

Environmental Assessment VOLUME 1 OF 2

Property:

Lot 132 DP 1053492 and Lot 2 DP 839929
2 Lookout Road, New Lambton Heights

Proposed Development:

Medical Research and Development Facility

Applicant:

Hunter Medical Research Institute

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Hunter Medical Research Institute

Proposed Medical Research and Development Facility

Lot 132 DP 1053492 and Lot 2 DP 839929
Lookout Road, New Lambton Heights, City of Newcastle

Environmental Assessment

25/09/2009

Limitations Statement

This report has been prepared in accordance with the scope of services agreed between ADW Johnson Pty Ltd and the Client. The scope of services was defined by the requests of the Client and by time and budgetary constraints set by the Client.

All reasonable skill, diligence and care have been applied within the agreed scope of services with the Client and the resources made available to it by agreement with the Client. Any responsibility to the Client and others in respect of matters outside the scope of the above is disclaimed.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, to the best of our ability, checks were undertaken to determine relevancy and currency of information prior to use.

Submission of Environmental Assessment (EA)

Prepared under the Environmental Planning and
Assessment Act 1979.

Section 75F

EA prepared by

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B. Urban & Regional Planning

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WARNERS BAY NSW 2282

In respect of

Development Application

Applicant Name:

Hunter Medical Research Institute

Applicant Address:

John Hunter Hospital
Lookout Road, New Lambton NSW 2305

Land to be developed:

2 Lookout Road
New Lambton Heights
Lot 132 DP 1053492 & Lot 2 DP 839929
Parish of Newcastle
County of Northumberland
City of Newcastle

Lot no. DP/MPS, vol/fol, etc:

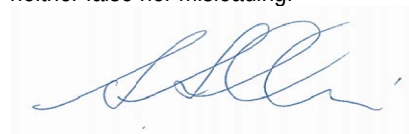
Environmental Assessment

An Environmental Assessment is attached.

Certificate

I certify that I have prepared the contents of this
Report and to the best of my knowledge:

- It is consistent with Section 75F of the Environmental Planning and Assessment Act 1979;
- The Report contains all available information that is relevant to the environmental assessment of the development to which the Report relates; and
- The information contained in the Report is neither false nor misleading.



Signature:

Name:

Date: 25/09/2009

Shannon Sullivan

EXECUTIVE SUMMARY

Background

Established in 1998, the Hunter Medical Research Institute (HMRI) is a unique partnership between Hunter New England Health, the University of Newcastle and the community. It provides a strong voice for health and medical research in the region. The establishment of HMRI capitalised on the region's strategic advantage in health and medical research and biotechnology. As a research hub, HMRI is creating an environment that nurtures health and medical research. HMRI provides a focal point for the coordination of research strategy, resources and funding.

HMRI is a multi-campus institute that fosters and enables research collaboration between multidisciplinary teams across institutions and geographic sites, coordinates research activity and resource distribution for the Hunter region with close links to the local community.

The project is for a world class health and medical research facility for the Hunter region. The joint HMRI and University of Newcastle medical research facility will support the continued growth of HMRI, which is already the third largest medical research institute in NSW. The building will attract leading researchers, clinicians, and the best doctors and health specialists to the Hunter, ensuring that the community receives the best health care. It will also boost the local economy and create more jobs in the area. Additionally, world class facilities, supported by outstanding researchers, will provide long term career opportunities for researchers in the Hunter.

The Site

The site is described as Lot 132 DP 1053492 and Lot 2 DP 839929, and is located on Lookout Road, New Lambton Heights. The site is within the existing John Hunter Hospital campus. The total area of the two allotments is approximately 46 hectares.



The Proposed Development

The construction of this new Research Facility is part of the vision of HMRI to consolidate health and medical research in the greater Newcastle area onto three major campuses – Rankin Park (John Hunter Hospital / Royal Newcastle Centre), Waratah (Calvary Mater Newcastle) and Callaghan (University of Newcastle). With an estimates works value of \$75 million dollars, the development represents a significant capital investment at the John Hunter Hospital Precinct and shall provide for 450 full time equivalent staff.

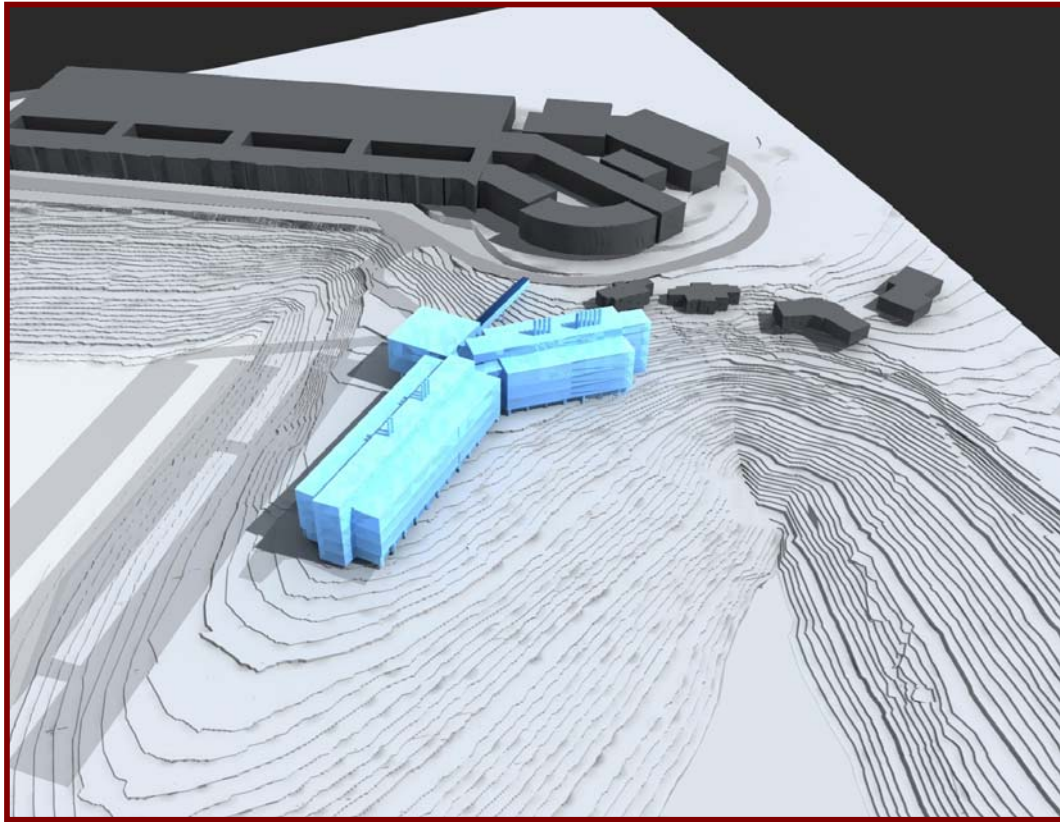
The new building is conceived as two wings of solid elements linked together by a glass link circulation zone with an entry Pod building to highlight the entrance and provide an identity for the new Hunter Medical Research Institute Building. The HMRI building will have an overall Gross Floor Area of 15,962 m², with overall works consisting of:

- The demolition of the existing structures within the site and the existing car park, and site preparation for the development;
- The construction of the new Hunter Medical Research Institute facility, including a four storey east and west wing connected through a central circulation area, and a two storey elevated entry pod;
- Construction of a three tiered open deck car park on grade and new entry road to Kookaburra Circuit; and,
- Ancillary site works including connection to the required services and infrastructure, stormwater capture and detention design, civil earthworks including retaining structures and battered slopes, and extensive landscaping.

Access to the proposed new building will be via Kookaburra Circuit which is accessed off Lookout Road. The Lookout Road intersection is controlled by traffic lights.

The site currently accommodates the John Hunter Hospital former staff amenities building and adjacent car park, with the building and associated facilities currently being underutilized. The existing structures shall be demolished and material removed or re-used within the development site, and the existing access road known as Gumtree Close shall be closed. The existing car park shall be replaced with an equivalent number of car parking spaces in the lower tier section of the new car park. The new 150 car space section on the lower tier shall be accessed by HNEAHS staff only.





The Sites Zoning & Development Application Process

While the proposed development is a medical research and development facility as defined in the Major Development SEPP, the proposal would be defined as a “hospital” under the Newcastle LEP 2003 and is permissible within the 5(a) zone with consent.

Because the project has an estimated capital investment value of \$75 million, and is defined as a Medical Research and Development Facility, it is subject to the provisions of State Environmental Planning Policy (Major Development) 2005 (Schedule 1: Group 7 Health and Public Services Facilities – 19 Medical Research and Development Facility).

On 16 December 2008, the Director –General formed the opinion under Clause 6 of the Major Project SEPP that the proposal is a major project, to which the Major Development SEPP (and Part 3A of the Act) applies. The Director-General's Requirements (Ref: MP 08_0250) were provided 29 January 2009, and have been addressed in this Environmental Assessment Report.

The Development Application will be lodged with the Department of Planning under the provisions of Part 3A of the Environmental Planning and Assessment Act 1979 (as amended). The Minister will be the assessment and consent authority for this project.

Consultation

In establishing the environmental parameters and scope of this project, consultation was undertaken with Newcastle City Council (NCC), the Department of Planning (DoP), the Department of Water and Energy (DWE), the Department of Environment and Climate Change (DECC), the Roads and Traffic Authority (RTA), the New South Wales Rural Fire Service (NSW RFS), Energy Australia, Hunter Water Corporation, Hunter New England Area Health Service (HNEAHS), Jemena/AGL and the Mine Subsidence Board. The consultation was undertaken in accordance with the Director-General's Requirements (Ref: MP 08_0250).

Key Environmental Investigations

Investigations of the existing environment, and the potential impacts on this of the proposed development were undertaken during the period November 2007 to August 2009. Specialist consultant reports were commissioned where necessary and are contained as Appendices to the EA Report. The following is a brief summary of the matters raised within the Director Generals Requirements:

1. Built Form and Design

The building design has evolved over time and is based on site analysis and investigations relating to the sites context and the surrounding landscape and topography. The final design and exact location of the proposal is the outcome of those considerations.

HMRI is at the forefront of international medical research and as such their new building should reflect the importance of the work being carried out within. The design seeks to convey 'clarity of expression' through simple but confident forms. The intended building is to be bold, but not ostentatious so that it will always be enduringly timeless.

The HMRI building is intended to architecturally stand apart, both from the immediately adjacent hospital and associated buildings. It needs to be a significant building in its own right that provides a memorable experience for visitors and staff alike.

The projection of the longer east wing follows the line of the ridge of the hill and the shorter west wing aligns with the contours and the line of existing track which connects back to the western carpark. The square pod building addresses Kookaburra Circuit and the Hospital by providing an entry statement for the complex.

In order to address the issues with respect to urban form and design of the proposed development, 3D design plans, a visual analysis, photomontages, an architectural design statement and a landscape design plan and report have been prepared.

The design has responded to the site constraints and intentionally recedes into the surrounding landscape. It is considered that the proposed design is appropriate for the site, and provides a building able to accommodate the proposed land use.

2. Biodiversity

The study area is approximately 7.11 hectares in size and is bound by remnant bushland to the north and east and by existing development within the grounds of the John Hunter Hospital to the south and west.

Data collected during the field surveys revealed that the study area supported 162 plant species within one plant community, *Coastal Plains Smooth-barked Apple Woodland*. An individual plant of the threatened flora species, *Tetralthea juncea* was recorded within the proposed development footprint. Mitigation measures suggested in the Flora and Fauna Report will be implemented to ensure no loss of biodiversity or ecosystems.

A total of 62 fauna species were recorded within the study area including the following threatened species listed as Vulnerable under the NSW *Threatened Species Conservation Act* 1995: Little Bentwing-bat *Miniopterus australis*, Eastern Bentwing-bat *Miniopterus oceanensis*, Eastern Freetail-bat *Mormopterus norfolkensis*, Grey-headed Flying-fox *Pteropus poliocephalus*, Masked Owl *Tyto novaehollandiae*, Powerful Owl *Ninox strenua* and the Glossy Black-Cockatoo *Calyptrorhynchus lathamii*.

The Assessment of Significance revealed that for the majority of threatened species there would be minimal impact from the proposed development. In order to ensure the safety of native flora and fauna and to preserve habitat integrity within the study area, several ameliorative measures and management actions have been recommended.

3. Impacts on adjoining Heritage Item

Croudace House was the former residence of Thomas Croudace, Manager of the Scottish Australian Mining Company Limited, Lambton Mine. The former '*Lambton Lodge*' (Croudace House) residence and remnant garden are listed as items of Local significance in the Newcastle Local Environmental Plan 2003.

The proposed development will be located approximately 400m from Croudace House and its associated remnant garden and will not be visible from the curtilage of the heritage item. There will be no aspects of the proposal that will detrimentally impact on the heritage items.

4. Transport, Traffic and Access

A Transport and Accessibility Report was undertaken to review of the surrounding context and how the proposal fits within the overall hospital campus, and the traffic and parking implications of the proposed development, including cumulative affects of future development. The report covers all aspects of transport and expected traffic to the proposed development and provides advice on access for all forms of transport issues, internal carpark layout, emergency service vehicles and issues relating to service vehicles both during construction and once operational.

The report concludes that the traffic and parking arrangements for the development proposal are satisfactory and that there is not traffic or parking impediments to the development.

5. Bushfire

A specialist Bushfire Threat Assessment report was commissioned to assess the issues associated with bushfire for the proposed development. The proposal is for a new multi-level medical research facility, which due to the function of the building the NSW Rural Fire Service has agreed is not considered to be a Special Fire Protection Purpose development under *Planning for Bush Fire Protection 2006*.

The Bushfire report concludes that the proposed development, subject to implementing specific (standard) recommendations, will achieve the intent of the relevant legislation and in particular the requirements as set out in *Planning for Bush Fire Protection 2006*.

6. Drainage and Stormwater Management

A Civil and Stormwater Drainage Report including a Concept Stormwater Management Plan has been prepared for the proposed development interactively with the project design. The findings of the report states that Stormwater drainage can be adequately and appropriately managed during construction and operation, and incorporates a number of Water Sensitive Urban Design philosophies, some of which are over and above legislative requirements.

7. Geotechnical and Mine Subsidence

A comprehensive geotechnical assessment of the site for the proposed development was undertaken. The purpose of the Geotechnical Investigation was to provide comments on the sub-service conditions, excavation conditions and footing design parameters for the building. The results of the Geotechnical Investigation have primarily been used for input into the Civil and Mine Subsidence Investigations.

On 12 August 2009, the Mining Subsidence Board accepted the Coffey geotechnical subsidence profiles and the combined engineering response, MSB's Letter of Approval, dated 12 August 2009, is contained in Appendix N.

The proposed development is assessed to have an overall Medium risk of slope instability and it is considered that the site is appropriate for development subject to the geotechnical constraints on development detailed in The Geotechnical Report.

8. Construction Impacts

A Noise Impact Assessment has been prepared to assess the potential noise impacts from the construction of the proposed development. The construction noise at the identified sensitive residential receivers is predicted to be significantly below the relevant criteria. In regard to the John Hunter Hospital, some simple measures can be taken to help reduce the impact of construction noise on the adjacent hospital site.

Other construction impacts identified include construction traffic, vibration, soil and water impacts, air pollution, waste management, and dust impacts. Appropriate mitigation measures and strategies to minimise these potential impacts have been provided.

9. Operational Impacts

The Noise Impact Assessment predicts the operational noise from plant and equipment serving the building will be well below the criteria to residential receivers. Other operational impacts identified waste management, site security and lighting, emergency procedures, fire safety, and signage.

Potential operational impacts associated with the new building will be addressed by the inclusion of existing procedures, methods and management strategies already employed by HMRI and covered by standard requirements and/or conditions.

10. Ecologically Sustainable Development Measures

A number of measures will be incorporated into the development in order to address ESD principles. The proposal will meet Section J of the BCA and include additional ESD measures such as water savings measures, additional window glazing, appropriate landscaping species and reuse of stormwater.

11. Services

The proposed development will be provided with connection to all essential services, including power, water, sewer, gas and telecommunications. Investigation into the provision of other services including mechanical systems, electrical, lighting, fire detection and communications services, hydraulic and fire protection services, medical gas services, wet fire services, and lift services have been undertaken to support the design.

Justification for the Proposed Development

The main objective of the proposed development is to enable HMRI to consolidate a number of training and research facilities within the John Hunter Hospital Precinct, without compromising the amenity of the surrounding land uses.

Locating the facility on this site will enable both the operational and the environmental objectives of the project to be met. The main advantage of this site over the other alternatives considered is its proximity to, and integration with, existing John Hunter Hospital buildings.

There are a number of benefits of the proposed development proceeding. The development will make available operational space within the existing John Hunter Hospital. Additionally, the relocation of the current facilities from the David Maddison Building allows for the commercial redevelopment of the current Newcastle site, allowing further capital investment with the Newcastle CBD.

Structure of the Environmental Assessment Report

This Environmental Assessment Report is generally structured in accordance with, and contains the information required by the Director General's Requirements. The Environmental Assessment Report contains descriptive and summarised text, while the appendices contain the various detailed specialist assessment reports.

Section 1- Provides the background to HMRI and the proposed development. The objectives of the proposal are described and an outline, in table format, of compliance with the Director General's Requirements is provided.

Section 2 – Describes the proposed development and its operational details. A detailed description of the proposal including construction phases, development features and building design is provided. Operational details including hours of operation, access and parking, employment, waste production, security and lighting and emergency procedures are described.

Section 3 – Provides the property description and owner's details, as well as a detailed site analysis and an overview of the existing environment.

Section 4 – Provides the planning context for the proposed development, as described in Section 2, including the relevant Commonwealth, State, Regional and Local legislation and planning controls.

Section 5 – Describes how the project team identified the key issues associated with the proposal. This section outlines the consultation undertaken and lists the project team and the specialist studies that were undertaken as part of the project.

Section 6 – Investigates, and makes assessment, in accordance with the DGRs, of the key environmental issues associated with the site and the proposed development. This section generally summarises the assessment and findings of the specialist consultant reports which are contained in the appendices to the report.

Section 7 – This section provides a summary of the commitments for the proposed development draft "Statement of Commitments". This section demonstrates how the proposal and the environmental safeguards will be implemented and managed in an integrated and feasible manner.

Section 8 – Provides a conclusion and justification for the proposal, including an assessment (of the proposal) within the principles of Ecological Sustainability, namely the "Precautionary Principle" and "Intergenerational Equity".



Table of Contents

LIST OF ABBREVIATIONS.....	17
LIST OF FIGURES.....	18
LIST OF PHOTOGRAPHS	19
1.0 INTRODUCTION.....	20
1.1 INTRODUCTION	20
1.2 BACKGROUND	20
1.3 OBJECTIVES OF THE PROPOSAL	21
1.4 COMPLIANCE WITH THE DIRECTOR-GENERAL'S REQUIREMENTS (REF: MP 08_0250)	21
2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT.....	33
2.1 SITE LAYOUT AND DESIGN PLANS.....	33
2.2 PROJECT PHASES	37
2.3 DEVELOPMENT FEATURES	37
2.4 BUILDING DESIGN.....	39
2.5 ACCESS & PARKING	39
2.6 HOURS OF OPERATION	40
2.7 EMPLOYMENT.....	40
2.8 WASTE PRODUCTION AND DISPOSAL.....	40
2.9 LANDSCAPING	40
2.10 SECURITY AND LIGHTING	43
2.11 FUEL & CHEMICALS STORAGE	43
2.12 EMERGENCY PROCEDURES	43
2.13 CONSIDERATION OF ALTERNATIVES	44
3.0 SITE ANALYSIS AND OVERVIEW OF THE EXISTING ENVIRONMENT.....	45
3.1 INTRODUCTION	45
3.2 PROPERTY DESCRIPTION AND OWNERS DETAILS.....	45
3.3 THE SITE AND LOCALITY	45
3.4 EXISTING IMPROVEMENTS ON THE SITE	55
3.5 TOPOGRAPHY, DRAINAGE AND FLOODING	55
3.6 ACCESS, ROAD NETWORK AND PARKING.....	55
3.7 VEGETATION.....	56
3.8 BUSHFIRE.....	56
3.9 EUROPEAN HERITAGE	56
3.10 CONTAMINATION.....	57
3.11 METEOROLOGICAL CHARACTERISTICS.....	57
3.12 GEOTECHNICAL PROPERTIES AND SOILS.....	57
3.13 MINE SUBSIDENCE.....	58
3.14 CRITICAL HABITAT AND THREATENED SPECIES	59
3.15 ABORIGINAL ARCHAEOLOGY	59

3.16	SERVICES	59
3.17	ROAD WIDENING	59
4.0	PLANNING CONTEXT	60
4.1	COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999	60
4.2	ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 & REGULATION 2000	60
4.3	STATE ENVIRONMENTAL PLANNING POLICIES	62
4.3.1	SEPP (Infrastructure) 2007	62
4.3.2	SEPP (Major Development) 2005	62
4.3.3	SEPP 33 – Hazardous and Offensive Development	62
4.4	REGIONAL ENVIRONMENTAL PLANS	63
4.4.1	Hunter Regional Environmental Plan 1989 (HREP)	63
4.4.2	Hunter REP (Heritage) 1989	63
4.4.3	Lower Hunter Regional Strategy	63
4.5	NEWCASTLE LOCAL ENVIRONMENTAL PLAN 2003	63
4.6	LAND USE DEFINITION AND PERMISSIBILITY	63
4.7	SPECIFIC NEWCASTLE LEP 2003 CLAUSES	64
4.8	NEWCASTLE DEVELOPMENT CONTROL PLAN 2005	65
4.8.1	Element 4.1 Car parking	65
4.8.2	Element 4.4 Landscaping	65
4.8.3	Element 4.5 Water Management	66
4.8.4	Element 4.6 Waste Management	66
4.9	SECTION 94A	67
5.0	PLANNING METHODOLOGY & CONSULTATION	69
5.1	INTRODUCTION	69
5.2	OVERVIEW OF THE METHODOLOGY	69
5.3	CONSULTATION	70
5.3.1	Department of Planning	70
5.3.2	Newcastle City Council (NCC)	71
5.3.3	Roads & Traffic Authority (RTA)	72
5.3.4	Ministry of Transport (MoT)	72
5.3.5	New South Wales Rural Fire Service (NSW RFS)	73
5.3.6	Mine Subsidence Board (MSB)	73
5.3.7	Hunter New England Area Health (HNEAH)	77
5.3.8	Energy Australia	77
5.3.9	Hunter Water Corporation	77
5.3.10	Jemena/AGL Retail	78
5.3.11	NSW Fire Brigade	78
5.3.12	Department of Water and Energy	78
5.3.13	Department of Environment and Climate Change	78
5.4	OUTCOME OF ISSUES IDENTIFICATION	79
5.5	THE PROJECT TEAM	79
6.0	ENVIRONMENTAL ASSESSMENT	81
6.1	INTRODUCTION	81

6.2	BUILT FORM AND DESIGN	81
6.3	LANDSCAPING	82
6.4	TRANSPORT, TRAFFIC AND ACCESS	83
6.5	IMPACTS ON ADJOINING HERITAGE ITEM	84
6.6	BUSHFIRE	85
6.7	BIODIVERSITY	85
6.8	DRAINAGE, STORMWATER AND GROUNDWATER MANAGEMENT	87
6.9	GEOTECHNICAL AND MINE SUBSIDENCE	87
6.9.1	<i>Mine Subsidence</i>	87
6.9.2	<i>Geotechnical</i>	88
6.10	CONSTRUCTION IMPACTS	88
6.10.1	<i>Noise and Vibration</i>	88
6.10.2	<i>Stormwater Management</i>	90
6.10.3	<i>Dust and Erosion Control</i>	91
6.10.4	<i>Waste Management</i>	92
6.10.5	<i>Traffic and Pedestrian Access Management</i>	92
6.10.6	<i>Cut and Fill</i>	93
6.10.7	<i>Wind</i>	94
6.11	OPERATIONAL IMPACTS	94
6.11.1	<i>Noise generated from plant and equipment</i>	94
6.11.2	<i>Waste Management</i>	94
6.11.3	<i>Site security, including lighting</i>	94
6.11.4	<i>Emergency and Evacuation Procedures</i>	95
6.11.5	<i>Fire Safety</i>	96
6.11.6	<i>Signage</i>	96
6.12	ECOLOGICALLY SUSTAINABLE DEVELOPMENT MEASURES	97
6.12.1	<i>Introduction</i>	97
6.12.2	<i>Mechanical Systems</i>	97
6.12.3	<i>Hydraulic Services</i>	98
6.13	SERVICES	99
7.0	DRAFT STATEMENT OF COMMITMENTS	100
7.1	INTRODUCTION	100
7.2	BUILT FORM AND DESIGN	100
7.2.1	<i>Architectural Design</i>	100
7.2.2	<i>Landscape Design</i>	100
7.2.3	<i>BCA</i>	101
7.2.4	<i>Access</i>	101
7.3	TRANSPORT, TRAFFIC & ACCESS	102
7.4	BUSHFIRE	102
7.5	BIODIVERSITY	104
7.6	DRAINAGE, STORMWATER AND GROUNDWATER MANAGEMENT	105
7.7	GEOTECHNICAL AND CONTAMINATION	106
7.7.1	<i>Geotechnical</i>	106
7.7.2	<i>Mine Subsidence</i>	106
7.8	CONSTRUCTION IMPACTS	107
7.8.1	<i>Noise & Vibration</i>	107

7.8.2	<i>Stormwater Management</i>	107
7.8.3	<i>Dust and Erosion Control</i>	108
7.8.4	<i>Waste Management</i>	108
7.8.5	<i>Traffic and Pedestrian Access Management</i>	109
7.8.6	<i>Cut and Fill</i>	109
7.9	OPERATIONAL IMPACTS	110
7.9.1	<i>Noise from Plant and Equipment</i>	110
7.9.2	<i>Waste Management</i>	110
7.9.3	<i>Site Security and Lighting</i>	110
7.9.4	<i>Emergency Procedures</i>	110
7.9.5	<i>Fire Safety</i>	111
7.9.6	<i>Signage</i>	112
7.10	ESD MEASURES	112
7.11	SERVICES	113
8.0	JUSTIFICATION FOR THE PROPOSAL	114
8.1	MEETING PROJECT OBJECTIVES	114
8.2	ECOLOGICAL SUSTAINABILITY	114
8.2.1	<i>Integration</i>	114
8.2.2	<i>Precautionary Principle</i>	114
8.2.3	<i>Inter-generational Equity</i>	115
8.2.4	<i>Conservation of Biodiversity and Ecological Integrity</i>	115
8.2.5	<i>Improved Valuation, Pricing and Incentive Mechanisms</i>	115
8.2.6	<i>Environmental Assessment</i>	115
8.2.7	<i>Public Consultation</i>	116
8.2.8	<i>Conclusion</i>	116
8.3	MEETING ENVIRONMENTAL PERFORMANCE REQUIREMENTS	116
8.4	SAFEGUARDING PUBLIC HEALTH	116
8.5	PUBLIC INTEREST	116
APPENDIX A		117
	Director-General's Requirements & Clause 6 Opinion	117
APPENDIX B		118
	Certificate of Title and Deposited Plans	118
APPENDIX C		119
	Title Info Plan – ADW Johnson Pty Ltd	119
APPENDIX D		120
	Architectural Plans, 3D Images & Visual Analysis – Denton Corker Marshall & S2F Architects	120
APPENDIX E		121
	Architectural Design Statement – Denton Corker Marshall & S2F Architects	121
APPENDIX F		122
	Landscape Design Plan & Report – EDAW AECOM Landscape Architecture	122
APPENDIX G		123

Building Code of Australia Capability Statement – Davis Langdon	123
APPENDIX H.....	124
Disability Access Report – Morris Godding Access Consulting	124
APPENDIX I	125
Flora, Fauna & Threatened Species Assessment - Ecobiological	125
APPENDIX J	126
Transport and Accessibility Study – Better Transport Futures	126
APPENDIX K.....	127
Bushfire Threat Assessment – Australian Bushfire Protection Planners	127
APPENDIX L	128
Civil & Stormwater Drainage Report – Arup	128
APPENDIX M	129
Geotechnical Report – Coffey Geotechnics.....	129
APPENDIX N.....	130
Mine Subsidence Report – Arup	130
APPENDIX O	131
Acoustic Report – ArupAcoustics.....	131
APPENDIX P.....	132
Hydraulic and Wet Fire – Steve Paul & Partners.....	132
APPENDIX Q	133
Mechanical, Lighting, Electrical, Fire Detection, Communication, Security and Vertical Transportation – S2F	133
APPENDIX R.....	134
Ecologically Sustainable Development - Arup	134
APPENDIX S.....	135
Quantity Surveyor – Davis Langdon	135
APPENDIX T	136
Dangerous Goods – Safety Engineering & Technical Services	136

List of Abbreviations

ACM	Asbestos Containing Material
ADWJ	ADW Johnson Pty Ltd
AHD	Australian Height Datum
AQIA	Air Quality Impact Assessment
BCA	Building Code of Australia
DA	Development Application
DCP	Development Control Plan
DDA	Disability Discrimination Act
DECC	Department of Environment and Conservation
DG	Director-General
DIPNR	Department of Infrastructure, Planning and Natural Resources
DoP	Department of Planning
DP	Deposited Plan
DWE	Department of Water & Energy
EA	Environmental Assessment
EAR	Environmental Assessment Report
EMP	Environmental Management Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority (now NSW DEC)
EPA Act	Environmental Planning and Assessment Act 1979
EPA Reg	Environmental Planning and Assessment Regulation 2000
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
HNEAH	Hunter New England Area Health
HMRI	Hunter Medical Research Institute
GTA	General Terms of Approval
INP	Industrial Noise Policy
LEP	Newcastle Local Environmental Plan 2003
LGA	Local Government Area
MSB	Mine Subsidence Board
NCC	Newcastle City Council
NIA	Noise Impact Assessment
PHA	Preliminary Hazard Analysis
RAP	Remedial Action Plan
REP	Regional Environmental Plan
RFS	New South Wales Rural Fire Service
RL	Relative Level
RTA	Roads and Traffic Authority
SEPP	State Environmental Planning Policy
VENM	Virgin Excavated Natural Material

List of Figures

Figure 1 – An aerial photograph of the site.

Figure 2 – Extract from the Site Plan.

Figure 3 – Stylized section through the development as viewed from the West.

Figure 4 – Elevation and section of the Entry Pod as viewed from the proposed car park.

Figure 5 – Extract from the Landscape Plan.

Figure 6 – Site Analysis Plan.

Figure 7 – Locality map within local context.

Figure 8 – Aerial photograph of site and surrounds.

Figure 9 – Locality of site in broader local context.

Figure 10 – Locality of site within regional context.

Figure 11 – Extract from Council's bushfire prone land map.

Figure 12 – Aerial photograph showing the location of the Heritage Items.

Figure 13 – Extract from NLEP 2003.

List of Photographs

Photograph 1 – View of existing John Hunter Hospital from peak of Dent Street.

Photograph 2 – View of existing entrance to the former staff amenities building and car park.

Photograph 3 – View of existing pedestrian access to John Hunter Hospital.

Photograph 4 – View of the north eastern corner of the development site.

Photograph 5 – View of the northern end of the existing car park.

Photograph 6 – View of across the existing car park and vegetation within the site.

Photograph 7 – View of the disturbed area of drainage line to the west of the site.

Photograph 8 – View of existing access track in the west of the site, & the Kookaburra cottages.

Photograph 9 – View of the easement within the north of the site.

Photograph 10 – View of area of the proposed entrance road.

Photograph 11 – View of disturbed and modified area of drainage line to the east of the site.

Photograph 12 – View of the existing detention basis to the east of the development site.

Photograph 13 – View of the vegetation to the east of the existing parking.

Photograph 14 – View of the intersection of Jacaranda Drive & Croudace Street.

1.0 Introduction

1.1 INTRODUCTION

This Environmental Assessment Report has been prepared by ADW Johnson Pty Ltd to accompany a Development Application to the Department of Planning for the construction and operation of a new medical research and development facility at Lookout Road, New Lambton Heights, by Hunter Medical Research Institute.

The preparation of the Environmental Assessment Report has been undertaken in accordance with the Director-General's Requirements (Ref: MP 08_0250) and in consultation with Government Agencies.

The purpose of the Environmental Assessment Report is to alert members of the public and the decision-maker to the potential environmental impacts and community consequences of the proposal. It is not a decision making end in itself but rather a means to assist the Department of Planning in making a decision.

1.2 BACKGROUND

Established in 1998, the Hunter Medical Research Institute (HMRI) is a unique partnership between Hunter New England Health, the University of Newcastle and the community. It provides a strong voice for health and medical research in the region.

The establishment of HMRI capitalised on the region's strategic advantage in health and medical research and biotechnology. As a research hub, HMRI is creating an environment that nurtures health and medical research. HMRI provides a focal point for the coordination of research strategy, resources and funding.

By proposing this project, HMRI is continuing to develop its plans for a world class health and medical research facility for the Hunter region. The HMRI building will support the continued growth of HMRI, which is already the third largest medical research institute in NSW.

The building will attract leading researchers, clinicians, and the best doctors and health specialists to the Hunter, ensuring that the community receives the best health care. It will also boost the local economy and create more jobs. Additionally, world class facilities, supported by outstanding researchers, will provide long term career opportunities for researchers in the Hunter.

HMRI and the project team undertook some positive consultation with Newcastle City Council (25 August 2009) and Council's Urban Design Consultative Committee (15 July 2009). The primary issues discussed during these consultations included the architectural design, environmental impacts, landscaping, location of the proposed facility, social and community benefits.

A submission made to the Department of Planning on 4th December 2008 sought formal confirmation (Clause 6 Opinion) of the proposed development as a 'Major Project'.

The Director-General of the Department of Planning declared the proposal to be a Major Project (Clause 6 opinion) under Part 3A of the *Environmental Planning and Assessment Act 1979* on the 16th December, 2008

and the Director-General's Requirements (DGR's) were issued on the 29th January 2009 (Ref: MP 08_0250). **Appendix A** includes a copy of the Clause 6 opinion and the DGR's.

1.3 OBJECTIVES OF THE PROPOSAL

HMRI is a multi-campus institute that fosters and enables research collaboration between multidisciplinary teams across institutions and geographic sites, coordinates research activity and resource distribution for the Hunter region with close links to the local community.

The construction of this new Research Facility is part of the vision of HMRI to consolidate health and medical research in the greater Newcastle area onto three major campuses – Rankin Park (John Hunter Hospital / Royal Newcastle Centre), Waratah (Calvary Mater Newcastle) and Callaghan (University of Newcastle).

The proposal involves construction of a new multi-level research and development building located in the northern portion of Lot 132 DP 1053492 and Lot 2 DP 839929. The development has an estimated works value of \$75 million dollars and shall provide for 450 full time equivalent staff.

1.4 COMPLIANCE WITH THE DIRECTOR-GENERAL'S REQUIREMENTS (REF: MP 08_0250)

The table below outlines where the Director-General's Environmental Assessment Requirements for the project have been addressed in this Report and its Appendices.

(DGEAR for MP 08_0250, issued 29th January, 2009).

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
GENERAL REQUIREMENTS			
1.	Executive summary	An executive summary has been included within the Environmental Assessment Report. Please refer to pages 4-11 of the EAR .	✓
2.	A description of the proposal including:	Section 2.0 of the Environmental Assessment Report provides a comprehensive description of the proposed development.	✓
	Description of the site including cadastre and title details;	The Certificate of Titles, Deposited Plans and Title Information Plan for the site have been included in the Environmental Assessment Report as Appendix C. A description of the site is provided within Section 3.0 – Site Analysis and Overview of the Existing Environment, of the Environmental Assessment Report.	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
	A thorough site analysis and description of the existing environment;	This is provided within Section 3.0 – Site Analysis and Overview of the Existing Environment , of the Environmental Assessment Report.	✓
	Suitability of the site for the proposed development;	Section 3.0 – Site Analysis and Overview of the Existing Environment within the Environmental Assessment Report demonstrates the suitability of the site for the proposed development, which is described in Section 2.0 of the EAR.	✓
	Likely environmental impacts;	The likely environmental impacts of the proposed development are identified in Section 5.0 – Identification of Issues & Consultation , of the Environmental Assessment Report, and these impacts are discussed and addressed within Section 6.0 – Environmental Assessment of the EAR.	✓
	Design, construction, operation, maintenance, rehabilitation and staging as applicable; and	Provided in Section 2.0 – Description of the Proposed Development , of the Environmental Assessment Report.	✓
	Justification for undertaking the project, taking into consideration the environmental impacts of the proposal, the suitability of the site and whether or not the project is in the public interest.	This is provided within Section 8.0 – Justification for the Proposal , of the Environmental Assessment Report.	✓
3.	A consideration of the following with any variations to be justified:		
	All relevant State Environmental Planning Policies; and	All relevant State Environmental Planning Policies have been addressed within Section 4.0 – Planning Context , of the Environmental Assessment Report.	✓
	Applicable local planning instruments and relevant legislation and policies.	All applicable local planning instruments and relevant legislation and policies have been addressed within Section 4.0 – Planning Context , of the Environmental Assessment Report.	✓
4.	A draft Statement of Commitments, outlining commitments to the projects	A draft Statement of Commitments has been provided as Section 7.0 – Draft Statement of Commitments , of the Environmental Assessment	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
	management, provision of infrastructure, mitigation and monitoring measures with clear identification of who is responsible for these measures.	Report.	
5.	A conclusion justifying the project, taking into consideration the environmental and construction impacts of the proposal, mitigation measures to address these impacts, the cumulative impacts of the proposal, suitability of the site and whether or not the project is in the public interest.	This is provided within Section 8.0 – Justification for the Proposal , of the Environmental Assessment Report.	✓
6.	A signed statement on the validity of the Environmental Assessment, the qualifications of person(s) preparing the assessment and that the information contained in the Environmental Assessment is neither false nor misleading.	This signed statement is provided on page 3 of the Environmental Assessment Report.	✓
KEY ASSESSMENT REQUIREMENTS			
	The Environmental Assessment must address the following key issues:	The key issues are addressed within Section 6.0 – Environmental Assessment of the Environmental Assessment Report.	
1.	Urban Form and Design		
	Urban design, height, density, bulk and scale of the development and relation to surrounding development, landscape and topography;	This is more specifically addressed within Section 6.2 – Urban Form and Design and Section 6.3 – Landscaping within the EAR. An Architectural Design Statement has been prepared by DCM/S2F and is included as Appendix E of the EAR.	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
	Floor space calculations;	This is addressed within Section 6.2 – Built Form & Design within the EAR. An Architectural Design Statement has been prepared by DCM/S2F and is included as Appendix E of the EAR.	✓
	Site analysis and architectural plans, elevations and sections;	A full set of architectural plans, including site analysis plans, has been prepared by DCM/S2F and is included within the Environmental Assessment Report as Appendix D (Architectural Plans T0001– T5034).	✓
	External materials and finishes, including a sample board;	A schedule of External Materials and Finishes has been provided within the full set of architectural design statement prepared by DCM and provided at Appendix D. A sample board has been prepared and provided to the Department of Planning.	✓
	Photomontages and view analysis; and	Photomontages, 3D images and coloured elevations of the proposed development are provided with the Architectural Plans (Appendix D). A view analysis and photomontages are also provided within the Architectural Design Statement, Appendix E of the EAR.	✓
	Details of the proposed areas of landscaping and open space.	Landscaping is addressed within Section 6.3 – Landscaping, of the Environmental Assessment Report. A full Landscape Masterplan Report and Landscape plans (L-TP01 - L-TP06) at A3 size have been prepared by EDAW Landscape Architecture and are included as Appendix F of the EAR.	✓
2.	Transport, Traffic & Access		
	Provide a traffic and transport study that addresses the following:	A Transport and Accessibility Report has been prepared by Better Transport Futures and is included in the Environmental Assessment Report	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
		as Appendix J .	
	➤ Surrounding context and how the proposal fits within the overall hospital campus in terms of transport and traffic management; including the cumulative affects of future development in other parts of the site;	This is addressed in Section 3.1 – Site Description & Proposed Activity and Section 4.1 – The Development of the Transport and Accessibility Report (Appendix J of the EAR).	✓
	➤ Estimated vehicular traffic generation from the proposed development and the cumulative impact of this with any other known development proposal in the area;	Section 5 – Impact of the Proposed Development and more specifically Section 5.1 – Traffic Generation , within the Transport and Accessibility Report (Appendix J of the EAR), addresses the estimated vehicular traffic generation from the proposed development and the impacts of this.	✓
	➤ Any existing public transport services in the site, together with other transport services offered by the hospital;	Existing public transport services in the site and other transport services offered by the facility are addressed within Section 3.6 – Existing Public Transport of the Transport and Accessibility Report (Appendix J).	✓
	➤ Measures to encourage mode shift to public transport and reduce reliance on on-site car parking;	This is addressed within Section 3.6.2 – Bus Stops & Associated Facilities , Section 4.2.5 – Access to Public Transport and Section 5.5.1 – Options for Improving Services of the Transport and Accessibility Study (Appendix J of the Environmental Assessment Report).	✓
	➤ Existing pedestrian and cycle movements within the vicinity of the subject site and determine the adequacy of the proposal to meet the likely future demand for increased pedestrian and cycle access – this may include facilities for secure bicycle storage; and	This is addressed in the following sections of the Transport and Accessibility Study Report (Appendix J of the EAR): Section 3.2.2 – Pedestrians; Section 3.2.3 – Cycling Facilities; Section 4.1.2 – Access and Circulation; Section 4.3.6 – Bicycle Parking; Section 5.1.2 – Pedestrian movements; and	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
		Section 5.5.2 – Measures to encourage use of public transport, cycling and walking. Visually these issues are also presented in the Key Drawings in Appendix D (Architectural Plans K0500 to K1050).	
	➤ Travel Demand Management (TDM) measures that will optimize the opportunity provided by the project's site proximity to public transport.	This is addressed within Section 3.2.2 – Pedestrians, Section 3.2.3 – Cycling Facilities, and Section 3.5 – Existing Parking Supply & Demand of the Transport and Accessibility Study Report (Appendix J of the EAR).	✓
	• Compliance with the RTA <i>Guide to Traffic Generating Developments</i> .	This is addressed within all sections of the Transport and Accessibility Report (Appendix J of the EAR).	✓
	• Internal road and access arrangements including entry points, drop off points, traffic management and hierarchy;	This is addressed within Section 4.2 – Access of the Transport and Accessibility Study Report (Appendix J of the EAR).	✓
	• Service delivery requirements;	This is addressed in Section 4.1.2 – Access & Circulation, Section 4.2.3 – Service Vehicle Access, and Section 4.3.5 – Service Area Parking of the Transport and Accessibility Study Report (Appendix J of the EAR).	✓
	• Emergency evacuation and public access;	This is addressed in Section 4.2 – Access of the Transport and Accessibility Study Report (Appendix J of the EAR).	✓
	• Traffic Management during construction including car parking requirements for construction workers; and	This is addressed in Section 4.3.7 – Construction Parking and Section 4.3.8 – Construction Traffic of the Transport and Accessibility Study Report (Appendix J of the EAR).	✓
	• Car Parking provisions for the development taking into consideration future developments proposed for the site.	This is addressed in Section 3.7 – Other Proposed Development of the Transport and Accessibility Study Report (Appendix J of the EAR).	✓
3.	Impacts on Adjoining Heritage Item		

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
	Impacts of the proposal on local heritage items identified in Newcastle LEP 2003	Impacts of the proposal on local heritage items (Croudace House and the remnant gardens) are addressed within Section 6.5 – Heritage , of the Environmental Assessment Report.	✓
4.	Bushfire		
	Compliance with NSW Rural Fire Service's <i>Planning for Bush Fire Protection 2006</i>, with particular regard to ensuring Special Fire Protection purpose developments are located away from the bushland interface.	This is addressed within Section 6.6 – Bushfire, of the Environmental Assessment Report. A Bushfire Protection Assessment has been prepared by Australian Bushfire Protection Planners and is located at Appendix K of the EAR.	✓
	Identify any vegetation types and describe ownership and ongoing management of any proposed Asset Protection Zones.	This is addressed within Section 6.6 – Bushfire, of the Environmental Assessment Report. A Bushfire Protection Assessment has been prepared by Australian Bushfire Protection Planners and is located at Appendix K of the EAR.	✓
5.	Biodiversity		
	Assess and address any impact of the development on endangered or vulnerable species and/or habitat, including potential indirect impacts such as water quality, and the management of these.	This is addressed within Section 6.7 – Biodiversity, of the Environmental Assessment Report. A Flora, Fauna & Threatened Species Assessment has been prepared by Ecobiological and is located at Appendix I of the EAR.	✓
6.	Drainage, Stormwater and Groundwater Management		
	Construction and operational drainage, stormwater and groundwater management issues, including impact on riparian areas, topography, on site stormwater detention, overland flow paths and drainage infrastructure.	Drainage, stormwater and groundwater management issues have been addressed within Section 6.8 – Drainage, Stormwater and Groundwater Management, of the Environmental Assessment Report. A Civil and Stormwater Drainage Report and Stormwater Management Concept Plan has been prepared by Arup Engineers and is included in the	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
		EAR as Appendix L .	
7.	Geotechnical and Contamination		
	Suitability of the site for the proposal with regard to slope stability, erosion hazard, proposed earthworks and retention methods.	This is addressed within Section 6.9 – Geotechnical and Mine Subsidence, of the Environmental Assessment Report. A Structural Report on Mine Subsidence Issues Affecting the Site has been prepared by Arup Engineers and is included in the EAR as Appendix N. A Mine Subsidence Assessment has been prepared by Coffey Geotechnics and is included in the EAR as Appendix N. A Geotechnical Assessment has been prepared by Coffey Geotechnics and is included in the EAR as Appendix M.	✓
8.	Construction Impacts		
	Air pollution, soil and erosion and waste material;	Air pollution, soil and erosion and waste material management issues have been addressed within Section 6.10 – Construction Impacts , of the Environmental Assessment Report.	
	Noise and vibration; and	Noise and vibration impacts are addressed within Section 6.10.1 – Noise and Vibration, of the Environmental Assessment Report. A Noise Impact Assessment has been prepared by ArupAcoustics and is included as Appendix O of the EAR.	✓
	Details of any cut and fill and whether any fill is proposed to be imported or exported to/ from the site.	Cut and fill details have been addressed within Section 6.10.6 – Cut and Fill, of the Environmental Assessment Report. A Civil and Stormwater Drainage Report has been prepared by Arup Engineers and is included as	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
		Appendix L of the EAR.	
9.	Operational Impacts		
	Noise generated from plant and equipment;	Noise generated from plant and equipment is addressed within Section 6.11.1 – Noise Generated from Plant and Equipment, of the Environmental Assessment Report. A Noise Impact Assessment has been prepared by ArupAcoustics and is included as Appendix O of the EAR.	✓
	Waste management including biomedical, infectious or toxic wastes, storage of any chemicals /hazardous materials;	Operational waste management is addressed within Section 6.11.2 – Waste Management, of the Environmental Assessment Report. A Dangerous Goods Assessment has been prepared by Safety Engineering & Technical Services Pty Ltd and is included as Appendix T of the EAR.	✓
	Site security;	Site security, including lighting is addressed within Section 6.11.3 – Site Security, including lighting , of the Environmental Assessment Report.	✓
	Emergency and evacuation procedures;	Emergency and evacuation procedures are addressed within Section 6.11.4 – Emergency and Evacuation Procedures , of the Environmental Assessment Report.	✓
	Fire safety;	Fire Safety is addressed within Section 6.11.5 – Fire Safety , of the Environmental Assessment Report.	✓
	Lighting; and	Site security, including lighting is addressed within Section 6.11.3 – Site Security, including lighting , of the Environmental Assessment Report.	✓
	Signage.	Signage is addressed within Section 6.11.6 – Signage of the Environmental Assessment Report.	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
10.	Ecologically Sustainable Development Measures		
	Address proposed ESD measures including water reuse and demand management, energy efficiency, recycling and waste disposal.	Ecologically Sustainable Development Measures are addressed within Section 6.12 – Ecologically Sustainable Development Measures, of the Environmental Assessment Report. A ESD DA Report has been prepared by Arup and is included as Appendix R of the EAR.	✓
11.	Services		
	Address capacity of utilities including water, sewer, stormwater, gas, power and telecommunications infrastructure which will serve the project.	Utilities and services are addressed within Section 6.13 – Services, of the Environmental Assessment Report. A Mechanical, Lighting, Electrical, Fire Detection, Communication, Security Services and Vertical Transportation Report has been prepared by S2F Pty Ltd and is included as Appendix Q of the EAR. A Hydraulic and Wet Services Report has been prepared by SP&P Pty Ltd and is included as Appendix P of the EAR.	✓
CONSULTATION REQUIREMENTS			
	Written evidence shall be submitted to demonstrate that an appropriate level of consultation with the relevant Local or State government authorities, service providers, community groups and other stakeholders has been undertaken. In particular you should consult with:	All consultation is addressed within Section 5.3 – Consultation of the Environmental Assessment Report.	✓
	Newcastle City Council;	This is addressed in Section 5.3.1 of the Environmental Assessment Report. Consultation with NCC was undertaken via a Council briefing (25 August, 2009) and an Urban Design	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
		Consultative Committee meetings (15 July, 2009).	
	• Rural Fire Service;	This is addressed in Section 5.3.5 of the Environmental Assessment Report. Australian Bushfire Protection Planners Pty Ltd consulted with the NSW RFS on the 30 th April, 2009.	✓
	• NSW Roads and Traffic Authority;	This is addressed in Section 5.3.2 of the Environmental Assessment Report. Better Transport Futures consulted with the NSW RTA on the 12 th January, 2009.	✓
	• Mine Subsidence Board; and	This is addressed in Section 5.3.6 of the Environmental Assessment Report. Arup Engineers consulted with the Mine Subsidence Board on the 1 st July, 2009.	✓
	• All utility providers.	This is addressed in Section 5.3.6 of the Environmental Assessment Report.	✓
APPLICATION FEE			
	The application fee is based on Capital Investment Value of the project as defined in the Major Projects SEPP and as set out in Clause 8H of the <i>Environmental Planning and Assessment Regulation 2000</i> . To verify the cost of works for this project you are requested to submit a Quantity Surveyor's report for the project.	A Quantity Surveyor's Report verifying the cost of the works for the project has been submitted as part of the Project Application.	✓
LANDOWNERS CONSENT			
	Landowner's consent is to be provided in accordance with clause 8F of the <i>Environmental Planning and Assessment Regulation 2000</i> .	This is provided with the application.	✓

Item	Environmental Assessment Requirement	Where issues have been addressed	Addressed
DOCUMENTS TO BE SUBMITTED			
	Ten (10) hard copies of the EA with plans to be to scale and A3 in size.	Ten (10) hard copies of the EAR with plans to scale and A3 in size have been provided.	✓
	Five (5) copies of the Environmental Assessment Report and plans on CD-ROM (in PDF-please ensure all files are less than 5Mb in size).	Five (5) copies of the EAR and plans on CD-ROM (all files in PDF and less than 2Mb in size) have been provided.	✓

2.0 Description of the Proposed Development

2.1 SITE LAYOUT AND DESIGN PLANS

The proposed new medical research facility will be located to the north the existing John Hunter Hospital.



Figure 1: An aerial photograph of the site.

The above aerial photograph shows the location of the proposed new building in the context of the site, the locality and the existing buildings. The proposed new Hunter Medical Research Institute Building will be located adjacent the John Hunter Hospital.

The development site is constrained to the north by the existing power easement, which is clear within the above Figure 1. The development site is bound to the south by the existing Kookaburra Circuit and current plans for expansion of the John Hunter Hospital. Further the extent of the development site to the immediate east and west is constrained by site topography and two existing watercourses.

The site is largely disturbed due to the former staff amenities building and associated car park being located within the development site. The existing buildings, carpark and access road shall be demolished to provide for the new building and associated carpark. A new entry road will be constructed off Kookaburra Circuit to serve the loading dock and carpark.

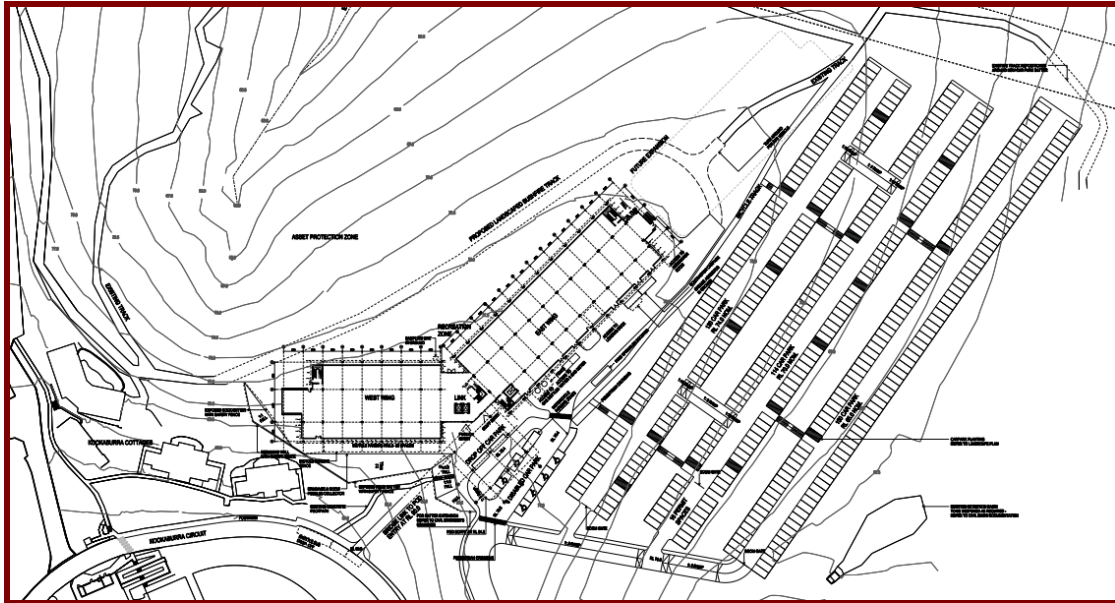


Figure 2: Extract from the site plan.

Figure 2 includes the proposed site plan and shows the location of the proposed new building in the context of the site, the locality and the existing buildings. **Figure 3** provides a section through the site from northern end of the John Hunter Hospital, through the proposed new buildings and to the northern end of the east wing. This section provides a good indication of the scale of the proposed new building in the context of the existing buildings and the topography of the site.

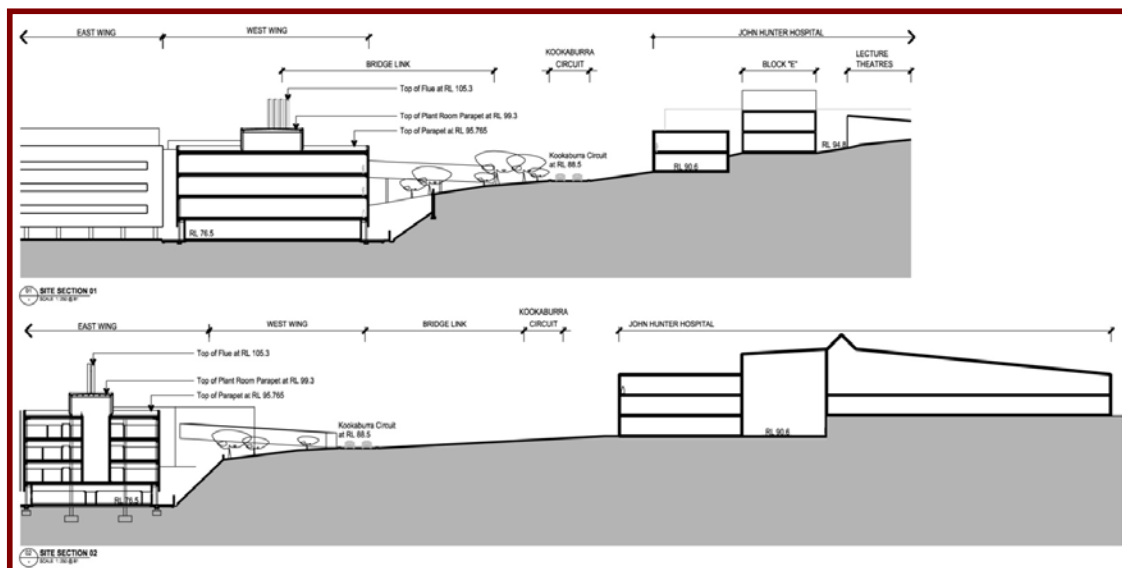


Figure 3: Stylized section through the development as viewed from the West.

The Section through the site shows the relationship of the north western extent of the hospital to the new building and how the topography allows the building to sit comfortably below the hospital with minimal impact to the neighbouring hospital.

The section over the page through the entry 'pod' building shows the height difference between Kookaburra Circuit (RL 88.5) and the Ground level (Level1) of the new building at RL 76.5. This 12 metre level difference has been utilised to provide an at grade pedestrian access via a bridge link from Kookaburra Circuit to the top Level (Level 4) of the complex where the main reception is located.

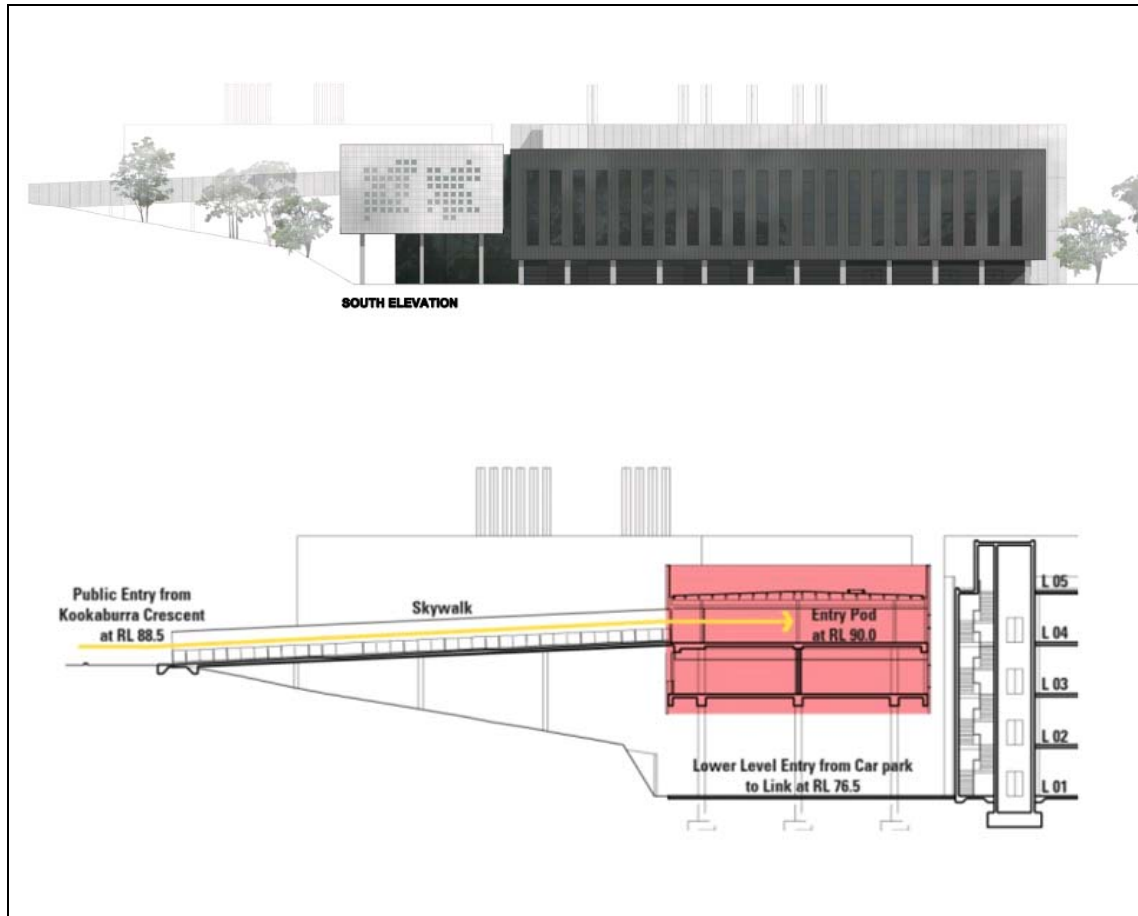


Figure 4: Elevation and section of the Entry Pod as viewed from the proposed car park.

The following is a list of the architectural drawings which describe the site and design of the proposal:

Architectural Drawings

Overview Plans

T0000	Cover Sheet
T0001	Site Plan
T0010	Existing Site Plan
T0111	Level 01 Overview Plan
T0121	Level 02 Overview Plan
T0131	Level 03 Overview Plan
T0141	Level 04 Overview Plan
T0151	Level 05 Overview Plan

T0161 Roof Level Overview Plan

Reference Plans

T1202 East Wing – Reference Plan- Sub Floor

Elevations

T5011 North Elevation – West Wing
 T5012 East Elevation – West Wing
 T5013 South Elevation – West Wing
 T5014 West Elevation – West Wing
 T5021 North Elevation – East Wing
 T5022 East Elevation – East Wing
 T5023 South Elevation – East Wing
 T5024 West Elevation – East Wing
 T5032 East Elevation – Pod
 T5033 South Elevation – Pod
 T5034 West Elevation – Pod

Sections

T6001 Section A – West Wing Cross Section
 T6002 Section B – East Wing Cross Section
 T6003 Section C – West Wing Long Section
 T6004 Section D – East Wing Long Section
 T6005 Section E – Pod
 T6006 Section F – Pod

Key Drawings

K0500 Site Sections
 K0510 Coloured Elevations
 K0520 Photomontage 1
 K0521 Photomontage 2
 K1000 Access and Movement – Pedestrian and Bus Movement
 K1001 Access and Movement – Car Movement
 K1002 Access and Movement – Pedestrian and Bicycle Movement
 K1003 Access and Movement – Service Vehicles and 4WD Access
 K1004 Ecology & Bushfire Protection
 K1005 Views
 K1050 Shadow Diagrams

Civil Drawings

CS 11 Schematic Stormwater Layout Plan
 CS 12 Schematic Site Grading Plan
 CS 13 Schematic Site Earthworks Plan

Landscape Drawings

L-TP01	Site Analysis Diagram
L-TP02	Circulation Diagram
L-TP03	Character Images
L-TP04	Landscape Site Plan
L-TP05	Landscape Sections
L-TP06	Preliminary Plant Palette

The full set of architectural, civil and landscape plans are located at **Appendix D**.

2.2 PROJECT PHASES

The construction of the facility is expected to take place in the following phases:

1. Construction of the access road and lower tier of the car park to provide 150 car parking spaces for HNEAHS prior to the removal of the existing staff parking facilities;
2. Enabling works including base construction of the remaining areas of carpark to house site facilities, and the construction of a construction access road to the north of the development site connecting to Jacaranda Drive;
3. Demolition of the existing former staff amenities building and site preparation for the main building, including excavation of foundations and completion of infrastructure for all major services to building entry point;
4. Construction of the proposed new facility, including final construction of the carpark and landscape works;
5. Fitout, furniture, fittings and equipment by HMRI; and,
6. Relocation of existing HMRI staff to the new facility to be ready for operation.

2.3 DEVELOPMENT FEATURES

The proposed development includes:

- The demolition of the existing structures within the site and the existing car park, and site preparation for the development;
- The construction of the new Hunter Medical Research Institute facility, including a four storey east and west wing connected through a central circulation area, and a two storey elevated entry pod;
- Construction of a three tiered open deck car park on grade and new entry road to Kookaburra Circuit; and,

- Ancillary site works including connection to the required services and infrastructure, stormwater capture and detention design, civil earthworks including retaining structures and battered slopes, and extensive landscaping.

The proposed new HMRI facility will contain:

Level 1

Level 1 is a Service Floor to the Generic Laboratories, Lab Support Spaces and Staff Facilities above. The Link area will provide an Entry to the building for both Staff and the General Public from the car parks. The East Wing will house Central Support Functions and Plant rooms including loading dock. The West Wing will accommodate the Bioresources Facility.

Level 2

Level 2 is the first of two floors of Generic Laboratory layouts. This layout utilizes a Tripartite Planning arrangement, which locates the offices and workstations to the north, Generic Open Plan Laboratory Spaces through the middle and Laboratory Support Spaces to the south. Development of these Generic Design Concepts have been tested through the design process and the net result is a consistent design approach across most of the Laboratories floors, with layout differences due to the particular location of certain Laboratory Support Functions

Level 3

Level 3 is the second of the Laboratory floors which seeks to adhere to the general Tripartite Planning arrangement.

Level 3 also contains the bottom level of the entry pod building, which will contain the main computer room and the offices and workstations for the Clinical Trials Support Unit which is located adjacent the reception on the level above.

Level 4

Level 4 is the upper most level of the building excluding the rooftop plant. It connects the proposed HMRI Facility to the Ring Road, Kookaburra Circuit via the 'skywalk'. Level 4 contains the Reception for the whole building in the entry 'pod' which also contains the public - accessed Clinical Trial Support Unit which has been kept separate from the rest of the building. The eastern wing contains the HMRI Administration with the staff interaction spaces which include lecture theatre, staff lounge, dining and semi enclosed terrace.

The Level 4 western wing provides a Generic Laboratory layout. This layout utilizes a Tripartite Planning arrangement, which locates the offices and workstations to the north, Generic Open Plan Laboratory Spaces through the middle and Laboratory Support Spaces to the south.

External Works

External works include:

- A landscaped carpark with pedestrian stairs and walkways to link the various carpark terraces to the facility and back to Kookaburra Circuit;
- Bike paths, including linking to existing bike paths such as the Rankin Park to Broadmeadows Farmers Market bicycle path;
- An entry road and loading dock to service the facility; and
- Outdoor recreation and barbecue area for staff.

2.4 BUILDING DESIGN

The proposed new Hunter Medical Research Institute Building has been designed to respond to the site and to be sympathetic to the neighbouring John Hunter Hospital. The former staff amenities building and carpark will be demolished to make way for the new facility with the rest of the development occurring in native bushland.

Topography and site constraints such as a water course to the west and associated Riparian Zone, Bushfire Protection Zones, Ecology and adjacent buildings were all taken into consideration.

The new building is conceived as two wings of solid elements linked together by a glass link circulation zone with an entry Pod building to highlight the entrance and provide an identity for the new Hunter Medical Research Institute Building. The solid wings are further broken down into longitudinal blades as a response to their tripartite function. The offices to the north of the wings are one blade, the generic laboratories are the second or central blade and the laboratory support functions are the third blade. In this way, the form of the building directly responds to the function within.

Detailed investigation into the opportunities for integrating Environmentally Sustainable Design (ESD) in the proposed HMRI facility has been carried out, with Arups being engaged as a specialist ESD consultant. Refer to the Appendix for their report.

Davis Langdon have stated that compliance with the BCA will be able to be achieved by a combination of compliance with the deemed-to-satisfy (DTS) provisions and the documentation of alternative solutions in accordance with Clause A0.5 of the BCA, with a Building Code of Australia Capability Statement included in **Appendix G**.

The plans prepared by DCM/S2F Architects in Association (**Appendix D**) include 3-D images, coloured elevations and photomontages. The Architectural Design Statement is included in **Appendix E**.

2.5 ACCESS & PARKING

The proposed development includes the construction of a three tiered open deck car park on grade, including 150 car parking spaces in the lower tier built to replace the area of car park to be demolished, and a new entry connection to Kookaburra Circuit.

Traffic access to the new development is proposed off Kookaburra Circuit using the current circulation patterns well established within the Hospital campus. This is a one way road and consequently all staff, visitors and servicing vehicles will arrive and depart via the same one way system. It is only at Jacaranda Drive that drivers

have a choice of route to approach or leave the development. All vehicular access to the HMRI development will be provided via a new two way driveway located 80m to the east of the existing former staff amenities building and car park access. A simple T intersection will be provided on Kookaburra Circuit but there will be no increase in the number of intersections off Kookaburra Circuit.

Pedestrian access will be provided via a walkway from the car parks and via a Sky Walk from the building through to Kookaburra Circuit. The footpath on Kookaburra Circuit will be upgraded from the walkway to the existing crossing point leading into the Hospital building. The approximately 16 permit spaces that will be lost on Kookaburra Circuit due to the footpath upgrade will be replaced in a dedicated permit car park on the second tier of the proposed carpark. The current pedestrian/cycleway linkage through the site shall remain.

The proposal includes the construction of two additional at grade levels of car parking, totalling 250 bays. This parking will be largely HMRI staff parking given the nature of the facility, however, there will be in the order of 4 drop off bays provided close to the building, as well as 6 spaces for people with disabilities and some visitor parking provided in the car parks.

2.6 HOURS OF OPERATION

The proposed new Hunter Medical Research Institute will have general operating hours from 8:30am to 5:00pm, Monday to Friday. However, as a research facility, there may be the need to have staff conduct research over night and on weekends. The varied work hours are consistent with the John Hunter campus in general, which currently accommodates a number 24 hour facilities, including hospitals.

2.7 EMPLOYMENT

The proposed new building will accommodate 514 staff, of which 381 will be fulltime, and 133 will be part time, being the equivalent of 450 full-time staff. Currently, HMRI staff are located in various campuses including the John Hunter Hospital, the Mater Hospital, the University of Newcastle, the Wallsend Campus and the David Madison Building. Over 184 of the 514 staff are being relocated from elsewhere on the Rankin Park campus.

2.8 WASTE PRODUCTION AND DISPOSAL

Different streams of waste will be appropriately disposed of, according to the John Hunter Hospital protocols. A waste storage and removal area will be located close to the loading dock. This will include areas specifically designated for general, biological and chemical waste separation. Isotope waste will be stored in a bunker located in the facility. Appropriate sampling pits and monitor systems will allow for testing of the Liquid Trade Waste on a regular basis.

All liquid trade waste water generated from the HMRI facility will be pre treated prior to discharging to the Hunter Water Corporation sewer. This will be in compliance with a HMRI Liquid Trade Wastewater agreement with Hunter Water Corporation. Further details of the liquid trade waste discharge are included in **Appendix P** of this report.

2.9 LANDSCAPING

The vision for the Hunter Medical Research Institute Building landscape design is to create an indigenous landscape in keeping with the site's natural surrounds whilst also catering to the needs of users of the existing hospital facilities and proposed Research Institute.

The steeply sloping terrain for the proposed Hunter Medical Research Institute Building poses a challenge for the siting of buildings and carparking. The landscape design plays an essential role in integrating the proposed development into the existing vegetation and mitigating the visual impact through planting and screening.

Design Principles

The following design principles were used to generate the landscape design:

- Utilise plant species indigenous to the area in the landscape;
- Integrate landscape treatments with the existing bushland and sloped site;
- Create a legible and welcoming arrival experience to the institute;
- Facilitate pedestrian movement through the carpark and site;
- Minimise the visual impact of the carpark area through planting;
- Provide for emergency access and fire protection management within the landscape; and,
- Provide shade through planting to minimise heat island effect.

Building Surrounds

The arrival space at the intersection of the west and east wings is demarcated by high quality stone paving under the porte-cochere space. Disabled parking and drop off space is incorporated into this arrival area. Located on the south side of the building, this paved arrival area is softened and greened by areas of fern planting which guide pedestrian movement.

The west and south edges of the west wing contain an exterior paved terrace in front of an exposed rock face which retains the higher existing grade behind. Where possible, natural rock faces are used to express the geology of the site, rather than the addition of retaining walls.

To the north of the building is paved break out space and an open landscape area, consisting of opens lawn and some low native garden bed areas with tree planting. Further to the north of the building envelop is a fire access track and an existing area of native bushland which is to be retained and also managed as according to the requirements associated with the Asset Protection Zone (APZ).

Carpark and Site Boundaries

The carpark site contains sloped planting areas between the parking tiers, which will be planted with indigenous groundcovers, grasses and low shrubs. The areas of car parking are broken up by use of materials, with colour variation to the central drive aisles and the parking bays. Internal tree planting is also introduced within interspaced planting bays, introducing shade and tree canopy to the carpark.

At the base of each slope is a bioswale, designed to capture and treat the runoff from the parking areas. The treated stormwater is then transferred to the existing detention basin. The bioswales contain sedges and rushes which can tolerate periods of wet and dry, as well as trees to provide shade to the carpark.

Pedestrian movement across the carpark is demarcated by coloured concrete crossings between the car spaces and stairs which transition up the landscape batters. The pedestrian areas are also highlighted by lines of tree planting to provide shade, and vertical light columns, or other pole-type markers to assist in wayfinding through the site.

2.10 SECURITY AND LIGHTING

It is proposed that the new HMRI facility will have a security system, which will primarily provide access control, duress alarms, CCTV Surveillance and intruder detection for the facility.

The system will typically consist of card reader access controlled doors as required by the client, monitoring of external doors, Card access control for lifts to control access between floors, Duress alarm in contact rooms, CCTV around the building perimeter, CCTV in the approaches to the bioresources areas and CCTV to the public areas on level 4. In addition, the car park entry will be provided with a card access boom gate, which shall also be monitored by a CCTV camera. Exit from the car park will be via a proximity loop activated boom gate.

The Security management plan for the John Hunter Hospital Campus will be revised to include the new HMRI facility. Details of the precise operational requirements and procedures are to be agreed between HMRI and John Hunter Hospital.

Lighting will be provided in accordance with AS/NZS 1158 to car parks, pathways, roads and building perimeter to provide a safe environment for the movement of vehicular traffic and pedestrians.

External lighting will be designed to limit light pollution in accordance with AS4282. External lighting will be controlled via a daylight sensor. Light fittings selected will have an efficacy of not less than 60 lumens/W to comply with section J6 of the BCA.

Internal lighting will be designed in accordance with AS 1680 and section J6 of the BCA.

Emergency and exit lighting will be provided in accordance with AS2293 and the BCA.

Further details of the proposed security and lighting are detailed in **Appendix Q** of this report.

2.11 FUEL & CHEMICALS STORAGE

Safety Engineering & Technical Services Pty Ltd has provided a review of Occupational Health & Safety and Dangerous Goods Matters for the proposed Hunter Medical Research Institute Facility. The report states that no highly hazardous processes (such as solvent distillation or hydrogenation) are being conducted, the activities being confined to those typically undertaken in a medical research laboratory; and, that goods of Packing Group I (high hazard) are stored or handled only in very small quantities.

Each of the appropriate design standards and codes for a specific class of dangerous goods has been considered and documented, and the proposed development is considered appropriate in terms of design.

2.12 EMERGENCY PROCEDURES

Arup Fire is undertaking the fire engineering services for the proposed Hunter Medical Research Institute building. The design will consist of a combination of Deemed-to-Satisfy provisions and Performance Based design.

The NSWFB will be involved in all stages of the development of the fire safety design, to ensure that the completed building meets their needs in terms of achieving an acceptable level of fire safety and to support the role of the Fire Brigade in any emergency.

The HMRI building is to be provided with sprinkler protection and smoke detection throughout. These systems will be connected to the Sound System and Intercom System for Emergency Purposes (SSISEP) and will be monitored by the Fire Brigade. The building will have a Fire Indicator Panel (FIP) located at the main entrance to the building. The Fire Brigade on arrival will take control of the emergency.

2.13 CONSIDERATION OF ALTERNATIVES

With regards to site selection for the HMRI Project a number of potential green field sites were considered on the perimeter of the Rankin Park Campus of the John Hunter Hospital. The Architects looked at several Master Plan options on the original preferred site next to the Hospital staff carpark but access, topographic and proximity issues to existing accommodation buildings were problematic. In response to this The Hunter New England Area Health Service (HNEAHS) offered HMRI an alternative site 100 metres to the East which currently houses an underutilized Hospital Multi-Purpose Facility, being the former staff amenities building and staff carparking. After a number of Master Planning options were evaluated, HMRI accepted this site as the preferred site for the New Research Facility.

3.0 Site Analysis and Overview of the Existing Environment

3.1 INTRODUCTION

This section provides the property description and owner's details, as well as a detailed site analysis and an overview of the affected environment.

3.2 PROPERTY DESCRIPTION AND OWNERS DETAILS

Copies of the Deposited Plans and the Certificates of Title have been provided within **Appendix B**. The land subject to the proposal is described as, and owned by:

- Lot 132 DP 1053492 – owned by Hunter New England Area Health; and,
- Lot 2 DP 839929 – owned by Hunter Area Health Service.

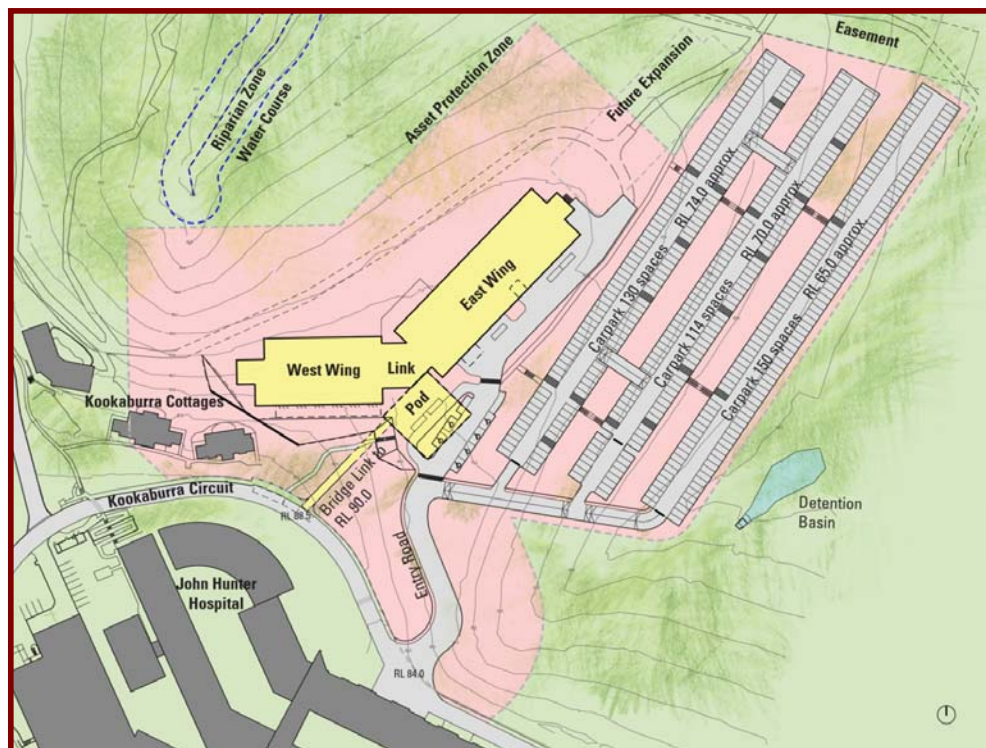


Figure 6: Site Analysis Plan.

3.3 THE SITE AND LOCALITY

The subject site currently contains buildings and car park that form part the John Hunter Hospital, however the remaining area of proposed development is currently vacant land (**Appendix C**).

- Lot 132 DP 1053492 comprises the John Hunter Hospital former staff amenities building and car park (32.47ha).
- Lot 2 DP 839929 comprises bushland (13.31ha).

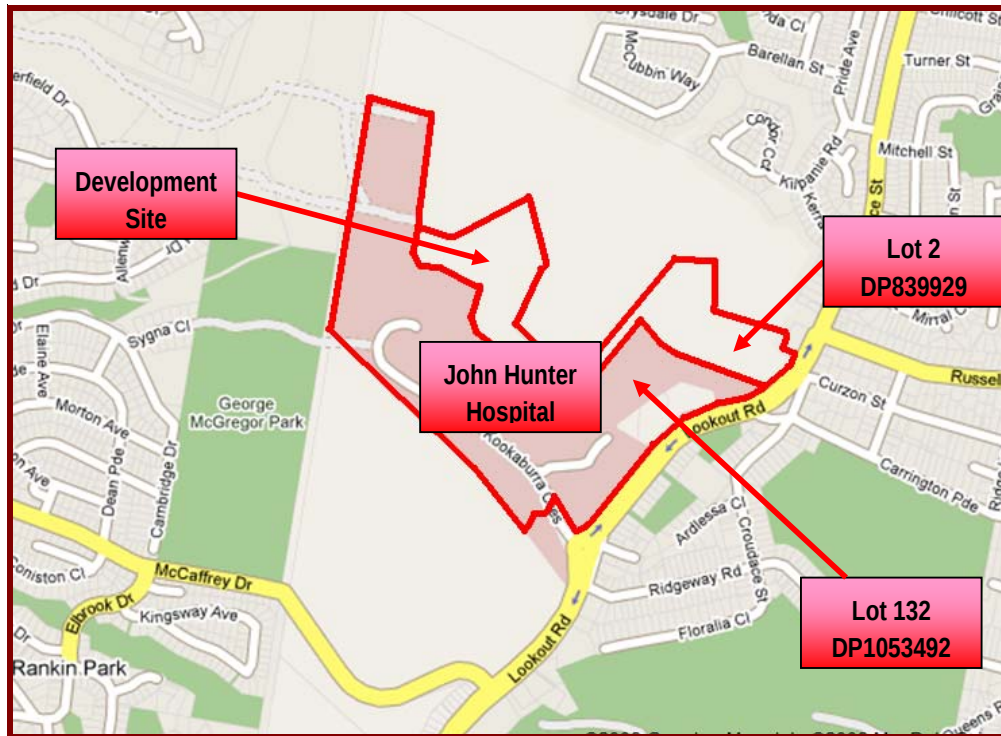


Figure 7: Locality map within local context.

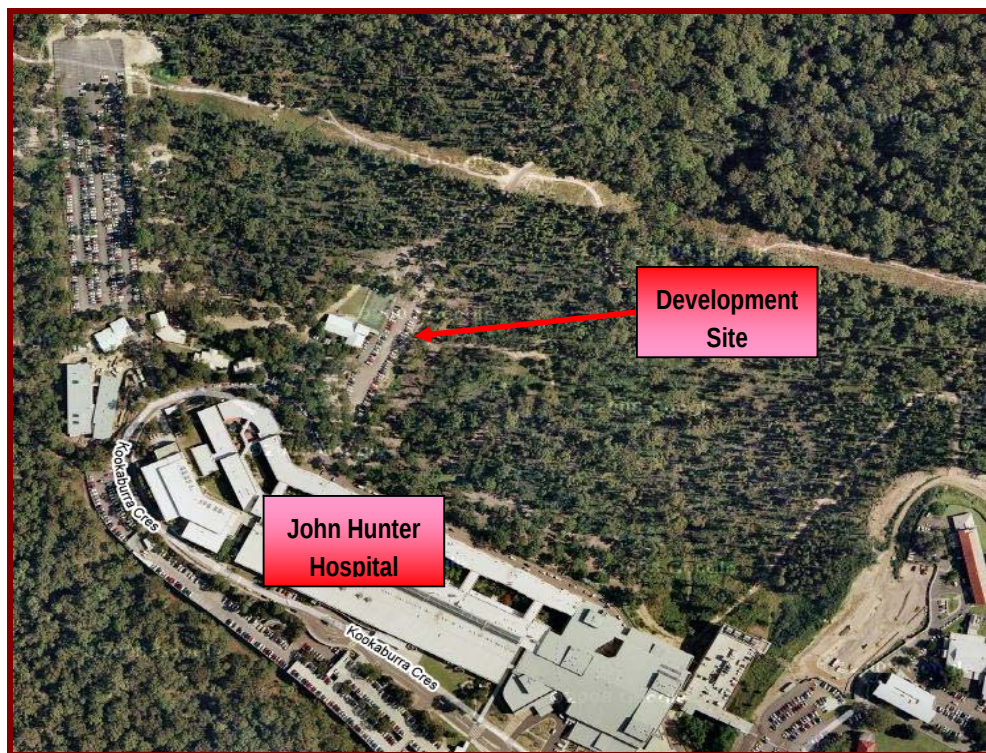


Figure 8: Aerial photograph of site and surrounds.

The subject site is located within New Lambton Heights which, in a local context, is situated north of Kotara, south of Jesmond, east of Elmore Vale and west of New Lambton. In a broader regional context New Lambton Heights is located within Newcastle which is situated north of Sydney.

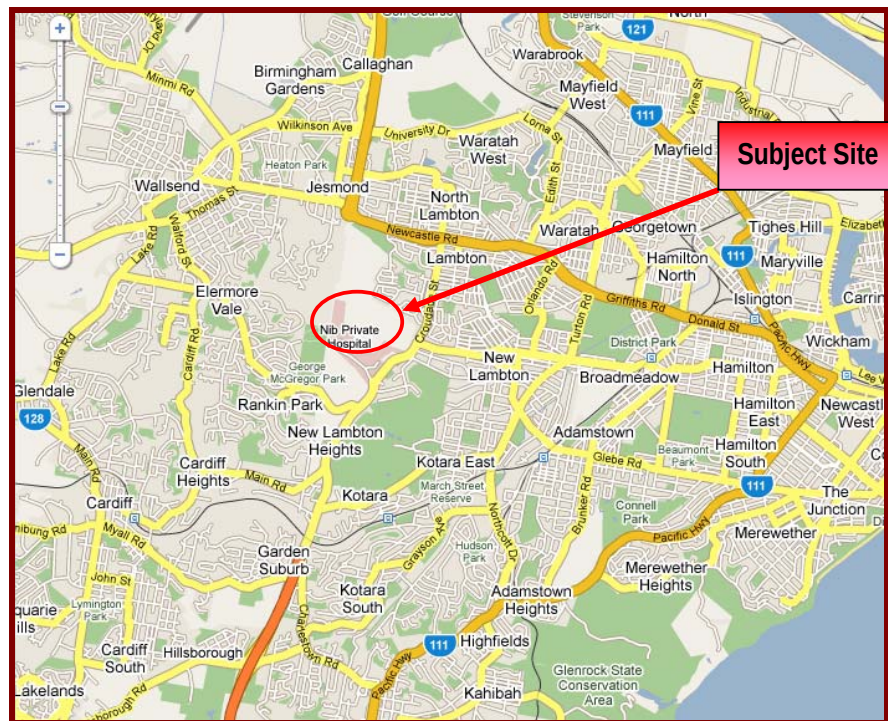


Figure 9: Locality of site in broader local context.

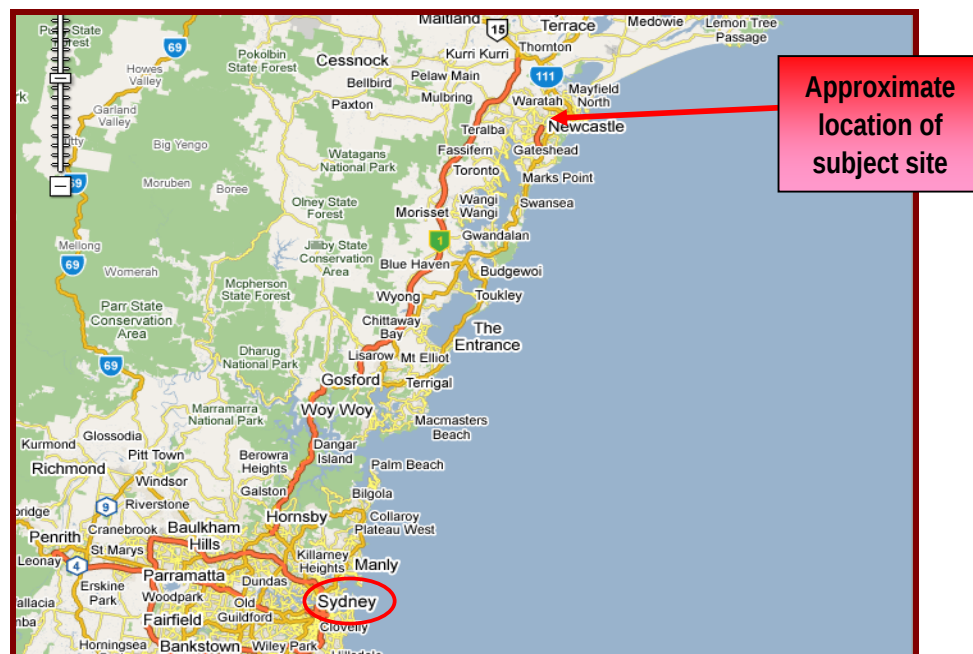


Figure 10: Locality of site within regional context.

The following photographs show the surrounding area and views around the site:



Photograph 1: View of existing John Hunter Hospital from peak of Dent Street, North Lambton, looking south. The site and proposed building is unlikely to be visible from this location.



Photograph 2: View of existing entrance, known as Guntree Close, to the former staff amenities building and car park.



Photograph 3: View of existing pedestrian access to John Hunter Hospital on the south side of Kookaburra Circuit.



Photograph 4: View of the north eastern corner of the development site, with the existing bike path that runs to the north through to the easement.



Photograph 5: View of the northern end of the existing car park.



Photograph 6: View across the existing car park and vegetation within the site.



Photograph 7: View of the disturbed area of drainage line to the west of the site.



Photograph 8: View of existing access track in the west of the site, and the Kookaburra cottages that are to the west of the proposed development.



Photograph 9: View of the easement within the north of the site, which is the northern constraint for development of the site.



Photograph 10: View of area of the proposed entrance road, as viewed from the existing car park area.



Photograph 11: View of disturbed and modified area of drainage line to the east of the site.



Photograph 12: View of the existing detention basin to the east of the development site, which has the capacity to accommodate increased detention requirements.



Photograph 13: View of the vegetation to the east of the existing parking, this area will accommodate the first and second tier of the proposed car park.



Photograph 14: View of intersection of Jacaranda Drive and Croudace Street. Jacaranda Drive is a relatively new access road, constructed in 2007.

3.4 EXISTING IMPROVEMENTS ON THE SITE

Improvements that are contained within the site and form part of the John Hunter Hospital Precinct includes the former staff amenities building, tennis court, an access road off Kookaburra Circuit and staff carparking.

3.5 TOPOGRAPHY, DRAINAGE AND FLOODING

The existing site consists of improvements as detailed above, and an area densely populated with heavy timber and a thick underscrub. The topography of the site consists of steeply sloping hillside with a minor gully to the South which feeds into a detention basin perched on the sloping hillside to the South-East.

Primary access for vehicles is by the Kookaburra Circuit roadway which runs to the South-West of the site. The roadway is elevated adjacent to the rear of the existing hospital and has a retaining wall to the East.

There is minimal control of surface water run-off across the site. Runoff from the bitumen carpark, medical officer's amenities building and tennis court is allowed to flow freely down the hillside where it is captured within the detention basin or allowed to continue on down the slope.

The detention basin is the primary discharge point for the hospital complex to the East and consists of a surcharge pit with an energy dissipation structure, an outlet riser for basin discharge and a spillway and spillway channel to control overflow during major rainfall events. A number of surface water collection pits are placed along the Kookaburra Circuit road and are connected to the detention basin.

3.6 ACCESS, ROAD NETWORK AND PARKING

Access from the main road network is via either of the two signalised intersections from Lookout Road. The main entrance to the hospital campus site is via the signalled Lookout Road / Kookaburra Circuit intersection. Kookaburra Circuit then provides a one way connection between many of the Hospital buildings and car parks, looping around the John Hunter Hospital buildings and reconnecting with Jacaranda Drive.

Jacaranda Drive is the secondary access to the overall campus, is a two way, two lane road with no on street parking providing alternative signalised access to the regional road network via Lookout Road. It was constructed in 2007 as part of an upgrade to the campus layout. It has a variable width, but is predominantly 8m wide, with no footpaths east of Tea House Road and is marked for cycle use.

Kookaburra Circuit is signposted with 20kph speed signs; this speed limit is reinforced with repeated speed humps along its length. Jacaranda Drive is posted at 40kph. There are numerous crossings facilities located on Kookaburra Circuit providing clear, safe crossing facilities from all the car parks located around the periphery of the campus into the main Hospital buildings.

Lookout Road is a major road, forming part of MR 23, and operating as an arterial road linking the Newcastle Bypass with Newcastle Road. Lookout Road is a four-lane, two-way highway, with a 60kph speed limit and on street parking where width permits.

There is very little on-street parking allowed within the overall Rankin Park / John Hunter Precinct. There is, however, significant parking available in the residential streets on the eastern side of Lookout Road. Observations indicate that in the order of 50 non-residential vehicles park all day in these streets.

3.7 VEGETATION

The study area is approximately 7.11 hectares in size and is bound by remnant bushland to the north and east and by existing development within the grounds of the John Hunter Hospital to the south and west. Native vegetation within the John Hunter Hospital grounds forms part of a large expanse of bushland including Blackbutt Reserve to the southeast, George McGregor Park to the southwest and Jesmond Bushland Reserve to the north. The extent of vegetation and infrastructure that adjoins the study area is shown in Figure 5 – Aerial Photograph of the site.

3.8 BUSHFIRE

The subject site is identified as being located within bushfire prone land on Council's bushfire prone land map. The proposed development is for the purpose of a new building being a medical research and development facility, which is not considered to be a special fire protection purpose development under *Planning for Bush Fire Protection 2006*.

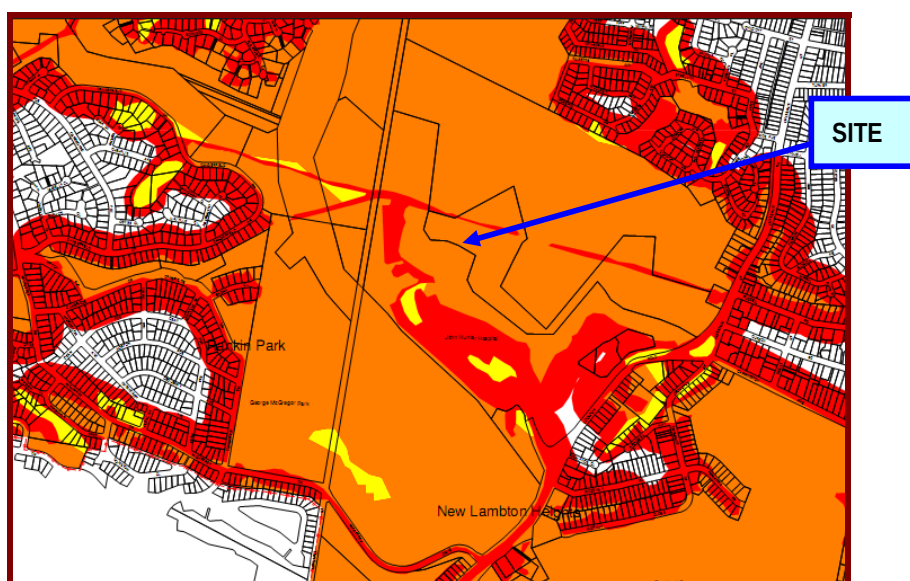


Figure 11: Extract from Council's bushfire prone land map.

3.9 EUROPEAN HERITAGE

The subject site is not located within a heritage conservation area under the Newcastle LEP 2003, however, heritage items listed under Schedule 6 of the Newcastle LEP 2003 are situated on the subject site, including Croudace House, the Remnant Garden of Croudace House and Rankin Park Hospital.

Suburb	Item name	Address	Property description	Significance
New Lambton Heights	Rankin Park Hospital	2 Lookout Road	Lot 13 DP 876245	Local
New Lambton Heights	Croudace House	2 Lookout Road	Lot 13 DP 876245	Local
New Lambton Heights	Remnant Garden, Croudace House	2, 14 and 20 Lookout Road	Lot 13 DP 876245, SP 60845, Lot 12 DP 876245	Local



Figure 12: Aerial photograph showing the location of the Heritage Items.

3.10 CONTAMINATION

The site currently accommodates the John Hunter Hospital former staff amenities building and adjacent car park. The existing structures shall be demolished and material removed or re-used within the development site.

3.11 METEOROLOGICAL CHARACTERISTICS

The subject site is located within New Lambton Heights, which is on the east coast of NSW. The region experiences warm summers and cool to mild winters with average maximum temperatures of 27.6 °C in summer (December to February) and average minimum temperatures of 7.7°C in winter (June to August). The region experiences moderate rainfall, with an annual average of approximately 1,112.4mm. Rainfall is generally highest in March (Bureau of Meteorology Station – Maryville Weather Station).

3.12 GEOTECHNICAL PROPERTIES AND SOILS

Reference to the BHP Newcastle Coalfields Surface Geology Map indicates the site is located in the Permian Aged Newcastle Coal Measures. The study area is judged to be underlain by the Merewether Conglomerate Member of the Kotara Formation, comprising of conglomerate, pebbly sandstone and sandstone overlying the Victoria Tunnel Seam and the Shepherds Hill Formation comprising coal, siltstone and sandstone.

The Borehole Seam, which has been extensively mined, underlies the site at about RL -20m AHD (i.e.: approximately 80m to 100m below the existing ground surface). The seam dips at approximately 2° to the south-west and has a thickness of approximately 3.0m.

On the basis of the results of the soil profiles encountered during the field investigation, laboratory testing from previous studies at the John Hunter Hospital site, and preliminary calculations, the site is classified in accordance with AS2870-1996 as follows:

- Class 'M' – Natural Soil Profile (<1.0m to weathered rock);
- Class 'H' – Natural Soil Profile (>1.0m to weathered rock); and
- Class 'P' – Uncontrolled Fill Areas (such as backfilled trenches for sewer main).

The effects of changes to the soil profile by additional cutting and filling and the effects of past and future trees should be considered in selection of the design value for differential movement. Site classifications should therefore be reviewed after any site regrade works. Footings for the proposed development should be designed and constructed in accordance with the requirements of AS2870. The classification presented above assumes that:

- All footings are founded in controlled fill (if applicable) or in the natural soils below all non-controlled fill, topsoil material and root zones and fill under slab panels meets the requirements of AS2870, in particular, the root zone must be removed prior to the placement of fill materials beneath slab floors;
- The performance expectations set out in AS2870 are acceptable;
- Site maintenance complies with the provisions of CSIRO Sheet BTF 18, 'Foundation Maintenance and Footing Performance: A Home Owner's Guide', a copy of which is attached;
- Service trenches backfilled with uncontrolled fill do not extend below a line extending out and down at 45° from the ground surface at the edge of the building; and
- The constructional and architectural requirements for reactive clay sites set out in AS2870 are followed.

Where fill is to be placed to raise site levels the affected building areas will require reclassification once the depth and type of placed fill are known and the level of earthworks control has been established.

3.13 MINE SUBSIDENCE

The HMRI site is located within the Newcastle Mine Subsidence District and as such its design is subject to approval from the Mining Subsidence Board (MSB). Coffey's "Mine Subsidence Assessment" Report (dated 26th May 2009) established the subsidence design criteria, which Arup Structures applied to assess appropriate design strategies. The preliminary design concepts were tabled to MSB at a specially convened meeting in Newcastle on 1st July 2009, attended by Coffey and Arup. Following this meeting an integrated engineering submission was made to MSB, covering Coffey's design criteria and the proposed design responses by each of the affected engineering disciplines – namely, structures, mechanical, electrical and hydraulic.

Appendix N contains:

- The Coffey “Mine Subsidence Assessment” report ;
- Minutes of the MSB, Coffey & Arup meeting from 1st July 2009; and
- The integrated engineering submission made to MSB.

3.14 CRITICAL HABITAT AND THREATENED SPECIES

The study area is approximately 7.11 hectares in size and is bound by remnant bushland to the north and east and by existing development within the grounds of the John Hunter Hospital to the south and west. Native vegetation within the John Hunter Hospital grounds forms part of a large expanse of bushland including Blackbutt Reserve to the southeast, George McGregor Park to the southwest and Jesmond Bushland Reserve to the north.

3.15 ABORIGINAL ARCHAEOLOGY

Due to the disturbed nature of the site around the former staff amenities building and existing carpark, it is likely that any areas of significance that may have been present would have been destroyed as a result of past activities in this area. Should any aboriginal artefacts be discovered during construction, including the greenfield areas, the appropriate permits will be obtained under the National Parks and Wildlife Act.

3.16 SERVICES

All services, including power, water, sewer, telecommunications and gas are available for connection to the site.

3.17 ROAD WIDENING

The subject site is not affected by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993, under an environmental planning instrument, or under a resolution of the Council. There is an existing concept plan for the realignment of Kookaburra Circuit north to accommodate expansion of the John Hunter Hospital.

4.0 Planning Context

4.1 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

This Act (EPBC Act) was introduced in 1999, and replaces several dated Environmental Protection and Conservation Acts. The EPBC Act aims to protect seven matters of national environmental significance being;

- World Heritage properties;
- National heritage places;
- Wetlands of international importance (Ramsar wetlands);
- Threatened species and ecological communities;
- Migratory species;
- Commonwealth marine areas; and
- Nuclear actions (including uranium mining).

It is considered that this proposal will not have a significant impact on any of the above matters. Referral under the EPBC Act is therefore not considered necessary.

4.2 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 & REGULATION 2000

The EPA Act 1979 and the EPA Regulation 2000 constitute the principle planning legislation in NSW and provides the statutory framework for the assessment of this proposed development.

Consideration has been given to the objects of the EP & A Act 1979 and these are addressed below:

a) *To encourage:*

- I. *The proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*

The proposed development will help to boost the physical, social and economic welfare of the community by providing an additional medical research facility, and increased employment opportunities, through both construction and operation. The site is ideally located for this purpose within close proximity to the existing John Hunter Hospital buildings.

The proposed development protects the environment through the employment of appropriate measures.

- II. *The promotion and co-ordination of the orderly and economic use and development of land,*

The proposed development is consistent with this object. The close proximity of the proposed development to the existing John Hunter Hospital buildings provides for the orderly and economical use and development of the site. The proposal relies on an extension of the existing utilities and services. The proposed development ensures the economic use of land, promoting the principles of highest and best use.

III. The protection, provision and co-ordination of communication and utility services,

The proposal will meet this object.

IV. The provision of land for public purposes,

The proposed development will not diminish the ability to provide land for public purposes.

V. The provision and co-ordination of community services and facilities, and

The proposed development will be easily integrated into the existing services and facilities provided by Hunter Medical Research Institute, and the broader John Hunter Hospital Precinct.

VI. The protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and

The subject site currently accommodates a threatened flora species, *Tetratheca juncea*, as well as areas of native vegetation forming the plant community *Coastal Plains Smooth-barked Apple Woodland*.

Appropriate mitigation measures will be employed during the construction phase of the project.

VII. Ecologically sustainable development, and

The proposed building design has been developed to provide for ESD principles. In addition, throughout the construction and operation of the proposed development ESD principles and guidelines will be implemented and adhered to.

VIII. The provision and maintenance of affordable housing, and

Not applicable.

b) To promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

The proposal is consistent with this object.

c) To provide increased opportunity for public involvement and participation in environmental planning and assessment.

The Part 3A process under which this development is being considered allows extensive public involvement.

The proposed development is considered to be consistent with all of the objects of the EPA Act.

4.3 STATE ENVIRONMENTAL PLANNING POLICIES

4.3.1 SEPP (Infrastructure) 2007

The general aim of this Policy is to facilitate the effective delivery of infrastructure across the State of NSW. Division 10 – Health services facilities, of this SEPP is considered to apply to the proposed development. The proposed development is located within a 5(a) Special Uses Zone - Hospital and is permitted with consent.

Under this SEPP Schedule 3 identifies traffic generating developments that require referral to the RTA. The proposed development is identified as traffic generating development requiring referral to the RTA under the “*area used exclusively for parking or any other development having ancillary parking accommodation*” purpose of development. The proposed development provides 400 car park spaces.

4.3.2 SEPP (Major Development) 2005

This SEPP defines certain developments that are major projects under Part 3A of the Environmental Planning and Assessment Act 1979 and determined by the Minister for Planning. The SEPP also lists State significant sites.

The proposed development is identified as being a Part 3A Major Project under Schedule 1, Group 7, Clause 19 - Medical Research and Development Facility, of the SEPP. The proposed development has a capital investment value of \$75 million, and is for the purpose of providing a medical research and development facility.

The Director-General's Clause 6 Opinion declaring the proposed development to be a Part 3A Major Project has been included as **Appendix A**.

4.3.3 SEPP 33 – Hazardous and Offensive Development

State Environmental Planning Policy No 33—Hazardous and Offensive Development (SEPP 33), which was gazetted in 1992, requires developers and consent authorities to specifically assess the hazards and risks associated with a proposed development before approval is given for construction and operation.

An assessment in regard to SEPP 33 has been undertaken for the purposes of the development. The largest inventory quantity of flammable liquid to be kept per floor for consideration against the screening criteria is the 1,500 L being kept in the flammable liquids store. This is below the threshold screening limit, thus the storage of flammable liquids within the facility does not trigger SEPP 33.

A Dangerous Goods Assessment has been prepared by Safety Engineering & Technical Services Pty Ltd and is included as **Appendix T** of the EAR.

4.4 REGIONAL ENVIRONMENTAL PLANS

4.4.1 Hunter Regional Environmental Plan 1989 (HREP)

The Hunter Regional Environmental Plan (HREP) 1989 has recently been repealed, and as such is no longer a consideration.

4.4.2 Hunter REP (Heritage) 1989

Newcastle local government area is excluded from the provisions of the Hunter Regional Environmental Plan 1989 (Heritage).

4.4.3 Lower Hunter Regional Strategy

The Lower Hunter Regional Strategy was adopted by the Department of Planning in October 2006 and has established the framework for development across the region. The John Hunter Hospital is identified within the strategy as a 'Specialised Centre' providing for 'regionally significant economic activity and employment'. The proposed development re-affirms the hospital precinct as a leading area for health services within the State, and provides for long term employment opportunities. The development is consistent with the broad aims and objectives of the Lower Hunter Regional Strategy.

4.5 NEWCASTLE LOCAL ENVIRONMENTAL PLAN 2003

The site is zoned 5(a) Special Uses Zone under the Newcastle LEP 2003.

The objectives of the 5(a) Special Uses Zone are:

- a) To accommodate major transport networks and facilities;
- b) To accommodate large scale facilities and services, together with ancillary activities;
- c) To accommodate large scale community establishments, together with ancillary activities; and
- d) To require development to be integrated and reasonably consistent in scale and character with surrounding natural, rural or urban environments.

The proposed new medical research and development facility is consistent with the objectives of the zone.

Figure 13 over the page is an extract from the Newcastle LEP 2003 and illustrates the site's zoning in the context of the surrounding locality.

4.6 LAND USE DEFINITION AND PERMISSIBILITY

The Newcastle Local Environmental Plan 2003 does not specifically define medical research facility. The applicable land use definition within the LEP for the proposed development is '*hospital*' which is permissible within the 5(a) zone, with the consent of Council:

Hospital means a building or place used for the purpose of providing professional health services (including preventative care, diagnosis, medical or surgical treatment or counselling) to people admitted as in-patients, whether or not out-patients are also cared for or treated, and may include:

- a) a nursing home, or
- b) offices for administration, or
- c) accommodation for staff and visitors, or
- d) associated education or research facilities.

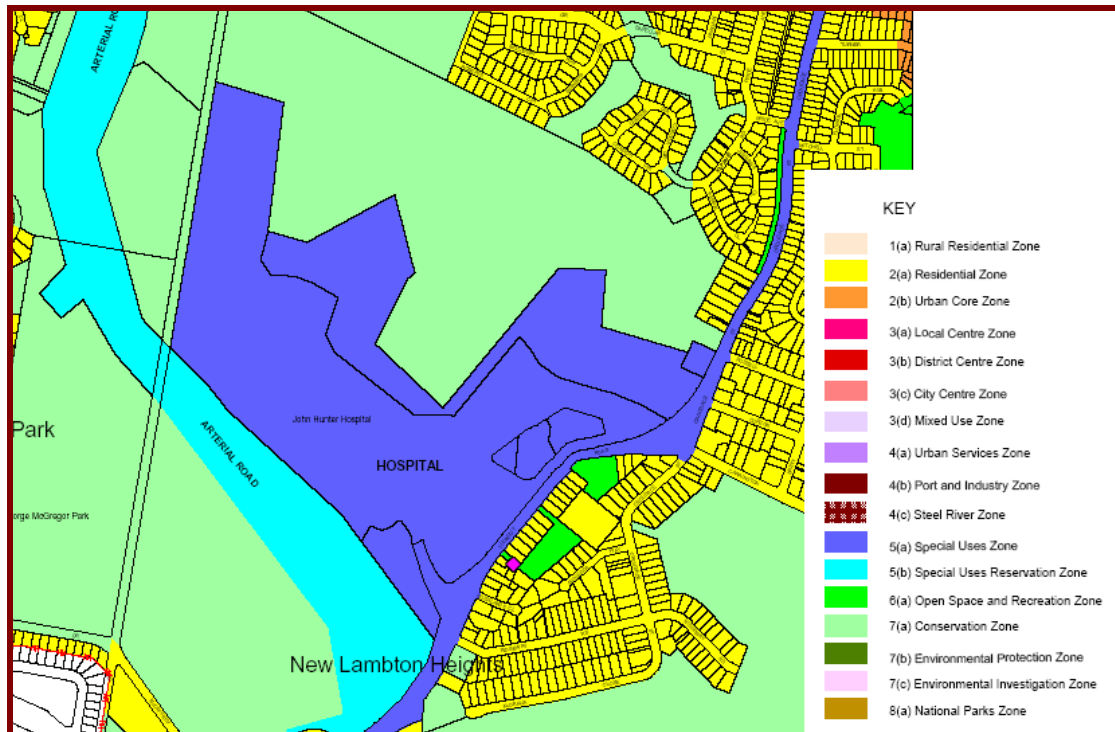


Figure 13: Extract from NLEP 2003.

4.7 SPECIFIC NEWCASTLE LEP 2003 CLAUSES

- Clause 8 – Requirements for development – refers to the general matters the consent authority must have regard for before granting consent for a proposed development.
- Clause 14 – Development that requires consent – refers to the various types of development that may only be carried out with the consent of Council.
- Clause 26 – Bushfire prone land – the consent authority shall not grant consent to development on bush fire prone land unless the consent authority is satisfied with the measures proposed to be taken with respect to the development to protect persons, property and the environment from danger that may arise from a bush fire.
- Clause 33 – Development in the vicinity of a heritage item – Before granting consent to development in the immediate vicinity of a heritage item or a heritage conservation area, the consent authority shall assess the impact of the proposed development on the heritage

significance of the heritage item or the heritage conservation area and, in this regard, the consent authority may require the submission of a heritage impact statement.

The proposed development is considered to be consistent with the Newcastle LEP 2003.

4.8 NEWCASTLE DEVELOPMENT CONTROL PLAN 2005

Newcastle City Council does not have a Development Control Plan (DCP) specifically for Medical Research Facilities. Various components of the Newcastle Development Control Plan 2005 (DCP 2005) may apply to the assessment of the proposed development.

4.8.1 Element 4.1 Car parking

This element of DCP 2005 outlines the requirements for the provision of car parking and service delivery facilities.

The objectives of this element are to:

- Provide guidelines for provision of adequate car parking and loading / unloading facilities;
- Provide a consistent and equitable basis for assessment of parking requirements;
- Provide guidelines for efficient and functional layout of parking, loading bays and access driveways; and
- Establish an appropriate parking standard for the Newcastle CBD that recognises strategic function, locational advantages, accessibility by public transport and economies of scale.

Newcastle DCP 2005 does not contain specific car parking rates for medical research and development facilities. As a comparison the DCP requires the provision of car parking for **hospitals** at a rate of 1 space per 3 beds, plus 1 space per 2 staff, plus ambulance bay or bays.

The DCP states that Council may require a parking assessment with survey of similar developments. A Transport and Accessibility Report has been prepared by Better Transport Futures and is included in the Environmental Assessment Report as **Appendix J**.

4.8.2 Element 4.4 Landscaping

This element outlines requirements and procedures for landscape planning and design for development sites.

The objectives of this element are to:

- Provide a reference for the Council's objectives, requirements and procedures for landscape planning and design for development sites;

- Encourage developers to appreciate landscape design as a fundamental and critical element in the preparation of a development proposal and to include landscape design considerations at an early stage in the planning process;
- Provide comprehensive landscape design guidelines and advice; and
- Provide a convenient checklist for evaluating the adequacy of landscape design details submitted with DA's.

A landscape design plan and report have been prepared by EDAW AECOM (**Appendix G**) and are discussed further in **Section 6.2** of this report.

4.8.3 Element 4.5 Water Management

This element outlines requirements for sustainable water management for all development.

The objectives of this element are to:

- Prevent the export of sediment from the site during construction;
- Set a minimum standard for the collection and management of stormwater on development sites;
- Protect natural drainage lines and waterbodies;
- Prevent litter, sediment, nutrients and oils from entering waterways;
- Ensure stormwater is controlled in a way that minimises nuisance to neighbouring properties;
- Ensure appropriate easements are provided over existing drainage systems on private property; and
- Assist in the efficient use of mains water.

Stormwater Management is discussed further in **Section 6.7** of this report.

4.8.4 Element 4.6 Waste Management

This element outlines requirements for the use and/or development of land that is likely to result in the generation of waste.

The objectives of this element are to:

- Maximise reuse and recycling of building / construction waste materials, household waste and industrial / commercial waste;

- To consider development against the waste minimisation hierarchy;
- To ensure adequate waste minimisation and management measures are incorporated into the design construction and management phases of development; and
- To make provision for the lodgment of a waste management plan with development applications.

Waste Management is discussed further in **Section 6.11.2** of this report.

4.9 SECTION 94A

The Environmental Planning and Assessment Act, 1979 contains requirements for contributions, which states:

94A Fixed development consent levies

- (1) *A consent authority may impose, as a condition of development consent, a requirement that the applicant pay a levy of the percentage, authorised by a contributions plan, of the proposed cost of carrying out the development.*
- (2) *A consent authority cannot impose as a condition of the same development consent a condition under this section as well as a condition under section 94.*
- (2A) *A consent authority cannot impose a condition under this section in relation to development on land within a special contributions area without the approval of:*
 - (a) *the Minister, or*
 - (b) *a development corporation designated by the Minister to give approvals under this subsection.*
- (3) *Money required to be paid by a condition imposed under this section is to be applied towards the provision, extension or augmentation of public amenities or public services (or towards recouping the cost of their provision, extension or augmentation). The application of the money is subject to any relevant provisions of the contributions plan.*
- (4) *A condition imposed under this section is not invalid by reason only that there is no connection between the development the subject of the development consent and the object of expenditure of any money required to be paid by the condition.*
- (5) *The regulations may make provision for or with respect to levies under this section, including:*
 - (a) *the means by which the proposed cost of carrying out development is to be estimated or determined, and*
 - (b) *the maximum percentage of a levy.*

Newcastle City Council has an adopted plan, the Section 94A Contributions Plan 2006, which applies to the subject site and the proposed form of development. The Department of Planning have confirmed that if a plan is in place a condition requiring contributions in accordance with the plan would be applied.

Newcastle City Council has identified that the Section 94A Contributions Plan 2006 has been under review and a draft document is currently on exhibition. The Draft Section 94A Development Contributions Plan 2009 identifies a number of exemptions within Clause 4.2 of the document. One of the exemptions is 'Hospitals' and

discussion with Newcastle City Council has confirmed that this exemption would likely be applied to the development.

Ongoing consultation in regard to this draft contributions plan will occur prior to the plan being adopted by the Council. The Council has stated support for the contribution requirements to be waived for this project. It is likely that the Draft Section 94A Development Contributions Plan 2009 will not be formally adopted at the time of this application being assessed. Due to this timing issue, it is understood that Newcastle City Council shall, within their formal referral response to the Department of Planning for the project, state that the requirement to apply a condition requiring contributions under the current Section 94A Contributions Plan 2006 be waived in this instance.

5.0 Planning Methodology & Consultation

5.1 INTRODUCTION

This section describes how the project team identified the key issues associated with the proposal and the specialist studies undertaken and used to support this project.

5.2 OVERVIEW OF THE METHODOLOGY

The key issues associated with the construction and operation of the proposed new medical research and development facility and car park have primarily been identified in consultation with the client, HMRI.

ADW Johnson Pty Ltd undertook preliminary environmental and town planning investigations in accordance with the company checklists and policies.

ADW Johnson also sought guidance from Newcastle City Council on local planning issues. The Minister's agreement that the proposal be considered a 'Major Project', and the Director-General's Requirements (MP 08_0250) were obtained.

While not exhaustive, the following legislation formed the basis for identification of the issues associated with the preparation of the Environmental Assessment Report:

- Environmental Planning and Assessment Act 1979;
- Protection of the Environmental Operations Act 1997;
- Threatened Species Conservation Act 1995;
- National Parks and Wildlife Act 1974;
- Heritage Act 1977;
- Occupational Health and Safety Act 2000;
- Contaminated Land Management Act 1997;
- Native Vegetation Act 2003;
- Roads Act 1993;
- Rural Fires Act 1997;
- Rural Fires & Environmental Assessment Legislation Amendment Act 2002;
- Mine Subsidence Compensation Act 1961;
- Local Government Act 1993;
- Newcastle Local Environmental Plan 2003 & associated Development Control Plans and Policy; and
- Commonwealth Environment Protection and Biodiversity and Conservation Act 1999.

5.3 CONSULTATION

In establishing parameters, and appropriate design for this project, consultation was carried out with the key authorities. The following is a brief outline of the consultation undertaken.

5.3.1 *Department of Planning*

A meeting was held on site attended by Annette Birchall – Department of Planning, Wojciech Pluta – DCM, Stuart Diver – APP, Lynn Herd – HMRI Representative & Shannon Sullivan – ADWJ, on the 29th July 2009.

During the meeting, the general area of the development site was walked, with existing site features and various aspects of the proposed development discussed. The main issues raised during this meeting are identified below:

- Clearing of Existing Vegetation – This is addressed within **Section 6.7 – Biodiversity**, of the Environmental Assessment Report.
- Stormwater Management – This is addressed within **Section 6.8 – Drainage, Stormwater and Groundwater Management**, of the Environmental Assessment Report.
- Construction Traffic Management – This is addressed within **Section 6.10.5 – Traffic and Pedestrian Access Management**, of the Environmental Assessment Report.
- ESD Principles – This is addressed within **Section 6.12 – Ecologically Sustainable Development Measures**, of the Environmental Assessment Report.
- Car parking layout and the provision of motorcycle parking – This is addressed within **Section 6.4 – Transport, Traffic and Access**, of the Environmental Assessment Report.
- Safety and Security – This is addressed within **Section 6.11 – Operational Impacts**, of the Environmental Assessment Report.
- Bushfire and Vegetation Management – This is addressed within **Section 6.6 – Bushfire**, of the Environmental Assessment Report.
- Mine Subsidence – This is addressed within **Section 6.9 – Geotechnical and Mine Subsidence**, of the Environmental Assessment Report.
- Consideration of a multi storey car park – This is not addressed within the Environmental Assessment Report. The provision of a multi-storey car park has been excluded from the proposal due to design and budget limitations.

5.3.2 Newcastle City Council (NCC)

- A briefing session was held with Newcastle City Council's elected representatives and Senior Management 25th August 2009.

The session commenced with the history of HMRI within the Newcastle area and the overall objective of consolidating a number of current research fields within the John Hunter Campus. The overall planning and design process was discussed, including the influence of the site constraints and the HMRI design requirements on the end design.

The public benefit to be provided by the facility was agreed. The capital investment, direct employment and flow on economic benefits of the project to the Region were discussed, with overwhelming support from the Council. It was acknowledged that the new HMRI building will provide for a world class facility.

- A meeting was held with Council's Urban Design Consultative Committee on the 15th July, 2009.

The Group noted that they had not seen a long-term master plan of the hospital site and advised that a briefing from Hunter Area Health in this regard would be of assistance in considering the merit of individual proposals. The following comments are taken from the minutes of the meeting.

'The group expressed strong reservations regarding the general architectural character of the proposed building which they considered did not comfortably relate to the natural topography of the site. They felt that the external façade treatment was somewhat bland and anonymous and could be better articulated, with at least the upper level communal facilities expressed to provide a measure of visual relief.

As presented, it was felt that the building would not have a welcoming presence on the site, and its character was somewhat alien to the natural bushland setting. The Panel was not persuaded by an argument advanced in part 5.3 of the Schematic Design Report about maintenance problems caused by "spider spinning webs and other creatures".

Also of concern was the considerable visual impact of the proposed carpark, it being suggested that a more compact multi-deck carpark, accessible directly off the ring road, would be far less visually intrusive. At the very least, the carpark fingers should be curved to more closely follow the natural contour and to relieve the gun-barrel effect.

Other aspects of detail raised by the Group that required further consideration were:

- *The very large footprint of the parking area and the fact that any tree planting could not be of significant scale would be unfortunate in environmental terms. The cost implications were recognised, but it was considered that the layout as proposed would also be costly, and such expenditure would be better diverted into*

a more compact parking structure. The slope of the land would allow access to (say) three levels directly from the road, thereby avoiding expensive internal ramping;

- The desirability of providing a more distinctive entry to the proposed pedestrian ramp off the ring road, with possibly an appropriate canopy incorporating bench seating;*
- Provision of a more defined pedestrian pathway connection between the pedestrian ramp to the proposed new building and the nearest entrance to the hospital;*
- Landscaping at ground level beneath the 'Pod' needs to be 'humanised' in scale; and*
- Proposed roof treatment needs to be clarified, including the number and form of flues, with consideration given to the provision of a 'green' roof – views directly to the roof would be prominent from parts of the existing hospital.'*

HMRI and the Architects, S2F in association with Denton Corker Marshall, disagreed with some of the Council's UDCC's comments and have pointed this out to the UDCC in a letter.

In response to the comments provided in regard to the car park layout and overall landscape design, a number of design modifications have been incorporated to be more sympathetic to the surrounding bushland.

5.3.3 Roads & Traffic Authority (RTA)

Better Transport Futures consulted with the Roads and Traffic Authority on the 5th February, 2009

The issues raised in their letter of 12th January 2009 were confirmed and the following issues discussed:

- The current shuttle bus from Energy Australia stadium runs through the day and specifically at shift change times. This provides an excellent service and is currently used by approximately 60 people;
- The current onsite parking is a problem during the day but not outside working hours;
- The issue of the right turn capacity at Russell Street was raised, as there are two right-turn lanes back to back with Jacaranda Drive and possible problems with overflow out of turning lane needed; and,
- The RTA agreed that the Hospital area is currently one of the best serviced areas by public transport, therefore it is in a good location for expansion / new developments.

5.3.4 Ministry of Transport (MoT)

Better Transport Futures consulted with the Ministry of Transport on the 4th February, 2009.

The key issue for the Ministry of Transport is parking, and the proponent needs to demonstrate

how the proposed development is contributing to the MoT requirements, which were stated in their letter of 21st January and which are, broadly, to:

- Provide a minimalist approach to car parking provision to encourage a shift to public transport, walking and cycling;
- Identify all existing pedestrians, cycling and public transport facilities;
- Identify Travel Demand Management measures, and possibly prepare a Travel Access Guide.(TAG); and
- Identify measures to encourage the use of cycling and walking for the journey to work and to mitigate the impacts of the development on pedestrians and cyclists.

The measures being included in the proposal relating to the above matters, and in particular in relation to parking reduction, were outlined. The utilising of the shuttle service and parking at Energy Australia Stadium was considered a key initiative to be pursued.

5.3.5 New South Wales Rural Fire Service (NSW RFS)

Australian Bushfire Protection Planners Pty Ltd consulted with the NSW Rural Fire Service on the 30th April 2009, providing the following comments:

It should be noted that ultimately the determination as to the nature of the referral to the RFS (i.e. section.91 or section 79BA of the Environmental Planning & Assessment Act 1979) will rest with Newcastle City Council.

Based on the information provided, although located upon on hospital grounds, the development type for the proposed works does not appear a 'Special Fire Protection Purpose' (SFPP) development given it is proposed for use solely as a laboratory / research facility. Assuming this was to be considered the case, the proposed works should be determined under 79BA of the Environmental Planning & Assessment Act 1979 and assessed as 'infill' in relation to Planning for Bush Fire Protection 2006. In any case, careful consideration should be given to the impact such a development may have on the existing hospital facility in particular the provision of access and water.

The RFS agreed in principal that the proposal should comply with the requirements of *Planning for Bushfire Protection 2006*, subject to assessment of the full application and supporting documentation.

5.3.6 Mine Subsidence Board (MSB)

Identification & Consultative Process Overview

The HMRI site is located within the Newcastle Mine Subsidence District and as such its design is subject to approval from the Mining Subsidence Board (MSB). Coffey's "Mine Subsidence Assessment" Report (dated 26th May 2009) established the subsidence design criteria, which Arup Structures applied to assess appropriate design strategies. The preliminary design concepts were tabled to MSB at a specially convened meeting in Newcastle on 1st July 2009, attended by Coffey and Arup. Following this meeting an integrated engineering submission was made to MSB, covering

Coffey's design criteria and the proposed design responses by each of the affected engineering disciplines – namely, structures, mechanical, electrical and hydraulic.

Appendix N contains

- The Coffey "Mine Subsidence Assessment" report, dated 26th May 2009.
- Minutes of the MSB, Coffey & Arup meeting from 1st July 2009.
- The integrated engineering submission made to MSB on 10th July 2009.

On 12 August 2009, the Mining Subsidence Board accepted the Coffey geotechnical subsidence profiles and the combined engineering response, as follows:

Based on the advice from Coffey Geosciences submitted by the applicant, the Mine Subsidence Board accepts that the geotechnical requirements of the approval have been achieved.

Arup has submitted design principles to address the parameters in the Coffey Geosciences report. The Board accepts this structural engineering advice.

Extract from MSB's Letter of Approval, dated 12 August 2009.

Identification of Mine Subsidence, as contained within Coffey's "Mine Subsidence Assessment" Report – an overview.

Coffey's report states the criteria by which the Mining Subsidence Board (MSB) assess the risk associated with a new development in relation to future site subsidence caused by old mine workings.

In order to satisfy the MSB and gain approval for the development, it is necessary to demonstrate that:

- The risk of failure of the pillars is acceptably low for the proposed development; and / or
- Should failure occur, the resulting damage to the proposed development will be acceptable and safe, serviceable and repairable; and / or
- The risk of subsidence can be reduced or removed by structural measures or remediation of the workings, usually by injecting a cement/fly ash grout into the mine workings through boreholes drilled from the surface.

Extract from Coffey's Mine Subsidence Assessment, GETOWARA20576AB-AB, 26 May 2009, pp4

For a comprehensive overview of the prevailing subsurface conditions, refer to Coffey's report. Based on the knowledge gained from the deep borehole undertaken as part of the HMRI Geo-investigation and four other deep boreholes for which Coffey have data, Coffey generated a design surface subsidence profile.

From a building engineering viewpoint, this subsidence design criteria is the crucial information, as contained in the extracts below (pp 14-16):

9.2 Mine Subsidence

Due to the amount of cover above the mine workings, only trough subsidence is considered feasible. In BH 22, 0.29m of crush was determined. Comparing this to the 0.5m of crush in boring 6, it appears that 0.2m of additional crush is possible at mine level. Therefore, based on the maximum subsidence factor of 0.55, the possible future vertical surface subsidence is 0.11m or 110mm. Estimated subsidence parameters as indicated in Table 6 were developed based on procedures in Holla, 1987 assuming relatively level ground conditions.

TABLE 6 – ESTIMATED TROUGH SUBSIDENCE PARAMETERS

PARAMETER	VALUE
Maximum Subsidence, Smax	110 mm
Maximum Tensile Strain, +Emax	0.76 mm/m
Maximum Compressive Strain, -Emax	1.24 mm/m
Maximum Tilt, Gmax	3.7mm/m
Tensile Curvature radius (convex)	12.6 km
Compressive Curvature radius (Concave)	7.6 km

An angle of draw of 26.5° (2V:1H) within rock overburden is typically adopted for the northern coal fields of the Hunter Valley. This is based on longwall subsidence data presented in Holla (1987). The angle of draw through soil is believed to be similar to that through rock.

9.3 Designing for Subsidence

When proposed building gets above three stories the current position of the MSB is that all plausible movements need to be designed for, or the building be designed in such a way that cost of repair is sufficiently small (exact value will need to be discussed with the MSB) or grouting to stabilise the mine workings performed. Sometimes the risk to developments by Mine Subsidence is not always a catastrophic event and as such it may be possible to design developments for 'maximum conceivable' subsidence. This is case at our site where workings have already crushed to some extent.

10 CONCLUSIONS

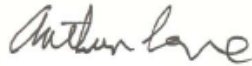
Coal in the Borehole Seam has been mined under the site by Lambton Colliery which operated between 1862 and 1941, with the site area under mined somewhere between 1885 and 1895 using bord and pillar methods with working height estimated to be 2m. Retreat mining was performed in haulageways in about 1915 to 1918. The current location of the mine plan can be seen in Drawing 1.

Borings used in the subsidence assessment included BH22 drilled during the current investigation and four borings drilled in a previous investigation.

It appears that approximately 0.3 to 0.5m of crushing has occurred in pillars with lower factors of safety at the site. It appears that about 110mm of additional trough subsidence could occur at the site.

As previously mentioned, the Mine Subsidence Board must assess the level of risk which is acceptable to them based on the likelihood and consequences of further crushing.

For and on behalf of Coffey Geotechnics Pty Ltd



Arthur Love

Principal Geotechnical Engineer

Extract from Coffey's Mine Subsidence Assessment, GETOWARA20576AB-AB, 26 May 2009

Consultation between HMRI design team (Arup & Coffey) & MSB

Following Coffey's "Mine Subsidence Assessment", Arup engaged Coffey in an intensive consultative process to clarify the design subsidence criteria, in order to develop an appropriate design response. With this information, Arup and Coffey held a special meeting with MSB in Newcastle on July 1st 2009 to review the proposed development, the local subsidence conditions, and Arup Structures response.

The outcomes of this meeting were for the discussed design concepts to be compiled into an integrated engineering submission to MSB covering the following topics:

- A description of the site conditions and proposed building
- Conceptual methodologies to mitigate the risk of subsidence-related damage
- The structural response to the subsidence profile produced
- The response of the building infrastructure to the subsidence profile (i.e. incoming services with flexible joints, facades etc)

This report was issued to MSB on 10th July 2009 – refer **Appendix N**, for their consideration at their July 22nd Board Meeting.

The MSB responded on 12 August 2009, accepting both the Coffey geotechnical subsidence profiles and the combined engineering response, as follows:

Based on the advice from Coffey Geosciences submitted by the applicant, the Mine Subsidence Board accepts that the geotechnical requirements of the approval have been achieved.

Arup has submitted design principles to address the parameters in the Coffey Geosciences report. The Board accepts this structural engineering advice.

Extract from MSB's Letter of Approval, dated 12 August 2009.

The MSB noted that they would not normally require re-levelling until tilts exceeded 7mm/m, whereas it is envisaged that the stiff HMRI frame will require re-levelling if tilts exceed 2mm/m.

MSB also reiterated the agreement that “permanent survey marks shall be established on each of the buildings following their construction. A baseline survey shall be undertaken upon installation of the survey marks and a further set of readings taken after 12 months.”

5.3.7 Hunter New England Area Health (HNEAH)

Consultation with HNEAHS has been ongoing since the project's inception. Stewart Leeman, who is the Manager for Capital Works and Physical Resources for HNEAHS has been part of the HMRI Project Control group (PCG) that meets every month.

HNEAHS was involved in the initial site selection, and were instrumental in the final choice of the former staff amenities building site, after the earlier Western Carpark site was found to be too constrained to accommodate the whole development. At a meeting on 20 January 2009 with Dr. Nigel Lyons (CEO HNEAHS), HMRI Director Maree Gleeson was informed that the former staff amenities building was no longer required by HNEAHS and this site could be made available for the proposed HMRI Building. Dr Lyons also advised that connectivity to the back of the main Hospital through the engineering link-ways was a possibility and agreed it could be explored with the Engineering Department.

A meeting has been held with HNEAHS Executive, who are organising meetings with the managers of the Kookaburra and Yallarwah Cottages to inform them about the proposed HMRI building.

5.3.8 Energy Australia

Energy Australia have been involved in the recent electrical site infrastructure upgrade works via correspondence with the Department of Commerce to determine the future power requirements for the John Hunter Hospital campus.

The Department of Commerce have managed the design, procurement and construction of the electrical infrastructure upgrade.

The upgrade to the High Voltage infrastructure has taken into account existing facility loads and future planned loads (which includes HMRI) plus spare capacity. The department of commerce have advised that the recently completed infrastructure has capacity for the new HMRI facility.

Further to this, Energy Australia have been consulted with and advised of the prospective timescale for the connection of the HMRI facility. It should be noted that no further capital works are required by Energy Australia to connect the new facility, as all HV works will be carried out by the successful electrical contractor.

5.3.9 Hunter Water Corporation

Hunter Water Corporation has provided their indicative requirements for the provision of water and sewer services for the HMRI facility.

A copy of the Hunter Water requirements is included in **Appendix P** of this report.

5.3.10 Jemena/AGL Retail

A preliminary application for a natural gas supply has been submitted to AGL Retail. AGL Retail has verbally advised gas is available on site to supply the HMRI Facility.

AGL retail are awaiting written confirmation from Jemena at this time.

5.3.11 NSW Fire Brigade

Arup Fire is undertaking the fire engineering services for the proposed Hunter Medical Research Institute building. The design will consist of a combination of Deemed-to-Satisfy provisions and Performance Based design.

Arup Fire has been engaged to provide fire engineering design advice to support the design team in developing an appropriate building solution that meets the needs of the client and the approval authorities. Arup Fire has also been engaged to provide documentation to support the statutory building approval process.

To this end, we have had a preliminary meeting with the NSWFB, who have expressed their in principal support for the proposed design approach.

The NSWFB will be involved in all stages of the development of the fire safety design, to ensure that the completed building meets their needs in terms of achieving an acceptable level of fire safety and to support the role of the Fire Brigade in any emergency.

5.3.12 Department of Water and Energy

A site meeting was held 17th February 2009 with Anthony Bryson from the Newcastle office of the Department of Water and Energy to discuss the DWE's DGR response letter dated 16 January 2009. The location and extent of riparian corridors was discussed on site, and an overall review of the concept design plans at that stage. Subsequent discussions were held as the design development was progressed through to a Schematic Design stage.

5.3.13 Department of Environment and Climate Change

A meeting was held with Robert Gibson of the Department of Environment and Climate Change at the Newcastle office 16th March 2009 to discuss the DECC's DGR response letter dated 14 January 2009. It was identified that there was potentially a threatened species within the development site and that the proposed activity may have an impact upon the species (Flora, Fauna & Threatened Species Assessment subsequently confirmed the presence of *Tetratheca juncea*). A request for further direction on study methodology was made, with no response. Due to the potential presence of a threatened species the engaged consultant, Ecobiological, undertook field work in accordance with DECC guidelines. The impact of the proposed development upon the identified threatened species is addressed within the Flora, Fauna and Threatened Species Assessment located at **Appendix I** of the Report.

5.4 OUTCOME OF ISSUES IDENTIFICATION

Normally it is ADW Johnson Pty Ltd's preference to prioritise the environmental issues and sequence the key environmental issues from greatest potential impact to least likely potential impact within the report. In this instance and for ease of reference we have addressed each issue in the order listed in the DGR's. Within the EA some issues have undergone more analysis and discussion than others, which is reflective of the weighting the project team have given to the potential impact.

5.5 THE PROJECT TEAM

Consultants were commissioned to undertake specialist assessments and investigations to identify the various issues associated with the construction of the new building and operation of the new building as a medical research facility.

The Environmental Assessment for this project has been undertaken by the following project team:

	Company	Project Coordinator	Responsibility / Section Prepared
Client	Hunter Medical Research Institute	Maree Gleeson	Proponent
Project Manager	APP Corporation	David Rann	Project Manager
Architects	Denton Corker Marshall / S2F Architects in Association	Wojciech Pluta Julian Scanlan	Architectural Plans 3D Visualisations Visual Analysis Photomontages
Planning Consultant	ADW Johnson	Shannon Sullivan	Town Planning Preparation of the EAR
Landscape Consultant	EDAW	Jon Shinkfeild	Landscape Design Plan & Report
DDA Consultant	MGAC (VIC) Pty Ltd	Bernie Clifford	DDA Access Report
BCA Consultant	Davis Langdon	John Grimbos	BCA Report
Traffic Consultant	Better Transport Futures	Mark Waugh	Transport & Accessibility Study
Bushfire Consultant	Australian Bushfire Protection Planners	Graham Swain	Bushfire Threat Assessment
Civil Consultant	Arup	Paul Janssen	Civil & Stormwater Drainage Report
Structural Consultant	Arup	Sean McGinn	Mine Subsidence Report

	Company	Project Coordinator	Responsibility / Section Prepared
Acoustic Consultant	Arup	Kym Burgmeister	Acoustic Assessment
Fire Engineering	Arup	Elaine McGee	Fire Engineering Report
ESD Consultant	Arup	Phillip Greenup	ESD Report
Geotechnical Consultant	Coffey	Arthor Love	Preliminary Geochemical Assessment
Ecology Consultant	Ecobiological	Adam Blundell	Remedial Action Plan
Mechanical, Lighting, Electrical, Fire Detection, Communication, Security and Vertical Transportation Consultant	S2F	Nigel Doxey Geoff Oakes	Utilities and Services Report (Mechanical & Electrical)
Hydraulic and Wet Fire Consultant	Steve Paul & Partners	Brett Lipscombe	Utilities and Services Report (Hydraulic)
Quantity Surveyor	Davis Langdon	Michael Manikas	Quantity Surveyor's Report
Dangerous Goods Consultant	Safety Engineering & Technical Services Pty Ltd	Ross Underwood	Dangerous Goods Report

6.0 Environmental Assessment

6.1 INTRODUCTION

This section investigates, and makes assessment of, in accordance with the DGRs, the key environmental issues associated with the site and the proposed development. This section generally summarises the assessment and findings of the specialist consultant reports, which are included in full, in the appendices to the report.

6.2 BUILT FORM AND DESIGN

Denton Corker Marshall Architects have prepared a detailed Architectural Statement which is included as **Appendix E**. The Architectural Statement including photo montages from various view points, has sought to document the issues relating to urban design, external materials and finishes, the height, bulk and scale of the development and its relation to surrounding landform.

The new building is conceived as two wings of solid elements linked together by a glass link circulation zone with an entry Pod building to highlight the entrance and provide an identity for the new Hunter Medical Research Institute Building.

The solid wings are further broken down into longitudinal blades as a response to their tripartite function. The offices to the north of the wings are one blade, the generic laboratories are the second or central blade and the laboratory support functions are the third blade. In this way, the form of the building directly responds to the function within.

Externally, the rooftop plant forms a central services spine which acts as an anchor to support the two side blades. Made from silver perforated metal, this central spine is higher and lighter in appearance than the adjacent blades, blending it into the sky and reducing what would otherwise be a dominant feature.

The side blades are deliberately darker in colour to allow them to recede into the landscape. The ground floor is set back to allow the building to float above and to settle comfortably into the landscape. The side blades are further broken down into a series of sculptural plates which float over the landscape and lighten the overall composition. This language of blades and planar elements is an intended metaphor for the microscope slides used in medical research. Articulation of the 'slides' continues into the terrace and helps to define the edges of the Link by providing a dramatic series of framed views from within.

Form responding to function is further developed in the elevations whereby a single slot of glazing which responds to the office function provides a continuous slit of panoramic view through the tree-tops and across the creek zone beyond. The natural setting, whereby spider spinning webs and other creatures cause maintenance problems dictated a smooth curtain walling approach with minimal external horizontal projections. This limited opportunities for external sun protection, so glazing was reduced to the minimum requirement for the internal functions whilst providing maximum impact in the form of capturing panoramic views. Internally, floating light shelves help to bounce natural light into the space and act as an internal sun-shading device.

The southern elevation is also a direct response to the functions housed within. Here, the laboratories dictate vertical strip windows which allow for laboratory equipment to be placed against the walls while still allowing for natural daylight to enter the space.

The entry building is conceived as a floating metallic cube, connected to the road adjacent the hospital by a bridge or 'skywalk' through the native treetops. The Pod is deliberately precious, rather like a titanium jewel box that is intended to provide a memorable experience and sense of privilege for visitors. The skywalk or bridge link of perforated metal provides shelter whilst imitating the dappled light of walking through eucalypts. Likewise, the Pod contains panels of metal and glass which plays not only with both light and shade, but also scale, providing a more abstract quality of a precious box, rather than a building. Columns are pigmented concrete, to blend in with the tree trunks and to focus the viewer on the 'specialness' of the floating cube. The box is also a metaphor for the preciseness of medical research – it is intended to be a careful and thoughtfully considered composition that reflects the accuracy and seriousness of medical research.

Internally, the metaphorical relationship to medical research is continued. Just as the entry building reflects the meticulous nature of performing scientific experiments, the Interactive Spaces represent the more abstract 'art' of research. The more organic plan is fitting for the interactive spaces where discourse and discussion can initiate ideas and lead to future partnerships.

All floor plans have been measured for Gross Floor Area (GFA) with the following areas to be reported:

GFA 15,962 m²

The GFA stacking is as follows:

Floor Level	GFA (m2)
Level 1	3,274
Level 2	3,539
Level 3	4,011
Level 4	4,028
Level 5 - Roof	1,110
Total	15,962

6.3 LANDSCAPING

A Landscape Design Plan and Report has been prepared by EDAW AECOM Landscape Architecture Pty Ltd and is included as **Appendix F**.

The following ESD principles have been applied in the landscape design:

- Existing bushland has been retained where possible;
- Indigenous plant species have been used to revegetate areas and integrate with surrounding landscape;

- Slopes have been planted to reduce erosion;
- Bioswales have been used to treat carpark stormwater; and
- Tree planting has been used where possible to mitigate heat island effect.

6.4 TRANSPORT, TRAFFIC AND ACCESS

A Transport and Accessibility Report was undertaken by Better Transport Futures to review the traffic and parking implications of the proposed development (Appendix J). The report covers all aspects of transport and access to the proposed development and provides advice for all forms of transport issues, internal carpark layout and issues relating to service vehicles.

The Transport and Accessibility Report investigates the maximum potential impact of the proposed development upon the surrounding road network and parking within the site. HMRI have identified strategies to encourage patronage of public transport and the 'park and ride' service currently operated within the John Hunter Hospital precinct. The identified peak demand are based on all staff within the building driving to work and commencing work at the same starting time, and finishing in a similar manner. In reality the hours of operation of the research staff shall be staggered across various hours and days of the week, depended upon research requirements. Further, due to funding requirements and research protocols it is highly likely that the full occupation of the building will not occur for a number of years after the building is completed.

All traffic access to the new development is proposed off Kookaburra Circuit. The development will require the closure of the existing driveway and access to the former staff amenities building and car park. A new access will be constructed 80m to the east. Drivers will be able to enter the Hospital campus from either intersection on Lookout Road and use Kookaburra Circuit to loop around the John Hunter Buildings. All trucks and deliveries using the loading bay in the lower level of the building will have to use this same approach and driveway.

The driveway leads down the slope towards the building and car parks, there are then 3 choices for drivers to make:

- All vehicles entering the car parks turn right into the car park access road, entry into the top two levels of parking is via the barrier gate into the top level, all exit from these two levels (250 parking spaces) is via the second level exit gates. Entry and exit to the lower level of parking will be via a single driveway at the bottom of the car park access road, accessing 150 bays of general hospital staff parking. All exiting vehicles drive up the car park access road to rejoin the driveway back up to Kookaburra Circuit.
- All vehicles wishing to drop off, pick up passengers, etc can turn left and park under the Pod area of the building. These vehicles then rejoin the access driveway to Kookaburra Circuit.
- All service and delivery vehicles can drive straight down the driveway, past the drop off area and the car park access to reach the service and loading dock. The exit is a simple reverse of this route.

All exits from the development will be also via Kookaburra Circuit to the intersection with Jacaranda Drive, All vehicles then have the choice of turning left or right to leave the campus either via Kookaburra Circuit or Jacaranda Drive intersections with Lookout Road.

Pedestrian access will be via one of two routes, from the car park up a link to enter the building at the lower level, or via the Sky Walk to access Kookaburra Circuit to or from other parts of the Hospital campus. The footpath between the Sky Walk and the crossing at the western end of the Hospital Building will be widened to improve the pedestrian environment and allow use by wheelchairs.

Access to existing public transport is very good from the Hospital site. Access to the regular service buses is within 350m and staff will be encouraged to utilise the free “Park and Ride” service, run from Energy Australia Stadium. Provision has been made to allow this shuttle bus to extend its route around the hospital via Kookaburra Circuit to include the HMRI building in its catchment. The HMRI building will be one of the largest single concentrations of staff on the campus and the opportunity to use this service will be maximised. Support for this service will be maintained by the HNEAHS to provide a viable alternative for travel to the site. The Hospital management actively support the use of alternative modes of transport to the Hospital.

The proposed new building will accommodate 514 staff, of which 381 will be fulltime, and 133 will be part time. To cater for the proposed HMRI building 250 parking bays are being provided. However, up to 16 existing permit parking bays on Kookaburra Circuit will be removed due to the development, with these 16 spaces being replaced in a dedicated permit car park located in the second tier of the proposed car park.

There are no specific parking requirements identified in the NCP DCP 2005 that relate to Laboratory/Research use, however, if the parking requirements for office are adopted for use on this building 319 parking spaces are required. Consequently, in that scenario, the parking provision constitutes a shortfall in parking. Over 184 of the 514 staff are being relocated from elsewhere on the Rankin Park campus; they will already have travel and parking arrangements in place which may not necessarily need to change as a result of the relocation to the new building.

Provision has been made for 12 motorcycle parking bays in accordance with the NCC DCP 2005 rates of 1 bay per 20 car parking bays. Additional bicycle parking will be provided within the overall site footprint and will be determined as part of the detailed design of the facilities and agreed with Council at that time.

This development is expected to generate an additional 385 vehicles in the morning peak hour and an additional 300 trips in the afternoon peak period. The additional traffic flows associated with the development of the subject site will result in increases in the level of peak hour congestion occurring at the signalised intersections on Lookout Road and at the two internal roundabouts within the Campus.

There will be an increase in the level of traffic using Kookaburra Circuit which will have to cross the main pedestrian routes from the car parks into the Hospital buildings. All crossings are well signposted, and Kookaburra Circuit is a 20kph zone which is enforced by the location of numerous speed humps. The majority of this traffic increase will occur at peak traffic times when pedestrians have to be extra aware of vehicles. This is not the peak pedestrian time which coincides with the change in shifts within the hospital.

The report concludes the traffic and parking arrangements for the development proposal are satisfactory and that there is no traffic or parking impediments to the development.

6.5 IMPACTS ON ADJOINING HERITAGE ITEM

Although the subject site is not located within a heritage conservation area under the Newcastle LEP 2003, heritage items listed under Schedule 6 to the Newcastle LEP 2003 are situated on the subject lot, including Croudace House and the Remnant Garden of Croudace House. Croudace House is classified by the National

Trust of Australia (NSW). The proposed development will be located approximately 400m West of Croudace House and its associated remnant garden.

Croudace House was the former residence of Thomas Croudace, Manager of the Scottish Australian Mining Company Limited, Lambton Mine. The former '*Lambton Lodge*' (Croudace House) residence and remnant garden are listed as items of Local significance in the Newcastle Local Environmental Plan 2003.

The Croudace House building and site is of Local significance for its association with Thomas Croudace and the mining industry. It is also significant for its association with the historical development of the Lambton Township. It is significant for its later association with its use as a Convalescent Home associated with the Royal Newcastle and Rankin Park Hospitals.

The building is a visually prominent landmark from surrounding hills and ridges despite being screened by natural bushlands and buildings from closer vantage points. Originally the large *Araucarians* (Bunya Pines) were visually prominent landmarks from surrounding hills and ridges and are associated with the house and its gardens.

The construction of the proposed new research and development facility located a substantial distance to the west of Croudace House will have a minimal impact on the heritage significance of the building, the remnant gardens and the visual curtilage due to:

- Croudace House being visually separated from the proposed development due to extensive existing bushland between the two; and
- No visual interference with the panoramic views from Croudace House to the north.

Based on the above, it has been established that there are no aspects of the proposed development that would detrimentally impact on the heritage item or its curtilage.

6.6 BUSHFIRE

A review of the Newcastle Certified Bushfire Prone Land Map identifies that the vegetation over the development site is deemed to be bushfire prone. Therefore, the construction of the HMRI facility is triggered by the bushfire prone land map and bushfire protection measures are required to be implemented, in accordance with the deemed-to-satisfy provisions of *Planning for Bushfire Protection 2006*. A Bushfire Hazard Assessment has been prepared by Australian Bushfire Protection Planners.

The Bushfire Hazard Assessment concludes that provided the recommendations stated above are implemented in full, Australian Bushfire Protection Planners is of the opinion that the proposed development achieves the intent of the relevant legislation and in particular the requirements as set out in *Planning for Bushfire Protection, 2006*.

6.7 BIODIVERSITY

The Assessment of Significance revealed that for the majority of threatened species there would be minimal impact from the proposed development. However, an additional survey is required to determine the extent of impact on the threatened plant, *Tetratheca juncea*. Surveys for this species were conducted outside of the

flowering season, and it is recommended that an additional survey for this species be undertaken within the study area during the known flowering period (September – December). Without information from further surveys conducted during the main flowering season, the precautionary principle must be invoked whereby it is considered likely that the proposed development will place the local population of *Tetratheca juncea* within the subject site at risk of extinction. It is recommended that the results of this targeted survey form an Addendum to this assessment. In order to ensure the safety of native flora and fauna and to preserve habitat integrity within the study area, several ameliorative measures and management actions have been recommended.

The following recommendations are considered necessary to protect the integrity of the remaining vegetation and resident threatened species:

- A survey for *Tetratheca juncea* should be undertaken in September – December during its known flowering period within the area identified in Figure 8 to determine the extent of the population and the number and location of individual plants. The results of this survey should form an Addendum to this assessment. Should a local population of the species be confirmed within the proposed development footprint, further mitigation measures such as translocation to another area within the Hospital grounds or offsetting may be required to address impacts on this species. Should a local population be found within the proposed bushfire APZ and fuel managed areas, these plants should be protected. Fuel reduction techniques such as manual slashing have the potential to impact on any plants found. Protection for identified plants should be afforded through the proposed Fire Management Plan (ABPP 2009);
- Clearing of hollow-bearing trees should be minimised where possible and those occurring within the bushfire APZ be retained if deemed appropriate under Planning for Bushfire Protection (NSW RFS 2006);
- The hollow-bearing tree identified in Figure 7 as containing a potential owl nesting hollow should be felled outside of the breeding season which is generally from late autumn to mid-winter. Prior to felling the tree should be inspected by an Ecologist using a cherry picker to ensure there will be no destruction of eggs or injury caused to chicks or roosting owls that might be present;
- All other hollow bearing trees proposed for clearing should be inspected for wildlife habitation by an appropriately qualified and licensed ecologist within one week before clearing commences. An ecologist should also supervise the clearing operations where necessary to avoid injury or death of native animals. Any hollow-bearing trees should be soft-felled. The soft-felling process should include several gentle nudges followed by several minutes of monitoring the hollows. This process alerts any occupying fauna and allows them to self-relocate. Upon felling of trees with hollows, each hollow section would be inspected for wildlife. Any wildlife found should be captured, housed and relocated at a suitable time and location;
- Best practice erosion and sedimentation control methods should be adopted, enforced and maintained during construction. The construction site should be managed to allow no accidental incursions into areas that are not part of the proposed development footprint such as nearby drainage lines and adjoining remnant vegetation; Potential fauna habitat trees should be retained where possible (i.e. *Eucalyptus punctata*, *Corymbia maculata*, *Allocasuarina torulosa* and *Acacia* species); and

- The use of insecticides and herbicides within the study area should be avoided where possible to retain the integrity of the surrounding habitat for insectivorous Microchiropteran bats, Large Forest Owls and amphibian species.

6.8 DRAINAGE, STORMWATER AND GROUNDWATER MANAGEMENT

A Schematic Stormwater Management plan has been prepared which complies with legislative requirements of local Council. This plan indicates Stormwater drainage can be adequately and appropriately managed and incorporates a number of Water Sensitive Urban Design philosophies, some of which are over and above legislative requirements.

The site, being the land required for the proposed new building, is not flood prone.

The potential impact of climate change has been considered and where appropriate the design enhanced to cater for such an occurrence.

A Civil and Stormwater Drainage report and Stormwater Management Concept Plan has been prepared by Arup and is included as **Appendix L**.

6.9 GEOTECHNICAL AND MINE SUBSIDENCE

6.9.1 Mine Subsidence

Coffey consider that any future subsidence would be a gradual process-taking place over a timeframe of months/years rather than an abrupt event. This is very important as it provides the opportunity to monitor and correct for settlements before they become excessive and therefore a problem. The rationale for this is based on the following, which renders a rapid collapse scenario unlikely:

- Subsidence from pillar crushing has already occurred to some extent based on the boring data;
- The mine is flooded so oxidation of the coal pillars is greatly reduced;
- The absence of claystone in the floor and above the pillars eliminates the risk of material softening leading to an abrupt pillar punching event; and,
- The coal is underlain by high strength sandstone which is unlikely to allow pillar failure by punching into the floor.

In broad terms, the maximum estimated crushing at mine level is in the order of 200mm, which relates to a maximum predicted surface settlement of 110mm.

The absolute subsidence is much less significant than the relative subsidence as far as buildings are concerned - i.e. rate-of-change of settlement; curvature; tilt etc.

It should be noted that the risk of subsidence within the design life of the development is considered by Coffey to be low.

6.9.2 Geotechnical

A Geotechnical Investigation Report was prepared by Coffey Geotechnics for the proposed development and is located at Appendix M.

Based on the available information on the depth of the Borehole Seam and the layout of the workings, several preliminary pillar stability calculations have been conducted. The stability of selected pillars was assessed using rectangular pillar theories incorporated in the Modified UNSW Power Law as presented in Galvin (1998) and Galvin (1996). Of the several input factors used in the analysis, the critical variables are working height, pillar dimensions and overburden stress. A working height of 2m was used in the pillar calculations based on historical data and quality of the coal recovered in BH 22. The pillar dimensions were measured on a print of the RT.

Overburden stresses were estimated using the interval between the average surface elevation and the top of the coal. Transfer of load from retreat mined haulage ways to adjacent pillars was assessed using the procedures in the Australian Coal Association Research program (ACARP) Final Report – Chain Pillar Design (Calibration of ALPS) C6036 Oct 1998. In this approach, the load transferred from the retreat mined area is distributed over a zone of adjacent pillars based on empirical equations developed from longwall mining.

Based on this preliminary assessment and boring data, some pillars appear to have factors of safety that indicate a high potential for crushing while other larger pillars appear to remain uncrushed as indicated in Table 5. For example a pillar with a factor of safety of 1.0 would have a probability of failure of 5 in 10 while a pillar with a factor of safety of 2.11 has a probability of failure of 1 in 1,000,000.

Coal in the Borehole Seam has been mined under the site by Lambton Colliery which operated between 1862 and 1941, with the site area under mined somewhere between 1885 and 1895 using board and pillar methods with working height estimated to be 2m. Retreat mining was performed in haulage ways in about 1915 to 1918. The current location of the mine plan can be seen in Drawing 1. Borings used in the subsidence assessment included BH22 drilled during the current investigation and four borings drilled in a previous investigation. It appears that approximately 0.3 to 0.5m of crushing has occurred in pillars with lower factors of safety at the site.

It appears that about 110mm of additional trough subsidence could occur at the site. As previously mentioned, the Mine Subsidence Board must assess the level of risk which is acceptable to them based on the likelihood and consequences of further crushing.

6.10 CONSTRUCTION IMPACTS

6.10.1 Noise and Vibration

Preliminary construction noise levels have been calculated using equipment sound power levels from AS 2346¹ and BS 5228². Based on typical construction activities likely to occur during the

¹ AS 2346 – 1981, Guide to noise control on construction, maintenance and demolition sites

² BS 5228: Part 1: 1997, Noise and vibration control on construction and open sites

construction of the proposed development, and taking into account distance losses, shielding and reflections of sound. Typical construction site source noise levels are shown below (extract from Acoustic Report).

Table 5 (of Acoustic Report): Construction equipment and sound power levels, dB re 10⁻¹² W

Equipment	% On	Sound Power Level of equipment L _w dB(A)
Excavator	60	116
Truck and Dog Trailer	80	89
Concrete Pump	60	105

The construction noise level at the residential receivers is predicted to be significantly below the relevant criteria.

It will also be necessary to control construction noise emission to the existing hospital site. Some simple measures can be taken to help reduce the impact of construction noise levels at the adjacent hospital site. These include:

- Equipment that emits noise strongly in one direction should be orientated so that the noise is directed away from noise sensitive areas.
- Machines that are used intermittently should be shut down between periods of work or throttled down to a minimum.
- Regular maintenance of plant and equipment.
- Restricting hours of work of noisy equipment, scheduling noisy construction activities during times when noise impact on residents is likely to be lowest, e.g. No heavy work before 09:00am.
- Providing acoustic screens and/or enclosures for stationary equipment, such as compressors.
- Providing mobile acoustic screens and/or enclosures for construction equipment and activities, where possible.
- Selecting low noise plant and equipment where possible.
- Keeping engine covers and access hatches to equipment closed, e.g. compressors, etc.
- Introducing respite periods during the day or at weekends where no noisy construction work can take place. These periods are best determined through consultation and negotiation with affected stakeholders.
- Regular consultation to advise the hospital of impending noisy activities.

Vibration from construction activities is not typically perceptible beyond 5 or 10 m from any particular construction process, and is therefore not expected to have any significant impact for this project.

Some construction vibration may be just perceptible or impact on particularly sensitive uses within the adjacent hospital building. Ongoing consultation with the existing hospital building users should be implemented to allow appropriate scheduling of construction activities to manage the effect of noise and vibration.

Similarly, construction noise at the exterior of the Kookaburra Cottages would be between 60 – 80 dBL_{Amax} during the daytime, depending on the amount of local shielding. This would be expected to be clearly audible and possibly adversely impact the residences during the daytime. However, internal noise levels would be 20 - 25 dB(A) lower assuming windows were kept closed, and construction would not be undertaken during the sensitive night-time period. The use of the Kookaburra Cottages would need to be managed carefully with the local health department administration during the construction period.

The noise control recommendations are discussed in more detail within the Acoustic Impact Assessment (**Appendix O**).

6.10.2 Stormwater Management

The general principles for stormwater management are to eliminate, minimise, isolate or control erosion, and therefore minimise the potential for sediment deposition to have an effect on downstream environments.

The first step to ensure the sediment and erosion control strategy is successfully adopted is awareness. It is therefore vital that all site personnel, including: engineers, foreman, leading hands, site managers, laborers and administration personnel are aware of the sediment and erosion control plan.

To achieve this site wide awareness, the contractor shall undertake sediment and erosion control awareness education as part of the site induction or general induction for all personnel.

The Contractor will be responsible for adequately implementing the requirements of the 'Sediment and Erosion Control Plan' which will be specifically prepared for this site and proposed development as part of the Construction Certificate Phase. However, from a conceptual viewpoint for Development Assessment, the Sediment and Erosion Control Plan will include specific requirements such as:

- All work is to be carried out in accordance with relevant ordinances and regulations; note in particular the requirements of Landcom's 'Managing Urban Stormwater, Soils and Construction' (the 'blue book').
- Install sediment protection filters on all new and existing stormwater inlet pits in accordance with the typical detail contained within the 'Bluebook'.
- All stormwater devices being upgraded are in full working order at the end of each days work.

- All stormwater devices in the designated route of vehicular access shall be protected from damage. All damage to stormwater devices during the works shall be repaired or replaced prior to the completion of works.
- Sediment and Erosion Control measures shall be installed prior to the commencement of construction and regularly maintained in accordance with the Engineering drawings and specifications.
- Stage the earthworks operations where appropriate to reduce the extent of the site that is 'open' and susceptible to erosion processes.
- Install a 'rumble strip' or 'shakedown' at all vehicle entrances / exists to reduce the likelihood of sediment being trafficked offsite. Manually remove (by means other than washing into stormwater drains) sediment tracked offsite on the adjacent roads.
- Use silt fences and staked hay bales to control runoff in individual building zones across the site.
- All trenches (including all service trenches) shall be side-cast to the high side and closed at the end of each days work.
- Construct and maintain all material stockpiles in accordance with detail SD4-1of the 'blue book'. Once cut/fill operations have been finalised all disturbed areas that are not being worked on shall be re-vegetated or sealed as soon as is practical.
- The Site Foreman (Contractor) shall be responsible for keeping a detailed written record of all erosion and sediment controls on site during the construction period. This record shall be updated on a daily basis and shall contain details on the condition of controls and any/ all maintenance, cleaning and breaches. This record shall be kept on site at all times and shall be made available for inspection by the principal certifying authority during normal working hours.
- To reduce the likelihood of suspended solids entering downstream stormwater drains; flocculate, settle and discharge stored water from the temporary sediment basin in accordance with the methodology outlined in the blue book.

6.10.3 Dust and Erosion Control

To ensure that dust generation is eliminated or reduced where possible and practical, all site operations shall be undertaken with consideration given to their potential to produce dust. A management strategy of *avoid > minimise > control* shall be implemented.

The first step to ensure the dust minimisation is successfully achieved is awareness. It is therefore vital that all site personnel, including: engineers, foreman, leading hands, site managers, laborers and administration personnel are aware of the dust minimisation strategy. To achieve this site-wide awareness, the contractor shall undertake dust minimisation awareness and education as part of the site induction or general induction for all personnel.

The Contractor shall instigate measures to minimise and control generation of dust from the site. These measures shall include, but not be limited to:

- Program works around periods of significant and adverse meteorological conditions;
- Install wind fences around stockpiles in accordance with detail SD6-15;
- Maintain vegetation across the site where possible, otherwise establish vegetation or seal disturbed site areas as soon as practical;
- Provide water trucks or sprinkling devices during construction as required to suppress dust; and
- Install and maintain protective cloth to perimeter fence to assist with dust suppression.

6.10.4 Waste Management

All waste / surplus building material from the construction phase of the proposed development will be recycled wherever possible. A detailed Waste Management Plan will be incorporated into the detailed Environmental Management / Construction Plan.

6.10.5 Traffic and Pedestrian Access Management

The construction work will require deliveries and staff to the site. The construction plans will be developed to reduce the impact of the construction traffic on the adjacent road network to the satisfaction of the consent authority. The construction plans will form part of the tender process and will be strictly adhered to. A separate construction access road from Jacaranda Drive shall be constructed to provide for vehicular access to the site.

All works on site will be governed by the relevant EP&A rules and as stipulated within any development consent granted by NSW Department of Planning. The construction plans will be developed to reduce the impact of construction traffic on the adjacent road network to the satisfaction of the NSW Department of Planning. The construction plans will form part of the tender process and will be strictly adhered to. All works on site will be governed by the relevant EP&A rules and as stipulated within any development consent granted by the NSW Department of Planning.

A Construction Traffic Management Plan will be prepared and submitted to Council prior to any construction activity commencing on site. Construction is expected to take approximately 24 months over which period there will be up to 200 workers at the peak. The issue of where there workers will park has been considered as part of this assessment and, whilst the details of the construction method have not been finalised, the following options have been identified:

1. Stage 1 'Enabling Works' are planned to reconstruct the existing 150 bay car park. This will be undertaken by a small gang of workers who would be able to park on the waste ground alongside the car park. These workers would then construct the construction access road to Jacaranda Drive and 250 parking bays to coarse level

so they can be used for contractor parking and construction materials. The workers temporary parking area will be allocated to accommodate all workers identified onsite;

2. Workers park at the Energy Australia stadium or elsewhere as arranged by the construction company, and are bussed to the Hospital complex. This will require a temporary supplement to the capacity of the existing shuttle bus service;
3. Negotiations with the building should include a clause in the contract specifying no contractor parking will be permitted other than in specific areas; and,
4. Construction staff must be discouraged from parking in the residential area to the east of Lookout Road.

The quantity of construction traffic will be determined by the construction time table, however some controls will be put in place including the following:

- Construction traffic will be encouraged to avoid the peak on-street traffic periods;
- Construction traffic will be encouraged to use Jacaranda Drive where possible to reduce the use of the intersection of Kookaburra Circuit and Lookout Road and potential impacts on other essential services on the campus; and,
- Having some specific deliveries undertaken on weekends to avoid blocking Kookaburra Drive.

6.10.6 Cut and Fill

The proposal includes:

- Minimisation of cut and fill earthworks to limit impacts to the existing site and reduce the need for exportation or disposal of excess cut and the importation of fill;
- Cut and fill balance across the site, requiring minimal exportation or importation of bulk earthworks; and,
- Revegetation of batter slopes to reinforce slope stability and minimise sediment movement from the site.

The estimate includes an allowance for the building pad but excludes any foundation earthworks.

The Schematic Site Grading Plan and Schematic Site Earthworks Plan for the proposed development are located in **Appendix D**. The plans provide schematic design for the key aspects of the cut fill earthworks management systems, as outlined above.

6.10.7 Wind

The HMRI buildings are positioned on a ridgeline falling away to the East off the Circuit ring road. The HMRI buildings closest neighbours are the Hospital buildings to their south, as is shown the location map below. The closest new building is the West Wing, which is itself cut 8m into the hill, as can be seen on the Western Elevation. Given that the closest HMRI buildings project 10m above the existing ridgeline, their affect on creating wind turbulence on the adjacent hospital buildings is considered to be negligible.

The HMRI buildings are located 400-500m away from their nearest neighbouring buildings that are not part of the John Hunter Hospital, which they will have no discernable impact on in a wind disturbance sense.

6.11 OPERATIONAL IMPACTS

6.11.1 Noise generated from plant and equipment

The building will have plantrooms located at each end of the main wings, and on the rooftop. In order to support critical processes within the building it is expected that a significant amount of the equipment will be required to operate 24/hrs a day.

Generally, external noise breakout from the equipment will be designed to achieve a limit of 65 dB(A) external to the plantrooms to ensure a reasonable level of amenity for nearby hospital buildings and within the HMRI building itself. In order to achieve this, the plantrooms will incorporate acoustic louvers on air intake and exhausts, where required, and individual equipment will incorporate residential grade mufflers, attenuators and other noise control as required. The emergency generator should incorporate a 'residential' grade muffler system, and sound attenuated air intake and exhaust systems. Industrial noise levels at the residential receivers are predicted to be well below the applicable criteria.

Further details of the acoustic impacts are included in **Appendix O** of this report.

6.11.2 Waste Management

All liquid trade waste water generated from the HMRI facility will be pre treated prior to discharging to the Hunter Water Corporation sewer. This will be in compliance with the HMRI Liquid Trade Wastewater agreement with Hunter Water Corporation.

Further details of the liquid trade waste discharge are included in **Appendix P** of this report.

6.11.3 Site security, including lighting

The Security management plan for the John Hunter Hospital Campus will be revised to include the new HMRI facility. Details of the precise operational requirements and procedures are to be agreed between HMRI and John Hunter Hospital.

All staff to the new HMRI facility will be issued with security photo identification access cards. Access permissions will be programmed for each individual as determined by HMRI.

It is proposed that electronic lockdown of the facility will occur outside of business hours. Exact times to be agreed with HMRI. Access to the building outside of working hours will be restricted to authorised personnel and programmed into their access cards.

Staff duress buttons are proposed for the reception and contact rooms.

CCTV coverage is proposed to cover the external entry points to the facility, public areas, entrances to the bioresources area and the entrance to the car park.

The provision of night patrols to the external of the building are to be determined by HMRI.

Lighting will be provided in accordance with AS/NZS 1158 to car parks, pathways, roads and building perimeter to provide a safe environment for the movement of vehicular traffic and pedestrians.

External lighting will be designed to limit light pollution in accordance with AS4282. External lighting will be controlled via a daylight sensor. Light fittings selected will have an efficacy of not less than 60 lumens/W to comply with section J6 of the BCA.

Internal lighting will be designed in accordance with AS 1680 and section J6 of the BCA.

Emergency and exit lighting will be provided in accordance with AS2293 and the BCA.

6.11.4 Emergency and Evacuation Procedures

An Emergency Evacuation Plan shall be prepared for the HMRI facility which establishes the emergency management protocols to address the safety of staff and visitors during emergencies which occur within or external to the Institute.

The building is to be served by 3 fire-isolated stairs discharging direct to the outside at level 1 (ground level). In addition, occupants can evacuate horizontally into an adjoining fire compartment, if safe to do so. Emergency lighting and directional signage will be provided to help occupants identify the location of exits and exit routes quickly and easily. Sprinklers provided throughout the building will significantly reduce the likelihood of a large fire developing in the building. The smoke detection and occupant warning system will provide occupants with early warning in the event of a fire, and the Sound System and Intercom System for Emergency Purposes (SSISEP) will provide occupants with additional warning and further information in relation to safe evacuation procedures in the event of a fire.

The building will be required to be managed under a fire safety policy which includes:

- A fire safety management plan in accordance with AS3745; including procedures for the safety of people in buildings, structures and workplaces during emergencies, the appointment of an Emergency Planning Committee and setting up of an Emergency Control Organisation;

- Good house keeping and fire prevention procedures such as maintaining clear evacuation routes;
- Regular maintenance of all fire safety systems;
- Fire training of staff, including evacuation procedures and use of fire fighting equipment, undertaken at regular intervals.

Emergency procedures can be developed based on the information provided in the Fire Engineering Report and will consider the possible activities being undertaken by occupants at the time of an emergency.

The HMRI building is to be provided with sprinkler protection and smoke detection throughout. These systems will be connected to the Sound System and Intercom System for Emergency Purposes (SSISEP) and will be monitored by the Fire Brigade. The building will have a Fire Indicator Panel (FIP) located at the main entrance to the building. The appropriate emergency services, on arrival, will take control of the emergency.

6.11.5 Fire Safety

Arup Fire is undertaking the fire engineering services for the proposed Hunter Medical Research Institute building. The design will consist of a combination of Deemed-to-Satisfy provisions and Performance Based design.

Arup Fire has been engaged to provide fire engineering design advice to support the design team in developing an appropriate building solution that meets the needs of the client and the approval authorities. Arup Fire has also been engaged to provide documentation to support the statutory building approval process.

To this end, we have had a preliminary meeting with the NSWFB, who have expressed their in principal support for the proposed design approach.

The NSWFB will be involved in all stages of the development of the fire safety design, to ensure that the completed building meets their needs in terms of achieving an acceptable level of fire safety and to support the role of the Fire Brigade in any emergency.

6.11.6 Signage

External Signage to direct visitors to the new facility will be coordinated with HNEAHS requirements. Signage is intended to be easily comprehended by all users of the building and the following DDA requirements to comply with AS 1428.1, Clause 14, will be adopted:

- Place signage (including Braille) and international symbols at all major crossovers, accessible entrances and exits, emergency exits, common areas lifts, & toilets.
- Accessible signage can be produced in different colours and on different surfaces e.g. brass, ensure the colour contrast is significant between the background and symbol / letter colours.

- Where an accessible pathway or route is different to the main route, signage including the international logo for access should be clearly highlighted, (Highlight changes in surface materials for nature pathways).
- Braille signage shall be provided on all gender and unisex toilet doors and signage boards located at a height of 1500mm.
- Signage to include international symbol for people with disabilities, directional arrow and a written explanation.
- Symbol size shall be the following according to viewing distance:-
 - o < 7 metres - 60mm X 60mm
 - o > 7 < 18 metres - 110mm X 110mm
 - o > 18 metres - 450mm X 450mm
- Letter heights shall be the following according to viewing distance:-
 - o 2 metre - 6mm
 - o 6 metres - 20mm
 - o 15 metres - 50mm
 - o 35 metres - 100mm
 - o 50 metres - 150mm
- Directional signage shall be installed at a height not less than 1500mm and provided in an accessible sightline location.
- All signage should provide a distinct contrast to the background colour/s with colours such as pastels and reflective colours being avoided.

6.12 ECOLOGICALLY SUSTAINABLE DEVELOPMENT MEASURES

6.12.1 Introduction

A number of measures will be incorporated into the development in order to address ESD principles. The proposal will meet Section J of the BCA and include other ESD measures which will include water savings measures, appropriate landscaping species and reuse of stormwater.

6.12.2 Mechanical Systems

In considering sustainable ways in which to deliver cooling, heating & ventilation to the facility, the following energy saving measures are proposed:

- Efficient façade design to reduce solar heat gains and losses;
- Appropriate ambient design temperatures;
- Wider tolerance of internal design conditions within Office & Interaction areas;
- Outside air intakes located on shaded façades where possible to reduce cooling loads;
- Zoning of ventilation systems into areas of similar load profile to avoid overcooling;
- Areas of distinctly different functions served by individual ventilation / air conditioning systems to minimise unnecessary operation of plant;

- Modulating economy cycles on non single-pass air handling systems;
- After hours control by local User controlled switching;
- Energy recovery on ventilation systems where possible (either by re-circulation of air or by energy exchangers);
- Gas source heating in lieu of electric;
- Use of appropriate low energy technologies;
- Use refrigerants with low ozone depletion potential and comparatively low greenhouse gas emissions used on chilled water generating plant;
- Efficient control strategies;
- Variable speed drives fitted on chillers, pumps & fans where appropriate;
- Low pressure & leakage ductwork to reduce fan energy consumption;
- CO2 monitoring in areas of high occupancy;
- Metering of mechanical systems and central plant;
- The Requirements of BCA Section J;
- High efficiency plant and systems;
- Provision for closed circuit cooling systems to laboratory equipment should the need arise;
- Condensate recovery on Steam systems;
- Perimeter zones may incorporate variable air volume supply air for energy efficiency.

6.12.3 Hydraulic Services

The proposed Hydraulic Services will comply with the requirements of:

- Section J of the Building Code of Australia i.e.
 - Thicker insulation to hot water tanks;
 - Timer switches on boiling/chilled water units;
 - The hot water system shall be designed to AS 3500.4;
 - Rainwater harvested for irrigation system and washing down purposes;

- Installation of AAA rated tapware, dual flush toilets and waterless urinals;
- Use of natural gas as an energy source for hot water temp. boosting;
- Use of solar sourced heat pump technology for domestic hot water; and
- Limiting water pressures to max. 350 kpa on the top level of the new building.

Epoxy coated sprinkler heads will be used for the wet fire sprinkler services in lieu of the environmentally damaging chrome plated types.

6.13 SERVICES

Details of the proposed electrical, communications and security services are detailed in **Appendix Q** of this report.

Details of the proposed hydraulic services are detailed in **Appendix P** of this report.

The reports indicate that the proposed development will be provided with connection to all essential services, including power, water, sewer, gas and telecommunications.

In summary, the report provides details in respect to all services to the building including:

- Mechanical Systems;
- Electrical, lighting, fire detection and communications services;
- Hydraulic and fire protection services;
- Medical gas services;
- Wet fire services; and
- Lift services.

The provision of the above services to the site and proposed new building is not considered to have any significant environmental impacts.

7.0 Draft Statement of Commitments

7.1 INTRODUCTION

The following section outlines the proponent's commitment to implement construction and operational strategies relating to environmental management and mitigation measures. The section details how the proposal and its environmental safeguards will be implemented and managed in an integrated and feasible manner.

The construction impacts associated with the proposed development are likely to be more significant than the operational impacts. Construction impacts are short term impacts and can be managed through appropriate measures. These measures would include keeping the local community informed of proposed construction activities.

An Environmental Management Plan (EMP) will be prepared for the construction and operation of the proposed facility once approval has been granted and the detailed designs are complete. The EMP will ensure that the commitments made in the EAR, and the requirements under subsequent approval and licence conditions are fully implemented. It will provide a framework for managing and mitigating the environmental impacts for the construction of the facility, and will also make provision for auditing the effectiveness of the proposed environmental protection measures and procedures.

The EMP will clearly outline who is responsible and when the commitments associated with mitigation and monitoring strategies should be implemented / undertaken.

For the purpose of the EAR the level of detail contained in a comprehensive EMP is not considered necessary, and as such the outline Statement of Commitments is provided. The Statement of Commitments will guide the preparation of the Environmental Management Plan and Environmental Monitoring Plan.

For ease of reference the commitments are provided in order of the key issues listed within section 6 of this report.

7.2 BUILT FORM AND DESIGN

7.2.1 Architectural Design

The building, associated works and operations of the HMRI building will be carried out generally in accordance with the EAR (included Appendices) and architectural plans nominated on the architectural drawing list (DCM/S2F) dated 31th July 2009. If there is any inconsistency between the plans, the EAR and conditions imposed by the consent authority then the conditions will prevail to the extent of the inconsistency.

7.2.2 Landscape Design

The proposed landscape design will be carried out generally in accordance with the Directory General's Environmental Assessment Requirements, the Bushfire Management Plan, and the landscape plans L-TP-01 – L-TP-06, prepared by EDAW AECOM, dated 31 July 2009.

In addition, the following aspects of site and landscape management will be addressed in the detailed design and landscape construction documentation:

- A final plant palette which consists of species indigenous to the surrounding site area;
- The protection during construction of existing trees to be retained;
- Where possible, the stockpiling and re-placement of site topsoils to planted areas, with amelioration through recycled compost and green waste;
- A mulch product which consists of locally resourced recycled product; and
- The use of locally sourced stone and aggregate in the paving materials.

7.2.3 BCA

The HMRI building will achieve compliance with the BCA through a combination of compliance with the deemed-to-satisfy (DTS) provisions and the documentation of alternative solutions in accordance with Clause A0.5 of the BCA, suitably prepared by a NSW Accredited Fire Safety Engineering to achieve compliance with the performance provisions of the BCA.

7.2.4 Access

MGAC (VIC) Pty Ltd has been applying the requirements of AS 1428 and the Disability Discrimination Act (DDA) for over 10 years. The DDA is a Federal Government legislation that seeks to ensure all new developments and refurbishments, infrastructure, services and transport projects provide functional, equitable and independent accessibility.

The key outcome of the DDA Consulting is to provide design and project sign off to the requirements of the Australian Standards 1428 series and the spirit of the DDA. MGAC's accessibility consulting will ensure the built environment meets the 'universal accessibility' design principles whilst also protecting the building owners against the DDA.

MGAC notes that where the Australian Standard or DDA requirements compromises the safety and security of anyone associated with the Hunter Medical Research Institute, or the particular area of research may require a skill base that excludes people with particular impairments, the security and safety or skill base requirement will override the regulatory requirements and therefore a DDA dispensation can be applied.

The HMRI building will be reviewed based on the following Statutory Requirements:

- Federal Disability Discrimination Act (DDA);
- Draft DDA Premises Standards;
- Australian Standards 1428.1- AS1428.4 series; and

- Building Code of Australia (BCA).

MGAC Project Commitments:

- MGAC commits to provide advice and assistance during all design stages to ensure that facilities allow full access for people with disabilities with reference to area functionality, safety and security;
- MGAC will assess project documentation to verify compliance with the requirements of the DDA Act and Building Code of Australia deemed to satisfy controls relating to disability access; and
- MGAC comments and advice incorporate a proactive liaison and coordination with other members of the consultant team.

7.3 TRANSPORT, TRAFFIC & ACCESS

In regard to traffic management, HMRI commit to the following:

- The proposal will provide car parking spaces and motor cycle parking designed in accordance with the relevant Australian Standards;
- Bicycle parking will be provided within the overall site footprint and will be determined as part of the detailed design of the facilities and agreed with Council at that time;
- A Travel Access Guide (TAG) should be prepared for staff and visitors to the HMRI building as indicated by the Ministry of Transport; and,
- Additionally, incentives to encourage public transport use should be identified at both the HMRI level and at Campus level, these could include:
 - Real time public transport information.
 - Car Pooling.
 - Flexible working hours.
 - Extend the Park and Ride Route.

7.4 BUSHFIRE

The following recommendations shall be adopted for the HMRI facility:

Recommendation 1:

Defendable Spaces to HMRI Building:

A Defendable Space of minimum 40 metre width shall be provided to the west, north, northwest and northeast of the HMRI Building. *[Refer to Attachment A].*

Recommendation 2:***Management of Defendable Space:***

The Defendable Spaces shall be maintained as an Inner Protection Area in accordance with Appendix 5 *Planning for Bushfire Protection 2006* and the NSW Rural Fire Service's 'Specifications for Asset Protection Zones'.

Recommendation 3:***Fuel Managed Area:***

The area of retained vegetation between the building and the Power Line Easement shall be managed as a fuel reduced zone. [Refer to Attachment A].

Recommendation 4:***Fire Management Plan for the Defendable Space/Fuel Managed Area:***

There shall be a Fire Management Plan prepared for the Defendable Spaces and fuel managed area. The Fire Management Plan shall provide the protocols for the management of the bushfire fuels and the maintenance of the fire trail network.

Recommendation 5:***Covenant for the management of the Asset Protection Zones:***

An 88b covenant shall be created on the title of the lot to ensure the ongoing management of the Defendable Spaces/Fuel Managed Area and Fire Trail.

Recommendation 6:***Construction Standards to the HMRI building:***

The north-western elevation of the building shall be constructed to comply with the 29kW/m² radiant heat specifications as defined by A.S. 3959 – 2009.

The remainder of the building shall be constructed to comply with the 12.5kW/m² radiant heat specifications as defined by A.S.3959 – 2009.

Recommendation 7:***Access for fire-fighting operations:***

The internal road network shall comply with the deemed-to-satisfy provisions of Section 4.1.3(1) [Access - Public Roads] and Section 4.2.7 [Access – Internal Roads] of *Planning for Bushfire Protection 2006*. A minimum pavement width of 6.5 metres shall be provided with 'No Parking to one side.

A parking lay-by shall be provided adjacent to hydrant booster valves so as to permit fire service vehicles to park clear of the road width.

Fire trails shall be constructed to comply with the provisions of Section 4.1.3(3) of *Planning for Bushfire Protection 2006* and shall have a minimum width of 4.0 metres within a cleared width of 6.0 metres. Passing bays shall be provided at 200 metre intervals.

Recommendation 8:***Water Supply for fire-fighting operations:***

Hydrants shall comply with the specifications of Australian Standard A.S 2419.2 and have a flow rate of 10 litres / second.

Fire hydrants shall be accessible and located such that a fire appliance can park within a maximum distance of 20 metres from a hydrant and the habitable building must be located such that a fire at the furthest extremity can be attacked by fire-fighters using two 30 metre hose lines and a 10 metre water jet. A clear unobstructed path between the hydrant and the most distant point of the building cannot exceed 90 metres.

Hydrants shall also be located to the northwest of the building to provide a water supply for bushfire fighting operations.

Recommendation 9:

Evacuation Plan:

An Emergency Evacuation Plan shall be prepared for the HMRI which establishes the emergency management protocols to address the safety of staff and visitors during emergencies which occur within or external to the Institute.

HMRI shall be responsible for establishing and maintaining an Emergency Management Committee [EMC] within the Institute. HMRI and the EMC shall be responsible for the daily management of the welfare of persons working in or visiting the Institute.

A copy of the Emergency Evacuation Plan shall be provided to the Local Emergency Management Committee [LEMC] and the local Emergency Services.

7.5 BIODIVERSITY

The recommendations contained within the Flora, Fauna & Threatened Species Assessment shall be adopted for the period of construction including:

- Clearing of hollow-bearing trees should be minimised where possible and those occurring within the bushfire APZ be retained if deemed appropriate under Planning for Bushfire Protection (NSW RFS 2006);
- All other hollow bearing trees proposed for clearing should be inspected for wildlife habitation by an appropriately qualified and licensed ecologist within one week before clearing commences. An ecologist should also supervise the clearing operations where necessary to avoid injury or death of native animals;
- Best practice erosion and sedimentation control methods should be adopted, enforced and maintained during construction;
- Potential fauna habitat trees should be retained where possible (i.e. *Eucalyptus punctata*, *Corymbia maculata*, *Allocasuarina torulosa* and *Acacia* species); and,
- The use of insecticides and herbicides within the study area should be avoided where possible to retain the integrity of the surrounding habitat for insectivorous Microchiropteran bats, Large Forest Owls and amphibian species.

7.6 DRAINAGE, STORMWATER AND GROUNDWATER MANAGEMENT

Typical standard building construction methodologies and practices to mitigate construction impacts will be implemented, including sediment and erosion control, dust management and stormwater management.

The contractor will be responsible for adequately managing / controlling site stormwater runoff with the aim of preventing erosion and deposition, specifically within water ways or stormwater drains.

The contractor will undertake sediment and erosion control awareness and education as part of the site induction or general induction for all personnel.

The contractor will be responsible for adequately implementing the requirements of the Sediment and Erosion Control Plan which will be specifically prepared for the site and proposed development as part of the Construction Certificate Phase. However, from a conceptual viewpoint, the Sediment and Erosion Control Plan will include specific requirements such as:

- All work is to be carried out in accordance with relevant ordinances and regulations; note in particular the requirements of Landcom's 'Managing Urban Stormwater, Soils and Construction' (the 'blue book').
- Install sediment protection filters on all new and existing stormwater inlet pits in accordance with the typical detail contained within the 'Bluebook'.
- All stormwater devices being upgraded are in full working order at the end of each days work.
- All stormwater devices in the designated route of vehicular access shall be protected from damage. All damage to stormwater devices during the works shall be repaired or replaced prior to the completion of works.
- Sediment and Erosion Control measures shall be installed prior to the commencement of construction and regularly maintained in accordance with the Engineering drawings and specifications.
- Stage the earthworks operations where appropriate to reduce the extent of the site that is 'open' and susceptible to erosion processes.
- Install a 'rumble strip' or 'shakedown' at all vehicle entrances / exists to reduce the likelihood of sediment being trafficked offsite. Manually remove (by means other than washing into stormwater drains) sediment tracked offsite on the adjacent roads.
- Use silt fences and staked hay bales to control runoff in individual building zones across the site.
- All trench (including all service trenches) shall be side-cast to the high side and closed at the end of each days work.
- Construct and maintain all material stockpiles in accordance with detail SD4-1 of the 'blue book'.
- Once cut/fill operations have been finalised all disturbed areas that are not being worked on shall be re-vegetated or sealed as soon as is practical.
- The Site Foreman (Contractor) shall be responsible for keeping a detailed written record of all erosion and sediment controls on site during the construction period. This record shall be updated on a daily basis and shall contain details on the condition of controls and any/ all maintenance, cleaning and breaches. This record shall be kept on site at all times and shall be made available for inspection by the principal certifying authority during normal working hours.

- To reduce the likelihood of suspended solids entering downstream stormwater drains; flocculate, settle and discharge stored water from the temporary sediment basin in accordance with the methodology outlined in the blue book.

All site operations will be undertaken with consideration given to their potential to produce dust. A management strategy of *avoid > minimise > control* shall be implemented.

The Contractor will instigate measures to minimise and control generation of dust from the site. These measures will include, but not be limited to:

- Program works around periods of significant and adverse meteorological conditions;
- Install wind fences around stockpiles in accordance with detail SD6-15;
- Maintain vegetation across the site where possible otherwise establish vegetation or seal disturbed site areas as soon as practical;
- Provide water trucks or sprinkling devices during construction as required to suppress dust; and
- Install and maintain protective cloth to perimeter fence to assist with dust suppression.

7.7 GEOTECHNICAL AND CONTAMINATION

7.7.1 Geotechnical

The proposed development will be constructed in accordance with the recommendations detailed within the Geotechnical Report prepared by Coffey Geotechnics which relate to:

- Excavations;
- Footings;
- Support of Excavations;
- Site Contamination; and,
- Mine Subsidence.

7.7.2 Mine Subsidence

Monitoring of ground subsidence

The risk of future subsidence is considered to be low but must be safeguarded against. Furthermore, the anticipated rate of subsidence movements are considered to be sufficiently low such that regular monitoring and re-levelling can be carried out should relative settlement values exceed trigger values.

Datum markers will be provided above every jacking point, ie at each column, both ends of a shear wall, and all four corners of a core. The as-built HMRI building will be surveyed so that any future subsidence can be correlated back to the as-built geometry to assess how much subsidence has occurred and the appropriate re-levelling performed. A guideline document will be produced to state

how regularly monitoring is to be done, and what the trigger points are for re-levelling. Please note that the jacks will be temporarily installed only as needed.

Re-levelling

When monitoring shows that the actual subsidence is approaching the normal building limits of 2mm in 1000mm, then it is proposed that the affected buildings will be re-levelled. As such, provision for jacking has been incorporated below the L1 ground slab at every vertical support. It is envisaged that jacking would be required if differential settlement limits of $L/500$ or $H/500$ were exceeded, which for instance, equates to 12mm between columns at 6600mm centres.

Re-levelling the building, or parts thereof, by means of jacks under the vertical structural elements is considered to be both a practical and cost-effective means to respond to imposed curvature and tilt. Isolation of the building footings from the surrounding rock mass by means of slip membranes and compressible joints will accommodate imposed ground surface strains.

These design principles were accepted by the Mine Subsidence Board on 12 August 2009.

Conclusion

So in summary, damage from any future mine subsidence will be controlled by

- The structural provision for re-levelling; and,
- The careful articulation details for incoming and outgoing building services at the building perimeter.

7.8 CONSTRUCTION IMPACTS

7.8.1 Noise & Vibration

The mitigation measures identified by ArupAcoustic are implemented and maintained through the construction period.

7.8.2 Stormwater Management

The proposal includes:

1. Roof water collection and reuse as per the Building Hydraulics Report.
2. Collection and treatment of runoff from paved surfaces to remove waterborne pollutants. The proposal incorporates vegetated swales in accordance with Newcastle City Council's DCP 2005, 'Element 4.5 Water Management'. There is potential to fit the swales with additional bioretention treatment to further enhance the treatment of runoff as required.
3. Surface water infiltrating into the ground will be managed using conventional techniques (water proofing membranes, subsoil drainage pipes, etc) to maintain slope stability and

pavement integrity. The geotechnical investigation report, undertaken by Coffey (ref. GEOTWARA20576AB-AC) indicates that ground water profiles are relatively low and should not result in any significant effects.

4. Collection of surface runoff derived from upstream catchments from a small area to the North West. This runoff will be collected and conveyed to prevent impact upon the new building and discharged to maintain the status quo (i.e. utilising the same discharge point as currently occurs).
5. Onsite detention of an initial volume of rainfall in 'site discharge controls' emulating the runoff characteristics of more natural site conditions. The proposal incorporates detention in vegetated swales fitted with check dams, a roof water storage tank and enhancement of the existing detention basin.
6. Erosion and scour control at the site outlet.
7. Surface levels have been graded to ensure the site is free draining and excess waters do not enter buildings when the underground drainage systems are operating above their design capacity.

Stormwater Management will be carried out as detailed above in **Section 7.6** of this report.

7.8.3 Dust and Erosion Control

The contractor shall implement the requirements of the 'Sediment and Erosion Control Plan' which will be specifically prepared for this site and proposed development as part of the Construction Certificate Phase.

The Contractor shall instigate measures to minimise and control generation of dust from the site. The measures shall include but not be limited to:

- Program works around periods of significant and adverse meteorological conditions.
- Install wind fences around stockpiles in accordance with detail SD6-15.
- Maintain vegetation across the site where possible, otherwise establish vegetation or seal disturbed site areas as soon as practical.
- Provide water trucks or sprinkling devices during construction as required to suppress dust.
- Install and maintain protective cloth to perimeter fence to assist with dust suppression.

7.8.4 Waste Management

All waste / surplus building material from the construction phase of the proposed development will be recycled wherever possible. A detailed Waste Management Plan will be incorporated into the detailed Environmental Management / Construction Plan.

7.8.5 Traffic and Pedestrian Access Management

A Construction Traffic Management Plan will be prepared and submitted to Council prior to any construction activity commencing on site. Construction is expected to take approximately 24 months over which period there will be up to 200 workers at the peak. The issue of where there workers will park has been considered as part of this assessment and, whilst the details of the construction method have not been finalised, the following options have been identified:

1. Stage 1 'Enabling Works' are planned to reconstruct the existing 150 bay car park. This will be undertaken by a small gang of workers who would be able to park on the waste ground alongside the car park. These workers would then construct the 250 parking bays to coarse level so they can be used for contractor parking and construction materials. The workers temporary parking area will be allocated to accommodate all workers identified onsite;
2. Workers park at the Energy Australia stadium or elsewhere as arranged by the construction company, and are bussed to the Hospital complex. This will require a temporary supplement to the capacity of the existing shuttle bus service;
3. Negotiations with the building should include a clause in the contract specifying no contractor parking will be permitted other than in specific areas; and,
4. Construction staff must be discouraged from parking in the residential area to the east of Lookout Road.

The quantity of construction traffic will be determined by the construction time table, however some controls will be put in place including the following:

- Construction traffic will be encouraged to avoid the peak on-street traffic periods;
- Construction traffic will be encouraged to use Jacaranda Drive where possible to reduce the use of the intersection of Kookaburra Circuit and Lookout Road and potential impacts on other essential services on the campus; and,
- Having some specific deliveries undertaken on weekends to avoid blocking Kookaburra Drive.

7.8.6 Cut and Fill

The proposal shall where possible:

- Minimisation of cut and fill earthworks to limit impacts to the existing site and reduce the need for exportation or disposal of excess cut and the importation of fill.
- Cut and fill balance across the site, requiring minimal exportation or importation of bulk earthworks.
- Revegetation of batter slopes to reinforce slope stability and minimise sediment movement from the site.

7.9 OPERATIONAL IMPACTS

7.9.1 Noise from Plant and Equipment

The mitigation measures and design solutions proposed by ArupAcoustics are included within the final building design.

7.9.2 Waste Management

All liquid trade waste water generated from the HMRI facility will be pre treated prior to discharging to the Hunter Water Corporation sewer. This will be in compliance with the HMRI Liquid Trade Wastewater agreement with Hunter Water Corporation.

Further details of the liquid trade waste discharge are included in **Appendix R** of this report.

7.9.3 Site Security and Lighting

The Security management plan for the John Hunter Hospital Campus will be revised to include the new HMRI facility. Details of the precise operational requirements and procedures are to be agreed between HMRI and John Hunter Hospital.

All staff to the new HMRI facilities will be issued with security photo identification access cards. Access permissions will be programmed for each individual as determined by HMRI.

Electronic lockdown of the facility will occur outside of business hours. Exact times to be agreed with HMRI. Access to the building outside of working hours will be restricted to authorised personnel and programmed into their access cards.

Staff duress buttons are proposed for the reception and contact rooms.

CCTV coverage is proposed to cover the external entry points to the facility, public areas, entrances to the bioresources area and the entrance to the car park.

The provision of night patrols to the external of the building are to be determined by HMRI.

Lighting will be provided in accordance with AS/NZS 1158 to car parks, pathways, roads and building perimeter to provide a safe environment for the movement of vehicular traffic and pedestrians.

External lighting will be designed to limit light pollution in accordance with AS4282. External lighting will be controlled via a daylight sensor. Light fittings selected will have an efficacy of not less than 60 lumens/W to comply with section J6 of the BCA.

Internal lighting will be designed in accordance with AS 1680 and section J6 of the BCA.

Emergency and exit lighting will be provided in accordance with AS2293 and the BCA.

7.9.4 Emergency Procedures

HMRI will manage the building under a fire safety policy which includes:

- A fire safety management plan in accordance with AS3745; including procedures for the safety of people in buildings, structures and workplaces during emergencies, the appointment of an Emergency Planning Committee and setting up of an Emergency Control Organisation;
- Good house keeping and fire prevention procedures such as maintaining clear evacuation routes;
- Regular maintenance of all fire safety systems;
- Fire training of staff, including evacuation procedures and use of fire fighting equipment, undertaken at regular intervals.

The HMRI building is to be provided with sprinkler protection and smoke detection throughout. These systems will be connected to the Sound System and Intercom System for Emergency Purposes (SSISEP) and will be monitored by the Fire Brigade. The building will have a Fire Indicator Panel (FIP) located at the main entrance to the building.

The Fire Brigade on arrival will take control of the emergency.

7.9.5 Fire Safety

The Fire Engineering Report will include detailed information relating to the proposed egress strategy for the building.

The building is to be served by 3 fire-isolated stairs discharging direct to the outside at level 1 (ground level). In addition, occupants can evacuate horizontally into an adjoining fire compartment, if safe to do so. Emergency lighting and directional signage will be provided to help occupants identify the location of exits and exit routes quickly and easily. Sprinklers provided throughout the building will significantly reduce the likelihood of a large fire developing in the building. The smoke detection and occupant warning system will provide occupants with early warning in the event of a fire, and the Sound System and Intercom System for Emergency Purposes (SSISEP) will provide occupants with additional warning and further information in relation to safe evacuation procedures in the event of a fire.

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- Regular maintenance of all fire safety systems; and
- Fire training of staff, including evacuation procedures and use of fire fighting equipment, undertaken at regular intervals.

7.9.6 Signage

External Signage to direct visitors to the new facility will be coordinated with HNEAHS requirements. Signage is intended to be easily comprehended by all users of the building and the following DDA requirements to comply with AS 1428.1, Clause 14, will be adopted:

- Place signage (including Braille) and international symbols at all major crossovers, accessible entrances and exits, emergency exits, common areas lifts, & toilets.
- Accessible signage can be produced in different colours and on different surfaces e.g. brass, ensure the colour contrast is significant between the background and symbol / letter colours.
- Where an accessible pathway or route is different to the main route, signage including the international logo for access should be clearly highlighted, (Highlight changes in surface materials for nature pathways).
- Braille signage shall be provided on all gender and unisex toilet doors and signage boards located at a height of 1500mm.
- Signage to include international symbol for people with disabilities, directional arrow and a written explanation.
- Symbol size shall be the following according to viewing distance:-
 - o < 7 metres - 60mm X 60mm
 - o > 7 < 18 metres - 110mm X 110mm
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 - o 6 metres - 20mm
 - o 15 metres - 50mm
 - o 35 metres - 100mm
 - o 50 metres - 150mm
- Directional signage shall be installed at a height not less than 1500mm and provided in an accessible sightline location.
- All signage should provide a distinct contrast to the background colour/s with colours such as pastels and reflective colours being avoided.

7.10 ESD MEASURES

The key ESD goals are:

- Minimise the impact of the construction process; and
- Minimise the impact of the building operation while improving the researcher experience.

To achieve this, the HMRI building shall implement measures related to:

- Water reuse and demand management;
- Energy efficiency; and

- Recycling and waste disposal.

A number of other measures have been identified that provide additional value to the project.

7.11 SERVICES

The following electrical infrastructure work will be carried out in accordance with the services reports in **Appendix R** of this report.

- Electrical power services;
- Lighting;
- Fire detection;
- Emergency Warning and Intercom System;
- Communications services; and
- Security Services.

The following hydraulic services infrastructure work will be carried out in accordance with the services reports in **Appendix R** of this report.

- Water service;
- Sewer drainage service; and
- Natural gas service.

8.0 Justification for the Proposal

8.1 MEETING PROJECT OBJECTIVES

The main objective of the proposed development is to allow HMRI to continue to develop a world class health and medical research facility for the Hunter region with minimal impact on the immediate and surrounding natural and built environment.

8.2 ECOLOGICAL SUSTAINABILITY

Ecologically sustainable development (ESD) has emerged as the primary objective of environmental protection in NSW. ESD is defined under the Local Government Act 1993 as requiring the effective integration of economic and environmental considerations in decision-making processes. Sustainability encompasses a range of considerations under the principles of ecologically sustainable development.

A building on a partially developed part of a hospital site is generally consistent with sustainable patterns of land use. The building will provide significant social benefits thorough the provision of a medical research and development facility without adverse environmental or economic effects.

No particular environmental threats have been identified as arising from the proposed development. Where issues have arisen, adequate management and mitigation measures are proposed. The potential effects of the development are such that the likelihood of environmental harm is very low. No unacceptable risks of development or environmental harm have been identified.

The proposal is subject to a rigorous and public environmental assessment process, which ensures that issues and risks to the environment are appreciated and understood. Consultation with the community and public authorities has commenced and will continue as part of the assessment process.

The proposed development is in keeping with the principles and practice of ecologically sustainable development. Specific matters under the principles of ecologically sustainable development are addressed below.

8.2.1 *Integration*

The development proposal integrates environmental social and economic considerations. The development proposed is consistent with applicable planning policies. The proposal provides for urban infrastructure development without significant environmental risk. The proposal achieves the balance generally sought by planning policy.

8.2.2 *Precautionary Principle*

A risk adverse approach to development is promoted by the precautionary principle.

Threats

There are no particular environmental threats arising from the proposed developments as adequate management and mitigation measures can be implemented. The development area is not flood prone and has adequate setbacks to the local bushfire hazards. Mine subsidence will be adequately investigated prior to construction commencing.

Risk

The likely effects of development are such that the likelihood of environmental harm is very low. The effects of the development can be adequately managed with standard mitigation measures and processes. The risk of loss of biodiversity or ecological integrity is very low.

Unacceptable Risks

No unacceptable risks of development have been identified. Bushfire risks have been addressed via the application of asset protection zones.

Proportionality

The management measures proposed as part of the development are in proportion to the likely risk and potential effects.

8.2.3 Inter-generational Equity

The development does not involve a potential loss of opportunity or resources for future generations. Improved and increased health services are an investment in the future.

8.2.4 Conservation of Biodiversity and Ecological Integrity

The proposal will not result in a loss of biodiversity. Ecological integrity will be protected through appropriate stormwater controls. The location of the development within an urban footprint is consistent with minimising ecological effects.

8.2.5 Improved Valuation, Pricing and Incentive Mechanisms

HMRI will pay for the establishment of infrastructure and for appropriate environmental management measures on the development areas of the site. Longer term management costs will be borne by HMRI as the operator of the research facility consistent with the polluter pays principle.

8.2.6 Environmental Assessment

The proposal will be subject to a rigorous and public environmental assessment process under Part 3A of the Environmental Planning and Assessment Act. This includes assessment of matters under the Commonwealth Environmental Protection and Biodiversity Conservation Act. The EA process under Part 3A ensures that a broad range of issues are considered and weighed appropriately for the development.

8.2.7 Public Consultation

Consultation with the community and public authorities has commenced and will continue as part of the assessment process. The consultation process provides for input from a diverse range of individuals, interest groups and statutory authorities consistent with the social aspects of sustainability.

8.2.8 Conclusion

The proposed medical research and development facility is in keeping with the principles and practice of ecologically sustainable development.

8.3 MEETING ENVIRONMENTAL PERFORMANCE REQUIREMENTS

The site is ideally suited to the proposed development as it is not an area of particular environmental vulnerability, nor does it have special social or economic value for any other land use. As such, with the implementation of appropriate mitigation measures, the environmental performance requirements of the development during and post construction will be easily met. A monitoring program will be implemented to ensure the performance of construction of the facility, and contingency plans with appropriate responses and corrective actions will form part of the site Environmental / Construction Management Plan.

8.4 SAFEGUARDING PUBLIC HEALTH

It is considered that the proposed facility will have a negligible impact on public health due to:

- The adequate separation distance of the building from the nearest residential areas and schools;
- The nature of the intervening land uses and their role as a buffer; and
- The incorporation of a range of strict controls on emissions to water and the acoustic environment.

Any unforeseen public health impact will be addressed and managed by a contingency plan within the site Environmental Management Plan.

8.5 PUBLIC INTEREST

The HMRI building will support the continued growth of HMRI, which is already the third largest medical research institute in NSW. The building will attract leading researchers, clinicians, and the best doctors and health specialists to the Hunter, ensuring that the community receives the best health care. It will also boost the local economy and create more jobs. Additionally, world class facilities, supported by outstanding researchers, will provide long term career opportunities for researchers in the Hunter.

With an estimates works value of \$75 million dollars, the development represents a significant capital investment at the John Hunter Hospital Precinct and shall provide for short and long term employment within the region for construction and research/medical related industry.

It is considered the project is in the public interest of the local community, and broader Hunter Region.