Lismore Base Hospital Stage 3C

Document Number:

LBH-PP-JH-Y-0004-07-CEMP

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

PROJECT 7204B

Lismore Base Hospital Stage 3C

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Revisions and Distribution

REVISIONS

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REVISION LIST

Rev	Date	Prepared by (Name and Signature)	Reviewed by (Name and Signature)	Approved by (Name and Signature)	Change Remarks (Include Section, Page and Details)
00	24/05/2014	Brian McGuiness	Brett Popham	Brett Popham	Initial Issue
01	11/06/2014	Brian McGuiness	Brett Popham	Brett Popham	Revised Waste ECP and inclusion of Noise & Vibration ECP
02	08/05/2015	Brian McGuiness	Brett Popham	Brett Popham	Revised to include Stage 3B1
03	22/05/2015	Brian McGuiness	Brett Popham	Brett Popham	Revised following DLCS audit
04	01/09/2015	Brian McGuiness	Brett Popham	Brett Popham	Review and reissue
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06	21/04/2017	Michael Sawyer	Brett Popham	Brett Popham	Minor updates to CEMP and ECPs following review
07	29/03/2018	Michael Sawyer	Brett Popham	Brett Popham	Updated scope for North Tower

AMENDMENT RECORD

Rev	Amendment Record	Section	Page
00	Initial Issue – For Principal review	All	All
01	Updated – Revised Waste ECP and inclusion of Noise & Vibration ECP	App 8 – Revised JH-ECP-ENV-005 & add JH-ECP-ENV-004.	Appendix 8 only
02	Updated – Revised to include Stage 3B1 of the project	All	All
03	Revised following DLCS audit	EMP: Appendix 5	51

Rev	Amendment Record	Section	Page
		EMP: Appendix 6 ECP 1: Sect. 7 ECP 2: Sect 9.1 ECP 3: Sect 5.2 ECP 5: Sect 9 ECP 6: Sect 9	55 66 75 91 103 116
04	Review and reissue	Table 4 Table 12	24 38
05	Revised for Stage 3B	All	All
06	Minor updates to CEMP and ECPs following review	Appendix 1 CEMP Sect 5.5 and Dust and Air Quality ECP Water Quality Erosion Sediment Control plan Sect. 11	45 23, 63 74
07	Updated scope for North Tower changes	Project Scope	15, 16

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Table of Contents

1 Definitions and Abbreviations

Definitions and abbreviations to be applied to the Lismore Base Hospital Stage 3B Redevelopment are listed below.

Table 1: Definitions and Abbreviations

Term/Abbreviation	Definition
AMS	Activity Method Statement – a planning process to determine detailed methodology which breaks down and analyses individual WRA work elements. Also referred to in the industry as Work Method Statement (WMS).
AS/NZS	Australian Standard/New Zealand Standard
Best Practice Environmental Management	The best practice environmental management of an activity is the management of the activity to achieve an on-going minimisation of the activity's environmental harm through cost-effective measures assessed against the measures currently used nationally and internationally for the activity. When deciding the best practice environmental management of an activity, regard must be given to the following measures: a) Strategic planning by the person carrying out, or proposing to carry out the activity b) Administrative systems put into effect by the person, including staff trained and monitoring and review of the systems c) Public consultation carried out by the person d) Product and process design e) Waste prevention, treatment and disposal
Clean waters	Upstream (or run on) waters, the condition of which has not been affected by construction work or related activities
Construction work site	Individual defined work area which forms part of the construction site
Construction zone	The area in which all work takes place, including any ancillary areas necessary for the undertaking of the project
Consultant	The party engaged to perform the design, preparation of detailed 'For Construction' documentation and necessary certification to meet contractual requirements.
Contamination	Contamination of the environment is the release (by act or omission) of a contaminant to the environment
DA	Development Approval/Consent relevant to the works including the main works, the demolition of three houses on Little Uralba Street and the car parking site at 42 McKenzie Street, Lismore
D&C	Design and Construct
ECP	Environmental Control Plan – defines management measures for a specific environmental aspect
EIFR	Environment Incident Frequency Rate
EIS	Environmental Impact Statement
CEMP	Construction Environmental Management Plan – this document
EMS	John Holland's Environmental Management System

Term/Abbreviation	Definition
Environment	Components of the earth, including: a) Land, air and water and; b) Any layer of the atmosphere; and c) Any organic or inorganic matter and any living organism; and d) Human-made or modified structures and areas And includes interacting natural ecosystems that include components referred to in a – c. (*Protection of the Environment Operations Act 1997*)
Environmental Aspect	An element of the Project that has potential to cause environmental impacts
Environmental Impact	A change to the environment, positive or negative, caused by environmental aspects
EMM	Environmental Management Manual
EPBC Act	Environmental Protection and Biodiversity Conservation Act (Commonwealth) - legislation to protect and manage matters of national environmental significance
ESD	Ecologically Sustainable Development
HI	Health Infrastructure (NWS)
Hold Point	An identified point in a process which John Holland or its subcontractor must not proceed without direction from a nominated authority
HSC	Health and Safety Committee
IMS	Integrated Management System
Incident (environmental)	An incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise. (*Protection of the Environment Operations Act 1997*)
Incident (noise)	The emission of an offensive noise; a) that by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances: i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations. (*Protection of the Environment Operations Act 1997*)
ITP	Inspection and Test Plan – defines the steps to be taken to check and verify an activity or product
JH	John Holland
JHET	John Holland Event Tracker
KPI	Key Performance Indicator

Term/Abbreviation	Definition
LBH	Lismore Base Hospital
Mitigation Measures	Mitigation measures may include a wide range of measures such as, but not limited to, changes in work procedures and practices, physical interventions to separate or buffer places from predicted construction impacts or physical relocation of affected parties for agreed periods of time. Such measures must be directed to achieving the environmental objectives and performance criteria, the statutory requirements, and must be consistent with the conditions of an approval.
NCR	Non-conformance/Compliance Report
NGER	National Greenhouse and Energy Reporting
OEH	NSW Office of Environment and Heritage
OEM	Operations Environment Manager
OH&S	Occupational Health and Safety
PER	Project Environmental Representative
Performance Criteria	The performance criteria are results contributing to the overall objectives. If all performance criteria are met, the objective will be achieved. Where possible these criteria should be measureable and monitored to assess level of achievement
PM	Project Manager
PMP	Project Management Plan
Pollution (air)	The emission into the air of any air impurity (*Protection of the Environment Operations Act 1997*)
Pollution (land)	Placing in or on, or otherwise introducing into or onto, the environment (whether through an act or omission) any matter, whether solid, liquid or gaseous: a) That causes or is likely to cause degradation of the environment, resulting in actual or potential harm to the health or safety of human beings, animals or other terrestrial life or ecosystems, or actual or potential loss or property damage, that is not trivial, or b) That is of a prescribed nature, description or class or that does not comply with any standard prescribed in respect of that matter, but does not include placing in or on, or otherwise introducing into or onto, land any substance excluded from this definition by regulations. (*Protection of the Environment Operations Act 1997*)

Term/Abbreviation	Definition
Pollution (water)	a) Placing in or on, or otherwise introducing into or onto, waters (whether through an act or omission) any matter, whether solid, liquid or gaseous, so that the physical, chemical or biological condition of the waters is changed, or b) placing in or on, or otherwise introducing into or onto, the waters (whether through an act or omission) any refuse, litter, debris or other matter, whether solid or liquid or gaseous, so that the change in the condition of the waters or the refuse, litter, debris or other matter, either alone or together with any other refuse, litter, debris or matter present in the waters makes, or is likely to make, the waters unclean, noxious, poisonous or impure, detrimental to the health, safety, welfare or property of persons, undrinkable for farm animals, poisonous or harmful to aquatic life, animals, birds or fish in or around the waters or unsuitable for use in irrigation, or obstructs or interferes with, or is likely to obstruct or interfere with persons in the exercise or enjoyment of any right in relation to the waters, or c) placing in or on, or otherwise introducing into or onto, the waters (whether through an act or omission) any matter, whether solid, liquid or gaseous, that is of a prescribed nature, description or class or that does not comply with any standard prescribed in respect of that matter, and, without affecting the generality of the foregoing, includes: d) placing any matter (whether solid, liquid or gaseous) in a position where: 1) it falls, descends, is washed, is blown or percolates, or 2) is likely to fall, descend, be washed, be blown or percolate, into waters, onto the dry bed of any waters, or into any drain, channel or gutter used or designed to receive or pass rainwater, floodwater or any water that is not polluted e) placing any such matter on the dry bed of any waters, or in any drain, channel or gutter used or designed to receive or pass rainwater, floodwater or any water that is not polluted, if the matter would, had it been placed in any waters, have polluted or have been likely to pollute those waters. (*Protection of the Environment Operations Act 1997)*
PSR	Project Safety Representative
PP	Process Procedure – A work instruction, which details the technical/engineering/safety/quality/environmental methodology for a particular activity
Principal (Client)	The party to whom John Holland is contracted for a Project, namely Health Infrastructure
Principal's Representative	The person appointed by the Principal to perform the duties of the Principal as defined in the GC21 Edition 2 contract
Sensitive Place	Any of the following: a) a dwelling b) a library, child care centre, kindergarten, school, college, university or other educational institution c) a hospital, surgery or other medical institution or d) a commercial premises relying on calibrated equipment or computers sensitive to vibration

Term/Abbreviation	Definition
SEP	Site Environmental Plan – site level document providing a map or spatial representation of the site identifying the location of specific environmental controls and sensitive areas, and detailing practical environmental management methods to be implemented at specific work sites
SQE	Safety, Quality and Environment
Subcontractor	Any company, body or person who is contracted to John Holland for the purpose of supplying plant and/or services
System Element	The administrative activities that need to be implemented and controlled to ensure that the product or service meets environmental requirements
The Project	Lismore Base Hospital Stage 3B Redevelopment
TMP	Traffic Management Plan
TRA	Task Risk Assessment – Specific risk assessment based on day to day tasks, facilitated by supervision and involving consultation with workforce before task is undertaken. Signed off by all people undertaking the task.
WRA	Workplace Risk Assessment – High level strategic risk assessment conducted on workplace and broken down into work components for the purpose of identifying system, training and legislative requirements, and identifying the need for further detailed planning and risk assessment activities. The WRA also fulfils the function of an aspects and impacts register.

2 Introduction

2.1 Purpose and Application

2.1.1 Environmental Management Plan

Reference Doc No.	Reference Title
JH-MAN-ENV-001	Environment Management Manual

This Construction Environmental Management Plan (CEMP) for the Lismore Base Hospital Stage 3B Redevelopment (The Project) describes the John Holland (JH) system for managing and minimising the environmental impacts of its activities, meeting its legislative and contractual obligations and providing a means of continually improving environmental performance.

This CEMP provides a 'road map' for the implementation of the Project Environmental Management Systems (EMS), including plans, procedures and forms. It provides directions to the documents required to address Environmental Management for the Project. This CEMP is for use by all Project personnel and subcontractors during the Project:

- Procurement;
- Construction; and
- Commissioning

The CEMP has been developed in accordance with the requirements of ISO 14001 and the John Holland Environmental Management System. It incorporates:

- Legislative and contractual requirements and other environmental obligations
- Development approval conditions
- John Holland Environmental Policy objectives
- Objectives and measurable targets associated with the potential environmental impacts of the Project
- Processes and procedures that John Holland will adopt to identify, manage and control the environmental aspects and impacts (using a risk management approach)
- Provision of adequate resources and allocation of responsibilities for ensuring the effective implementation of this CEMP
- Methods for maintaining records and requirements for reporting
- Process for monitoring and reviewing the environmental management performance of the Project to drive continual improvement.

This EMP has been reviewed and updated on Contract Award to incorporate all relevant contractual information and obligations.

2.2 Environmental Policy

Reference Doc No.	Reference Title
JHG-POL-GEN-002	John Holland Group Environment Policy

The Project and any nominated subcontractors of John Holland will operate in accordance with the John Holland Environmental Policy as shown in Appendix 1.

The policy is reviewed and endorsed on an annual basis by the Group Managing Director to ensure it's on going suitability and effectiveness.

The Project's commitment to the Environmental Policy will be demonstrated by:

- Communication of the policy intent to all staff through inductions, notice board displays and project meetings
- Provision of adequate resources and assigning responsibilities to implement and maintain the EMS
- Achievement of the Project Targets/Objectives and regular reviews to manage their suitability and effectiveness
- Provision of the Environmental Policy on public request.

3 Global Mandatory Requirements

Reference Doc No.	Reference Title
JHG-STD-WHS-09	Site Environment Management
JHG-STD-WHS-10	Clearing, Water Management & Earthworks
JHG-STD-WHS-11	Resources, Recycling and Waste Management

The Global Mandatory Requirements (GMRs) outline the control strategies and minimum standards for managing, and where possible, eliminating the key risks we are exposed to across our business.

These standards will assist the business to:

- Minimise the impact of our activities on the environment and communities
- Reduce our use of natural resources and energy, and the generation of waste
- Be a reliable and trustworthy partner to our customers, dedicated to providing environmentally sustainable solutions throughout our diverse business.

With a wide variety of environmental legislation and regulations across our operations, as well as the unique needs of each workplace, it can be a challenge to identify and comply with all environmental requirements. The new GMRs set environmental standards that can be applied across John Holland to ensure a consistent approach to environmental management. The three environment GMR's and their intents are outlined below:

GMR 9: Site Environment Management

Intent: To prepare the work area, protect the surrounding environment and minimise impacts to the community

GMR 10: CLEARING, WATER MANAGEMENT AND EARTHWORKS

Intent: To ensure the environment is protected during earthworks and clearing activities

GMR 11: RESOURCES, RECYCLING AND WASTE MANAGEMENT

Intent: To manage resources efficiently, prevent pollution and minimise waste

4 Health, Safety and Environment (HSE) Behavioural Framework

Presented as four core themes; 'Standards', 'Communication'; 'Risk management' and 'Involvement'; our HSE behaviours describe a set of everyday behaviours that are expected of all employees and people we work with to drive better HSE outcomes. These themes are the key elements of a culture that displays strong HSE performance. The HSE Behavioural Framework integrates on-site planning and management of environmental aspects with our approaches to health and safety. This extends to the way we manage subcontractors, carry out regular inspections, deal with incidents and identify lessons learned and improvement opportunities.

The HSE Behaviours are a set of behaviours that, if displayed consistently, will support strong safety and environment performance at a workplace. The HSE Behaviours are outlined in a simple framework below that is easy to understand.

Theme	Everyone	Supervisors	Managers
Standards	Follow rules	Ensure compliance	Set high standards
Communications	Speak up	Encourage the team	Communicate openly
Risk management	Be mindful	Promote risk awareness	Confront risk
Involvement	Get Involved	Involve the team	Involve others

Represented in the framework above are twelve cells that identify HSE behaviour expectations set out across three employee groups noted as Everyone, Supervisors and Managers, and the four

themes. Each cell is interdependent of each other and is supported by a set of behaviours that are expected of people and a set of behaviours that are considered undesirable.

Below is an example of the guidance that sits behind one of the behaviours:

As part of the EMP, the HSE behaviours can be incorporated within:

- **Inductions & Training** – to communicate the expected HSE Behaviours to staff, subcontractors and workforce
- **Toolbox & Pre Starts** - to communicate expected HSE Behaviours to workplace members as they relate to a specific task or change in hazards/risks
- **Audits and reviews** – to identify a workplace's strengths.

In addition this project will have a HSE Behavioural Plan that will provide the framework for incporating the desired behaviours though all levels of project delivery.

5 Project Scope

Reference Doc No.	Reference Title
JH-MPR-PMA-001	Project Launch

John Holland Pty Ltd has been awarded the design finalisation and construction contract for the Lismore Base Hospital – Stage 3B2 (New North Tower Building) Redevelopment. The Lismore Base Hospital is located at 60 Uralba Street, Lismore, NSW, 2480. The site is approximately 5,000 sqm with site frontage along Little Uralba Street which is a steep one way residential street and adjacent to the new Ambulance entry bay. The site is heavily sloping and is constrained by adjacent hospital buildings to all perimeters and private residencies along Little Uralba Street.

The Principal has nominated John Holland Queensland Pty Ltd as "Principal Contractor" under Workplace Health & Safety Act 2011 (NSW) for the works with site possession from 23 August 2016 for Early Works Delivery phase.

The project involves design & construction structure and fit out of Level 3 to level 10, completion & commissioning of North Tower and coordination of imaging equipment relocation to North Tower.

The design phase includes consultation with Health Infrastructure and compliance with relevant codes, standards, guidelines.

The major project stakeholders are:

- Health Infrastructure (HI) – Project Principal
- CBRE – The Principal's Project Management company for the project, engaged by HI
- Lismore Base Hospital – Staff, users and visitors including the Local Health District Representatives (LHD)
- Local Indigenous Community
- Local and surrounding community and residents – Benefit through construction and at completion with a the new Renal and Emergency Departments
- Local Authorities – Including Lismore City Council, Essential Energy, Rous Water, Telstra, NSW Fire & Rescue, Northern Rivers Buslines, local Gas provider.
- John Holland as Design Finalisation and Construction Contractor
- Conrad Gargett – Principal Consultant (Architect) to John Holland
- Design Consultants –other Consultants to design relevant work disciplines
- Building Subcontractors – Engaged by John Holland to construct the project

The Principal has nominated John Holland as "Principal Contractor" under Workplace Health and Safety Act 2011 (NSW). Any individual or company engaged on the project will comply with John Holland's Safety System including Workplace Risk Assessment, Activity Method Statements, Task Risk Assessment and Start Cards as a minimum.

5.1 Hours of Work

The hours of construction as nominated by the DA, including delivery of materials to and from the site shall be restricted as follows:

a) Between 7:00AM and 6:00PM, Mondays to Fridays inclusive
b) Between 8:00AM and 1:00PM, Saturdays
c) No work on Sundays or Public Holidays
d) Works may need to be undertaken outside these hours where:
    - The delivery of materials is required outside these hours by the Police or other authorities
    - Large scale critical tasks are required to be completed in one shift (e.g. tower crane erection and dismantle)
    - It is required in an emergency to avoid the loss of life, damage to property and/or prevent environmental harm
    - Variation is approved in advance in writing by the Director-General or his nominee

All rock breaking, rock hammering, sheet piling, pile driving and similar activities shall only be undertaken within the following hours, unless prior approval is provided by the Director-General:

a) 9:00AM to 12:00PM, Monday to Friday
b) 2:00PM to 5:00PM, Monday to Friday; and
c) 9:00AM to 12:00PM, Saturday

5.2 Site Contact Details

Project Manager:

Brett Popham,

M: 0419 519 889 (24 hrs)

E: brett.popham@jhg.com.au

Site Manager:

Justin Ingram

M: 0437 747 006

E: justin.ingram@jhg.com.au

5.3 Receiving Environment

The Environmental Impact Statement prepared by City Plan Services for the development of Lismore Base Hospital (LBH) Redevelopment dated July 2013 (the EIS) states that the area surrounding the site is currently in transition. Traditionally, the land surrounding the hospital has been predominantly residential; however over time hospital related uses have emerged due to the presence of the LBH and the University Centre for Rural Health. This has created a more substantial 'health' precinct in the locality.

5.3.1 Natural Features

The EIS states that the LBH campus sits on a ridge line and falls away to the north. The north-western part of the site is located within the "low risk flood area" which is defined by the limit of the probably maximum floor level contour. The 1:500 year ARI flood level in this area of Lismore is about RL 13.3 and the probable maximum flood level contour is at RL 15.8.

The development site is located in the south-eastern part of the LBH campus and is located at the most elevated point of the site. The development site is not subject to any flood risk area and is above the probable maximum flood level.

The LBH campus also contains a number of trees which comprise a mix of native and exotic species and there is no remnant vegetation on site. The development site was cleared of trees prior to John Holland taking possession of the site for construction by an 'Enabling Works Contractor' as separately engaged by the Principal prior to previous Stage 3A works.

5.3.2 Adjoining Uses

The EIS notes that the site is located within a transitional precinct that is historically residential, but is gradually emerging into a mixed-use and more prominently health-related precinct. The proposed new hospital building in the south-east corner of the site will directly adjoin health-related uses to the south and residential uses (predominantly) to the east (but for the presence of respective roads).

Figure 1: Location of Stage 3 development

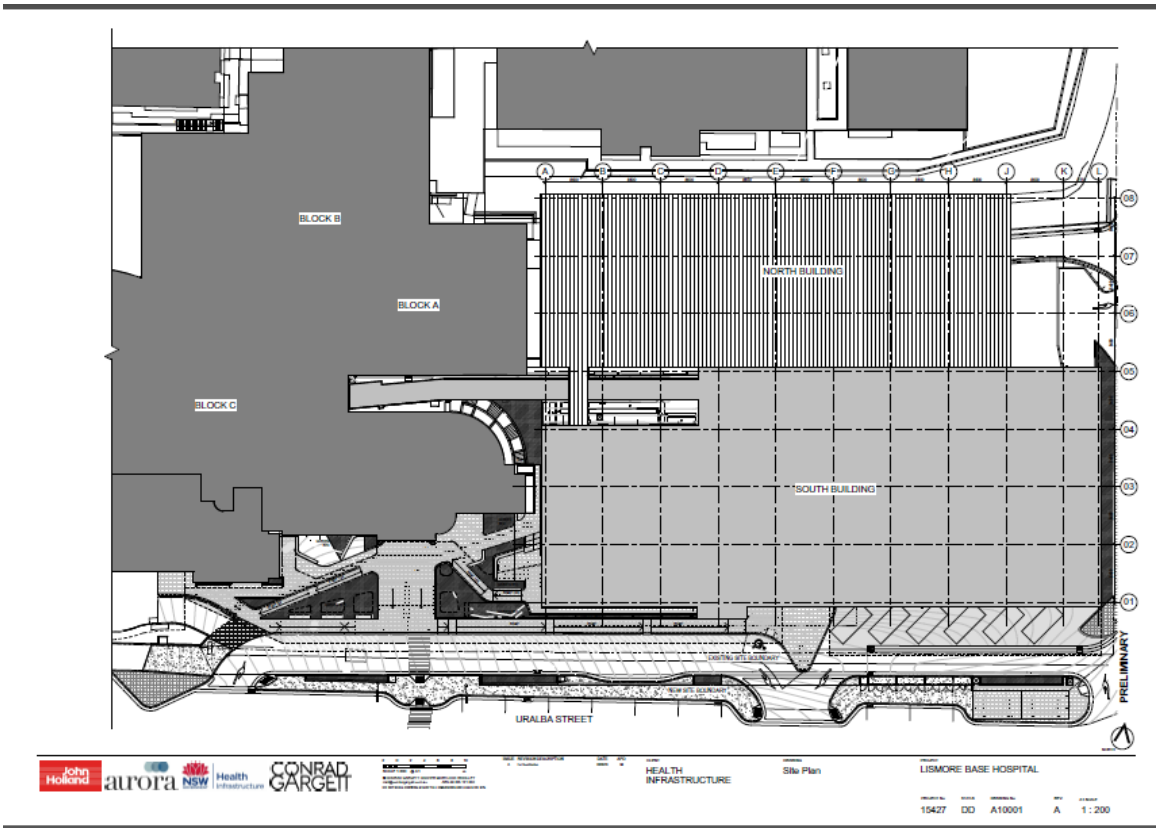


Figure 2: overlay of locations 3B1 & B2 (source: Lismore Base Hospital Redevelopment Stage 3B1 Architectural)

5.3.3 Heritage

The EIS states that there are no buildings or structures on the site that are listed as items of environmental heritage. Further the EIS states that there is no potential for sites or places of Aboriginal Heritage, Cultural Significance or archaeological deposits (both Aboriginal and European) to be located within the Lismore Base Hospital.

1. There is one heritage item (locally listed) in the vicinity of the site, which is known as *"Armstrong House".* This heritage item is located at 86 Uralba Street and is shown in yellow in Figure 3.

Whilst the EIS state there is no potential for Aboriginal or cultural heritage impacts, John Holland understand and acknowledge the importance and significance that the local indigenous representatives have had on the project to date and will contribute during the construction of the project.

Figure 3: Blue: LBH site, Red: Approximate area of proposed works, Green: Health-related uses within the locality, Yellow: Heritage Item "Armstrong House" (source: Lismore Base Hospital Redevelopment EIS, July 2013).

5.4 Approach

John Holland is committed to undertaking business in a manner that recognises the importance of environmental protection and sustainability through a risk and opportunity based approach.

- Our vision is to achieve environmental excellence through
- Shared responsibility for self-regulation and continual improvement
- Understanding and accepting environmental accountability and responsibility
- Ensuring effective communication of information for improved performance.

5.5 Environmental Risks, Actions and Opportunities

Reference Doc No.	Reference Title
JH-MPR-PMA-002	Planning and Programming
JH-MPR-ENV-001	Environment Planning
JH-MPR-SQE-006	Managing SQE Risks

Prior to the commencement of works and as discussed below, the Project has identified environmental aspects, risks, actions and opportunities, in order to limit, manage and improve the impact of works.

Overall risks to the project are managed through the SQE Risk Management Process outlined in Section 5. Additional risks and opportunities may be identified during the Project and this CEMP should be updated to reflect these changes. As defined in the JH-MPR-SQE-006 Managing SQE Procedure, a risk may have a positive or negative impact, however in order to differentiate controls required versus improvement potential, for the purpose of this CEMP they have been classed as Risks (negative impact) and Opportunities (positive impact).

Environmental risks and opportunities of particular importance to this Project are introduced in Table 2 below. Environmental Risks and Opportunities have been further developed with the management of these risks are further defined in Environmental Control Plans (ECP's).

5.5.1 Key Environmental Aspects

The key environmental aspects identified and addressed in the ECPs have been determined as:

Table 2: Environmental Risks, Actions and Opportunities

Key Environmental Aspects	Hazards and Control Measures for Lismore Base Hospital Project
Noise and Vibration	• Minimise adverse impacts and effects to enable LHD to maintain business continuity noting critical areas such as works adjacent to patients, operating theatres, catheter laboratory, imaging and other such sensitives departments (particularly during the demolition and refurbishment works) • Coordinate noisy works with LHD to accommodate patient rest and quiet times

	• Potential hazards include the monitoring and reviewing of construction works adjacent to operational areas (i.e. Block A demolition, North Tower lift overruns, North Tower fit-out etc.
Transport and Accessibility	• Potential hazard is congestion or traffic blockages due to construction traffic or impedance to any DDA access / pathways • A specific traffic management plan has been developed to minimise impact of the construction on adjacent road networks and businesses • Priority is the minimisation of impact to the Hospital's Ambulance Bay and to enable the business continuity of the Hospital during all construction works
Flora and Fauna	• Potential is extremely low, however risk is adverse impact or damage to existing flora and fauna during construction works
Sediment, Erosion and Water Quality	• Potential hazards include the material handling area on Little Uralba Street noting the natural grade of the land, runoff from the North Tower building footprint • Project specific Water Quality, Erosion and Sediment Control Plan will be developed to capture run off and mitigate any potential erosion or dirt water issues • Regular inspections and reviews of the SEP effectiveness and implementation of additional measures and controls if required
Dust and Air Quality	• Implement methods to manage dust to mitigate impact on operational LHD areas / departments or adjacent neighbours and business, particularly during demolition works • Minimise dust created and leaving site (including wet during wet weather) via appropriate and reasonable control methods • Monitor air quality as required and implement appropriate and reasonable control measures, including asbestos air monitoring during demolition activities • Potential hazards include monitoring and

	management during demolition of Block A and bulk / detailed excavation of North Tower
Waste	• Construction projects create waste both from the greenfield build and the demolition and brownfield elements of the construction • A significant amount of waste will be created particularly during the demolition of Block A • Where possible, the objective is to divert building waste from landfill • Building waste materials will be handled by waste company that will separate and recycle building waste where possible • Minimisation of waste from new build will be encouraged with all trades
Unanticipated Discoveries (Aboriginal Heritage) and protection of Heritage	• Potential for damage to listed heritage structures noting risk is very low for the project • Potential for 'cultural heritage' finds is low, however if discovered the works will be ceased and assessment of the finds will be undertaken • Objective is for no impact to cultural heritage objects or finds • Principal and relevant stakeholders will be immediately notified • Site induction will include awareness and respect for the cultural heritage
Hazardous Substances Management, including unanticipated Discoveries (Site Contamination, Hazardous Substances)	• There is high potential to find unidentified hazardous contaminates or substances during the bulk excavation or demolition scope which will be managed as per the Environmental Control Plan in Appendix 8 • Site induction will includes awareness for potential of hazardous substances and requirement to immediately cease all works • Objective is to identify, confirm and remove any hazardous substances or materials discovered and minimise any impact to workers, patients, staff, neighbours, etc. • Principal and relevant stakeholders will be immediately notified

5.6 Environmental Planning

Reference Doc No.	Reference Title
JH-MPR-ENV-001	Environmental Planning

Environmental Planning at the project level is performed by the Project Environmental Representative (PER) and other nominated project staff at the commencement of the project. This project planning will be conducted with support from the Regional HSE Operational Support Team. Planning will be in accordance with the JH-MPR-ENV-001 Environmental Planning procedure and will both inform and be informed by the SQE Risk Management outputs.

5.7 Objectives and Targets

Reference Doc No.	Reference Title
JH-MPR-ENV-001	Environmental Planning
JH-MPR-PMA-001	Project Launch
JH-MPR-PMA-002	Planning & Programming

5.7.1 Corporate Environmental Objectives

The corporate environmental objectives of John Holland are to:

- Conduct all operations in accordance with relevant legislation;
- Minimise the project's environmental impacts;
- Establish environmental objectives and incorporate environmental management practices in project planning;
- Provide staff training to improve awareness and knowledge of environmental issues;
- Identify and allocate the responsibilities and resources required to implement the environmental policy objectives;
- Communicate constructively with customers, the workforce and the community on the environmental effects of proposed project operations; and
- Apply waste minimisation principals to project operations.

5.7.2 Objectives of the CEMP

The objectives of this CEMP are to:

- Outline the environmental policy (stating John Holland's statement of commitment to protection of the environment in all phases of the project);
- Identify relevant environmental legislation requirements;
- Identify the actions required to ensure compliance with the conditions of the Contract and Development Consent as well as applicable legislative requirements;
- Describe the construction activities and subsequently identify the environmental effects, risks and actions required during the project;

- Provide a uniform approach, with robust systems allowing for continual improvement, which assures that the required Principal, John Holland and legislative standards of environmental protection are attained and maintained for the duration of the project works; and
- Outline the actions to be carried out during the project, whilst ensuring acceptable environmental protection standards are maintained; this will include monitoring, inspection, reporting, auditing, documentation, training and implementation of emergency procedures.

The project is committed to maintaining a high level of excellence in environmental compliance and diligence. Project objectives and targets have been developed to establish a baseline for the success of the project to be measured on. The objectives and targets are defined in Table 3 and 4, and in aspect-specific Environment Control Plans.

John Holland Group has committed to the following Performance Targets:

Table 3: John Holland Group performance targets

Objective	Targets (Group)
Environmental Incident Frequency Rate (EIFR) = No. Class 1 & 2 incidents x 1,000,000 divided by the man hours worked for the period	< 0.06
All Environmental Incident Frequency Rate (AEIFR)	< 5.00
Breaches, Prosecutions & Infringements	Nil
Certification Major Non-Conformances	Nil
Energy Intensity *(includes Fuel, Electricity, Natural Gas)*	< 340 GJ / $M *(5% reduction from 2013 Baseline)*
Water Intensity *(includes Potable Water only)*	< 96 kL / $M *(5% reduction from 2013 Baseline)*
Waste Intensity *(excludes fill/soil, liquid waste, hazardous and prescribed wastes)*	< 38 t / $M *(5% reduction from 2013 Baseline)*

Table 4: Project Objectives and Targets

Objective	Targets
Conduct regular Environmental Inspections	Weekly – completion of environmental inspection checklist
Conduct regular Environmental Observations	Daily – supervisors to maintain site diary detailing daily observations as relevant or for anything that is not business as usual.
Prevent serious Environmental Incidents	Zero Class 1 or 2 incidents (refer to JH-APP-SQE-010-02 "Environmental Incident Severity Classifications)
Complete the project with no statutory environmental infringements, prosecutions or breach of conditions of approval	No infringements No prosecutions No breaches of conditions of approval

Objective	Targets
Conduct operations in accordance with Community and Regulatory expectations	No substantiated community complaints relating to works outside of approval No breaches of conditions of approval (i.e. Development Approval conditions)
Site HSE Walks	100% of Site HSE Walks attended by a John Holland team member as per schedule.
Training	100% of John Holland employees have completed GMR training 100% of HSE staff completed PER training (Project Safety Advisor / Project Environmental Representative)

6 Environmental Management Implementation

6.1 Environmental Management System (EMS)

Reference Doc No.	Reference Title
JH-MAN-ENV-001	Environment Management Manual
JH-MPR-SQE-002	Monitoring and Review

This CEMP has been developed within the framework of JH's third party certified EMS, as described in the John Holland Environmental Management Manual, JH-MAN-ENV-001. The system provides for ongoing continual improvement through a cycle of planning, monitoring, and reviewing as described in Figure 1.

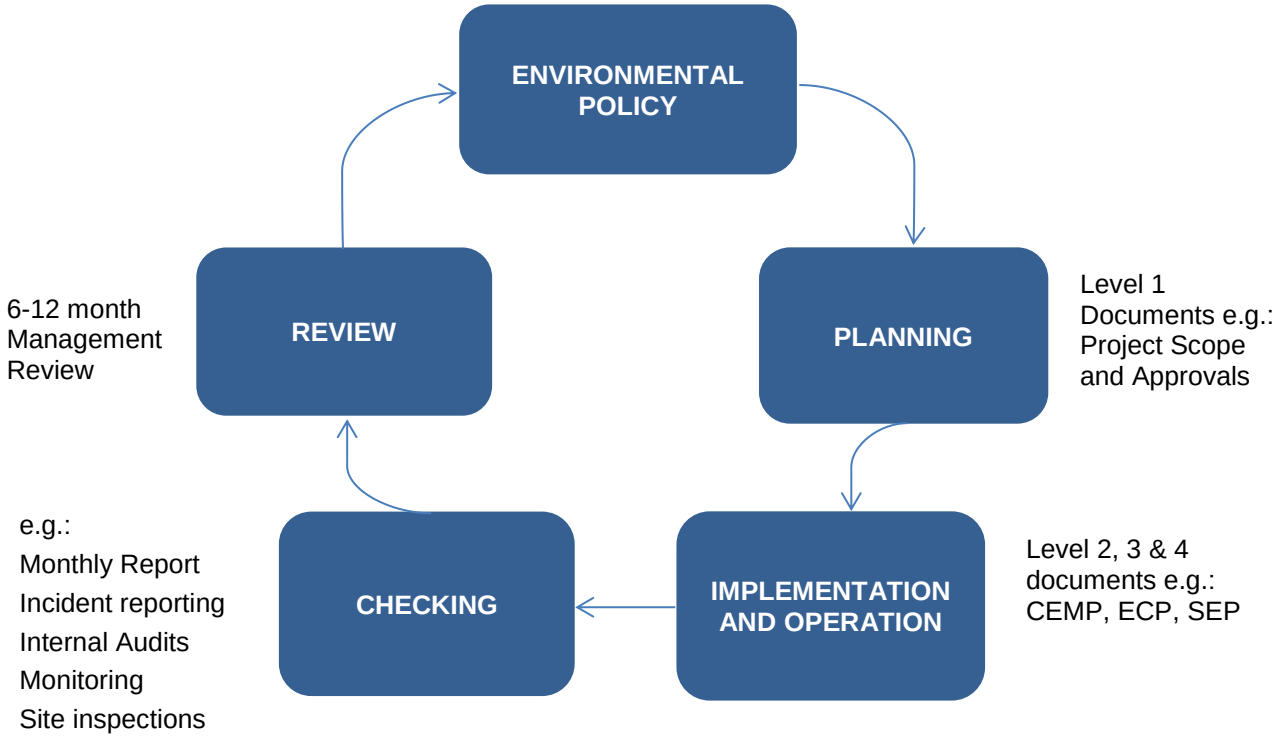


Figure 1: The review and continual improvement cycle

Figure 1 outlines the review and continual improvement cycle enabling the ongoing improvement of Environmental Management. The Environment Management System Review is normally conducted as an integral part of the overall review of the project system. Records of such reviews are documented as minutes and maintained by the Project Manager.

All Environment System Reviews are carried out within three months of project commencement and six monthly after that. The System Review shall be undertaken in accordance with JH-MPR-SQE-002 'Monitoring and Review.

The JH EMS is part of a broader project management structure, linking to the Project Delivery Cycle and Integrated Management System (IMS). The Integrated Management System Matrix located in Appendix 7 provides further details of this linked approach, and how this addresses the requirements of ISO 14001 specifically.

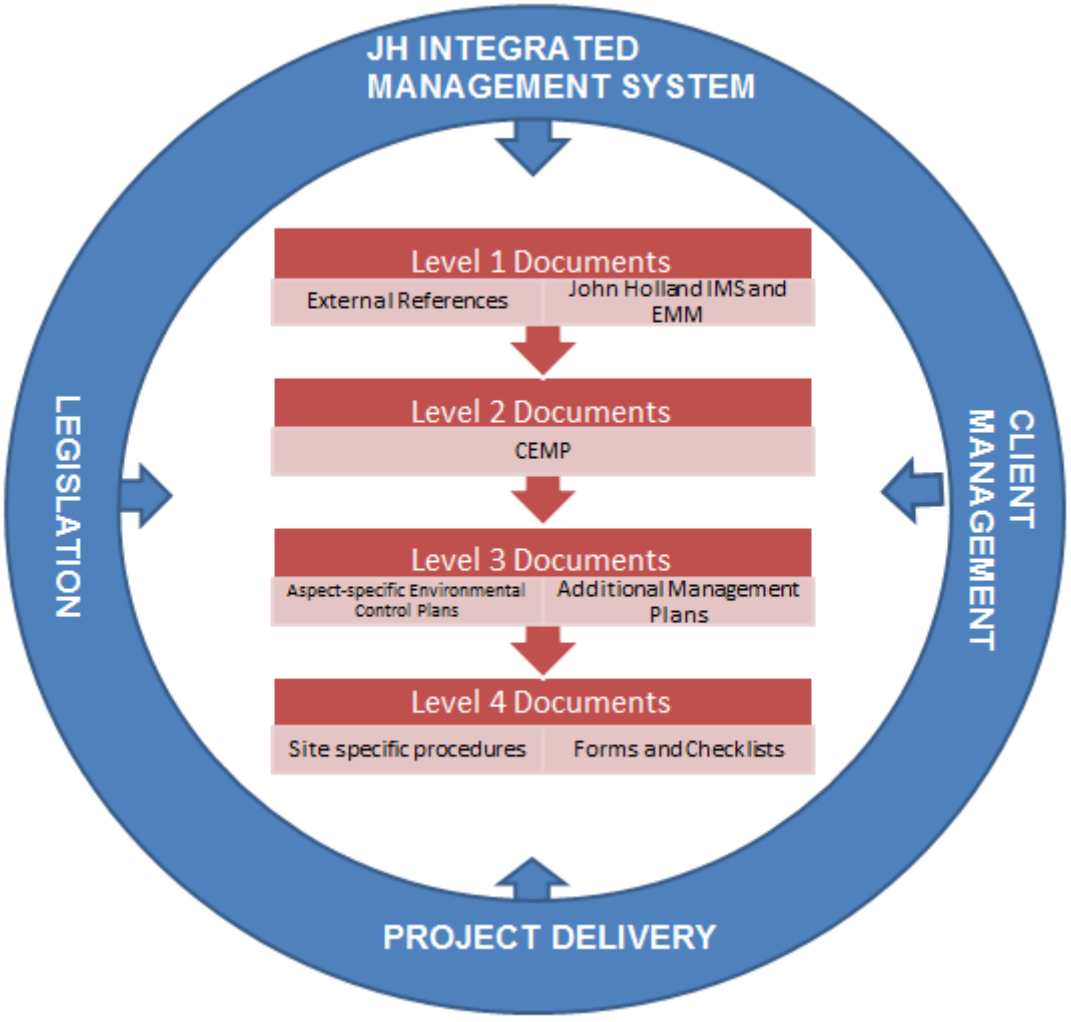


Figure 2: Inputs to the Environmental Management System in the Project Delivery Cycle

6.2 Document Hierarchy

The application of the required controls, mitigation measures, and operational requirements is the responsibility of defined personnel throughout the Project Delivery Cycle. The requirements have been classified into one of four "Levels" for the purpose of environmental management documentation and subsequent allocation of responsibilities on the Project.

6.3 Level 1 – Federal, State, Local and Client Requirements

Level 1 represents the applicable requirements, including Federal, State, Local and Principal imposed requirements which set out the specific environmental management framework for the Project. These are described in Table 5 below.

Table 5: Description of Level 1 Federal, State, Local and Client Requirements

Requirement	Description
Project governance documents	▪ Head Contract No. H1 15381MW, namely GC21 Edition 2 for the project ▪ Development Consent (DF:DA5.2014.46.1) – Demolition of three existing dwellings including on-site structures and vegetation associated with the Stage 3 Redevelopment of the Lismore Base Hospital ▪ Development Consent (DF:DA5.2014.45.1) – Construction of a Temporary Car Park for the Lismore Base Hospital for two (2) years only ▪ Development Consent SSD 6848 (1 May 2015) – Lismore Base Hospital Redevelopment stage 3B)
Environmental Impact Statement	▪ Environmental Impact Statement for a State Significant Development Application – *Lismore Base Hospital Redevelopment Stage 3B (13 January 2015)* ▪ Describes the assessment of the Project environmental aspects and impacts. The EIS describes an environmental management framework to facilitate the transfer of identified Environmental Requirements into the Project's decision-making processes.
Legislative and Regulatory Requirements	<u>General</u> *Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth) *Environmental Planning and Assessment Act 1979* *Environmental Planning and Assessment Regulation 2000* *Protection of the Environment Operations Act 1979* *Protection of the Environment Operations (General) Regulation 2009* *Guidelines for developments adjoining land managed by the Office of Environment and Heritage (NSW OEH 2013)* <u>Acid Sulfate Soils</u> NSW Acid Sulfate Soils Assessment Guidelines 1998

Requirement	Description
	Air quality *Environment Protection Measures for Ambient Air Quality, National Environment Protection Council* *Protection of the Environment Operations Act (Clean Air) Regulation 2010* *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Department of Environment and Conservation NSW) 2005* Cultural Heritage *Heritage Act 1977* *National Parks and Wildlife Act 1974* Energy Use/Greenhouse Gas *National Greenhouse Energy Reporting Act 2007* Erosion and Sediment Control Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC, 2000 Managing Urban Stormwater – Soils & Construction Volume 1 (2004) Fauna and Vegetation *Threatened Species Conservation Act 1995* Land Contamination *Contaminated Land Management Regulation 2013* *National Environmental Protection (Assessment of Site Contamination) Measure* *NSW State Environmental Planning Policy* *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning, 1998)* Noise and Vibration *AS 1055.1/2: 1997 – Acoustics – Description and management of environmental noise* *AS2436: 1981 – Guide to noise control on construction, maintenance and demolition sites* *DIN4150 Part 3 Structural Vibration in Buildings* *Environmental Noise Management Assessing Vibration: A Technical Guideline (NSW Dept. of Environment and Conservation, 2006)*

Requirement	Description
	Protection of the Environment Operations (Noise Control) Regulation 2008 Hazardous Materials *AS 1940:2004, The storage and handling of flammable and combustible liquids* *Environmentally Hazardous Chemicals Regulation 2008* Biosecurity (Pest and Disease) *Noxious Weeds Act 1993* *Noxious Weeds Regulation 1993* Traffic and Site Access *Roads Act 1993* Waste *Protection of the Environment Operations (Waste) Regulation 2005*

6.4 Level 2 – Lismore Base Hospital Stage 3B Redevelopment CEMP

Level 2 represents the project's strategic management framework including the CEMP. This CEMP provides a 'roadmap' that links the relevant Level 1 requirements to the Project's EMS and describes the document structure that is used to manage and address the environmental requirements of the Project.

Level 2 is inclusive of Appendices to the CEMP, which include registers, matrices, schedules and programs. These items (listed in Appendix 7) address the required Environmental Management System elements in accordance with ISO 14001.

Level 2 documents will be stored in the Lotus Notes / Project Pack, ensuring document control and access to documents for all Project personnel.

Table 6: Description of Level 2 contents

Level 2 document description	Location
CEMP	This document
Environmental Policy	Appendix 1
Obligations, Approvals and Licences Register	Appendix 2
Environmental Audit Schedule	Appendix 3
Functional Organisation Chart for Project Delivery	Appendix 4
Environmental Toolbox Meeting Schedule	Appendix 5
Environmental, Inspection, Monitoring & Reporting Program	Appendix 6

Level 2 document description	Location
Integrated Management System Procedures Matrix and Proforma to be used on the Project	Appendix 7
Environmental Control Plans	Appendix 8

6.5 Level 3 – Environmental Control Plans

Level 3 refers to Environmental Control Plans (ECPs) for managing specific environmental aspects. This level also includes specific environmental plans or strategies determined by the Level 1 requirements and address project specific risks identified in Section 2.8.

Level 3 documents will be stored on the Project W: Drive, ensuring document control and access to documents for all Project personnel.

A summary of the Level 3 documents for the Project is outlined in Table 7.

Table 7: Description of Level 3 documents

Level 3 document type	Description
Aspect-specific ECPs ▪ Dust and Air Quality Environment Control Plan JH-ECP-ENV-001 ▪ Erosion & Sediment Environment Control Plan JH-ECP-ENV-002 ▪ Cultural Heritage Environment Control Plan JH-ECP-ENV-003 ▪ Noise & Vibration Management Plan JH-ECP-ENV-004 *(developed by a suitably qualified expert, Resonate Acoustics, as per condition B23 of the Development Consent SSD 6848)* ▪ Waste Management Environment Control Plan JH-ECP-ENV-005 ▪ Site Contamination & Hazardous Substance Management Environment Control Plan JH-ECP-ENV-006	▪ Defines objectives and targets ▪ Identifies relevant statutory references ▪ Defines the operational controls and responsibilities ▪ Defines management measures, procedures, monitoring and reporting requirements, and responsibilities for the relevant issue or aspect ▪ Addresses all environmental aspects relevant to project name
▪ Emergency Response Plan LBH-PP-JH-0012-06-ERP Includes but is not limited to procedures addressing the following scenarios: ▪ Major spills ▪ Extreme weather and storms ▪ Fire and chemical hazards ▪ Damage to protected flora and fauna species ▪ Damage to Cultural Heritage Sites	▪ Addresses all categories of safety and environmental emergencies ▪ Includes communication and coordination protocols with emergency services and other relevant authorities. Communication with external and internal stakeholders during an emergency is also described in the Emergency Response Plan

6.6 Level 4 – Implementation Documents

Level 4 Implementation Documents (listed in Table 8) are tools used to implement Environmental Requirements at the site level.

The Level 4 Implementation Documents are prepared to satisfy the requirements of, and are informed by, the Environmental Control Plans and Appendices (Level 3).

Level 4 documents will be stored in the Lotus Notes / Project Pack, ensuring document control and access to documents for all Project personnel.

Table 8: Description of Level 4 documents

Level 4 document type	Description
Site specific Site Environmental Plans (SEP)	▪ Comprise of a table of written controls (including responsibility) and a map or diagram of the location/area identifying environmentally sensitive areas, hazards, and required controls. ▪ Detail practical environmental management methods to be implemented at specific work sites. ▪ Are used at the site level and displayed in the site office ▪ All areas of the Project will be covered by an SEP
Project specific Procedures ▪ Noise and Vibration Monitoring Procedure for the Lismore Base Hospital Redevelopment Stage 3B (Resonate Acoustics, 2016)	▪ Informs how to conduct environmentally related tasks (including responsibility and frequency) e.g. environmental monitoring
Forms and checklists	▪ Used for documenting, reviewing and evaluating the status and effectiveness of environmental controls at a work site ▪ Document improvements and changes to the site conditions
Incident Reporting	▪ For any incident which has the potential to cause an impact on the environment: ▪ An incident report will be completed (JH-MPR-SQE-010 - Incident Management) ▪ The incident will be input to John Holland Event Tracker (JHET) ▪ The incident report will be forwarded to the PER ▪ Notification of relevant stakeholders ▪ The incident will be reported in monthly management reports
Actions register in JHET	▪ Tracking of actions raised, managed and closed out ▪ Consolidates actions identified in incident reports, inspections, audits, etc.
Newsletters, Posters, Alerts etc.	▪ Communication of requirements, disruptions etc. as approved and agreed by the Principal ▪ Lessons learned
Induction Presentations	▪ Outlines key aspects for the project, incident notification requirements and project staff responsibilities to all workers prior to commencing work on the project
Training Sessions/Toolboxes	▪ As required by the Project Manager, aspect specific focused on work activities being conducted at the time
Non Conformance Reports in JHET	▪ Used by the projects to identify areas of non-conformance at project level

Level 4 document type	Description
	▪ Used to record any environmental controls or measures that do not conform to the requirements specified in Level 1, 2 and 3 documentation ▪ Any NCRs will be included in the monthly report issued to the Principal

6.7 Document Control and Records Management

Reference Doc No.	Reference Title
JH-MPR-QUA-005	Project Documentation & Control
JH-FRM-ENV-001-04	Site Environment Plan Template
JH-MPR-BUA-018	Records Management

All Project documentation (including documentation discussed above as well as documents and records discussed in the following sections) will be managed in accordance with the JH Procedure JH-MPR-QUA-005 'Project Documentation and Control'.

At practical completion the environmental records will be archived as per JH-MPR-BUA-018 'Records Management' and retained for 7 years (as required by JH-MPR-BUA-018-02 'Archiving Records') or longer where specified by the Contract.

7 Process Management

7.1 Environmental Risk Management and Planning

Reference Doc No.	Reference Title
JH-MPR-SQE-006	Managing SQE Risks

John Holland's risk management approach (JH-MPR-SQE-006 Managing Safety, Quality and Environmental Risks) includes a comprehensive Safety, Quality and Environment (SQE) risk management planning process including strategic, operational, team and individual processes.

7.2 Risk Management

John Holland is committed to effective risk management beginning before commencement of works and well before employees are mobilised to a project. All identified risks are incorporated into normal planning activities and are specifically designed to address Risk Management throughout the life cycle of works. The steps in the John Holland SQE Risk Management process are specifically designed to address SQE throughout the life cycle of works conducted on a project.

With respect to project delivery, Figure 3 provides a simplified representation of the three levels of project environmental management documentation that are prepared post-contract award:

(i) Workplace Risk Assessment (WRA) & Construction Environmental Management Plan (CEMP);

- *All system, procedural and contractual requirements based on legislation and best practice are considered in planning and executing the work related to contract or project.*
- *Environmental Risk Assessment and mitigation strategies are considered on a project wide basis*
- *More detailed planning activities required for the project are identified (i.e. AMS)*

(ii) Activity Method Statement (AMS); and

- *Links Environmental Risks to the activity schedule*
- *Includes system and procedure requirements*
- *Development of Environment Control Plans (ECP)for the project*
- *Identifies the Site Environmental Plan (SEP) requirements for the project*

(iii) Site Environmental Plan (SEP)

- *A visual communication tool that illustrates the location of the environmentally sensitive areas to be protected, and the environmental controls to be installed prior to and during works. It is the implementation plan for environmental controls.*

(iv)Task Risk Assessment (TRA)

- *Task Risk Assessment (specific task based risk assessment which is facilitated by supervision and involves consultation of workers before the activity is undertaken). TRAs are also referred to in industry as Job Safety Analysis (JSA), Job Safety and Environmental Analysis (JSEA), Job Hazard Analysis (JHA), and Safe Work Method Statements (SWMS) amongst others*
- *The Site Environment Plan should be used to inform the preparation of the TRA*

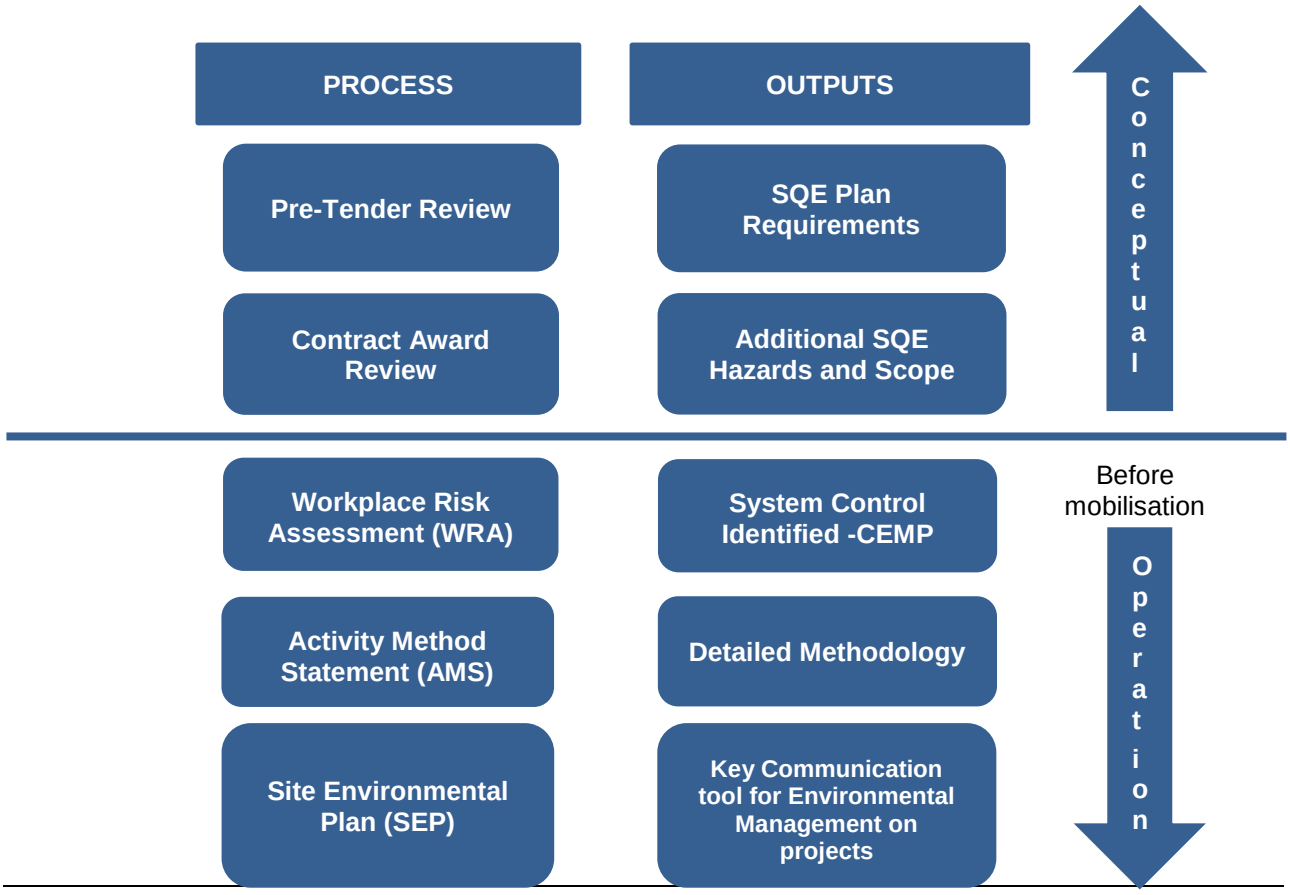


Figure 3: Environmental Management System outputs from the SQE Risk Assessment Process

This CEMP has been prepared based on John Holland's best understanding of the scope of work and the identified environmental aspects and impacts. It will be further developed and revised as potential impacts are further identified and documented in the Workplace Risk Assessment. Further, more detailed environmental control requirements are identified in the Activity Method Statements and Site Environmental Plans which are prepared as fieldwork progresses and specific site conditions are encountered and documented.

Change management enables environmental impacts associated with any variation in the scope of the permanent or changes to temporary works to be captured and managed effectively. As the SQE process documents are updated, the outcomes of the SQE review should be incorporated into the CEMP. This may be conducted in a timely review or as Project scope or environmental aspects alter (physical, regulatory, commercial or technical).

It should be noted that these SQE documents are live documents which will be reviewed and reassessed continually as the project progresses.

7.3 Communication

Reference Doc No.	Reference Title
JH-MPR-SQE-001	Site Induction

The Project is committed to effective and well planned communication as it is a critical factor in ensuring the Project achieves its objective for outstanding performance.

Internal communication will take place via the following: Toolbox Meetings (JH-MPR-WHS-004 Health and Safety Management and consultation arrangements (HSMA)), JH Site Coordination meetings, pre-start meetings, JH Team meetings.

Table 9: Internal Communication

Method	Frequency	Participants	Records
Toolbox meetings	As required	Relevant project personnel as required	W Drive
Construction/JH Site Coordination Meeting	Weekly	Site Manager, Site Engineers, Supervisors, PER, Subcontractors	Environmental section of minutes
Workplace pre-start/restart meetings	Daily	All staff and supervisors	Minutes
Project Management Meetings (act as Management Review)	Initially after 6 months, then once every 12 months	Project Manager, Project team including PER	Minutes

7.4 External Communication

The Project is committed to open and effective communication with our external stakeholders in conjunction with the client. These stakeholders may include but are not limited to the list in Table 10.

Table 10: External communication

External stakeholders
▪ Principal – Health Infrastructure, Principal's Representatives, Local Health District (LHD) representatives including users and visitors
▪ Suppliers, subcontractors and other projects affected by the works
▪ Government Regulatory Authorities including local councils o NSW Department of Planning and Infrastructure o NSW Environment Protection Authority (EPA) o Office of Environment and Heritage o Lismore City Council
▪ Neighbouring Land Users
▪ Traditional Land Owner Groups
▪ Community Groups
▪ Authorities providing services to site

7.5 Management of Complaints and Incidents

7.5.1 Complaints

Reference Doc No.	Reference Title
JH-MPR-CCM-001	Internal and External Communication
JH-FRM-SQE-010-02	Incident Notification and Investigation Report
JH-MPR-SQE-007	Non-Conformance and Corrective Action

Complaints may be received from various sources within the community or from other stakeholders. These include community groups, clients, interested parties, sensitive receivers etc. A verified complaint may advise of practices, activities or processes which do not conform to environmental system requirements.

Complaints raised to JH from any stakeholder will be immediately advised to the Principal via JH's Project Manager or Site Manager. The Principal is to forward any complaints received to JH Project Manager for review. The investigation and findings of all complaints will be discussed at the fortnightly site coordination meetings and included in the monthly report.

On receipt of a complaint, the PER shall record the necessary details within JHET in accordance with the External Communication Procedure (JH-APP-CCM-001), and investigate the details of the complaint. If it is confirmed, a Non-conformance Report shall be raised within the JHET and directed to the respective staff member for action.

Upon completion of corrective action the staff member shall document the action taken and return the document to the PER. The PER shall verify that the corrective action taken is suitable and

effective. Upon satisfactory verification, the PER shall ensure that an appropriate response is provided to the Principal for issue to the originator of the complaint.

If the complaint is not confirmed, the PER shall contact the originator of the complaint to determine the course of action to resolve the issue.

7.5.2 Incidents

Reference Doc No.	Reference Title
JH-MPR-SQE-010	Incident Management

Any incident with actual or potential impacts on the biophysical environment (such as a spillage of chemicals) shall be recorded and addressed by the PER and/or the PSR, as detailed in JH-MPR-SQE-010 'Incident Management'.

All incidents will be investigated as soon as possible after the event and communication made with regulatory agencies if required. All incidents will be immediately reported to the Principal and the Principal's Authorised Person, with reporting as per the contract. The Project Manager shall establish an investigation team to investigate all environmental incidents. Completion of corrective actions identified through the investigation shall be verified as completed via follow up checks by the PER and signed off as completed in the investigation report. On completion of all corrective actions, the Project Manager shall sign off the incident report as completed and closed.

Incidents will be addressed in consultation with the Client (or their representative) where required.

8 Roles and Responsibilities

Reference Doc No.	Reference Title
JH-MPR-ENV-002	Resource Use Reporting
JH-MAN-ENV-001	Environment Management Manual

Environmental management is the responsibility of all individuals and organisations involved with the Project. Personnel and subcontractors will be made aware of environmental issues for the Project and their responsibilities through training and awareness methods detailed in Section 9 below.

The roles and responsibilities of personnel specifically responsible for implementation of this CEMP are summarised in Table 11 below. The PER is appointed by the PM to implement this CEMP. For this project, the Project Safety Advisor will be nominated as the PER. The PER shall be granted authority by the Project Manager to stop a particular task or activity in circumstances where environmental controls have not been implemented to prevent harm to the environment, or environmental controls have been shown to be ineffective or inadequate. In such circumstances the PER shall prescribe corrective action that shall be implemented before work recommences.

It should be noted that detailed roles and responsibilities for specific environmental operational controls are set out in ECP's.

Table 11: Roles and Responsibilities

Role	Responsibilities
Project Manager (PM)/Site Manager (SM)	▪ Review, authorise and ensure implementation of the CEMP ▪ Assign environmental responsibilities to project personnel, nominating alternates in the absence of a site based environmental professional. ▪ Ensure appropriate environmental training is identified in a Training Needs Analysis and training is provided to project personnel where required ▪ Monitor environmental performance to ensure compatibility and continued effectiveness with the policy and objectives ▪ Participate in the review of the Project Environmental Management System ▪ Communication with the Principal including complaints, monthly reporting, etc.
Project Environmental Representative (PER)	▪ Ensure correct and ongoing implementation of CEMP ▪ Liaise with project staff for ongoing monitoring and maintenance of environmental controls ▪ Ensure reporting of incidents and practices that are non-conforming ▪ Conduct and report regular inspections, monitoring and reporting ▪ Ensure actions relating to environmental non-conformances, incidents and/or inspections are actioned and closed out in a timely manner ▪ Actively participate in and facilitate SQE Risk Management workshops ▪ Assist with updating of CEMP as required ▪ Prepare Project environmental reports ▪ Liaise with client environmental representative as required ▪ Manage and track compliance with all environmental approvals, licences, and permits relating to the project.
Project Engineer	▪ Ensure environmental controls are established prior to commencement of construction activities ▪ Ensure PERs participate in the preparation of SQE Risk Management documentation ▪ Identify and report environmental non-conformance ▪ Ensure and verify that corrective action is taken when required for non-conforming work
Supervisors/Foreman	▪ Ensure that CEMP requirements are communicated to all personnel under his/her control ▪ Be aware of all approval/contractual conditions relating to his/her area of work ▪ Perform surveillance and monitoring of environmental controls to ensure that they are established and maintained with requirements ▪ Ensure rectifications of environmental controls are carried out as required
Subcontractors/Suppliers	▪ Subcontractors have a responsibility to undertake specific works for the project and are also responsible for ensuring their work is undertaken in accordance with the CEMP and ECPs. The subcontractor reports to the PM and PER on all environmental matters. Subcontractors/suppliers have a responsibility for the following: ▪ Undertake all work in an environmentally responsible manner in accordance with the CEMP/ECPs and legislative requirements

Role	Responsibilities
	▪ Reporting to the PER any potential or actual environmental incidents ▪ Maintaining environmental controls/management for the duration of their works ▪ Undertaking corrective actions in accordance with the principal contractor's requirements
ALL	▪ Ensure that all care is taken to avoid activities outside of approval conditions ▪ No disposal of any materials into a receiving environment without prior approval ▪ Comply with any and all project approval and environmental management conditions

The Functional Organisation Chart for Project Delivery included in Appendix 4 of this plan describes the organisational structure for environmental management in relation to project delivery. This includes the external support and guidance provided by the Regional Environment Manager, and interaction with environment and other senior management functions in the John Holland Group.

9 Training and Awareness

Reference Doc No.	Reference Title
JH-MPR-HRT-020	People Capability
JH-MPR-SQE-001	Site Induction

Environmental training and awareness will be provided through the methods detailed in Table 12.

Table 12: Training and awareness methods

Training/Awareness Method	Description

Inductions	▪ All project personnel will undergo a Site Induction prior to commencement on site
	▪ Inductions will be carried out in accordance with procedure JH-MPR-SQE-001 'Site Induction'
	▪ Inductions will include but are not limited to:
	  ○ Purpose, objectives and key issues of the CEMP
	  ○ Specific environmental aspects as detailed in ECPs and other Level 3 documents
	  ○ Conditions of environmental licences, permits and approvals
	  ○ Emergency response procedures and reporting processes for environmental incidents
	  ○ Responsibilities and key contacts
	▪ Consequences of not implementing mitigation measures or departure from specified operating conditions
	▪ Induction records will be maintained to confirm that all relevant personnel have been appropriately inducted

Training/Awareness Method	Description
	▪ Inductions will be regularly reviewed and updated as required e.g. when significant changes occur on-site or within the environmental management framework of the project ▪ Principal and community awareness and sensitivities, and cultural perspectives and expectations
Pre-start meetings	▪ Pre-start meetings will be undertaken at the beginning of each day (before work commences) ▪ Pre-start meetings will be attended by an environmental representative whenever possible ▪ Specific environmental issues relevant to the day's work (e.g. working hours) will be raised and discussed at these meetings as required
Toolbox meetings	▪ Environmental awareness training will be provided to the workforce (including sub-contractors) via Toolbox meetings ▪ A schedule of environmental Toolbox meetings (including topics) is included in Appendix 5. ▪ Toolbox Meetings will be recorded in the Project W Drive
Global Mandatory Requirements (GMR)	▪ GMR training to be completed by all new employees to John Holland and can also be used for subcontractor induction and training
HSE Behaviours	▪ We all play an important part in ensuring that everyone returns home safely every day and that we continue to care for our environment. This is why we are committed to a set of everyday behaviours that are expected of us and people we work with to drive better HSE outcomes
Project Environment Representative (PER) Training	▪ Any personnel other than qualified environmental professional that will assume the role of PER are required to complete the JH PER training course within three months
Other	▪ Environmental topics may be raised in other forums (including but not limited to those listed in Appendix 5) as required
Specialised Training	May include, but not be limited to: ▪ Spill prevention and control ▪ Noise and Vibration Monitoring ▪ Waste Management ▪ Heritage Management ▪ Erosion and Sediment Control
Internal Training	▪ Operational and Strategic SQE Risk Management ▪ Risk Based Investigation ▪ National Greenhouse and Energy Reporting Act
SQE Alerts	▪ To be posted on notice boards as released from Group and/or Regional support services

10 Monitoring and Reporting

Reference Doc No.	Reference Title
JH-MPR-SQE-004	Inspection, Testing and Surveillance
JH-MPR-ENV-002	Resource Use Reporting

Reference Doc No.	Reference Title
JH-MPR-PMA-015	Project Monthly Reporting Reforecasting
JH-APP-QUA-010-02	Monitoring and Testing Equipment
JH-APP-ENV-002-01	National Greenhouse & Energy Reporting Guideline
JH-APP-ENV-002-02	PCR Resource Use Reporting Guideline

The Project's environmental performance will be tracked through monitoring and reporting as detailed in Table 13 below. A detailed Project Monitoring and Reporting plan is also included in Appendix 6.

Table 13: Monitoring and reporting

Monitoring/Reporting Aspect	Details
Inspection	▪ The PER and Supervisors will perform environmental inspections during the site establishment, construction and site demobilisation phases, inspections will be undertaken of on and off site work areas as appropriate (including a monthly inspection of the McKenzie St car park) ▪ Inspection will be carried out in accordance with the JH procedure JH-MPR-SQE-004 'Inspection, Testing and Surveillance' ▪ Inspection checklists and any corrective actions identified will be recorded on Project Pack Web (PPW)
Monitoring	▪ The PER will perform environmental monitoring as required throughout the Project ▪ Monitoring will be carried out in accordance with the JH procedure JH-MPR-SQE-004 'Inspection, Testing and Surveillance' ▪ Details of what monitoring is required is included in the relevant ECPs ▪ Project Procedures will be prepared as necessary to specify how monitoring is to be undertaken, including responsibility and frequency ▪ Monitoring results and any corrective actions identified will be recorded in JHET ▪ Water, Waste Management and National Greenhouse and Energy Reporting related information will be collected in accordance with procedure JH-MPR-ENV-002 Resource Use Reporting ▪ Guidance for NGER Reporting can be found in JH-APP-ENV-002-01 National Greenhouse And Energy Reporting Guideline ▪ Guideline for utilising the finance system PCR to collate Environment Data can be found in JH-APP-ENV-002-02 PCR Resource Use Reporting Guideline
Calibration of monitoring equipment	▪ Monitoring equipment will be calibrated in accordance with JH procedure JH-APP-QUA-010-02 Monitoring and Testing Equipment ▪ Monitoring equipment will be calibrated prior to use ▪ Any equipment identified as having doubtful accuracy or precision will be removed from use and recalibrated ▪ Where any monitoring equipment is found to be out of calibration, the validity of the previous monitoring results will be assessed and documented.

Monitoring/Reporting Aspect	Details
	▪ Calibration of monitoring equipment will be recorded in the project pack Monitoring and Equipment register as per the Monitoring and Testing Equipment procedure JH-APP-QUA-010-02
Reporting	▪ All incidents, complaints and NCRs will be summarised and included in the Principal required monthly report ▪ Internal reports will be loaded on to the Project W Drive for inclusion in the Project Monthly Report, in accordance with JH-MPR-PMA-015 'Project Monthly Reporting', these will include: o Inspections o Non-compliance reports o Incidents o Waste, water use data o Complaints o Innovations and achievements o Training and Awareness delivery o Status of environmental aspects related to the Project o Fuel and energy use information will be reported in accordance with procedure JH-MPR-ENV-002 Resource Use Reporting ▪ This information will also be included in the Client Monthly Report (if required). ▪ All John Holland Environmental Data is available at all times for review on the John Holland Report Centre ▪ Guide on using the systems is available at Environmental Data Cubes Guidance
Non-conformance and Incident Management	▪ Non-conformance Reports will be raised, tracked and closed out in accordance with JH-MPR-SQE-007 'Non-conformance & Corrective Action' in JHET. ▪ Incident Reports will be raised, tracked and closed out in accordance with JH-MPR-SQE-010 'Incident Management' procedure in JHET.

11 Auditing

Reference Doc No.	Reference Title
JH-MPR-SQE-007	Non Conformance & Corrective Action
JH-MPR-SQE-002	Monitoring and Review
JH-MPR-WHS-006	Workplace Hazard Identification and Inspection

The following environmental audits of the Project, listed in Table 14, may be undertaken. Results of all audits will be distributed to the relevant personnel, including any corrective/preventative actions required to be undertaken.

Table 14: Auditing

Audit Type	Details
Project Audits	▪ Audits of subcontractors, suppliers etc. carried out by Project personnel (JH-MPR-QUA-003- 'Inspection of Subcontracted Works') ▪ Audits will be undertaken in accordance with the JH procedure JH-MPR-SQE-002 'Monitoring and Review' ▪ Audits will be undertaken to verify compliance with Project requirements, this CEMP and the EMS
JH Internal Audits	▪ Audits of the Project carried out by JH personnel external to the Project (Regional Support Staff) ▪ Audits will be undertaken in accordance with the JH procedure JH-MPR-SQE-002 'Monitoring and Review' ▪ Audits will be undertaken to verify compliance with Project requirements, this CEMP and the EMS ▪ Audit outcome reports will be forwarded to the relevant General Manager, Operations Manager and Project Manager. ▪ An Audit Schedule for the Project is included in Appendix 3
3rd Party Audits	▪ Audits of the Project carried out by the Client or Client's Representative to verify compliance with Project requirements, this CEMP and the EMS ▪ Audits of the Project carried out by Certification organisations to verify compliance with conditions of accreditation ▪ Inspections and audits conducted by Regulators to verify compliance with conditions of approval and/or environmental legislation

Internal audits shall be conducted on the project initially within twelve weeks and six-monthly thereafter. Results of the audit shall be documented and brought to the attention of the personnel having responsibility for the area audited and reported to the relevant manager. For any deficiencies or non-compliances found, corrective action shall be initiated using the 'Non-conformance Report' or detailed as an 'Observation' or an 'Opportunity' in the Audit Report.

12 Project Closure

Reference Doc No.	Reference Title
JH-MPR-PMA-016	Project Completion

Following commissioning and prior to demobilisation from site, the PER shall identify the environmental issues associated with the finalisation of works. If the PER is released from the Project, the Project Manager will nominate project personnel.

In particular, the following completion practices shall be performed:

- Contractual environmental requirements closeout
- Environmental approval/licence closeout
- Subcontractor Assessment
- Lessons learned
- Project NGER Project Assessment closeout
- Complete project completion report (JH-MPR-PMA-016- Project Completion).

13 Appendices

Appendix 1 - Environment Policy Statement

POLICY

Environment & Heritage

Our commitment

John Holland values the natural environment and cultural heritage, and is committed to minimising adverse impacts and enhancing outcomes.

Our approach

John Holland addresses its commitment to environmental sustainability and heritage conservation through the consistent implementation of an effective Environmental Management System.

Environment & Heritage Policy in practice

- Comply with relevant legal obligations, standards, customer requirements, and any obligations that John Holland has adopted voluntarily
- Integrate environment and heritage considerations into business planning, strategy development and operational delivery
- Continually improve the Environmental Management System to enhance performance.
- Maintain third party certification of the Environmental Management System to ISO 14001 as independent verification of implementation and effectiveness
- Establish environment and heritage objectives and targets, and communicate performance regularly to engage our employees and other stakeholders
- Continually improve operational resource use efficiency and take all reasonable and practicable steps to prevent adverse environmental impacts, including pollution
- Promote a culture of shared responsibility for environment and heritage outcomes.
- Enhance the awareness, knowledge and skills of employees, contractors and suppliers in relation to environment and heritage requirements and practices
- Drive organisational learning by investigating significant environment and heritage incidents, and communicating action taken or required to prevent recurrence
- Work with business partners, the local community, regulators and other stakeholders to understand their perspective and achieve improved environment and heritage outcomes

Joe Barr

Chief Executive Officer | John Holland Group Pty Ltd

December 2016

We provide engineering and infrastructure solutions with skill and passion that benefit our customers, our people, our communities and our shareholders.

Powered by People

Appendix 2 - Obligations Approvals and Licences Register

Table 15 below provides a summary of the specific requirements for the Project from the sources described in Section 6.3 of this CEMP. This includes any approvals or licences required to be obtained. This register will be updated as required.

Table 15: Obligations, Approvals and Licences Register

Aspect	Obligations/ Approvals/ Licences Required	Source	Relevance to Project	Relevant Authority	Responsibility	Status/Timing
Development Consent	▪ Development consent to be obtained for the demolition of three existing dwellings including on-site structures and vegetation associated with the Stage 3A redevelopment of the Lismore Base Hospital ▪ Development consent to be obtained for the construction of a temporary car park for the Stage 3A redevelopment of the Lismore Base Hospital for two (2) years ▪ Development consent SSD 6848 for Stage 3B of Lismore Hospital	▪ *Environmental Planning and Assessment Act 1979*	▪ Project is subject to a development assessment process	▪ NSW Planning and Infrastructure	NSW Health Infrastructure	▪ Obtained (Development Consent DF:DA5.2014.46.1, 7 May 2014) Demolition consent for the demolition of three existing dwellings ▪ Obtained (Development Consent DF:DA5.2014.45.1, 7 May 2014) Construction of a temporary car park ▪ Obtained (Development consent for stage 3B, 1 May 2015)
Water and Sewerage Works	▪ Approval to carry out water supply work	▪ Section 68 of the *Local Government Act*	▪ Project involves sewerage and water reticulation works	▪ Local Government	John Holland/NSW Health Infrastructure	▪ Prior to commencement of works
Water and Sewerage Works	▪ Compliance Certificate for water and sewerage works	▪ Section 305 of the *Water Management Act 2000*	▪ Project involves sewerage and water reticulation works	▪ Local Government	John Holland/NSW Health Infrastructure	▪ Prior to commencement of works
Noise Attenuation	▪ Detailed design drawings submitted to NSW Planning and Infrastructure must demonstrate that noise impacts identified in the Stage 3A & 3B1 Redevelopment Noise and Vibration Impact Assessment have been adequately mitigated	▪ Development Consent SSD 6848 (1 May 2015) Condition B5	▪ Noise attenuation to be included in detailed design	▪ NSW Planning and Infrastructure	NSW Health Infrastructure	▪ Prior to commencement of works
Notice of Commencement of Works	▪ The Certifying Authority and Council shall be given written notice at least 48 hours prior to the commencement of building works on site	▪ Development Consent SSD 6848 (1 May 2015) Condition B4	▪ Notice must be supplied prior to the commencement of works	▪ Certifying Authority & Local Government	John Holland	▪ Prior to the commencement of works
Reflectivity	▪ Reflectivity on the facades of the buildings is to have a normal specular reflectivity of visible light of 20% and shall be designed so as not to result in glare	▪ Development Consent SSD 6848 (1 May 2015) Condition B6	▪ Report/statement of compliance to be provided to the Certifying Authority	▪ Certifying Authority	John Holland/NSW Health Infrastructure	▪ Prior to the commencement of above ground works
Outdoor Lighting	▪ All outdoor lighting to comply with AS/NZS1158.3:1999 Pedestrian Area (Category P) Lighting and AS4282:1997 Control of the Obtrusive Effects of Outdoor Lighting	▪ Development Consent SSD 6848 (1 May 2015) Condition B10	▪ Report/statement of compliance to be provided to the Certifying Authority	▪ Certifying Authority	John Holland/NSW Health Infrastructure	▪ Prior to the commencement of above ground works
Erosion and Sediment Control	▪ Soil erosion and sediment control measures are to be designed in accordance with the document Managing Urban Stormwater – Soils & Construction Volume 1 (2004)	▪ Development Consent SSD 6848 (1 May 2015) Condition B18	▪ Details are to be submitted to the satisfaction of the Certifying Authority	▪ Certifying Authority	John Holland/NSW Health Infrastructure	▪ Prior to the commencement of any works

Aspect	Obligations/ Approvals/ Licences Required	Source	Relevance to Project	Relevant Authority	Responsibility	Status/Timing
Pre-Construction Dilapidation Report	▪ A pre-construction dilapidation report is to be prepared by a qualified structural engineer of the buildings, infrastructure and roads within the 'zone of influence'	▪ Development Consent SSD 6848 (1 May 2015) Condition B19	▪ Pre-construction dilapidation report to be submitted to the Certifying Authority	▪ Certifying Authority	John Holland	▪ Prior to commencement of any works
Stormwater and Drainage Works Design	▪ Final design plans of the stormwater drainage systems, prepared by a qualified practicing professional	▪ Development Consent SSD 6848 (1 May 2015) Condition B17	▪ Final design to be submitted to the Certifying Authority	▪ Certifying Authority	John Holland/NSW Health Infrastructure	▪ Prior to the commencement of any works
Construction Environmental Management Plan (CEMP)	▪ CEMP must be submitted to the Certifying Authority prior to any work commencing	▪ Development Consent SSD 6848 (1 May 2015) Condition B20	▪ CEMP to be submitted to the NSW Dept. Planning and Infrastructure and Council	▪ NSW Dept. Planning and Infrastructure	John Holland	▪ Prior to the commencement of any works
Waste Management Plan (WMP)	▪ Construction Waste Management Plan to be prepared by a suitably qualified person ▪ Roads and Maritime Services Traffic	▪ Development Consent SSD 6848 (1 May 2015) Condition B21	▪ WMP to be submitted to the Certifying Authority ▪ TMC to be notified of waste truck transport route	▪ NSW Dept. Planning and Infrastructure ▪ TMC	John Holland	▪ Prior to the commencement of any works
Waste Management Transport Route	▪ Roads and Maritime Services Traffic Management Centre (TMC) to be notified of waste transport trucking route	▪ Development Consent SSD 6848 (1 May 2015) Condition B21(d)	▪ TMC to be notified of waste truck transport route	▪ TMC	NSW Health Infrastructure	▪ Prior to the commencement of the removal of any waste material from site
Traffic and Pedestrian Management Plan	▪ Traffic and Pedestrian Management Plan (TPMP) to be prepared by a suitably qualified person	▪ Development Consent SSD 6848 (1 May 2015) Condition B22	▪ TPMP to be prepared by a suitably qualified person and submitted to the Certifying Authority and Council	▪ Certifying Authority and Council	John Holland	▪ Prior to the commencement of any works on site
Noise and Vibration Management Plan	▪ Noise and Vibration Management Plan to be prepared by a suitably qualified expert	▪ Development Consent SSD 6848 (1 May 2015) Condition B23	▪ Noise and Vibration Management Plan to be prepared by a suitably qualified expert	▪ Council & NSW EPA	John Holland	▪ Prior to the commencement of any works on site
Loading Dock Consultation	▪ Prior to undertaking tree planting along the interface with the shared residential boundary surrounding the loading dock driveway, the applicant shall consult with the owner of No. 78A Uralba Street regarding the species and density of the proposed tree planting	▪ Development Consent SSD 6848 (1 May 2015) Condition B7	▪ Consultation with owner of No. 78A Uralba Street required prior to undertaking tree planting along shared residential boundary	▪ Dept. Environment and Heritage	NSW Health Infrastructure	▪ Prior to the commencement of planting works on shared residential boundary

Appendix 3 - Project Environment Audit Schedule

The project will conduct audits for their workplace utilising JH-FRM-SQE-002-02 'System Audit Report Template (Environment)'.

Project Scope related elements will be audited within 3 months of mobilisation and then once more during the project life cycle.

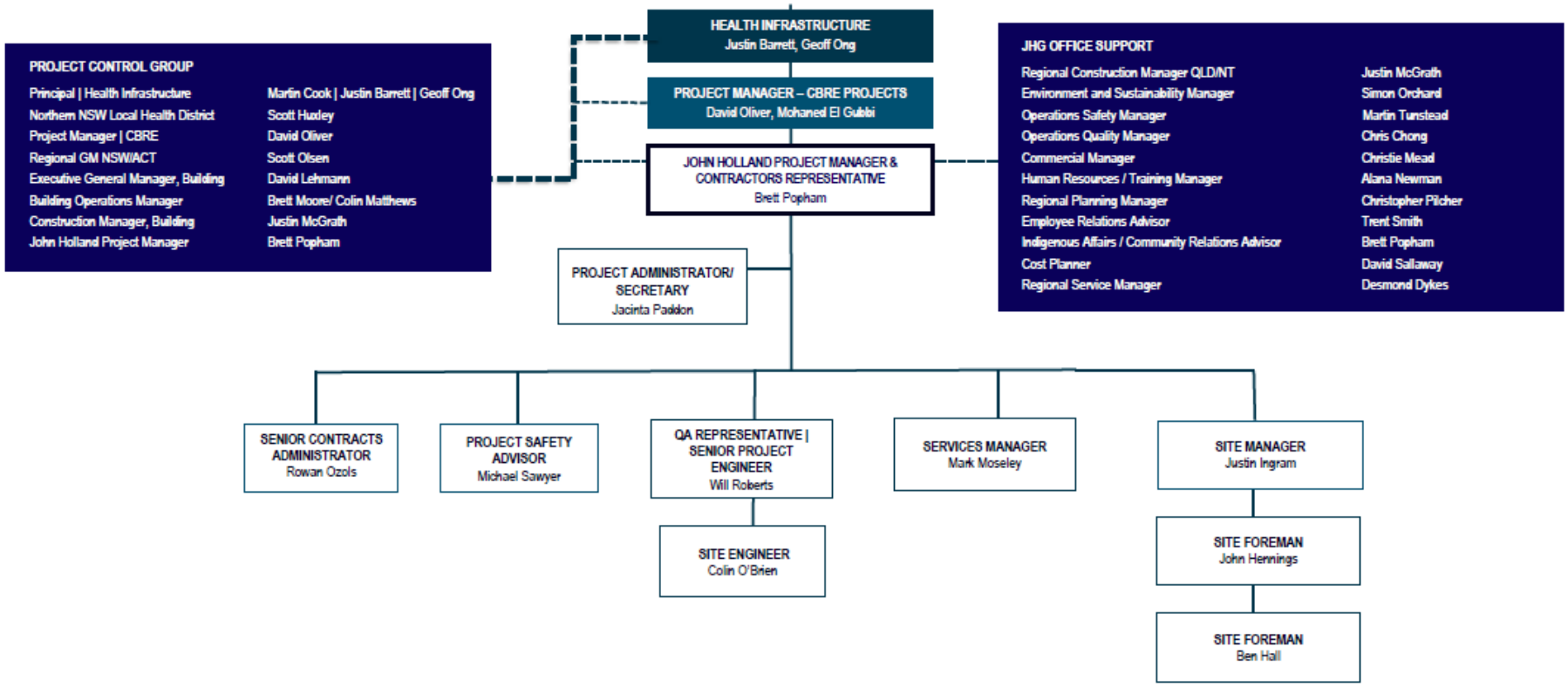
Environmental Management Implementation & Operation Control elements will be audited in line with construction program, the environmental importance of the activity concerned and the results of previous audits. The **LBH 3B HSE Risk Look Ahead Tool** (located on W Drive) will be used to schedule audit elements in line with the construction program.

Corrective actions identified during audits shall be entered into JHET, Closed Off and Followed Up as required.

Appendix 4 - Organisational Chart for Project Delivery

Organisational Chart – Delivery Phase - North Tower

Revision A: - 20/03/2018



Appendix 5 - Environmental Toolbox and Prestart Meeting Schedule

Table 16: Toolbox meeting schedule

Topic	Timing
Waste management	During construction
Hazardous substances management	During construction
Noise and vibration management	During construction
Spill response	During construction
Dust and air quality management	During construction

Appendix 6 - Monitoring and Reporting

Table 17: Monitoring

Monitoring			
Method	**Frequency**	**Participants**	**Records**
Site inspections	Weekly inspection of project site, monthly inspection of drainage settling tank and McKenzie St car park, further inspections as required (e.g. after rain event)	PER	Checklist
GMR assessment (internal)	Monthly	PM/SM/PER	GMR assessment form
GMR assessment (external)	Quarterly	OEM/OSM	GMR assessment form
Noise & Vibration	As specified in the Noise & Vibration Management Plan	PER	Ongoing monitoring as required in the Noise & Vibration Plan
Site observations	Daily or as required	Supervisor	Site diary

Table 18: Calibration

Calibration of Monitoring Equipment	
Equipment Type	**Frequency**
To be determined based on project requirements.	As per manufacturer's specifications

Table 19: Reporting

Reporting			
Type	**Recipient**	**Frequency**	**Inclusions**
Project Report	Internal	As directed by JH Regional HSEQ	Fuel, electricity, water usage and waste generated by the project Environmental innovations and initiatives Complaints, infringements and penalties incurred Environmental incidents Non conformances
Principal Monthly Report	Principal	Monthly or as required	As per the head contract requirements

Appendix 7 - Integrated Management System Procedures

Table 21 below describes the framework of how JH addresses the requirements of ISO 14001. Note that in addition to ISO14001, the procedures referenced also address the requirements of AS/NZS4801, 4292 and AS/NZSISO9001

Table 20: Matrix of Management Procedures

AS/NZS ISO14001 Ref	AS/NZS ISO 14001:2004 System Element Heading	IMS Ref	Integrated Management System Procedure
4.1	General requirements	JH-MPR-BUA-020 JH-MPR-PMA-015 JH-MPR-SQE-009 JH-MPR-SQE-002	Business Planning Project Monthly Reporting Performance Statistics – Safety, Quality and Environment Monitoring & Review
4.2	Environmental Policy	JHG-POL-GEN-002	John Holland Group Environment Policy
4.3 4.3.1 4.3.2 4.3.3	Planning Environmental aspects Legal and other requirements Objectives, targets and programme(s)	JH-MPR-ENV-001 JH-MPR-PMA-001 JH-MPR-PMA-002 JH-MPR-QUA-001 JH-MPR-WHS-001 JH-MPR-BUA-004	Environmental Planning Project Launch Planning & Programming Quality Planning WHS & R Planning Administering the Integrated Management System (IMS)
4.4 4.4.1 4.6	Implementation and operation Resources, roles, responsibility and authority Management review	JH-MPR-PMA-005 JH-MPR-PMA-006 JH-MPR-PMA-017 JH-APP-PMA-005-06 JH-MPR-QUA-003 JH-MPR-QUA-004 JH-MPR-SQE-002 JH-MPR-HRT-003 JH-MPR-SQE-006	Letting of Consultant, Subcontract or Supply Packages Administration of Consultants, Subcontract or Supply Packages Standard Contract Agreements Evaluation Visits to Subcontractors Suppliers Inspection of Subcontracted Works Performance Rating of Subcontractors Monitoring and Review Resource Planning Managing Safety, Quality & Environment Risks

AS/NZS ISO1400 1 Ref	AS/NZS ISO 14001:2004 System Element Heading	IMS Ref	Integrated Management System Procedure
4.4.2	Competence, training and awareness	JH-MPR-HRT-020 JH-MPR-SQE-001	People Capability Site Induction
4.4.3	Communication	JH-MPR-CCM-001	Internal & External Communication
4.4.4	Documentation	JH-MAN-ENV-001	Environmental Management Manual
4.4.5	Control of documents	JH-MPR-QUA-005 JH-APP-QUA-005-06 JH-MPR-BUA-004	Project Documentation & Control Project Generated Drawing & Sketches. Administrating the Integrated Management System
4.4.6	Operational control	JH-MPR-QUA-010 JH-MPR-BUA-017 JH-MPR-HRT-002 JH-MPR-SQE-008 JH-MPR-BUA-009 JH-MPR-PAE-001	Process Control Information Technology Employee Relations Medical Services Administration of Motor Vehicles Plant & Equipment
4.4.7	Emergency Preparedness and Response	JH-MPR-SQE-006 JH-MPR-PMA-008 JH-MPR-CCM-001 JH-MPR-SQE-010 JH-MPR-RCC-006	Managing SQE Risks Emergency Evacuation and Response Internal and External Communication Incident Management Crisis Management
4.5 4.5.1	Checking Monitoring and measurement	JH-MPR-SQE-004 JH-MPR-WHS-006 JH-MPR-QUA-010 JH-MPR-QUA-011 JH-MPR-PMA-016 JH-MPR-ENV-002	Inspection, Testing & Surveillance Workplace Hazard Identification & Inspection Process Control Commissioning of Works Practical Completion Resource Use Reporting
4.5.2	Evaluation of compliance	JH-MPR-SQE-007	Non-conformance & Corrective Action

AS/NZS ISO14001 Ref	AS/NZS ISO 14001:2004 System Element Heading	IMS Ref	Integrated Management System Procedure
4.5.3 4.6	Non-conformity, corrective action and preventative action Management review	JH-MPR-SQE-002 JH-MPR-SQE-010 JH-MPR-SQE-009	Monitoring and Review Incident Management Performance Statistics – Safety, Quality and Environment
4.5.4	Control of Records	JH-MPR-BUA-018	Records Management
4.5.5	Internal Audit	JH-MPR-SQE-002	Monitoring and Review

Appendix 8 – Environmental Control Plans

JH-ECP-ENV-001	Dust and Air Quality Environment Control Plan
JH-ECP-ENV-002	Water Quality, Erosion and Sediment Control Environment Control Plan
JH-ECP-ENV-003	Cultural Heritage Management Environmental Control Plan
JH-ECP-ENV-004	Construction Noise and Vibration Management Plan (or Environmental Control Plan)
JH-ECP-ENV-005	Waste Management Environment Control Plan
JH-ECP-ENV-006	Site Contamination & Hazardous Substances Environmental Control Plan

Dust and Air Quality

Lismore Base Hospital Redevelopment
Stage 3B/3C Main Building Works

JH-ECP-ENV-001

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	15/05/2014	B. McGuiness	Brett Popham	Brett Popham	Initial issue
B	6/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised to include stage 3B1 works
C	22/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised following DLCS audit
D	12/09/2016	M.Patel	Brett Popham	Brett Popham	Revised for Stage 3B and Early works
E	21/4/2017	M. Sawyer	Brett Popham	Brett Popham	Revised following review
F	29/3/2018	M. Sawyer	Brett Popham	Brett Popham	Revised for NTX, inclusion of additional compliance documents

Contents

1 Introduction

This Dust and Air Quality Environmental Control Plan has been developed for the Lismore Base Hospital (LBH) Redevelopment – Stage 3B Main Building Works.

The LBH is located at No.60 Uralba Street, Lismore.

The LBH site is located within a block that is bound by Uralba Street to the south, Hunter Street to the west, Orion Street and Fermoy Avenue to the north and Weaver Street and Little Uralba Street to the east.

The locality surrounding the LBH is generally mixed use, consisting of a combination of residential and health-related land uses.

The project will involve earth, road, demolition and construction works, all of which have the potential to create an environmental nuisance for surrounding land users. Demolition activities have the potential to disturb asbestos containing materials (ACM).

Figure 1: Location of Stage 3B development

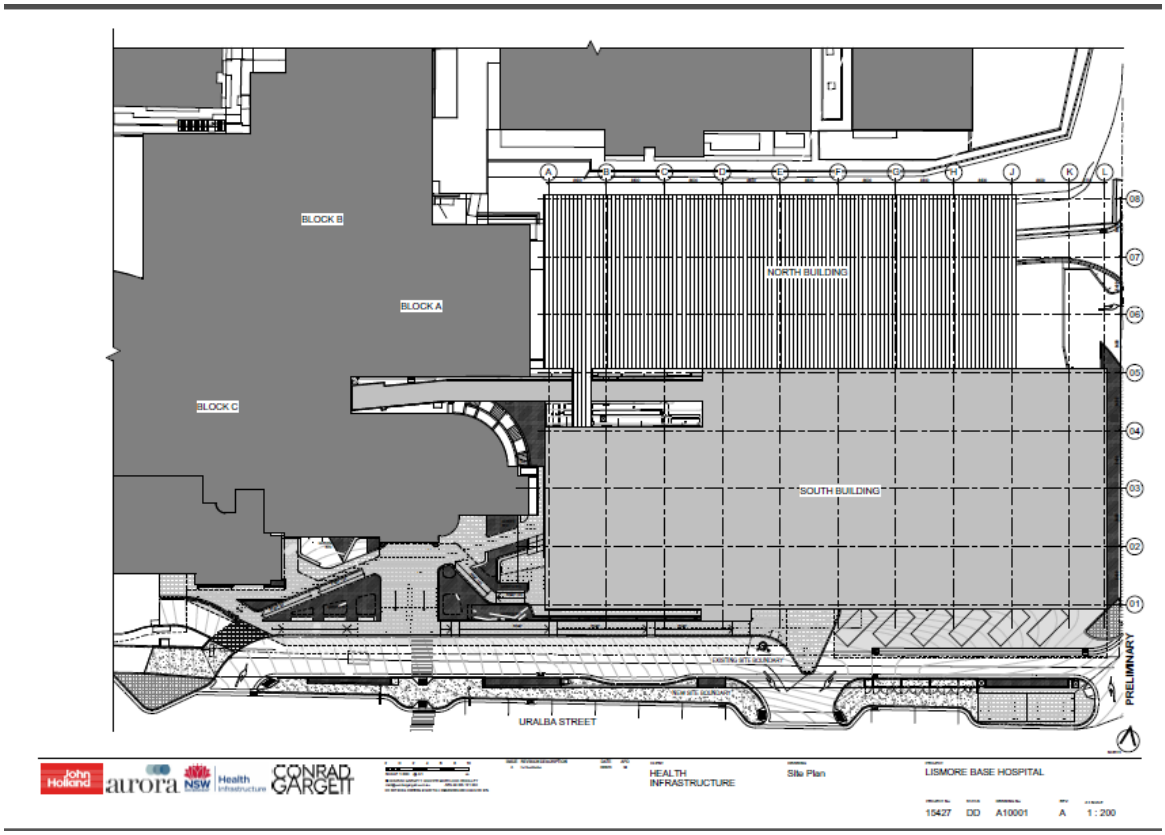


Figure 2: Overlay of Stage 3B1 South Tower and 3B North Tower Buildings

2 Objective

To assess the potential air quality impacts generated by the Lismore Base Hospital Redevelopment and provide management measures to ensure the impacts are controlled to an acceptable level and ensure that dust generated from construction activities does not impact on sensitive receptors. This ECP aims to outline the following:

- Compliance with head contract to manage and protect the existing building mechanical air intakes through an inspection and monitoring regime
- Relevant legislation and guidelines for air quality generated during the project;
- Air quality impacts potentially arising from construction of the project;
- Safeguards, mitigation measures and monitoring to manage air quality impacts during construction;
- Roles and responsibilities of those involved in the design and implementation of air quality management and control;
- Environmental obligations and requirements.

3 Legislative and Regulatory Compliance

Federal Legislation

- Not applicable

State legislation

- NSW Environment Planning and Assessment Act 1979 (EP&A Act)
- NSW Protection of the Environment Operations Act 1997 (POEO Act)
- NSW Protection of the Environment Operations (Clean Air) Regulation 2002

Local Government Laws

- Not applicable

Standards / Codes

- National Environmental Protection Measure (NEPM) for Ambient Air Quality, National Environment Protection Council (NEPC), June 1998
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, Department of Environment and Conservation (NSW)

4 Performance Criteria

1. Construction and on-site activities undertaken in accordance with this ECP
2. No impacts to sensitive receivers as a result of works

5 Responsibilities

The Project Environmental Representative (PER) and Site Supervisors shall be responsible for the day-to-day management of on-site air quality, environmental controls and on-site monitoring. The PER and Supervisors will:

- Implement practical and effective dust control procedures for all aspects of the project, as detailed in Section 6 of this Plan;
- Ensure compliance with dust procedures through visual inspection, staff training, checklists and corrective action where required;
- Review and modify where required, the air quality management program on a regular basis; and
- Monitor community and stakeholder feedback and monitoring results.

6 Environmental Control Measures and Safeguards

No	Actions Required	Staff Responsible	When
1.	Exposed sections of the work will be watered regularly where there is a risk of surface dust to be generated.	Supervisor	As required
2.	All construction plant and machinery will be maintained in good working order and there shall be no excessive exhaust emissions (e.g. longer than 20 seconds after start-up).	Plant Operator	At all times
3.	No burning of any materials on site.	All personnel	At all times

No	Actions Required	Staff Responsible	When
4.	Stabilisation of disturbed surfaces will take place as soon as practicable.	Supervisor	As required
5.	The frequency of dust suppression (such as watering) will be increased as appropriate, such as during dry and windy conditions to ensure no visible dust emissions.	Supervisor	As required
6.	Progressively rehabilitate/seal disturbed areas to minimise the potential for windblown dust.	Supervisor	Within 4 weeks of creation of final landform
7.	Ensure appropriate erosion and sediment control measures in place to prevent mud being tracked onto sealed roads.	Supervisor	Daily
8.	Ensure hard paved areas are swept clean of soil/clay at regular intervals using broom/shovel or similar when required.	Supervisor	Daily
9.	Stockpiles and handling areas will be maintained in a condition that minimises windblown or traffic generated dust by watering, sealing or vegetation. Areas that may be inaccessible by water carts will be managed using other means such as water hoses, crushed rock or mulch coverage.	Supervisor	Daily
10.	Deposition of dust, soil or mud from any vehicle on public roads will be minimised by placement of gravel to site compound and laydown areas	Supervisor	Daily
11.	Vehicles will not be left to idle where the emissions could adversely impact on sensitive receivers.	Plant Operator	As needed
12.	Start-up of vehicles will, where practicable or relevant be undertaken away from areas of sensitivity.	Plant Operator	As needed
13.	Silt will be removed from behind filter fences and other erosion control structures on a regular basis (as determined during scheduled or post- rain event inspections), so that collected silt does not become a source of dust and to ensure that silt fences operated effectively.	Supervisor	As determined by inspection outcomes
14.	Ensure that vehicles on site travel at speeds that do not generate excessive amounts of dust – i.e. 5km/hr.	Vehicle Operator	At all times
15.	Vehicles will be restricted to specified routes.	Supervisor	Daily
16.	Restricting or ceasing dust-generating activities on extremely windy or dry days.	Supervisor	As required

No	Actions Required	Staff Responsible	When
17.	Specific AMS and TRAs required for demolition and refurbishment works, where there is a high risk of dust / air quality issues affecting the existing Lismore Base Hospital operations.	Project Engineers, Safety Advisor, PER, Supervisors	Prior to demolition and refurbishment works commencing
18.	Air monitoring will be performed during demolition activities where there is a risk of disturbing asbestos containing materials	Project Engineers, PER	During demolition activities

7 Monitoring

No	Monitoring Required	Staff Responsible	When
1.	Airborne dust and controls will be visually monitored daily	PER/Supervisors	Daily
2.	Airborne dust and controls will be visually inspected during the weekly environmental site inspection	PER	Weekly

8 Reporting

No	Reporting Required	Staff Responsible	When
1.	All complaints / incidents regarding dust and air quality shall be reported to the Supervisor and PER immediately. Complaints and incidents will be recorded and managed through JHET.	All Staff	Following incident and/or complaint
2.	Environmental Incident Report shall be completed on the JHET system and forward to the Project Manager.	PER	Following incident and/or complaint

9 Corrective Actions

Problem	Corrective Action
In case of any incident or complaint	1. Advise appropriate staff (Supervisor & PER); 2. Determine problem, and rectify 3. Notify staff through: • Specific instructions • Meetings • Written instructions / Memos / Notice boards • Induction

Problem	Corrective Action
	• Training sessions • Action delegation through JHET; 4. Monitor performance and re-notify staff as required.

Water Quality, Erosion and Sediment Control

Lismore Base Hospital Redevelopment
Stage 3B/3C Main Building Works

JH-ECP-ENV-002

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	16/05/2014	B. McGuiness	Brett Popham	Brett Popham	Initial issue
B	06/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised to include stage 3B1 works
C	22/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised following DLCS audit
D	12/09/2016	M.Patel	Brett Popham	Brett Popham	Revised for Stage 3B and Early works
E	21/04/2017	M. Sawyer	Brett Popham	Brett Popham	Revised following review
F	29/3/2018	M. Sawyer	Brett Popham	Brett Popham	Revised for NTX, inclusion of additional compliance documents

Table of Contents

1 Introduction

This Water Quality, Erosion and Sediment Environmental Control Plan has been developed for the Lismore Base Hospital (LBH) Redevelopment – Stage 3B Main Building Works (the Project).

The LBH is located at No.60 Uralba Street, Lismore.

The LBH site is located within a block that is bound by Uralba Street to the south, Hunter Street to the west, Orion Street and Fermoy Avenue to the north and Weaver Street and Little Uralba Street to the east.

The locality surrounding the LBH is generally mixed use, consisting of a combination of residential and health-related land uses.

The project will involve earth, road, demolition and construction works, all of which have the potential to create an environmental nuisance for surrounding land users. Demolition activities have the potential to disturb asbestos containing materials (ACM).

Figure 1: Location of Stage 3 development

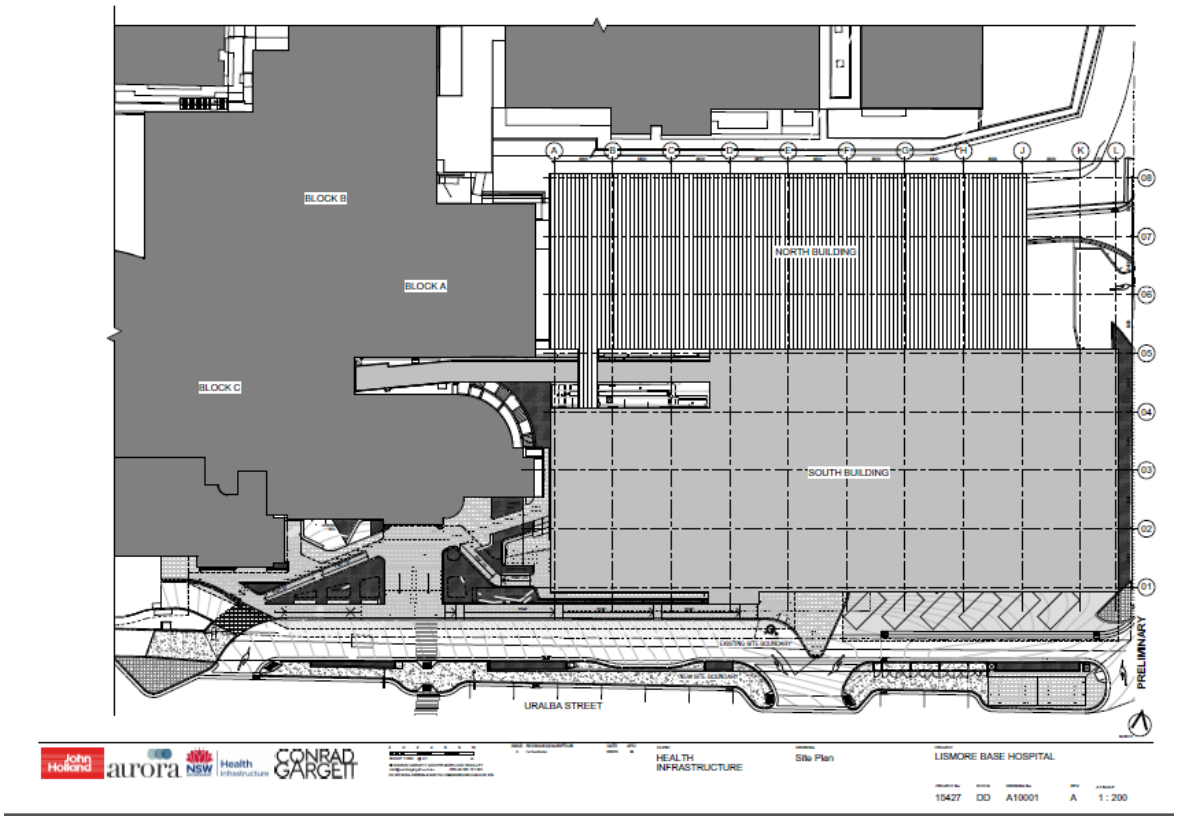


Figure 2: Overlay of Stage 3B1 South Tower and 3B North Tower Buildings

2 Objective

The objectives of this Plan are to ensure that appropriate procedures and programs of work are in place during the Project to:

- Identify activities that could cause soil erosion and general sedimentation;
- Describe the location, function and capacity of erosion and sedimentation control structures required to minimise soil erosion and the potential for transport of sediment off-site;
- Ensure erosion and sediment control structures are appropriately maintained; and
- Fulfil the Project's statutory obligations.

3 Legislative and Regulatory Compliance

This list may change subject to scope of works.

Federal Legislation

- Not applicable

State legislation

- NSW Environment Planning and Assessment Act 1979 (EP&A Act)
- NSW Protection of the Environment Operations Act 1997 (POEO Act)
- NSW Protection of the Environment Operations (Clean Air) Regulation 2002

- NSW Water Act 1912
- NSW Water Management Act 2000

Local Government Laws

- Not applicable

Standards / Codes

- Managing Urban Stormwater – Soils and Construction , Volume 1 (the Blue Book) (Landcom, 2004)
- Managing Urban Stormwater – Soils and Construction, Volume 2A Installation of Services (Dept. of Environment and Climate Change, 2008)
- Managing Urban Stormwater – Soils and Construction, Volume 2C Unsealed Roads (Dept. Environment and Climate Change, 2008)
- National Water Quality Management Strategy: Australian Freshwater Guidelines for Fresh and Marine Water Quality (ANZECC, 2000)

4 Performance Criteria

1. Construction and on-site activities undertaken in accordance with this ECP
2. No impacts to sensitive receivers as a result of works
3. No complaints or legislative action against the Project as a result of erosion or sediment control

5 Water Quality Objectives

Water quality objectives for this project are in accordance with the ANZECC, 2000 Guidelines.

Dewatering of accumulated water in pits, trenches and other excavations will be in accordance with the following trigger values:

pH: 6.5 – 8.5

Turbidity: 50 NTU

Total Suspended Solids: 50mg/L

Hydrocarbons: No hydrocarbons observed

6 Erosion and Sediment Controls

Erosion and sediment controls will be implemented on the Project to mitigate the impacts of the Lismore Base Hospital Stage 3B development on nearby watercourses and the surrounding environment. Standard erosion and sediment control techniques will be utilised in accordance with the requirements of Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volumes 2A and 2C (DECC, 2008) (the Blue Book).

A summary of the general erosion and sediment control principals to be employed on the Project are outlined in Section 7. A detailed drawing of erosion and sediment control measures to be employed is contained in Appendix A.

7 General Erosion and Sediment Control Principals

The Project will implement a range of general erosion and sediment controls in accordance with the Blue Book (Landcom, 2004). These general controls have been designed to control and manage erosion and sediment that may result from earthworks, road works, the installation of services and demolition works. The measures to be implemented include the following:

- Installation of erosion and sediment control measures as the first step in the process for land disturbance;
- Minimising all disturbed areas and stabilisation by progressive rehabilitation/stabilisation as soon as practicable;
- Clearly identifying and delineating areas required to be disturbed and ensuring that disturbance is limited to those areas;
- Construction of diversion banks upslope of areas to be disturbed to direct clean water runoff away from disturbed areas where practicable. The diversion banks will be designed to ensure effective segregation of sediment-laden runoff and allow clean surface water to return to watercourses;
- Construction of catch drains to capture runoff from disturbed areas and direct runoff to appropriate controls;
- Construction of other erosion and sediment control measures such as sediment fencing and sediment dams within the catchment area;
- Construction of drainage controls such as table drains at roadsides and on hardstand areas and toe drains on stockpiles and overburden emplacement areas;
- Interception of runoff from disturbed catchment areas in pit floors and sediment dams;
- Construction of sediment dams to capture runoff from infrastructure areas;
- Placement of geotextile liners and rock check dams in drains as required to reduce water velocities and prevent scouring;
- Regular maintenance of all controls and inspection of all works weekly and immediately after storm events to ensure erosion and sediment controls are performing adequately;
- Topsoil stockpiles are to be located away from trafficked areas and water courses;
- Level or gently sloping areas will be selected as stockpile sites to minimise erosion and potential soil loss;
- Stockpiles will generally be less than three metres high;
- Re-vegetation or stabilisation of final landforms and disturbed areas (where practicable) as soon as possible;
- Immediate repair or redesign of erosion and sediment controls that are not performing adequately, as identified by field inspections and daily observations.

8 Site Specific Strategies

8.1 Disturbance Minimisation

Land disturbance will be minimised by clearing the smallest area of land ahead of construction activities and leaving the disturbed area for the shortest amount of time possible.

All identified erosion and sediment control measures (refer Appendix A) will be implemented in advance of, or in conjunction with, soil removal activities.

8.2 Topsoil Management

Where topsoil is not being removed from site, it will be stockpiled within the perimeter of the dirty water management system.

If topsoil is to be stockpiled for greater than three (3) months, stockpiles are to be a maximum of three metres and a maximum batter slope of 1:2 (vertical:horizontal) is to be maintained to preserve biological viability and reduce soil deterioration where possible. Topsoil will preferably be stored in previously cleared areas. Stockpiles will be clearly identified with enough signage to reduce the likelihood of vehicular interaction, contamination and soil loss.

8.3 Management of Runoff Water

Runoff water that is generated on site in dirty water catchments is either treated or diverted through sediment management controls (refer Appendix A) to minimise the impact on the surrounding environment.

The Blue Book (Landcom, 2004) states that "…*ensuring that pollution does not occur to downslope receiving waters is essential. To this end, treated discharge waters should not contain more than 50 milligrams per litre of suspended solids in the design rainfall event. More stringent requirements might be necessary in particularly sensitive environments or, where applicable, can be required by Council's storm water management plan. Of course, all practicable measures to reduce pollution should be taken for storm events beyond the design event"* (refer to Chapter 6 – Sediment and Waste Control, Blue Book (Landcom, 2004).

In addition, the Blue Book states that *"The actual discharge should be considerate of the loads normally carried in the receiving waters, including those during and following storm events. Any fluvial processes within these waters will have reached equilibrium considerate of those loads. Reducing them significantly below these levels can cause streams to become "hungry" and erode their own bed and banks; whilst increasing them significantly can result in degradation of ecosystems"* (refer to Chapter 6 – Sediment and Waste Control, the Blue Book (Landcom, 2004).

If necessary, flocculation will be used to improve the quality of sediment laden water to less than 50mg/L of Total Suspended Solids (TSS) prior to discharge (in accordance with the Blue Book).

9 Site Specific Control Measures

Erosion and sediment control plans (Appendix A) have been designed for the project site and construction site compound to control and manage sediment through the construction and maintenance of a range of structures designed to prevent the uncontrolled discharge of surplus water off site. The structures will include:

- Clean water diversion drains;
- Catch drains;
- Sediment dams;

- Sediment fences and other temporary controls.

These erosion and sediment control plans will be implemented prior to commencing any works or as soon as practicable during early stages of the works. These controls will be maintained throughout the project duration until sufficient stabilisation of disturbed areas is achieved to prevent any further soil erosion.

The objective of these controls is to maximise similarities between pre-development and post development drainage networks. That is, the sediment loading and flowrates from disturbed areas will not exceed those that would have occurred from the pre-developed catchment areas. Where implemented, the adequacy of any controls will continually be assessed by the Project Environmental Representative (PER).

9.1 Permanent Drainage Measures

Permanent drainage will be installed as soon as practicable during construction. This permanent drainage will direct all water to a sediment trap (refer Appendix A). This trap will be inspected on a monthly basis as a part of the monthly environmental inspection. This trap will be cleaned as required where sediment is found to have accumulated within the tank. Cleaning will be via a vacuum truck or other suitable method.

9.2 Clean Water Diversion Drains

Clean water diversion diversions will be constructed upslope of areas to be disturbed to convey clean water runoff away from disturbed areas and prevent water from entering active areas and the dirty water systems. This clean water runoff will be diverted into stormwater systems surrounding the site.

9.3 Catch Drains

Catch drains will be established to convey runoff from the disturbed areas to sediment controls.

9.4 Temporary Controls

Sediment fences, sediment traps, rock check dams and other temporary erosion and sediment control measures from the “Blue Book” will be installed in advance of, or in conjunction with, earthworks to prevent sediment laden water leaving the site or entering clean water systems. These temporary controls are intended to be used for short periods whilst more permanent erosion and sediment control structures are being implemented, or during emergency scenarios where permanent structures are not deemed appropriate.

Sediment fences and other temporary controls will be designed and installed in accordance with the “Blue Book”. Where necessary, sediment fences or other temporary controls are to be installed immediately downstream of the areas to be disturbed. Sediment fences are to be installed along contours if practicable and where possible, the upslope catchment should have a grade of 1V:2H (vertical:horizontal). Sediment fences are to be constructed using geotextile fabric with structural posts to be placed no more than 1.5 metres apart. Sediment fences are not to be installed in high flow areas where the effectiveness of the fences may be impeded (e.g. perpendicular across drains).

Where practicable, the catchment areas of sediment fences and other temporary controls are to be limited by constructing the fences or other controls with small returns at 20 metre intervals to create smaller contributing sub-catchments. This is necessary as sediment fences and other temporary controls are prone to failure in larger storm events and should be designed to ensure a maximum of 50L/s passes through the sediment fence during a storm event, as per the “Blue Book” design criteria (Landcom, 2004).

10 Training

Effective implementation of this plan and on-site erosion and sediment control measures depends on the competency of the Project workforce and its contactors. General awareness training will be provided to all new employees and contractors via the Project environmental induction and an Erosion and Sediment Control toolbox presentation. Additional training and instruction will be provided to employees and contractors on an as-required basis.

11 Monitoring

11.1 Inspections

The Project Environmental Representative will conduct weekly inspections of all erosion and sediment control measures in conjunction with the Site Supervisor for each work area. Inspections of controls will also be undertaken as soon as practicable after high rainfall events (greater than 5mm of rainfall in 24 hours).

The objectives of the ongoing monitoring are to ensure:

- That erosion and sediment control structures are inspected at a frequency commensurate with the level of risk that each of the respective structures address;
- Maintenance works are conducted as required;
- Sediment and erosion control features are checked prior to high rainfall events; and
- That the program of erosion and sediment works implemented and the erosion and sediment control structures are effective.

Inspections will include:

- Water levels and general water quality in the settlement trap and sediment dams;
- Silt build-up in the settlement trap and sediment dams;
- Scouring or erosion in drainage lines;
- The integrity of installed structures;
- The presence of hydrocarbons in structures or drainage lines; and
- Rehabilitation progress of disturbed areas.

All inspections will be recorded in the Project’s Project Pack Web (PPW).

11.2 Corrective Actions

Environmental incidents will be managed in accordance with Section 7.5.2 of the Construction Environmental Management Plan (CEMP).

Where a failure of erosion and sediment control structures has occurred, or an inspection identifies a non-conformance with this plan, an incident/non-conformance report will be generated via the John Holland Event Tracker (JHET) System and actions allocated to the responsible person.

Any potentially high risk non-conformances identified during inspections will be reported immediately to the Site Supervisor responsible for the area in question for urgent action. The Project Environmental Representative will assess the effectiveness of any remedial actions at the next site inspection.

12 Reporting

Project reporting will be undertaken in accordance with Appendix 6 of the CEMP.

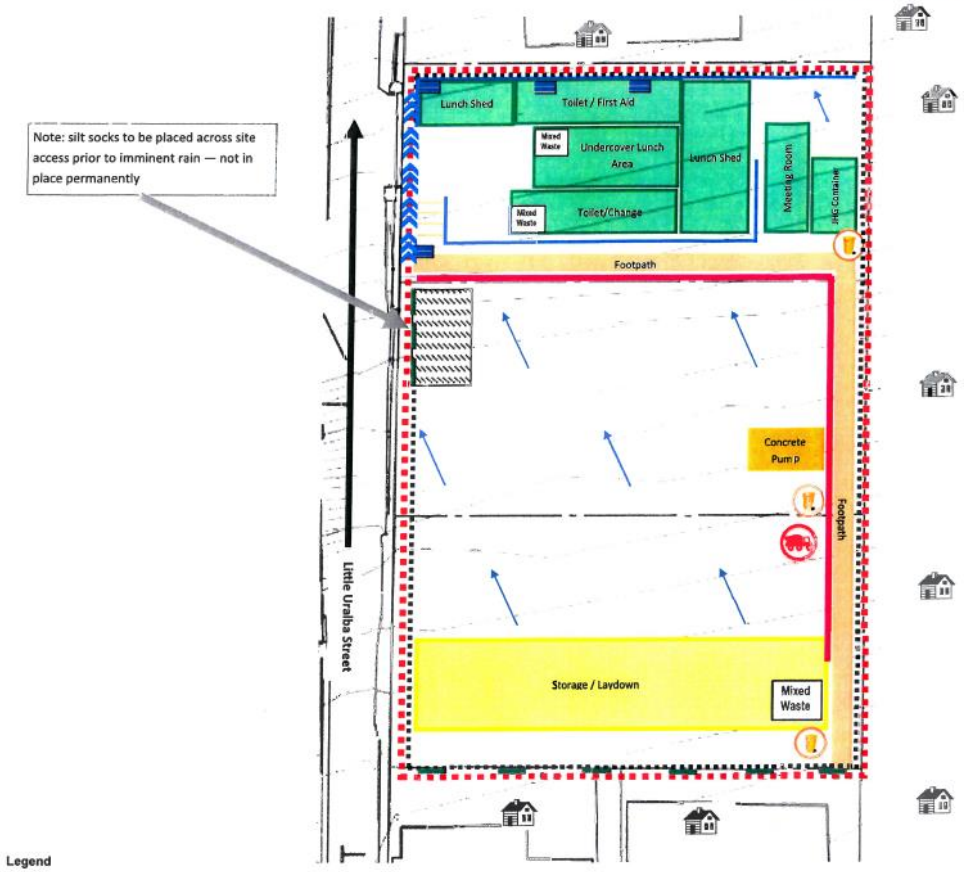
13 Complaints and Incident Management

Complaints and incidents will be managed in accordance with Sections 7.5.1 and 7.5.2 of the CEMP.

Appendix A – Lismore Base Hospital Stage 3B Erosion and Sediment Control Plan

SITE ENVIRONMENT PLAN

LBH Stage 3B Site Compound



Key Environmental Risks & Controls

SURFACE AND WATER:

Risk of loss of soil during rain.

Sediment fencing to be installed and maintained as per this SEP. Vehicle movements to be restricted to roadways and entry/exit/access roads. Entry/exit/access roads to be stabilised with coarse aggregates.

Stormwater pits must be treated for silt protection and maintained.

Drain guards on storm drains located on Little Uralba and Fermoy Avenue.

SOIL AND LAND:

Hazardous substances must be stored appropriately as to prevent spills. Spill kits to be stocked and accessible.

Concrete washout to occur only in designated area.

FLORA AND FAUNA:

No damage to vegetation inside or outside site boundary.

CULTURE & HERITAGE:

If there is discovery of any cultural heritage artefacts, personnel will immediately stop in the vicinity and the discovery will be reported to the Project Environmental Representative (PER) and/or Site Manager. Area to remain isolated from works until resolved.

NOISE AND VIBRATION:

Adhere to site hours (7am-6pm M-F, 8am-1pm Saturday). Note — no rock breaking/hammering, sheet piling or similar high noise activities are planned for this area.

RESOURCES:

Minimise the sites energy usage and related cost by turning off unnecessary plant and equipment when not in use.

WASTE:

Richmond Waste to report monthly waste statistics. Bins to be emptied regularly into skips on level 3.

AIR QUALITY

Dust suppression (water) to be used as required.

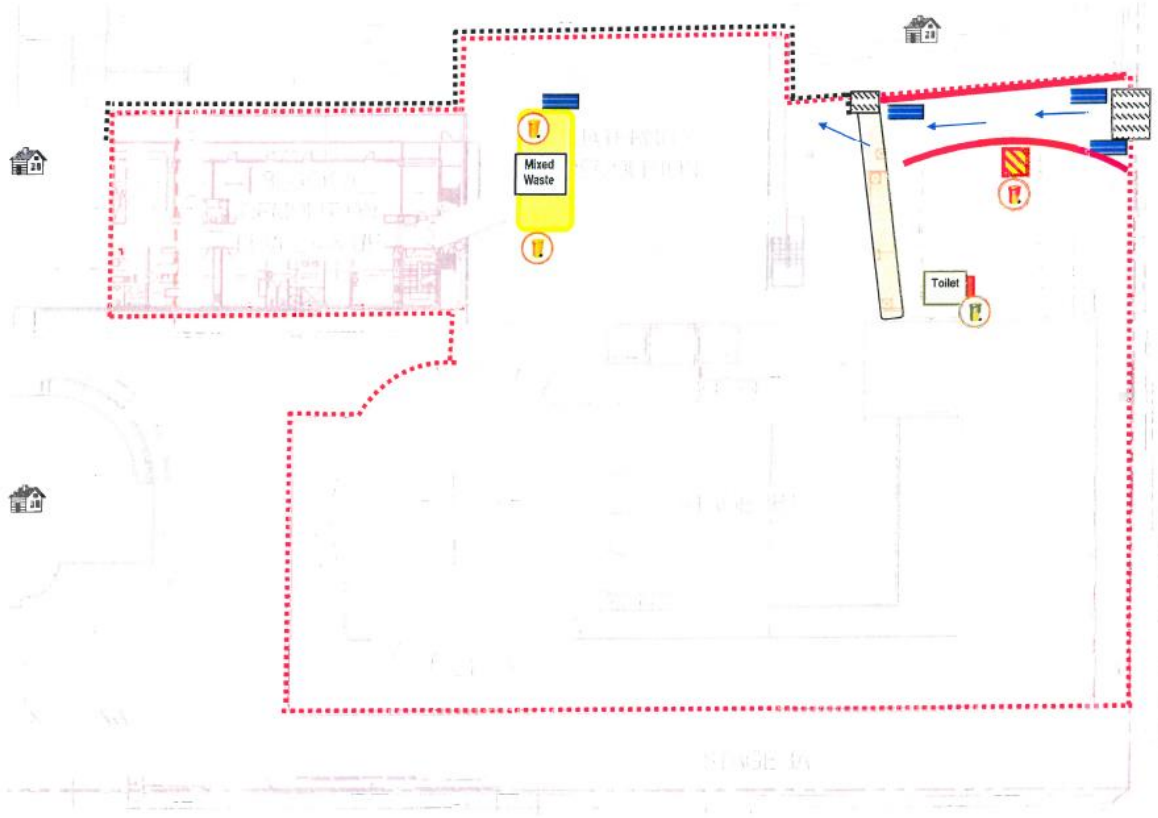
Position & Name	Initials	Date
Project Manager Brett Popham		9/9/16
Site Manager Justin Ingram	JI	9/9/16
PER Michael Sawyer	MS	9/9/16

LBH-SEP-004 Rev 0 3B Site Compound

1

SITE ENVIRONMENT PLAN

LBH Stage 3B Project Site



Legend

- Site Boundary
- Building/Shed
- Storage / Laydown
- Chemical store
- Block Wall
- Stabilised entry/exit
- Mixed Waste — General waste
- Stormwater inlet protection (geotextile cover)
- Spill Kit
- Washout trough
- Sensitive receiver
- Pedestrian walk-way
- Sediment fence
- Flow of water

N

Not to scale

Key Environmental Risks & Controls

SURFACE AND WATER:

Ground is road base, no stockpiles or areas of soil to be disturbed by rain or runoff.

Vehicle movements to be restricted to roadways and entry/exit/access roads.

Stormwater pits must be treated for silt protection and maintained.

SOIL AND LAND:

Hazardous substances must be stored appropriately as to prevent spills. Chemical store must be bunded with spill kits stocked and on hand.

Washout trough (paint, render etc.) installed to side of toilet block, spill kit to be stocked and on hand.

FLORA AND FAUNA:

No vegetation currently within site boundary. No damage to any vegetation outside site boundary.

CULTURE & HERITAGE:

If there is discovery of any cultural heritage artefacts, personnel will immediately stop in the vicinity and the discovery will be reported to the Project Environmental Representative (PER) and/or Site Manager. Area to remain isolated from works until resolved.

NOISE AND VIBRATION:

Adhere to site hours (7am-6pm M-F, 8am-1pm Saturday).

All rock breaking, rock hammering, sheet piling, pile driving and similar activities shall only be undertaken within the following hours:

9:00AM to 12:00PM, Monday to Friday

2:00PM to 5:00PM, Monday to Friday; and

9:00AM to 12:00PM, Saturday

RESOURCES:

Minimise the sites energy usage and related cost by turning off unnecessary plant and equipment when not in use.

WASTE:

Richmond Waste to report monthly waste statistics. Site bins to be emptied regularly into skips on level 3.

AIR QUALITY:

No dust issues expected due to site being road-base or chip-sealed

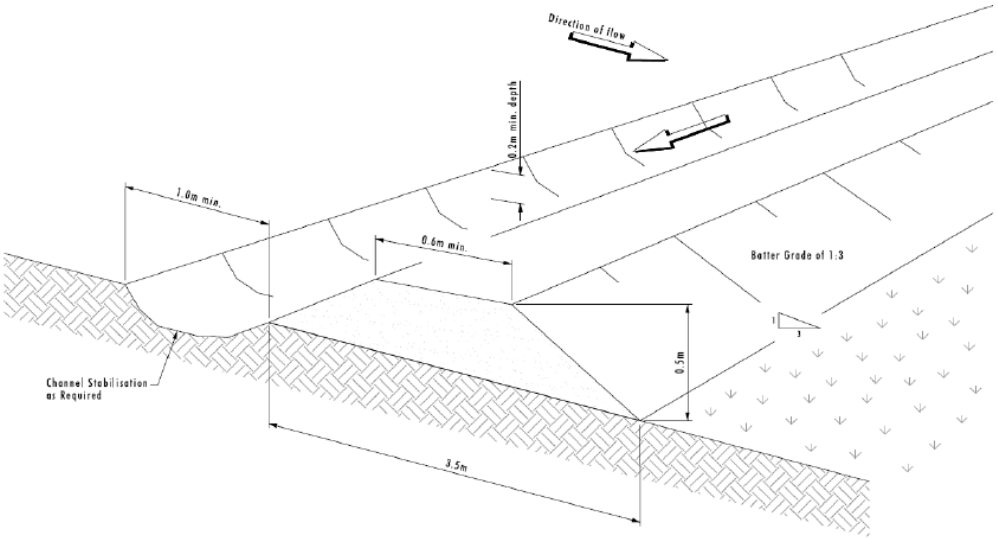
Position & Name	Initials	Date
Project Manager Brett Popham		9/9/16
Site Manager Justin Ingram	J.I	9/9/16.
PER Michael Sawyer		9/9/16

LBH-SEP-005 Rev 0 3B Project Site

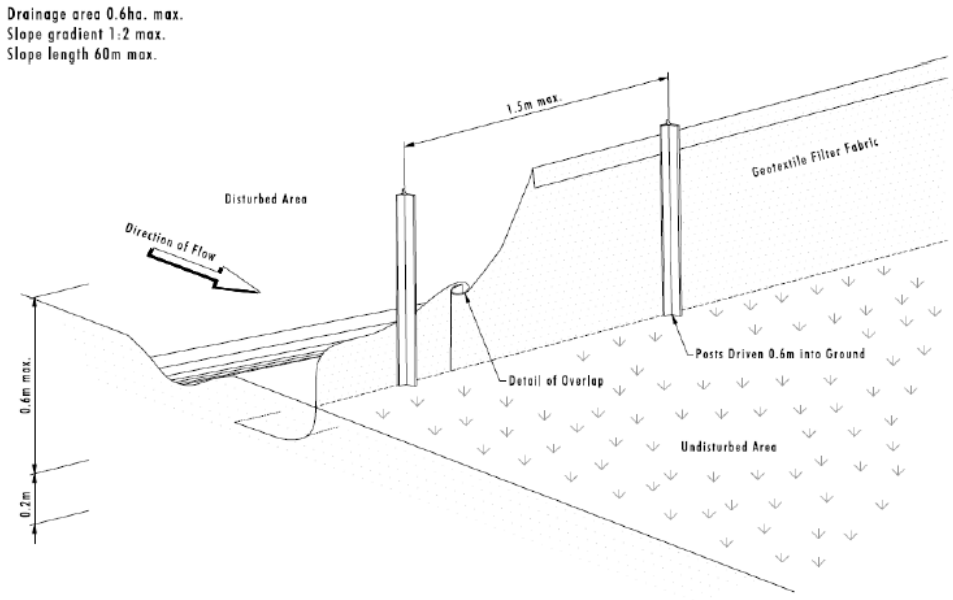
1

Appendix B - Drawings of Typical Erosion and Sediment Control Structures

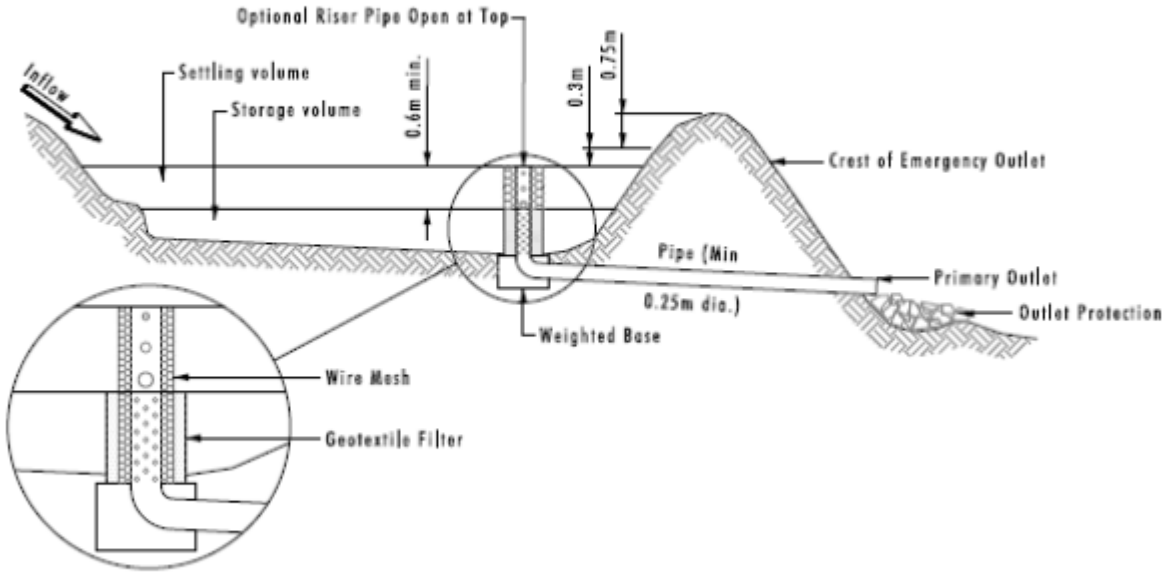
Catch/Diversion Drain



Silt Fence

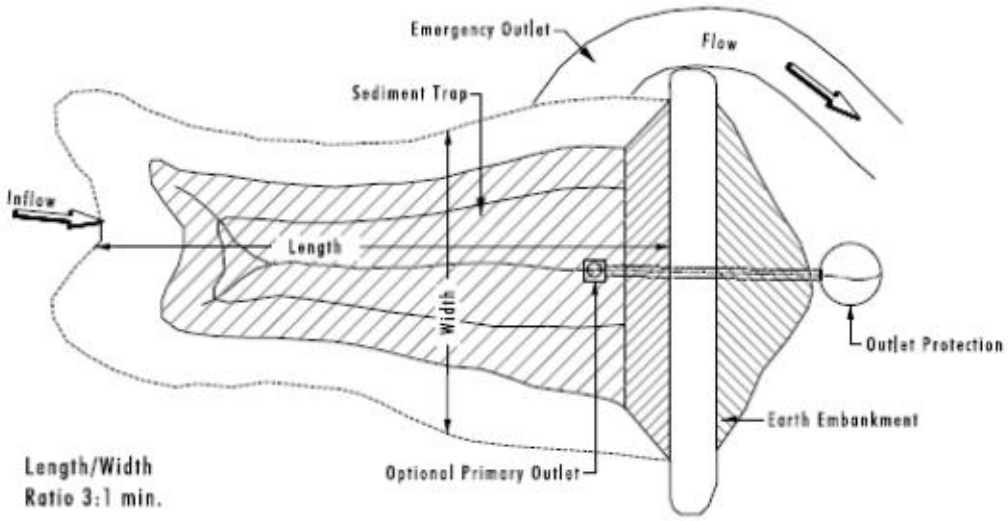

Drainage area 0.6ha. max.
Slope gradient 1:2 max.
Slope length 60m max.
1.5m max.
Geotextile Filter Fabric
Disturbed Area
Direction of Flow
0.6m max.
0.2m
Detail of Overlap
Posts Driven 0.6m into Ground
Undisturbed Area

Sediment Dam – Cross Section

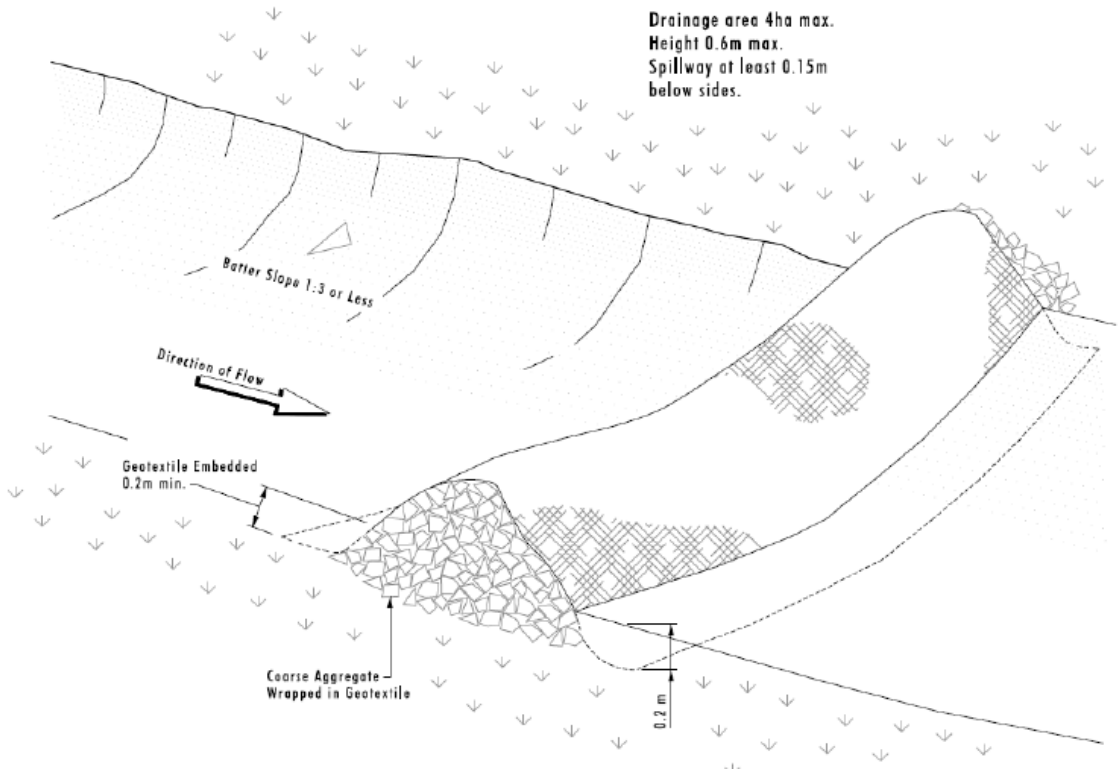


Cross Section

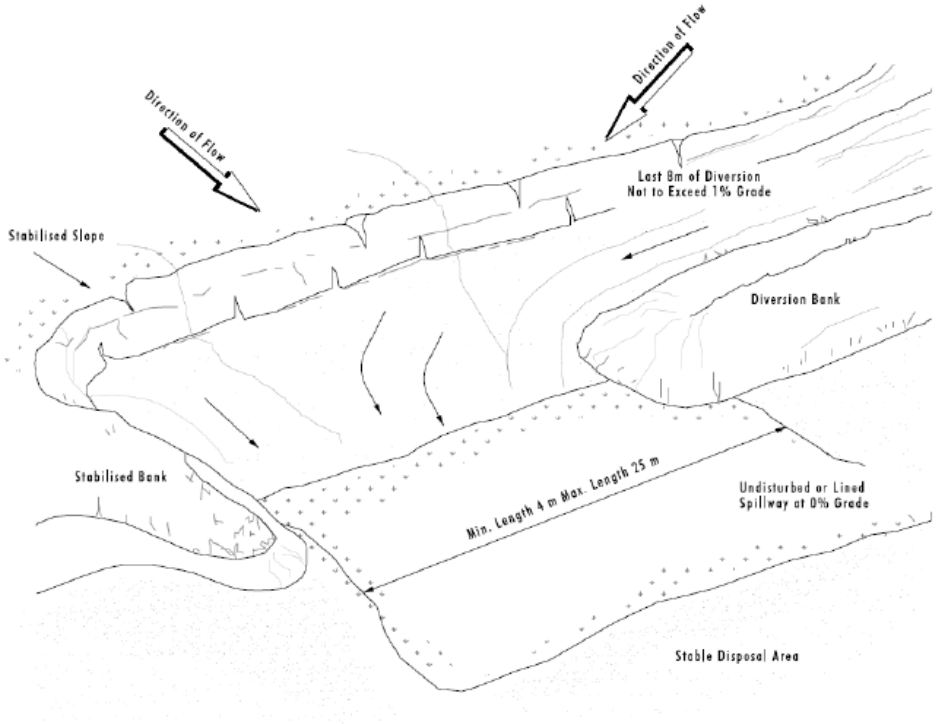
Sediment Dam – Plan



Rock Check Dam



Level Spreader



Cultural Heritage Management

Lismore Base Hospital Redevelopment
Stage 3B/3C Main Building Works

JH-ECP-ENV-003

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	21/05/2014	B. McGuiness	Brett Popham	Brett Popham	Initial issue
B	06/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised to include stage 3B1 works
C	22/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised following DLCS audit
D	12/09/2016	M.Patel	Brett Popham	Brett Popham	Revised for Stage 3B and Early works
F	29/3/2018	M. Sawyer	Brett Popham	Brett Popham	Revised for updated North Tower scope

Contents

1 Introduction

This Cultural Heritage Management Environmental Control Plan has been developed for the Lismore Base Hospital (LBH) Redevelopment – Stage 3B Main Building Works.

The LBH is located at No.60 Uralba Street, Lismore.

The LBH site is located within a block that is bound by Uralba Street to the south, Hunter Street to the west, Orion Street and Fermoy Avenue to the north and Weaver Street and Little Uralba Street to the east.

The locality surrounding the LBH is generally mixed use, consisting of a combination of residential and health-related land uses.

A Heritage Impact Statement prepared by City Plan Services (January 2015) reviewed the heritage value of the Lismore Base Hospital, investigated the presence of any heritage places or items within the vicinity of works and also investigated the potential for Aboriginal heritage items or places to be impacted by works.

The impact statement found that there was one 'locally' listed heritage item "Armstrong House" located at 86 Uralba Street (refer Figure 4). It is not believed that the proposed Lismore Base Hospital redevelopment works will impact on Armstrong House in any way.

The impact statement did not identify any items or places of Aboriginal heritage significance, and concluded that there was no potential for sites or places to be Aboriginal heritage significance to be uncovered during works. Regardless, City Plan Services stated in their impact assessment that a 'Stop Work' provision should be communicated to all project personnel in case any heritage items are uncovered during excavation works.

Figure 1: Location of Stage 3 development

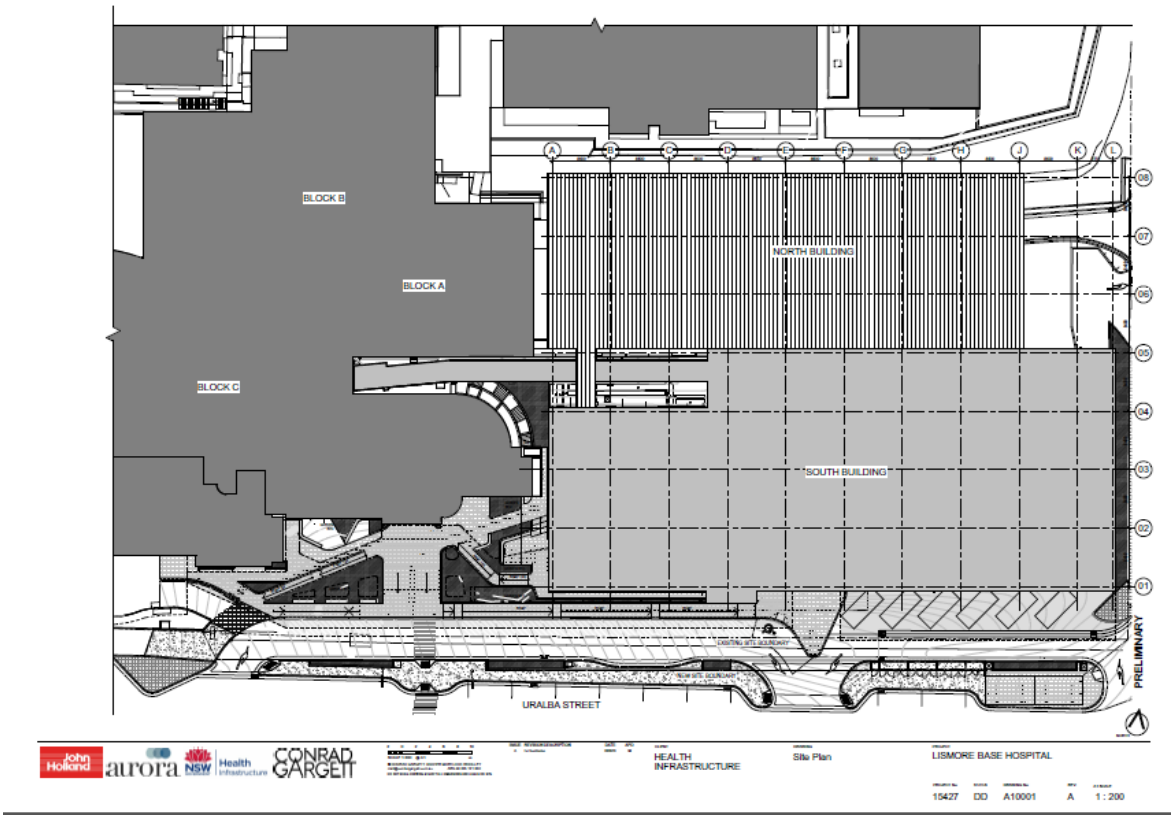


Figure 2: Overlay of Stage 3B1 South Tower and 3B North Tower Buildings

Figure 3: Armstrong House – 86 Uralba Street, Lismore (Locally heritage listed item – shown in yellow)

2 References

Federal Legislation

- Environment Protection and Biodiversity Conservation Act 1999

State legislation

- Heritage Act 1977
- National Parks and Wildlife Act 1974

Local Government Laws

- Not applicable

Standards / Codes

- Not applicable

Other Documentation

- Not applicable

3 Performance Criteria

1. Construction activities undertaken in accordance with this ECP
2. No impacts to cultural heritage items, sites or areas
3. Compliance with relevant permits any directions given by City Plan Services

4 Actions

No	Actions Required	Staff Responsible	When
Accidental Finds Procedure			
An 'accidental find' is a cultural heritage object or area that has not previously been identified during the initial cultural heritage survey or inspections.			
1	If cultural heritage is found, or suspected to be found during works, John Holland must: • Stop work immediately • Remove all workers from the area • Cordon off the area using flagging • Notify the Site Supervisor, Project Environmental Representative and City Plan Services (02 8270-3500) • City Plan Services will contact the Office of Environment and Heritage to gain advice on appropriate management measures. • Implement Office of Environment and Heritage advice prior to resuming works	PER Site Supervisor	During discovery of cultural heritage find
Discovery of Human Remains			
1	In the event of the discovery of human remains John Holland will: • **STOP WORK** and immediately contact the **POLICE** • Secure site • Also notify the Office of Environment and Heritage. • Resume works following clearance obtained from the NSW Police.	PER PM Site Supervisor	During discovery of human remains

5 Monitoring

No	Monitoring Required	Staff Responsible	When
1.	Daily site observations by the PER and Supervisors	PER/Supervisors	Daily
2.	Results for monitoring shall be recorded on the Environmental Management Inspection Checklist	PER	Monthly

6 Reporting

No	Reporting Required	Staff Responsible	When
1.	In the event of uncovering a cultural heritage item during excavation works, City Plan Services are to be advised immediately on (02) 8270-3500	PER Supervisor	In the event of an accidental find
2.	In the event of an incident relating to this ECP, an Environmental Incident Report shall be completed on the JHET and forward to the Project Manager	PER	Following incident

7 Corrective Actions

Problem	Corrective Action
In the event of a breach of this ECP	A breach of this ECP may occur if a cultural heritage item is accidentally uncovered and notification not given to City Plan Services. 1. The Supervisor shall immediately notify the PER that a breach of this ECP has occurred 2. The PER shall immediately notify City Plan Services and seek advice on rectification 3. John Holland shall adhere to any advice and direction provided by the City Plan Services and Monitor (if applicable) 4. The PER shall complete an Environmental Incident Report on JHET and forward to the Project Manager.

Construction Noise and Vibration Management Plan

Lismore Base Hospital Redevelopment
Stage 3B/3C Main Building Works

JH- ECP-ENV-004

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	11/06/2014	Resonate Acoustics	Brian McGuiness	Brett Popham	Initial issue
B	06/05/2015	Resonate Acoustics	Brian McGuiness	Brett Popham	Revised to include Stage 3B1 works
C	12/09/2016	Resonate Acoustics	Brett Popham	Brett Popham	Revised for Stage 3B and Early works
D	TBC	Acoustic Logic	TBC	TBC	To be submitted

Waste Management

Lismore Base Hospital Redevelopment
Stage 3B/3C Main Building Works

JH-ECP-ENV-005

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	15/05/2014	B. McGuiness	Brett Popham	Brett Popham	Initial issue
B	11/06/2014	B. McGuiness	Brett Popham	Brett Popham	Updated section 6
C	4/05/2015	B. McGuiness	Brett Popham	Brett Popham	Updated to include stage 3B1 works
D	22/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised following DLCS audit
E	12/09/2016	M.Patel	Brett Popham	Brett Popham	Revised for Stage 3B and Early works
F	29/03/2018	M. Sawyer	Brett Popham	Brett Popham	Revised for updated North Tower scope

Contents

1 Introduction

This Waste Management Environmental Control Plan (ECP) has been developed for the Lismore Base Hospital (LBH) Redevelopment – Stage 3B Main Building Works.

The LBH is located at No.60 Uralba Street, Lismore.

The LBH site is located within a block that is bound by Uralba Street to the south, Hunter Street to the west, Orion Street and Fermoy Avenue to the north and Weaver Street and Little Uralba Street to the east.

The locality surrounding the LBH is generally mixed use, consisting of a combination of residential and health-related land uses.

The project will involve earth, road, demolition and building works all of which have the potential to generate significant volumes of waste. This ECP will promote waste minimisation though pre-planning of work and adherence to the waste management hierarchy, additionally this ECP will ensure that all waste is handled and disposed of appropriately and in accordance with relevant legislation.

Figure 1: Location of Stage 3 development

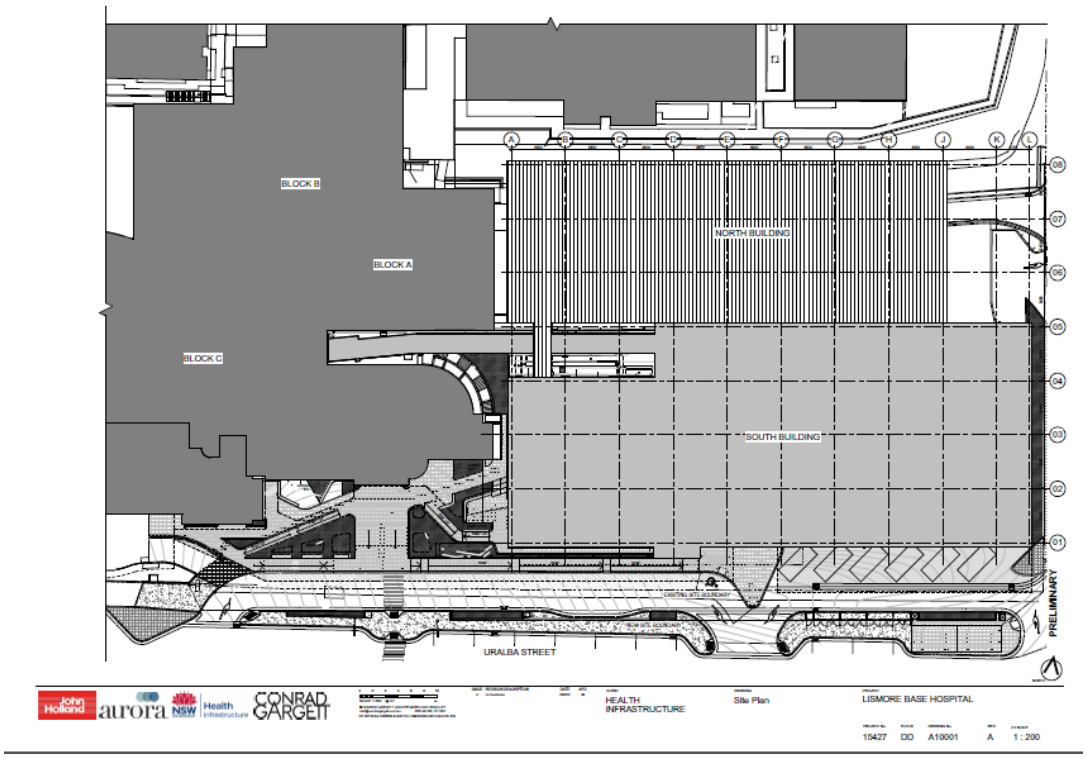


Figure 2: Overlay of Stage 3B1 South Tower and 3B North Tower Buildings

2 Objective

- Engage waste contractor whom will separate and recycle building waste where possible
- To re-use the clean excavated rock as import fill for a local site
- Divert waste from landfill via investigating any possible re-use options, in particular demolition of Block A
- Minimise waste generated through construction activities
- Ensure all potentially contaminated water is contained and managed on site
- Promote minimisation initiatives on site
- Ensure all waste is handled and disposed of appropriately and in accordance with relevant legislation

3 Legislative and Regulatory Compliance

This list may change subject to scope of works.

Federal Legislation

- Not applicable

State legislation

- NSW Environment Planning and Assessment Act 1979 (EP&A Act)
- NSW Protection of the Environment Operations Act 1997 (POEO Act)
- NSW Protection of the Environment Operations (Waste) Regulation 2005

- Waste Avoidance and Resource Recovery Act 1985

Local Government Laws

- Not applicable

Standards / Codes

- AS1940:2004 – *The storage and handling of flammable and combustible liquids*
- AS3780:1994 – *The storage and handling of corrosive substances*
- AS/NZS 4452:1997 – *The storage and handling of toxic substances*
- Waste Classification Guidelines: Part 1 Classifying Waste (DECC, December 2009)
- Resource Recovery Exemptions (Land Application) Guidelines (DECC)
- Transport of Dangerous Goods Code

4 Performance Criteria

- Target 80% of waste generated during construction to be either reused or recycled
- Both energy and water use will be minimised where feasible and practical
- All wastes generated on site is appropriately stored prior to disposal
- Recycle bins are to be set up at strategic positions
- Minimise harm to the surrounding environment though the control of on-site litter

5 Responsibilities

The Project Environmental Representative (PER) and Site Supervisors shall be responsible for the day-to-day monitoring of waste management on site:

- Implement practical and effective waste management processes and resources;
- Review and modify where required, waste management resources and initiatives on a regular basis; and
- Monitor community and stakeholder feedback and monitoring results.

6 Waste Classification

Using data from the construction of South Tower and applying industry averages, it is estimated that the construction of North Tower will generate 1150 tonnes of recyclable waste and 510 tonnes of non-recyclable waste.

Potential construction wastes for the Lismore Base Hospital project have been classified in accordance with the NSW Waste Classification Guidelines – Part 1 (Classifying Waste).

Waste Classification	Description	Transport/ Disposal Method	Tracking Required
Special Waste	▪ Asbestos Waste (potential for unanticipated discovery)	Licenced Contractor	No (Yes, if transported interstate)
Liquid Waste	▪ N/A	N/A	N/A
Hazardous Waste (Pre-Classified)	▪ Containers having previously held substance of Class 1, 3, 4, 5 or 8 (*Transport and Dangerous Goods Code*) ▪ Lead Acid or Nickel Cadmium batteries ▪ Waste oil	Licenced Contractor	Yes
Restricted Solid Waste	▪ N/A	N/A	N/A
General Solid Waste (putrescible)	▪ Putrescible organics ▪ Sewerage waste ▪ Food waste	Licenced Contractor	No (Yes if transported interstate)
General Solid Waste (non-putrescible)	▪ Glass ▪ Plastic ▪ Rubber ▪ Plasterboard ▪ Ceramics ▪ Bricks ▪ Concrete ▪ Metal ▪ Timber ▪ Paper ▪ Cardboard ▪ Sediment (collected in sediment trap devices) ▪ Vegetation ▪ Containers previously containing dangerous goods that have been washed ▪ Drained motor oil filters (mechanically crushed) ▪ Drained oil containers ▪ Oil rags ▪ Virgin excavated soil ▪ Building and demolition waste ▪ Asphalt waste ▪ Dried cured concrete waste	Licenced Contractor	No

7 Waste Tracking

Waste types that require tracking are detailed in the above table in Section 6 and in Schedule 1 of the NSW Protection of the *Environment Operations (Waste) Regulation 2005*. Wastes of this nature must be tracked using the NSW online waste tracking system, unless it is being transported interstate in which case the tracking system nominated by legislation is to be used.

8 Waste Management Actions

No	Actions Required	Staff Responsible	When
1.	The project will maintain and conserve the ecological integrity of site by implementing good construction practices at all times.	All project personnel	At all times
2.	Store excess materials appropriately (i.e. in a secure and weatherproof area) so that it is available for re-use on site	PER Project Manager Site Supervisor	Prior to construction
3.	Store waste separately to building materials to avoid the loss of materials with high value through accidental damage or disposal	Site Supervisor	At all times
4.	Communicate best waste minimisation practice with site personnel to ensure all are aware of the need to maintain a clean worksite. Construction waste will not litter areas outside the construction site boundary.	Site Supervisor	At all times
5.	Establish a designated waste compound (area) to avoid rubbish being placed in unacceptable areas of the site. Locations and setup shall be determined taking into account the following: • Protection from weather • Location to water • Accessibility for removal • Types of waste Locations, setup and removal shall be provided in the form of a Site Environment Plan. Signage is to be placed on or near all waste and recycling bins to encourage correct waste separation and disposal where applicable.	PER Site Supervisor	At all times

No	Actions Required	Staff Responsible	When
6.	Use a waste contractor who can provide a waste collection, separation, recycling and reporting service. Alternatively, provide separate bins on site for the collection of metal, plasterboard, timber, cardboard, PET (drink bottles), aluminium cans, clean office paper and general waste.	PER Site Supervisor	At all times
7.	Only approved waste contractors shall be used to collect and transport waste and recycling to licensed facilities.	PER Site Supervisor	At all times
8.	Suitable receptacles are to be provided for waste paint and other liquids, recycling of this material is to be arranged where practicable.	PER Site Supervisor	At all times
9.	Provide and maintain impervious storage bunds for all liquid materials (bunds must be constructed in accordance with Australian Standards, WorkCover and DECC (EPA) requirements.	PER Site Supervisor	At all times
10.	Remove, stockpile, test and dispose of all hazardous or intractable wastes (including asbestos) and contaminated materials in accordance with the requirements of WorkCover and DECC (EPA). All waste of this type must be tracked using the NSW online waste tracking system.	PER Site Supervisor	At all times
11.	Soil with traces of hydrocarbons will be managed as general solid waste (non-putrescible), if generally does not contain free-flowing liquid and may be disposed of in the general waste bins once bagged and tied in small quantities. Large quantities will be managed by a licensed waste contractor.	PER Site Supervisor	At all times
12.	No waste shall be burnt or buried on site	All personnel	At all times
13.	A concrete wash out pit lined with plastic sheeting shall be installed to catch all waste and excess concrete from concrete delivery trucks and concrete boom/line pump trucks. Once the pit is full the hardened waste concrete will be recycled or disposed of.	Site Supervisor	At all times
14.	At completion of the project all temporary works must be removed from site by a licensed contractor.	PER Site Supervisor	At completion of works
15.	Recycle packaging and consult with suppliers to identify opportunities to return excess or damaged materials and reduce packaging requirements (where this can be achieved without loss of product).	PER Site Supervisor	At all times

No	Actions Required	Staff Responsible	When
16.	Purchase products with a recycled component where available and cost effective. Where possible, goods will be ordered in bulk to minimise packaging waste, and the use of pre-fabricated components will be investigated and implemented where possible.	Site Supervisor	At all times
17.	No litter is to be left on site. All work areas are to maintain good housekeeping daily.	All personnel	At all times
18.	Store and dispose of chemicals in accordance with SDS and/or Australian Standards for storage of chemicals and dangerous goods. Empty containers not pre-classified as hazardous substance or dangerous goods may be disposed of as general solid waste (non-putrescible), if no free-flowing liquids are evident per OEH waste classification guideline requirements.	All personnel	At all times
19.	Waste storage facilities and spoil placement areas are to be located away from existing drainage lines and have appropriate bunding and drainage mechanisms.	Site Supervisor	At all times
20.	Water courses, site drains and water bodies will not be polluted by waste.	Site Supervisor	At all times
21.	Prior to disposal of any materials at a landfill the waste must be classified in accordance with the provisions of the POEO Act 1997	PER Site Supervisor	At all times
22.	Contaminated material including chemical and fuel containers, oil rags and contaminated soil will be removed from the site where practicable, and disposed of in accordance with OEH waste classification guideline requirements.	PER Site Supervisor	At all times
23.	Approved waste contractors are to provide the following data monthly: • Date of waste collections • Description of wastes • Cross reference to relevant waste transport documentation (where applicable) • Quantity of waste • Origin of waste • Destination of waste (for regulated wastes) • Intended fate of the waste e.g. type of waste treatment, reprocessing or disposal	PER Site Supervisor	Monthly

9 Monitoring

No	Monitoring Required	Staff Responsible	When
1.	Wastes shall be generally monitored on a daily basis to ensure that any materials which may cause land and/or water contamination or create odor problems are removed from site promptly and correctly	PER Site Supervisor	Daily
2.	Waste management will be monitored and recorded on the environmental inspection checklist	PER	Weekly

10 Reporting

No	Reporting Required	Staff Responsible	When
1.	Monthly waste quantities shall be entered into the Project's Project Pack Web	PER	Monthly
2.	Waste quantities shall be reported monthly via monthly Environmental Reports issued to Client	PER	Monthly

11 Incidents & Complaints

Incidents and complaints will be managed in accordance with section 5.5 of the CEMP.

12 Corrective Actions

Problem	Corrective Action
In case of any incident, complaint or non-conformance with this ECP	1. Advise appropriate staff (Supervisor & PER); 2. Determine problem, and rectify 3. Notify staff through: • Specific instructions • Meetings • Written instructions / Memos / Notice boards • Induction • Training sessions; 4. Monitor performance and re-notify staff as required.

Site Contamination & Hazardous Substances

Lismore Base Hospital Redevelopment
Stage 3B/3C Main Building Works

JH-ECP-ENV-006

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	16/05/2014	B. McGuiness	Brett Popham	Brett Popham	Initial issue
B	06/05/2015	B. McGuiness	Brett Popham	Brett Popham	Updated to include stage 3B1 works
C	22/05/2015	B. McGuiness	Brett Popham	Brett Popham	Revised following DLCS audit
D	12/09/2016	M.Patel	Brett Popham	Brett Popham	Revised for Stage 3B and Early works

Contents

1 Introduction

This Site Contamination and Hazardous Substances Environmental Control Plan has been developed for the Lismore Base Hospital (LBH) Redevelopment – Stage 3B Main Building Works (the Project).

The LBH is located at No.60 Uralba Street, Lismore.

The LBH site is located in a block that is bound by Uralba Street to the south, Hunter Street to the west, Orion Street to the north and Weaver Street and Little Uralba Streets to the east.

The locality surrounding the LBH is generally mixed use, consisting of a combination of residential and health-related land uses.

A survey of hazardous materials at the Lismore Base Hospital was undertaken by Noel Arnold and Associates (Ref: C107305:J111111) in July 2012 and Environmental and Laboratory Solutions (ELS) Pty Ltd (Ref: CUS000/00006107F) in November 2014. This assessment did identify asbestos within Block A which is to be demolished and Block C that is to be refurbished. This plan will be implemented during Block A demolition and Block A and C refurbishment including engagement of qualified hygienist. JH note there remains the risk and possibility that additional asbestos containing materials that could be identified during demolition or refurbishment works

Additionally, Coffey Geotechnics undertook a Stage 1 Environmental Site Assessment of the Lismore Base Hospital site (February 2013 – Ref: GEOTALST01618AO-AD). This assessment did not identify any areas of environmental concern and concluded that additional assessment was not required. This demonstrates that the site is suitable for the proposed use in accordance with *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land.* Irrespective, there remains a risk of unexpected finds during excavation works.

This document outlines environmental management practices, protocols and procedures to be implemented should contaminated soils, buried structures or asbestos be identified within the construction area.

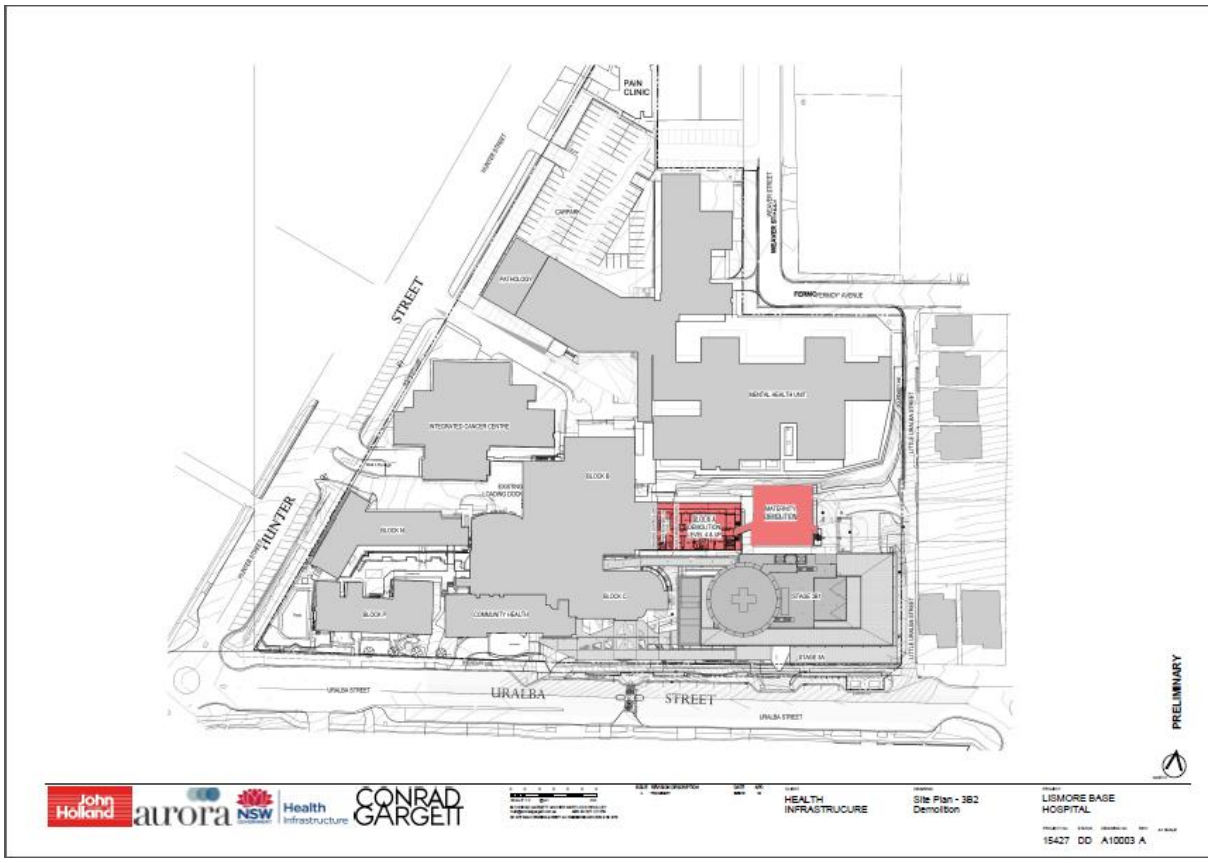


Figure 1: Existing Hospital Layout – Site Plan

Figure 2: Location of new Stage 3 redevelopment

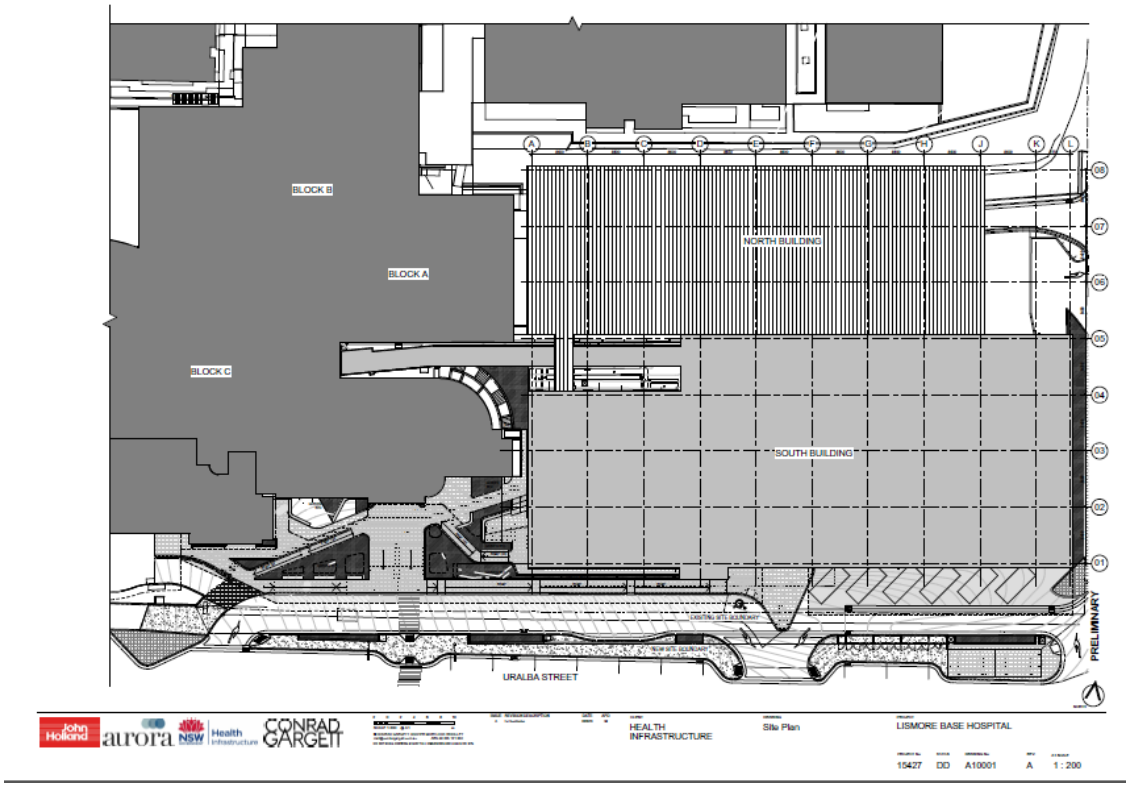


Figure 3: Overlay of Stage 3B1 South Tower and 3B North Tower Buildings

2 Objective

This plan sets out the environmental management practices, protocols and procedures required to minimise environmental impacts during planned works at the site.

The objective of the plan is to provide procedures to enable the works to be conducted according to relevant statutory requirements and sound environmental practice, with minimal environmental health impacts.

The plan therefore aims to provide a strategy for the construction works which:

- Immediate notification to the Principal on the identification of any suspected hazardous materials
- Use specialist hygienist to provide to conduct any testing and sampling required and provide advice as necessary
- Is in line with environmental statutory requirements;
- Minimises adverse impacts on the site and off-site environment and on public health and safety during works;
- Maximises the protection of workers;

3 Legislative and Regulatory Compliance

Federal Legislation

- Not applicable

State legislation

- Environment Planning and Assessment Act 1979 (EP&A Act)
- Contaminated Land Management Act 1997
- Environmentally Hazardous Chemicals Act 1985
- Occupational Health and Safety Act 2000
- Occupational Health and Safety Regulations 2001
- Protection of the Environment Operations Act 1997 (POEO Act)
- Protection of the Environment Operations (Waste) Regulations 1996
- Waste Avoidance and Resource Recovery Act 2001
- Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land 1998

Local Government Laws

- Not applicable

Standards / Codes / Policies

- AS1216: Class Labels for Dangerous Goods
- AS1940: The storage and handling of flammable and combustible liquids
- AS3780: The storage and handling of corrosives
- AS3833: The storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers
- AS3833: The storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers
- AS4326: The storage and handling of oxidising agents
- State Environmental Planning Policy No. 55: Remediation of Contaminated Land
- NEPC National Environment Protection (Assessment of Site Contamination) Measure (NEPM), 1999
- NSW DECC Waste Classification Guidelines, 2008
- NSW EPA Assessment, Classification and Management of Liquid and Non-Liquid Wastes, 1999
- WorkCover NSW Code of Practice: Excavation Work, 2000

4 Performance Criteria

1. Construction and on-site activities undertaken in accordance with this ECP
2. No impacts to sensitive receivers or personnel as a result of works
3. No complaints or legislative action against the Project as a result of site contamination or hazardous materials management

5 Unexpected Finds Procedures

5.1 Asbestos

If asbestos is detected in unexpected areas prior to, or during, site development works the following 'Unexpected Finds Protocol' will apply:

- Upon discovery of suspected asbestos containing material, the Site Manager is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to Asbestos Hazards and shall comply with Australian Standard 1319:1994 – Safety Signs for the Occupational Environment.
- A qualified Occupational Hygienist/OHS Consultant/Environmental Scientist is to be notified to inspect the area and confirm the presence of asbestos and to determine the extent of remediation works to be undertaken. A report detailing this information will be compiled by the Occupational Hygienist/OHS Consultant/Environmental Scientist and provided to the Project Manager.
- The location of identified asbestos material will be surveyed using sub-metre DGPS.
- The impacted soil will be classified and disposed of, as a minimum, as asbestos contaminated waste at an appropriately licensed waste facility. In dry and windy conditions the stockpile will be lightly wetted and covered with plastic sheet whilst awaiting disposal.
- All work associated with asbestos in soil will be undertaken by a contractor holding a class AS-1 License. WorkCover must be notified 7 days in advance of any asbestos works.
- As required, monitoring for airborne asbestos fibres is to be carried out during the soil excavation in asbestos containing materials.
- If the asbestos contaminated filling is disposed off-site documentary evidence (weighbridge dockets) of correct disposal is to be provided to the Project Environmental Representative.
- At the completion of the excavation, a clearance inspection is to be carried out and written certification is to be provided by an Occupational Hygienist/Environmental Scientist that the area is safe to be accessed and worked. If required, the filling material remaining in the inspected area can be covered/encapsulated by an appropriate physical barrier layer on non-asbestos containing material prior to sign-off.
- Validation samples will be collected from the walls and base of the remedial excavation to confirm the complete removal of the asbestos containing materials. If asbestos pipes/conduits are uncovered, then sampling density will typically comprise one sample per 10-20 linear metre (depending on length of pipe).
- The sampling locations should be surveyed using a sub-meter DGPS.
- Following clearance by an Occupational Hygienist, the area may be reopened for further excavation or construction work.

5.2 Volatile Contaminants

In the unlikely event that significant quantities of volatile compounds are detected, then appropriate gas mitigation strategies may be required as per ANZECC (1999) Guidelines for the Assessment of On-site Containment of Contaminated Soil.

If volatile contaminants are detected, the nature and extent of the impacts of the volatile contaminants should be established as a first step before an appropriate remedial strategy is to be established. If feasible the source material should be removed for off-site disposal.

6 Dangerous Goods Mitigation and Management Measures

6.1 General Construction

No	Actions Required	Staff Responsible	When
1.	Store and handle all dangerous goods (as defined by the Australian Dangerous Goods Code) strictly in accordance with: a) All relevant Australian standards b) For liquids, a minimum bund volume of 110% of the volume of the largest single stored volume within the bund; and c) The DECC's Environment Protection Manual Technical Bulletin Bunding and Spill Management	Project Safety Advisor (PSA) Project Environmental Representative (PER)	During construction
2.	All oils, potentially hazardous liquids and chemicals will be stored in bunded areas. They will also be covered and isolated from storm water run-off and on pallets or trays where possible. The bunded areas will be large enough to hold the contents of the largest container stored inside the bund, plus 10% of its volume i.e. 110% of the volume of the largest container.	PSR PER	During construction
3.	Spill kits will be supplied and maintained on site where chemicals are stored or used. Spills will be contained immediately. Refer to Spill Response Procedure below.	PER Site Supervisors	During construction
4.	All storage areas for hazardous materials will be located an adequate distance away from watercourses and entry points to the storm water system. Spillages will be contained and collected for disposal.	PER Site Supervisors	During construction
5.	Appropriate controls will be put in place for all hazardous and potentially contaminating activities to prevent contamination of watercourses.	PER Site Supervisor	During construction
6.	Maintain dedicated refuelling, chemical storage, and equipment wash down areas.	PSR PER Site Supervisors	During construction
7.	Potentially hazardous and contaminating activities including major equipment maintenance/servicing, wash down of construction plant and concrete washout to be conducted in bunding areas away from watercourses and other environmentally sensitive areas.	PSR PER Site Supervisors	During construction

No	Actions Required	Staff Responsible	When
8.	Minimise the volume of hazardous chemicals stored on site.	Site Supervisors	During construction

6.2 Storage, Use and Transport

No	Actions Required	Staff Responsible	When
1.	All dangerous goods and/or hazardous materials stored on site will be entered into an SDS Register.	PSR	During construction
2.	All dangerous goods and/or hazardous materials will be stored and transported in accordance with their SDS, and where practicable, handled within containment facilities (i.e. bunded areas, leak proof trays) designed to prevent the release of spilt substances to the environment.	PSR PER Site Supervisors	During construction
3.	The storage, handling and transport of dangerous goods and/or hazardous materials will comply with legislation and Australian Standards, including but not limited to, containment, placarding and segregation from incompatible materials.	PSR PER	During construction
4.	All vehicles and equipment will be adequately maintained so as to minimise drips/leaks/spills of dangerous goods and/or hazardous materials.	PSR PER Site Supervisors Plant Operators	During construction
5.	All storage and handling equipment (i.e. transfer hoses, tanks) will be kept in a well maintained condition.	PSR PER Site Supervisors	During construction
6.	Transport of dangerous goods to be undertaken under appropriate license.	PSR	During construction

6.3 Labelling

No	Actions Required	Staff Responsible	When
1.	All dangerous goods and/or hazardous materials should be stored in approved containers and properly labelled.	PSR PER Site Supervisors	During construction

No	Actions Required	Staff Responsible	When
2.	All packaged dangerous goods must be labelled in accordance with the Australian Dangerous Goods Code.	PSR PER Site Supervisor	During construction
3.	If unmarked drums arrive on-site, or if in doubt as to the constituents of a chemical substance, treat as a hazardous, toxic substance until found otherwise.	PSR PER Site Supervisor	During construction
4.	Any dangerous goods and/or hazardous materials decanted into a second container must be clearly labelled with the name and safety risks.	PSR PER Site Supervisor	During construction

6.4 Spill Response

No	Actions Required	Staff Responsible	When
1.	In the instance of a substance spill the following shall apply: • Isolate source and intercept/contain contaminated material; • Divert clean water around site • Clean-up substance with absorbent booms and pads, organic absorbent material and/or absorbent granules; • Remove contaminated material to a suitable site for remediation/disposal • Notify the Site Supervisor, PSR and PER immediately through verbal communication; • Raise an incident report on the JHET system in accordance with section 7.5.2 of the CEMP; • If spill is uncontainable or deemed to pose a risk to the health of personnel contact emergency services immediately on '000'.	All Personnel	During construction

6.5 Disposal

No	Actions Required	Staff Responsible	When
1.	Waste dangerous goods and/or hazardous materials, including empty drums or containers, must be stored in assigned storage areas until they are disposed of in accordance with the SDS.	PSR PER Site Supervisors	During construction
2.	Waste dangerous goods and/or hazardous materials will be managed and disposed in accordance with the requirements of relevant legislation and industry standards.	PSR PER Site Supervisors	During construction

7 Incidents and Complaints

Incidents and complaints will be managed in accordance with Section 7.5 of the Construction Environmental Management Plan (CEMP).

8 Training and Awareness

Training and awareness will be ensured in accordance with Section 9 of the CEMP.

9 Monitoring

No	Monitoring Required	Staff Responsible	When
1.	Daily observation of hazardous substances and associated controls	PSR PER Site Supervisors	Daily
2.	Monthly inspection of hazardous substances and associated controls	PSR PER	Monthly

10 Reporting

No	Reporting Required	Staff Responsible	When
1.	All complaints / incidents regarding hazardous substances shall be reported to the Supervisor, PSR and PER immediately.	All Staff	Following incident and/or complaint
2.	Incident Report shall be completed on the JHET system and forward to the Project Manager.	PER	Following incident and/or complaint

11 Corrective Actions

Problem	Corrective Action
In case of any incident or complaint	1. Advise appropriate staff (Supervisor, PSR & PER); 2. Determine problem, and rectify 3. Notify staff through: • Specific instructions • Meetings • Written instructions / Memos / Notice boards • Induction • Training sessions; 4. Monitor performance and re-notify staff as required.