TWEED VALLEY HOSPITAL PRELIMINARY CONSTRUCTION & ENVIRONMENTAL MANAGEMENT PLAN – MAIN WORKS

Revision: 08 –19 September 2019

lendlease

REVISION STATUS

Rev	Date	Project
01	16 June 2019	**Tweed Valley Hospital – Main Works**
02	10 July 2019	**Description of The Project Section added**
03	11 July 2019	**SEAR Condition references added**
04	09 August 2019	**Update to include Latest Site Plans and Dam Decommissioning**
05	16 August 2019	**Updated to include client feedback**
06	05 September 2019	**Update diagrams and minor amendments**
07	12 September 2019	**Update diagrams and minor amendments**
08	19 September 2019	**Update diagrams and minor amendments**

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1. DESCRIPTION OF THE PROPOSAL

1.1 OVERVIEW

On the 11 June 2019 the Minister for Planning and Public Spaces granted approval for the Concept Proposal and Stage 1 Early and Enabling Works for the new Tweed Valley Hospital (SSD 9575) located at 771 Cudgen Road, Cudgen (Lot 11 DP1246853). All documents relating to this consent can be found on the major project website of DPE at https://www.planningportal.nsw.gov.au/major-projects/project/10756.

The Environmental Impact Statement (EIS) has been prepared to assist in the State Significant Development (SSD) Stage 2 Application for the Tweed Valley Hospital which will be assessed under Part 4 Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This, along with supporting documentation, provides a clear outline of the Stage 2 Application.

The Tweed Valley Hospital Project broadly consists of:

- Construction of a new Level 5 major regional referral hospital to provide the health services required to meet the needs of the growing population of the Tweed-Byron region (in conjunction with the other hospitals and community health facilities across the region);
- Delivery of the supporting infrastructure required for the Tweed Valley Hospital, including green space and other amenities, roads and car parking, external road upgrades and connections, utilities connections, and other supporting infrastructure.

1.1.1 Stage 2 Hospital Main Works and Operation

The Stage 2 SSD component seeks consent for the Main Works and Operation of the Tweed Valley Hospital, including:

- **Construction of Main Hospital Building**
  - Main entry and retail area
  - Administration
  - Community health
  - In-Patient units
  - Outpatient clinics and day only units
  - Child and Adolescent Services
  - Intensive Care Unit
  - Mental Health Unit
  - Maternity Unit and Birthing Suites
  - Renal Dialysis
  - Pathology
  - Pharmacy
  - Radiation Oncology as part of integrated Cancer Care
  - Emergency Department
  - Perioperative Services
  - Interventional Cardiology
  - Medical Imaging
  - Mortuary
  - Education, Training, Research
  - Back of House services
  - Rooftop Helipad
- **Construction of Support Buildings, referred to as the 'Health Hub', containing:**
  - Oral Health
  - Community Health
  - Aboriginal Health
  - Administration
  - Education, Training and Research
- **Internal Roads and carparking, including multi-deck parking for staff, patients and visitors;**
- **Construction of a temporary building for the 'Tweed Valley Skills Centre'**
- **External road infrastructure upgrades and main site access**
- **Environmental and wetland rehabilitation, including rehabilitation of existing farm dam as outlined in the Biodiversity Development Assessment Report (BDAR) prepared for the Concept Proposal and Stage 1 works**
- **Site landscaping**
- **Signage**
- **Utility and service works**

The works outlined above comprise five key components, which are subject to various funding allocations and may be delivered independently to each other. Stage 2 has therefore been defined in the following sub-stages[1]:

- Stage 2A – Main Hospital Building complete with supporting roads, services infrastructure and landscaping
- Stage 2B – Main Hospital Building incremental expansion areas
- Stage 2C – Health Hub
- Stage 2D – Tweed Valley Skills Centre
- Stage 2E – Multi-deck car park.

Development consent is sought for the all 5 components of Stage 2 under this SSDA.

Plans for Stage 2 Main Works and Operation are attached in Appendix B of the EIS. Approval of Stage 2 will enable the new Tweed Valley Hospital to be built which will provide a much-needed contemporary health service facilities for the surrounding region.

1.1.2 Potential Future Expansions

Any subsequent stages or modifications to the proposal would be subject to separate applications as required including the potential future expansion of the facility.

[1] Stages are not listed in chronological order and may be delivered independently to each other

2.0 INTRODUCTION

This CEMP will refer to and should be read in conjunction with the Tweed Valley Hospital Project Environmental, health & Safety Management Plan (EH&S Plan) and all the subplans referred thereto.

The Lendlease construction management processes will provide:

- Seamless performance and accountability for all related construction works.
- The works will be designed, constructed, commissioned cohesively by the integrated team.
- Tried and proven Delivery tools, techniques, strategies and structure to successfully delivery the project.

This CEMP is a preliminary document that has been developed through the schematic design stage and contains Lendlease's overall construction methodology for the delivery of this complex integrated project. The CEMP will evolve during the detailed design stage as the design develops in conjunction with the design consultant team, project stakeholders; consumer and community representatives, HI, NNSW LHD and TSA and will be finalised prior to construction.

The following sections set out how we intend to construct the Tweed Valley Hospital, including our processes and controls throughout the construction phase, project finalisation, commission, validation, testing and transition to the operational commissioning team and final handover.

Our proactive and collaborative approach is underpinned by the following overriding and non-negotiable objectives:

- Minimise any impact on surrounding residents and existing road network.
- To deliver a world class facility for our client, on time and to the highest safety and quality standards.
- Communicate, in a timely fashion, with all relevant stakeholders what, when and how we are planning to undertake the interface works.
- Present a positive public perception of the project during the construction works.
- Use experienced and competent subcontractors ensuring that local industry engagement and opportunities are maximised.
- Enhancing opportunities for local indigenous businesses, employees and trainees.
- Hands on control of subcontractors from experienced Lendlease site supervision

Lendlease will spare no effort to achieve four key outcomes as explained on this CEMP:

CERTAINTY

- Robust management processes across all areas of the business
- Demonstrated and strong delivery experience

PARTNERSHIP

- Transparency of management processes
- Shared responsibilities applied to the project team
- Collaboration with Client and contractor market

CAPABILITY

- Extensive industry experience of the project leadership in delivery

COMPLIANCE

- Processes that meet HI, industry and company certification requirements
- Superior QA performance

3.0 REFERENCE TO CONDITIONS OF DETERMINATION

3.1 CONDITIONS TO BE SATISFIED IN FUTURE DEVELOPMENT APPLICATION(S)

The following table indicates the reference plan/subplan that relates to the conditions to be satisfied as part of SSD2 application.

DESCRIPTION	REFERENCE
PART B CONDITIONS TO BE SATISFIED IN FUTURE DEVELOPMENT APPLICATION(S)	
Heritage	
B14. The Stage 2 application must include details of the retained stone walls on the site (where feasible), the associated archival recordings and interpretation techniques (where removal is proposed) as required by conditions A12 and A13 of schedule 3 and the recommendations of the *Historical Heritage Assessment Report* prepared by Niche Environment and Heritage dated 19 October 2018.	• Section 10.7.7 of this Plan
Biodiversity	
B20. The Stage 2 application must demonstrate that the proposal is consistent with the endorsed *Biodiversity Development Assessment Report* prepared by Greencap dated January 2019 (BDAR) and the *Matters of National Environmental Significance Report* (MNES) prepared by Greencap dated February 2019 and all recommendations to mitigate the direct, indirect and prescribed impacts in the BDAR and the MNES.	• Section 10.7.6 of this Plan
B21. The Stage 2 application must be supported by a long-term Biodiversity Management Plan (BMP) including the following:	
(b) details of measures to protect the retained vegetation in the Tweed Coast Road / Cudgen Road intersection upgrade site;	• Sections 7.2 & 10.7.6 of this Plan
(c) details of measures to protect the identified trees for retention in the *Preliminary Arboricultural Report* prepared by Arbor safe dated 17 October 2018;	• Section 10.7.6 of this Plan
(d)Vegetation Management Sub-Plan (VMP) for the Site that incorporates revegetation of the exotic grassland in Zone 9 with rainforest species, regeneration and weed management of retained remnant vegetation in the north of the Site;	• Sections 10.7.6 of this Plan
(e) installation of the identified 'stepping-stone' habitats and rain gardens within the Site to improve threatened species connectivity;	• Sections 7.2 & 10.7.6 of this Plan
(f) identification of suitable wide life friendly fencing that would not impede the movement of fauna in the future and excludes fencing on the northern boundary of the Site;	• Section 10.7.6 of this Plan • Biodiversity Management Plan
(i) a water quality management plan including the water quality monitoring techniques to be adopted to ensure that the water quality targets to be achieved for the Site are always maintained (except large flood events);	• Sections 10.7 & 10.7.1 of this plan
(m) A Fauna Management Sub-Plan (FMP) for the Site including details of impacts and proposed mitigation measures due to loss of connectivity, impact on movement, details of fencing to allow movement, restricting developments in identified areas, light spill and operational noise; and	• Sections 7.2 & 10.7.6 of this Plan
Traffic and Transport	
B22. The Stage 2 application must be accompanied by a detailed assessment of the traffic and	

transport impacts of the development having regard to Roads and Maritime Services (RMS's) Guide to Traffic Generating Development, prepared in consultation with Transport for NSW (TfNSW), RMS and Council and include (but not be limited to) the following:	
(i) cumulative traffic impacts of the development on local roads and the State roads including Cudgen Road, Tweed Coast Road, Turnock Street and the Pacific Highway;	• Sections 6.0, 7.2, 12.0, 12.1 & 12.2 of this Plan • Section 3 & 4 of the Construction Traffic & Pedestrian Management Plan
Noise and Vibration	
B25 The Stage 2 application must be accompanied by a detailed Noise and Vibration Impact Assessment Report prepared by a suitably qualified person including (but not limited to):	
(a) details of the main construction and operational noise and vibration sources and activities including future mechanical plants, additional noise due to on-site traffic, additional noise due to construction works on the Tweed Coast Road / Cudgen Road intersection upgrade site, additional traffic on the surrounding roads due to the hospital, emergency vehicles and helicopter operations;	• Sections 6.0, 7.2, 10.3 & 10.7.2 of this Plan
(b)outlining all feasible and reasonable noise and vibration mitigation and management measures to reduce the impact of the noise generated by the construction and operation of the future hospital and associated facilities (including the intersection upgrade works), in accordance with *Noise and Vibration Impact Assessment Report* prepared by Acoustic Studio dated 17 October 2018 and the addendum *Stage 1 Works – Site Access and Associated Road Works* prepared by Acoustic Studio dated 18 January 2019;	• Sections 6.0, 7.2, 10.3, 10.7, 10.7.2 & 11.3.2 of this Plan
(d) demonstrate that the maximum noise emission from the 24 hours plant operations within the Site would comply with the recommendations of the *Noise and Vibration Impact Assessment Report* prepared by Acoustic Studio dated 17 October 2018.	• Sections 6.0, 7.2, 10.3 & 10.7.2 of this Plan
Agricultural Offset Plan	
B28. The Stage 2 application must include an Agricultural Offset Plan with a strategy of physical works and / or implementation plans and programmes addressing how the development will offset the adverse agricultural impacts on the State Significant Farmland (SSF) of Cudgen Plateau and the land use risks associated with the siting of the hospital adjoining the agricultural uses (as identified in the *Land Use Conflict Assessment Report* prepared by Tim Fitzroy and Associates dated 18 October 2018). The Agricultural Offset Plan must include (but not be limited to):	
(d) details of feasibility of reuse of the existing topsoil in the landscaped areas of the Site; (e) details of the feasibility to reuse the remaining top-soil (if any) on other sites for agricultural purpose;	• Sections 7.3.6 of this Plan
Geotechnical Assessment Report	
B29. The Stage 2 application must be accompanied by a detailed Geotechnical Assessment Report with details of proposed mitigation measures during excavation works and measures to control impacts on adjoining properties due to vibration during construction.	• Sections 6.0, 7.2, 10.3 & 10.7.2 of this Plan
Stormwater and Flooding	

B31. The Stage 2 application must be accompanied by:	
(a) an Emergency Flood Evacuation Management Plan for the users of the Site, in case of a major flood event in the region;	• Section 10.6.5 of this Plan
(vii) demonstrate that the proposed development would not significantly impact on the quality of surface and groundwater flows to and from the adjacent coastal wetland; and	• Sections 10.7 & 10.7.1 of this Plan
Contamination	
B34. The Stage 2 application must include evidence that the site has been suitably remediated in relation to all identified soil contaminants identified in Stage 1 of the development and that a Site Auditor was engaged throughout the Site remediation works. Details of documentation must include a final Site Auditor's Report and a Site Audit Statement for the Stage 1 remediation works.	• Sections 6.2 & 10.7.5 of this Plan

3.2 SEARS REQUIREMENT – PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

The following table indicates the SEAR's Requirements for the Preliminary Construction Management Plan satisfied in this plan.

DESCRIPTION	REFERENCE
20. Sediment, Erosion and Dust Controls Detail measures and procedures to minimise and manage the generation and off-site transmission of sediment, dust and fine particles. Relevant Policies and Guidelines: · Managing Urban Stormwater – Soils & Construction Volume 1 2004 (Landcom) · Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA) · Guidelines for development adjoining land and water managed by DECCW (OEH, 2013).	• Sections 6.1, 7.3.7 & 10.7.1 of this Plan
23. Construction Hours Identify proposed construction hours and provide details of the instances where it is expected that works will be required to be carried out outside the standard construction hours.	• Refer Section 10.4.2 of this Plan

4.0 ACRONYMS

Acronym	Definition
CASA	Civil Aviation Safety Authority
CCU	Coronary Care Unit
ECI – Early Contractor Involvement	Design Development Phase
EH&S	Environmental, Health & Safety
EIS	Environmental Impact Statement
FF&E	Furniture, fitments and Equipment
GMR	Global Minimum Requirements: minimum standards of environmental, health and safety procedures and reporting.
HI NSW	Department of Health Infrastructure, NSW (Client)
ICN	Industry Capabilities Network
ICU	Intensive Care Unit
IPT	Integrated Project Team: are the key organisations Management the Design, Procurement & Delivery of the TVH, including HI NSW, TSA , Lendlease and the Consultants team.
ITP	Inspection & Test Plans
LLB	Lendlease Building
LTI	Lost Time Injury
NNSW LHD	Northern NSW Local Health District
RBG	Robert Bird Group, Structural Consultants
OR	Operating Rooms
RFT	Request for Tender
TSA	TSA Management – TVH Project Managers, Principal's Representative
SEAR	Secretary's Environmental Assessment Requirements
SSD1	State Significant Development – Stage 1, Early Works
SSD2	State Significant Development – Stage 2, Main Works
STH	Silver Thomas Hanley – Project Architects & Clinical Planners
TVH	Tweed Valley Hospital
VECI – Very Early Contractor Involvement	Schematic Design Phase

5.0 OVERALL PLANNING & STAGING

Lendlease have undertaken rigorous planning activities to identify well-defined stages of the project, resulting in the seamless delivery of the Tweed Valley Hospital Project. Key members of the Lendlease delivery team have been directly involved during the schematic design process to input into the buildability and safety in design process.

Site Establishment considers the changing nature and accommodation requirements as the job grows, commencing with the Early Work and Main Works stages for the delivery of the whole precinct.

This planning considers both establishment of the site accommodation, offices, amenities and carparking as well as establishment of site access, internal traffic and locations of laydown and delivery areas to complement the arrangement of cranes, hoists, loading bays and egress paths.

Efficient planning is the key to success and will ensure successful delivery of the project.

The Lendlease delivery team will continue to refine the construction methodology during the ECI period and through procurement of key trades, on-site investigations and validation of early works whilst the Lendlease design managers take the lead role with design consultants to finalise documentation prioritised to suit the construction delivery programme.

Site Establishment:

Site Establishment will be staged to cater for workforce appropriate for each stage.

Early Works (July 19 to March 20):

The Early Works stage commencing in July 2019 and finishing in March 2020 are subject of a separate set of Management Plans submitted provided under a sperate approval process. The Figure below summarises the Establishment during Early Works that includes Bulk Excavation, Civil Works and Piling

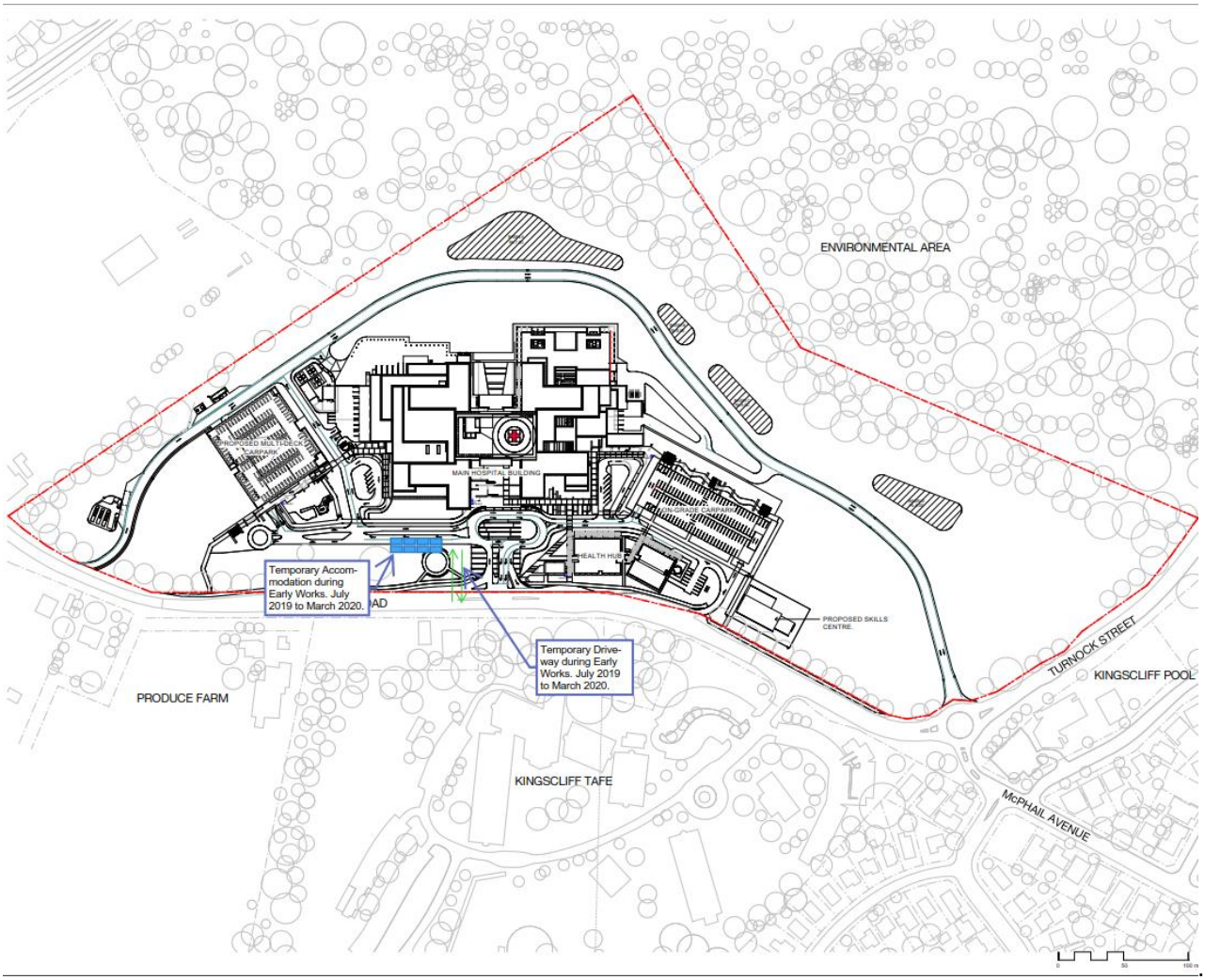


Figure 5.1 – Early Works Establishment

Main Works (April 20 to mid-2022)

The Main Works Accommodation, as depicted in Figure 5.2, will cater for the peak force of Main Hospital construction and associated building and structures such as carparks and the Health Hub. The expected peak number of workforces will be in excess of 650 workers. The accommodation and construction carpark will accommodate these numbers minimising disruption to the neighbours.

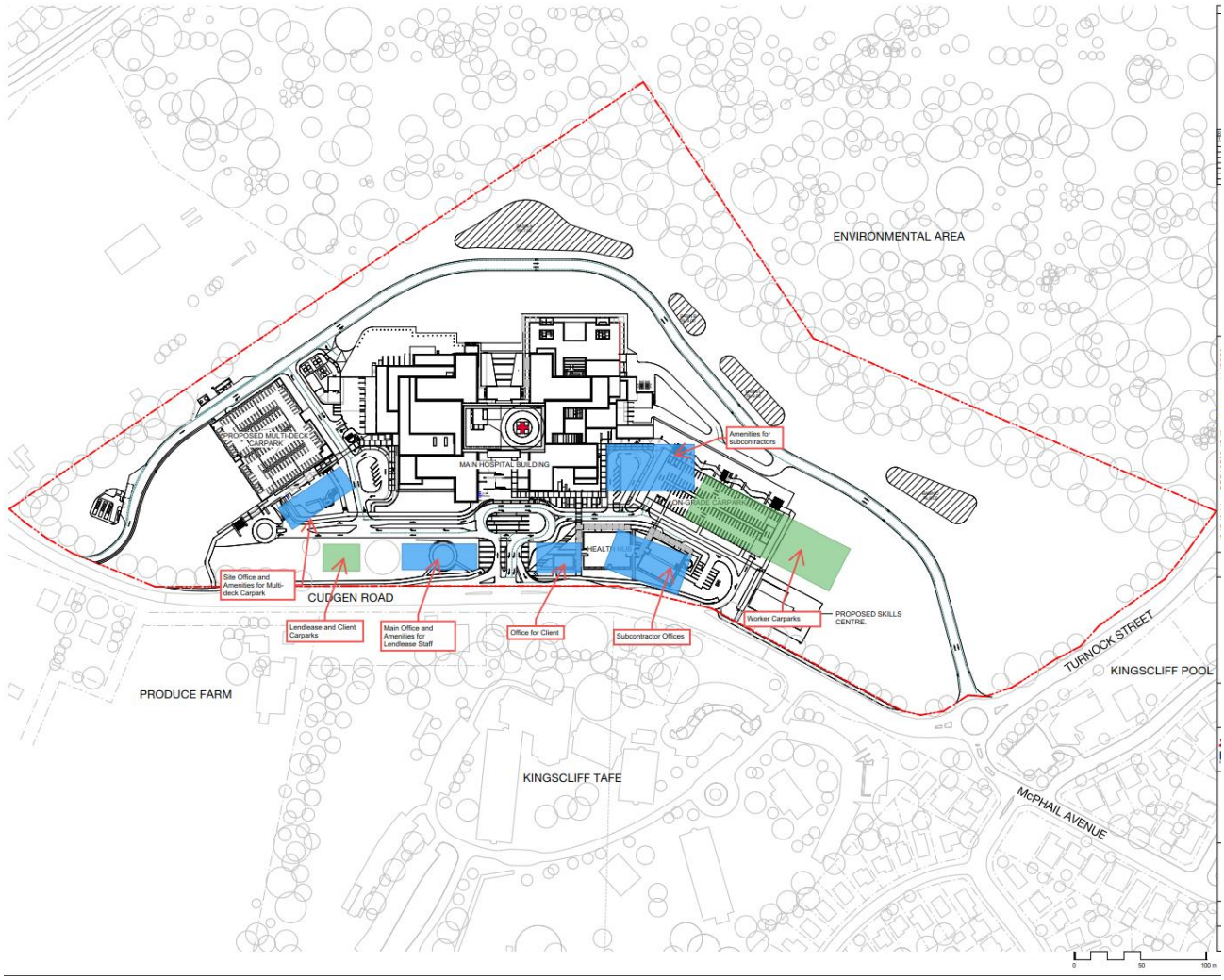


Figure 5.2 – Main Works Establishment

Further details for Main Works accommodation are provided in Section 10.4.

Construction Interfacing:

Lendlease will ensure all efforts from supervision staff is put into early planning and continuous monitoring to minimise impact of construction activities on the neighbours. Some of the key measures that will be implemented include:

- Maintaining the full height perimeter fencing to ensure segregation of construction activities from the general public;
- Installation and continuous monitoring of vibration, noise and dust controls;
- Segregation work faces from construction workers, visitors, Clients and other stakeholders;
- Selection of equipment and lesser impact construction methods to mitigate noise, dust and vibration;

Ongoing risk assessment, mitigations and monitoring of controls that have been established and altering these controls for changing conditions that may affect our design and construction methodology. Strategies to support the interface with the community include but are not limited to:

- Regular construction risk assessment using the Interface Strategy principles to identify areas of potential interface that may affect the community;
- Undertake a holistic integrated system testing and commissioning process;
- Undertaking an efficient, transparent and as simple as possible Completion and Room Validation processes in collaboration with the NNSW LHD and principal representatives to ensure that the completed product is seamlessly transitioned to the hospital operations team; and
- Community notices / updates.

6.0 RISK AND HAZARD MANAGEMENT

6.1 IDENTIFICATION & MANAGEMENT OF KEY PROJECT RISKS

Construction of the Tweed Valley Hospital presents a number of challenges that need to be delivered through a planned and structured approach.

During detailed design, continuous analysis of the project documents will be undertaken including multiple site inspections to thoroughly understand and plan the project based on our awareness of the key risks. Within this section an initial assessment has been carried out of such risks and the proven construction delivery techniques adopted for the project.

One of key objectives is to have “zero” unplanned events that may cause disruptions to the community and the workers of the project.

To achieve this objective Lendlease propose using a risk identification strategy built around the key interface points between the construction site and the surrounding properties. This Interface Strategy will be critical in risk identification and will be used to influence design decisions and dictate construction methodology.

Table 1 provides an initial assessment of the key interface risks and mitigations associated with the TWEED VALLEY HOSPITAL construction works.

These will be developed in meticulous detail during the planning phase to inform the design and construction methodology, eliminate or manage risks appropriately and to ensure a smooth interface with the existing Hospital Campus.

Table 1: Initial Key Interfacing Risks

Approach to Risk Management			
Risk, Major Issues and Interface Type	**Details**	**Mitigation**	**Benefit**
Ensure immediate residents, institutions and businesses on Cudgen Rd and Turnock St are well supported through appropriate management and notification of construction activities	Construction traffic causing disruption to local traffic and operations of the fruit barn and TAFE.	Site access has been designed to ensure that incoming traffic queues within the site and minimises impact on main roads. Gate keepers will be on site at all time to manage incoming and outgoing traffic.	Reduced impact of construction on main roads.
Construction Workers access and egress affecting immediate neighbours and the local road, cyclists and pedestrian network.	Construction works are to cause the least amount of disruption/inconvenience possible TAFE students, businesses, road users, cyclists and pedestrians.	Access to and from site will be defined and out of bounds areas clarified for workers. The induction will focus on the amenities planned for within the construction site boundary which include a fully equipped canteen designed to offer choices to workers to limit their need to exit site at meal times.	Reduced congestion of public areas through separate access routes and social areas. Workers to be constantly reminded of the importance of respecting neighbors and students.
Working in the vicinity of student centres.	With construction in close proximity to TAFE, workers will need to be aware of working in proximity to a major teaching facility.	All workers will be made aware of their responsibilities towards working in proximity to students.	Workers to be constantly reminded of the importance of not disrupting TAFE operations.

Approach to Risk Management			
Vehicle parking	The commencement of the construction works for the early and main works contracts will see an influx of subcontractor workforce to the site.	We will actively encourage the construction workers carpooling. During peak of construction, some 380 cars are expected. Construction carparking will be progressively expanded to accommodate these numbers.	No parking in public roads or at TAFE.
Disruption to nearby residential and business properties	Minimising loss of amenity for nearby residential and business properties during construction.	Noise, dust and vibration monitoring, proactive notification of disruptive works, and selection of low impact equipment where possible, to minimize impact on public.	Minimise noise, dust and vibration impacts on nearby properties.
Environmental Conditions	The site area will require careful management of site run-off, biodiversity, flora & fauna, air quality etc.	Erosion and sediment control, conservation & habitat, noise & vibration and other site management measures to be developed during the detailed design period.	Minimises negative impact of construction to surrounding environment.
Identification of potentially hazardous materials	Removal and disposal of potentially hazardous or contaminated materials and substances	Clearly communicate our methodologies to relevant stakeholders. Site will be decontaminated completely before commencement of Main Works,	Containment of potentially hazardous materials in a controlled manner.

A detailed risk analysis and refinement of the associated mitigation strategies will be further progressed during the detailed design phase.

6.2 HAZARDOUS MATERIAL

The new Tweed Valley Hospital size has minimum contamination within its boundaries, with only minimal ACM remaining on the former location of the site sheds.

The Contamination and Remediation Management Plan issued by Cavvanba and reviewed by JBS&G Australia was fully implemented during the Early Works Stage.

This Plan contemplates that the site will be completed de-contaminated before commencement of Main Works activities. This Plan also includes a well-defined 'Unexpected Finds Protocol' to be used in the unlikely event that contamination is found.

On the unlikely event that contamination is found after completion of Early Works, Lendlease is well equipped to co-ordinate and manage the safe removal of hazardous materials and understand how to appropriately manage risk associated with transporting hazardous materials with close teaching, commercial and residential properties. Accordingly, Lendlease has developed a site-specific methodology for removal of hazardous waste to ensure that waste is disposed of correctly and efficiently including:

Of major importance in managing the removal of hazardous materials is communicating the works activity to the stakeholders.

Lendlease has allowed additional provisions to provide transparency to stakeholders and additional assurance for the successful implementation of the methodology above if unexpected contaminated materials are found.

6.2.1 Preliminary Hazards Analysis

The Preliminary Hazard Analysis (refer Appendix AA of the EIS) covered the risks associated with the bulk liquid oxygen installation at the site. The report concluded that "the overall risk of operation in the proposed location is low with implementation of risk control". For further details refer to the Preliminary Hazard Analysis report (Appendix AA of the EIS).

7.0 DESIGN FINALISATION & SUBCONTRACTOR ENGAGEMENT

7.1 SUBCONTRACTOR PROCUREMENT & ENGAGEMENT

The technical complexity, delivery program, environmental, health, safety and quality requirements of the Tweed Valley Hospital project dictate that the selection of the appropriate subcontractors will be critical in meeting the demands of the project. The selection of trade subcontractors and suppliers must demonstrate Value for Money to Health Infrastructure NSW and the community of the NSW Northern Rivers. A fundamental element on the selection of trade partners is the engagement and development of local participants and indigenous business and employees.

Our procurement strategy and associated program is derived from lead times determined from the overall delivery program. From our extensive experience in delivering large scale health projects and how the industry has been changing over the last few years, Lendlease has put forward the strategy of engaging services trades on a design and construct (D&C) basis but ensuring to safeguard the interest of Health Infrastructure NSW and other stakeholders.

The focus on the initial phases of procurement will be on the critical trades for the structure erection, façade/envelope and services.

Lendlease will be in continuous consultation with the market during the VECI (Schematic Design) and ECI (Design Development) phases to incorporate as much subcontract expertise and buildability early into the design process.

7.1.1 Industry Briefings, Expressions of Interest and Selection of Tenders

Throughout the VECI, ECI and detailed design stages Lendlease will hold meetings as well as general briefings with the supply chain for consultants, suppliers and subcontractors. The key objective of these meetings is engagement and discussion of opportunities with local and regional businesses and potential employees as well as providing better understanding in the selection of the most appropriate preferred tenderers to carry out the works.

These forums will provide the opportunity to communicate to all potential participants the environment in which the construction works will be carried out and the responsibilities that comes with undertaking such works.

The Tweed Valley Hospital has set up a platform through the Industry Capabilities Network (ICN) to facilitate the registration of all those interested in participating in the project and provide the gateway for Local Industry Development and engagement of Indigenous businesses and employees.

The registration on the ICN Gateway is followed with a formal EOI Questionnaire where proponents are invited to provide detail information to enable assessment of their capabilities on the following fields:

- Environmental health & safety
- Local Industry Development Plan
- Indigenous engagement
- Financial
- Work load & pipeline
- Training
- Workplace Relations.
- Management systems, QA,

The above listed fields constitute the Non-Pricing criteria for the pre-selection of tenders and the subsequent evaluation of tender submissions. The waiting of the non-pricing criteria is a significant portion of the overall assessment and may change depending on the risks associated with the trade.

The procedure provides a sound basis for the pre-selection of subcontractors to be included in the tender lists.

7.1.2 Tendering and Trade Package Award

After finalisation and approval of the tender lists, Lendlease conducts a formal procurement process that complies with the NSW Code of Practice for Procurement, the Cth Procurement Rules and Lendlease's Procurement Code. These platforms provide the basis to ensure probity and transparency in the process and to achieve Value for Money for the project.

Approximately 60 trade packages will be procured for the delivery of the Tweed Valley Hospital main building.

Following each subcontract award, Lendlease will carry out formal pre-commencement meetings. These meetings will provide further details, amendments as required and detail procedures on:

- Environmental, health and safety systems, rehabilitation policy and procedures;
- Delivery program, delay allowances and certainty in delivery;
- Nominated team for delivery including involvement of senior management/directors, project management, supervision and employees;
- Aboriginal engagement;
- Local Industry Development Plan;
- Training targets:
- Working in compliance with the Conditions of Consent;
- Working around neighbours, particularly TAFE and immediate commercial and private residents;
- Site access and delivery requirements;
- Infections control;
- Trade specific interface and coordination issues from day one;
- Worker transport, site access and others.

7.2 INDUCTIONS

The Lendlease induction has been specifically tailored to inform workers of their obligations working at the Tweed Valley Hospital. The content of the induction has been reviewed by the Client's project team to ensure the strategies imposed by Lendlease are aligned with project objectives and targets.

To gain access to the work areas, every worker must complete a full site induction which is to be delivered in two parts:

Part A: is an offsite online induction that includes general hazard and risk management procedures, legislative obligations of all parties, including Lendlease, supervisors, workers, managers, suppliers, etc., reporting procedures, SWMS, Lendlease's GMR, high risk activities, exclusion zones and others.

Part B: is delivered on site upon and provides project specific requirements and constrains such as:

- Working hours;
- Managing construction traffic arrival and departure from site;

- Neighbouring properties, businesses and organisations such education facilities, e.g., TAFE;
- Encouraging construction staff to carpool or utilise public transport;
- Noise, vibration and other constraints;
- Emergency and evacuation;
- Environmental and biodiversity key issue and their management
- Workplace Relations, and others.

7.3 CONTRACTOR'S DOCUMENTS

The Integrated Project Team, including HI NSW, TSA and Lendlease have been closely working with the NNSW LHD during the VECI phase. This team effort will continue and will transition from the VECI to the ECI phase and subsequently through to the commencement of the approved for construction documentation.

The focus of the team is on the timely issue of documentation to meet the delivery program ensuring that safety, quality, whole of life and environmental requirements are met and the facility achieves in full its fitness for the intended purpose.

The documentation outputs from the VECI and ECI stages will be progressively converted to fully coordinated 'For Construction' documents. This will be achieved by coordinating the design disciplines to each floor plate and then progressing up the building in a floor by floor sequence, including all specialist areas of internal fitout, facades/envelope, plantrooms and external works. This process is set out in our Design Management Plan for the delivery phase. During this period, we will see three primary actions incorporated:

- Full documentation and coordination of the detail design principles confirmed in our detailed design development phase;
- Coordination and finalisation of the clinical MME including shop drawing reviews and final design requirements from the Vendors; and
- A progressive review by our peer review consultants and Lendlease for alignment with the project brief building compliance codes.

The development and design approval of the Construction Documentation will be undertaken by members of the Building, Services and Clinical Design Management teams carried through from the detailed design phase for continuity in design. They will be supported by the Construction Management team.

7.3.1 Approvals and Design Changes

Lendlease approach is to continuously inform the Client about design progress, milestones, changes and departures. A robust Cost Planning disciplines is an integral part of the design evolution. Formal submissions of design outputs are issued to the Principal at approximately 70% design development of each phase and at completion (i.e. 100%) of the VECI and ECI stages. Again, these submissions are accompanied by a Cost Plan reflecting the status of the documentation.

A Design Change Register is a 'live' document implemented from the commencement of design and will be included in the Final Design Development Report outlining all changes from the commencement of DD and following the submission of the 70% Design Development Report. It will refer to the User Group consultation issues register where applicable.

The Design Change Register will record the following:

- Discipline and document showing the change.
- Nature of the change.
- Reason for change.
- Effects on the Project brief (if any).

- Potential safety, time and cost impact of change.

Lendlease will add to the register any details of when proposals/implemented changes have been submitted to the Principal, when a response has been received and status of design documentation updates and or other implications.

The key streams of documentation approval required during this phase are detailed in the below sections.

7.3.2 Services Design

Our staged approach for the services design documentation commences with the services concepts derived from the Project Brief to develop the initial schematic design. A close consultation is then carried out with NNSW LHD's User Groups/Engineering departments to optimise the design and align it with their specific needs and requirements. This is an iterative process during the VECI phase.

Upon completion of the VECI design stage, Lendlease has adopted an alternative design framework. Lendlease foresees significant benefit in adopting the strategy of engaging Services Contractors to provide a design and construct scope of services through the ECI & Delivery phases of the project. The VECI services design consultants would then revert to a 3rd Party peer review role.

This philosophy is suggested for a number of reasons:

- Maximising perspectives from both services consultants and trade contractors. Often the trade contractors bring a new perspective to the design process.
- Engagement of design and construct services subcontractors ensures that plant specified

  is a balanced consideration between cost effectiveness while being fit for purpose.
- Design is co-ordinated to ensure constructability.
- Programme advantages of early contractor involvement on long lead equipment.

During the delivery phase, Lendlease will lead a staged review of floor by floor services coordination via 'live' BIM model, with the Mechanical Contractor in a lead role. This process will confirm the detail set out of all risers, duct runs and coordinate any clashes within the disciplines, enabling the finalisation of the plans for each level to shop drawing progressing stage.

Following this will be a peer review by our services manager and consultants prior to final design approval.

7.3.3 Structural Design

The structure erection is the longest critical activity in the Delivery Programme. As such, Lendlease has been focusing on the structural design with our Structural Consultants, Robert Bird Group, to incorporate in the design methodologies, details and sequencing, intensive market input in an effort to implement the most efficient methodology to complete the structure. Some of the details that have been adopted include:

- The radiation bunkers have been located in an area that will not disrupt the progress of the structure on the levels above (bunker construction takes much longer);
- Contiguous piling and shotcrete infills have been adopted for the bunkers (and subsequent excavation of the batter from FFL level of the bunker – Ground Floor- to the level below – LG;
- 1:1 Batters at floor transitions from Basement-Lower Ground-Ground to minimise construction of retaining walls and precast planks for topping slabs in the transition of these floors;
- Flat plate slabs have been adopted to enable the use of formwork modular deck pans, with great improvement on safety and production rates;
- Doubled direction post tensioning to maintain adequate slab thicknesses, making provision for drainage penetration
- Simple and regular lift and stair cores;
- Maximising use of precast panels where possible in stair wells and flights;

7.3.4 Façade & Envelope

The Façade and building envelope have been the subject of extensive focus and review by the IPT, including the Architectural Consultants STH/Bates Smart, TSA and Lendlease with continuous reporting to HI NSW and the NSW Government Architects. The aim is to achieve a functional, robust and light weight façade.

Lendlease has presented the initiative of a 'mega façade panel' prefabricated off site with all elements, including glazed windows, insulation, and backing ready for installation in a similar way as a curtain wall façade. Other systems, such as curtain wall will be considered. The prefabricated panels bring great advantages from the safety and efficiency of installation viewpoints at the time of being cost effective.

The subsequent ECI and design finalisation of the envelope will be completed by the Consultants with intensive input for different D&C Façade subcontractors. Primary focus from the Lendlease team will be the Safety in Design, buildability, efficiency and whole of life performance in the building fabric.

7.3.5 Clinical Design Finalisation

Lendlease recognises that the clinical design development during the ECI and detail documentation stages will conclude the need for any further consultation on large parts of the building. However, we also recognise the critical input, participation and review by the Principal during the final overlay of clinical design finalisation which is essential in confirming the functional requirements of critical clinical spaces including:

- Finalised and endorsed Clinical DD Standard rooms.
- Kit of parts documentation.
- All clinical design lead in studies.
- Initial selection spreads for MME vendor's services planning.
- MME Scope delineation matrix.
- Medical Services Panels;
- Bariatric Equipment;
- Medical Pendants;
- Digital OR Systems;
- Sterilising Services;
- Imaging and the Interventional modalities.

The built form and services requirements will be reviewed against each vendor's requirement and adjusted accordingly.

7.3.6 External Landscaping

The landscaping concept design forms a key part of the patient journey. The site, surrounding landscape, and architectural design calls for a landscape response that is connected with its context and seamlessly integrated into the life of the hospital.

The landscape design will also include the reuse of the existing topsoil. The topsoil will be stockpiled during the construction works and used as part of the final landscaping, spread across the landscape and used to form landscaped mounds.

Key principles for the landscape design include:

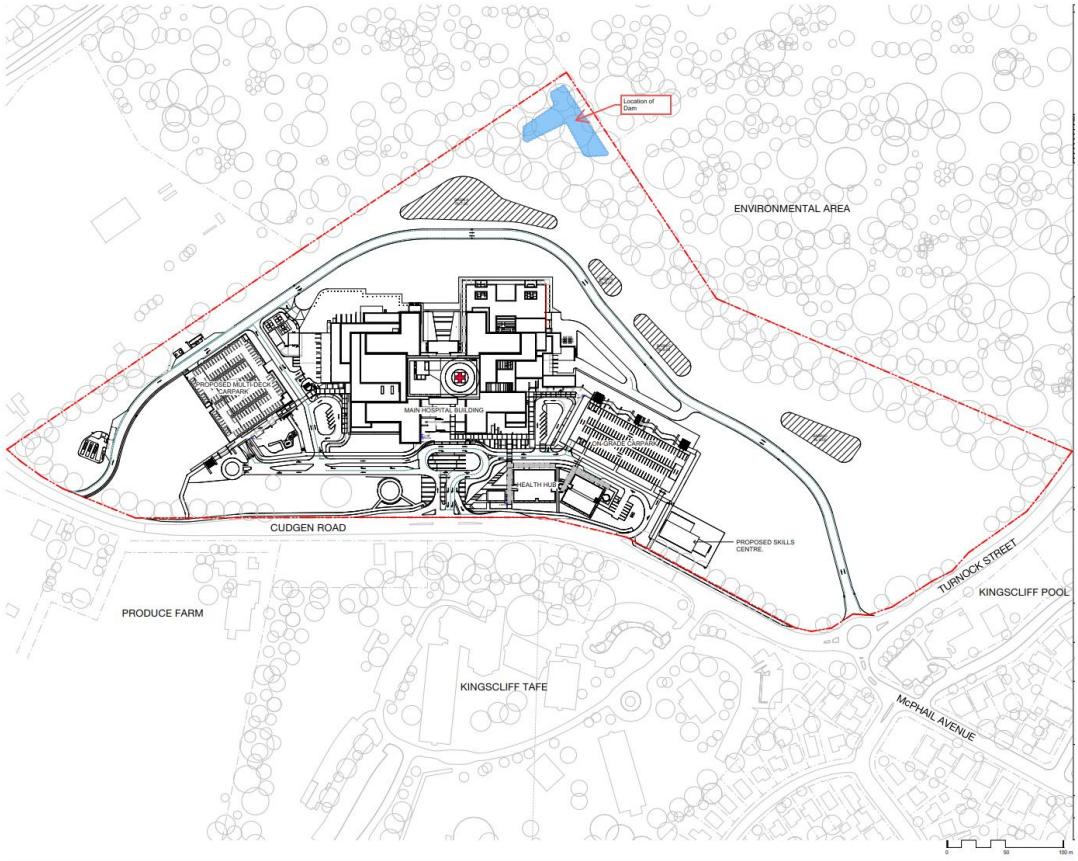
- Biophilic design
- Uniquely of the place
- Legible and accessible
- Diversity of experiences; and
- Low maintenance

7.3.7 Dam Decommissioning

An overview of the method and environmental impact mitigation measures for decommissioning the dam is outlined below;

- Establishment of Sediment and Erosion Control
- Fauna spotter/rescue person shall be present for the dam decommissioning and vegetation removal.
- Clearing of exotic vegetation to create clear access to perform works. Clearing native vegetation around the dam will be avoided
- Efforts should be made to rescue and relocate any native fauna which may currently be in the dam, this could potentially include fish, eels, turtles, yabbies and tadpoles. Frogs could also be present, most likely in any grassy vegetation along the dam banks.
- Electrofish/ gill net to remove the majority of aquatic species
- Remove the bulk of floating weeds Salvinia
- Once manually removed, salvinia can be disposed of on site in an appropriate dry contained area and left to dry out and die.
- Infill dam by tipping re-use rock (up to 150mm diameter) and topsoil from site into it from a dump truck
- Install geofabric to reduce the bogginess of the area.
- Install topsoil and planting
- Demobilise

Upon completion of the works, vegetation restoration, maintenance, weed management activities and monitoring and reporting will be undertaken around the decommissioned dam



8.0 PROCUREMENT

The ultimate objective of the procurement process at the Tweed Valley Hospital project is to achieve value for money solutions for the Client, Health Infrastructure NSW and other project's stakeholders, whilst ensuring that the works procurement process is undertaken consistently, fairly and with a high level of probity.

The procurement of consultants, trade subcontractors and suppliers led by Lendlease is in strict compliance with NSW legislation, the National Procurement Code and Lendlease procurement rules.

8.1 LONG LEAD TIME AND FLEXIBILITY FOR MME SELECTION

The Master Delivery Program includes all stages of Design, VECI, ECI and Detailed Design, Procurement and Construction. This program has been put together using Lendlease experience in delivering large scale health projects and considering valuable input and lessons learnt from previous projects. The key procurement items are fully understood and specified based on construction requirements.

During the ECI phase and leading to the submission and approval of the Main Works offer, Lendlease will continue to update the Master Delivery Program incorporating the evolution of the design and the regular market input. The strategy of D&C procurement of services provides a great advantage from the long lead items viewpoint. Leading towards the completion of the ECI phase, procurement of other key elements such as façade, tower cranes, chillers and main switchboards will be initiated. This would enable a timely transition from Early Works to Main Works.

For equipment, it is acknowledged that the Principal will finalise product selection for several equipment items as late as possible to access the latest advances in technology. These packages will include Digital OR, AV, ICT, New Ways of Working and MME. Based on this logic, the RFT program is based on the design and procurement of these packages as late as possible. The Master Delivery Programme will be reviewed and updated regularly and issue to the Principal to enable key decision dates to be agreed and met in line with construction requirements.

8.2 SERVICES TRADES PROCUREMENT

Lendlease's bid submission adopted the strategy of procuring services design for the ECI phase by trade Subcontractors. Some of the key benefits that this approach will bring to the Tweed Valley Hospital project include:

- Maximising breadth of experience from both service consultant and trade subcontractors. Generally, the trade subcontractors bring a wealth of experience that add a new perspective to the design process and could become key driver of innovation and efficiencies.
- Engagement of design & construct services subcontractors ensures that plant specified is a balanced consideration between cost effectiveness and being fit for purpose at the time that proper allowances are made for future proofing and whole life of the facility.
- Design is co-ordinated to ensure constructability, driving production efficiency. The Subcontractors would be involved from start of ECI with constant input into the BIM model.
- Program advantages of early subcontractor involvement on long lead time equipment and ability to commence installation as early as practicable.
- Single point of accountability.
- Shorter Procurement time during Main Works Program
- Continuous input of trade costs into the cost plan and design development.
- Significant reduction on potential for variations due to design creep and therefore minimises potential for disputes.

8.3 FFE & MME PROCUREMENT AND DELIVERY

8.3.1 General approach to FFE & MME Management

Lendlease fully appreciates the importance of the design development, design finalisation, selection and procurement of FFE and MME.

The utilisation of the dRofus provides the best platform for accuracy and maintenance of FFE Registers. Lendlease implements dRofus as a key part of our design and delivery methodology.

dRofus provides invaluable support for the FFE procurement to ensure efficient and accurate purchasing and installation of equipment in the delivery phase of the project.

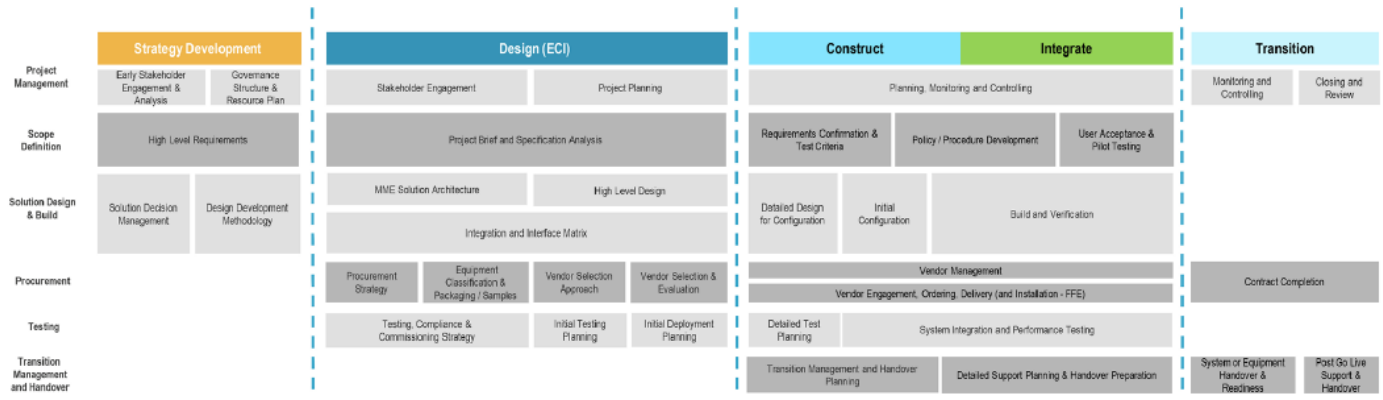
While selection of some of the FFE & MME equipment is critical to maintaining the Delivery Program due to their interfacing with services installation, such as the Central Sterilisation Unit, the Medical Pendants, and others, MME rooms can be designed with enough flexibility to accommodate most of the MME Vendors. A key element of the process is the continuous communication and engagement with the relevant stakeholders during the procurement and construction phases for all FFE and MME as depicted in the table below.

Meeting	Engagement Type	Frequency
FFE Working Group	Formal meeting	Weekly or Fortnightly
MME Working Group	Formal meeting	Weekly or Fortnightly

8.3.2 The Proposed End-To-End Model

The following describes our methodology for the development of the FFE and MME detailed design in conjunction with HI, the NSW LHD, FFE and MME teams which will form part of the detailed design deliverable within the Design Development Report.

As detailed in the Schematic Design/ECI FFE and MME sections, Lendlease has adopted a five-pillar methodology, Strategy Development, Design, Construct, Integration, and Transition (SDCIT) for the complete end-to-end management and procurement of FFE and MME. The following diagram is a graphical representation of this model as it applies to project phases.



8.3.3 Construction Phase FFE and MME Methodology

The following sections will specifically address the activities to be undertaken for the FFE, MME disciplines during the Construction Phase.

The applicable section of the SDCIT model is shown in the below Figure .

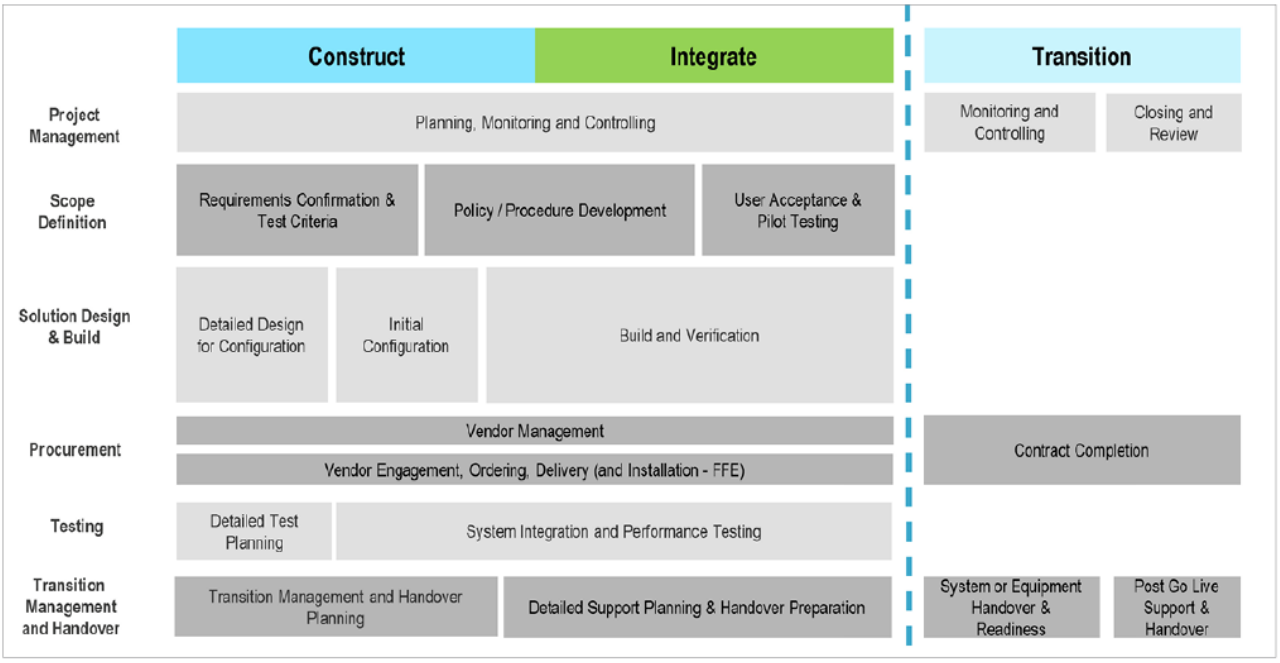


Figure 2: Construction Phase FFE and Mme Methodology.

8.3.4 Scope Definition

Requirements Confirmation and Test Criteria

Through the Construction Phase, Lendlease will confirm the requirements and test criteria agreed in the detailed design phase, ready for procurement and delivery of equipment and systems. These include:

- Alignment of Requirements to Detailed Designs and Configurations
  - This matrix seeks to ensure that Detailed Designs address and will deliver on the Requirements baseline. The matrix will articulate and track the alignment. Lendlease use this method to not only ensure a detailed audit trail of Design outcomes relating to the solution requirements, but also to track and report on the progress of the Detailed Design.
- Alignment of Requirements to Test Cases and Criteria.
  - This matrix is used to link Requirements to Design Components to Test Criteria. It builds off the Detailed Test Planning, ensuring suitable breadth and depth of testing coverage across the Design and baseline Requirements is accommodated. Key criteria measurement can be recorded in this view of the matrix.

User Acceptance and Pilot Testing

All User Acceptance Testing is expected to be managed on its entirety by NNSW LHD.

8.3.5 Solution Design & Build

MME Detailed Design for Configuration

Further to general equipment, it is recognised that the MME Equipment is subject to the greatest variation as a result of technological change, and the final design and configuration of equipment will be dependent on the procured vendor for each modality. Once final vendors have been procured for each modality, a round of detailed design will be undertaken to finalise the room design and configuration.

This detailed design will include:

- Vendor confirmation of each MME room via vendor shop drawing process and subsequent user shop drawing approval based on the agreed specification;
- Confirm program within the greater construction program for each modality by successful vendor which will cover all aspects of the installation process, including:
  - Offsite manufacture and transportation to site
  - Onsite installation and testing period
  - Vendor commissioning

Build and Verification

- Installation and implementation activities associated with the equipment procured. These activities will be delivered in a manner, as prescribed in the Deployment Plan.
- Emphasis during installation is given to staging or phasing of the build activities, including rollout of loose items.
- Interim or progressive Build Validation & Verification auditing will be conducted wherever possible. This may include any or all the following methods:
  - Asset management activities
  - Equipment delivery reconciliation
  - Site audits (e.g. cabling test and audit)
  - Physical inspection of installation
  - Configuration audit reviews
  - Documented build certification
  - Software and Licensing audits / verification

8.3.6 Procurement

Vendor Management

To ensure that the requirements of a vendor subcontract are managed by having appropriate controls and responsibilities which ensure compliance with the Company contract obligations and that all entitlements are pursued or preserved.

8.3.7 FFE and MME – Construction Phase Roles and Responsibilities

Roles and Responsibilities by Equipment Group

This end-to-end methodology has been developed on the understanding that Lendlease will undertake the full effort for the procurement of new Group 1, 2 and 3 FFE and MME. However, this end-to-end methodology does not negate the need for all parties to be involved in varying degrees when reviewing the Equipment specifications and finalising the Equipment selections for Group 1, 2 and Group 3 FFE and MME.

8.3.8 Testing

The primary objective for testing is to provide a high level of assurance and documented evidence that appropriate levels of testing have been successfully performed, and that the solution meets all the requirements.

The testing of the NNSW LHD solutions will be structured and methodical. Testing occurs over successive phases that build on each other in terms of quality and assurance.

The High-Level testing approach proposed will be informed by contemporary industry practices and tailored for this project. The program will be structured across three phases - Build Validation, System & Integration Testing, and Operational Acceptance Testing. The fourth phase, User Acceptance Testing will be undertaken by the NNSW LHD post-handover.

Test Phases

The test phases for FFE and MME are described below and include a diagrammatic representation of testing of the overall solution.

Detail of the Test phases are included in the below diagram:

Phase	Description
Biomedical and Electrical Testing	• Conducted by the NNSW LHD as the owners & ongoing maintainers of the equipment • To be conducted as equipment arrives on site
Vendor Build Validation	• Undertaken by the Vendor pre-delivery • Can be referred to as Factory Acceptance Testing (FAT). • Confirms the product can be 'plugged in and turned on' out of the box and is not Dead on Arrival. • Is applicable to a selected amount of life saving clinical equipment
Systems Integration Testing	• Equipment is installed onsite. • Ensure the system level requirements meet the business and functional specifications requirements. • Represents the testing of assembled operational components to ensure they are working together as a single integrated solution
Operational Acceptance	• Allows defined simple site-specific/ scenario-based testing to occur. • Confirms the system performs as expected. • Confirms the system is in a fit state for customer handover.
User Acceptance	• Undertaken by the NNSW LHD once the system and/or site is handed over • Allows the Client to take ownership of the system and commence user-based acceptance testing. • Allows integration of the system into Client defined business practices/ procedures.

Test Execution

Test execution is supported by the following artefacts and/or activities.

Phase	Description
Test Case	• A set of logical steps to prove a functional or non-functional requirement. • Identifies the 'Expected Result' condition for each step • Built around a standard template for consistency of reporting and interpretation.
Test Report	• Document used to describe test phase activity. • Information typically includes Test phase summary results, status of open defects and their treatment plan.
Test Evidence	• Represents the objective information that proves the successful execution of the test case against the requirement. • Evidence can comprise screenshots, video files, system configurations, and/ or observations.
Defect Management	• Process that captures FAILED tests and applies causal analysis to direct their resolution. • Incorporates Severity/ Impact ratings, tracking, reporting, and quality validation.
Witness Testing	• Reflects that the Clients' nominated representative(s) is participating in the Suppliers' test execution. • Client participation can be either active (participant), or passive (observer). • Provides an opportunity for any deviations within test execution to be agreed.

Defect Management

Defects will be managed by Lendlease through to an agreed resolution with NNSW LHD based on a clear and shared understanding of the defect, its status, and mitigation approach.

The following tables provide an understanding of how we can review and categorise Defects.

Severity Rating	Business Impact	Technical Impact
1 - Critical	The failure causes a system crash or unrecoverable data loss or causes impairment of critical system functions. The customer cannot continue using the software. No acceptable work-around exists. Business risk is high	The failure prevents deployment of the system into production or deployment of the system would severely impact stability of the production environment.
2 - High	The failure causes impairment of system function. The customer can still use the software but cannot perform a critical task and no acceptable workaround solution exists for that task. Business risk is moderate.	Would impact implementation of system into production or would impact production stability of system and/or other systems.

Severity Rating	Business Impact	Technical Impact
3 - Medium	The failure causes impairment of system function or component. The customer can use the software (an acceptable workaround exists) but the defect is very annoying. Business risk is low.	Localised impact on implementation of system into production or localised impact on production stability of system and/or other systems.
4 - Low	The failure causes inconvenience or cosmetic in nature. Long-term work-around for use in production is acceptable to the customer. Business risk is negligible	No impact on implementation of system into production and no impact on production stability of system and/or other systems.

Defect severity classification

8.4 TRADE PACKAGE MANAGEMENT

The works required to deliver the new Tweed Valley Hospital will be split into numerous trade packages, with the extent of each package relating directly to the technical scope of the works. Clearly defined scopes of works are critical to managing the trade packages, including unambiguous demarcation of the interfaces between the respective trades. To manage the subcontractors efficiently and effectively, we will:

- Finalise a detailed services responsibility matrix to provide clarity, confirm all roles, responsibilities and inter-relationships between contractors, and establish lines of communication and reporting;
- Prepare detailed programmes, especially highlighting inspections and ‘hold points’;
- Implement our Quality Assurance,
- Environmental, Health and Safety Management Plans for the Project to ensure that site personnel and subcontractors are aware of all responsibilities in these vital areas;
- Establish and maintain good industrial relations and ensure subcontractors are aware of and comply with all contractual, legislative and industry - recognised obligations;
- Ensure that materials used and final quality
- levels are of as high a standard as possible, and comply with all contractual, legislative and best practice requirements;
- Implement practices to mitigate the effects of works delays that could translate to overall contract delays; and
- Seek back to back subcontract conditions to the Main Works Head Contract and as set out in the GC21 head contract.

9.0 PROJECT PLANNING, PROGRAMMING & MONITORING

The delivery planning of the Tweed Valley Hospital is one of the core disciplines of Lendlease during pre-construction to ensure that the delivery team is adequately prepared to commence the project and the necessary resources, planning, procedures and controls are in place to meet the requirements of Health Infrastructure NSW and associated stakeholders. This phase also ensures a common understanding of the contractual requirements, project objectives, commitments, constraints, risks and opportunities and responsibilities across the whole project team.

The key to the successful planning is to understand how the project progresses and changes from the moment is established to the final hand over date. Section 7 of this document provides details on different aspects of the project including establishment, logistics, plant and equipment, temporary works, production rates, etc.

9.1.1 Program Integrity

The program durations have been developed from first principles and subsequently tested through the use of carefully selected as-built benchmark data obtained from other Hospital and comparable projects completed by Lendlease nationally and input from subcontractors approached to date.

The durations take in consideration resourcing, site establishment, materials handling methodologies, plant and equipment, etc. Our project planning process includes hook analysis, proximity to the coastline, multiple activity charts to test the continuity and flow of work for resources, selection of systems for construction (e.g., structure erection and façade installation) and other factors.

To ensure that the program durations and resources allowed are ‘realistic’ we have consulted with our delivery partners to verify that the resource estimates are reliable. In particular, we have consulted with critical trades that carry the highest risks to the program such as formwork, concrete pumping and placing, reinforcement and post tensioning, scaffolding and façade installation.

9.1.2 Programming Framework

The Master Delivery Programme is the key document to control time in the project. The program includes Design, Procurement and Delivery activities as well as key Milestones that represent approvals, key decisions, hold point and other constraints. The program derives from the planning activities and is developed using primavera P6 Enterprise software.

Once the Delivery Programme is endorsed and agreed by all parties as the central point of reference for time management, Lendlease will implement its full discipline of program management which includes:

- Regular status of Construction Programme in a monthly basis to understand slippages, delays and enable mitigation strategies when required;
- Production of Medium Range Programmes: they provide a 3 monthly look ahead of the Delivery Programme with greater detail on activities and their links. MRP are issued every 6 weeks and monitored quickly to enable corrective actions;
- Short Term Programmes: each work area team will produce in a weekly basis a 3 week look ahead schedule with enhanced level of detail that includes all sign off and approvals (e.g., temporary works sign off), exclusion zones, crane time allocation, etc.

9.1.3 Program Management

The following are minimum requirements for inclusion within the Delivery Program developed throughout the construction phase:

- A program that has an accurate Critical Path;
- Regular reporting against the program;
- Program float is regularly analysed and reported on;
- Program is resource levelled; and

- Change control applied on the program, based on agreed tolerances.

The program will provide sufficient task level detail for each phase and package and will track key milestone items and dates. The program will be reported against as part of the standard reporting process.

Regular reviews will be undertaken as the project evolves with re-scheduling and re-sequencing of tasks as required. This will be a working document and will incorporate regular reviews with key subcontractors to ensure the appropriate level of resources is available to meet the project dates. This is particularly pertinent to the commissioning and testing phases.

The program will accommodate slippage and contingency of the forecast dates and key dependencies will be identified that will form the critical path. These items will be actively tracked and managed through the risk and issue process.

9.1.4 Program Controls

Lendlease uses numerous control tools that go from overall coordination Charts (as presented in Exhibit 1 below) to trade specific controls (Exhibit 2) that are updated in a regular basis and, where required, monitored in a daily basis. Each one of these controls serve their specific purpose and provide powerful outcomes to the team to make adjustments, develop mitigation measures and prioritise critical issues.

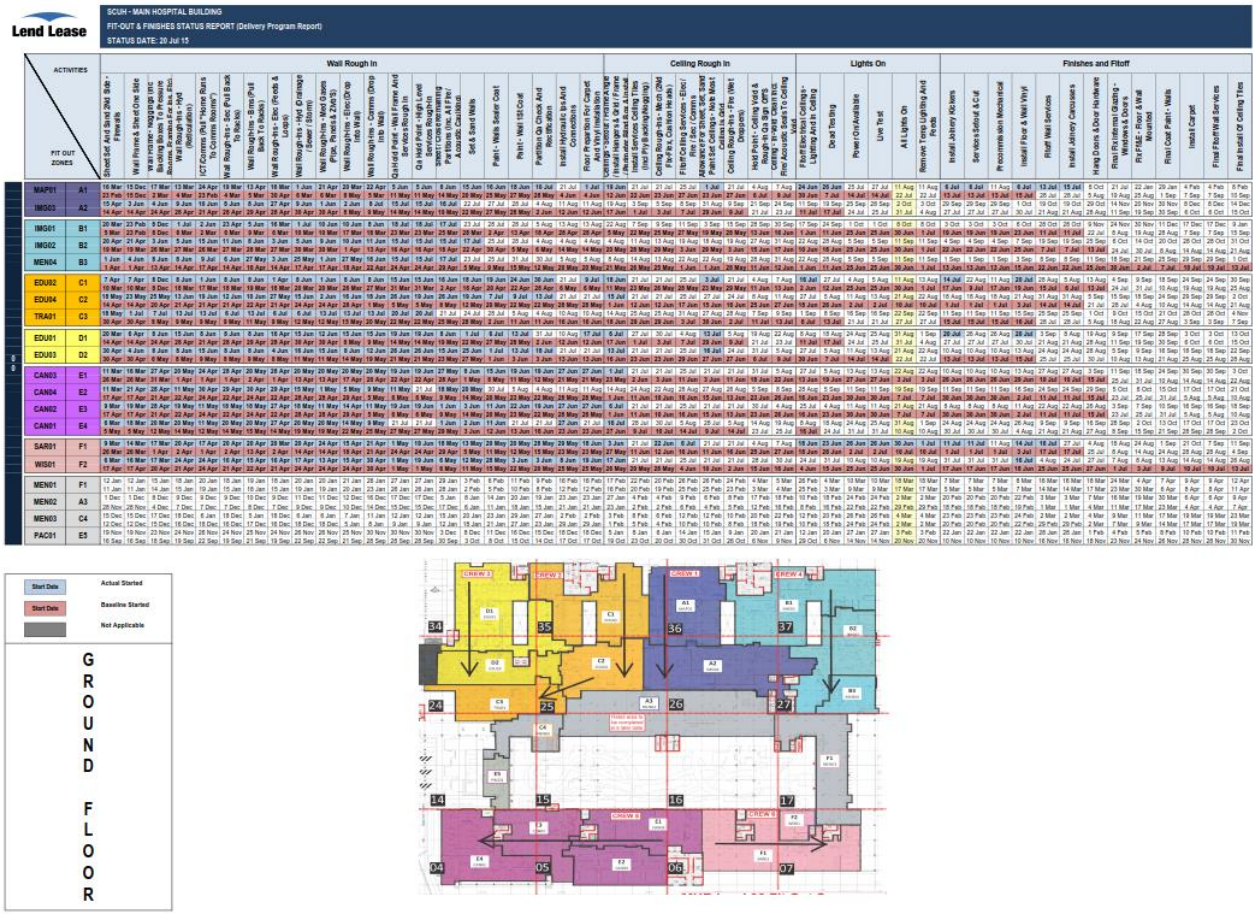


Exhibit 1: Example of an Internal Fitout Status Matrix

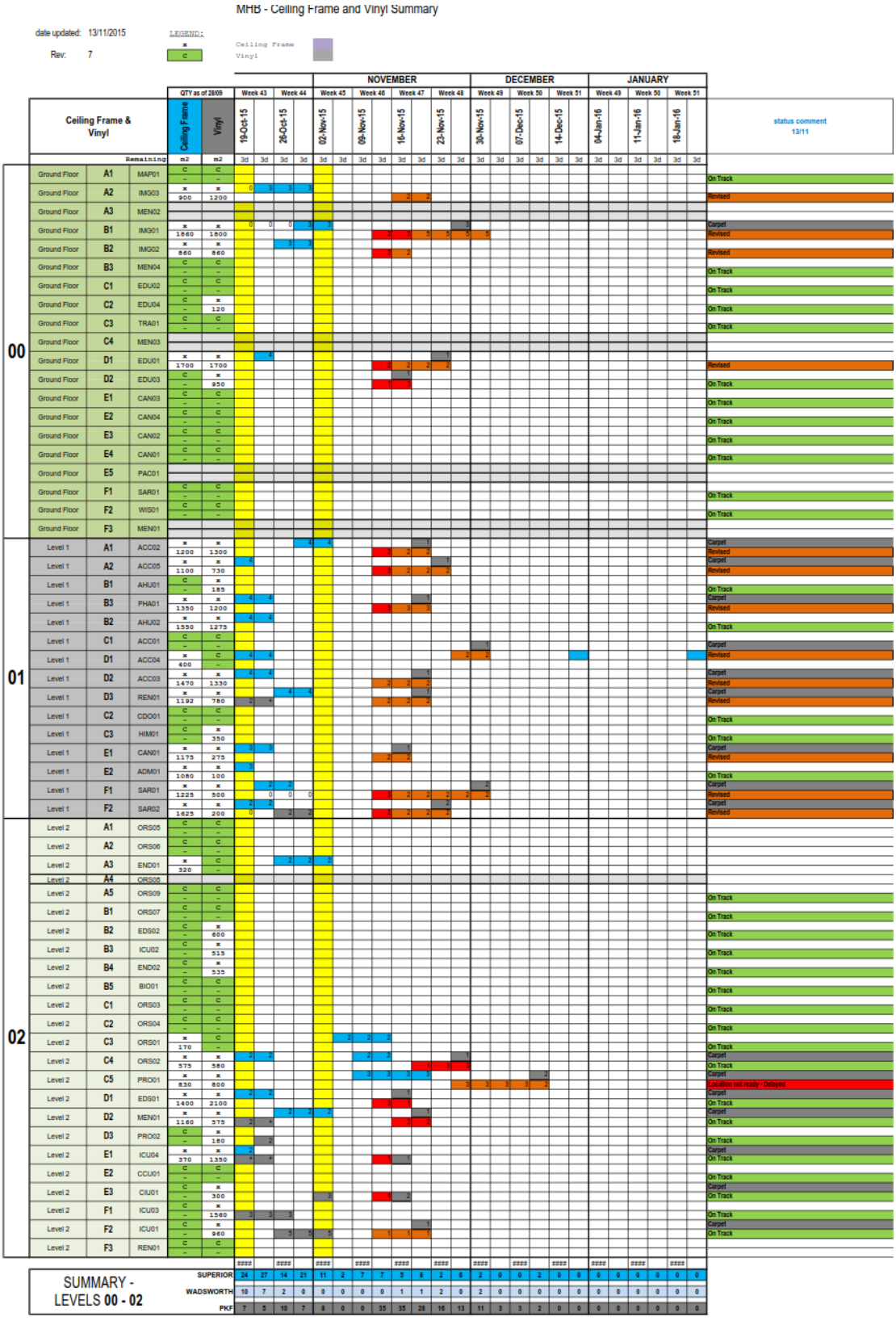


Exhibit 2: Example of a Vinyl & Ceiling Framing production control.

10.0 OPERATIONS AND SITE MANAGEMENT

10.1 OVERVIEW

The progress of design documentation during VECI and the amended submission of the SSD Stage 1 have granted an overall review of the project planning, including accommodation, access, circulation – temporary roads and carparking, plant and equipment and others.

Key members of the Lendlease delivery team have been directly involved in the project planning with active input from the supply chain. The construction methodology has been updated to mitigate the additional time that has been experienced during the VECI design phase.

The Lendlease delivery team will continue to update the construction methodology during the procurement of critical trades and their input into the methodology, resource allocation and other issues affecting the program.

The planning and methodology assessment for the project has identified a number of key stages in the general configuration of the site during construction. This section provides an overview of the overall approach adopted with detailed description of these stages.

10.2 DESCRIPTION OF THE WORKS

The Works involve the new Tweed Valley Hospital Building in Cudgen Road, Kingscliff, NSW. The new hospital building includes the services listed below distributed in 8 levels with an approximate GFA of 65,000 m2.

The Tweed Valley Hospital will be the major referral hospital for the Tweed-Byron communities and will form the core of the region's network of hospital and community health centres.

The vision for the Tweed Valley Hospital is to deliver a life-changing healthcare solution for the Tweed-Byron region. The new hospital will deliver:

- Additional inpatient capacity;
- Emergency department;
- Surgical and ambulatory care services;
- Diagnostic and interventional cardiology;
- Perioperative Services;
- Intensive Care Unit;
- Maternity, special care nursery and paediatrics;
- Adolescent Unit;
- Central Sterilisation Services;
- An integrated cancer care service, including radiotherapy services;
- A Central Energy Plan and various on-floor plantrooms;
- Helipad;
- Education and research spaces that will support collaborative clinical research and innovation.

10.3 DILAPIDATION SURVEYS AND MONITORING

Prior to commencing the early works Lendlease completed a dilapidation survey of existing infrastructure covering roads, footpaths, and road furniture on the roads immediately adjoining the site, including those portions of Cudgen Road and Turnock St. on the site perimeter, as well as external areas of existing

buildings located in proximity to the construction site such as TAFE, Mate & Matts Fruit Farm and the closest private properties adjoining the mentioned roads.

To minimise impacts on noise, vibration and dust generated from construction activities, Lendlease:

- Procured, supplied and installed sensors/monitors for vibration, noise and dust and back to base alarm to track levels of these parameters as compared to accepted levels stipulated in the Conditions of Approval for the State Significant Development.
- Where required, Lendlease will engage an acoustic consultant during the course of the construction works if noise and or vibration are consistently going over the acceptable levels, to provide detailed advice and practical methodologies to amend procedures.
- Our early planning anticipates measures to minimise impacts on the project such as:
  - Positioning major plant away from sensitive receiver boundaries and where possible to the north end of the building (away from Cudgen Rd);
  - Similarly, concrete pumping zones, cranage, and loading zones to be positioned away from Cudgen Road and the more sensitive receivers.

10.4 SPECIFIC SITE CONSIDERATIONS

10.4.1 Site Establishment

Lendlease prides itself on providing site facilities which are of a high standard for the workforce. This clean, comfortable and safe work environment is a simple and effective way of engaging the workers and ensuring a positive workplace.

The delivery of the Tweed Valley Hospital requires various stages including Early Works and Main Works, as such, site accommodation is also split in different stages. The initial Site Establishment for early works will remain for the duration of the Early Works phase (approx. mid July 2019 to end March 2020). Towards completion of the Early Works stage that includes bulk earthworks, piling, retention and in ground services installation, the Main Works accommodation will be installed to cater for the increased workforce, and to include for the Principal's Office and Lendlease final site accommodation until completion.

Figure's 10.4.1 & 10.4.2 below presents the proposed site accommodation compounds for delivery of the Main Works as well as details of the workforce accommodation during this stage.

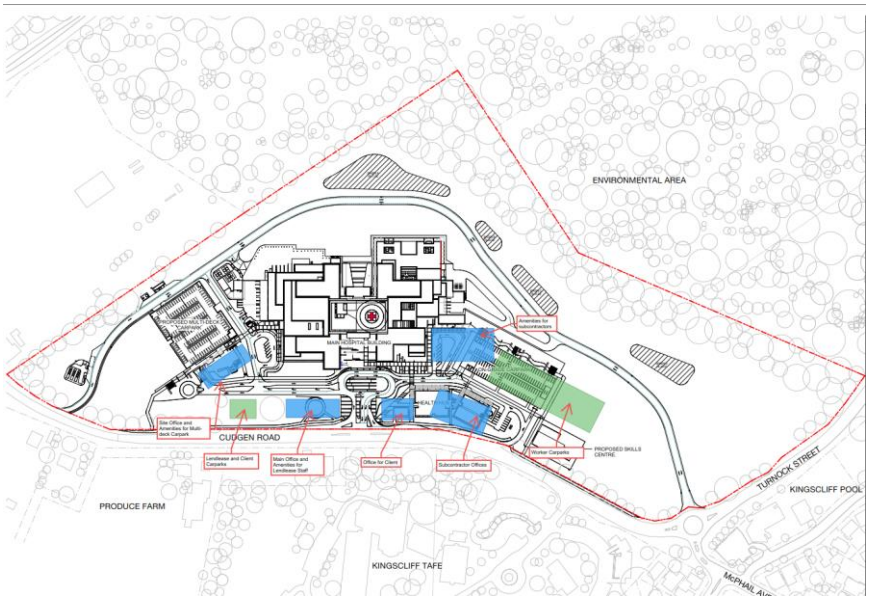


Figure 10.4.1– Main Works Accommodation and Office compounds.

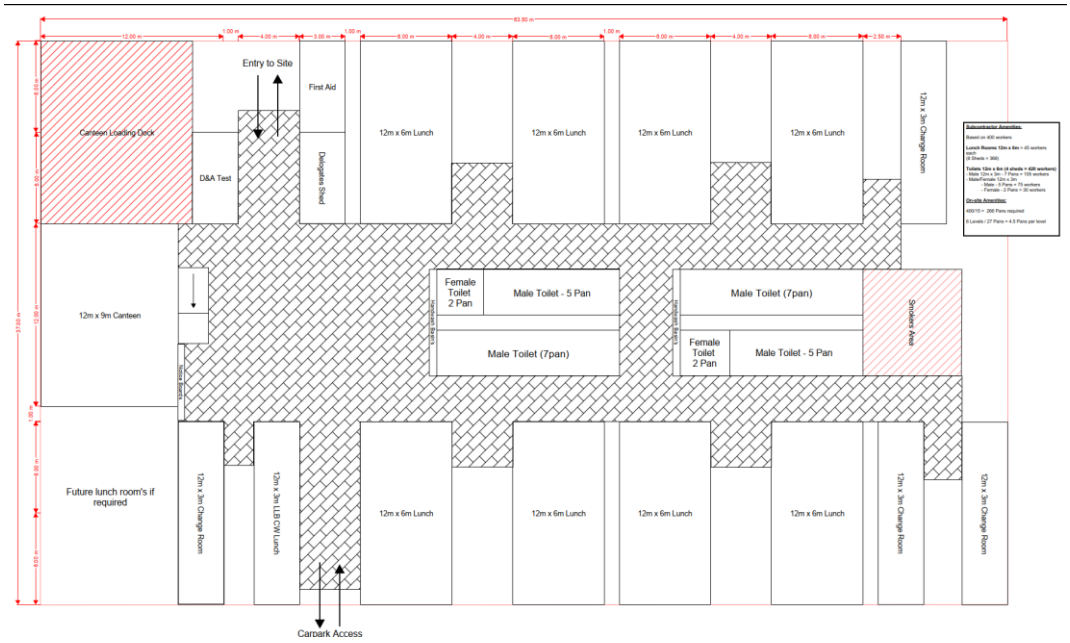


Figure 10.4.2 – Main Works Accommodation and Office compounds and details of Main Workers Accommodation.

10.4.2Hours of Work

Permitted Working hours are as follows:

Monday to Friday: 7am – 6pm (excluding public and statutory holidays)

Saturday: 8am – 1pm (Saturday works must be coordinated with Lendlease)

Sunday: No work

Lendlease anticipates that the delivery of the new Tweed Valley Hospital will be carried out mainly during week days, i.e., on Mondays to Fridays with daily work activities generally from 7am to 5 pm. Leading activities for 7 am physical works commencement, will include non-physical activities such as builder's brief, pre-start meetings, safety briefings, safety walks and others.

Saturdays work will be limited to specific schedule activities (e.g., post-tensioning), specific trade target programs (e.g., services testing, connections/disconnections) and for delays mitigation.

Other specific activities will require out of hours work due to specific constrains, e.g., crane erections, special deliveries (due to road rules) and others.

10.4.3Fencing for Site Segregation, Security and Safety

It is crucial to maintain a safe and secure site perimeter to both protect the public and staff from construction activities, as well as preventing unauthorised access 24-hours a day. Equally important is the segregation of the site accommodation compound from the main work activities, thereby ensuring workers safety and workplace management.

The perimeter site fencing has been installed by the Principal and will be maintained by Lendlease throughout the construction duration.

Within the site boundary, Lendlease will ensure temporary fencing is installed around the Subcontractors' compound ensuring no inadvertent access to the main site. Security access via controlled turnstiles will be implemented at the entry to the Main Works to ensure only inducted/ authorised persons gain entry.

Lendlease will install throughout the duration of the works electronic security (e.g., security cameras/sensors, CCTV) in key locations of the site. Security guards will be utilised out of working hours strategically during

construction to mitigate for theft and vandalism as well as during the later stages of the fitout works. Similarly, shutdown periods (Christmas and Easter) will also be monitored by external security services.

10.4.4 Traffic Management Site Access, Construction Traffic and Deliveries

Efficient management of materials delivery to ensure continuous flow of construction activities is critical to the construction programme. Clear access around site coupled with an unencumbered road network allowing ready access to loading/ unloading areas without creating congestion on site is crucial.

As an example, large concrete pours will require in the order of nine concrete trucks arriving and leaving the site every hour. To minimise any impact in Cudgen Road and disturbance to the neighbours, trucks will be immediately directed inside the site and hold in designated bays at the north end of the site (i.e. away from the public road).

Other important consideration for the management of construction generated traffic affecting the immediate vicinity is parking. The site offers the opportunity to complete on-grade carparking for construction workers. Some 400 carparking spaces will be facilitated on site to cater for peak construction workers parking. Carpooling will be encouraged for all workers.

With safety first in mind, we will ensure that vehicles and pedestrians are segregated throughout the duration of the works. We'll use barricades similar to a 'Danley' panel or Jersey kerbs for segregation of heavy, light vehicles and pedestrians.

Pedestrian crossings will be clearly defined.

Lendlease will install temporary fencing to create a queuing space within the site for staging of incoming construction traffic.

As depicted in Figure 10.4.3 below, Lendlease intend to install 3 vehicular access and 2 pedestrian accesses to the site, noting that this plan may change depending on progression of construction, number of resources on site and other factors. The main use of these gates are as follows:

Gates 1 and 5 – Vehicular Only Access (Site Loop Road)

These gates are installed in the permanent accesses to the precinct and will be used during activity peaks of activities when continuous deliveries occur, and numerous activities overlap.

Access through Gate 1 will only be left into site from Cudgen Road, and the control gate will be well into the site boundary, thus minimising congestion on the public road. Construction vehicles accessing the site through Gate 1 will exit the site either from Gate 5 (generally an exit only Gate) into Turnock St. roundabout, or from Gate 3 (left only into Cudgen Road).

Gates 2 and 4 – Pedestrian Only Access

Gate 2 is a pedestrian only access into Lendlease's Main Site Office (main reception to the site). This gate is intended for general visitors, Health Infrastructure NSW and Lendlease's staff, consultants and general public. All new pedestrian visitors to the site will be directed to this entry.

Gate 4 is intended to provide an independent access to the Skills Centre's users and visitors.

Gate 3 – Construction Carpark and Vehicular Access

Gate 3 is the main construction entry during Early Works and will be used during Main Works for both heavy Construction Vehicles during non-peak periods, as well as main access to light vehicles to get access to the temporary carparks.

Heavy vehicles will be forced to turn left after gaining access to site into the 'loop roads', while light vehicles (mostly workers) will turn right to get access to the temporary carparks.

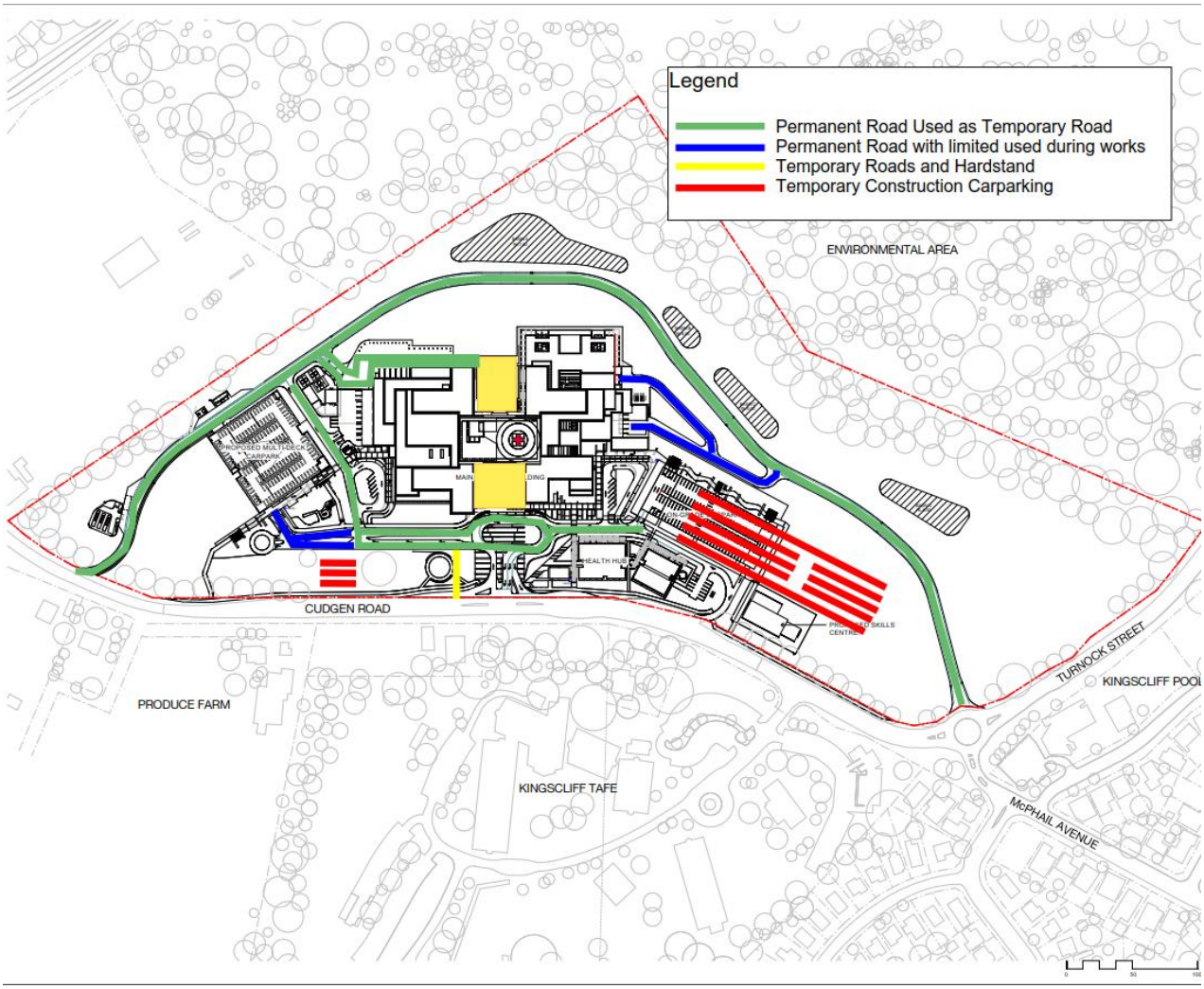


Figure 10.4.3 – Main Circulation roads during construction and Access Gates.

10.4.5 Pedestrian Control

Pedestrians will be completely segregated from heavy vehicles via substantial barricades such as Jersey kerbs (or similar). Walking on heavy vehicles circulation areas will not be permitted. Pedestrian crossings on circulation roads will be minimised and will be clearly highlighted, i.e. 'Zebra" crossings and supported by appropriate signs. Some areas, such as the Skills Centre, will be completely fenced to negate un-authorised access to the site.

10.4.6 Construction Worker Support

Lendlease see that the health and wellbeing of our construction workers is paramount and provide our construction workforce on site with a more comfortable environment and support healthier minds in the workplace. Initiatives Lendlease provide onsite may include:

- Quit smoking support;
- Bupa Healthy Options;
- Healthy living courses; and
- Mates in Construction (MIC) - mental health support.

10.4.7 Temporary Services

Temporary services installation is a critical consideration to maintaining production on site and therefore, meeting Delivery Programme dates.

Temporary services provisions contemplate the requirements for operation of all plant and equipment required to deliver the project. This includes though is not limited to tower cranes, satellite concrete pumps, hoists, and others. Additionally, temporary lighting and power is critical for ensuring a safe workplace by providing enough lighting for circulation, temporary emergency lighting, etc. Temporary distribution boards and switchboard are needed in all work faces to cater for construction activities, power tools re-charging stations, etc. Lendlease will be providing enough lighting under decks and general circulation areas in compliance with AS/NZS 3012:2010. Temporary electrical boards will generally be provided in 30m radius. Task lighting will be provided by each trade for their specific activities.

Temporary hydraulics installation is required for adequate provision of toilets, drinking fountains and washing stations.

A well-planned temporary drainage for stormwater is important to maintaining site productivity. The plan will endeavour to de-water the site as soon as practicable after major rain events and reduce the consequential impact after those events. Lendlease will try to maximise the use of permanent infrastructure for temporary drainage ensuring that adequate controls are in place.

Temporary ventilation is another important consideration, particularly during the warmer months of the year. Temporary fans, generally overheads in circulation corridors and pedestal fans across main work faces will be installed and relocated as the work progresses.

A temporary nurse call system will be installed during the construction phase to provide emergency call on site. Locations of the nurse call will be deployed in key points such as in vicinity of hoists and high circulation corridors and accesses.

10.4.8 Waste Management

Lendlease will ensure our supply chain is responsible and accountable for maintaining a clean, clear and safe working environment.

Housekeeping is one of the most influential factors on wellbeing and safety performance and has a significant impact in site productivity. Within our Environmental, Health and Safety conditions included in our instruments of agreement with suppliers and subcontractors, we require that a daily clean is performed on work areas as well as contribution to the maintenance of common areas such as corridors.

Lendlease will provide and manage waste skips for subcontractors to use. This is done to ensure cleanliness of site and helps drive a Factory Floor level of cleanliness. The site skips will be centrally located at accessible point at ground to ensure easy access to house keepers and easy pick up from the waste subcontractor.

Waste is managed through a single Lendlease subcontractor to ensure will be separated at the approved waste management centre. Auditable records will be kept of quantities of all materials both recycled and disposed landfill. Records will be monitored to ensure Lendlease requirements are maintained. To ensure the New Tweed Valley Hospital project meets its sustainability targets, waste management reports will show monthly and cumulative performance.

10.4.9 Scaffold and Perimeter Screens

Fall of objects/materials remains a major cause of incidents on construction sites. With safety being an uncontested priority for Lendlease globally, much attention is paid to edge protection as one of our first considerations.

Edge protection during construction will be achieved via combination of perimeter screens and scaffold.

Perimeter Screens

Wherever practical, perimeter formwork screens will be erected to provide edge protection during structure erection. Perimeter screens provide an advantage over scaffold due to time of erection, ‘jumping’, i.e.,

relocating to the levels up and dismantling. A preliminary assessment of potential screens installation has been completed and is depicted in Figure 10.4.4 below. However, this will have to be re-assessed and finalise once all floor layouts are ‘frozen’ and the building envelope locked in.

The screens have a tight mesh with small apertures on the cladding to reduce the risk of wind-blown materials penetrating the screen cladding and into the building working areas.

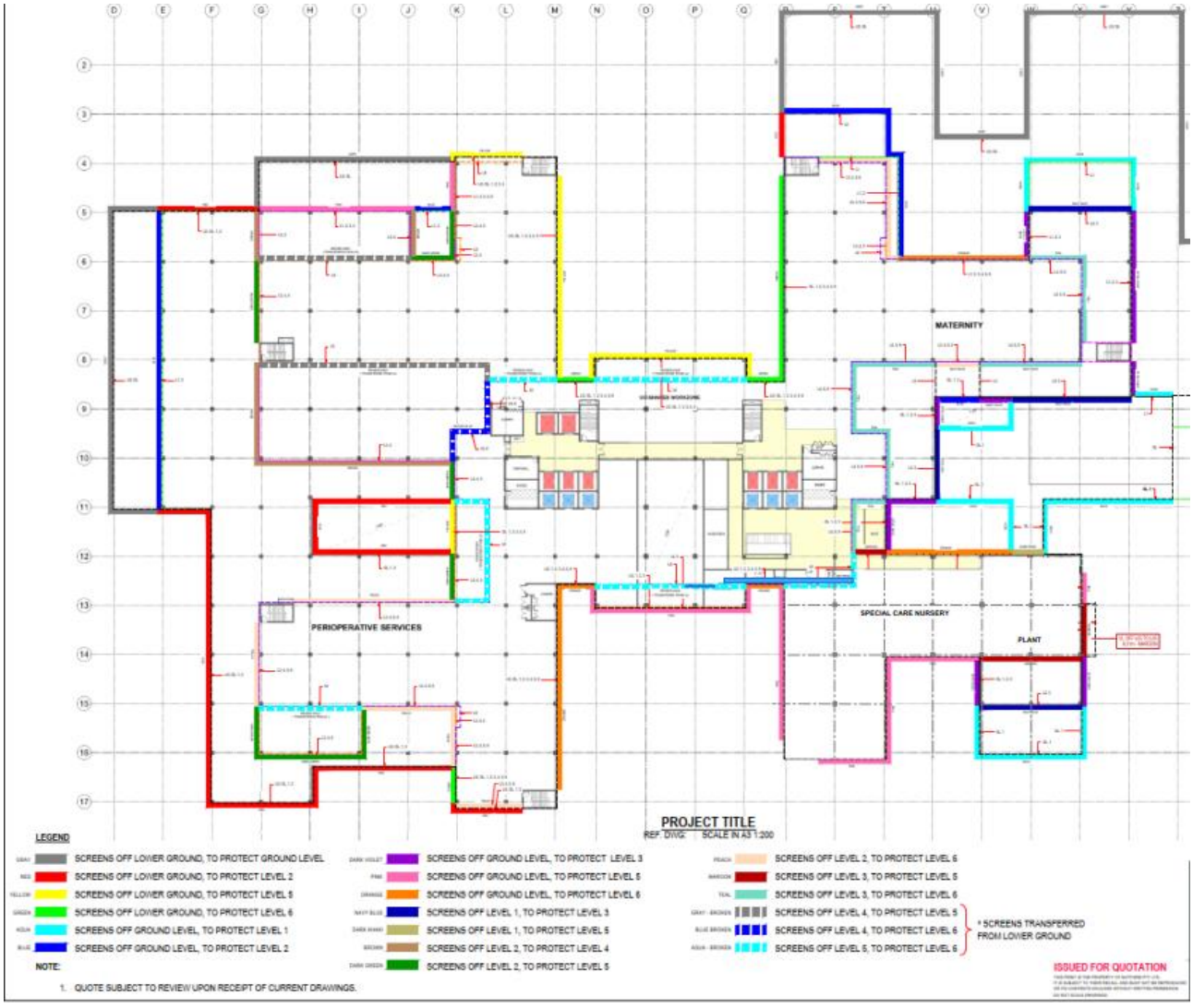


Figure 10.4.4 – Preliminary Perimeter Screens Layout.

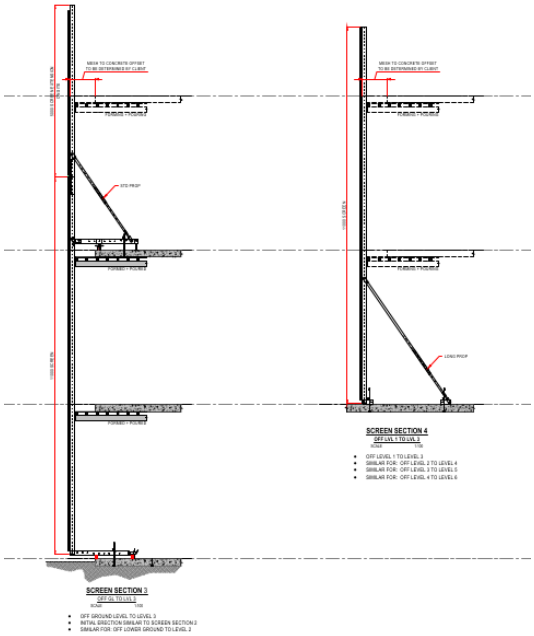
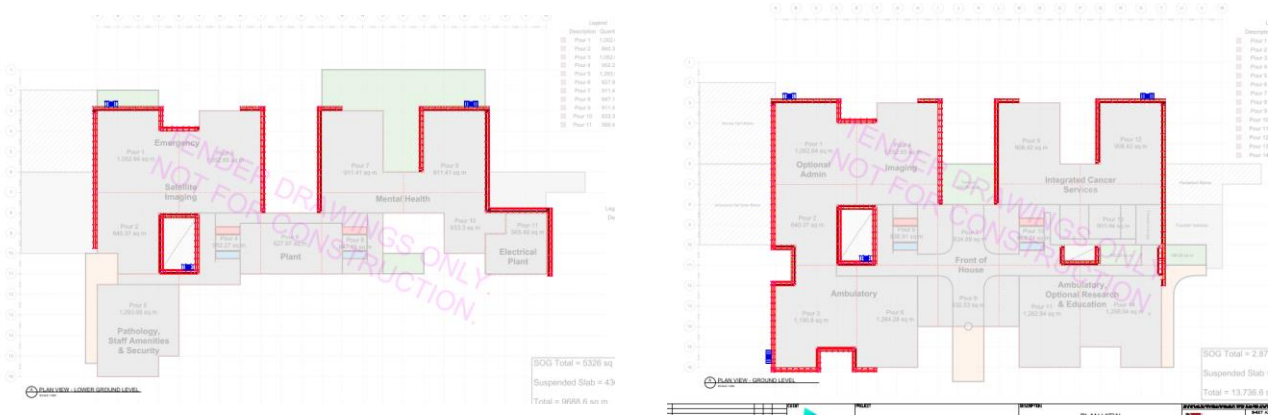


Figure 10.4.4 – Perimeter Screens Sections

Scaffolds & Stretcher Stairs

On the lowest floors, where perimeter formwork screens are not practical due to the irregularity of the building, independent scaffolds system will be installed to the perimeter of these floors to provide edge protection and safe working platform for activities such as edge board installation and post tensioning. Scaffolds will be fully contained with shade cloth or plastic screens. This will help to contain dust and attenuate noise whilst the structure is being completed.

As per the perimeter screens, the scaffold layouts and location of access and stretcher stairs will be finalised once the floor layouts and building envelope are locked in. Figure 10.4.6 below shows the preliminary layouts for scaffolds in the lowest floors.



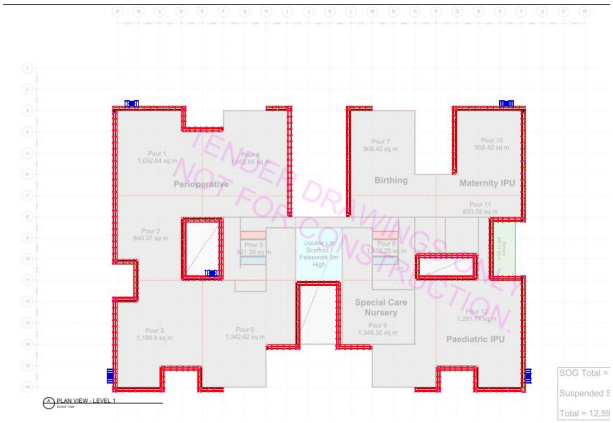


Figure 10.4.6 – Preliminary Scaffold Layout

Stretcher and access stairs will be distributed to provide safe and fluent access to the work areas throughout the building footprint.

Handrails

Once the concrete slabs are poured and prior to removal/jumping of the safety perimeter screens (or scaffolds), a handrail system will be fixed on the slab close to its edge (depending on timing for façade installation, the system may include a netting system to fully contain the floor to soffit aperture). The handrails installed will facilitate the removal of the lower screen/mesh but maintaining the kicker board to enable façade installation crews to safely work behind the handrails for installation of the façade panels.

10.4.10 Concrete Cores

Concrete stairs and lift cores are kept on program and progressed ahead of the leading formwork deck. Lendlease assessment for the Tweed Valley Hospital project is that jump forms, i.e., automated/self-climbing formwork systems for the cores do not represent value for money for the project as they are quite expensive to set up and take a considerable manufacturing time. For a building only 6 storeys high, the upfront expenditure and delayed start does not justify jump forms. As such, lift cores will be constructed with internal boxes (with a false deck to ensure safety of operators) and external shutters. Options for precast walls are currently being considered for the perimeter stair egresses.

10.4.11 Temporary Works

In addition to the various elements of temporary works described above, such as temporary services, scaffolds and screens, other parts of the Tweed Valley Hospital project will need temporary structures to enable permanent works to be built. Examples of these include, shoring, excavation support, false-work (e.g. bird cage for the atrium and supports for the bunkers' structure). These items will be generally calculated, supplied and certified by the respective trade. To ensure ultimate safety the Lendlease Workplace Delivery Code requires an independent third-party design review for those temporary works that carry critical risks.

10.5 CRANES AND MATERIALS HANDLING

The building has been relocated moving it eastward from its original setup, making most of the north, and particularly north-east quadrant of the building, difficult for setting up mobile cranes due to steep batters.

Due to the above Lendlease has assessed options to mitigate the additional delivery time and meet the required date for hospital opening and has added one tower crane to a total of 3 cranes for the main hospital building.

10.5.1 Materials Handling

As part of the review on the planning as part of the VECI stage completion, the cranage study has been updated. The analysis has driven the type, size, position and quantity of cranes required for the most efficient material handling solution for the project. This assessment has included input from reputable crane suppliers. Some of the criteria for the selection of the cranes and their positions included:

Coverage for the prominent east and west locations of the building layout (IPUs).

- Ability to service cores and plantroom areas.
- Capacity for heaviest lifts.
- Proximity of the coast line.
- No disruption to site roads and traffic flow from unloading deliveries.
- Minimal disruption to internal fitout.
- Ability to service all stages of project from chosen location.
- Redundancy in coverage to account for breakdown or emergency.
- Quiet enjoyment for neighbourhood thus the use of electric cranes.
- Access to erect and dismantle of cranes.

10.5.2 Tower Cranes

Tower Crane No 1 will be positioned to the west of the main hospital building, Tower Crane 2 will be positioned in the North end of the building between the NE & NW quadrants and Tower Crane 3 will be in the eastern courtyard. All tower cranes will be founded on concrete footing & piles (that will remain buried on site at enough depth to ensure it does not interfere with any present or future development).

All cranes are proposed to be Yongmao STL 420 – 24 Electric Luffing Tower Crane 60m boom and a lifting capacity of 4.9t at maximum reach (or similar). The central crane position (in the North-South plane) provides crane hook coverage of the main core area and the majority of the floor plate. This crane has been sized for major lifts and to complete the helipad on top of the building. Figure's 10.5.1a & 10.5.1b indicate the crane layouts and coverage on the Lower Ground and Level 04.

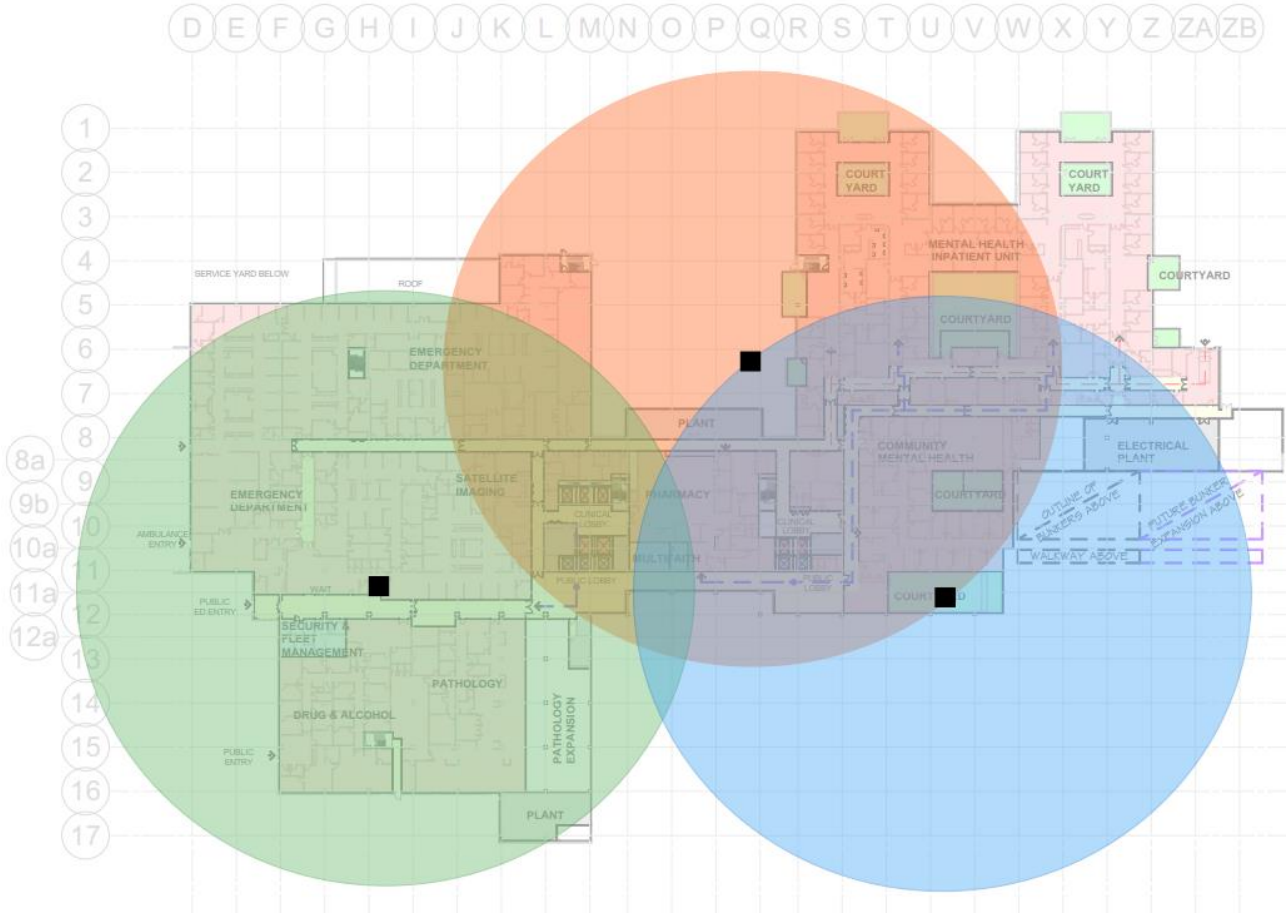


Figure 10.5.1a – Tower crane depicted on lower ground

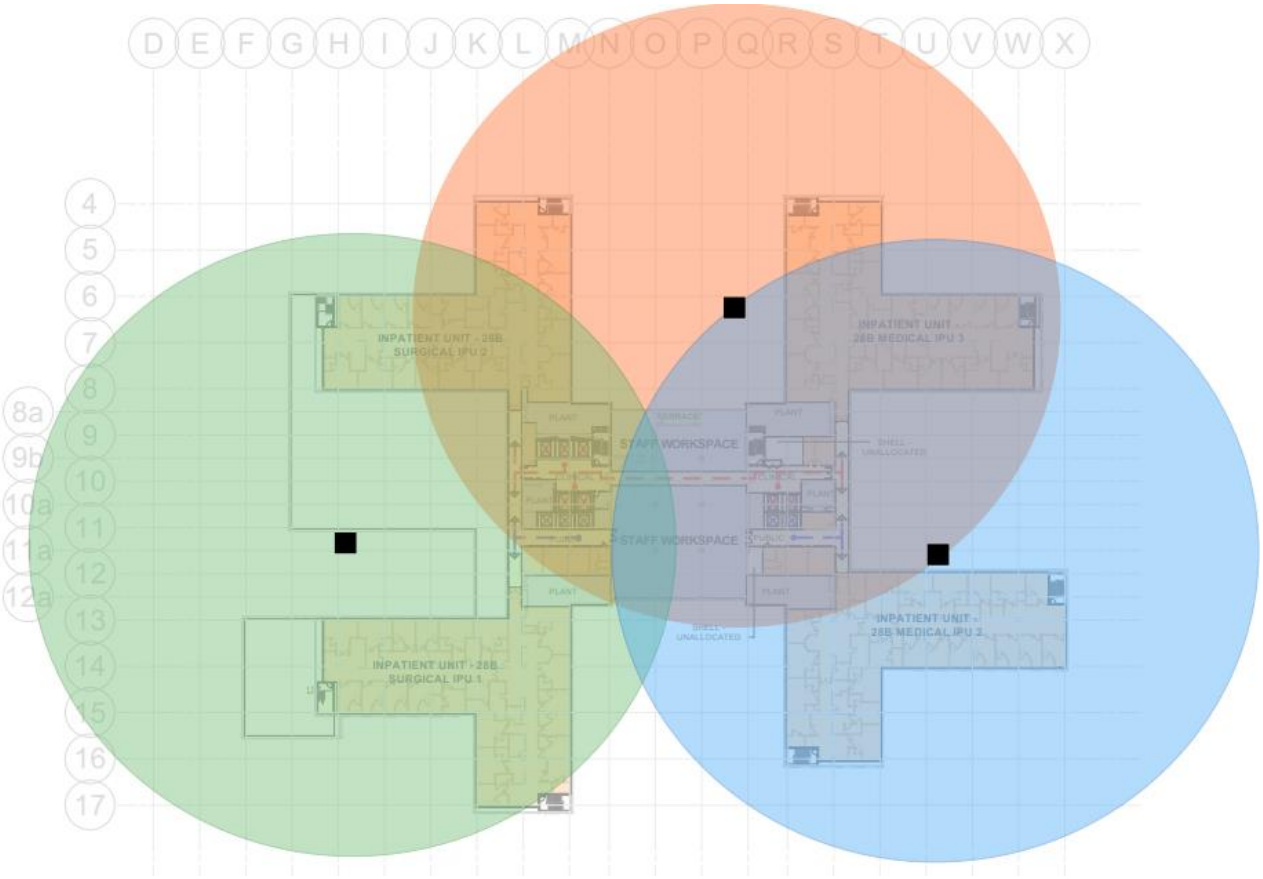


Figure 10.5.1b – Tower crane depicted on Level 04.

Initial consultation has taken place with CASA to ensure that the tower cranes can operate safely, and preliminary advice is that maximum heights are acceptable. Figure 10.5.1c presents the elevations and shows on top the level of maximum permissible height.

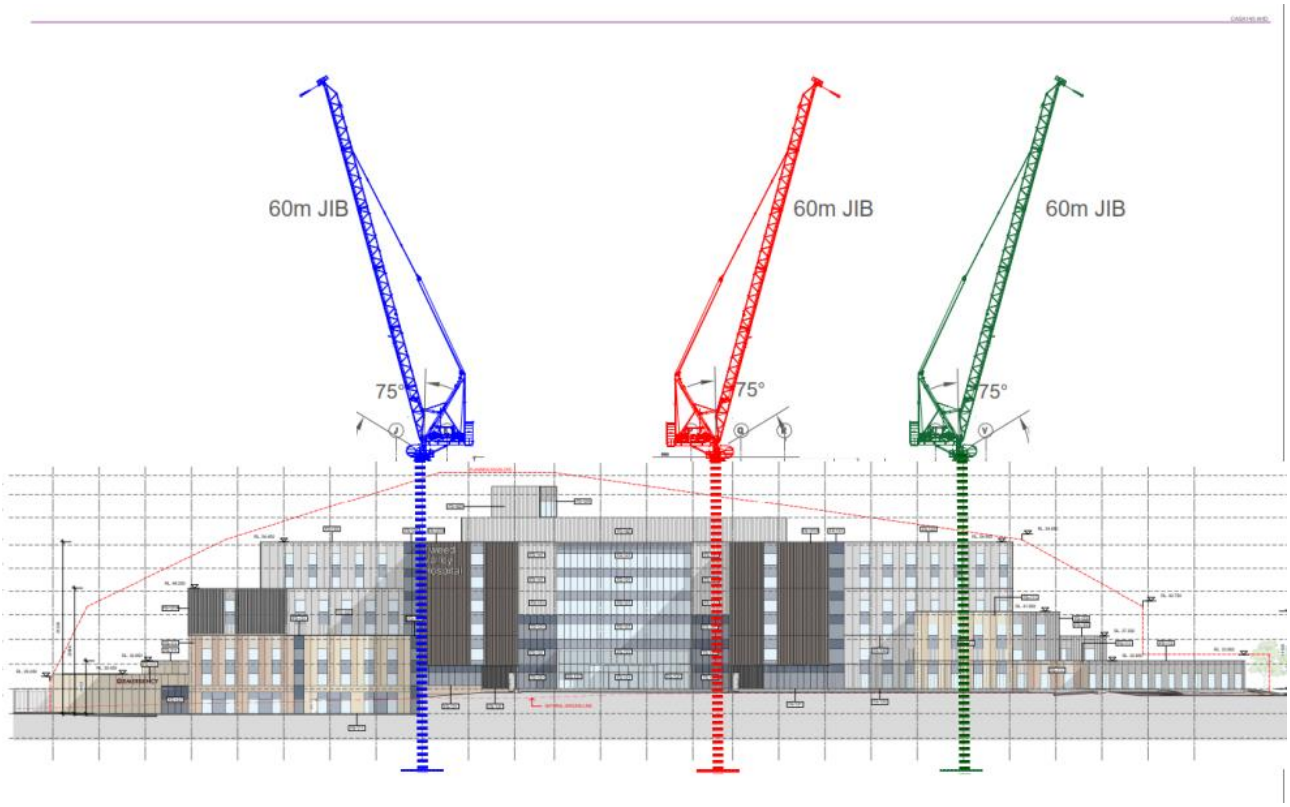


Figure 10.5.1c – Tower crane elevations.

Hammerhead tower cranes have also been considered and may be an alternative. Final crane layouts, heights and final hook analysis will be completed towards the end of ECI.

10.5.3Hoists

Review of the project planning confirms utilisation of three (3) double car men and materials hoists should be installed for the project (shown as green rectangles in Figure 10.5.2). Market for advice suggests these hoists should be GJJ 20/32 Twin Man and Materials Hoist (or equivalent), dimensions 3.2m (L) x 1.5m (W). Careful consideration has been given to the quantity and location of the hoists to provide adequate vertical transportation to each level of the towers and to supplement tower cranes.

Our experience delivering projects within a similarly proximity to the coast suggests utilisation of hoists will be invaluable due to the potential for wind speeds rendering it unsafe to use the cranes. The hoists will be progressively removed once the temporary fitout and commissioning of the internal builder's lifts are completed. The positioning of these cranes and hoists will be progressively reviewed during ECI phase as documentation develops and building shell is confirmed.

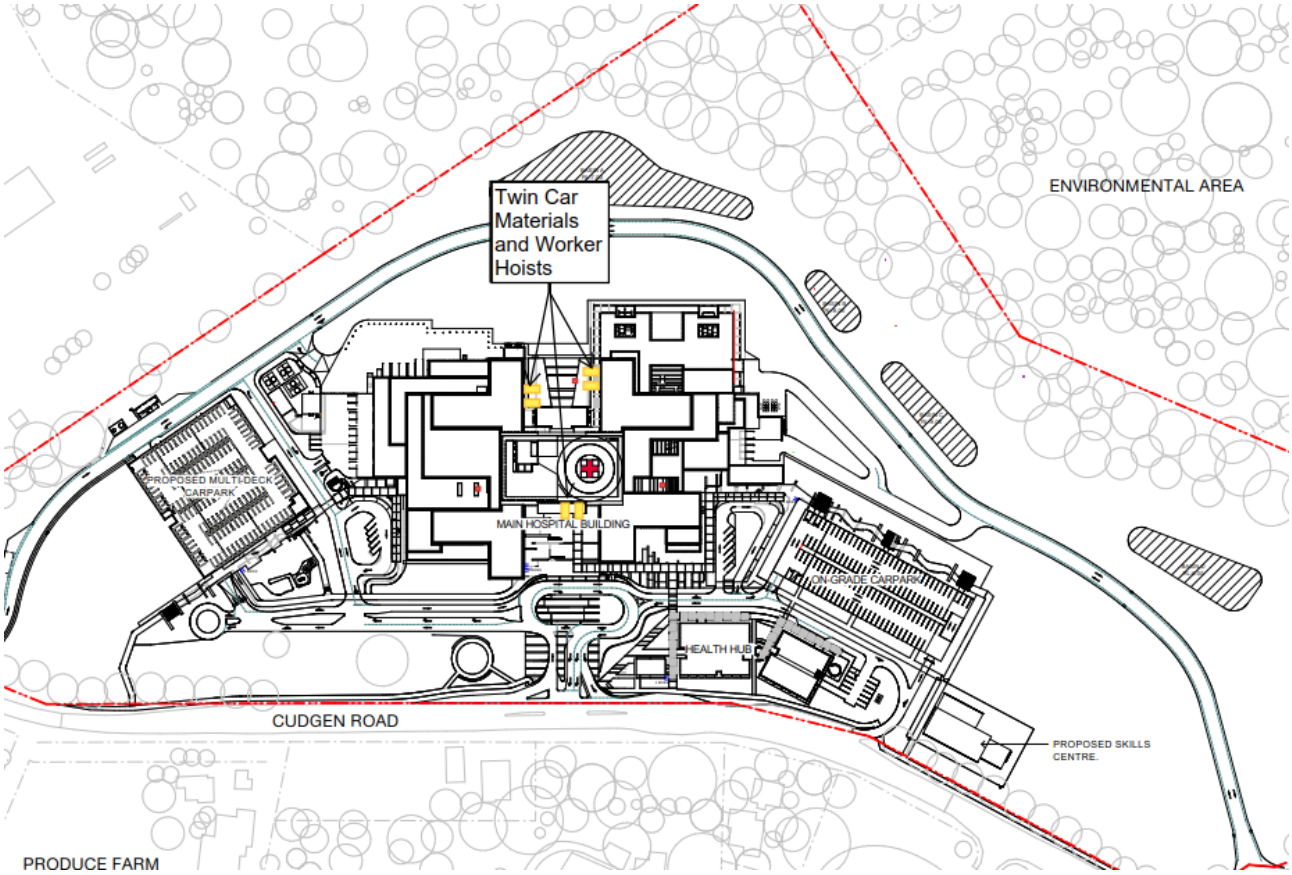


Figure 10.5.2 – Workers & materials Hoist location

10.5.4 Loading Bays

Loading bays similar to CDQ Model 3200 will be installed across the suspended levels to unload materials during the envelope and internal fitout stages of the construction programme. Likely locations (to be confirmed) for each floor as depicted below. 15 in total.

10.6 SITE EVACUATION / MAJOR INCIDENCE

10.6.1 Response / Emergency Procedures

Lendlease has robust procedures in place for the management of emergency situations. There are a number of key strategies that will be implemented to ensure Lendlease provides a safe environment for the entire workforce, the Client representatives and visitors. Further project specific details will be developed during the ECI phase and reviewed and approved regularly once activates start on site and the project develops.

10.6.2 Nurse Call System

A temporary Nurse Call system will be installed across the site during Main Works. Call stations will be situated at various locations throughout the site in key locations such as close to hoists and emergency egresses. They are one-way call stations connected to the first aid room.

The project's Safety Committee will be regularly updated on the location of Nurse Call points as the project progresses.

10.6.3Mobile Phones – All Site Supervisors (Lendlease and Subcontractors)

All Lendlease Building Supervisors and nominated personnel are issued with mobile phones. From a subcontractor perspective, it is a Lendlease policy that Subcontractors supervisors undertake front- end leadership training (Supervisors are required to be in a 1:8 ratio as per Lendlease's Safety Plan) and are provided with mobile phones.

These mobile phone details are kept in a site wide communication system which will send texts regularly (daily or in a required basis) to notify front all end leaders of changing site conditions, e.g. exclusion zones, wet weather, etc. Emergency warnings will be issued by SMS to all front-end leaders.

10.6.4Emergency Evacuation & Serious Injuries

An evacuation of the site is to be conducted in relation to an event which is assessed by the Chief Warden or Incident Controller to be serious, unexpected or a dangerous situation requiring immediate action, and which warrants an evacuation.

The decision to evacuate the site will be made by the Chief Warden, or Incident Controller, or initiated by any other person, who must notify a Lendlease representative immediately, should there be an imminent threat to life.

If anyone is injured and / or there is an emergency, the Project First Aid Officer immediately will be notified by using the nurse-call, two-way radio or phone. Depending on the seriousness of the injury, the First Aid person in charge may need to call an ambulance to site.

If the evacuation siren sounds, all site workers are to stop work immediately, leave the work area, and evacuate the site through the nearest safe EXIT (temporary 'EXIT' signs are installed throughout the site and modified as required, e.g., under formwork decks), or as directed by a Warden.

Muster points will be designated on site and adjusted as required with the increase of workers on site.

Every designated muster point/assembly area will have at least one of the electronic card readers to verify that every person on site has been evacuated in the shortest possible time. Our access control system (Pegasus or similar) provides excellent features to establish that all workers visitors and staff are accounted for.

After each worker has swiped their card on the Pegasus card reader they will proceed straight to their nominated sub-contractor area within the muster zone.

As part of our safety system and in compliance with regulatory requirements, Lendlease conducts evacuation drills regularly (every six months as a minimum).

10.6.5Flooding

Risk of flooding on the Tweed Valley Hospital site is minimal. Appropriate infrastructure to manage stormwater and runoff water is in place in the way of retention basins and will be supplements by the stormwater network being constructed as part of the Early Works stage. A preliminary Flood Emergency Response plan has been prepared (refer to Appendix BB of EIS report).

The peak event flood diagram (Figure 10.6.1) depicted below substantiates the claim of flood being a minimal risk.

Figure 10.6.1 – Peak Event Flood Diagram

Despite the low risk assessment, planning for a flood event is the best step to articulate a solid response. Some of the key elements of the plan are:

- Ensure flood response materials are available for immediate use e.g. sand and sandbags, plastic sheeting, loudhailer first aid kit *
- Ensure all workers are briefed on flooding risk during workplace inductions and at other appropriate times
- Subscribe to the National Alert System: http://www.emergencyalert.gov.au/
- Ensure the dangerous goods and hazardous materials register is up to date and all storage is located in non-flood prone areas
- Ensure the workplace can be effectively secured from intruders if abandoned during a flood event
- Ensure all IT systems are backed up regularly to off-site servers
- Ensure all isolation points for water, electricity and gas are communicated to all ECO members and included on the Evacuation Diagram or Emergency Equipment Diagram

10.7 ENVIRONMENTAL & BIODIVERSITY PROTECTION

Various key documents have been issued by different consultants and Authorities that deal with different aspects of the environmental and biodiversity management on site. Some of these key documents are, although not limited to:

- The Notice of Decision of the SSD9575;
- The Environmental Impact Statement for the New Tweed Valley Hospital;
- The Geotechnical Reports (Appendix P of the EIS);

- Biodiversity Management Plan (Appendix U of the EIS);
- The Preliminary and Detailed Site Investigation (Contamination) Report (Appendix Q of the EIS);
- Tweed Valley Hospital Project Environmentally Sustainable Design (ESD) Report (Appendix L of the EIS);
- Tweed Valley Hospital Aboriginal Cultural Heritage and Archaeological Report (Appendix M of the EIS);
- Tweed Valley Hospital Historical Heritage Assessment (Appendix M of the EIS).

The above documents identify the key features to be managed and carefully considered during planning and delivery activities on site. They also provide guide and restrictions applying to different site activities.

The site area will require careful management of site run-off. Perimeter protections installed during the Early Works phase will be reviewed regularly throughout the delivery.

Regular inspections will enable any issues to be identified and corrected immediately, endeavouring to have no impact on the environment, local community and public ways. An “Unexpected Finds Protocol” has been well documented.

The primary areas requiring specific environmental controls will be:

- Inspection of remediation capping layer for uncontrolled breaches;
- Managing site surface water run-off;
- Disposal of any retained stormwater;
- Monitoring and mitigation of dust, vibration and noise;
- Managed storage of hazardous construction materials;
- Dedicated wash down facilities; and
- Monitoring water table during groundworks.
- Weeding control.

10.7.1 Sediment Control

The topography of the site presents some challenges for management of the storm and runoff water. The sedimentation basins constructed during the Preliminary Works stage are now well established and are a key element of the stormwater and sedimentation management. Refer to the Civil and Stormwater Reports (Appendix S of the EIS).

These basins will be regularly maintained throughout the construction of the main buildings to ensure no unplanning discharge into the adjacent downstream wetlands.

Only areas where buildings, roads, carparks or other structures are to be built will be cleared.

Lendlease will carry out frequent, regular site inspections and ad hoc inspections in response to changes in environmental conditions. These inspections will focus on protective measures for all site boundaries, sedimentation basis and the wetlands area at the northern boundary.

These regular inspections will enable any issues to be identified and corrected immediately, endeavouring a no impact on the environment, local community and public assets.

The primary areas requiring specific environmental controls will be:

- Ensuring works to not alter planned drainage paths (i.e. run off not captured by basins).
- Inspection and remediation basin capping layer for uncontrolled breaches.
- Managing site surface water run-off, e.g. use of sediment collection devices upstream and not replying on the basin as a sole control.
- Disposal of any retained stormwater.

- Monitoring and mitigation of dust, vibration and noise.
- Managed storage of construction materials, particularly chemicals such as paints, epoxy coatings, glues, etc.
- Dedicated wash down facilities.
- Monitoring water table during groundworks where required.

10.7.2 Noise, dust and vibration

Refer to Preliminary Air and Dust Management Subplan.

Monitoring for noise emissions, vibration and air quality during the Early Works and Main Works are necessary to maintain the health and well-being of people who are involved in the works and of those within the surrounding neighbourhood.

Generally, the following controls will be implemented to ensure that noise and vibration related issues are controlled, addressed and resolved in accordance with regulatory requirements:

- Noise and vibration monitors were established during early works in three different locations on site, covering the areas that are most susceptible to be affected. The sensors will be maintained throughout the duration of construction works. The sensors will trigger a warning (sent to the nominated recipient) when the maximum allowed levels are exceeded.
- As the work environment changes, additional assessments may be conducted, the timing of which will be determined in consultation between the site management, Site Safety Committee and the Principal.
- Managing works within the approved site working hours.
- For specific tasks that will require short-term, noisy work, warning signs will be erected in the area where noise in excess of 85dBA.
- Where additional personnel protection equipment is required, the areas shall be identified by signage. The appropriate noise protection devices are to be issued to the effected personnel.

During the construction period, there will be some noise, dust and vibration. To manage the impact on the community, the majority of the construction activities will be carried out during the day.

Whenever possible, equipment will be selected to minimise noise generation, e.g., electric cranes which are quieter and more efficient than traditional diesel cranes, person and materials hoists, concrete pumps, angle grinders, hammers, drills, and hydraulic pumps.

Generally, the following controls will be implemented to ensure that noise and vibration related issues are controlled, addressed and resolved in accordance with regulatory requirements:

- Employees will receive training which will enable them to recognise areas where noise levels are likely to exceed 75dBA;
- Additional noise assessment of the site will be undertaken prior to or at the commencement of new type of works on site with ongoing monitoring in strategic locations determined through consultation with HI during the construction period;
- Use of core holing rather than impact hammer drilling into concrete structures of existing buildings, in particular at façade break-ins;
- In conjunction with HI NSW, developing acceptable periods when specific “noisy works” can occur;
- Where additional personnel protection equipment is required, the areas shall be identified by signage. The appropriate noise protection devices are to be issued to the effected personnel.

Noise emissions will be managed in accordance with the regulatory requirements and Lendlease management procedures, complying with the following:

- National Code of Practice for Noise;

- Management and Protection of Hearing at Work [NOHSC:2009];
- AS/NZS 1269.0:2005: Occupational noise management – Series of several Standards;
- AS 2012.2: Acoustics - Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors - Stationary test condition - Operator's position;
- AS 2436: Guide to noise control on construction, maintenance and demolition sites;
- AS 2221.1: Methods for measurements of airborne sound emitted by compressor units including prime movers and by pneumatic tools and machines; and
- AS 3781: Acoustics – Noise labelling of machinery and equipment.
- NSW Noise Policy for Industry 2017.
- NSW Department of Environment and Climate Change (DECC) "Interim Construction Noise Guideline" (ICNG), 2009.
- NSW Department of Environment and Conservation (DEC) "Assessing Vibration: A Technical Guideline", 2006.
- BSI British Standards "BS 5228-1 : Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise", 2009.
- Australian Standard "AS 1055 : Acoustics – Description and Measurement of Environment Noise", 1997.
- Australian Standard "AS 2670.2 : Evaluation of human exposure to whole-body vibration – Part 2: Continuous and shock-induced vibration in buildings (1 to 80 Hz)", 1990.
- British Standards Institution "BS 6472 – Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)", 1992.
- German Institution for Standardisation "DIN 4150.3 : Structural vibration – Effects of vibration on structures", 1999.
- Protection of the Environment Operations Act 1997.
- Swiss Standard SN 640 312:1978.
- NSW EPA Road Noise Policy (RNP), 2011.

10.7.3Air Quality Management

Objectives for the project are to implement appropriate controls to suppress dust and other suspended particles in accordance with legislation and risk management requirements minimising the generation of dust on the site and potential emission issues relating to plant and equipment.

Our strategy for air quality management would include:

- Clear definition of trafficable and material storage areas to prevent unnecessary vehicle movement into other areas;
- Use of water cart to dampen work areas and exposed soils to prevent the emission of excessive dust;
- Installation of a wheel shaker grid and/or wash down facilities at the vehicle egress point;
- Ensuring trucks transporting materials to and from the site use covers to prevent wind-blown dust or spillage;
- Periodic inspection of surrounding roads to ensure no construction contamination and initiation of road sweeping if required;
- Careful selection of materials for temporary road surfacing;
- Aspergillus control during construction works within existing buildings;
- Subcontractors to maintain equipment / machinery to ensure exhaust emissions comply with relevant legislation and guidelines;

- All waste material to be sorted, collected and removed from site (for recycling where possible);
- Air quality monitoring;
- Dust screens and airlocks to be utilised with interior works;
- Provide construction filters to air intake vents; and
- Use of temporary exhaust fans and filters to circulate construction zone air to exterior of building.

Concrete pumping lines are secured to the slab below using vibration mounts, which dampen noise and vibration associated with pumping even further.

10.7.4 Infection Prevention and Control Management

Throughout the project Lendlease will ensure stringent standards are put in place to ensure once the building is handed over it is a clean and healthy environment. This will be achieved through the following controls.

Throughout the build all pipework and ductwork will be capped off to avoid any dust and debris to accumulate in building services.

The initial Builder's clean will be undertaken progressively as areas are completed and locked off. This will be completed prior to testing of any mechanical duct work to avoid intrusion of dust into the HVAC system.

This will facilitate final defect rectifications and include the removal all protection and general construction dirt and dust from the building.

Then, shortly before handover and in parallel to final testing and commissioning of the building, a final clean will commence and work progressively through the levels. It is critical at this stage to programme and maintain a works sequence to systematically work area by area and level by level.

This will achieve a better final result than working on a large number of concurrent workfaces.

Critical in achieving a satisfactory final clean is having works areas locked down and secured.

To this end we will designate one of our Senior Engineers to manage the completion works and employ additional security staff during this phase of the Project.

10.7.5 Asbestos and Other Contaminants

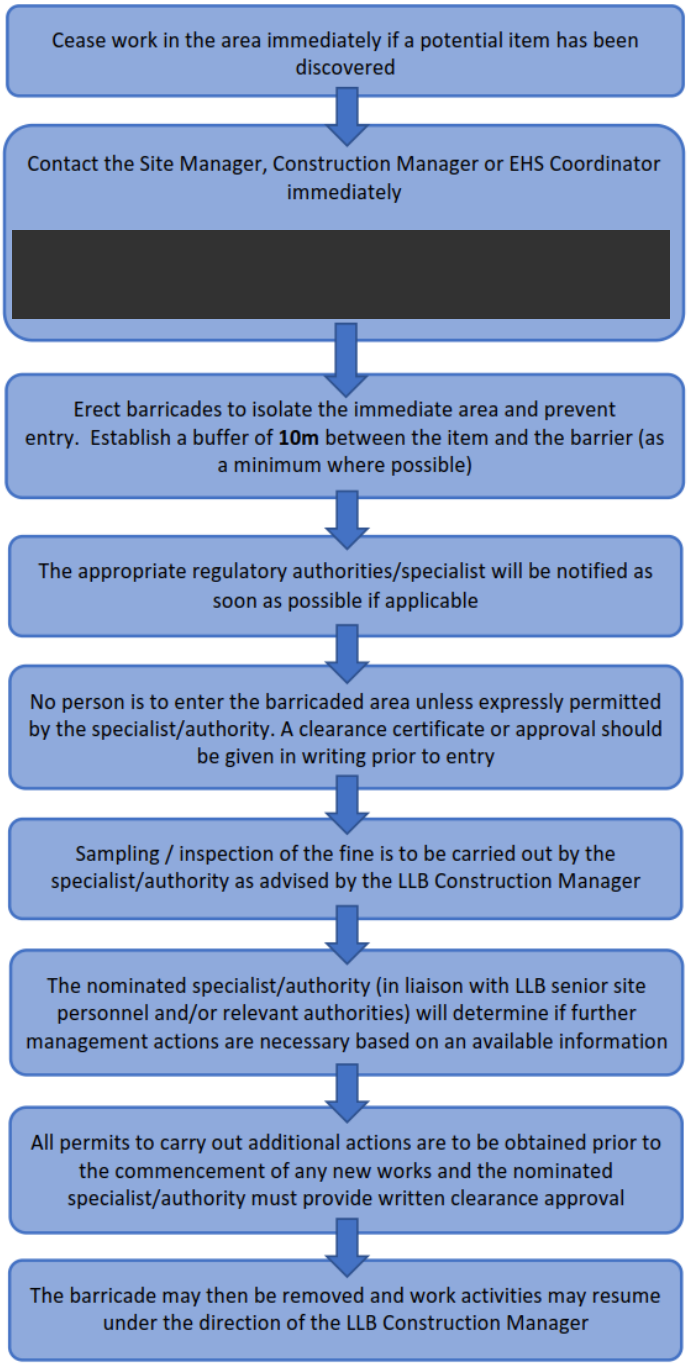
All hazardous materials on site will be removed as part of the Preliminary & Early Works stages and therefore there will not be any hazardous materials during Stage 2 of the Development – Main Works.

Soil contaminants are of relative low risk and originated from the predominant previous use of the land for agricultural activities. During earthworks activities performed at the Early Works stage, the subcontractor will be required to manage and remove contaminated materials and dispose in compliance with regulations. Again, all potential contaminants will be removed before commencement of Stage 2.

An unexpected find protocol is in place and will be followed if required. (See next page).

UNEXPECTED FINDS PROTOCOL

Unexpected Find items can include, but are not limited to, hazardous building material, potential burial site or item of heritage or archaeological significance, medical paraphernalia, illicit items including weapons and drugs related objects



10.7.6 Conservation and Habitat

Throughout the project Lendlease will implement strategies and mitigation measure on site to comply with Biodiversity Development Assessment Report and Biodiversity Management Plan (Appendix U of the EIS) and the Matters of National Environmental Significance Report (MNES) prepared by Greencap dated February 2019, ensuring the ongoing protection and conservation of the local flora and fauna.

Lendlease will incorporate conservation and habitat management measures to minimise the impact of the development on the movement and habitats of local wildlife. The Control Measures include; the development of a specialised management plan by an Ecologist, maintaining or providing wildlife corridors, revegetation, parking restriction, tree protection and inspection & maintenance of the area etc. The management measures will be regularly reviewed and adjusted as required.

The trees identified to be retained on site will be protected throughout the construction period. Protection measures include; protection fencing, No ENTRY signage and no parking permitted within 4m of the trunk of any retained tree.

Suitable temporary fencing was established during Early work across the north boundary, as recommended in the Biodiversity Management Plan (Appendix U of the EIS). The wildlife fencing will be maintained throughout the construction period and the site will not be fenced in the long term.

10.7.7 Heritage and Archaeological

The Historical Heritage Assessment Report prepared by Niche Environment and Heritage dated 19 October 2018, identified five historical dry-stone walls that were likely constructed by South Sea Islander workers, principally from the Solomon Islands and Vanuatu, and may represent a significant connection of South Sea Islanders to the Tweed district. Refer Appendix M of the EIS.

A detailed investigation to assess the potential for Aboriginal archaeological resources in the area identified that the site has an extremely low potential to contain archaeological deposits. However, in the unlikely event of an historical or archaeological the Unexpected Find Protocol will be followed.

11.0 CONSTRUCTION PROGRAM METHODOLOGY

11.1 SUMMARY PROGRAM OF WORKS

The overall high-level program is depicted in Figure 11.1.1, noting that starting dates are subject to achieving key milestones such as receiving Determination of SSD2 and agreeing the final Main Works offer for the development. The overall delivery program will be regularly updated during the ECI phase.

11.2 CONSTRUCTION STAGING

11.2.1 Construction Staging Overview

The Lendlease project team fully appreciate the disruption and change the construction works will bring and understand the challenges the HI, NNSW LHD and Tweed Valley Hospital Precinct management will have in communicating the staging sequences and the program of the works to the staff and public. The better the hospital staff and public understand the timing and reasoning of the staging of the works, the more comfortable they will be with the temporary inconveniences.

We have completed an initial review of our construction program and methodology and documented a draft set of staging plans covering the works phases. These will provide the basis for a full set of staging control plans, which will be developed in conjunction with detailed design development during the Schematic Design and detailed design phase in consultation with HI, NNSW LHD and Tweed Valley Hospital Precinct Management.

The staging plans will be developed to include:

- All site establishment items;
- Changed or modified egress paths;
- Pedestrian and vehicle circulation route changes;
- Temporary signage requirements;
- Upcoming changes to works areas including approximated program dates; and
- Projected completion and handover areas.

11.2.2 Early and Enabling Works

The early and enabling works are being undertaken as part of the current works and will completed to allow the main works to commence as programmed. These works have been approved under a separate approval process and include:

- Site Establishment;
- Services Isolations;
- Demolition; and
- Services Augmentation (stormwater, sewer, gas and high voltage).

Summary Overall Programme

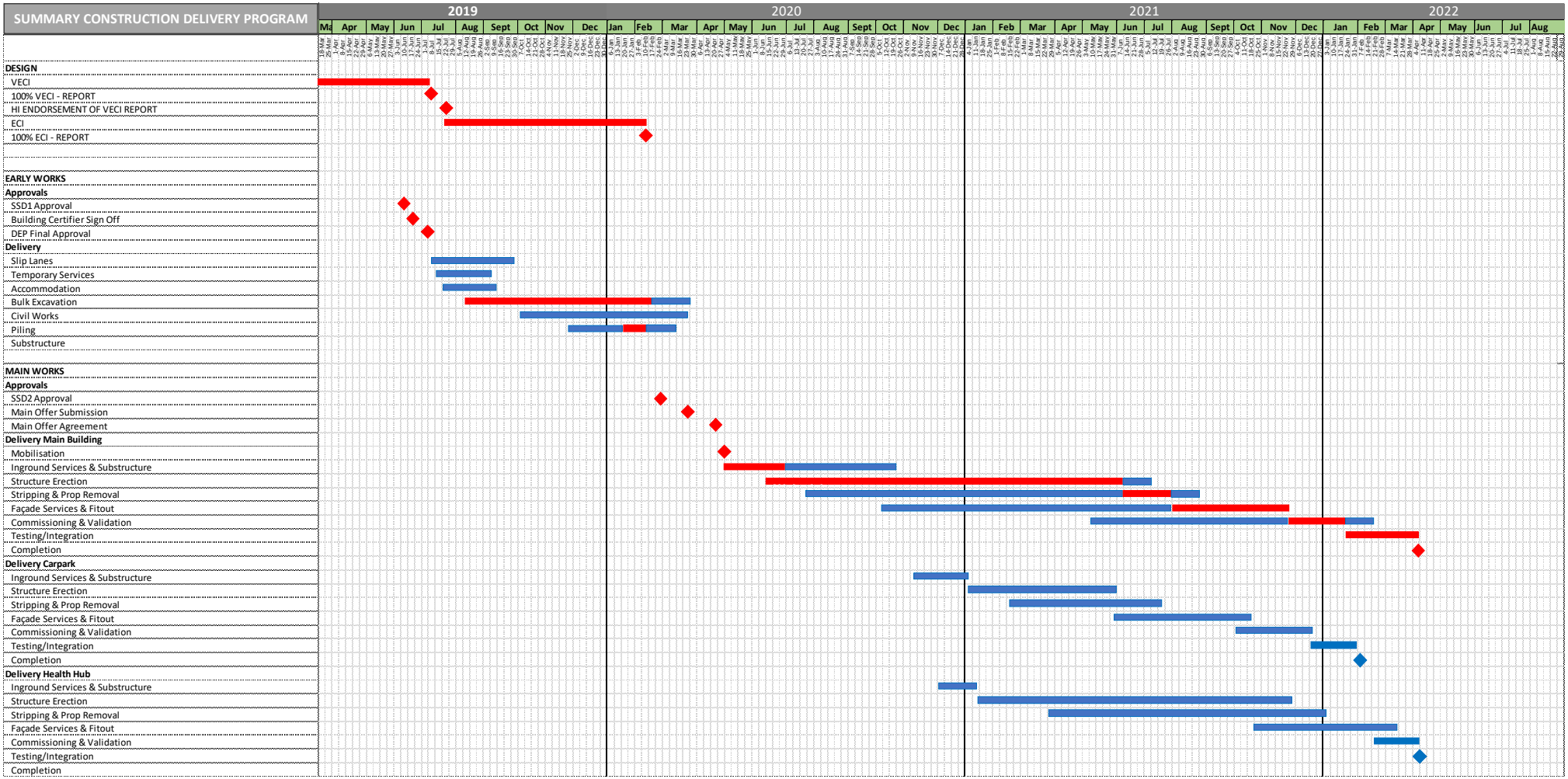


Figure 11.1.1 – High Level Program

11.3 CONSTRUCTION METHODOLOGY AND PROGRAM

11.3.1 Structure -Concrete Framing

Slabs on ground

Upon completion of the substructure, two crews will commence forming the slabs on ground for the Basement Level (Logistics) and Lower Ground (Mental Health Unit) respectively. These slabs are expected to be conventional. There will be pour breaks for SOG in Basement & Lower Ground that cover the majority of SOG Slabs (there are SOG slabs also in Ground Floor). Pours are limited to a maximum of approx. 1,100 m2 (330 m3) to ensure that they can be poured and finished during prescribed working hours.

Lift & Stair Cores

Concrete stairs and lift cores are kept on program and progressed ahead of the leading formwork deck. Lendlease assessment for the Tweed Valley Hospital project is that jump forms, i.e., automated/self-climbing formwork systems for the cores do not represent value for money for the project as they are quite expensive to set up and take a considerable manufacturing time. For a building only 6 storeys high, the upfront expenditure and delayed start does not justify jump forms. As such, lift cores will be constructed with internal boxes (with a false deck to ensure safety of operators) and external shutters. Options for precast walls are currently being considered for the perimeter stair egresses.

Decks/Suspended Slabs

The Lendlease delivery team have re-visited and agreed the sequence for all suspended slabs from Lower Ground level up to Level 6 roof slab and then the Helipad. To drive the efficiencies and productivity rates used as a basis for the programme durations, the team have driven the design to flat slab soffits and the use of a modular formwork system similar to that shown in Figure below.

Pour sizes are generally kept to a maximum size of approx. 750 m^2 (as pumping is slower in suspended decks) resulting in pours of approx. 250 m^3.

Due to the increase in floor area, an additional crew for the decks has been added to a total of 3 crews. The Figure below shows as an example the Ground Floor plate with deck crews going on alternative pours.

Figure 11.3.2 – Suspended decks

Four concrete placing booms will be set up to deliver concrete to cores, columns, shear walls and suspended slabs. To ensure safety of concrete pumping procedure, these pumps are independent satellite pumps, one for each 'L' shaped tower as shown in the Figure below.

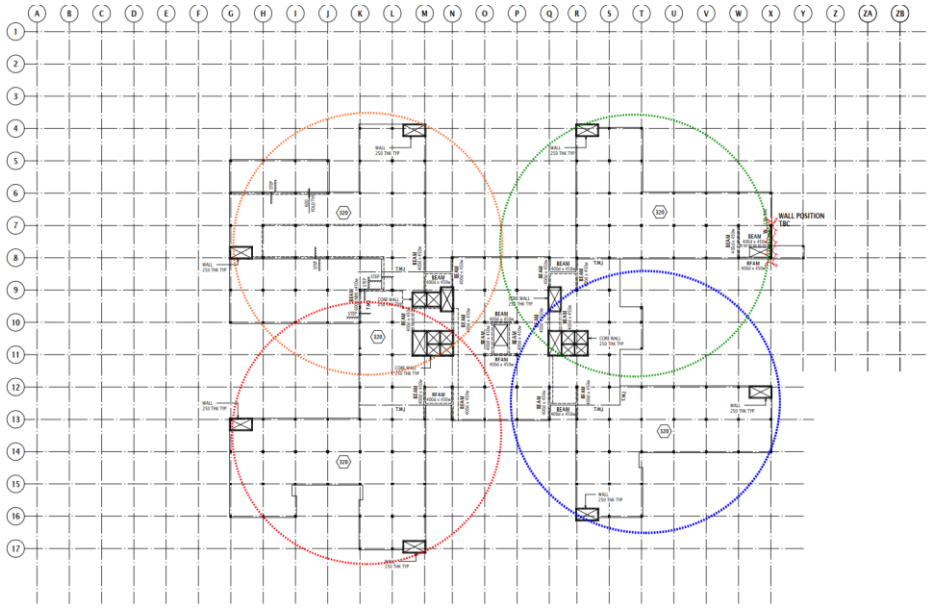


Figure 11.3.3 – Approximate layout of Concrete Placing Booms.

Concrete supply to the pumps will be via concrete hoppers in the north end of the building (to mitigate noise in Cudgen Rd) with a two-truck feed to ensure continuous supply will be maintained on every pour. Concrete trucks will be directed to drive in and drive out under the control of a dedicated spotter. Upon consultation with industry we feel there is sufficient local capacity to batching for the project. Mobile pumps may be utilised to supplement the largest pours.

Through development of detailed design during the ECI Phase, all these assumptions will be validated and updated as required. Is worth noting that to achieve programme dates, strengths on concrete slabs are to be 10KPa for the Podium Level 2 (i.e. the roof slab over the Operating Rooms and Maternity) and the Level 6 Roof slab and with all other slabs maintaining a design rating of 5 to 6KPa. This will enable to reduce propping to just two levels below the leading deck.

11.3.2 Structural Steel

Although there is no detail at this stage of structural steel, it is not expected to be a prominent element of the structure. Likely areas where structural steel will be used include the plantrooms directly adjoining the helipad' on the level below, the canopies on the lower floors (e.g. Ambulance Bays), the Central Energy housing and the Main Entry to the Hospital building. Structural steel will be manufactured and built off site to ensure that when it is brought to site it will be installed once and the need for re-working or localised adjustments are not minimal.

11.3.3 Façade

The delivery programme is based on a combination of precast concrete panels, curtain wall façade and/or unitised façade panel (mega panel system) that will be pre-fabricated and finished off site. The panel will include the insulation to comply with BCA Section J, the air and water seal with external architectural finish applied. The panels will come to site flat with support for any accessories such as sunshades ready to be

bolted on either prior to lifting or once panel is installed (depending on design and programme constraints). These panels will be fully prototyped and tested prior to proceeding with manufacturing.

The façade mega-panels will be installed in similar way to a curtain wall façade, with metal brackets casted-in on the slab edges (or fixed after pours) and panels being craned in via mini-crane or the Tower Crane.

All façade systems used will be installed in a 'one direction' order detailing in coordination with structure progression. Each façade zone will start immediately after removing the scaffolds or 'jumping' the screens. Façade panels will be installed from behind the handrails installed close to the façade edge.

11.3.4 Waterproofing Systems

The integrity of the waterproofing systems both in temporary applications and in final flat roof areas is always critical to the success of the project.

Waterproofing systems of very fast curing and resistant to heavy duty traffic will be applied to roof areas to allow dry trades to commence on the levels below at the earliest opportunity.

These systems have the flexibility to apply further layers after construction trades are finished without affecting the long-term performance and warranty. Attention will be paid to ensure the clients comfort with the robust detailing.

It is critical that the membrane works are installed correctly and efficiently as the quality of the installation ensures the long-term durability of the membrane is not compromised. The formula in achieving the required outcome is threefold:

- Selecting the best suited type of product for the specific waterproofing application.
- Integrating workable termination and joint details into the architectural and subcontractor design elements such as façade components and services penetrations.
- Competent product installation, QA and protection to the completed membranes.

Waterproofing details are a specialist trade and a peer review of the architect details through our Lendlease Certainty in Design and Delivery (CIDD) team will be initiated, prior to commencing these works.

11.3.5 Building Services

A hospital by nature has a heavy reliance on services design and co-ordination prior to commencement of installation. The project success can be influenced considerably in the planning of the building to ensure adequate level of co-ordination is complete to enable efficient services rough in during the fitout phase of the project. Similarly, planning for commissioning is an equally important focus during the ECI phase.

The strategy for procurement of services consultancies for the ECI phase, as explained above, is by the early engagement of Subcontractors (refer to Section 4.1).

During the VECI period, the Integrated Project Team led by Lendlease Value Management initiatives, adopted the consolidation of all major plant and equipment in the basement level, adjoining the Logistics Area as depicted in Figure 11.3.1 below

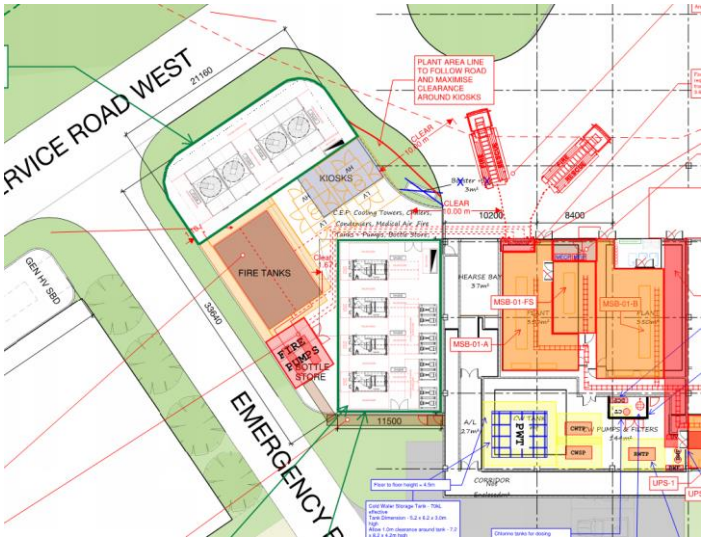


Figure 11.3.1 – Central Energy Plant.

Within the main works, the services installation will be carried out over a number of stages and across numerous concurrent work faces, all under the guidance of the specialist subcontractors' supervision and our Services Project Managers, Services Engineer and Services Supervision Foreperson. Services rough-in will commence upon removal of structural back-propping.

The trade installation sequence will follow a tried and true typical installation sequence as indicated in the construction programme. This typical sequence will be common to all fit out zones which ensures continuity and familiarity preceding and succeeding trades. The installation of main plant, vertical services risers and lift installation works will be completed in parallel with the works on each floor.

Areas requiring particular attention will be those associated with the services infrastructure, risers, plant rooms, HV substations, LV switch rooms, fire control rooms, etc. Services intense rooms/ modalities will be prioritised for completion of the building works to allow for the individual services subcontractors to commence their detailed installations. Early access to these critical services rooms will allow for the commencement of pre- commissioning and testing works prior to the final individual system commissioning.

The main challenge initially with the services works will be the accurate coordinated rough- in installation. The installers will benefit from fully coordinated construction documentation generated through the digital engineering / co- ordination process.

BIM management will be carefully and closely managed. It is likely that the mechanical subcontractor will take the lead role of BIM coordination to develop design from approximately LOD200 to LOD400 and then LOD500 for the as built documentation. All services disciplines will actively participate in the BIM coordination process that will be managed following Lendlease's BIM Management Plan.

The Lendlease team will put every effort to ensure the design considers prefabrication of all services risers off site.

The plant and equipment to be installed on the new Tweed Valley Hospital project will be of high quality and supplied by recognised and reputable manufacturers in the industry; leaders in providing the highest quality solutions. Careful consideration will be given to the sustainability and energy efficiently requirements of the equipment to ensure the whole of life (WOL) and ESD requirements are achieved.

Plant and equipment will also be installed to achieve ease of access for maintenance in accordance with best practice and WH and S guidelines, thus ensuring safety of all facility, operations and service personnel.

11.3.6 Internal Works – Fit Out and Finishes

Lendlease has proven experience in coordinating the multiple trades that interact during the internal services installation, internal fitout and finishes.

This is a critical flow path in the construction process to enable the final clean and services commissioning. Generally, the internal fitout sequence will be undertaken as follows:

- High level services rough in.
- Prefabricated services risers craned-in concurrently.
- Façade complete and ceiling margin installation.
- Full height wall framing.
- Rough in wall services
- Close walls one side.
- Hold Point inspection and sign offs prior to second side wall sheeting.
- Wall sheeting.
- Wet area fitout inclusive of all sanitary ware, and FFE and items.
- Specialist finishes to core wall where applicable.
- Services fit-off and initial testing.
- Painting.
- Install ceiling tiles.
- Builders clean.
- Final Commissioning

11.3.7 Internal Works – Specialised Clinical Areas

The specialist areas, such as Operating Theatres, ICU, CCU, Birthing Suites, and other specialist patient care rooms, will progress in conjunction with the overall fit-out on each floor, but with dedicated attention from the responsible site engineers and supervisors to manage the additional trades and the attention to detail required to these areas.

Testing and commissioning during installation and at completion of the installation works. Areas to address to ensure integrity of the room envelope will include:

- Fire rating penetrations.
- Air-tight wall and façade details.
- Sound insulation measures.
- Noggins for all wall mounted items and FFE.
- Concealed ceiling supports for pendants, patient lifters, IV drips and the like.
- Wall and floor finishes details.
- Detailing to limit ledges and gaps ensuring clean ability of surfaces.
- Door and hardware including door seals.
- Services rough-in and first fix.
- Sealing all rough items at wall and ceiling penetrations.
- Coordination during rough-in to accommodate all ceiling fixed items and their services feeds.
- Identification and appropriate locating of all rough-in items that require maintenance access.
- Understanding up front the required sequence of all fit-off to primary services and specialist equipment - particularly complex in operating theatre fit-out.
- Coordinate contractor works with all FFE group installations.
- Full coordination of multi-discipline services terminating in pendants, medical services panels and imaging equipment.
- Testing and Commissioning:
- Test all installed components immediately after they are installed.
- Coordinate commissioning systems external to space such as HVAC with HEPA filters.

- Completion of adjacent areas, doors, facades to allow setting up and commissioning of differential room pressure regimes.
- Adequate time for testing.

11.3.8 Internal Works - FFE

As the Integrated Project Team progressively finalises and approves all FFE and MME items, quantities and locations locked down in the detail construction documents, the FFE/MME procurement, coordination and installation will be managed by a dedicated FFE Project Engineer with support from Design Managers.

The FFE Project Engineer will be the key Lendlease representative for the Construction Team and the Principal to provide a single point of reference for all FFE related actions.

During ECI Planning Phase this FFE Project Engineer will coordinate all FFE actions in conjunction with the FFE Selection Committee, including:

- Development of the FFE Programme.
- Facilitating Group 1 FFE selection and sample inspections and approvals.
- Confirming benchmark make/models of all Group 2 and Group 3 architecturally significant FFE so they can be accurately represented in design.
- Conducting Shop Drawing reviews with key Group 1, 2 and 3 third party specialist vendors and confirming dedicated wall openings, temporary access requirements for deliveries and finalising ongoing replacement routes for key FFE.

The FFE Project Engineer will have a key role during the Main Works phase as the link between the Construction Team fit out requirements and the Principal and HI NSW procurement processes.

Within the Main Works, the FFE Project Engineer's activities will include confirming program dates for procurement and delivery of Group 2, 2T and 3 by HI NSW and their nominees.

Generally, Group 1 items will be incorporated into integrated fit-out trades, both in terms of procurement and installation. However, specialised Group 1 items such as pendants and CSSD equipment will be installed and commissioned by the vendor or other specialist installer. There will be a significant coordination process required for both general and specialist Group 1 FFE to correlate the room data sheets, elevations, the services design and the user requirements that will be facilitated by the FFE Project Engineer.

Group 2 and Group 2 MME items will require on-going detailed liaison with the HI NSW and User Groups to achieve the optimal delivery dates to site in line with construction programme requirements.

11.3.9 Internal Works – Defects Management

Throughout the building process Lendlease will progressively identify and record defective works as part of the plan to achieve a 'defect free' completion at handover. Defects are raised at regular, most likely daily inspections and recorded using Aconex Field or similar platform.

Hold points are prescribed at certain critical points, examples of these are: joint inspections with all services subcontractors on fire and smoke walls for correct fire seal and labelling before authorising ceiling framing and closing.

Inspections are also conducted upon application of waterproofing membranes before proceeding with granolithic toppings, etc.

ITPs for the examples above and for every trade are completed, signed off and recorded.

Consultants' inspections are also conducted in a regular basis and their defects and observations are followed up and closed out.

Lendlease will also use the Aconex Field platform to record issues raised during the Principal and Client's defects inspections to manage the defects to ensure that are all are recorded and resolved in a timely manner.

12.0 COMBINED TRAFFIC AND PEDESTRIAN MANAGEMENT

Lendlease understand one of the keys to the successful delivery of the project will be managing the flow of materials and equipment into and out of the construction site and making all effort to minimise disruptions to all neighbours.

Lendlease has completed preliminary traffic management plan and will continue to develop the plan for the Main Works with recommendations and monitor the progress of the plan and adjust accordingly.

The key issues and objectives of this assessment include:

- maintaining safety standards;
- maximising traffic and transport efficiencies;
- traffic impact mitigation;
- management of environmental impacts through facilitating green travel plans, active and alternate
- transport and minimising private vehicle dependencies; and
- catering for needs of the broader community through facilitating access by multiple transport modes, including private vehicles; public transport, community transport and active transport.

Details are provided in the mentioned plan.

12.1 TRAFFIC MANAGEMENT AND CONTROL

Traffic management and control will be established across all active gates on the project interfacing with the local road network, particularly Cudgen Road and Turnock St. Traffic control will ensure that materials and deliveries will not block off roadways and will streamline the truck movements in and out the project. Security gates will be installed well inside the site to avoid queuing on the public roads.

Specific construction traffic considerations

- Ongoing consultation with TAFE Kingscliff, and all close neighbours and adjusts movements as much as practicable to minimise impact on their operations;
- Pre-booking system will be implemented for all cranes. Lendlease is investigating best virtual platforms and will endeavour to implement a real time virtual booking system for deliveries;
- Particular attention will be given to concrete pours given their frequency and impose on the traffic to ensure concrete trucks can arrive and turn around on site in a timely and efficient manner; and
- Lendlease will ensure that all Subcontractors and workers comply with the SSD1 conditions of approval.

12.2 CONSTRUCTION ACCESS & CIRCULATION ROUTES

Figure 12.2.1 shows the predominant road network for the Tweed Valley Hospital site. It is expected that most of the traffic coming into site will generate from the M1 Pacific Motorway, through the Tweed Coast Road and then Cudgen Rd.

Construction vehicles and workers will be directed into site off Cudgen Rd to the security gates or workers carpark trying to minimise impact on Cudgen Road eastbound. Refer to Section 7.4.4 for details of access to site.

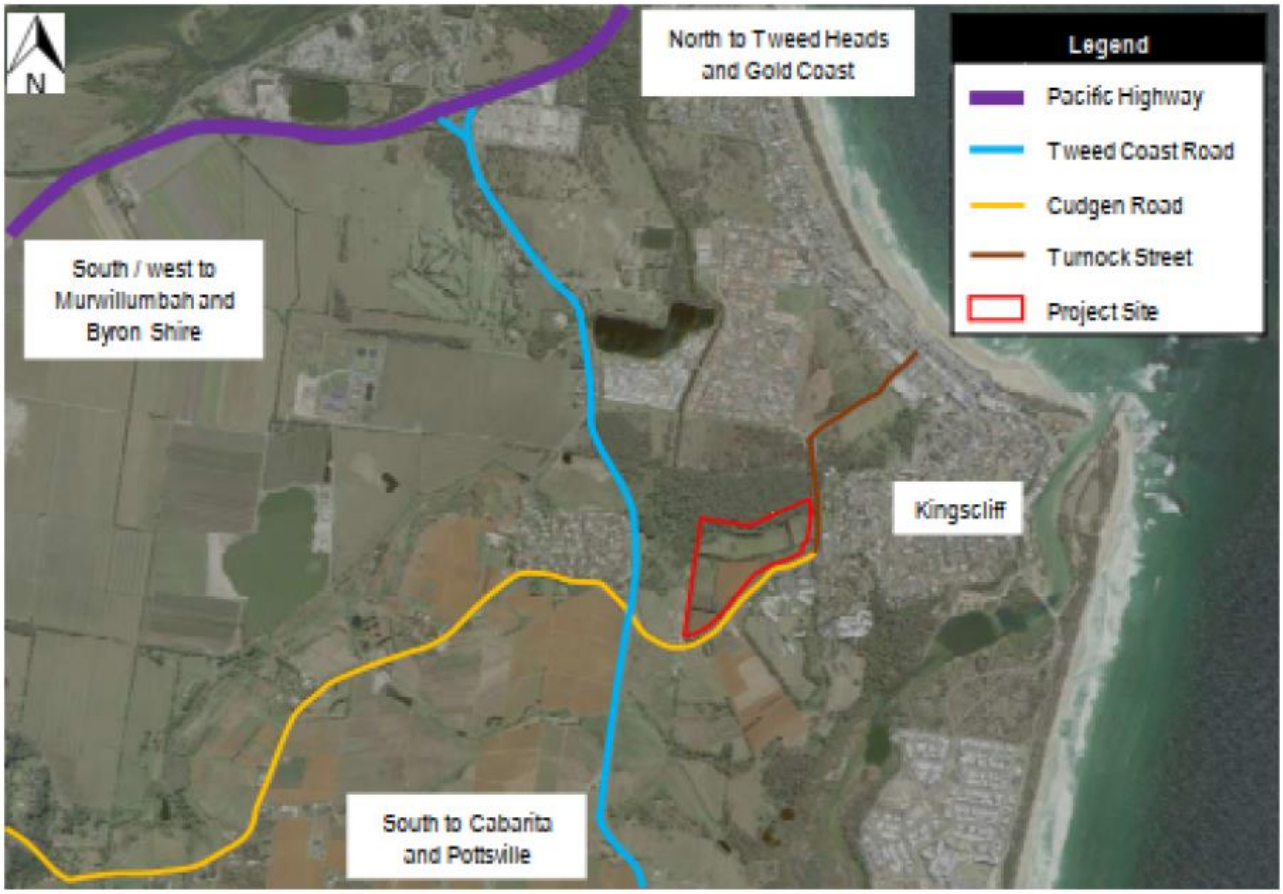


Figure 12.2.1 – TVH Predominant Road Network.

13.0 STAKEHOLDER MANAGEMENT

13.1 CONSULTING AND COMMUNICATING

Lendlease will be actively and proactively supporting Health Infrastructure NSW in their lead role of stakeholder manager for the Tweed Valley Hospital project. Lendlease's Construction Communications Plan provides details of the strategic communication approach.

Lendlease's approach to managing enquiries for the Tweed Valley Hospital project is to create a strategic framework which enables a consistent and transparent guide to engaging stakeholders throughout both the initial project engagement and Delivery Phase. The key principles which underpin our proposed approach are:

- Establish and maintain transparent and consistent communication channels which enable geographically dispersed and diverse stakeholders to engage which the project as required;
- Respect, involve and engage stakeholders to ensure their needs are recognised and considered throughout all phases of the project;
- Ensure a proactive, rather than reactive approach to all potential stakeholder related issues and engagement;
- Tailor communications to provide the right information, to the right people at the right time; and
- Should Lendlease receive any inquires or complaints through the Tweed Valley Hospital project information line or email address these will be actioned in a timely fashion with the response to be circulated to the Tweed Valley Hospital project team.

13.2 KEY MESSAGES

Our key messages with respect to stakeholder engagement are:

- Lendlease are committed to minimising construction impacts through the implementation of appropriate mitigation measures – with Lendlease, stakeholders are in safe hands.
- Lendlease will support HI NSW, the NNSWLHD and the HI TVH Management Team's ongoing relationship with the stakeholders and will continue to respect their role in the process through proactive engagement.
- Lendlease are committed to a partnership approach by working with HI NSW, NNSWLHD and HI TVH Management Team to ensure our communicated information is succinct, accurate and united. This will provide both internal and external stakeholders a platform to be informed and to respond.
- Lendlease's engagement with the NNSWLHD and the wider community will create a lasting legacy beyond the construction activities on the project.

14.0 AUTHORITIES

14.1 LEGISLATIVE REQUIREMENTS

The works will be undertaken is accordance with Legislative Requirements including but not limited to:

- National Construction Code 2016 comprising the Building Code of Australia & the Plumbing Code of Australia;
- Protection of the Environment Operations Act 1997 and Regulations;
- Environmentally Hazardous Materials Act 1985;
- Protection of the Environment Administration Act 1991 and Regulations;
- Work, Health & Safety Act 2011 and relevant codes of practice and standards;
- Resource and Recovery Act 2001;
- Environmental Planning and Assessment Act 1979;
- Heritage Act 1997;
- Local Government Act 1993;
- Soil Conservation Act 1938; and
- National Parks and Wildlife Act 1974.

14.2 STATUTORY PLANNING APPROVAL AND CONSTRUCTION CERTIFICATE

Lendlease will actively assist the process of applying and obtain authority approvals in a timely manner.

Lendlease has developed detailed and specific management tools to implement, monitor and report on the conditions of approval issued with the Determination of SSD1.

The proposal for management of Construction Certificate(s) is likely going to be broken in separate certificates to allow for efficiency in design and start on site dates.

This will allow the earliest start on site date possible and assist with providing delivery certainty to HI. Our Design Management team will lead this process working closely with the Building Certifier, with the HI NSW and the Tweed Valley Hospital Management Team.

14.3 LOCAL AUTHORITY

Lendlease understands how important the role of Tweed Shire Council has in a development of the scale and significance of the new Tweed Valley Hospital.

Lendlease works on the proviso of a highly respectful relationship with the council and will foster a close, transparent and fluent communication with them. Lendlease will overview and will actively participate in the Tweed Shire Council activities related to the hospital, such as hydraulic inspections, road network and council assets management.

14.4 FIRE RESCUE NSW

Lendlease will engage early in the process with the Fire Authority to get their involvement on the new Tweed Valley Hospital as early as possible.

During the ECI process, Lendlease will engage with Fire Rescue NSW to involve the with the project's Fire Engineering Brief and get their input and involvement. This relationship will continue through the Fire Engineering Report and its updates and with the fire inspections during the testing and commissioning of the building.

During the construction stage, our site team will engage with the local Fire Brigades to inform them of the Emergency Management Plan and introduce the to key members of the Lendlease Emergency Response team

14.5 POLICE

Lendlease will also engage the Tweed Heads and Kingscliff Police stations to introduce to the Tweed Valley Hospital project and make them aware of Lendlease's Emergency Response Plan.

14.6 UTILITY PROVIDER AND ASSOCIATED EXTERNAL APPROVALS

Our Services Project Managers have been involved and will continue their involvement during ECI, with the services providers. The aim is to manage approvals from the onset. This will include:

- Tweed Valley Shire (water, sewer, traffic).
- Essential Energy
- NSW Fire & Rescue.
- Roads & Maritime Services.
- NBN providers.
- Other relevant utility providers.

Our approach with these authorities will differ dependent on the respective requirements, however fundamentally we will seek:

- Prior coordination with HI NSW to ensure all approaches are aligned and coordinated;
- Early contact to mitigate potential delays and identify potential issues; and
- Establish common contacts that can provide continuity of service on the project.

15.0 PROJECT COMPLETION

15.1 OVERVIEW

The coordination and management of the completion of a project the scale and complexity of the Tweed Valley Hospital is not to be underestimated. The process will demand resources from all affiliations of the Integrated Project Team, including the Design Consultants, HI NSW, Authorities and future hospital staff.

Lendlease in conjunction with the Integrated Project Team will implement succinct processes and systems to manage and coordinate seamless project completion, commissioning and handover. We will work closely with the Independent Commissioning Agent through the design and commissioning phases to ensure there are no unforeseen surprises.

From the early stages of the project, the Project Handover and Completion Management Plan will be developed.

The purpose of the Handover and Completion Management Plan is to set out and establish the activities that will be undertaken by Lendlease and all its sub-contractors in order to achieve completion. This plan outlines the methodologies to ensure that the building works, inclusive of testing and commissioning and completed to the satisfaction of all stakeholders.

15.2 COMPLETION MANAGEMENT PLAN

The Handover and Completion Management Plan will be structured to meet the following objectives:

- Providing a consistent and systematic approach to the delivery, testing and commissioning of the building works.
- Providing a seamless move of the Principal/ tenant into their new building.
- Providing effective communication to the Principal of all relevant information relating to the establishment, commissioning and transition of Facility Manager/Maintenance staff.
- Providing timely and sufficient training, education for the effective use of the equipment and systems.

Below are the fundamental steps that will be implemented to deliver on these objectives:

- Identify the key contractual dates and Principals requirements to successfully complete the Project.
- Identify all the key stakeholders associated with commissioning, completion and transition.
- Establish key representatives of the wider project team that will be the completion committee.
- Organise and participate in project completion meetings.
- Appreciate the importance of planning for completion and prepare a completion program.
- Prepare tools for the various components of Project Completion. Lendlease will utilise a series of methodologies as a subset of each of the required steps. These include:
    - Managing, coordinating the preparation and implementing each of the subcontractor's and suppliers' commissioning and handover plans with the others, including identification of all acceptance criteria, with the subcontractors and suppliers.
    - Preparing and implementing coordinated commissioning and handover plans for parts of the works as part of the Project Plan with the applicable subcontractors and in liaison with other stakeholders.
    - Ensuring and verifying with the subcontractors and suppliers that all necessary acceptance tests and demonstrations of commissioning are carried out in preparation for handover.
    - Inspecting subcontract works prior to progressive completion and final completion under the subcontracts.

- Preparing lists of defective work and reviewing those prepared and certified by the subcontractors and suppliers in accordance with agreed Defects Management and Rectification procedures to be agreed with the Principal.
- Ensuring that defect completion is achieved in accordance with the program and where practical be “defect” free at practical completion.
- Ensuring that sufficient training is provided for the Building Management resources in the operation of the works in accordance with the requirements of the subcontracts and the contract and the specifications.
- Responding to, and ensuring the rectification of, identified defects within the required time.
- Obtaining and verifying the subcontract ‘Certificates of Compliance’ and completion certificates for the works.

15.3 VALIDATION

Lendlease will evaluate the setup of the dRofus validation tool. This process could coordinate with other platforms, for example to import information from dRofus into a Zutec mobile validation tool for the purpose of inspecting rooms for equipment and room components completeness in a productive manner. We have fine-tuned the dRodus/Zutec interface through recent hospital projects where Lendlease has been responsible for the end to end equipment procurement, installation and commissioning.

The system developed allows the agreed room data as completed in dRofus to be imported to a live data base platform. Rooms are inspected by Lendlease Engineers using mobile devices such as iPads using our in-house App that synchronises the room validation requirements from dRofus with a room check sheet.

Live Room complete status is fully synchronised with the database, allowing real-time reporting, tracking and untimely room compiles sign off. A reporting module allows summaries of progress to be shared with contractors, HI, venders and any other key stakeholder.

Figure 19: Zutec Room Check sheet and Room QR code.

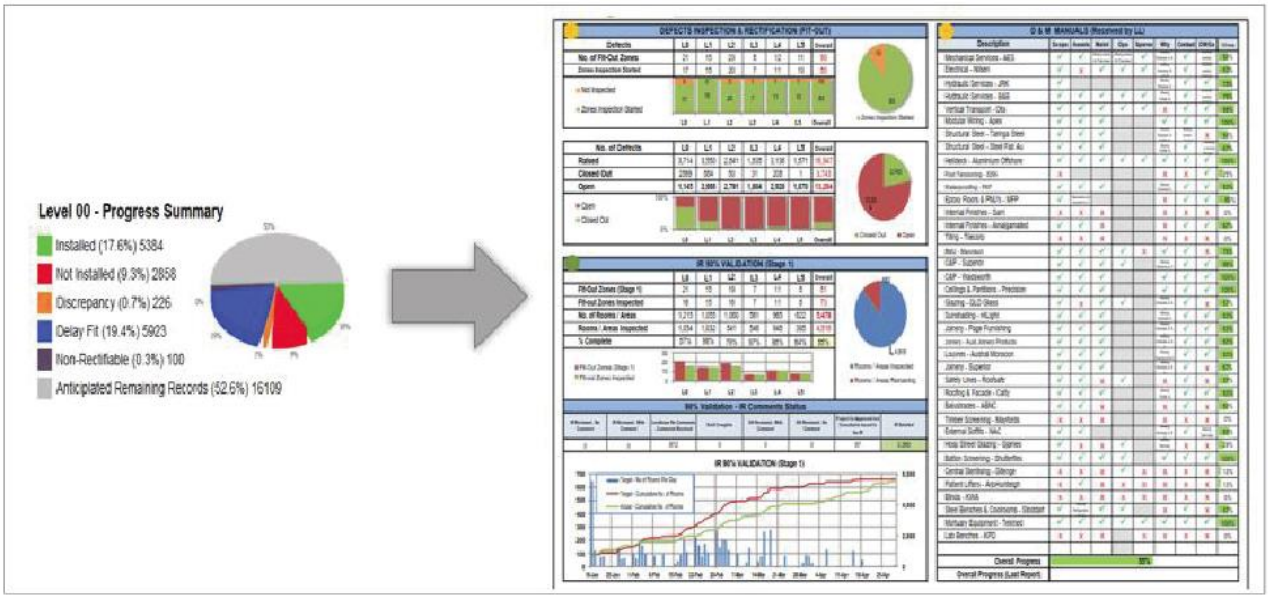


Figure 20: Zutec Room Validation Reporting Options

Each room will have a unique QR barcode that identifies the room with the validation platform. Engineers are able to inspect each room and tick off completed works via the mobile APP including equipment installations, building services, security equipment, joinery and loose equipment.

15.4 COMMISSIONING MANAGEMENT PROCESS

Lendlease has a demonstrated expertise in commissioning large complex projects such as the Tweed Valley Hospital. The holistic approach to the commissioning process will achieve the mutual goal of a maintainable, sustainable, safe and functional clinical environment.

From the onset on the VECI phase and continuing during ECI, services consultants and subsequently subcontractors will be engaged by the Integrated Project Team to develop a consistent definition and understanding of the test and commissioning process activities and documentation until sound version of the Project Commissioning Plan is approved and implemented.

15.4.1 Builders Clean and Pre-completion Hygiene and Dust Control

The initial Builder's clean will be undertaken progressively as areas are completed and locked off. This will be completed prior to the testing of any mechanical duct work to avoid intrusion of dust into the HVAC system. This will facilitate final defect rectifications and include the removal of all protection and general construction dirt/dust from the building.

Prior to cleaning, Lendlease will lock down areas, only allowing access to services crews and workers that need to visit the area for specific tasks.

Lendlease will ensure that the cleaning trade package is procured to provide three stages of final clean. The first, after protection has been removed and floor finishes are therefore exposed. At this stage access will be controlled. The second round of final clean is performed prior to commencing mechanical commissioning.

The final stage of cleaning follows the services commissioning, prior to final handover.

External façades will be cleaned using access EWP's and BMU. Common areas and entrances will be the final areas to be cleaned.

A critical step in an affective final clean is having works areas locked down and secured just prior, during and post cleaning.

It will be the responsibility of one of our Senior Engineers to manage the completion works and employ additional security staff during this phase of the Project.

Access will be controlled by temporary construction cylinders and by security access cards when this system has been commissioned.

15.4.2 Commissioning Strategy

The commissioning strategy will involve clearly defined planning and processes. There are three planned stages of completion: firstly, to achieve substantial completion, secondly the commencement of the mandatory validation period, and finally project completion. Each of these stages are will be fully detailed in the Commissioning Management Plan which will provide guidelines for the project to achieving desired outcomes.

The facility operations team will be engaged during construction to assist with defining these outcomes, adding value to the installation and familiarising themselves with the commissioning process prior to practical completion.

The Commissioning Management Plan will identify:

- Scopes of work and deliverables;
- Program of works (critical adequate testing and commissioning durations are maintained);
- Roles and responsibilities including additional specialist commissioning consultants;
- Lines of communication and reporting; and
- Approvals, sign-offs, witness testing.

Comprehensive checklists will be prepared for each system, area and stage of the project. The commissioning requirements and activities associated with the following building services will be fully detailed within the Commissioning Management plan:

- Mechanical;
- HV, LV electrical and lighting;
- Security;
- BMCS & EMS;
- Medical gases;
- Hydraulics;
- Fire protection systems;
- Essential and emergency systems;
- Pneumatic tube system;
- Vertical transport; and
- ICT, communications systems & AV.

15.4.3 Interface Testing

Interface testing will be undertaken in accordance with the relevant, approved test plans and Interface Control Documents. Coordination will be required to ensure the participation of relevant stakeholders. This will include clinical and business stakeholders, particularly for acceptance testing.

The ICT Integration Matrix will track the overall progress of interface testing, however the specific execution of testing and recording of testing outcomes, will leverage a specific test management tool. Lendlease will leverage an existing LHD test management tool if available and preferred; alternatively, Lendlease will use its own ICT test management tool (which will be HP Quality Centre).

HP Quality Centre (HPQC) is Lendlease Technology's tool of choice for management, tracking and reporting against requirements, decisions, integration and testing. It will be used for the majority of Group 1 and Group

2 systems design and delivery management and the 3 stages of ICT integration, including to key Group 3 systems.

HP Quality Centre provides an easily accessible, web-based interface that provides different levels of function and information for project staff, subcontractors and customer staff.

It allows concurrent access and editing of records, as well as providing a flexible reporting engine, workflows and a full history log of changes. This makes it far superior to excel spreadsheets.

During the detailed design phase and ongoing design activities, HPQC will be used to record key requirements, design statements, and decisions. It would also be used to store the ICT Integration Matrix, Interface Control Documents, and System Register. During test planning, test cases will be documented in HPQC and linked to relevant requirements, design statements and integrations. This provides full traceability to ensure solutions and integrations are fully compliant with requirements and tested against design.

During delivery HPQC will be used to report progress against completion of integrations and delivery of requirements and design statements. It will also be used to manage and track any commissioning requests from subcontractors or the customer e.g. patching requests, incidents e.g. configuration errors, and change requests e.g. message format changes.

15.5 QUALITY MANAGEMENT

The New Tweed Valley Hospital Project Quality Management Plan (QMP) will be drafted and distributed during the ECI Planning Phase. The QMP will provide the framework for managing and monitoring delivery quality on the project.

Specifically, the following areas will be addressed in the QMP:

- Setting and monitoring document control processes across the project including require control documents and tracking of construction documentation.
- Setting out individual responsibilities for quality management on the project: people and roles including competencies.
- Determining level of QA documentation required from subcontractors and consultants which will be incorporated in respective packages.
- Set out ITP process and requirements of submitted and approving ITP forms.
- Management of Project internal administration documentation.
- System and subcontractor audit process and timetable.
- Corrective Action procedures and Non- Conformances.
- Running the QA system on Zutec, Aconex Field or other equivalent system.
- Compliance with Lendlease certifications including AS/NZS ISO 9001:2008.

This QMP is a management tool and control measure, however the real driver for delivering high quality on the project will be the culture driven through the project by the Lendlease Project Team with their subcontractors working collaboratively in setting and maintaining standards.

15.6 CERTIFICATE OF CLASSIFICATION (COC) AND HANDOVER

The preparation for handover and certifier issuance of the CoC will commence early in the delivery planning phase. A list of deliverable documents will be discussed and agreed with the Principal Certifying Authority (PCA) in early stages. Compilation of the documents from subcontractors and consultants will provide the basis for draft and final submissions to the PCA.

- Once services commissioning is significantly complete, essential services certification will commence system by system, including
- Consultants sign-offs and NSW Fire & Rescue inspection.

- Access consultant and other relevant consultants
- During the latter part of construction Lendlease will lead progressive and systematic PCA and fire engineer inspections. This will ensure
- that the building performs in accordance with the fire matrix and all possible scenarios of emergency and evacuation.
- Helicopter landings will also be performed, and relevant systems validated.

These inspections will typically identify any defects or remaining works which Lendlease will then execute to enable issuing of the Certificate of Classification (or SSD approval equivalent). (or SSD approval equivalent).

15.7 OPERATIONS AND MAINTENANCE MANUALS

The final form of the O&M manuals will be electronic using the Principals preferred system (Aconex O & M module, Zutec or AFM Online), with hard-copy back-up in line with the contract requirements. The collation process will be iterative with an early review with the Principal and importantly the Tweed Valley Hospital Engineering Manager to ensure that the content and format of manuals is optimally suited for future use by building Users.

The Lendlease content and format is required to be able to be implemented seamlessly into the AMF Online platform employed by NSW Health for FM and asset management. The final manuals will include:

- Building certifications documentation;
- Operation and maintenance manuals for works by each trade;
- Consultant and trade ‘work as executed’ drawings;
- Warranties;
- Commissioning data and certificates;
- Maintenance requirements with detailed breakdown of complex building services trades;
- FFE schedules and asset register; and
- Testing and training records.

The process of compiling and issuing the O&M’s will be progressive, firstly with initial format and presentation drafts being submitted for approval.

15.8 TRAINING

The final aspect of commissioning is the training of and handover to the building operators. This will incorporate final services commissioning and operator training activities. The main focus will be on the various building services operations and the presentation of the electronic Operation and Maintenance (O&M) information. Other operational and handover issues, such as key systems, façade cleaning, maintenance of finishes and the like, will also be covered. Draft O&M documentation will be issued to the building operators prior to completion of the construction works.

We will provide the Tweed Valley Hospital Redevelopment Engineering Managers with open site access during the final six months of construction and commissioning, in agreement with the Principal. We encourage early involvement of the building operators as this creates a familiarisation and technical understanding of the operating building services which is invaluable post-handover.

Earlier User Group consultation will have established the key personnel required to be trained in the new building systems. A series of comprehensive one-on-one training sessions will be conducted prior to handover to provide a “Soft Landing” for the building users, and to ensure the building operators are fully trained and appropriately prepared to run and manage the facility.

16.0 OTHER DEVELOPMENTS WITHIN THE PRECINCT

16.1 MULTIDECK CARPARK

Lendlease has started preliminary planning of the multideck carpark as part of the Stage 2 Main Works. This planning includes considerations on most efficient structure to adopt, potential for pre-cast elements, scaffolding v formwork screens, best suited cranage and materials handling and others.

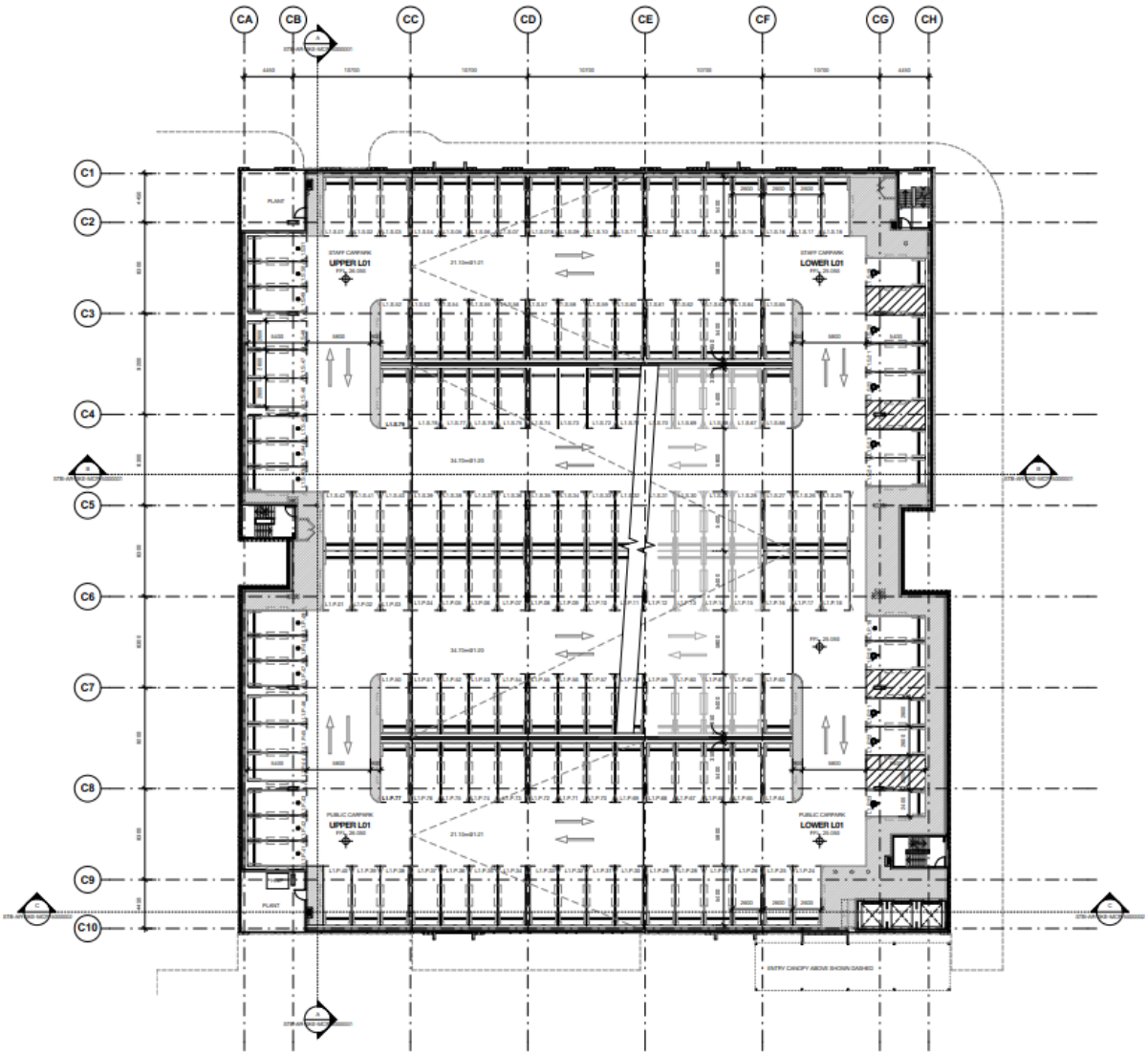


Figure 16.1.1 Typical floor of proposed Multideck Carpark

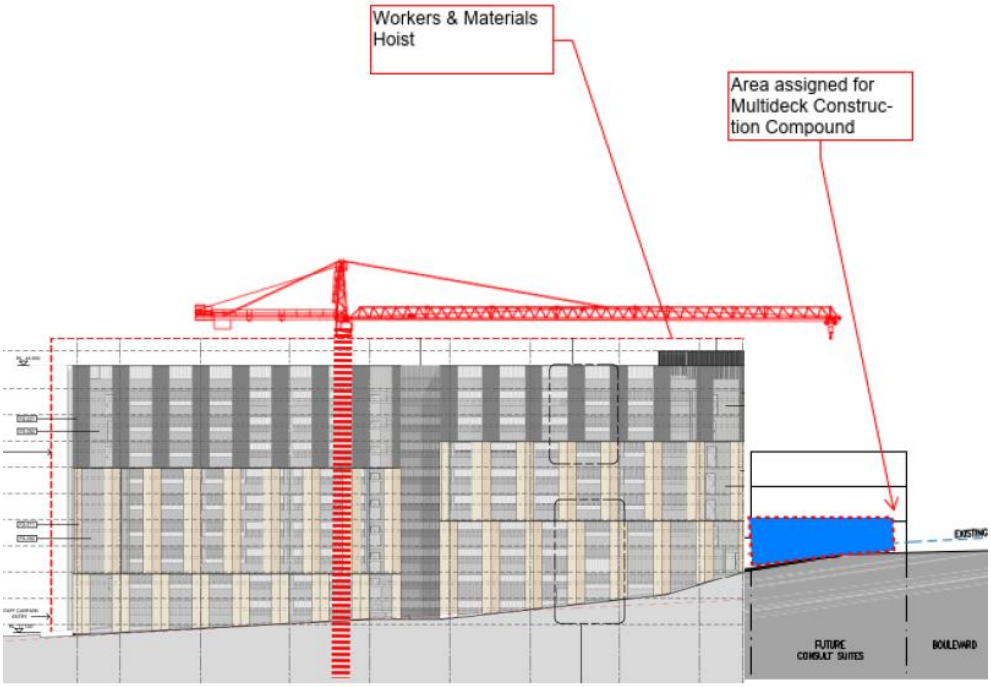
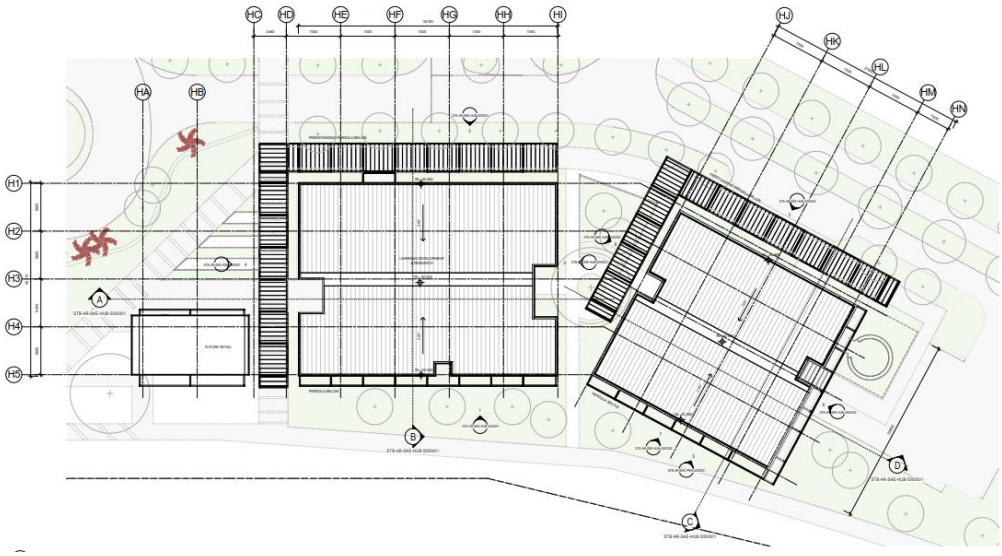


Figure 16.1.2 – Multideck Carpark Section

16.2 HEALTH HUB

Although Health Hub documentation is still at conceptual stage, Lendlease has done a preliminary assessment of delivery options for the buildings.

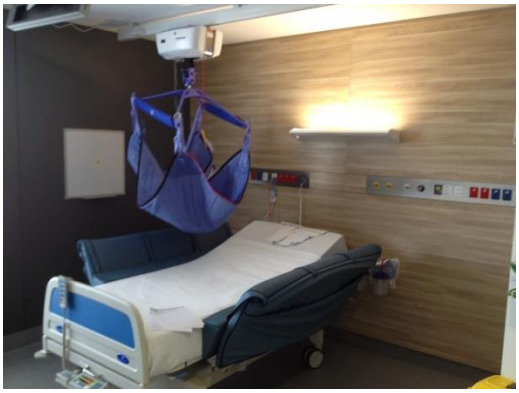


Initial consideration assume that these buildings will be of a light weight construction, most likely with steel framing and metal roofing. Internal finishes and services would be of similar construction to the Main Hospital Building.

Further details will be developed during the course of the ECI phase.

16.3 SKILLS CENTRE

The proposed installation of modular buildings for the Prototype Skills Centre, featuring protype rooms of the Tweed Valley Hospital project is currently going through preliminary documentation.



This modular building will be removed during the last stages of construction of the Main Hospital Building and permanently relocated to the TAFE in Kingscliff.

Lendlease will procure the supply, installation and final relocation of these buildings.