

WORKPLACE RISK ASSESSMENT (WRA)



LBH 3C North Tower

3B2-WRA-NT

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1	Project Wide Activities						-	-	-	Yes			-	-	-					
	Project Wide Activities	Protection of hospital staff, users, public & their property:- - Material and plant deliveries - Maintaining emergency egress routes - Protection of hospital access and routes as required - Minimise visual impact to secure mental health courtyard - Emergency egress through construction site - Trips, falls, uneven surface hazards - JH ceasing of works in the event of emergency	Risk of personal injury and harm if below are not managed: - Public / work area demarcation - Adequate hoarding/barricading/fencing - Exclusion zones for work at heights adjacent to public zones (falling objects) - Traffic & pedestrian control around materials handling & delivery zones - Emergency egress management from hospital - Adequacy of Subbie pack setting clear deliverables and expectations - Subcontractor onsite management - competent & adequate - Minimise visual intrusion to secure mental health courtyard (minimal risk due to new awning in courtyard).	Client / Head Contract	Poor Client Interface	Work Health & Safety	5	Likely	A	Yes	- Implementation and compliance to GMR 1 and TMP - Safety prestart/onboarding agenda to be implemented to include good practices from other projects - Implement the site Induction, Start Card, supervision monitoring, education and communication processes - Implement the subcontractor safety pack (updated to include positives from previous projects) - Subcontractor supervision - Hospital egress & pedestrian routes to be established and maintained - Exclusion zones for works creating hazard to adjacent operational zones - Disruption Notices to LHD - Adequate JH supervision - Monitor evacuation paths - Consultation & communication to LHD as part of handover - Monitor & improve signage, barriers, security as required		2	Rare	E	Justin Ingram Michael Sawyer John Hennings Ben Hall	- Disruption Notice process to be implemented - AMS required - Ongoing monitoring - Appropriate signage to be installed - Inform subcontractors via site induction	Ongoing throughout whole project		
	Project Wide Activities	Local Site Conditions / Climate / Environmental impacts creating safety hazards to temporary works and workers include:- - High winds - Wet weather (noting average 2m rainfall per annum) - Local summer storms - Heat / high temperature during summer	Local site conditions and climate has potential to cause personal injury and impact on plant and equipment: - Extreme weather conditions (including high winds, rain, hot temperatures, overland flow and sun exposure) cause risk to workers and stopping plant from operating (cranes, concrete pumps, EWPs etc.) - Emergency / crisis situation may occur on construction site or in the adjacent live hospital requiring emergency procedure to be activated - Unsafe access to site during wet weather, for both people and plant - Site unattended - perimeter fencing and padlocked gates - noted Hospital has roaming security guards that may also deter theft / vandalism - High winds/storms risk of temporary works collapse (scaffold, fencing, formwork etc.)	Natural Events	Exceptional Incident Weather	Work Health & Safety	5	Likely	A	Yes	design on temporary works to be included in subcontracts - JH emergency procedure / tie down / lock down to manage extreme and localised storm / wind warnings and events. - Planning and preparedness (based on warnings) to be undertaken on site to tie down or remove loose unfixed elements. - Implement safety awareness program for heat / sun exposure to mitigate and monitor sunstroke to workers. Monitor relevant activities - Implement Emergency Response Plan, in coordination with operational hospital - Implement site specific Traffic Management Plan - including all weather access to site for people and plant - Implement security and holiday shut down / start up procedures - Implement GMR 1, 7, 9, 10		2	Unlikely	E	Justin Ingram Ben Hall John Hennings Temporary works: Will Roberts	Temporary work certification/verification process and maintenance of the Temporary Works Register Weather and inbound helicopter alerts to nominated JH staff, JH process to lower materials hoist to ground for incoming helicopters Coordinated emergency response plan to be developed Execution of holiday shut down / restart procedures Wet weather safety walks and excavation inspections post rain events	Ongoing throughout whole project		

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	Project Wide Activities	Safety Culture and planning	- JH internal planning and launch is not adequate posing risk to safety culture of project - JH and Subcontractors are not aware of JH Safety, Quality and Environmental requirements posing risk to themselves and others, the environment, JH reputation, JH legally - Inadequate planning of project execution, risks and hazards - Inadequate management of head contract safety requirements / conditions	Subcontractors	Inadequate Management	Work Health & Safety	4	Likely	B	No	- Implement the JH-MPR-SQE-001 Site Induction procedure - Implement the JH- MPR-WHS-003 Managing Subcontractor Safety procedure - Implement the JH-MPR-SQE-006 Managing Safety,Quality & Environmental Risks procedure - Implement the JH-MPR-PMA-008 Emergency Evacuation & Response procedure - Develop Emergency Response Plan - Develop a Safety Management Plan - Develop a Project Management Plan - Develop a Quality Management Plan - Develop an Environmental Management Plan, includes waste plan and noise & vibration plan - Develop a Traffic Management Plan - Implement the JH-MPR-WHS-004 Health Safety Management and Consultation Arrangements - Develop a Subcontractor Pack - Project Launch workshop - Site Specific Induction - Develop Implementation Plan	2	Unlikely	E	Project Launch: Brett Popham Michael Sawyer	Develop and implement relevant JH procedures and management plans Subcontractor HSE Manual Pack to be made specific for the project	Ongoing throughout whole project			
	Project Wide Activities	Safety Culture and Workers expectation (i.e. Tier 1 builder requirements) noting the LBH3B is based in Rural location: - inadequate workforce management (both JH and subcontractor) - Unclear / ambiguous safety expectations - Lack of competency in JH or workforce - Complacency / poor safety culture	Hazard of personal injury and harm if: - Inadequacy of Subbie pack setting clear deliverables and expectations - Ambiguous / unclear safety expectations and requirements for subcontractors - Subcontractor engagement - Subcontractor understanding and compliance to SQERM / GMR - Subcontractor onsite management - competent & adequate number of - Safety Culture - complacency - Worker fatigue - Incompetent subcontractor (i.e. local workforce) - Alcohol and drugs / fitness for work - Driver fatigue of JHQ Employees and workers - Access to site during wet weather - Externally engaged subcontractors by HI (ICT, FFE) & Authorities (Essential Energy, Elgas, Telstra etc.)	Subcontractors	Non-compliance / Poor Performance	Work Health & Safety	5	Possible	B	No	- JH team, including regional establish clear safety expectations / Accountable Culture Tool (ACT) through HSC for project - Safety prestart agenda to be implemented to include good practices from other projects - Implement the site Induction, start card, supervision monitoring, education and communication processes - Implement JH process of vetting EO and tender submissions across S, Q, E, time and cost comparison to budget. - Implement the subcontractor safety pack (updated to include positives from previous projects) - Subcontractor to propose and confirm supervisor, JH to monitor capability - JH EO, tender and letting process explains, confirms and clarifies SQERM requirements - Implement JH SQERM education program for subcontractors - JH site team to promote positive safety from tender interview, induction, audits on site, safety committee, subcontractor managers participation. - Implement the JH Alcohol and Drug Policy and procedure - included in Induction, education, potential for testing pending incident type & investigation - Implement the JH site management processes, in particular site layout and access. Walkways from site sheds to site to be all-weather. Temporary road access to be all-weather - Develop and implement a Training Plan - Utilise the HSE Look Ahead tool and Leadership & Inspection Planner - Monitor fatigue management internally and for trades, JH employees relocated to Lismore area where applicable - Issue all GMRs at tender, reinforce through site induction - Issued JH Subcontractor Packs to those parties, parties to meet JH expectations - Subcontractor director inspections, subbie deliverables - HI/CBRE safety audits - fortnightly	2	Unlikely	E	All members of JH Project Team	- Develop and implement relevant SQE management documents and processes Ongoing monitoring of subcontractors - Subcontractor HSE Manual Pack to be made specific for the project	Ongoing throughout whole project			

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	Project Wide Activities	Safety in Design - Creation of construction hazards if CHAIR inadequate or not conducted by JH and design consultant team	Risk of staff, users, construction & public:- - Where possible eliminate or design out hazards - Offsite fabrication where appropriate to mitigate onsite hazards - Reduce complicated details and include construction team in methodology assumptions and detailing - Design & construction compliance to BCA/AS	Personal Injury	Miscellaneous Injury	Work Health & Safety	4	Almost Certain	A	No	- Develop a Procedure – Audit design documents for safety and buildability - from design through to end user - Work shop with JHQ project team and consultants (Design SID, construction SID, Operational SID) - Establish Consultant Inspection and involvement throughout construction until completion - Implement the JH-MPR-DES-001 Internal Design Management procedure - At completion, SID to be reviewed & updated. - Witness testing of fire & life safety elements		2	Unlikely	E	All members of JH Project Team Design team Consultants	CHAIR to be completed Witness testing of commissioning phase Workshop with JH project team and consultants	Handover		
	Project Wide Activities	Industrial Relations - engagement and management through project	- Union / IR issues can be created from unsafe practices	Industrial Relations	Industrial Disputes	Work Health & Safety	4	Likely	B	No	- Workplace Relations Management Plan to be developed. Implement the JHG IR Policy - Implement the JH-MPR-PMA-005 Letting of consultant subcontract supply packages procedure - Approach is to ensure all subcontractor comply with NCOP and minimum employee requirements. JHQ IR policy including regional support will be utilised. Review the NCOP agreements of sub-sub contractors. - Implement the Right of Entry protocol - JHQ designate personnel to manage Union visits. - Maintain communication and issues with other sites & regionally		2	Unlikely	E	Brett Popham Justin Ingram	Develop and issue WRMP Conduct regular ROE training for site team	Ongoing throughout whole project		
	Project Wide Activities	Fitness for work	Hazard of personal injury and harm if JH trades are not fit for work:- - Alcohol - Drugs - Mental illness - Extended working hours / fatigue	Personal Injury	Miscellaneous Injury	Work Health & Safety	5	Possible	B	No	- Managing workers fatigue & extended working hours - Mandatory drugs & alcohol testing as per FWBC change to 2013 code - Prestart for workers - Toolbox on fitness for work - JH & trade supervisors aware & raise any concerns over individuals at work - JH Employee Assistance Program - GMR#6 - Induction to include fitness for work requirements		2	Unlikely	E	Justin Ingram Ben Hall John Hennings Michael Sawyer	Conduct monthly D&A testing as per Building Code 2013 requirements	Ongoing throughout whole project		
	Project Wide Activities	Imported Materials from countries where ACM not prohibited	Risk of exposure to workers, staff, public:- - If ACM materials used or disturbed	Hazardous Substances	Exposure to Asbestos (including internationally imported materials, recycled material usage and naturally occurring asbestos)	Work Health & Safety	5	Likely	A	No	- Compliance to Head Contract requirements on imported materials - JH GMR #11 - JH CEMP		2	Rare	E	Justin Ingram Will Roberts	Issue CEMP Subcontracts to include conditions back to back to head contract JH representative to monitor and obtain required certificates / test results	Ongoing throughout procurement process		
	Project Wide Activities	Subcontractor parking offsite on blocks surrounding site (one block away from hospital precinct)	Safety hazards to workers, public, hospital staff:- - Public cars / people interface poses a risk of injury to work force getting to site - Manual handling poses risk to workforce safety if carrying equipment from temporary carpark	Community	Traffic Impacts	Work Health & Safety	5	Possible	B	Yes	- JH site inductions to include awareness. - Implementation and compliance to GMR 10 - JH to monitor worker parking		2	Unlikely	E	Justin Ingram Michael Sawyer	Include information regarding site parking in site induction Monthly inspections of McKenzie St. carpark	Ongoing throughout whole project		

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	Project Wide Activities	Noise and vibration management for relevant activities: - Plant operation - Use of noisy tools/equipment (eg. drop saws, grinders, hammer drills etc.) - Working in same vicinity of noisy activities - rock breaking, hammering etc.	Noise Induced Hearing Loss (NIHL) Risk of impacting operating hospital due to vibration/noise from construction activities	Personal Injury	Miscellaneous Injury	Work Health & Safety	4	Likely	B	Yes	Controls as required: - Isolation of noisy activities or eliminate by changing the task - Mandatory hearing protection areas (e.g. cutting/grinding stations, wall framing areas) - Signage (mandatory PPE) - Engineering controls (sound proofing cutting/grinding stations, exhaust mufflers etc.) - North Tower fit-out stage will implement new requirement: hearing protection to be carried by all workers at all times - Construction work as per approved site hours (including specific hours for hammering, rock breaking etc.)	4	Rare	D	Justin Ingram Ben Hall John Hennings Michael Sawyer	Implement controls as per AMS and TRAs Update Subcontractor HSE Manual Pack for North Tower to include requirement of all workers carrying hearing protection at all times.	Ongoing throughout whole project			
	Project Wide Activities	Head Contract obligations	<ul style="list-style-type: none"> JH fail to understand head contract obligations Failure to understand Principal (HI) critical drivers and hazards / risks Delay our site possession by not achieving the pre-start milestones 	Client / Head Contract	Client Experience / Reputation	Reputation & Community	5	Possible	B	No	Legal / Contract - systems and process • Complete Rights & Obligations • List & track pre-start milestones • Utilise the experience & knowledge in NSW on GC21 Ed 1 contract • Utilise the NSW experience and knowledge on the NSW guidelines (training, quality, environmental, aboriginal participation, waste, etc.)	2	Unlikely	E	Brett Popham	<ul style="list-style-type: none"> Site coordination meetings fortnightly Monthly report 	Ongoing throughout whole project			
	Project Wide Activities	JH Project team - Adequate number & competency & development of skills	Risk of incompetent or lack of resources:- - Clarity of JH project team, support staff, and role descriptions - Project team individuals have skill gap for their role (lack of competency)	Project Team	Poor / Inadequate Project Team	Management Impact	5	Possible	B	No	<ul style="list-style-type: none"> Develop Position Descriptions for each staff member Organisation chart finalised and displayed Deliver specific training for different roles in the project (based on skills / training matrix) Project Training Plan for project Implement JH-MPR-SQE-001 Site Induction to all project staff Conduct site meeting as per JH-APP-WHS-004-13 Workplace Meeting Conduct Trainings to all project staff according to their role in the project 	2	Unlikely	E	Brett Popham Justin Ingram	<ul style="list-style-type: none"> PDs to be developed Org. chart to be finalised and communicated Role specific training Site inductions for all project staff 	At project start-up and for new starters			
	Project Wide Activities	Crown Certificate submission and approval (re-submit approvals for NTX)	Risk of delay to site works:- - Delays due to approvals/permits not in place - Delay to site possession from enabling works contractor - Delay due to JH and their consultants not completing prestart milestones	Documentation	Lack of Documentation	Time Schedule	5	Likely	A	No	<ul style="list-style-type: none"> Permits and planning approvals to be obtained as per Development Consent dated 1/5/15 (i.e. Obtain Stage 1 Crown Certificate) Seek updated approvals in line with any revised plans (NTX) Implement JH-MPR-CCM-001 to create effective communication channel with public & Authorities Implement JH-MPR-CCM-005 Community Relations to improve the community relations with local councils to be established 	2	Unlikely	E	Brett Popham	Seek updated approvals for NTX	Dec-17			
	Project Wide Activities	Stakeholder management and consultation	Risk of complaints and community protest:- - Communication breakdown with interested parties and stakeholders, including: - neighbours to the project - local Aboriginal Community - Lismore Base Hospital & LHD representatives - Principal and Principals Representative - Adjacent business	Community	Complaints	Reputation & Community	5	Likely	A	No	<ul style="list-style-type: none"> Implement JH-MPR-CCM-001 to establish effective communication channel with public & Authorities Implement JH-MPR-CCM-001 Internal & External Communications to establish / improve community relations with interested parties and stakeholders Conduct meetings with parties and stakeholders Provide training for project personnel on communication processes Compliant process and response to be implemented 	2	Unlikely	E	Brett Popham Justin Ingram	<ul style="list-style-type: none"> Submit Community and Stakeholder Management Plan Complete newsletter drop to surrounding community as required 	Ongoing throughout whole project			

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	External & Civil Works and Substructure	Excavation and trenching activities and unknown inground services: - Retaining walls - Infrastructure along Little Uralba Street, (overhead to underground power) - North tower inground services - Removal of inground services (under Block A), - Bulk Earthworks - excavation / rock breaking - substructure / footings / MSB points / piling works - Sewer/Stormwater - Lift overruns - Crane base - Inground services	Hazards that could cause personal injury and property damage from :- - excavation, trenching, strike live inground services - Incorrect as-built drawings for existing services (note likely presence of redundant inground services) - Incorrect asbuilt records for future installed in ground services, hazard of striking during in ground works. - Open Excavation and trenching, risk of plant rollover, personnel falling from heights - Heavily sloping site with large steep batters (4m height), potential for unstable batters, falls from height, plant exceeding batter stability safe load - Potential for temporary works to maintain batter stability (i.e. Mental Health) - Potential for unstable ground - Excavation collapse to trenching - potential to strike unknown / unidentified inground live services or redundant services - Plant/people demarcation - uncovering contaminated material (e.g. ACM)	Services	Contact with Services (inground)	Work Health & Safety	5	Likely	A	Yes	- Implement the JH-MPR-WHS-010 Excavation and Trenching procedure - Implement service location and identification (DBYD, permits, service locators). - Implement a project system to record & update accuracy and currency of asbuilts for new services: fortnightly - barricading controls, shoring, benching, geotechnical advice as relevant, selection of correct plant and equipment (GMR 2) - Plant / people demarcation (GMR 1) - Temporary works to provide batter / trenching stability (shoring, benching) - GMR 7 - Engage competent geotechnical engineer for batter / ground stability assessment - selection of correct plant and equipment, assessment of adequate bearing capacity for operation. - Detailed review of available asbuilts and services - Engage competent service locator: Identification process to be implemented - Implement GMR 1,2,5,7 - Supervisor to complete daily excavation and trenching assessment (particular importance post rain events, etc.) - Implement adequate temporary covers /protection to existing inground services (i.e. steel plates maybe required over Telstra and water mains) - Implement Unexpected Finds procedure. Works to stop if ACM uncovered or suspected, proceed on hygienist advice.	2	Unlikely	E	Justin Ingram Will Roberts Ben Hall John Hennings Michael Sawyer Colin O'Brien	- Project asbuilt updates - Engage competent geotech - Assessment & audit of open trenches & batters	Ongoing throughout project			
	External & Civil Works and Substructure	Geotechnical Investigations & confirmations (Auger drilling & CPT Testing) required for stability of temporary & permanent works:- - Site establishment - Retaining Walls - North Tower foundations - batter stability - Tower crane base - Man/material hoist footings - Concrete pump & mobile crane outriggers Incorrect assessment could create failures of the batter materials, or inadequate design of the footings / crane base	SAFETY - Geotechnical testing has potential to cause personal and property damage: - Mobile plant movement and operation poses a risk of injury to work force and public - Incorrect assessment could create failures of the batter materials, risk of injury to people. - inadequate design of the footings / crane base cause injury to people and property - Investigation activities poses risk injury to public (plant deliveries, testing outside of construction site) - Exposure to unidentified hazardous materials (inground) poses health risks to people - Striking inground services poses risk of exposure to energised services causing electrocution, explosion or damage - Construction vehicles poses risk to public accessing and egressing the site	Design Requirements	Temporary Works Design	Work Health & Safety	5	Possible	B	Yes	- Implement the JH-MPR-PAE-001 Plant & Equipment - Implement the JH-MPR-WHS-014 Barricading and Signage - Implement the JH-MPR-WHS-010 Excavation and Trenching - Implement the JH-MPR-WHS-007 Isolation procedure - Implement GMR 1, 3, 7 - Engage competent person to conduct testing and for design of footings, crane base, hoist base etc. - DBYD / excavation permits to be completed as required - Implement Unexpected Finds procedure. Stop works if suspected ACM is uncovered, proceed on hygienist advice.	2	Rare	E	Justin Ingram Will Roberts Michael Sawyer Ben Hall John Hennings	• Temporary works design required • Mobile plant setup require geotech sign off	Ongoing throughout project			

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	Structure, Envelope and Roofing	Design & certification of temporary works:- - Tower crane impact to constructed works or temporary works - Temporary propping of slabs, including loading applied to slabs during construction - Steelwork erection sequence including requirement for temporary supports / propping (north side above mental health batter, roof steel, wall framing, etc) - precast installation including propping (if used) - Core/ walls formwork shutter system propping methodologies - Propping required for stair master system - Preston loading bays if required - Man/materials hoist	Risk to personal safety and property damage due to structural collapse of permanent or temporary works if incorrect / inadequate propping or temporary design works. Hazards include: - Material failure (poor quality props, welds, timber formwork quality), - incorrect installation, - mobile plant hitting temporary or permanent works causing instability or collapse, (tower crane, mobile pumps, mobile cranes, etc.) - Tower crane poses risk to aeroplanes / helicopters passing over site or accessing LBH HLS - Collision of booms / jibs in the air (Multiple coordination between tower crane, mobile pumps, mobile cranes, etc.) - Satellite concrete pumps (if applicable) - Working at heights - Falling objects	Design Requirements	Temporary Works Design	Work Health & Safety	5	Likely	A	Yes	- Implement the JH-MPR-DES-003 Temporary Works Design and Implementation procedure - Competent certification and inspection of temporary works, tower crane & permanent works. Erection by competent persons. - Competent persons to operate and coordinate cranes, mobile plant. - Required engineered inspection certification for all temporary works (formwork, temporary propping steel, scaffold, etc.). - Detailed and appropriate methodology for installation of structural steel, precast, formwork/shutter walls, etc. - Compliance to requirements of CASA (Civil Aviation Safety Authority), e.g.. approved light fittings for crane. - HLS to be closed during construction hours and reopened outside of construction hours - Multiple crane / mobile plant protocol to be developed - Implement GMR 1,3,5 ,7 - Temporary works design including temporary works register	4	Rare	D	Will Roberts Justin Ingram	- AMS required - GMR Audits to be done - Temporary works register to be developed and maintained - Design & certification of temporary works as per procedure and GMR	Ongoing throughout project			
	Structure, Envelope and Roofing	Craneage & materials handling activities:- - Tower crane erection, operation and dismantle - Man/materials hoist erection, operation & dismantle. - Preston loading bay if required - Mobile cranes and plant - concrete trucks and pumps	Risk of personal injury or temporary works collapse:- - Lifting over people including operational adjacent buildings poses risk to people and property (including adjacent to operational hospital areas and mental health) - Location and height of tower section poses risk to aircraft (planes and helicopters) - Incompetent operators & riggers/dogmen cause risk to people and property, noting coordination with mobile concrete pumps, mobile cranes, etc. - Erection and dismantle create risk of work at heights / falling objects. - Crane base design incorrect poses risk to people and property - Operation in high winds - Falls from height whilst ascending/descending. - Compliance to design & manufacturers requirements (e.g. hoist connections) - Correct rigging of loads and materials	Lifting Operations	Working Overhead	Work Health & Safety	5	Likely	A	Yes	- Verification of competency as per JH-MPR-PAE-005 Verification of Competency (VOC) for operators, riggers and dogmen - Pre-existing medical assessment for tower crane crew - Erection and dismantle methodology to be signed off by independent and qualified engineer - GMR 7 compliance - Crane limiting device (lock out to prevent lifting over specified areas) to be procured and installed - Crane operations to cease if driver feels unsafe and if the winds trigger the critical wind speed / conditions to stop lifting activities - Tower crane access ladders to be used, utilising both hands & feet whilst ascending/descending - Independent engineer design review of tower crane base & tower - Independent engineer design review of man/materials hoist and footings/ties - Planning set up of mobile cranes, GMR 3 compliance, crane setup checklists - Multiple plant protocol to be implemented where required to coordinate tower crane vs mobile crane/pump operations - HLS to be closed during construction hours and reopened outside of construction hours	2	Unlikely	E	Justin Ingram John Hennings Will Roberts Michael Sawyer	- VOC tower crane crew - Crane base design certification - Erection methodology to be reviewed - Procure crane limiting device - CASA approval for tower crane - Closure of HLS during construction hours	Prior to tower crane erection			

WORKPLACE RISK ASSESSMENT (WRA)



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				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
	Structure, Envelope and Roofing	Work at height activities involving:- - Scaffold - Formwork - Mobile scaffolds - EWP's (scissor lifts, boom EWPs) - Handrails, working decks, perimeter fencing - Preston loading bays - Man/materials hoist - Roofing/cladding activities - ladders	Risk to personal safety and property damage due to fall from heights / falling objects. Hazards include: - Inclement weather blowing objects from scaffold or structure - Temporary works design not compliant to project requirement - Falls from heights or falling objects - Inadequate exclusion zones / signage - Non-compliant scaffold setout (i.e. gaps to building structure) - Methodology of formwork leading edge (i.e. joists at 450mm centres) and external cladding (off scaffold / EWP's) - Material failure (fatigued welds, poor quality timbers, old materials) - incorrect installations (i.e. mobile scaffolds), not as per approved shop drawings / manufacturers instructions, code of practice - plant hitting temporary works (e.g. formwork). - Modification of temporary works by unauthorised persons. - Scaffold and formwork setout - wet weather changing bearing conditions (e.g. saturation, washouts, trenches etc.) - Working over/adjacent to occupied hospital areas (mental health, Block A, south towers floors, etc.)	Working at Height	Fall from Structure	Work Health & Safety	5	Likely	A	Yes	- Implement the JH-MPR-DES-003 Temporary Works Design and Implementation procedure - Competent certification and inspection of temporary works by engineer. Erection by competent persons. - Implement the Formwork and Scaffold code of practice. - Implement the ITP system RPEQ design, install and handover certification - Scaffold register to be developed and maintained - Scaffold tags to verify compliant design, install and erection and mitigates against unauthorised modification. - Implement the JH-MPR-WHS-011 Work at Height procedure - Implement the JH-MPR-WHS-014 Barricading and Signage procedure - Include information on scaffold/ mobile scaffold requirements and safety in site induction - Implement GMR 7 Temporary works including project specific temp works register	4	Rare	D	Justin Ingram Will Roberts John Hennings Michael Sawyer	- AMS required - GMR audits required - Temporary works design - Exclusion zones to be established (consult with LHD where required)	Prior to works			
	Structure, Envelope and Roofing	Work at heights for all Envelope elements: - Roofing, metal cladding - Structural steel - Façade: framing, sarking, panels - Glazing - Canopies - Fall arrest systems - External paint / render / applied finishes - Penetration infills - Manbox use	Working at Heights & falling objects create risk to personal safety: - Rescue and recovery of personnel from site - Falls from height - Falls from height through slab penetrations, service risers, lift shaft - Objects falling from height - Low level falls from trucks, shallow excavations, pits - Inadequate penetration protection to risers, stairs and service voids - Inadequate exclusion zones - Unsecured materials exposed to high winds - Adjacent occupied areas of the hospital (mental health, Block A, etc.)	Working at Height	Fall from Structure	Work Health & Safety	5	Likely	A	Yes	- Implement the ERP -JH to develop rescue plan for tower crane operator - Complete emergency evacuation at least every 6 months - Implement the JH-MPR-WHS-011 Work at height procedure - Develop a building scaffold plan - Implement elimination through design consultation process - Implement the JH-MPR-DES-003 Temporary Works Design procedure - Implement the Activity Method Statement process and heirarchy of control process - procure and implement loading / unloading access scaffolds - Implement the JH-MPR-WHS-014 Barricading and Signage.procedure - Implement cast in mesh to all penetrations through design process, or have structural steel contractor install post stripping - Implement GMR 5, 7 (temporary works critical for scaffold, handrail, penetration infills, etc) - Place protection against falling persons and for falling objects around service risers and slab penetrations - Implement 3 metre ladder exclusion zones around penetrations and slab edges (only scissor lifts or mobile scaffolds to be used in this area)	4	Rare	D	Brett Popham Justin Ingram Will Roberts Colin O'Brien Michael Sawyer John Hennings	- AMS required - Implement exclusion zones - No ladder access adjacent to open penetrations in suspended slabs - WAH permits as required	Prior to façade/envelope elements commencing			

**WORKPLACE RISK ASSESSMENT
(WRA)**



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				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
																		Progress	Date completed	
	Structure, Envelope and Roofing	Plant & Equipment operation and demarcation with people: - Mobile cranes - Delivery trucks (materials, plant and equipment) - Concrete pours (mobile pumps/trucks) - Refueling trucks - Scissor lifts/EWPs - Tower crane, both erection and Demobilise - Man box use - Telehandler / forklift - rollers - skid steer	Incorrect operation, setup or selection of plant creates hazards to people and property: - Plant & Equipment - coordination between mobile plant and people - Adequate ground conditions / bearing capacity for Plant and equipment - failure creates potential for plant rollover and people injury / property damage (noting adjacent public road, live hospital, residential properties) - Faulty Plant - poses risk to people and property and environment - Incorrectly selected Plant - risk to people and property - Plant/personnel interface - risk to people - Operation of plant during wet weather or high winds - Operation of plant post weather events (high annual rainfall with severe storms) - Heavily sloping site, protection of plant adjacent to batters and protection to people on lower levels - Plant & Equipment - coordination between mobile and tower crane operations - Plant and equipment on suspended slabs - hazard of exceeding slab design loads or inadequate back propping - Crush/entrapment in EWP/Scissors	Plant Management	Common Operative Risks	Work Health & Safety	5	Likely	A	Yes	- Implement the JH-MPR-PAE-001 Plant & Equipment procedure - Implement the JH-MPR-WHS-014 Barricading and Signage procedure - Implement a Crane Planning/ coordination process (e.g. daily supervisor meeting) - Develop an ITP for ground compaction - Implement task specific setup checklist for concrete pump, mobile cranes, etc. - JH Site Management Plan. Adequate and component supervision, plant pre-acceptance process, AMS / TRA to identify mitigation measures for relevant activities, design and certified ground conditions as required. - Access paths demarcated, temporary access roads reviewed by experienced JH staff (maximum batter 1:4) - Implement tower crane control to comply to requirements of CASA (Civil Aviation Safety Authority), e.g.. approved light fittings for crane. - Develop lift study for crane demob - Implement the Site Traffic Management Plan. - Implement GMR 1,2,3,5 - JH mandated secondary protection devices (SPD) for all boom EWP's. Mandatory protection for basket controls for scissor lifts. - SQE Applicable to AMS - Site Establishment, Substructure, External Works & Infrastructure, Superstructure, Envelope, Fitout, Testing Commissioning Validation and Handover	4	Rare	D	Brett Popham Justin Ingram Michael Sawyer John Hennings Will Roberts	- AMS to be developed - Site team to continue with audit on high risk activities - All ongoing - Ensure SPD on all EWP's as per pre-acceptance process - Manbox approval/permits	Ongoing throughout project			
	Structure, Envelope and Roofing	Materials and manual handling and logistics: - All structural trade (formwork, reo, PT), Scaffold - Structural steel, external framing, glazing, external cladding - roofing & all other materials required	Incorrect materials handling and planning create hazards to people safety: - Trip hazards, congestion on site - Manual handling activities - Traffic Management in material laydown area - Waste Management - Material washouts - Material handling and lay down - horizontal and vertical - Structural building overload (stacking materials on formwork or scaffold) - Multiple crane management (tower & mobile & concrete pump)	Materials Management	Inappropriate Storage	Work Health & Safety	5	Likely	A	Yes	- Implement through the AMS process to eliminate manual material handling where possible - use of craneage, hoists, pallet lifters, duct lifters etc. Awareness through increased education (toolbox, induction), - Implement the Traffic Management Plan, engage component Traffic Control subcontractor, compliance to traffic plan including signage etc - Implement a crane and mobile plant exclusion zone to occupied areas (i.e. occupied hospital, etc.) - Implement designated washout area as per site plan - Implement JH-MPR-WHS-006 Workplace Hazard Identification and Inspection procedure - ensure site is clean and safe - Subcontractor responsible for cleaning as works occur. Identify and action hazards and risks - Implement designated laydown areas as per Site Plan - Plan and manage demarcated materials lay down area, controls include barricading - Management of vertical materials handling via crane, hoist, Preston / scaffold loading bay locations etc. - Implement Tower/mobile crane and mobile pump interface procedure/protocol - Implement SWL signage to laydown areas on building levels - Implement GMR 1,3,7	2	Unlikely	E	Will Roberts Colin O'Brien Justin Ingram John Hennings Ben Hall	- AMS for structure - SWL signage to building levels & loading bays - Crane/ mobile protocol - Daily management of material zones, cranes, lifts, deliveries	Prior to structure activities commencing			

**WORKPLACE RISK ASSESSMENT
(WRA)**



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				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
	Structure, Envelope and Roofing	Post tensioning of suspended slabs	Incorrect stressing or failure of equipment / materials creates hazards to people and property: - Faulty Plant - poses risk to people and property and environment - Incorrectly selected Plant - risk to people and property - Plant/personnel interface - risk to people - Operation of plant during wet weather - Failure of materials / stressing jacks / wedges - Stressing to early when concrete strength has not been achieved - Overstressing or inadequate cover to PT duct - duct pops out of slab	Personal Injury	Stored Energy	Work Health & Safety	5	Likely	A	Yes	- Implement the JH-MPR-PAE-001 Plant & Equipment procedure - Implement the JH-MPR-WHS-014 Barricading and Signage procedure (i.e. exclusion zones during stressing). - Implement ITP for stressing hold points pending receipt of concrete strengths results - Implement process for shop drawing approval and inspection by competent persons prior to concrete pour (i.e. adequate cover, setout, anchor points, quality of jacks and wedges, etc.) - JH Site Management Plan. Adequate and component supervision, plant hazard checklists, AMS / TRA to identify - mitigation measures for relevant activities. - Implement GMR 1 and 7	2	Unlikely	E	Will Roberts Colin O'Brien Justin Ingram Michael Sawyer John Hennings Ben Hall	- AMS required - ITP to be developed - GMR audit	Prior to post-tensioning works			
	Structure, Envelope and Roofing	Construction of North Tower impacting LBH HLS: - Scaffold for North Tower - Structural activities (Formwork) - Roofing & cladding activities - Tower crane and concrete pumps	Risk to personal safety that helicopter downwash could create:- - Falling objects, wind blown - High winds - Temporary works compliant design - Dust & debris Risk of crane and/or concrete pumps impacting flight path and safety for aircraft	Design Requirements	Temporary Works Design	Work Health & Safety	5	Likely	A	Yes	- HLS to be closed during construction hours and reopen outside of construction hours - Implement the JH-MPR-DES-003 Temporary Works Design and Implementation procedure - Certification and inspection of temporary works by competent engineer. Erection by competent persons. - Implement the ITP system RPEQ design, install and handover certification - Scaffold to be included on Temporary Works Register -Scaffold tags to verify compliant design, install and erection and mitigates against unauthorised modification. - Implement the JH-MPR-WHS-011 Work at Height Procedure - Implement the JH-MPR-WHS-014 Barricading and Signage procedure - Implement GMR 7 Temporary works including project specific temp works register - SOE Applicable to AMS - Substructure, Superstructure, Envelope, Fitout - Scaffold incident - Lesson learnt - Peer review (independent certificate) for scaffold design.	3	Unlikely	D	Brett Popham Justin Ingram Will Roberts Colin O'Brien Michael Sawyer John Hennings Ben Hall	- AMS required - Lessons learnt scaffold incident - Daily check of loose items on upper floor & roll up/roll down containment mesh to scaffold above free standing slabs.	Prior to North Tower construction			
	Structure, Envelope and Roofing	Unauthorised access/climbing the tower crane	Risk to personal safety:- - Falls from heights, - Objects falling from heights, - Damage to people - Property damage	Community	Site Access / Security	Work Health & Safety	5	Likely	A	Yes	Anti climb shroud or similar deterrent to be designed & installed	2	Rare	E	Justin Ingram	Anti-climb shroud to be reviewed for North Tower	Immediately following tower crane erection			
	Structure, Envelope and Roofing	Concrete Finish and Quality (floors, exposed off form walls /columns, soffits, correct mix, test results, tracking of placement) can cause non-compliances: - Concrete place for all structure - out of tolerance formwork (Eg. Column boxes, shutters, etc.)	Risk of abortive works & reworks due to poor quality:- - Concrete out of tolerance - Non-compliant to off form class - Rain damaged - Test results fail to reach strength - Delivery of incorrect mix to pour - Unknown placement / tracking during pour. - Batching plant quality causes non-compliant concrete strength. - Construction traffic damage to finished surfaces. - Incorrect toppings or waterproofings product & install	Quality Assurance	QA Breach	Quality	5	Possible	B	No	- Plan and coordinate location of pumps, concrete sequencing (use the prepour checklist / signoff) - Implement Structural ITP's to adhere to structural hold points identified in ITPs - Implement pre-start meetings with concrete supplier and place / finisher to address Quality hazards - ITP adherence and adequate subcontractor and JH supervision (both quality and quantity) - Check delivery dockets, correct mix/strength	2	Unlikely	E	Justin Ingram Will Roberts Colin O'Brien John Hennings	- Quality Plan to be submitted - ITP's to be implemented	Prior to works			

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(WRA)**



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				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
	Structure, Envelope and Roofing	Quality and completeness of envelope elements to mitigate water ingress & damage:- - Roofing, metal cladding - Façade: framing, sarking, panels - Glazing - Canopies	Risk of poor quality / damage to internal partitions / sheeting: - water ingress due to incomplete façade / roofing / etc.water damage / mould - Penetration of water through non-compliant façade / flashings, etc. - Early commencement of internal sheeting prior to watertight façade - Risk of mould, water damage, rework, insurance claims - Poor design/incorrect flashings or poor workmanship	Rework	Incorrect Installation / Process / Fabrication	Quality	5	Possible	B	No	- Review & ensure design detailing - Engage competent subcontractor - Complete Quality Plans & ITP's - Check correct materials & construction details as per approved design - Implement the JH-MPR-WHS-011 Work at height procedure - Implement the JH-MPR_DES-003 Temporary Works Design and Implementation procedure - Implement the Activity Method Statement process and hierarchy of control process - Implement the JH-MPR-WHS-014 Barricading and Signage procedure - Implement cast in mesh to all penetrations through design process, or have structural steel contractor install post stripping - Implement GMR 5.2 - Water test facade:- Include on ITP		2	Unlikely	E	Brett Popham Justin Ingram Will Roberts Colin O'Brien	- Quality plan to be submitted - Water tests on façade/roofs - ITP's - Adequate supervision	Water tests, ITPs and adequate supervision throughout façade/envelope works		
4	Internal Fitout																			
	Internal Fitout	Safety Management of public, LHD staff, external authorities accessing site during construction & witness testing - Essential Energy - Telstra - Lismore City Council (Sewer/stormwater connections) - NSW Fire and Rescue - Westpac Helicopter (Air Ambulance NSW) - Design Consultants - Client & their representatives - Visitors - LHD & their contractors	Safety risk to visitors / inspectors and also workers if correct safety protocols are not followed: - Inadequate coordination with non-contracted external parties performing works or inspections (e.g. Essential energy, Telstra, LCC, Elgas, NSWFR, etc.) - Authorities will be required to work on site to install meters, valves, etc. - External parties working on JH site for connection, meter install, etc. - Westpac helicopter services, risk of downwash affecting site operations and causing flying objects	Site Management	Workforce Coordination	Work Health & Safety	5	Possible	B	No	- All site works are to comply with Safety plan - issue safety pack to external authorities - JH site team to educate and induct all workers on JH processes, includes authorities (i.e. no special treatment) - Target to engage local workers where possible. - Implement the Stakeholder Management Plan - Adequate planning and coordination between JH and relevant parties. - Agreed relocation of site fencing, or agreed protocol for them to be inducted and works on JH site as per JH policy and procedures - Issue JH Safety manual to all parties required to work on site - NSWFR, Elgas, Telstra, Essential Energy, LCC, FFE Installers, LHD representatives. - Implement and comply with GMR 1 - HLS to be closed during construction hours		2	Unlikely	E	Justin Ingram Ben Hall John Hennings Michael Sawyer	Issue subcontractor safety pack to authority contractors as required Induct all workers (subcontractor or authority) and visitors to site. Plan HLS shutdown with Client / LHD	Ongoing throughout whole project		
	Internal Fitout	Plant & Equipment delivery and operation - Scissor lifts/EWPs - Tower crane - Mobile cranes - Delivery trucks - Concrete pours (pumps/trucks) - Telehandler / forklift - man/materials hoist	Risk to personal safety or injury: - Falling from plant/equipment, falling objects - Coordination between mobile and tower crane operations - Adequate ground conditions for plant and equipment to avoid roll over, contact with in-ground or overhead services etc. - Plant and equipment on suspended slabs overloading structure - Faulty Plant - Incorrectly selected Plant - Plant/personnel interface - Operator incompetency - Crush injury on scissor/EWP's - WAH adjacent to risers & penetrations - Tower crane impact on HLS operations	Plant Management	Common Operative Risks	Work Health & Safety	5	Possible	B	Yes	Implement the JH-MPR-PAE-003 Plant and Equipment procedure. Implement the JH-MPR-WHS-014 Barricading and Signage procedure. Implement a crane planning / coordination process (e.g. daily supervisor meeting). Develop an ITP for ground compaction. JH Site Management Plan. Adequate and competent supervision, plant pre-acceptance process as per JH procedure, AMS / TRA to identify risk control measures for relevant activities, design and certified ground conditions as required. Access paths demarcated, temporary access roads reviewed by experienced JH staff (maximum batter 1:4). Implement tower crane control to comply to requirements of CASA (Civil Aviation Safety Authority), e.g. approved light fittings for crane. HLS to be closed during construction hours. Implement the Site Traffic Management Plan. Implement GMR 1,3,5,7 Mandatory SPD for boom EWP's and physical protection for scissor lift controls. No use of ladders adjacent to penetrations or voids with handrail protection (e.g. ladder exclusion zones).		2	Unlikely	E	Justin Ingram Brett Popham John Hennings Michael Sawyer Will Roberts	Establishment of pedestrian access ways and plant movement areas. Exclusion zones to be implemented - JH site team to monitor daily. VOC to be completed as per JH VOC procedure. AMS to be developed for Internal fitout. Regular inspections and audits Closure of HLS	Prior to works and ongoing.		

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				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
	Internal Fitout	Craneage & materials handling activities:- - Mobile crane set up and operation - Man/materials hoist erection, operation & dismantle. - Preston loading bay if required - Mobile plant deliveries	Risk of personal injury or temporary works collapse:- Lifting over people including operational adjacent buildings poses risk to people and property(including adjacent to operational hospital areas) - Incompetent operators & riggers cause risk to people and property, noting coordination between mobile concrete pumps, mobile cranes, etc. - Crane/pump operation in high winds - Non compliance to design & manufacturers requirements (e.g. hoist connections) - Incorrect rigging of loads and materials	Plant Management	Common Operative Risks	Work Health & Safety	5	Likely	A	Yes	- Compliance with JH-MPR-PAE-005 Verification of Competency for operators, riggers and dogmen - Mobile crane setup checklists, lift studies as per the JH Lift Planning Matrix - No-slew zones over adjacent Mental Health and South Tower and other areas as deemed necessary by JH - Crane operations to cease if driver feels unsafe and if the winds trigger the critical wind speed / conditions to stop lifting activities. - Independent design review of materials hoist and crane and footings/ties - All lifts to have designated runner/spotter to avoid lifting overhead - Compliance to GMR 3 and GMR 7	2	Unlikely	E	Justin Ingram Michael Sawyer John Hennings	Mobile crane/pump set up checklists to be completed for each set up Temporary works register to be developed and maintained 3rd party engineer sign off for temporary works as per procedure GMR audits	Prior to temporary works use, ongoing throughout project			
	Internal Fitout	Working with or adjacent to hazardous substances/fumes/vapours/dusts etc.	Hazardous Substances & fumes can cause harm - Generator fumes, including to adjacent air intakes - Plant & Equipment fumes (telehandler/forklift, EWP/scissor lift, mobile cranes etc.) - MDF materials / cutting - Waterproofing and flooring compounds - Lead lined walls to medical imaging area - Mould rectification if found due to water ingress/leaks. - Contaminated atmospheres in confined spaces (e.g. tanks).	Hazardous Substances	Exposure to Air Bourne Contaminants	Work Health & Safety	5	Unlikely	B	Yes	Implement the JH-MPR-SQE-011 Hazardous Chemicals Management procedure. Isolate MDF cutting areas, waterproofing activities etc. Ventilation via fans/exhausts and use of vacuums on tools etc. for works producing fumes/vapours/dust. Implement the Site Environmental Plan Implement Storage requirements for hazardous Substances/material, Dangerous Goods - including signage and education (induction). Implement lead procedure as required, training to those exposed and awareness to the project Implement JH-MPR-WHS-009 Confined Space Entry procedure, including permit approval and relevant conditions. Implement plant pre-acceptance process as per JH procedure.	2	Unlikely	E	Justin Ingram Michael Sawyer John Hennings	Appropriate chemical storage to be established. MDF cutting areas to be managed. Ventilation to be adequate - assessed on task-by-task basis. Confined space entry requirements to be met.	Prior to works			
	Internal Fitout	Materials handling and logistics - Plant, water storage tanks - Structural steel - Plasterboard, block work, equipment on suspended slabs - Little Uralba Street delivery zone - Service deliveries - Concrete trucks & pumps - All deliveries required - Preston & scaffold loading bays	Risk to personal safety and injury from: - Plant / people interface - Unstable / incorrect stacking / storage of materials - Overloading of materials to loading bays / slabs - Wind causing materials to fall - Manual handling activities - Poor traffic management - Overhead power lines - Waste management - material washouts - Material handling and lay down - horizontal and vertical - Multiple crane (tower / mobile) management	Materials Management	Inappropriate Storage	Work Health & Safety	5	Unlikely	B	Yes	- Implement through the AMS process to eliminate manual material handling where possible - use of craneage, hoists, pallet lifters, duct lifters etc. Awareness through increased education (toolbox, induction), - Implement the Traffic Management Plan, engage competent Traffic Control subcontractor, compliance to traffic plan including signage etc. - Implement a crane and mobile plant exclusion zone to occupied areas (i.e. Uralba Street, occupied hospital, mental health etc.) - Implement designated washout area as per site plan - Implement JH-MPR-WHS-006 Workplace Hazard Identification and Inspection procedure - Education through induction ensuring site is clean and safe (i.e. a clean site is a safe site). Subcontractor responsible for cleaning as works occur. Identify and action hazards and risks daily. - Implement designated laydown areas as per Site Plan - Plan and manage demarcated materials lay down area, controls include barricading area, induction, supervision. Controls include management of vertical materials handling via crane, hoist, Preston / scaffold loading bay locations etc. - Implement Tower/mobile crane and mobile pump interface procedure/protocol if required. - Implement SWL signage to laydown areas on building levels - Implement GMR 1, 3, 7.	2	Unlikely	E	Justin Ingram John Hennings Will Roberts Michael Sawyer	AMS required SWL signage to loading bays Tower / mobile & satellite pump protocol to be developed as required. TMP to be developed.	Prior to works and ongoing.			

**WORKPLACE RISK ASSESSMENT
(WRA)**



Line Item Ref. No.	Work Activity	Breakdown of Activity (In Sequence)	General Description Descriptions of Risk, Hazards or Aspects & Impacts Associated with this Activity <small>(Ensure description adequately defines the item (eg. Risk of soil contamination from site equipment / vehicles))</small>	Risk Categories		Selected Conseq Type	CURRENT RISK RATING <small>Rating after BAU controls and before noted controls are implemented</small>			AMS Req'd <small>Automatic Defaults to "Yes"</small>	Control Action Requirements <small>Rating A/B = Elimination or Engineering Controls Rating C = Engineering & Admin and/or PPE Controls Rating E/D = Combination of Controls (Press cell to see Hierarchy of Control)</small>	Action Element Control <small>Project Wide Strategies (Change design, construction method, procurement strategy, workforce manning, etc) Systems (Procedures or work instructions) Training Requirements No legislation to be listed, refer to Compliance Register</small>	RESIDUAL RISK RATING <small>Expected rating when noted controls including AMS are implemented. To be completed immediately.</small>			ACTION PLANS			ACTION STATUS	
				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
	Internal Fitout	<ul style="list-style-type: none"> - Penetrations, cores, drilling structural elements - services rough in. - Concrete cores in PT slabs, walls etc. - Vertical services rough in, drilling into slab soffits - Lift installation - Additional penetrations, new setdowns - Retra fitting hydraulic wastes 	Risk of personal injury due to drilling (concrete cores), penetrating (electrical, water, gas hazards) services	Services	Contact with Services (other)	Work Health & Safety	5	Possible	B	Yes	<ul style="list-style-type: none"> - Develop and implement core holing permit. - Develop and implement a 'permit to penetrate' for all walls/floors/ceilings (active upon energisation of services to an area). - Education through induction - Implement GMR 4, 8 - Design team eliminate in-slab services (i.e. electrical) where possible. - Core holing to be performed by specialist contractor. - Service locator / x-ray / scanner to be used prior to coring/drilling where deemed appropriate by risk assessment. 	3	Unlikely	D	Justin Ingram Mark Moseley John Hennings Ben Hall Michael Sawyer	<ul style="list-style-type: none"> - Permit systems to be implemented. - AMS to be developed - Regular inspections/audits. 	Permit systems in place.			
	Internal Fitout	<ul style="list-style-type: none"> - Design & certification of temporary works:- - Temporary propping of slabs, including loading applied to slabs during construction (possible use of Preston loading bays) - Tower crane - Man/material hoist 	Risk to personal safety and property damage due to structural collapse of permanent or temporary works if incorrect / inadequate propping or temporary design works. Hazards include: <ul style="list-style-type: none"> - Material failure (poor quality props, welds etc.), - incorrect installation, - mobile plant hitting temporary or permanent works causing instability or collapse, (mobile pumps, mobile cranes, hoist ties, backprops etc.) - Collision of booms / jibs in the air (Multiple coordination between EWPs, mobile pumps, mobile cranes, etc.) 	Design Requirements	Temporary Works Design	Work Health & Safety	5	Likely	A	Yes	<ul style="list-style-type: none"> - Implement the JH-MPR-DES-003 Temporary Works Design and Implementation procedure - Component certification and inspection of temporary works by 3rd party engineer. Installation by competent persons. - Competent persons to operate and coordinate mobile plant - Detailed and appropriate methodology for installation of materials hoist, tower crane - Implement GMR 1, 3, 7 - Temporary works design including temporary works register 	4	Rare	D	Will Roberts Justin Ingram Michael Sawyer	<ul style="list-style-type: none"> - AMS required - Regular GMR audits - Temporary works register to be developed and kept updated - Design & certification of all temporary works 	Ongoing throughout project			
	Internal Fitout	<ul style="list-style-type: none"> - Electrical & services safety:- - Electrical rough in & fitoff & commissioning - HV Live to padmount & LV to MSB - Energex interface (transformer and MSB) - Temporary power - All trades working around & adjacent to live power & temporary power - Transfer of live power from electrical to mech-electrical subcontractor - Gas (LPG & Medical) service install & Commission - Livening of all services & plant - Decommissioning of temporary services - Working at height 	Risk to personal safety and injury from: <ul style="list-style-type: none"> - Electrical hazards to people, both during installation and reticulation of temporary and permanent power, energisation, isolation, transfer of power between trades, etc. - Hazard of live power to all trades during construction activities. Includes temporary & permanent power hazards - Hazard of live services, including unidentified services - Commissioning, isolation or de-energisation of any services - Transfer of live services between trades (E.g. mech-elect EDB's) - Potential falls from height (use of scissor lifts, ladders, scaffolds, working near service risers and penetrations) 	Electricity	Electrocution	Work Health & Safety	5	Likely	A	Yes	<ul style="list-style-type: none"> - Implement the JH-MPR-WHS-007 Isolation procedure - Engage competent electrician & tradesmen for works, planning of reticulation and location of temporary boards, test and tag of boards and equipment, site specific energisation procedure, implement and use adequate electrical commissioning / isolation / decommissioning / energisation of power. - Implement electrical awareness training program - Educate all workers that no work on live power allowed (Project Golden Rules). - Utilisation of best practice power boards (Spinifex or similar) - Design out of cast-in electrical elements where possible - Implement GMR 4, 8 - Works sequence to eliminate needs for trades to enter ceiling spaces once permanent power energised. - Work Safely at Height training for relevant John Holland team members - Isolation Permit Holder and Isolation Permit Worker training for relevant persons. 	3	Unlikely	D	Justin Ingram Ben Hall Des Dykes Michael Sawyer Mark Moseley	<ul style="list-style-type: none"> - AMS required - Isolation/energisation permit to be used for all isolation, energisation & decommissioning - GMR audits - Staff Work Safely at Height training - Workforce to hold current Work Safely at Height competencies where relevant. - Nominate Permit Isolation Controller (PIC) (Ben Hall nominated) - EWMP to be developed and communicated to Project Team - Subcontractor EWIC to be VOCd and communicated EWMP - Isolation training and VOCs for relevant workers 	Ongoing throughout project			
	Internal Fitout	<ul style="list-style-type: none"> - Survey set out:- - Building footings - Partitions, set downs - Boundaries - Reduced levels 	Incorrect survey cause quality & reworks:- <ul style="list-style-type: none"> - Items are installed / constructed in the incorrect location or level as per design requirements - Inadequate survey control points for subcontractors / trades - Survey equipment not calibrated - Partitions wall & set down incorrect 	Rework	Incorrect Survey / Setout	Quality	5	Likely	A	Yes	<ul style="list-style-type: none"> - System - Ensure current & JH site team approved drawings, details are used - Set out surveys carried out - Control marks maintained - As built surveys carried out - Survey equipment calibration records submitted & maintained - Licenced surveyor is engaged - clear scoping of main survey package and the control points in the subcontractor packages 	2	Unlikely	E	Justin Ingram John Hennings Colin O'Brien Will Roberts	<ul style="list-style-type: none"> - Engage Licenced surveyor - Survey control points to be documented and included in subcontractor packages - Final building survey required at completion 	Prior to letting contract			

WORKPLACE RISK ASSESSMENT (WRA)



Line Item Ref. No.	Work Activity	Breakdown of Activity (In Sequence)	General Description Descriptions of Risk, Hazards or Aspects & Impacts Associated with this Activity <small>(Ensure description adequately defines the item (eg. Risk of soil contamination from site equipment / vehicles))</small>	Risk Categories		Selected Conseq Type	CURRENT RISK RATING <small>Rating after BAU controls and before noted controls are implemented</small>			AMS Req'd <small>Automatic Defaults to "Yes"</small>	Control Action Requirements <small>Rating A/B = Elimination or Engineering Controls Rating C = Engineering & Admin and/or PPE Controls Rating E/D = Combination of Controls (Press cell to see Hierarchy of Control)</small>	Action Element Control <small>Project Wide Strategies (Change design, construction method, procurement strategy, workforce manning, etc) Systems (Procedures or work instructions) Training Requirements No legislation to be listed, refer to Compliance Register</small>	RESIDUAL RISK RATING <small>Expected rating when noted controls including AMS are implemented. To be completed immediately.</small>			ACTION PLANS			ACTION STATUS	
				Main Categories	Sub Categories		Consequence	Likelihood	Rating				Consequence	Likelihood	Rating	Who responsible	What to be done	By when	Progress	Date completed
	Internal Fitout	Materials, plant & equipment complying with design & project requirement for:- - Lifts - Specialist plant (Medical Gas, Pneumatic Tube, pumps, Mechanical plant, MSB, etc) - Structural steel - Stainless steel equipment - Joinery - FFE deliveries and install - Facade, glazing, partitions - MME equipment	Risk of poor quality, non-compliant plant / products or damage causing rework & project delays: - Equipment stored safely and out of weather conditions. - Offsite storage/inspection - Damage to materials - Factory acceptance testing for Diesel Generator - Consultant and JH review of plant / materials - Contaminants in imported materials - Non-complaint to project specifications	Client / Head Contract	Non-compliance	Quality	4	Likely	B	Yes	- Implement Construction Management Plan and QMP - Coordination of deliveries via programme. - Designated material handling and laydown areas. - Implement ITP's to include checking materials on delivery - Install barricades to provide demarcation of materials in laydown areas - Consultant and JH review of plant and materials upon delivery to site to ensure compliance to specifications - Factory acceptance testing for diesel generator and there equipment as required - Monthly consultant inspections to identify any concerns / non-compliances early	2	Rare	E	Justin Ingram Colin O'Brien Will Roberts	- Quality plan to be issued - ITP for plant to be install - Monthly consultant inspections ongoing - Onboarding of new subcontractors - Will to provide form	Prior to works and prior to plant install			
	Internal Fitout	Use, storage and disposal of hazardous substances:- - Generators exhaust & fuel - MDF works - Civil works - plant & equipment - lead lined partitions & waste	Risk of Environmental harm from incorrect:- - Hazardous Materials management (including storage, use, handling) - Oil spills from plant & equipment - Waste & handling of lead lined materials	Hazardous Substances	Exposure to Contamination	Environment & Heritage	5	Possible	B	Yes	- Implement the Hazardous Substances Environmental Control Plan in the CEMP. Subcontractors to store all chemicals/fuels etc off site where possible. - All fuels/chemicals to be stored in a fully bunded area along with all MSDS's. - Supply Spill kits onsite. - System for removal of lead containing products - Civil spoil removed and tested to demonstrate compliance- clean fill - Testing of sediment basin sludge as required	3	Unlikely	D	Justin Ingram Michael Sawyer	Develop and issue CEMP Place spill kits as per SEP Waste tracking and testing for civil spoil, hazardous waste, lead-lined waste	At project start-up and ongoing			
	Internal Fitout	Materials handling and logistics - Concrete place - Plaster - Painting	Risk of poor environmental management regarding: - waste management, - material washouts, - lack of recycling, - lead offcuts contamination - Incorrect disposal of waste	Waste	Illegal / Improper Disposal (Other)	Environment & Heritage	4	Possible	C	Yes	Implement the Waste Management Environmental Control Plan in the CEMP. Record statistics, recycle where possible (part of waste removal subcontract to record), minimise waste, dedicated concrete / paint / plaster washouts nominated and managed as per SEP. Any lead waste to be disposed of as hazardous waste (tracking, licenced receiver etc.)	2	Unlikely	E	Justin Ingram Michael Sawyer	CEMP to be developed wit Waste Management ECP included Recording and reporting of waste records, including hazardous/trackable waste. SEP to be developed.	Prior to works			
5	Completion and Commissioning																			
	Completion and Commissioning	Testing, Commissioning, Validation and Hand over (services fitoff, handover)	Risk to personal safety during commissioning phase: - Late design changes or additional works resulting in out of sequence works and increased risk of injury/incident - Defects Liability Period - risk of water ingress to operational building - Shortcuts to compensate for reworks at late notice - Electrocutation from live services - Gas leaks - Accessing confined spaces - Screwing into / damage to live services - Work at heights: external, internal off ladders / adjacent to risers, etc.	Personal Injury	Miscellaneous Injury	Work Health & Safety	5	Possible	B	Yes	- Implement a change management system - JH site team to stop and evaluate any impact from user changes or additional works (additional power point installation, drilling into walls, etc.). - Coordination of trades via daily supervisor meetings - perform works out of hours works for high risk activities, limited access for high risks in commissioning. - Implement JH-MPR-WHS-007 Isolation procedure - Ensure SQE process implemented for all completion activities (e.g. smaller 'one-off' commissioning trades treated the same as all subcontractors / same requirements and expectations). - Implement GMR 4,8 - Implement Permit to Penetrate when services are live.	2	Unlikely	E	Brett Popham Justin Ingram Mark Moseley Ben Hall Michael Sawyer Will Roberts	AMS to be developed. Regular GMR audits. Daily supervisor meetings.	Prior to works. Ongoing throughout.			

Appendix K Work Breakdown Structure

NORTH TOWER STRUCTURE

- Bored Piles
- Substructure, footings, lift footings, MSB pits
- Substructure (included temporary and permanent):- columns, core walls, slabs
- Structural Steel

NORTH TOWER ENVELOPE

- Scaffold
- Roofing
- Façade
- Glazing
- Canopies and walkways
- Louvers

NORTH TOWER INTERNAL

- Plant Room: Plant, rough in, connections, louvers
- Lift installation
- Frame and sheet firewalls and smoke walls
- High level services install
- Frame all walls
- In wall rough in of all services
- Sheet and sand all walls
- Communication room fit out
- Frame ceilings
- Second fix to ceilings for all services
- Wet area waterproof, test and bedding
- First coat painting
- Joinery kicker installation
- Floor covering / finishes installation
- Fit-off services
- Joinery installation
- Final painting

NORTH TOWER COMPLETION AND HANDOVER

- Defecting
- Commissioning and witness testing
- Final clean
- Handover

Appendix L Construction Summary Program

The attached summary program for North Tower is as submitted in JH Main Works offer for North Tower (MWO#03).

LISMORE BASE HOSPITAL REDEVELOPMENT STAGE 3B2

MAIN WORKS OFFERS #1 & #3 CONTRACT PROGRAMME



Activity ID	Activity Name	D'tion	Start	Finish	2017							2018							2019							2020															
					J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J
					13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
180115 MWO #1 & 2 + NTX CONTRACT PROGRAMME REV D (incl PCVP, EOT 1 Only)																																									
JHG STAFFING																																									
SUMMARY PROGRAMME																																									
MAIN WORKS OFFER PREPARATION																																									
SOUTH TOWER FIT-OUT & BLOCK A DECANT INTO NEW DEPARTMENTS																																									
BALANCE OF BLOCK A DECANT & BLOCK A DEMOLITION																																									
MWO-DEC-1120	Decant Works: Block A L3 / 4 / 5	190	17-Mar-17	22-Sep-17	▶ Decant Works: Block A L3 / 4 / 5																																				
MWO-DEC-1140	Decant Works: Block A L6 / 7	153	05-Apr-17	04-Sep-17	▶ Decant Works: Block A L6 / 7																																				
MWO-DEM-1020	Block A Preparation Works (Demolition Hoardings / Haz. Mat Removal / Services Alteration)	36	25-Sep-17	10-Nov-17	▶ Block A Preparation Works (Demolition Hoardings / Haz. Mat Removal / Services Alterations)																																				
MWO-DEM-1000	Demolition of Block A	124	14-Nov-17	22-May-18	▶ Demolition of Block A																																				
MWO-DEM-1060	Block A Demo Complete	0		22-May-18	◆ Block A Demo Complete																																				
MWO-DEM-1040	Block A Fire Escape & Facade Make-Good Works	43	23-May-18	19-Jul-18	▶ Block A Fire Escape & Facade Make-Good Works																																				
NORTH TOWER CONSTRUCTION																																									
MWO-NT-1040	North Tower Construction	516	20-Jul-18	17-Dec-19	▶ North Tower Construction																																				
MWO-NT-7000	North Tower Construction Complete	0		17-Dec-19	◆ North Tower Construction Complete																																				
MWO-NT-7200	Principal Completion Validation Period	28	18-Dec-19	19-Jan-20	▶ Principal Completion Validation Period																																				
MWO-NT-7020	North Tower Construction MRI Relocation Complete	0		19-Jan-20	◆ North Tower Construction MRI Relocation Complete																																				
MWO-NT-7040	North Tower Post-Completion Activities Complete	0		20-Jan-20	◆ North Tower Post-Completion Activities Complete																																				
REFURBISHMENT WORKS (POTENTIAL FUTURE MWO)																																									
EOT001 SUMMARY																																									
EOT001-0000	EOT01 - Wet Weather Delay from 30/03/17 to 03/04/17 (3.5 days)	4	30-Mar-17*	03-Apr-17	1 - Wet Weather Delay from 30/03/17 to 03/04/17 (3.5 days)																																				
ECI PHASE - HEAD CONTRACTOR ENGAGEMENT																																									
STAGE 1: ECI PHASE (DESIGN DEVELOPMENT)																																									
EARLY WORKS: PROCUREMENT & CONSTRUCTION																																									
MAIN WORKS: PROCUREMENT & CONSTRUCTION																																									
PROCUREMENT																																									
CONSTRUCTION																																									
KEY PRELIMINARY ITEMS																																									
SOUTH TOWER FIT-OUT - LEVELS 6, 7, 9, 10 & 11																																									
BLOCK A: DECANTING, BUILDERSWORK & DEMOLITION																																									
MISC. REFURB & DECANTING WORKS TO FACILITATE BLOCK A DEMO																																									
ENABLING PREP: BUILDERSWORK & ASBESTOS SURVEYS / REMOVAL																																									
LEVEL 3																																									
MWO-BA-1000	Install Demo Hoarding	5	25-Sep-17	29-Sep-17	▶ Install Demo Hoarding																																				
MWO-BA-1020	Services Isolations	5	04-Oct-17	09-Oct-17	▶ Services Isolations																																				
MWO-BA-1040	Asbestos Survey & Removal	10	10-Oct-17	21-Oct-17	▶ Asbestos Survey & Removal																																				
MWO-BA-1080	Clearance Certificate Issued	0		21-Oct-17	◆ Clearance Certificate Issued																																				
LEVEL 4																																									
MWO-BA-1060	Client Salvages Items from Block A L4	14	21-Sep-17	04-Oct-17	▶ Client Salvages Items from Block A L4																																				
MWO-BA-1100	Install Demo Hoarding	10	05-Oct-17	17-Oct-17	▶ Install Demo Hoarding																																				
MWO-BA-1140	Services Isolations	10	18-Oct-17	30-Oct-17	▶ Services Isolations																																				
MWO-BA-1180	Asbestos Survey & Removal	10	31-Oct-17	10-Nov-17	▶ Asbestos Survey & Removal																																				
MWO-BA-1220	Clearance Certificate Issued	0		10-Nov-17	◆ Clearance Certificate Issued																																				

Page 1 of 16	Date	Revision	Checked	Approved
	14-Feb-17	MAIN WORKS OFFER CONTRACT PROGRAMME REV B	G. Foster	B. Popham
	07-Apr-17	MWO#1 CONTRACT PROGRAMME (EOT001 ADDITION)	G. Foster	B. Popham
	14-Jun-17	MWO#1 CONTRACT PROGRAMME (VALIDATION CHANGES)	G. Foster	B. Popham
	22-Jan-18	MWO#1 & MWO#3 COMBINED CONTRACT PROGRAMME	G. Foster	B. Popham

█ Actual
█ Critical
█ Remaining Work - Non Critical
█ Actual Work
◆ Milestone - Critical

◆ Milestone - Non Critical
— Approved Baseline
◆ Approved Baseline
▶ Summary Bar - Non Critical

LISMORE BASE HOSPITAL REDEVELOPMENT STAGE 3B2

MAIN WORKS OFFERS #1 & #3 CONTRACT PROGRAMME



Activity ID	Activity Name	D'tion	Start	Finish	2017							2018							2019							2020																					
					J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D	J	F	M	A	M	J	Jul	A	S	O	N	D
					13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49						
NORTH TOWER & N.T. EXTENSION																																															
NORTH TOWER CONSTRUCTION																																															
MW1-NT-WBS	North Tower Construction	354	20-Jul-18	20-Jan-20	North Tower Constr																																										
SUBSTRUCTURE																																															
TEMP. LOADING PLATFORM																																															
MWO-NT-1020	Demo Blockwork Wall	3	20-Jul-18	23-Jul-18	Demo Blockwork Wall																																										
MWO-NT-6940	Commence Works	0	20-Jul-18*		Commence Works																																										
MWO-NT-1100	Construct Footing & Load Bearing Wall	10	24-Jul-18	07-Aug-18	Construct Footing & Load Bearing Wall																																										
MWO-NT-1120	Construct Platform	5	08-Aug-18	14-Aug-18	Construct Platform																																										
PILING, FOUNDATIONS & HYDRAULIC INFRASTRUCTURE																																															
MWO-NT-1060	Install Piles & to Grids 07-08 / A-J (19 piles @4 per day)	10	20-Jul-18	01-Aug-18	Install Piles & to Grids 07-08 / A-J (19 piles @4 per day)																																										
MWO-NT-1140	Excavate & Construct 300 Dia Stormwater / Make Connection to Existing Pit	12	26-Jul-18	13-Aug-18	Excavate & Construct 300 Dia Stormwater / Make Connection to Existing Pit																																										
MWO-NT-1160	Detail Excavate Pile Caps, Ground Beams & Pad Footings (23 No)	10	08-Aug-18	20-Aug-18	Detail Excavate Pile Caps, Ground Beams & Pad Footings (23 No)																																										
MWO-NT-1180	FRP Pile Caps, Ground Beams & Pad Footings	15	18-Aug-18	05-Sep-18	FRP Pile Caps, Ground Beams & Pad Footings																																										
MWO-NT-1200	Excavate & Construct 225 Dia Sewer & Manhole / Make Connection to Existing Sewer	8	21-Aug-18	30-Aug-18	Excavate & Construct 225 Dia Sewer & Manhole / Make Connection to Existing Sewer																																										
STRUCTURE																																															
LEVEL 3																																															
MWO-NT-1300	Erect Structural Steel Beams for Scaffold to Northern Elevation	6	31-Aug-18	06-Sep-18	Erect Structural Steel Beams for Scaffold to Northern Elevation																																										
MWO-NT-1340	Trim & Prep. Sub-Grade	7	06-Sep-18	14-Sep-18	Trim & Prep. Sub-Grade																																										
MWO-NT-1380	FRP Raft Slab on Ground	5	15-Sep-18	20-Sep-18	FRP Raft Slab on Ground																																										
MWO-NT-1400	Construct Cols & Lift Shaft Walls to U/S L4	5	21-Sep-18	27-Sep-18	Construct Cols & Lift Shaft Walls to U/S L4																																										
LEVEL 4																																															
POUR 1																																															
MWO-NT-1440	L4 Slab P1 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements	12	28-Sep-18	15-Oct-18	L4 Slab P1 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements																																										
MWO-NT-7360	L4 Slab - Curing to 40 mpa	14	16-Oct-18	29-Oct-18	L4 Slab - Curing to 40 mpa																																										
MWO-NT-1600	L4 Slab P1 - Initial Stress / Final Stress / Grout	5	16-Oct-18	22-Oct-18	L4 Slab P1 - Initial Stress / Final Stress / Grout																																										
MWO-NT-1620	L4 Slab P1 - Strip Formwork Pans & Erect Backprops to U/S L4 Slab	2	23-Oct-18	24-Oct-18	L4 Slab P1 - Strip Formwork Pans & Erect Backprops to U/S L4 Slab																																										
POUR 2																																															
MWO-NT-1560	L4 Slab P2 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements	12	09-Oct-18	23-Oct-18	L4 Slab P2 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements																																										
MWO-NT-7370	L4 Slab - Curing to 40 mpa	14	24-Oct-18	06-Nov-18	L4 Slab - Curing to 40 mpa																																										
MWO-NT-1660	L4 Slab P2 - Initial Stress / Final Stress / Grout	5	24-Oct-18	29-Oct-18	L4 Slab P2 - Initial Stress / Final Stress / Grout																																										
MWO-NT-1740	L4 Slab P2 - Strip Formwork Pans & Erect Backprops to U/S L4 Slab	2	30-Oct-18	31-Oct-18	L4 Slab P2 - Strip Formwork Pans & Erect Backprops to U/S L4 Slab																																										
LEVEL 5																																															
POUR 1																																															
MWO-NT-1580	L5 Slab P1 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements	12	07-Nov-18	21-Nov-18	L5 Slab P1 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements																																										
MWO-NT-1720	L5 Slab P1 - Initial Stress / Final Stress / Grout	5	22-Nov-18	27-Nov-18	L5 Slab P1 - Initial Stress / Final Stress / Grout																																										
MWO-NT-1760	L5 Slab P1 - Strip Formwork Pans & Erect Backprops to U/S L5 Slab	2	28-Nov-18	29-Nov-18	L5 Slab P1 - Strip Formwork Pans & Erect Backprops to U/S L5 Slab																																										
POUR 2																																															
MWO-NT-1640	L5 Slab P2 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements	12	16-Nov-18	30-Nov-18	L5 Slab P2 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements																																										
MWO-NT-1780	L5 Slab P2 - Initial Stress / Final Stress / Grout	5	03-Dec-18	07-Dec-18	L5 Slab P2 - Initial Stress / Final Stress / Grout																																										
MWO-NT-1880	L5 Slab P2 - Strip Formwork Pans & Erect Backprops to U/S L5 Slab	2	08-Dec-18	10-Dec-18	L5 Slab P2 - Strip Formwork Pans & Erect Backprops to U/S L5 Slab																																										
LEVEL 6																																															
POUR 1																																															
MWO-NT-1700	L6 Slab P1 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements	12	24-Nov-18	08-Dec-18	L6 Slab P1 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements																																										
MWO-NT-1840	L6 Slab P1 - Initial Stress / Final Stress / Grout	5	10-Dec-18	14-Dec-18	L6 Slab P1 - Initial Stress / Final Stress / Grout																																										
MWO-NT-1900	L6 Slab P1 - Strip Formwork Pans & Erect Backprops to U/S L6 Slab	2	17-Dec-18	18-Dec-18	L6 Slab P1 - Strip Formwork Pans & Erect Backprops to U/S L6 Slab																																										
POUR 2																																															
MWO-NT-1860	L6 Slab P2 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements	12	03-Dec-18	17-Dec-18	L6 Slab P2 - Erect Scaffold / FRP Susp. P/T Slab & Vertical Elements																																										

Page 3 of 16	Date	Revision	Checked	Approved
	14-Feb-17	MAIN WORKS OFFER CONTRACT PROGRAMME REV B	G. Foster	B. Popham
	07-Apr-17	MWO#1 CONTRACT PROGRAMME (EOT001 ADDITION)	G. Foster	B. Popham
	14-Jun-17	MWO#1 CONTRACT PROGRAMME (VALIDATION CHANGES)	G. Foster	B. Popham
	22-Jan-18	MWO#1 & MWO#3 COMBINED CONTRACT PROGRAMME	G. Foster	B. Popham

Actual	Milestone - Non Critical
Critical	Approved Baseline
Remaining Work - Non Critical	Approved Baseline
Actual Work	Summary Bar - Non Critical
Milestone - Critical	

Appendix M – Not used

Appendix N Procurement Schedule

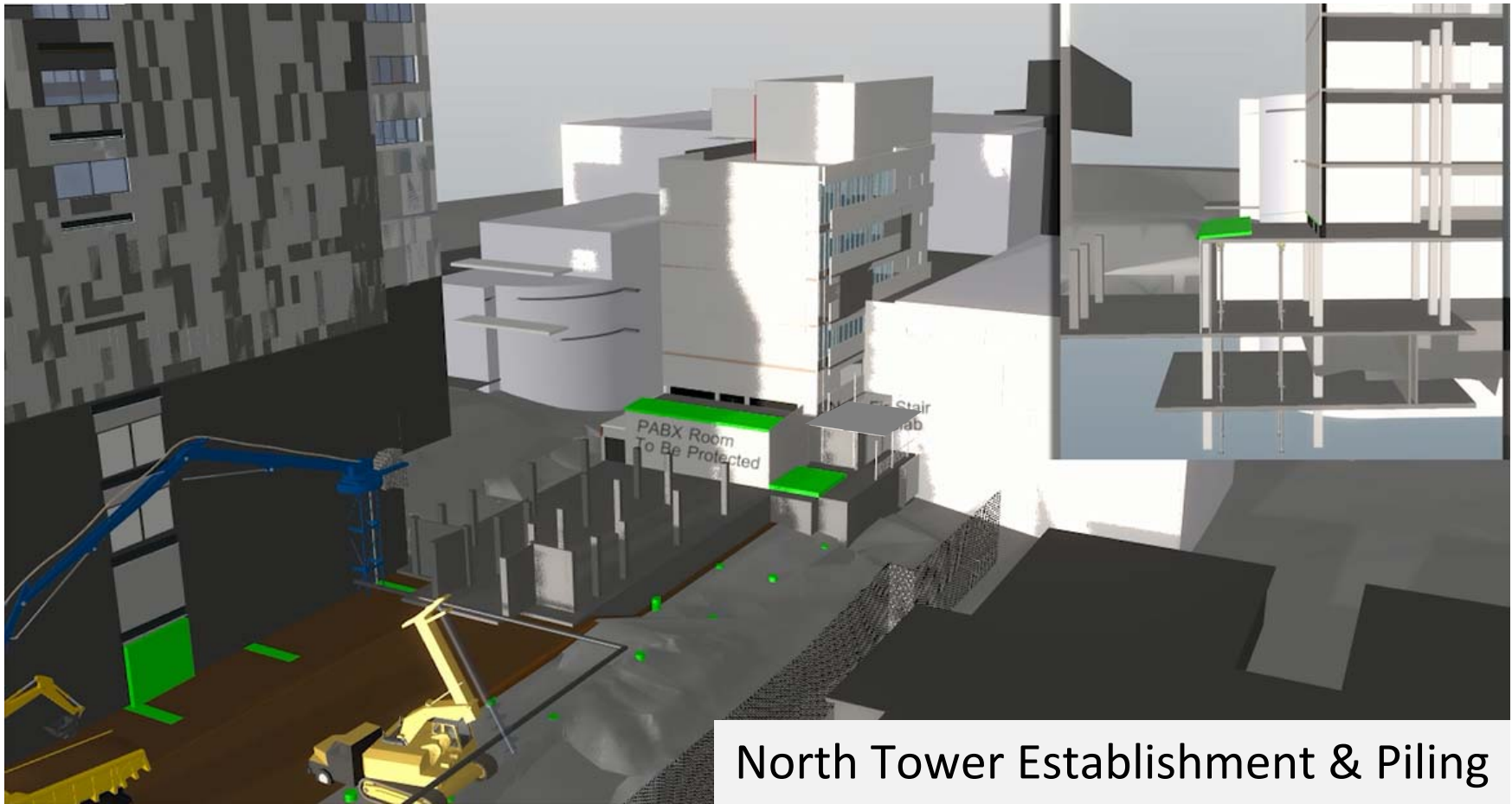
LISMORE BASE HOSPITAL - STAGE 3B2

Procurement Schedule - North Tower

Revision: Rev 1.0

Trade Package No.	Trade Package Description	Trade Type	JH Staff Member Responsible	Tenderers											
				Tenderer 1	Local X	Tenderer 2	Local X	Tenderer 3	Local X	Tenderer 4	Local X	Tenderer 5	Local X	Proposed Tenderer	Local X
Trade Preliminaries															
1	Final Clean	Subcontract	John Ellemor	SEQ Cleaning		Professional Builders Cleans (PBC)		Robrand		Pickwick					
2	Scaffolding	Subcontract	John Ellemor	Accrow		Ballina Scaffolding	x	WACO Kwikform				Ballina Scaffolding	x		
3	Tower Crane	Subcontract	John Ellemor	Lindores Const Logistics		Titan Cranes		BJS Labour Hire				Lindores Const Logistics	x		
4	Materials Hoist	Subcontract	John Ellemor	Lindores Const Logistics		Titan Cranes		BJS Labour Hire		Electrorig					
Material Supply															
5	Reinforcement Supply	Supply Agreement	John Ellemor	Neumann Steel		ARC		Onesteel Reinforcing				Neumann Steel			
6	Door & Frames - Supply	Supply Agreement	John Ellemor	CPD		Spence Doors		Ikon Doors							
7	Door Hardware - Supply	Supply Agreement	John Ellemor	John Barnes		SPL		Condon Hardware	x	Able Locksmiths					
8	Concrete Supply	Supply Agreement	John Ellemor	Hanson	x	Holcim	x	Boral	x			Hanson	x		
Services															
9	Hydraulics and Gas Service	Subcontract	John Ellemor/ Mark Mosely	Laser Plumbing Lismore	x	Loqix Plumbing		JRK		Christopher Contracting		Beavis & Bartels		Laser Plumbing Lismore	x
10	Electrical / Communication Services	Subcontract	John Ellemor/ Mark Mosely	LCE		Electrotech		Fredon QLD PTY LTD		RDE Electrical		Star Electrical		Star Electrical	
11	Mechanical Services / BMS	Subcontract	John Ellemor/ Mark Mosely	Climatech		HVAC		VAE		AG Coombs				VAE	
12	Pneumatic Tube	Subcontract	John Ellemor/ Mark Mosely	Lamson										Lamson	
13	Fire Service - Wet	Subcontract	John Ellemor/ Mark Mosely	Ultrasafe Fire		P&R Fire		OHP		National Fire (Tyco)				OHP	
14	Fire Service - Dry	Subcontract	John Ellemor/ Mark Mosely	Kelso Services	x	Micro Fire		Premier Fire		National Fire (Tyco)		GM Fire		GM Fire	
15	Lift Services	Subcontract	John Ellemor/ Mark Mosely	OTIS		Kone Lifts		Schindler							
16	Medical Gases	Subcontract	John Ellemor/ Mark Mosely	Hoslab		BOC								Hoslab	
Trade Packages															
17	Formwork	Subcontract	John Ellemor	Wideform Pty Ltd		Heinrich		Adcon (Ballina)	x	Bosform		SEQ Formwork		Bosform	
18	Piling	Subcontract	John Ellemor	Anora Piling										Anora Piling	
19	Brickwork and Blockwork	Subcontract	John Ellemor	Able Blocklaying		La Spina		FUGEN	x	Priest & Co		Gava	x		
20	Reinforcement Fix	Subcontract	John Ellemor	Reoforce		Reo Pro (GC)		IPR Contracting						Reoforce	
21	Civil Works	Subcontract	John Ellemor	Valley Earthworks	x	Manly Concrete		Holmes	x	Kenny Constructions		Penguin			
22	Detailed Excavation	Subcontract	John Ellemor	Valley Earthworks	x	Manly Concrete		Mark Bradford (ex Remo)		Kenny Constructions		Penguin			
23	Structural Steelwork	Subcontract	John Ellemor	Beenleigh Steel		MC Engineering		Central Engineering		Sencova Steel		Mulherin		Mulherin	
24	Structural Facade Framing (Façade package)	Subcontract	John Ellemor	Skypanel											
25	External Facade Glazing	Subcontract	John Ellemor	GJames	x	GGA		QLD Facades							
26	Concrete Place and Finish	Subcontract	John Ellemor	Manly Concrete		Mark Bradford (ex Remo)		Kenny Constructions		Penguin		Lion			
27	Concrete Pumping	Subcontract	John Ellemor	Specialised Concrete Pumping		Meales		Pro Pump							
28	External Tanking and Waterproofing	Subcontract	John Ellemor	Ron Hudd Building Services		Spanos		Commercial Waterproofing (GC)		Poseidon		BWS (GC)			
29	Metalwork	Subcontract	John Ellemor	Purnell Metalworks	x	Metal Matrix									
30	External Facade Cladding	Subcontract	John Ellemor	Skypanel		A Clad		QLD Facades		Starline					
31	Post Tensioning	Subcontract	John Ellemor	Freyssinet		Aus PT		Structural Systems		Tensioned Concrete		Aust Prestressing Services		Freyssinet	
32	Internal Glazing	Subcontract	John Ellemor	GJames	x	GGA		QLD Facades		Fitout Glass					
33	Ceilings, Partitions	Subcontract	John Ellemor	Auzline		Starline Interiors		Suncoast Linings		Greenline		Interior Works			
34	Metal Roofing and Cladding	Subcontract	John Ellemor	Havendeen Roofing		Coastal Roofing	x	Laser Plumbing Lismore	x						
35	Roof Access Safety System	Subcontract	John Ellemor	Havendeen Roofing		Coastal Roofing	x	Laser Plumbing Lismore	x						
36	Stainless Steel Benches	Subcontract	John Ellemor	Purnell Fabrications	x	Metal Matrix		Stoddart							
37	Cabinets & Joinery	Subcontract	John Ellemor	Bradco Joinery		Value Joinery		Sun Joinery		Mayneline					
38	Floor Toppings & Waterproofing	Subcontract	John Ellemor	Modern Flooring		PKF		Master Floor Systems							
39	Carpet, Vinyl and Rubber Flooring	Subcontract	John Ellemor	Modern Flooring		PKF		Master Floor Systems							
40	Painting and Applied Finishes	Subcontract	John Ellemor	Premier 3D	x	Usher & Sons		Total Contract Services		Amalgamated Painting					
41	Louvres and Grilles	Subcontract	John Ellemor	GJames	x	GGA		QLD Facades							
42	FFE Supply and Install (include Mirrors, Mis Hardware)	Subcontract	John Ellemor	Various											
43	Wall & Door Protection, Handrails, Crash Guards & Corner Guards	Subcontract	John Ellemor	Modern Flooring		Architectural Protection Systems									
44	Curtains and Blinds	Subcontract	John Ellemor	KWA Blinds		Quicksew		GWJ							
45	Signage	Subcontract	John Ellemor	Wood & Wood Signs		Best Signs		FX Signs	x						
46	Workstations & Pedestals	Subcontract	John Ellemor												
47	Landscaping	Subcontract	John Ellemor	Office Warehouse		Schiavello									
48	Medical Pendants	Subcontract	John Ellemor	Penfold Projects		Naturelink		Boyd's Bay							
49	Faraday Cages	Subcontract	John Ellemor	Drager											
50	Roller Shutters and Grilles	Subcontract	John Ellemor	Faraday		ACEPT									

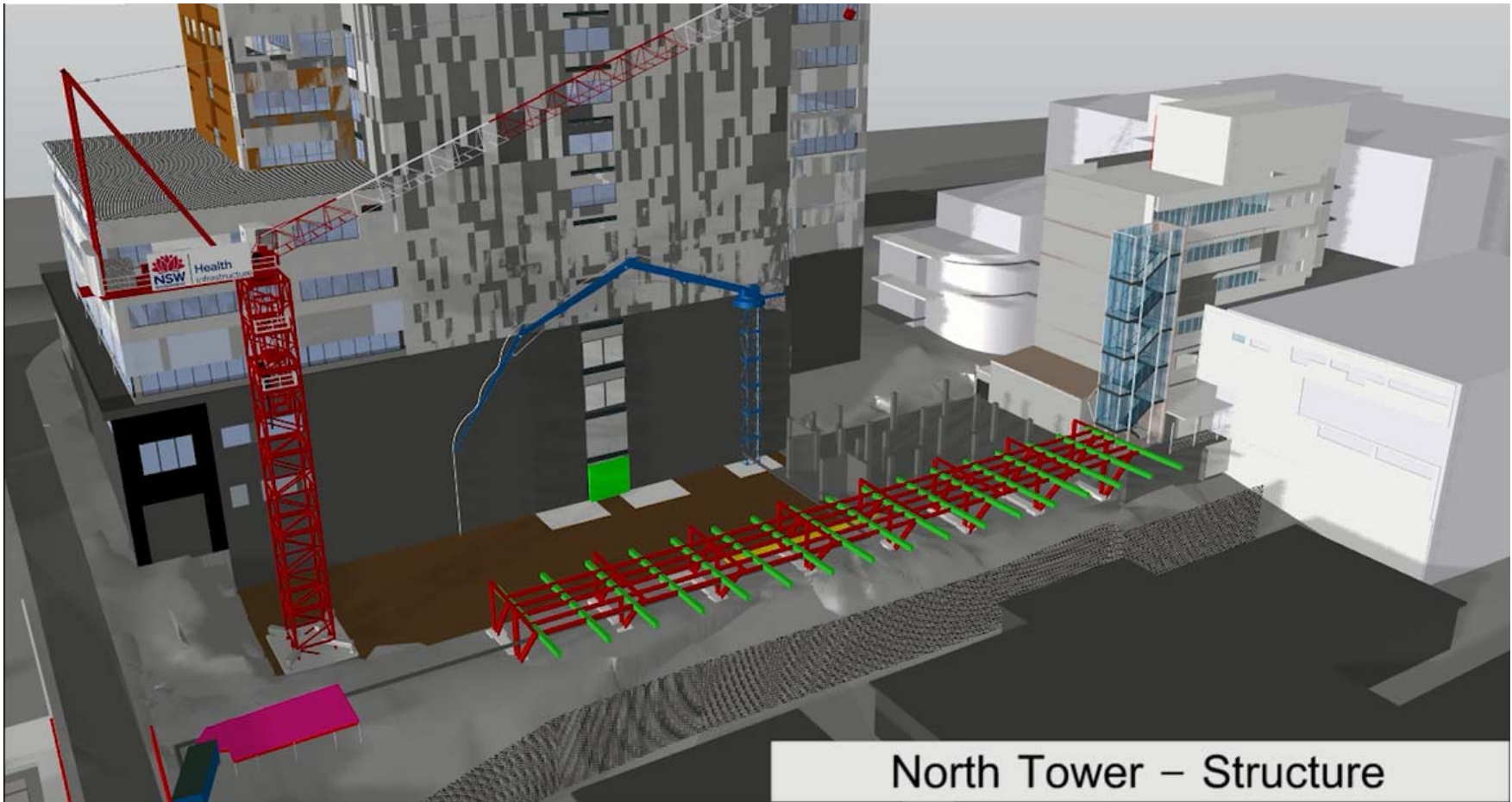
Appendix O Construction Methodology Plans



North Tower Establishment & Piling

North Tower Establishment & Piling

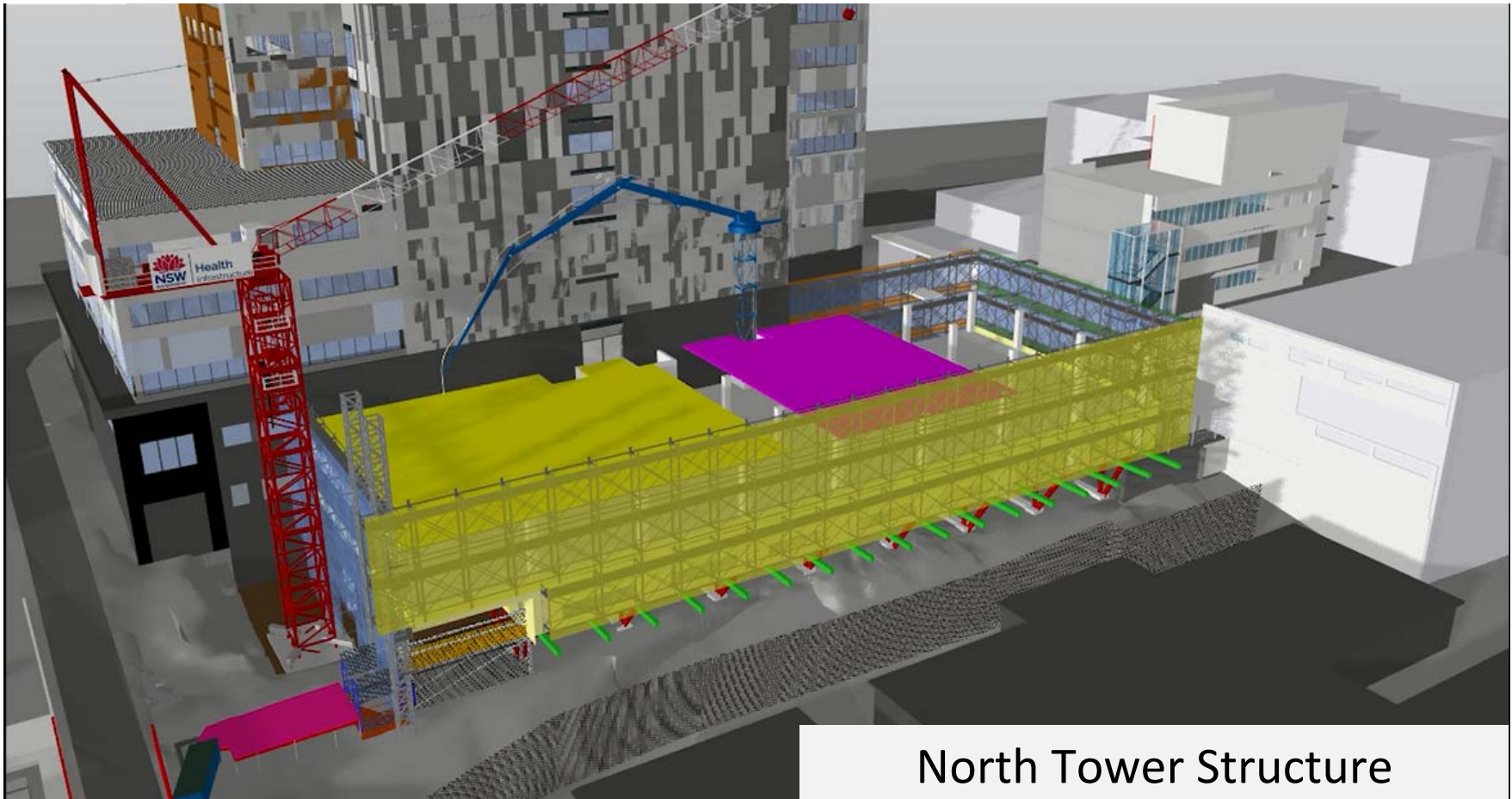
- Establishment of Traffic Control Plan on Little Uralba Street as approved by LCC
- Erection of static line concrete pump
- Bored piling works along existing shotcrete batter to mitigate vibration and noise
- Installation of structural footings, in ground services & civil works
- Lift base excavation
- Fire egress routes will be maintained from South tower in the event of an emergency
- Any operational or service disruption will be managed via the Disruption Notice process



North Tower – Structure

North Tower Structure Works

- Installation of electric Luffing tower crane (Collision avoidance technology utilised, No loads to be slewed over mental health or block E)
- HLS operations will cease during all construction hours (crane left in wind-vane mode overnight allowing HLS operation outside of construction hours)
- Erection of level 3 structural steel
- Form, Reinforcement place and pour of level 3 ground slab (East to West) - delayed and poured later in structure program
- Engineered temporary bracing system to be installed from structural steel back to ground slab
- Scaffold to Northern façade installed (engineered sign off)
- Materials hoist erected at level 3 ramp
- Fire egress routes will be maintained from South tower in the event of an emergency
- Any operational or service disruption will be managed via the Disruption Notice process



North Tower Structure

North Tower Structure Works

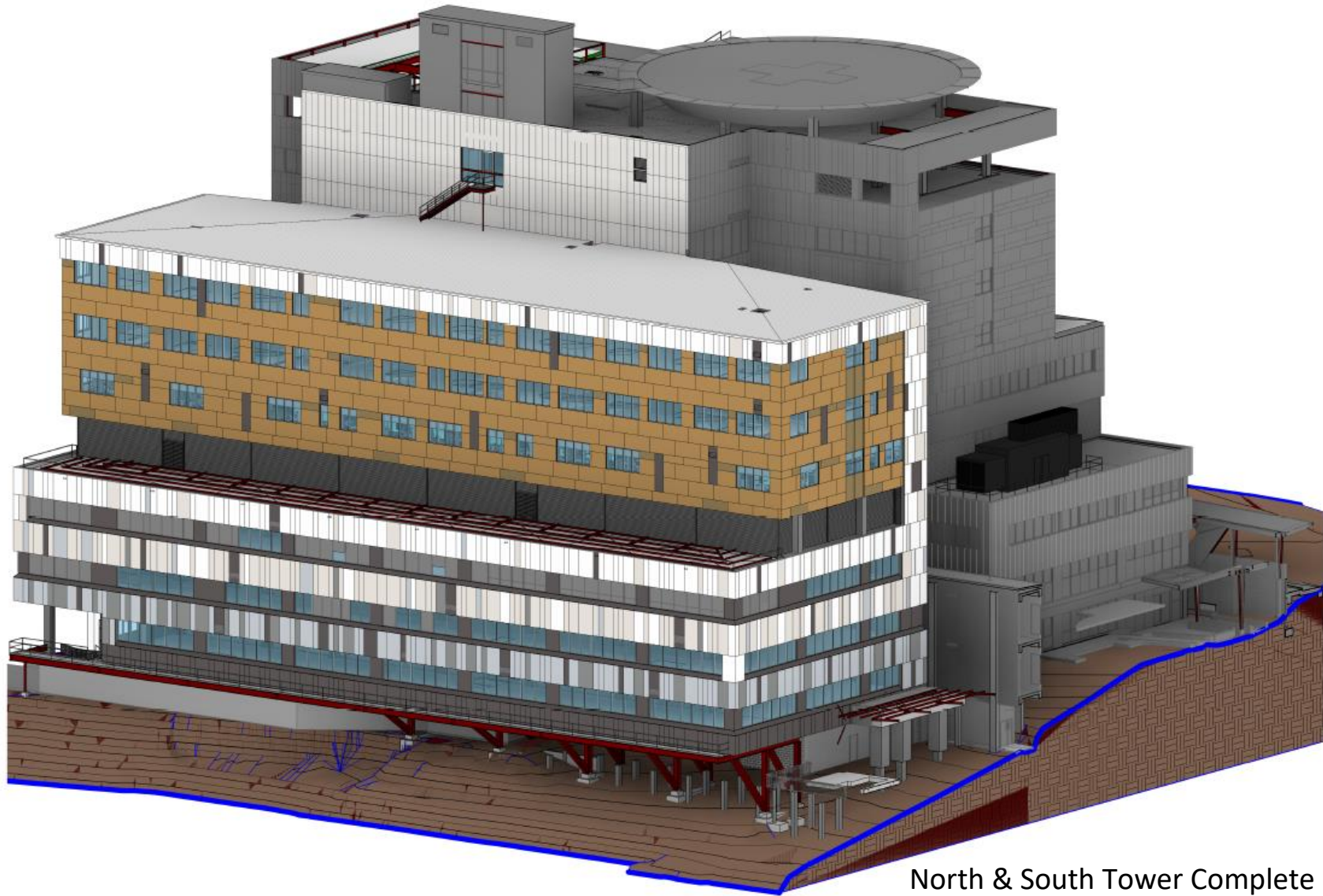
- Typical level sequence of works
- Erection of Layher scaffold system to encapsulate construction (one level lift)
- Erection of structural steel (one level lift) and brace back to suspended slab
- Form, reinforcement place & pour concrete columns & lift shafts (West to East)
- Form, reinforcement place & pour suspended slab
- Repeat to level 11
- Fire egress routes will be maintained from South tower in the event of an emergency
- Any operational or service disruption will be managed via the Disruption Notice process

North Tower Roof & Façade

- Form, reinforcement place & pour lift overruns
- Erect roof structural steel above level 11 slab
- Complete roof sheeting
- Commence façade installation (Leaving out panels for scaffold ties)
- Remove scaffold one level completing façade panels when ties removed
- Continue sequence until scaffold removed
- Fire egress routes will be maintained from South tower in the event of an emergency
- Any operational or service disruption will be managed via the Disruption Notice process

North Tower Fit out

- All materials delivered to site compound (Traffic Control Plan on Little Uralba Street as approved by LCC)
- Materials manoeuvred to site via Telehandler and transported vertically via material hoist or tower crane
- **Typical level sequence of works -**
- Services rough-in, Fit out & commissioning (working West to East, level 3 to 10)
- Completion of civil works
- Fire egress routes will be maintained from South tower in the event of an emergency
- Any operational or service disruption will be managed via the Disruption Notice process



North & South Tower Complete

Appendix P Major Plant & Equipment

The Major Plant and Equipment for phases of the project are:

North Tower structure and fitout:

- Mobile cranes, range from 20 tonne to 350 tonne
- Scaffold – perimeter and mobile as required
- Man and materials Hoist for tower fitout
- Horizontal materials movement via Franna's, Manitou and Forklifts
- Temporary hoarding, fencing, vehicle barriers
- Temporary site amenities and facilities
- Elevated work platforms: Scissor, knuckle booms, etc.
- Delivery trucks: Semi trailers, flat beds, vans, etc
- Excavators ranging from 5T to 25T
- Mobile concrete pump and concrete trucks
- Tower crane: electric luffing
- Satellite concrete pump
- Formwork including core box and shutters