

Major building works – Schedules of Hold Points and Witness Points

Project information

Project Number: _____

RTF Number: _____

Project title:

Superintendent:

Name: _____

Phone number: _____

Contact person (Project Manager/Officer):

Name: _____

Phone number: _____

Schedule 1 – Hold Points

SCHEDULE 1 – HOLD POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
01 GENERAL REQUIREMENTS				
GENERAL REQUIREMENTS - Contractor submissions - As-constructed drawings - Provision of As Constructed drawings is a condition precedent to Practical Completion.	#.6.4			
GENERAL REQUIREMENTS - Contractor submissions – Building Permits - Provide a copy of any required Section 40 Structural Certificate, and of any required Building Permit, before works commence.	#.6.8			
GENERAL REQUIREMENTS - Contractor submissions – Building Occupancy Certification - Provide a copy of any required Occupancy Permit or Certificate as soon as possible after it is issued. Provision of the Occupancy Permit or Certificate is a condition precedent to Practical Completion	#.6.9			
GENERAL REQUIREMENTS - Contractor submissions – Handover - Provide the information detailed below. The following requirements are conditions precedent to Practical Completion. Final Payment will not be processed if all the required information is not provided. Before Practical Completion provide: <ul style="list-style-type: none"> An electronic copy of the as constructed drawings. Detailed requirements are shown in the As-constructed drawings sub-clause. A list of plant and equipment installed as part of the project. Include the following details: <ul style="list-style-type: none"> Make – Model - Year of manufacture – Capacity - Location. Details of the maintenance and servicing regime that will be undertaken under this Contract during the defects liability period. Provide a servicing schedule for each item of plant and equipment which will be serviced and maintained under this Contract during the defects liability period. Electronic copies of the operation manuals and maintenance manuals for the items of plant, equipment, and ancillary components, provided, and/or installed, and/or supplied, under this Contract. Electronic copies of warranties for the items of plant, equipment, and ancillary components, provided, and/or installed, and/or supplied, under this Contract. Warranties are to be in the name of the Principal. Electronic copies of warranties for the installation, connection, and commissioning, of the items of plant, equipment, and ancillary components, provided, and/or installed, and/or supplied under this Contract. Warranties are to be in the name of the Principal. Provision of these docs will be required before final payment can be processed, and, if required, final certificate issued.	#.6.10			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
GENERAL REQUIREMENTS – Contractors Submissions – Maintenance during the defects liability period - Fulfill the requirements, and provide the information, detailed below. Provide maintenance services in respect to the provided plant and equipment. Provide regular maintenance services as required by manufacturer's warranty requirements and in accordance with any approved operation and maintenance manuals. Provide mandatory maintenance service reports required to meet legislative and regulatory requirements, and as required under the contract. During the maintenance period, and during the defects liability period, carry out periodic inspections and maintenance work as recommended by manufacturers of supplied equipment, and promptly rectify faults. Attend emergency calls promptly. During the maintenance period, and during the defects liability period, carry out required maintenance, inspections and tests. Comply with authority requirements, the National Construction Code of Australia, referenced documents, approved operation and maintenance manuals, and as required in other worksections in these specifications.	#.6.11			
GENERAL REQUIREMENTS - Volatile substances management Provide details of the volatile substances proposed to be brought in to the area(s) subject to Volatile Substance Abuse Management Plan(s) and provide details of the proposed methods for complying with the requirements of any applicable Volatile Substance Abuse Management Plan(s). This clause is applicable only in areas where Volatile Substance Abuse Management Plan(s) are in place	#.9			
GENERAL REQUIREMENTS - Camp site/compound/workshop Obtain written permission from the owner or lessee of the land.	#.10			
GENERAL REQUIREMENTS - Safety - Work health and safety management plan - If the Act requires it, provide a Work Health and Safety Management Plan within 14 calendar days of award of the contract. Do not commence works until the Superintendent has advised that the Work Health and Safety Management Plan may be used.	#.11.1			
GENERAL REQUIREMENTS - Materials and components - Project modifications - Advise the Superintendent of any activities that supplement, or are contrary to, the recommendations of the manufacturer or supplier before undertaking that non-conforming work.	#.12.3			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
02 DEMOLITION				
DEMOLITION - Materials and components - Hazardous materials Give notice to the Superintendent immediately if any hazardous materials or conditions are found.	#.3.1			
03 GROUNDWORKS				
GROUNDWORKS - Rock or bad ground - Immediate notice: If rock or bad ground is encountered, advise the Superintendent immediately and obtain instructions before carrying out any further work in the area.	#.4			
GROUNDWORKS - Existing services – Excavation - Do not excavate by machine within 1 m of existing underground services without approval from the Superintendent.	#.6.3			
GROUNDWORKS - Excavation – Explosives - Do not use explosives unless approval has been granted by the Superintendent.	#.9.6			
GROUNDWORKS - Excavation – Explosives - Provide evidence of the following to the Superintendent before transporting any explosives to the work site: <ul style="list-style-type: none"> • Licence to carry and store explosives • Vehicle licensed to carry explosives • Shot firer's certificate. 	#.9.6			
GROUNDWORKS - Excavation – Explosives - Inspect and record the condition of all structures and services subject to possible effect by use of explosives before carrying out any blasting operations. Provide the report to the Superintendent before carrying out any blasting operations.	#.9.6			
04 TERMITE CONTROL				
TERMITE CONTROL - Reticulation system - Reticulation design: Provide a detailed reticulation plan to the Superintendent for approval. Include on the plan the proposed locations of the feeder manifolds and injector points.	#.6			
05 CONCRETE				
CONCRETE - Contractor submissions - Sawn joints - Submit for information the proposed methods, timing and sequence of sawing.	#.5.1			
CONCRETE - Embedded items - Placing and fixing - Fix cores and embedded items to prevent movement during concrete placing. Obtain approval before cutting reinforcement or displacing reinforcement from its required location.	#.12.1			
CONCRETE - Concrete - Ready mixed supply - To AS 1379: Sampling and Testing of Concrete section. Nominate the slump and mix proportions prior to supplying any concrete. These values will be used for acceptance or rejection of concrete on site.	#.13.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
CONCRETE - Concrete - Hot weather placing - Mixing: Do not mix concrete when the outdoor shade temperature on the site exceeds 38°C, unless otherwise approved by Superintendent and then only subject to such conditions as may be imposed.	#.13.4			
CONCRETE - Joints - Construction joints - Joint preparation: Obtain approval for proposed construction joints which are not shown on the drawings.	#.18.1			
06 STRUCTURAL STEEL				
STRUCTURAL STEEL - Contractor's submissions - Shop drawings - Before commencing manufacturing components submit shop drawings to the Superintendent showing the following information: <ul style="list-style-type: none"> Relevant details of each assembly, component and connection. Specification for, or details regarding the fabrication, surface treatment, transport and erection of the components. Temporary works, such as lifting lugs, temporary cleats and bracing, which are required for the transportation and erection of the structural steelwork. 	#.3.1			
STRUCTURAL STEEL - Construction generally - Availability If steel members are not available in the required section, grade or length, submit full details of proposal including location of proposed splices or joints and their fabrication details to the Superintendent. Approval in writing from the project Structural Engineer and the Superintendent must be obtained, before substituting other sections or grades or splicing shorter lengths	#.5.1			
STRUCTURAL STEEL - Construction generally - Temporary connections - Do not attach cleats other than those shown on the approved shop drawings without approval from the Superintendent. Provide a report on Magnetic Particle Inspections (MPI) of the welds. Remove temporary cleats on completion and restore the surface.	#.5.5			
STRUCTURAL STEEL - Construction generally - Enlargement of bolt holes - Do not hand flame cut or otherwise enlarge any bolt holes or slots, without approval.	#.5.6			
STRUCTURAL STEEL - Welding - Approval of the weld procedure specification - The Superintendent must approve the Weld Procedure Specification (WPS) prior to commencement of any welding.	#.6.1			
STRUCTURAL STEEL - Bolting - Anchor bolts - Masonry anchors: If masonry anchors are required or proposed for the support or fixing of structural steel, submit details to the Superintendent of the anchors' capacities to carry the loads. Do not use unless approved by the Structural Engineer. Provide documentary evidence of this approval.	#.7.4			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
STRUCTURAL STEEL - Protective coatings – Inspector - Provide the name and qualifications of the inspector prior to commencement of work.	#.8.1			
07 LIGHT STEEL FRAMING				
LIGHT STEEL FRAMING - Roof trusses - Roof truss shop drawings - Submit shop drawings <ul style="list-style-type: none"> stating that the trusses have been designed to AS/NZS 4600 for the span, spacing, and loading; showing on an elevation view drawing the size and section type of each member; and specifying the method of assembly, fixing, tying, and bracing 	#.7.1			
08 MASONRY				
MASONRY - Samples - Masonry unit samples - Submit four face units of each type illustrating the range of variation available. <i>[Use only as required for unpainted face work.]</i>	#.3.1			
MASONRY - Samples - Facework sample panels - Incorporation: Sample panels of facework may be permitted to be incorporated into the works at the discretion of the Superintendent, otherwise remove all traces on completion.	#.3.2			
MASONRY - Materials and components - Mortar additives - Do not use additives in the mortar unless approved by the Superintendent.	#.4.5			
MASONRY - Materials and components - Coloured mortar - Submit samples of coloured mortar for approval by the Superintendent.	#.4.6			
MASONRY - Materials and components - Premixed mortar - Do not use premixed mortar unless approved by the Superintendent.	#.4.7			
MASONRY - Materials and components - Mortar damp proof course - Do not use a premixed mortar damp proof course unless prior approval has been obtained.	#.4.9			
MASONRY - Construction generally - Cleaning - If acid cleaning is intended, submit a proposal to the Superintendent, including SDS for products proposed to be used.	#.5.1			
MASONRY - Reinforced masonry - Cleaning core holes - Notify the Superintendent when cleaning out is completed. Reinforcement may be placed in the cores prior to the inspection. Do not grout fill the cores until cleaning out and reinforcement have been inspected and approved.	#.11.4			

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09 WOODWORK				
WOODWORK - Roof trusses - Shop drawings - Submit shop drawings showing the following: <ul style="list-style-type: none"> • Arrangement of trusses. • Location of the trusses in the building. • Loading parameters and bracing lengths assumed in the design. • Species, stress grade, strength group and joint group of timber. • Size of each member. • Tolerance on member sizes. • Joint details including connector plates. • Lifting points. • Method of fixing and bracing. • Preservative treatment, if any. • Long term deflection. 	#.10.3			
WOODWORK - Roof trusses - Shop drawings - Certification: Provide with the shop drawings certification of the structural sufficiency of the truss and roof design supplied on a completed NT Building Act Section 40 Certificate of Compliance form.	#.10.3			
12 INSULATION, SARKING, AND PLIABLE MEMBRANES				
INSULATION, SARKING, AND PLIABLE MEMBRANES - Inspection – Notice - Give 1 days' notice to the Superintendent for inspection of the vapour barrier system after 2 runs of lapped foil is installed.	#.2.1			
INSULATION, SARKING, AND PLIABLE MEMBRANES - Inspection – Notice - Give sufficient notice so that the sarking, vapour barrier and insulation can be inspected before it is covered up or concealed.	#.2.1			
13 WINDOWS				
WINDOWS - Contractor's submissions - Shop drawings - Submit shop drawings to the Superintendent; showing the following information a minimum of 14 days prior to ordering materials. <ul style="list-style-type: none"> • Layout (sectional plan and elevation) of the window assembly. • Full size sections of members. • Methods of assembly. • Methods of installation, including fixing, caulking and flashing. • Provision for vertical and horizontal expansion. • Junctions and trim to adjoining surfaces. • Hardware, fittings and accessories including fixing details. • Lubrication requirements. • Glazing details, include the following: <ul style="list-style-type: none"> ○ Rebate depth ○ Edge restraint 	#.3.1			

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<ul style="list-style-type: none"> ○ Clearances and tolerances ○ Glazing gaskets and sealant bead. ● Fall protection to openable windows requiring fall protection to AS 5203. <p>Requirement: Supply, with the shop drawings, calculations and a certificate signed by a practicing structural engineer, indicating that the entire assembly when installed as detailed, complies with the requirements of AS/NZS 1170.2, AS 1288, and AS 2047. The Certificate shall state the design criteria used, and that the installation is in accordance with the Contract documents.</p>				
14 GLAZING				
<p>GLAZING - Contractor submissions - Shop drawings -</p> <p>Requirement: Submit shop drawings if requested by the Superintendent showing the following:</p> <ul style="list-style-type: none"> ● Method of glazing ● Rebate depth. ● Edge restraint. ● Clearances and tolerances. ● Glazing gaskets and sealant beads. 	#.2.3			
<p>GLAZING - Glazing – Installation - Site glazing: If site glazing is intended, submit proposals before manufacturing frames.</p>	#.4.2			
17 SUSPENDED CEILINGS				
<p>SUSPENDED CEILINGS - Construction generally - Ceiling grid -</p> <p>Obtain approval of the set out before commencing the installation.</p>	#.7.1			
24 RESILIENT FINISHES				
<p>RESILIENT FINISHES - Substrate - Moisture content - Concrete substrates: Test concrete substrates for dryness by the hygrometer test method described in AS 1884 Testing for Moisture Content in Subfloors appendix and the values in Testing Procedures section, Concrete Subfloors clause Relative humidity surface mounted insulated hood test sub-clause have been obtained. Submit test results to the Superintendent.</p>	#.5.2			
25 CARPETS				
<p>CARPETS - Substrate - Moisture content - Concrete substrate: Test concrete substrate for dryness by the hygrometer test method to AS 2455.1, Determining the moisture content and alkalinity of concrete subfloors appendix and values in Default moisture content (RH %) and alkalinity (pH) values for concrete subfloors clause have been obtained. Submit test results to the Superintendent.</p>	#.5.3			

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26 PAINTING				
PAINTING - Materials and components - Paint manufacturer - Prior to placing orders provide a list showing the brand of the paint proposed for use and the trade names of the paint types referred to by generic type and APAS specification number in the painting schedule.	#.4.3			
PAINTING - Materials and components – Delivery - Submit copies of invoices receipts or delivery dockets showing brands, quality and quantities of paints and colour(s).	#.4.5			
PAINTING - Painting - Inspection test plans (ITPs) - Submit ITPs before commencing painting or substrate preparation.	#.5.2			
PAINTING - Painting – Spraying - Obtain prior approval for spray painting.	#.5.12			
28 STORMWATER				
STORMWATER - Tests – Notice - Give sufficient notice so that inspection may be made during hydrostatic tests.	#.3.1			
STORMWATER - Tests - Hydrostatic tests - Before backfilling or concealing, carry out the following tests to AS/NZS 3500.3 Section 9, Site Testing. <ul style="list-style-type: none"> Downpipes within buildings: Air or water pressure test. Site stormwater drains and main internal drains: Air or water pressure test. Rising mains from pumped discharge: Water pressure test. If leaks are found, rectify and re-test. Submit all test results to the Superintendent.	#.3.2			
STORMWATER - Contractor's submissions - Work-as-executed drawings - Submit drawings showing the as installed locations of pipes, fittings, pits, inspection openings and equipment. Show the depth of underground pipe-work.	#.4.1			
STORMWATER - Subsoil drains - Laying and backfilling - Obtain Superintendent's approval of the pipe installation before backfilling.	#.11.9			
29 SANITARY SERVICES				
SANITARY SERVICES - Tests – Notice - Give sufficient notice so that inspection may be made during hydrostatic tests.	#.3.1			
SANITARY SERVICES - Tests - Hydrostatic tests - Before backfilling or concealing fill the piping with water and test to AS 3500.2 Section 15, at the required pressure and duration. If leaks are found, rectify and re-test. Submit all test results to the Superintendent.	#.3.2			
SANITARY SERVICES - Contractor's submissions - Work-as-executed drawings - Submit drawings showing the as installed locations of pipes, fittings, pits, inspection openings, fixtures and equipment. Show the depth of underground piping.	#.4.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
SANITARY SERVICES - Sanitary plumbing - Building penetrations - Limitations: Unless prior approval has been given by the Superintendent do not penetrate: <ul style="list-style-type: none"> Existing structural members including external walls, fire walls, floor slabs and beams; or Membrane elements including damp-proof courses, or waterproofing membranes. 	#.9.2			
SANITARY SERVICES - Sanitary plumbing - Building penetrations - Concrete building elements: Obtain approval from the Superintendent for the location of sleeves or core holes.	#.9.2			
SANITARY SERVICES - Access chambers – Construction - Obtain approval in writing from the Superintendent to use precast access chambers or inspection chambers. If given, approval will be to construct in accordance with Power and Water Corporation drawing number W2-2-02.	#.11.1			
SANITARY SERVICES - Access chambers - Testing of access chambers - Test in the presence of the Superintendent. Submit test results to the Superintendent.	#.11.4			
SANITARY SERVICES - Access chambers - Testing of access chambers / pipeline connection - Test in the presence of the Superintendent. Submit test results to the Superintendent.	#.11.5			
30 WATER				
WATER - Tests – Notice - Give sufficient notice so that inspection may be made of hydrostatic tests.	#.3.1			
WATER - Tests - Hydrostatic tests - Before insulation is applied to joints, pressure test piping to AS/NZS 3500.1 and AS/NZS 3500.4 as appropriate. If leaks are found, rectify and re-test. Submit all test results to the Superintendent.	#.3.2			
WATER - Contractor's submissions - Work-as-executed drawings - Submit drawings showing the as installed locations of pipes, fittings, tanks, water heaters, control valves and accessories. Show the depth of underground piping.	#.4.1			
WATER - Pipework installation - Building penetrations - Limitations: Unless prior approval has been given by the Superintendent do not penetrate: <ul style="list-style-type: none"> Existing structural members including external walls, fire walls, floor slabs and beams; or Membrane elements including damp-proof courses, or waterproofing membranes. 	#.7.3			
WATER - Pipework installation - Building penetrations - Concrete building elements: Obtain approval from the Superintendent for the location of sleeves or core holes.	#.7.3			

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31 LP GAS				
LP GAS - Tests - Pressure tests - Pressure test pipes to AS/NZS 5601.1 before any pipes are buried, concealed or built in and before any appliances are connected, and before commissioning any part of the installation. Submit test results to the Superintendent for conformance.	#.4.1			
LP GAS - Contractor's submissions - NT Worksafe notification - Submit a notification of commencement of gas works to NT WorkSafe at least 24 hours before commencement of installation works.	#.5.1			
LP GAS - Contractor's submissions - Work-as-executed drawings - Submit drawings showing the as installed locations of pipes, fittings, control valves and accessories. Show the depth of underground piping.	#.5.2			
LP GAS - Contractor's submissions - Certificates of compliance - Submit certificates from the manufacturer stating that the appliances meet AGA/ALPGA approval for operation with the type of gas to be used before installing the appliances.	#.5.3			
LP GAS - Installation - Building penetrations - Limitations: Unless prior approval has been given by the Superintendent do not penetrate: <ul style="list-style-type: none"> Existing structural members including external walls, fire walls, floor slabs and beams; or Membrane elements including damp-proof courses, or waterproofing membranes. 	#.7.6			
LP GAS - Installation - Building penetrations - Concrete building elements: Obtain prior approval by the Superintendent for the location of sleeves or core holes.	#.7.6			
LP GAS - Compliance plate - Install a compliance plate and provide a Certificate of Approval prior to practical completion.	#.12			
32 GENERAL ELECTRICAL REQUIREMENTS				
GENERAL ELECTRICAL REQUIREMENTS - Quality - Obtain written approval from the Superintendent before: <ul style="list-style-type: none"> Manufacture of switchboards. Confirmation of orders for luminaires. Manufacture/procurement of generator. Engaging fuel installation contractor 	#.2			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - As-constructed drawings - Prior to practical completion submit work-as-executed drawings showing the as installed location of electrical cables, services and equipment including the depth of underground cables, in relation to permanent site features and other underground services.	#.4.2			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - Authority approvals - Submit shop drawings for main switchboards to Power and Water Corporation for approval prior to manufacture of the main switchboard.	#.4.3			

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33 WIRING AND ACCESSORIES				
WIRING AND ACCESSORIES - Movement detector switching - Movement detectors - Obtain the approval of the Superintendent for the final locations.	#.16.1			
34 GENERATORS				
GENERATORS - Contractor's submissions - As-constructed drawings - Prior to practical completion submit as-constructed drawings.	#.2.4			
GENERATORS - Completion - On-site commissioning - Give sufficient notice so that on-site commissioning can be witnessed. The on-site commissioning tests shall include: <ul style="list-style-type: none"> Coordinated Power Failure Test. The test shall be a simulation of power failure by isolation of the normal power supply to the site. One hour's operation on site load to test the correct operation of the governor, electrical controls and operation of all instruments and controls. Operation of associated automatic transfer switch and contactors in the electrical distribution system. Record time delays for the engine starting, coming on line, coming off line and run on. Record generator readings for temperature and pressure at 15 minute intervals. Return normal supply. 	#.6.3			
36 PHOTOVOLTAIC INSTALLATIONS				
PHOTOVOLTAIC INSTALLATIONS - Contractor's submissions - Shop drawings - Submit shop drawings, to a scale that best describes the detail, showing the following: <ul style="list-style-type: none"> General arrangement of equipment. Single line schematic showing the interconnection with the building electrical system. Access clearances for operational maintenance and dismantling. Electrical single line diagram and general arrangement for the complete system. Control diagrams. Support details. 	#.2.2			
PHOTOVOLTAIC INSTALLATIONS -Contractor's submissions – Certification - Provide a copy of the NT Building Act Section 40 Structural Certificate of compliance and a copy of the Permit to Build before commencing works.	#.2.3			
PHOTOVOLTAIC INSTALLATIONS -Contractor's submissions – Technical data - Submit technical data including the following: <ul style="list-style-type: none"> Technical description and specifications of each component including technical data sheets for all nominated equipment. Single line diagrams showing all equipment connections, 	#.2.4			

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quantities and equipment models. <ul style="list-style-type: none"> • PV string and array arrangement on rooftop & inverter location. • Calculations and assumptions for all selections and systems. • Type test reports. 				
PHOTOVOLTAIC INSTALLATIONS -Completion - Operation and maintenance manuals - Submit all operational and maintenance documentation necessary to operate & maintain the systems installed.	#.12.2			
PHOTOVOLTAIC INSTALLATIONS -Completion - Work-as-executed drawings - Submit drawings of the systems as installed.	#.12.3			
37 UNINTERRUPTIBLE POWER SUPPLY (UPS)				
UNINTERRUPTIBLE POWER SUPPLY (UPS) - Contractor's submissions - Shop drawings - Submit shop drawings to a scale that best describes the detail, showing the following: <ul style="list-style-type: none"> • The UPS system general arrangement and layout with details of connections, circuit breakers, cable sizes, overall dimensions, weight, location of access doors, cable terminating locations, and necessary clearances. • Functional block diagram. • The general arrangement of the remote manual by-pass switch/cabinet and indication/alarm panel with details of installation requirements. • Type and rating of equipment items. • Battery layout and associated details. 	#.2.3			
38 SWITCHBOARDS				
SWITCHBOARDS - Contractor's submissions - Product data for proprietary assemblies - Submit shop drawings with the following for each item of equipment: <ul style="list-style-type: none"> • Type and model number • Location of item • Unique identifier (if any). • Overall dimensions • Fault level • IP rating • Rated current of components • Number of poles and spare capacity • Mounting details • Door swings • Paint colours and finishes • Access details • Schedule of labels 	#.3.4			
SWITCHBOARDS - Contractor's submissions - Shop drawings of custom-built assemblies - Do not proceed with manufacture of the switchboards without written approval from the Superintendent.	#.3.5			

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SWITCHBOARDS - Contractor's submissions - Shop drawings of custom-built assemblies - Submit shop drawings showing: <ul style="list-style-type: none"> Types, model numbers and ratings of assemblies. Component details, functional units and transient protection. Detailed dimensions. Shipping sections, general arrangement, plan view, front elevations and cross-section of each tier. Projections from the assembly that may affect clearances or inadvertent operation, such as handles, knobs, arcing-fault venting flaps and withdrawable components. Fault level and rated short circuit capacity characteristics. IP rating. Fixing details for floor or wall mounting. Front and back equipment connections and top and bottom cable entries. Door swings. External and internal paint colours and paint systems. Quantity, brand name, type and rating of control and protection equipment. Construction and plinth details, ventilation openings, internal arcing-fault venting and gland plate details. Terminal block layouts and control circuit identification. Single-line diagrams and control wiring diagrams. Details of mains and submain routes within assemblies. Busbar arrangements, links and supports, spacing between busbar phases, and spacing between assemblies, the enclosure and other equipment and clearances to earthed metals. Dimensions of busbars and interconnecting cables in sufficient detail for calculations to be performed to AS/NZS 3008.1.1. Location of MEN link, neutral and earth connection points. Internal separation and form of separation and details of shrouding of terminals. Labels and engraving schedules. 	#.3.5			
SWITCHBOARDS - Contractor's submissions - Protection grading study - <u>This hold point is only applicable if the project contains a design component. Protection grading studies must be undertaken by an engineer with the appropriate qualifications.</u> Submit a protection grading study from the point of supply to final sub circuits based on calculations using final submain and circuit lengths and final switchgear selections.	#.3.6			
SWITCHBOARDS - Contractor's submissions - Authority approvals - Submit shop drawings for main switchboards to Power and Water Corporation for approval prior to manufacture of the main switchboard.	#.3.7			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
SWITCHBOARDS - Custom-built switchboards - Approved manufacturers - Submit details of the switchboard manufacturer to the Superintendent for approval prior to manufacture of the switchboard.	#.6.3			
39 LUMINAIRES				
LUMINAIRES - Contractor's submissions - Shop drawings - Lighting: Submit shop drawings for the following: <ul style="list-style-type: none"> • Lighting columns. • Lighting column mounting bases. • Non-proprietary luminaires. • Non-standard fixing brackets. 	#.2.5			
40 COMMUNICATIONS				
COMMUNICATIONS - Inspection - Notice - Before Practical Completion as-built drawings to be provided. Refer to the Definitions clause, and to the As-constructed drawings clause, in GENERAL REQUIREMENTS worksection	#.2.1			
COMMUNICATIONS - Execution – Firestop - Submit certification paperwork for approval to the Superintendent for the proposed firestop system as part of the shop drawing process.	#.10.5			
COMMUNICATIONS - Completion - As built drawings - Submit to the Superintendent as built drawings inclusive of the following information: <ul style="list-style-type: none"> • Symbols and identifiers used in drawings shall conform to the symbols defined in AS 3085.1, Preferred Drafting Symbols for Indoor Infrastructure Diagrams, Outdoor Infrastructure Diagrams, and Indoor Infrastructure Diagrams appendices. • Drawings shall include the telecommunications cabling records and conform to Example of Telecommunications Cabling Record and Pro-Forma Cross-Connect Records appendices of AS 3085.1. • A floor plan showing details of the building name, floor and room numbers. • The cable type e.g. brand, type and/or impedance. • The outlet number. This should match the label applied during installation. • The outlet location. • The cable route, shown by a line on the drawing running from the source to destination. Include depth of laying for underground cables. • Spare space available on cable routes and cable tray sizes. • A brief note describing where cables pass through floors, ducts, etc. There should be a note for each type of area, e.g. 'Above ceiling' or 'in wall ducting'. All information shall be accurate showing all modifications as at commissioning.	#.14.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
42 FIRE DETECTION				
FIRE DETECTION - Contractor's submissions - Before or on practical completion, submit the following: <ul style="list-style-type: none"> An installer's statement and certificates in the form set out in AS 1670.1, Standard Form of Installer's Statement for Automatic Fire Detection and Alarm System appendix. A system commissioning statement in the form set out in AS 1670.1, System Commissioning Statement appendix. Sound pressure level measurements for each occupiable compartment and acoustically separate area as in AS 1670.1, Sound Pressure Level Measurement appendix. An electronic copy of the As-Installed drawings in PDF and in CAD format. 	#.2			
FIRE DETECTION – Commissioning – Hot smoke tests – Submit the hot smoke test procedure for approval.	#.26.3			
43 LIGHTNING AND SURGE PROTECTION				
LIGHTNING AND SURGE PROTECTION - Lightning and surge protection contractor submissions - Shop drawings - Submit layout drawings of the lightning protection system showing the following information: <ul style="list-style-type: none"> Details of the locations and types of joints, air and earth terminations. Alternative: If bonding strips are inappropriate, use smooth weaved copper cable. Downconductors, materials and the provisions for minimising galvanic action. Arrangement of components in earthing pits. Provision for building movement and building penetrations. Details of bonding to other high level and in-ground services entering, or in the vicinity of, the building. 	#.2.3			
44 ELECTRONIC SECURITY AND ACCESS CONTROL				
ELECTRONIC SECURITY AND ACCESS CONTROL - Shop drawings - Submit shop drawings before commencing work showing the following: <ul style="list-style-type: none"> Schematic diagram of all systems. Panel layouts and dimensions. Switch socket outlet(s). Wiring access necessary for access controlled and/or intruder detection doors. Interfaces to other electronic security or building systems. Details of cable/wiring routes. Video storage calculations for CCTV. <p><i>[Add to or delete from this list as required for the particular project.]</i></p>	#.3			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
ELECTRONIC SECURITY AND ACCESS CONTROL - Completion – Commissioning - Conduct pre-commissioning testing to ensure that all systems operate in accordance with specifications. A formal commissioning of each system shall then be conducted and documented in the presence of the Superintendent to demonstrate compliance with the system specification. Submit a Commissioning Test Plan at least 2 weeks prior to the planned commissioning date. Submit a Commissioning History Report from the monitoring centre.	#.10.2			
45 GENERAL MECHANICAL REQUIREMENTS				
GENERAL MECHANICAL REQUIREMENTS - Preliminary details - Submit preliminary documentation for review indicating the design, construction, commissioning and maintenance characteristics of the works intended to meet the objectives of the Specification.	#.5			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions – Authority approvals - Submit notes of meetings with authorities whose requirements apply to the work and evidence that notices, fees and permits have been sought and paid, that authority connections are complete and that statutory approvals by the authorities whose requirements apply to the work have been received.	#.6.1.11			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions – Certification - Submit certification of conformance to documented requirements, including certification that the items of plant and equipment provided meet all requirements of the contract documents and that each installation is operating correctly.	#.6.1.12			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions - Design documentation - Submit design data and certification of proposed work.	#.6.1.13			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions - Contract drawings - Submit contractor detailing of the specified scope of works as required to confirm coordination with other details for construction, spatial management, incorporation of proposed component parts, plant and equipment and construction of off-site materials and the like. Conform to the Department of Infrastructure, Planning and Logistics NTG Technical Drawings Part 1 - Requirements for Technical Records Management available for download: https://transport.nt.gov.au/industry/technical-standards-guidelines-and-specifications/technical-records	#.6.1.14			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions - Maximum demand calculations - Submit contractor calculation confirming the maximum demand for the points of connection for the following: <ul style="list-style-type: none"> Electricity supplies. Natural gas supplies. 	#.6.1.15			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> • Potable water supplies. • Waste water discharges. 				
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions - Structural loadings - Submit contractor detailing of point load masses in excess of general structural allowances and details as required by the structural engineer.	#.6.1.16			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions - Execution details - Submit execution programs, schedules and details of proposed methods and equipment. For building services include, but not be limited to, the following: <ul style="list-style-type: none"> • Embedded services: Proposed method for embedding services in concrete walls or floors or chasing into concrete or masonry walls. • Fixing of services: Typical details of locations, types and methods of fixing services to the building structure. • Inaccessible services: If services will be enclosed and not accessible after completion, submit proposals for location of service runs and fittings. 	#.6.1.17			
GENERAL MECHANICAL REQUIREMENTS - Contractor's submissions – Prototypes - Submit prototypes of components, systems or elements.	#.6.1.19			
GENERAL MECHANICAL REQUIREMENTS - Shop drawings - Shop drawings approval - Before placing any orders or commencing any work, submit shop drawings and obtain written permission from the Superintendent to use them. Allow 10 working days from receipt by the Superintendent for approval or rejection of each Shop Drawing.	#.7.1			
GENERAL MECHANICAL REQUIREMENTS - Shop drawings - Variations to shop drawings - Before proceeding with any variation, submit shop drawings showing any change from the Contract drawings and obtain written approval of the variation drawing. Allow 5 working days from receipt by the Superintendent for approval or rejection of each variation drawing. Refer to Time allowed for assessment of submitted documents clause in GENERAL REQUIREMENTS worksection. The requirements of this worksection take precedence over the requirements stated in GENERAL REQUIREMENTS	#.7.4			
GENERAL MECHANICAL REQUIREMENTS - Shop drawings - Functional descriptions approval - Before placing any orders or commencing any work, submit functional requirements documents and obtain Superintendent's written permission to use them. Allow 10 working days from receipt by the Superintendent for approval or rejection of each submission.	#.7.5			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
GENERAL MECHANICAL REQUIREMENTS - Shop drawings - Preliminary submission - Submit for review preliminary descriptions of the proposed sequences of operation including the following: <ul style="list-style-type: none"> • Cascading sequences to deliver scheduled equipment capacities. • Starting and stopping sequences to engage items of plant. • Safety interlocks to terminate unsafe operation of the plant which may lead to undue wear or destruction. • Electricity supply details and integrity of operation during a mains supply outage or local supply transition. 	#.7.6			
GENERAL MECHANICAL REQUIREMENTS - Shop drawings - Detailed submission - Following review and general acceptance of preliminary submissions detail hardware components and proposed sequences of operation intended for programming including the following: <ul style="list-style-type: none"> • Hardware construction and mounting details. • Method of installation and location of cabling and cable support systems. • Details of the supplier of replacement components. • Details of product durability and duration of operating life. • Details of set points, proportional bands and integral time constants. • Details of delay timers, signal suppressors, signal expanders, software calculations and the like to enhance and provide stable operation of control sequences. 	#.7.7			
GENERAL MECHANICAL REQUIREMENTS - Shop drawings - As-installed documentation - Maintain the functional description and during the course of construction, commissioning, post occupancy tuning and post Practical Completion. Routinely issue revisions of the as-installed document.	#.7.8			
GENERAL MECHANICAL REQUIREMENTS – Records - Submit as-built documents, photographs, system diagrams, schedules and log books. Show the following: <ul style="list-style-type: none"> • Installed locations of building elements, services, plant and equipment. • Off-the-grid dimensions and depth if applicable. • Any provisions for the future. 	#.8			
GENERAL MECHANICAL REQUIREMENTS – Samples - Submit representative of proposed products and materials and including proposals to incorporate samples into the works, if any.	#.9			
GENERAL MECHANICAL REQUIREMENTS - Operations and maintenance manual - Submit for the whole of the works.	#.10			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
GENERAL MECHANICAL REQUIREMENTS - Log books - Submit for each plant room and operator station. Provide a maintenance attendance log book in the following locations: <ul style="list-style-type: none"> • Within each plant room. • At each control system remote user interface. Incorporate within each log book the following: Pre-prepared attendance record sheets suitable for on-site recording of information for each preventive and corrective maintenance visit.	#.12			
GENERAL MECHANICAL REQUIREMENTS - Products – Substitutions - Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives, including the following: <ul style="list-style-type: none"> • Evidence that the performance is equal to or greater than that specified. • Evidence of conformity to a cited standard. • Samples. • Essential technical information, in English. • Reasons for the proposed substitutions. • Statement of the extent of revisions to the contract documents. • Statement of the extent of revisions to the construction program. • Statement of cost implications including costs outside the contract. • Statement of consequent alterations to other parts of the works. 	#.13.6.2			
GENERAL MECHANICAL REQUIREMENTS – Warranties - Requirement: If a warranty is documented, name the Principal as warrantee. Register with manufacturers as necessary. Retain copies delivered with components and equipment. Provide copies to the Superintendent.	#.15			
GENERAL MECHANICAL REQUIREMENTS – Warranties - Approval of installer: If installation is not by manufacturer, and product warranty is conditional on the manufacturer's approval of the installer, submit the manufacturer's written approval of the installing firm.	#.15			
GENERAL MECHANICAL REQUIREMENTS - Building penetrations - Submit details of the methods to maintain the required structural, fire and other properties to Building penetrations clause in this worksection.	#.19			
GENERAL MECHANICAL REQUIREMENTS – Identification, marking, and labelling - Submit samples and schedules of proposed marking and labels.	#.25			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
GENERAL MECHANICAL REQUIREMENTS - Testing - Submit the following to the Superintendent: <ul style="list-style-type: none"> • Inspection and testing plan consistent with the construction program including details of test stages and procedures. • Certificates for type tests. • Fire hazard properties: Evidence of conformance of proposed proprietary products to documented requirements for fire hazard properties. • Test reports and certificates for testing performed under the contract to Testing clause in this worksection. Do not proceed until items tested have achieved conforming performance levels at testing. Re-do work which is non-conforming and re-test at no cost to the Principal. 	#.27			
GENERAL MECHANICAL REQUIREMENTS – Testing - Test reports - Provide copies of records of observations and results of tests and conformance or non-conformance with requirements. For non-conformances - re-do work or make adjustments until conformance is achieved at no cost to the Principal. Re-do work which is non-conforming, and re-test, and provide copies of records of the tests at no cost to the Principal. Provide copies of type test reports.	#.27.3			
46 MECHANICAL SYSTEMS				
MECHANICAL SYSTEMS - Contractor's submissions - Electrical loading information for mechanical services - Submit electrical loading information for all equipment before completion of the main switchboard shop drawings.	#.7.3			
MECHANICAL SYSTEMS - Contractor's submissions - Mechanical services contract drawings - Submit the following detail drawings at minimum 1:100 scale, showing: <ul style="list-style-type: none"> • Fire and smoke dampers including dimensional tolerances. • Floor wastes. • Ductwork, plinths, pipework and equipment layouts and sections. Show the location of fire-resisting building elements. • Diffuser and grille terminal reference numbers corresponding to design values and commissioning test results. Riser layouts and sections. • Plant room layouts and sections. • Locations of automatic control sensors, motors and valves. • Acoustic details. • Conditioner construction details. • Seismic restraint details. • Provisions for access for maintenance and removal of components to Access for maintenance clause in the GENERAL MECHANICAL REQUIREMENTS worksection. • Lifting provisions for heavy items. • Piping and other schematic drawings including numbering of each valve to correspond to the valve tag notation. For 	#.7.4			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
refrigerant piping include slope of horizontal runs, oil traps, double risers and valving. <ul style="list-style-type: none"> • Submission drawings required by authorities. • Connections to other services. • Switchboard details. • Wiring diagrams. • Control hardware schematics. • Control panel layout and wiring details. • Control graphics layouts. 				
51 DUCTWORK				
DUCTWORK - Contractor's submissions – Certification - Certification of fire-resisting ductwork: Before the date for Practical Completion, submit certification that the installed ductwork fire protection meets the required FRL when tested to AS 1530.4.	#.4.3			
DUCTWORK - Contractor's submissions – Certification - Fire and smoke dampers: Submit test certificates showing conformance as follows: <ul style="list-style-type: none"> • Fire and smoke dampers: To AS 1682.1 for air leakage. • Fire dampers: To AS 1530.4 for FRL. 	#.4.3			
DUCTWORK - Contractor's submissions – Certification - Flexible duct: Submit a flexible duct conformance report summary to AS 4254.1 Flexible Duct Compliance Report Summary appendix as certification of conformance with AS 4254.1.	#.4.3			
DUCTWORK - Contractor's submissions – Samples - Exposed duct: Submit construction and installation methodology.	#.4.6			
DUCTWORK - Contractor's submissions – Samples - Flexible duct: Submit sample 2 metre length of 300 mm diameter flexible duct with sheet metal spigot attached.	#.4.6			
DUCTWORK - Leakage testing – Reports - Submit a leakage testing report on each system tested. Include in the report: <ul style="list-style-type: none"> • Details of the system tested including a sketch of the portions of the system tested. • Test pressure in Pa and as a percentage of the design operating pressure. • The measured leakage rate in L/s and as a percentage of the design air quantity. • If the section tested exceeded the maximum permissible leakage rate under test, provide details of the leakage sources identified and measures taken to rectify them. Leakage retesting: If a system is retested, provide additional reports containing the information above.	#.26.4			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
52 DUCTWORK INSULATION				
<p>DUCTWORK INSULATION - Contractor's submissions – Samples</p> <p>- Submit samples of the following:</p> <ul style="list-style-type: none"> Each type of insulation, applied to a sample 1.5 m long section of ductwork, including a site applied insulated transverse joint. <p>Cutaway sections: For each sample, provide cutaway sections to permit inspection of application details including insulation materials, adhesives, mastics, fixings and sheathing.</p>	#.3.6			
53 AIR GRILLES				
<p>AIR GRILLES - Installation of air grilles - Alternative plenum and cushion head boxes - Provide shop drawings for approval. Provide copies of warranties referencing cushion head box manufacture and installation.</p>	#.6.5			
54 MECHANICAL PIPEWORK				
<p>MECHANICAL PIPEWORK - Design – Documentation - Drawings: Show the following on the drawings:</p> <ul style="list-style-type: none"> Piping schematics and layouts including demountable joints, valving, and instruments. Piping material and grade. Piping supports including means for handling hydraulic thrust. Provisions for system and component isolation. Details of removal provisions for insulation on items requiring regular maintenance. Details of weatherproofing for external piping. Details of protection for underground piping. <p>Submit shop drawings to the Superintendent for approval.</p>	#.2.4			
55 MECHANICAL PIPEWORK INSULATION				
<p>MECHANICAL PIPEWORK INSULATION Contractor's submissions – Samples - Submit samples of each type of insulation, including at least one transverse joint, bend and one hanger on a section of pipe at least 1.5 m long. If the piping system to be insulated using the respective type of insulation includes flanges, provide an insulated flange in the sample.</p> <p>Cutaway sections: For each sample, provide cutaway sections to permit inspection of application details including insulation materials, adhesives, mastics, fixings and sheathing.</p>	#.3.6			
56 WATER TREATMENT				
<p>WATER TREATMENT Completion - Tests before building occupation - Provide routine tests to AS/NZS 3666.3 before the building is occupied.</p> <p>For bacteria including Legionella species: Sampled and tested by a Registered testing authority accredited to perform the specific tests.</p> <p>Legionella analysis: To AS/NZS 3896.</p>	#.12.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
Bacteria analysis: Total plate count to AS/NZS 4276.3.1 or AS/NZS 4276.3.2 as appropriate. Test report: Submit test reports to the Superintendent.				
57 BUILDING MANAGEMENT SYSTEMS				
BUILDING MANAGEMENT SYSTEMS - Contractor's submissions – Listings - Submit the following prior to purchasing component parts and installation of on-site fixed works: <ul style="list-style-type: none"> • Listing of hardware devices. • Listing of platform software to be employed. 	#.4.1			
BUILDING MANAGEMENT SYSTEMS - Contractor's submissions – Samples - Submit the following prior to purchasing component parts and installation of on-site fixed works: <ul style="list-style-type: none"> • Hardware devices requested by the Principal or Superintendent for review. • Populates graphics indicating schematic layouts, active and passive symbols, readings and set points. 	#.4.2			
BUILDING MANAGEMENT SYSTEMS - Contractor's submissions – Drawings - Submit drawings including: <ul style="list-style-type: none"> • Schematic diagrams of control, communication and power wiring. • Interface wiring to control system. • Network riser diagrams of wiring between server and control panels. 	#.4.4			
BUILDING MANAGEMENT SYSTEMS - Contractor's submissions - Inspection and test plans (ITPs) - Requirement: Provide ITPs for each system and function showing: <ul style="list-style-type: none"> • Function to be tested. • Test method (including hardware required) for on-site verification of system before changeover. • List of inputs and outputs. • Acceptance criteria. • Name and signature of person verifying test. 	#.4.5			
BUILDING MANAGEMENT SYSTEMS - Contractor's submissions – Manuals - Requirement: Submit manuals including: <ul style="list-style-type: none"> • Draft LCP manuals. • Draft BMS manuals. • Draft RUI manual. • Draft service tool manuals. • Draft operators' manual. • Draft training manual. <p>Refer to the Operations and Maintenance Manual clause in the GENERAL MECHANICAL worksection.</p>	#.4.6			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
BUILDING MANAGEMENT SYSTEMS - Contractor's submissions – Prototypes - Requirement: Submit prototypes of the following: <ul style="list-style-type: none"> Switching modules. Graphical symbols. Graphical displays. Reports. Trend graphs. 	#.4.7			
BUILDING MANAGEMENT SYSTEMS - Execution – Pre-completion tests - Records: Submit results of testing on Inspection and Test Plans and certify correct operation of all aspects of the Functional Specification.	#.6.5			
BUILDING MANAGEMENT SYSTEMS - Execution – Completion – Training - Provide training to enable operators to accomplish the following objectives at LCP's and RUI's: <ul style="list-style-type: none"> Proficiently operate the system. Understand automatic control system architecture and configuration. Understand automatic control system components. Understand system operation, including automatic control system, control and optimising routines (algorithms). Operate workstation and peripherals. Log on and off system. Access graphics, point reports and logs. Adjust and change system set points, time schedules and holiday schedules. Recognise common HVAC system malfunctions by observing system graphics, trend graphs and other system tools. Understand system drawings and operation and maintenance manual. Understand job layout and location of control components. Access data from automatic control system controllers. Create and change system graphics. Create, delete and modify alarms, including configuring alarm reactions. Create, delete and modify point trend logs (graphs) and multi-point trend graphs. Configure and run reports. Add, remove and modify system's physical points. Add operator interface stations. Add a new controller to system. [Other items might include: <ul style="list-style-type: none"> Create, modify and delete application programming. Download firmware and advanced applications programming to a controller. Configure and calibrate I/O points.] Maintain software and prepare backups. Interface with job-specific, third-party operator software. Add new users and understand password security procedures. 	#.6.6			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
BUILDING MANAGEMENT SYSTEMS - Execution – Completion – Repeat Training - Operator training: In addition to the above, provide on-site operator training during the defects liability period. Number and duration of training sessions: Provide 4 training sessions of at least 4 hours each at 3 month intervals.	#.6.6			
58 MECHANICAL COMMISSIONING				
MECHANICAL COMMISSIONING - Fire and life safety training - Provide fire and life safety training after the installation has passed completion tests and before the date for Practical Completion.	#.25			
MECHANICAL COMMISSIONING - Handover meeting - Requirement: Document the handover meeting and distribute minutes of the meeting to the participants and to the Superintendent and to the Principal.	#.28			
MECHANICAL COMMISSIONING - Handover training - Requirement: Provide handover training after the installation has passed completion tests and before the date for Practical Completion to the Principal's designated plant operators and occupants. Utilize the following commissioning personnel as part of handover training: <ul style="list-style-type: none"> Licensed trades. Leading commissioning technician. Commissioning engineer. Commissioning authority. Independent commissioning auditor. 	#.29			
MECHANICAL COMMISSIONING - Final completion documentation - Requirement: Provide final approved hard copy originals plus the number of copies as indicated in the Handover documentation schedule .	#.30			
59 MECHANICAL MAINTENANCE				
MECHANICAL MAINTENANCE – Product selection Substitutions: Where the existing product is no longer available, provide products with at least the same performance, energy profile and construction characteristics. Submit products to be substituted to the Superintendent for approval.	#.6.1			
MECHANICAL MAINTENANCE - Handover training - Training topics: Provide as a minimum requirement the following training: <ul style="list-style-type: none"> Walk through of plant and equipment locations including general discussion of plant features and operational characteristics. Practical presentation of energizing and de-energizing procedures at each point of user interface. Presentation of as installed information including operating and maintenance instructions. Handover records of defects liability period records of routine and call out attendances. Handover records of any statutory maintenance requirements. Other trades: Participate with other trades to provide an across the trades presentation of whole of building operational systems training.	#.14			

SCHEDULE 1 – HOLD POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
MECHANICAL MAINTENANCE - Handover meeting - Requirement: Document the final completion meeting and distribute minutes of the meeting to the participants.	#.15			
MECHANICAL MAINTENANCE - Final completion documentation - Requirement: Provide final approved hard copy originals plus the number of copies as indicated in the Final completion documentation schedule .	#.16			
61 CIVIL WORKS				
CIVIL WORKS - General - Inspection test plan (ITPs) - Submit ITPs, detailing all procedures and test plans to be undertaken to complete the project, before commencing work.	#.1.6			
CIVIL WORKS - Earthworks - Excess material - Obtain approval from Superintendent prior to hauling, dumping and spreading excess material.	#.3.1			
CIVIL WORKS - Earthworks - Rock in subgrade - Obtain agreement from the Superintendent to the extent of the excavation.	#.3.2			
CIVIL WORKS - Earthworks - Unsuitable material below subgrade surface other than rock - Obtain directions from the Superintendent before works commence.	#.3.3			
CIVIL WORKS - Earthworks - Unsuitable material beneath fill - Obtain directions from the Superintendent before works commence.	#.3.4			
CIVIL WORKS - Earthworks - Proof rolling - Submit a proof rolling procedure to the Superintendent for approval including the proposed method of preparing the areas and the extent of proof rolling. Do not commence proof rolling before receiving approval.	#.3.6			
CIVIL WORKS - Earthworks - Conformance testing - Obtain the Superintendent's approval of subgrade conformance prior to placing further material.	#.3.7			
CIVIL WORKS - Pavements and shoulders - Process control testing - Provide the Superintendent with a program and procedure for process control testing for the project within 14 days of the awarding of the contract. Provide the program before work is commenced on site.	#.4.3			
CIVIL WORKS - Pavements and shoulders - Conformance testing of pavements and shoulders - Obtain the Superintendent's approval for pavement conformance prior to any surfacing work.	#.4.8			
CIVIL WORKS - Spray sealing – Spraying - Do not commence spraying until the spray rates are advised by the Superintendent.	#.5.14			
CIVIL WORKS - Spray sealing - Application of aggregate - Obtain approval from the Superintendent for use of the proposed aggregate loader before commencing loading operations.	#.5.15			

SCHEDULE 1 – HOLD POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
CIVIL WORKS - Dense graded asphalt - Design mix requirements - No asphalt shall be supplied until the mix has been registered and the Superintendent approves the mix for use.	#.6.6			
CIVIL WORKS - Dense graded asphalt - Design mix requirements - Where it is proposed to change the source grading or nature of the components or binders, new mix designs must be carried out in accordance with the Department's Code of Practice for Registration of Asphalt Mix Designs.	#.6.6			
CIVIL WORKS - Pavement marking – Workmanship - Remove defective marking by sand blasting, or other approved methods, make good the surface in a manner approved by the Superintendent.	#.8.10			
CIVIL WORKS - Road furniture and traffic control devices – Guide Posts - Refer to the Standard Specification for Roadworks v.5.3, July 2023. The Hold Points are listed below.	#.9.5			
CIVIL WORKS - Standard Specification for Roadworks (SSRw) v.5.3 July 2023 – Plastic Flexible Guide Posts – Samples - Provide a sample flexible guide post from each batch purchased for this contract for inspection and approval before installing any posts.	14.6.4	SSRw v.5.1 p.183 SSRw v.5.2 p.192 SSRw v.5.3 p.186		
CIVIL WORKS - SSRw v.5.3 July 2023 – Plastic Flexible Guide Posts – Tests - Test results are to be provided as detailed in Testing of Flexible Guide Posts clause in this worksection.	14.6.7	SSRw v.5.1 p.184 SSRw v.5.2 p.194 SSRw v.5.3 p.188		
CIVIL WORKS - SSRw v.5.3 July 2023 – Steel Flexible Guide Posts – Samples - Provide a sample flexible guide post from each batch purchased for this contract for inspection and approval before installing any posts.	14.7.4	SSRw v.5.1 p.185 SSRw v.5.2 p.194 SSRw v.5.3 p.188		

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
CIVIL WORKS - SSRw v.5.3 July 2023 – Steel Flexible Guide Posts – Tests - Test results are to be provided as detailed in Testing of Flexible Guide Posts clause in this worksection.	14.7.7	SSRw v.5.1 p.186 SSRw v.5.2 p.196 SSRw v.5.3 p.		
CIVIL WORKS - SSRw v.5.3 July 2023 – Testing of Flexible Guide Posts – Tests - Submit test results to the Superintendent in respect to the following characteristics before ordering the guide posts: - Heat resistance - Cold resistance - Rigidity - Vehicle impact	14.8.1	SSRw v.5.1 p186 & 187 SSRw v.5.2 p.196 SSRw v.5.3 p.190		
CIVIL WORKS - Road furniture and traffic control devices - Road signs – Anti-graffiti coating - Obtain Superintendent's approval for the use of anti-graffiti film or coating products. Apply anti-graffiti products only to the new road signs specified by the Superintendent.	#.9.6.6			
62 FABRIC SHADE STRUCTURES				
FABRIC SHADE STRUCTURES - Contractor's submissions - Design drawings - Provide 2 sets of design drawings showing the following information; <ul style="list-style-type: none"> • Overall plans and elevations of the final design. • Details of the support structure, footings and bracing where applicable. • Details of the tension membranes including the fabric joins, seams and pockets. • Details of the tension cables, plates and connectors. • Details of the weak links, where applicable. • Details of the design tension figures for the fabric and the connectors. <p><i>[Add to or delete from this list as required for the particular project.]</i></p>	#.5.1			
FABRIC SHADE STRUCTURES - Contractor's submissions - Design drawings - Provide with the design drawings, bound and indexed calculations and a Section 40 certificate signed by a NT registered practicing Structural Engineer, indicating that all elements	#.5.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
of the structure are designed to the full wind loads of AS/NZS 1170.2 and meet the functional requirements of the Contract. Provide calculations to show that the membrane can carry the full wind loads at the stated minimum life, taking into consideration the UV and other degradation of the membranes.				
FABRIC SHADE STRUCTURES - Building certification - Provide a copy of the Section 40 Structural Certificate and a copy of the Permit to Build before commencing the works.	#.6			
FABRIC SHADE STRUCTURES - Building certification - Provision of a copy of an Occupancy Certificate is a condition precedent to Practical Completion.	#.6			
FABRIC SHADE STRUCTURES - As-constructed drawings - Provision of as-constructed drawings is a condition precedent to Practical Completion.	#.13			
64 LANDSCAPE				
LANDSCAPE -Contractor's submissions – Samples - Plant materials: Submit to the Superintendent for approval one plant sample for each 100 of each species or variety, in the condition in which it is proposed to supply that plant to the site.	#.3.2			
LANDSCAPE -Topsoil - Imported topsoil - Advise the name of the proposed supplier. Do not order soils without Superintendent's approval of the supplier.	#.8.2			
LANDSCAPE -Excavation and planting - Setting out of holes - Obtain approval of the set out from the Superintendent before commencing any planting.	#.17.1			
LANDSCAPE -Mulching – Mulch - Advise the name of the proposed supplier. Do not order mulch without Superintendent's approval of the supplier.	#.18.1			
65 IRRIGATION				
IRRIGATION - Contractor's submissions - Design drawings - Submit design drawings showing the overall layout of the irrigation system design. Show on the drawings all pipework, sprinklers, tanks, valves, pumps, control systems, and backflow prevention devices. Do not start work on the installation until the design drawings have been approved by the Superintendent.	#.3.1			
IRRIGATION - Tests - Hydrostatic tests - Fill the pipework with water and test at the required pressure and duration. If leaks are found, rectify and re-test. Submit all test results to the Superintendent. Do not cover any pipework without Superintendent's approval.	#.4.1			
IRRIGATION - Excavation and installation - Backfilling trenches - Do not backfill trenches until inspection and approval from the Superintendent.	#.7.5			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<p>IRRIGATION - Completion - Work-as-executed drawings - Submit drawings showing the as installed locations of all piping, fittings, sprinklers, tanks, control valves and accessories before practical completion.</p> <p>Show the depth of underground piping. Show location of all controllers and automatic control wiring, indicate colours used for individual valves.</p>	#.12.2			
66 PLAY EQUIPMENT				
<p>PLAY EQUIPMENT - Contractor's submissions - Design concept 25% - Submit to the Superintendent for review concept design drawings showing the following:</p> <ul style="list-style-type: none"> Overall concept. Preliminary structural design. Major design and equipment selections. <p><i>[Edit this list to suit the project. Coordinate with PLAYGROUND SURFACING worksection.]</i></p> <p>Approval must be received by the Superintendent before proceeding to 50% design.</p>	#.3.1			
<p>PLAY EQUIPMENT - Contractor's submissions - Design drawings 50% - Submit to the Superintendent for review design drawings at 50% completion showing the following:</p> <ul style="list-style-type: none"> The overall layout of play equipment installation. The overall layout of the impact-attenuating surface installation. Fall zones. Footing details. Installation details. Location of all play equipment, furniture, and fixtures. Method of joining surfacing of different colours, and of joining separate pours. Location of any shade structures. All falls and levels. Drainage systems. <p><i>[Edit this list to suit the project. Coordinate with PLAYGROUND SURFACING worksection.]</i></p> <p>Approval must be received by the Superintendent before proceeding to 100% design.</p>	#.3.2			
<p>PLAY EQUIPMENT - Contractor's submissions - Design drawings 100% - Submit to the Superintendent for review the drawings at 100% design. Include all mark-ups and comments from the 50% design review into the drawings.</p> <p>Do not start work on the installation until the design drawings have been approved by the Superintendent.</p>	#.3.3			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
PLAY EQUIPMENT - Building certification - Provide a copy of the Section 40 Structural Certificate and a copy of the Permit to Build before commencing the works for any structural components (including, but not limited to, solid shade structure or fabric shade structure etc.).	#.4			
PLAY EQUIPMENT - Building certification - Provision of a copy of an Occupancy Certificate for structural components (including, but not limited to, solid shade structure or fabric shade structure etc.) is a condition precedent to Practical Completion.	#.4			
PLAY EQUIPMENT - Manufacturer's Installation Instructions - Product information - Submit to the Superintendent the manufacturer's information concerning the safety of the proposed installation for approval before any components are ordered. Do not purchase the equipment until written acceptance is received from the Superintendent. The information is to include the following: <ul style="list-style-type: none"> • Minimum impact area (fall zone) dimensions/minimum space. • Free height of fall and extent of surfacing. • Overall dimensions • Mass (kg) of the heaviest part. • Impact-attenuating surfacing requirements. • Intended age target user group of the equipment. • If the equipment is intended for indoor or outdoor use. • Resistance to vandalism. • Availability of spare parts. • Any unusual requirements for handling, space or installation of equipment. • Certification of conformity with AS 4685 series. 	#.5.1			
PLAY EQUIPMENT - Manufacturer's Installation Instructions - Installation information - Submit to the Superintendent the manufacturer's installation instructions for the correct assembly, erection, and siting of the equipment. Content is to include: <ul style="list-style-type: none"> • A checklist of all components/parts to be supplied. • Safety distances/clearances and minimum impact area (fall zone) dimensions. • Equipment and parts identification. • Erection sequence (assembly instructions and installation details). • Labelling or diagrams to aid assembly. • Special tools, lifting devices, templates or other aids to be used, and any precautions to be taken. • Amount of construction space required to install each item. • Orientation, in relation to sun and wind. • Details of foundation, anchorage in the ground, design and location of footings. 	#.5.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> Landscape profile for safe operation of specific items of equipment (e.g. Slide built into an embankment). Free height of fall (for impact attenuation surfacing needs). Need for and details of the application of any painting or treatment. Removal of assembly aids before the equipment is used. <p>Drawings and diagrams shall clearly specify the principal dimensions of the equipment and the relevant space, height and areas required for installation.</p> <p>Supply with the instructions the details necessary for inspection of the playground equipment prior to its first use.</p>				
PLAY EQUIPMENT - Manufacturer's Installation Instructions – Operation and maintenance manuals - submit manufacturer's published use, care, and maintenance requirements for each item of equipment.	#.5.3			
PLAY EQUIPMENT - Manufacturer's Installation Instructions – Manufacturer's data - Submit the manufacturer's product data for each item of equipment: <ul style="list-style-type: none"> Product technical data sheets. Safety data sheets (SDS). 	#.5.4			
PLAY EQUIPMENT - Installation inspections - Comprehensive post-installation inspection - Independent qualified Level 3 Comprehensive Playground Safety Inspector is to submit a report to the Superintendent verifying that the playground complies with the requirements of the relevant parts of the AS 4685 series. The report is to identify any recommendations to be addressed to achieve compliance in respect to any non-compliant elements	#.14.1			
PLAY EQUIPMENT - Installation inspections - Comprehensive post-installation inspection - A competent person is to inspect the impact attenuating surfacing on completion of installation and before it is open for use. The competent person is to submit a report to the Superintendent that the surfacing complies with the specified requirements and is fit for use. The report must be received before the area is opened for use.	#.14.1			
PLAY EQUIPMENT - Maintenance and Inspection Program - Maintenance program - Submit a maintenance program for all items of playground equipment, and for the impact attenuating surfacing, taking into account the manufacturer's instructions and local risk factors. Include both corrective and preventative measures designed to reduce hazards. Include the following in the maintenance program: <ul style="list-style-type: none"> Removal of broken glass, needles, animal fouling and other debris or contaminants. Raking and topping up loose-fill impact-attenuating surfacing if there is insufficient material or if it is compacted. Maintenance to unitary impact-attenuating surfacing. 	#.15.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> Repairing or replacing equipment and/or elements which are rusted, rotten, damaged, broken, or missing. Identifying any elements which require repair or replacement if repairs or replacement cannot be done immediately on discovery. Removal of equipment. Removing graffiti. Maintenance of ancillary items, such as barbecues, tables, rubbish bins, etc. Removal of dead or damaged overhanging branches. Lubrication of bearings and bushes as required. Tightening of bolts. Re-tensioning of ropes by a qualified playground installer. Confirming all equipment has no rotting, rusting, or damage that could cause the play equipment to fail, or which could cause injury to users. Confirming the structural adequacy of all equipment. Ensuring there are no strangulation hazards. Manufacturer's recommendations to maintain the play equipment. 				
<p>PLAY EQUIPMENT - Maintenance and Inspection Program - Inspection frequencies - Submit to the Superintendent a document detailing the recommended inspection frequencies for each type of inspection. Frequency and types of inspections and testing are determined by AS 4685 series, by AS 4422, and by manufacturers' recommendations.</p> <p>As a minimum the following are required:</p> <ul style="list-style-type: none"> Comprehensive post-installation inspection, Routine visual inspection, Operational inspection, Comprehensive inspection, Testing of impact attenuating surfacing, Any other testing or inspection appropriate for the playground, Any other testing or inspections recommended by the manufacturers. <p>These tests and inspections must take in to account prevailing local conditions.</p>	#.15.2			
<p>PLAY EQUIPMENT - Completion - As-constructed drawings - Provision of as-constructed drawings is a condition precedent to Practical Completion.</p>	#.16.3			
67 PLAYGROUND IMPACT ATTENUATING SURFACING				
<p>PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor submissions - Operation and maintenance manuals - Submit manufacturer's published use, care, and maintenance requirements for each type of surfacing.</p>	#.3.1			
<p>PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor submissions - Manufacturer's data - Submit the manufacturer's product data for each type of surfacing, and the manufacturer's recommendations for its application in the project including the following:</p>	#.3.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> Product technical data sheets. Safety data sheets (SDS). Maintenance recommendations. Type tests: <ul style="list-style-type: none"> Impact-attenuation performance of surfaces: To AS 4422. Slip resistance: To AS 4586. 				
PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor submissions – Samples - Submit to the Superintendent for approval a 100 g sample of the thermoplastic vulcanized rubber to be used for each nominated colour.	#.3.3			
PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor submissions – Samples - Submit to the Superintendent for approval a sample of the impact-attenuating surface system inclusive of the thermoplastic vulcanized rubber wearing surface and impact-attenuation layer on a suitable base.	#.3.3			
PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor submissions - Design concept 25% - Submit to the Superintendent for review concept design drawings showing the following: <ul style="list-style-type: none"> Overall concept. Preliminary structural design. Major design and equipment selections. <p><i>[Edit this list to suit the project. Coordinate with PLAY EQUIPMENT worksection.]</i></p> <p>Approval must be received by the Superintendent before proceeding to 50% design.</p>	#.3.5.1			
PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor submissions - Design drawings 50% - Submit to the Superintendent for review design drawings at 50% completion showing the following: <ul style="list-style-type: none"> The overall layout of play equipment installation. The overall layout of the impact-attenuating surface installation. Fall zones. Footing details. Installation details. Location of all play equipment, furniture, and fixtures. Method of joining surfacing of different colours, and of joining separate pours. Location of any shade structures. All falls and levels. Drainage systems. <p><i>[Edit this list to suit the project. Coordinate with PLAY EQUIPMENT worksection.]</i></p> <p>Approval must be received by the Superintendent before proceeding to 100% design.</p>	#.3.5.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
PLAYGROUND IMPACT ATTENUATING SURFACING - Existing services – Excavation - Do not excavate by machine within 1 m of existing underground services without approval from the Superintendent.	#.4.3			
PLAYGROUND IMPACT ATTENUATING SURFACING - Ground preparation - Natural ground surfaces - If the topsoil extends to a depth greater than 100 mm give notice to the Superintendent and obtain instructions before proceeding.	#.5.3			
PLAYGROUND IMPACT ATTENUATING SURFACING - Rubber based Impact-Attenuating materials - Impact-Attenuating Sub Layer (Shock Pads) - Impact-attenuating sub layer installation - Give sufficient notice so that the impact-attenuating sub layer can be inspected during installation and before being covered up or concealed.	#.9.1.3			
PLAYGROUND IMPACT ATTENUATING SURFACING - Rubber based Impact-Attenuating materials - Impact-Attenuating Surface (Wearing Layer) - Certificate of conformity - Provide documentary evidence in the form of a Certificate of Conformity that the supplied material is as specified.	#.9.2.2			
PLAYGROUND IMPACT ATTENUATING SURFACING - Rubber based Impact-Attenuating materials - Impact-Attenuating Surface (Wearing Layer) - Installation of impact-attenuating surface (wearing layer) - Give sufficient notice so that the impact-attenuating surface (wearing layer) can be inspected during installation and upon completion.	#.9.2.3			
PLAYGROUND IMPACT ATTENUATING SURFACING - Rubber based Impact-Attenuating materials - Impact-Attenuating Surface (Wearing Layer) – Completion – As-constructed drawings - Provision of as-constructed drawings is a condition precedent to Practical Completion.	#.9.4.5			
PLAYGROUND IMPACT ATTENUATING SURFACING - Testing - On-site impact-attenuating layer(s) tests - Submit to the Superintendent the on-site verification report. The on-site verification report shall contain at a minimum: <ul style="list-style-type: none"> • A statement on the cover of the report advising that: <ul style="list-style-type: none"> ♦ The tests were performed on-site. ♦ Description of the weather conditions (dry-bulb temperature, humidity, wind speed and direction, and precipitation) prevailing on the day of the test. ♦ The results shall not be considered comparable to those of a laboratory test. • Verification that the on-site testing was conducted in accordance with AS 4422, including the date of publication of the cited AS 4422. • The test location, i.e. playground address, with enough information to be able to identify the specific play area tested. • The date that the testing was conducted. 	#.11.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIAL S	DATE
<ul style="list-style-type: none"> • A description of the product tested. • The condition of the impact-attenuating layers at the time of the test, including its temperature and any other factor(s) that may affect the results. • A statement declaring the results of the testing to be satisfactory or not satisfactory. • Name, signature and qualification of the testing person or entity. <p>The on-site verification report may also contain the following:</p> <ul style="list-style-type: none"> • The identification and location of each point tested, using descriptions, drawings or photographs. • The h_f and h_m for the points tested. • The results of each test, specifying h_m used and the corresponding HIC, HIC duration and g_{max}. • The thickness in millimeters of the surfacing measured at each point tested. 				

Schedule 2 – Witness Points

SCHEDULE 2 – WITNESS POINTS				
<p>The number shown with each of the worksection headings is the DIPL internal worksection number – it will not align with the worksection and clause numbering in the RFT/RFQ.</p> <p>The symbol # indicates the worksection number which may differ for different RFTs/RFQs.</p> <p>The clause and sub-clause numbers may change if the worksection is edited.</p>				
CLAUSE TITLE	CLAUSE NUMBER	PAGE NO	INITIALS	DATE
01 GENERAL REQUIREMENTS				
GENERAL REQUIREMENTS - Contractors submissions - As-constructed drawings - Provide As Constructed drawings and information. Show information of building elements, plant, and equipment across all disciplines. Show co-ordinate dimensions where applicable. Refer to the NTG Technical Drawings Part 1 - Requirements for Technical Records Management document, which is accessible via https://dipl.nt.gov.au/industry/technical-standards-guidelines-and-specifications/technical-records . Drawings without changes shall be described as "As Constructed - No Changes" in the amendment description column.	#.6.4			
GENERAL REQUIREMENTS - Contractor submissions - As-constructed drawings - Provide PDF copies of drawings in PDF and in CAD format (in AutoCAD, REVIT or MicroStation).	#.6.4			
GENERAL REQUIREMENTS - Contractors submissions - Amended drawings - Before the work commences provide a proposed procedure for recording and submitting the amended drawings and information.	#.6.5			
GENERAL REQUIREMENTS - Contractors submissions – Warranties - Provide the standard manufacturer's warranty. Provision of warranties does not affect the responsibilities of the contractor under the contract. Provide electronic copies of warranties at or before final completion.	#.6.6			
GENERAL REQUIREMENTS - Contractors submissions - Authority's approvals - Submit the documents evidencing approval of the authorities whose requirements apply to the work	#.6.7			
GENERAL REQUIREMENTS - Contractors submissions - Inspection test plans (ITPs) - Submit ITPs detailing all procedures and test plans to be undertaken. ITPs are part of the Contractor's Process Control (quality control) inspections and testing to self-ensure work aligns with contractual requirements. Do not use the documented Hold Points and Witness Points as ITPs. ITPs are additional to Hold Points and Witness Points	#.6.14			
GENERAL REQUIREMENTS - Contractors submissions - Testing and commissioning reports - Provide copies of reports of all results of all testing and commissioning procedures undertaken under this contract, including for failed tests, and for unsuccessful commissioning attempts.	#.6.15			
GENERAL REQUIREMENTS - Safety - Safety officer - Appoint a Safety Officer and notify the Superintendent of the officer's name.	#.11.3			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
02 DEMOLITION				
<p>DEMOLITION – Inspections - Give sufficient notice so that inspections may be made at the following stages:</p> <ul style="list-style-type: none"> • Commencement of demolition • Adjoining structures before commencement of demolition • Underground structures after demolition above such structures • Trees specified to be retained before commencement of demolition • Excavations remaining after removal of underground work • Structures after removal of roof sheeting or wall cladding • Services after diversion or re-connection • Site after removal of demolished materials • Completion of demolition. <p><i>[Add to or delete from this list]</i></p>	#.2			
03 GROUNDWORKS				
<p>GROUNDWORKS – Inspections - Give sufficient notice so that inspections may be made at the following stages:</p> <ul style="list-style-type: none"> • Enclosures to trees to be retained • Excavation completed to contract levels or founding material • Services laid in trenches and ready for backfilling 	#.3			
<p>GROUNDWORKS – Excavation – Explosives - Inspect and record the condition of all structures and services subject to possible effect by use of explosives after all blasting operations are completed. Provide the report to the Superintendent.</p> <p><i>[Delete these requirements if explosives are not to be used.]</i></p>	#.9.6			
<p>GROUNDWORKS – Proof rolling - Give the Superintendent sufficient notice so that proof rolling can be witnessed.</p>	#.15			
<p>GROUNDWORKS – Density Tests - Compaction test results - Provide a test certificate from a NATA registered laboratory as proof that the specified compaction has been achieved under each floor slab.</p>	#.16.4			
04 TERMITE CONTROL				
<p>TERMITE CONTROL - Inspections - Notice</p> <p>Give sufficient notice so that inspection may be made at the following stages:</p> <ul style="list-style-type: none"> • Chemical spraying of under slab areas. • Stainless steel mesh barriers installed and before concrete is poured. • Chemical reticulation system installed ready for testing. <p><i>[Delete or add to list depending on the system being used.]</i></p>	#.2.1			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
TERMITE CONTROL - Completion - Chemical soil barriers - Provide a durable notice permanently fixed in a prominent location as detailed in the NCC Volume One NT B1.4(i) (ii) or NCC Volume Two 3.1.4.4 (To NCC 2022 Volume One NT B1D4 or to NCC Volume Two H1 and ABCB Housing Provisions 3.4, when NCC 2022 is adopted in the NT). Generally fix to the inside of the door to the electricity meter box.	#.9.1			
05 CONCRETE				
CONCRETE - Inspections – Notice - Give sufficient notice so that inspection may be made at the following stages: <ul style="list-style-type: none"> • Base or subgrade before covering. • Membrane or film underlay installed on the base or subgrade. • Termite barrier and film underlay installed on the base. • Completed formwork, and reinforcement, cores and embedments fixed in place. • Commencement of concrete placing. • Before core filling masonry. • Evaluation of the off-form finishes. • Evaluation of surface finish. <i>[Amend to suit project, Add new critical stage inspections.]</i>	#.3.1			
06 STRUCTURAL STEEL				
STRUCTURAL STEEL - Inspection – Notice - Give sufficient notice so that inspection may be made at the following stages: <ul style="list-style-type: none"> • Commencement of shop fabrication. • Completion of fabrication before surface preparation. • Surface preparation prior to painting. • Completion of protective coating before delivery to site. • Reinforcement and formwork in place before any encasement. • Steelwork and column bases erected on site, before grouting, encasing, site painting or cladding. • Completed grouting, encasement, fire protection, or site painting. <i>[Edit inspections to suit project]</i>	#.2.1			
STRUCTURAL STEEL - Contractor's submissions – Compliance - Provide evidence that the steel used in the work complies with the required material standards.	#.3.2			
STRUCTURAL STEEL - Contractor's submissions – Compliance - Provide evidence that fabrication and erection comply with AS/NZS 5131.	#.3.2			
STRUCTURAL STEEL - Welding - Certification of welders and welding supervisors - Provide copies of Welder Qualifications Records for welders and welding supervisors who are to be engaged in welding works under the contract, before commencing welding operations.	#.6.5			
STRUCTURAL STEEL - Welding – Preparation - Provide proof of weld procedure and weld consumable prequalification.	#.6.6			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
07 LIGHT STEEL FRAMING				
LIGHT STEEL FRAMING - Framing inspection - Notice: Give sufficient notice so that inspection can be made of steel framing erected on site prior to lining or cladding.	#.2			
08 MASONRY				
MASONRY - Inspection – Notice - Give sufficient notice so that inspection may be made at the following stages: <ul style="list-style-type: none"> Damp-proof courses, in position. Flashings, downpipes and other work to be concealed. Bottoms of cavities after cleaning out. Lintels in position. Structural elements being built in. Bottoms of core holes before grouting. Core filling. Control joints ready for insertion of joint filler. [Edit this list to suit the project.]	#.2.1			
MASONRY - Reinforced masonry - Clean out blocks - Notify the Superintendent when all clean out blocks have been laid.	#.11.3			
09 WOODWORK				
WOODWORK - Inspection – Notice - Give sufficient notice so that erected structural woodwork may be inspected before it is covered, for example by sheeting, lining, cladding, or roofing.	#.2.1			
WOODWORK - Contractor's submissions - Roof trusses certification - Submit a supplier's certificate (which may be included on an invoice or delivery docket) verifying that the timber conforms to the specification, including moisture content.	#.3.2			
WOODWORK - Contractor's submissions - Roof trusses moisture content - Submit records of moisture content.	#.3.3			
10 ROOFING				
ROOFING - Inspection – Notice - Give sufficient notice so that inspection may be made of: <ul style="list-style-type: none"> Substructure. Roof supports. Sarking, vapour barriers, pliable membranes. Insulation. Roof plumbing - gutters, rainwater heads, sumps, overflow relief systems, downpipes, inspection/maintenance openings, etc. 	#.7.1			
11 CLADDING				
CLADDING - Inspection – Notice - Give sufficient notice so that inspection may be made of framing complete with sarking and flashings ready to receive cladding.	#.6.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
CLADDING - Aluminium composite panels - Provide a report on the proposed system to be installed written by a qualified fire engineer. The report is to indicate if the proposed system is compliant with the specified requirements. If the system is not compliant it will not be accepted.	#.12			
CLADDING - Aluminium composite panels - Provide documentary evidence that the supplied material has been tested by a registered testing authority, and is classified EW to AS 5113, and is rated as material Group number 1 to AS 5637.1.	#.12			
CLADDING - Aluminium composite panels - Provide documentary evidence that the material supplied is the same as the material tested.	#.12			
13 WINDOWS				
WINDOWS - Inspections – Notice - Give sufficient notice to the Superintendent so that inspection may be made at the following stages: <ul style="list-style-type: none"> Fabricated window assemblies at the factory ready for delivery to the site. Openings prepared to receive windows (where windows are to be installed in prepared openings). Fabricated window assemblies delivered to the site, before installation. Commencement of window installation. 	#.2.1			
WINDOWS - Contractor's Submissions – Subcontractors - Submit names and contact details of proposed manufacturers and installers.	#.3.2			
WINDOWS - Contractor's Submissions - Operation and maintenance manual - Window and door assemblies: Submit the window and glazed door manufacturer's published instructions for operation, care and maintenance.	#.3.3			
WINDOWS - Contractor's Submissions – Warranties - Window and door assemblies: Submit the manufacturer's published product warranties.	#.3.4			
WINDOWS - Contractor's Submissions – Warranties - Submit warranties for installation.	#.3.4			
WINDOWS - Ceramic-coated spandrel glass - Submit a report, from the manufacturer, certifying that the glass meets the Fallout Resistance Test requirements of ASTM C1048.	#.6.3			
WINDOWS - Opacified glass - Submit a report, from the manufacturer, certifying that the proposed method of opacifying the glass will not be detrimental to the glass or affect the glass product warranty.	#.6.4			
WINDOWS - Construction generally – Certification - Submit evidence that window assemblies conform to AS 2047.	#.7.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
14 GLAZING				
GLAZING - Materials and components - Noise reducing glazed assemblies - Identification: Label each panel with a legible non-permanent mark, stating and certifying the Rw rating, and identifying the testing authority. Remove when directed.	#.3.9			
GLAZING - Glazing – Installation - Temporary marking: Use a method which does not harm the glass, and remove all traces when permitted to do so by the Superintendent.	#.4.2			
15 DOORS				
DOORS - Inspections – Notice - Give sufficient notice so that inspection may be made of door frames in place before building in to masonry.	#.2.1			
DOORS - Contractor submissions – Tests - Submit type test results and certificates, as follows: Fire-resisting and smoke doorsets: To AS 1905.1 and the NCC.	#.4.1			
16 HARDWARE				
HARDWARE - Contractor's submissions - Manufacturer's data - Submit the manufacturer's published product data for each component, including: <ul style="list-style-type: none"> Recommendations for installation use, care and maintenance; and The lock manufacturer's record of the key coding system showing each lock type, number and type of key supplied, key number for re-ordering, and name of supplier. Maintenance manuals. Warranties. 	#.2.1			
17 SUSPENDED CEILINGS				
SUSPENDED CEILINGS - Inspections – Notice - Give sufficient notice so that inspection may be made of the suspension system prior to installation of the ceiling panels or lining	#.2.1			
SUSPENDED CEILINGS - Inspections – Notice - Give notice on completion of fixing of panels and/or linings.	#.2.1			
SUSPENDED CEILINGS - Contractor submissions - Fire hazard properties - Submit documentary evidence of fire hazard properties: <ul style="list-style-type: none"> Assessment of group number to AS 5637.1 Group number to NCC <i>[Delete if not required.]</i>	#.3.1			
SUSPENDED CEILINGS - Contractor submissions – Warranties - Submit warranties from the supplier for materials, and warranties from the installer for workmanship. Minimum warranty period: 10 years.	#.3.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
18 PARTITIONS				
PARTITIONS - Inspections – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Set-out before installation Completion of installation 	#.2.1			
PARTITIONS - Contractor submissions – Samples - Submit samples as follows: <ul style="list-style-type: none"> Each selected panel and door finish, at least 300 x 300 mm, with associated selected edge strips and trims. All hardware and metal components in the selected finish e.g. lift-off hinges, coat hooks and fixing brackets. 	#.3.1			
PARTITIONS - Contractor submissions – Warranties - Cubicle system assemblies: Submit the manufacturer's published product warranties. Submit warranties for materials and components. Submit warranties for installation.	#.3.2			
19 LINING				
LINING - Inspections – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Substrate or framing before installation of linings. Finished surface of installation before applying: <ul style="list-style-type: none"> Sealer Finish coatings or decorative papers. 	#.2.1			
LINING - Contractor's submissions - Fire hazard properties - Submit documentary evidence of fire hazard properties: <ul style="list-style-type: none"> Assessment of group number to AS 5637.1 Group number to NCC <i>[Delete if not required.]</i>	#.3.1			
LINING - Contractor's submissions – Warranties - Submit warranties from the supplier for materials and warranties from the installer for workmanship.	#.3.2			
LINING - Contractor's submissions – Warranties - Lining materials: Submit the manufacturer's published product warranties.	#.3.2			
LINING - Materials and Components - Tongue and groove boards - Submit documentary proof that only certified timbers are used.	#.4.5			
20 RENDERING AND PLASTERING				
RENDERING AND PLASTERING - Inspections – Notice - Give sufficient notice so that inspection can be made of the following: <ul style="list-style-type: none"> Immediately prior to commencement of plastering; and On completion prior to decorative coating. 	#.2.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
RENDERING AND PLASTERING - Contractor Submissions – Samples - Plaster systems: Prepare prototypes of each plaster system complete with beads and other embedded items. Notify the Superintendent when the prototypes are ready for inspection.	#.3.1			
21 METALWORK				
METALWORK - Inspection – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Shop fabricated or assembled items prior to delivery to the site. Commencement of shop or site welding. Site erected assemblies on completion of erection, before covering up by cladding and/or encasing. Steel surfaces prepared for, and immediately before, site applied finishes. <i>[Edit this list to suit the project.]</i> 	#.2.1			
METALWORK - Contractor Submissions - Operation and maintenance manuals - Submit manufacturer's published recommendations for service use.	#.3.1			
METALWORK - Contractor Submissions - Manufacturer's data - Submit the manufacturer's product data including standard drawings and details showing: <ul style="list-style-type: none"> Methods of construction. Assembly and fixing, with dimensions and tolerances. 	#.3.2			
METALWORK - Contractor Submissions - Shop drawings - Confirm on site all dimensions and submit shop drawings showing the following information: <ul style="list-style-type: none"> Details of fabrication and components. Details of fabrication involving other trades or components. <i>[eg. toughened glass balustrade panels, proprietary louvres.]</i> Information necessary for site assembly. Proposals for the break-up of large items as required for delivery to the site. Proposed method of joining the modules of large items. 	#.3.3			
METALWORK - Contractor Submissions – Subcontractors - Submit names and contact details of proposed suppliers and installers.	#.3.4			
METALWORK - Contractor Submissions - Execution details - Welding procedures: Submit details of proposed welding procedures before fabrication.	#.3.5			
METALWORK - Contractor Submissions - Execution details - Welding dissimilar metals: Submit the following details: <ul style="list-style-type: none"> Type and thickness of materials to be welded. Proposed joint preparation and welding procedures. Proposed filler metal. Expected dilution (proportion of fused parent metal in the weld metal). Fastenings to aluminium (including aluminium alloys): Stainless steel or aluminium. 	#.3.5			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
22 FIXED FURNITURE AND JOINERY				
FIXED FURNITURE AND JOINERY - Inspection – Notice - Give notice so that inspection may be made of: <ul style="list-style-type: none"> • Shop fabricated or assembled items ready for delivery to the site. • Openings prepared to receive assemblies. • Site erected assemblies on completion of erection, before covering up by cladding and/or encasing. • Surfaces prepared for, and immediately before, site applied finishes. • Completion of installation. <i>[Edit this list to suit the project.]</i>	#.2.1			
FIXED FURNITURE AND JOINERY - Contractor's Submissions – Warranties - Submit the following: <ul style="list-style-type: none"> • Product warranty • Installation warranty. 	#.3.1			
FIXED FURNITURE AND JOINERY - Contractor's Submissions - Operations and maintenance manual - Submit manufacturer's published recommendations for service use.	#.3.2			
FIXED FURNITURE AND JOINERY - Contractor's Submissions - Shop drawings - Before commencing fabrication submit shop drawings to a scale that best describes the detail, showing the following: <ul style="list-style-type: none"> • Overall dimensions. • Materials, thicknesses and finishes of elements including doors, divisions, shelves, and benches. • Type of construction including mitre joints and junctions of members. • Hardware type and location. • Temporary bracing, if required. • Procedures for shop and site assembly, and fixing. • Locations of benchtop joints. • Locations items to be installed in the units. • Relationship of fixtures to adjacent building elements. • Details of fabrication involving other trades or components. <i>[e.g. toughened glass balustrade panels.]</i> <ul style="list-style-type: none"> • Proposals for the break-up of large items as required for delivery to the site. • Proposed method of joining the modules of large items. <i>[Edit this list to suit the project.]</i>	#.3.3			
FIXED FURNITURE AND JOINERY - Contractor's Submissions – Subcontractors - Submit names and contact details of proposed suppliers and installers.	#.3.4			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
23 TILING				
TILING - Inspections – Notice - Give sufficient notice so that inspection may be made at the following stages: <ul style="list-style-type: none"> • Completion of waterproof membrane. • Substrate immediately before tiling • Initial or trial set out. • Control joints before sealing and grouting • Grout and sealant colours before application. 	#.2.1			
TILING - Contractor's Submissions - Waterproofing membranes - Submit a report on the application of membranes and information including a photographic record as follows: <ul style="list-style-type: none"> • Date • Portion of work • Substrate preparation • After primer application • After membrane application • Protection provided from traffic. 	#.3.1			
TILING - Contractor's Submissions – Samples - Submit labelled samples of tiles, including fittings, accessories, trims, grout and sealants, illustrating the range of variation in colour and finish.	#.3.2			
TILING - Substrate - Moisture content - Verify that the moisture content of the substrate is compatible with the water vapour transmission rate of the membrane system by testing to AS/NZS 2455.1 Appendix B. Submit results of tests to Superintendent.	#.5.2			
24 RESILIENT FINISHES				
RESILIENT FINISHES - Inspection – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> • Substrate immediately before fixing resilient finishes or underlay. • Completed underlay, if any. • Finished surface before applying sealers or polishes (if any). • Completed installation. <i>[Amend to suit the project adding critical stage inspections required.]</i>	#.2.1			
RESILIENT FINISHES - Contractor's submissions - Fire hazard properties - Submit documentary evidence of fire hazard properties: <ul style="list-style-type: none"> • Assessment of critical radiant flux to AS ISO 9239.1. • Critical radiant flux to NCC. 	#.3.1			
RESILIENT FINISHES - Contractor's submissions - Manufacturer's data - Submit manufacturer's published product data for each type of finish and the recommendations for its application in the project including the following, as appropriate: <ul style="list-style-type: none"> • Care and maintenance requirements • Thickness and width of sheet or size of tile • Adhesive and joining method • Resistance to wear, indentation, chemicals, light, and fire • Flexibility and bending strength 	#.3.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
RESILIENT FINISHES - Contractor's submissions – Warranties - Submit warranties naming the Principal as warrantee from the supplier for materials, and warranties from the installer naming the Principal as warrantee for workmanship and application.	#.3.3			
25 CARPETS				
CARPETS - Inspection – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Substrate immediately before fixing underlay. Fixings, edge strips, and underlay installed ready to lay carpet. Completed carpet after cleaning and before covering for protection. 	#.2.1			
CARPETS - Contractor's submissions - Fire hazard properties - Submit documentary evidence of fire hazard properties: <ul style="list-style-type: none"> Testing of critical radiant flux to AS ISO 9239.1. Critical radiant flux value to the NCC. 	#.3.1			
CARPETS - Contractor's submissions – Samples - Submit labelled samples of not less than 200 x 200 mm illustrating the range of colour, pattern, and pile yarn available in the required carpet types.	#.3.2			
CARPETS - Contractor's submissions - Manufacturer's data - Submit manufacturer's published product data for each component, including: <ul style="list-style-type: none"> Published test results. Recommendations for its application in the project. A technical specification of the carpet installation. Recommendations for use, care and maintenance of the carpet conforming to AS/NZS 3733 in the form of a maintenance manual. 	#.3.3			
CARPETS - Contractor's submissions – Warranties - Submit warranties in the name of the Principal as the warrantee from the supplier for materials, and warranties in the name of the Principal as the warrantee from the installer for workmanship.	#.3.4			
CARPETS - Contractor's submissions - Shop drawings - Submit drawings indicating the proposed location of joints in carpet installations.	#.3.5			
26 PAINTING				
PAINTING - Inspection – Notice - Give sufficient notice so that each of the following stages may be inspected: <ul style="list-style-type: none"> Substrate immediately prior to commencement of painting Prior to application of final coat 	#.2.1			
PAINTING - Inspection – Notice - Complete and submit copies of reports to AS 3894.10, AS 3894.11 and AS 3894.12. Provide copies of reports within 2 days of the inspections.	#.2.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
PAINTING - Contractor's submissions - Specialist applicators - Submit name and contact details of proposed specialist applicators with suitable experience. Applicators to be PCCP accredited in the category applicable to the works.	#.3.1			
PAINTING - Contractor's submissions – Warranties - Submit paint manufacturer's warranties in respect to the paints in the name of the Principal as the warrantee.	#.3.2			
PAINTING - Contractor's submissions – Warranties - Submit paint applicators warranties in regards to workmanship in the name of the Principal as the warrantee.	#.3.2			
PAINTING - Materials and components - Low VOC paints - Use Low VOC emitting paints. Provide manufacturer's specifications.	#.4.1			
PAINTING - Powder coating - Powder coat subcontractors - Submit name and contact details of proposed specialist applicators as registered by the coating manufacturer.	#.6.3			
PAINTING - Powder coating - Powder coat warranties - Submit the coating manufacturer's warranties in the name of the Principal. Aluminium substrate Minimum warranty period colour retention: 15 years. Minimum warranty period film integrity: 20 years. Steel surfaces Minimum warranty period colour retention: 15 years. Minimum warranty period steel corrosion: 10 years	#.6.4			
28 STORMWATER				
STORMWATER - Inspections – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Excavated surfaces. Concealed or underground services before concealing or backfilling. Placing of in situ concrete. Upon completion. <i>[Amend to suit project requirements.]</i>	#.2.1			
STORMWATER - Sub-soil drains - End walls - Advise Superintendent within two days when clean out is completed.	#.11.11			
29 SANITARY SERVICES				
SANITARY SERVICES - Inspection – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Excavated surfaces. Concealed or underground services before concealing or backfilling. Testing of access chambers. Testing of access chambers / pipeline connection. <i>[Amend to suit project requirements.]</i>	#.2.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
30 WATER				
WATER - Inspection – Notice - Give sufficient notice so that inspections may be made of the following: <ul style="list-style-type: none"> Excavated surfaces. Concealed or underground services before concealing or backfilling. <i>[Amend to suit project requirements.]</i>	#.2.1			
31 LP GAS				
LP GAS - Inspection – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Before any testing. Before any pipes are buried, concealed or built in. 	#.2.1			
LP GAS - Contractor's submissions - Operating instructions - Submit a copy of the operating instructions for each gas appliance.	#.5.4			
32 GENERAL ELECTRICAL REQUIREMENTS				
GENERAL ELECTRICAL REQUIREMENTS - Inspection – Notice - Give sufficient notice so that inspection may be made at the following stages: <ul style="list-style-type: none"> Underground conduits prior to backfilling Concealed conduits and wiring prior to covering Required site tests. Fit-off of light and power equipment Practical completion/defects inspections 	#.3.1			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - Shop drawings - Submit the following shop drawings to the Superintendent for review: <ul style="list-style-type: none"> Switchboards. Distribution boards. Power factor correction equipment. Lighting control system. Energy management system. Security alarm system. Fire detection and alarm system. PA system. Fuel system and generator schematic, and room layout, including all associated equipment <i>[Amend requirements to suit the project.]</i>	#.4.1			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - Shop drawings - Shop drawings must include: <ul style="list-style-type: none"> Dimensions of equipment. Floor plans showing the location, and setout of equipment. General arrangement plans, elevations and sections. Submain and circuit identification. Equipment and labelling details. Label schedules. Schematic diagrams. Interfaces with other equipment. 	#.4.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - Product data - Submit product data for the following: <ul style="list-style-type: none"> • Switchboard and distribution board equipment. • Luminaires and emergency lighting. • Security alarm system. • Fire detection and alarm system. • PA system. • Generator and fuel installation equipment • UPS system • Power factor correction and all PV equipment • Battery systems and controls • Lightning protection system 	#.4.4			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions – Samples - Submit samples for the following: <ul style="list-style-type: none"> • Luminaires. • Electrical accessories, eg. switches, socket outlets and similar. • Cable supports. • Proprietary cable pits. • System components. <p>Submit the samples before commencing the installation.</p>	#.4.5			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - Quality management documentation - Submit copies of the Contractors quality assurance system documentation for all areas of the work.	#.4.6			
GENERAL ELECTRICAL REQUIREMENTS - Contractor's submissions - Plant and equipment - On or before practical completion provide a list of all plant and equipment installed as part of the project. Refer to the GENERAL REQUIREMENTS worksection, Contractor Submissions clause, Handover sub clause.	#.4.7			
GENERAL ELECTRICAL REQUIREMENTS - Operation and maintenance manuals – General - Submit operation and maintenance manuals for all installations.	#.10.1			
33 WIRING AND ACCESSORIES				
WIRING AND ACCESSORIES - Contractor's submissions - Shop drawings - Submit shop drawings showing details of the following: <ul style="list-style-type: none"> • Sub-main cable support routes including dimensions. • Busduct systems including routes dimensions and connection details. • Switchboard cupboard layouts including risers. • Spacings of cast in situ conduits near switchboards and in congested areas. • Structural penetrations for cabling and ducting. • Underground conduit routes and cable marker positions. <p><i>[Edit this list to suit the project requirements.]</i></p>	#.2.1			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE NO	INITIALS	DATE
WIRING AND ACCESSORIES - Contractor's submissions - Cable sizing calculations - If cable sizes are not given, submit load calculations and cable selections based on load current, fault current, earth loop impedance and voltage drop.	#.2.2			
WIRING AND ACCESSORIES - Contractor's submissions - Protection grading study – Refer DIPL Minimum Design Standards – Electrical Services <u>This witness point is only applicable if the project contains a design component. Protection grading studies must be undertaken by an electrical engineer.</u> The design drawings to include grading based on specific manufacturer's switchgear. Submit a protection grading study from the point of supply to final sub circuits based on calculations using final submain and circuit lengths, final switchgear selections and selected methods of installation.	#.2.3			
WIRING AND ACCESSORIES - Power cables - Support of fire resisting cables - Certification: Provide test certificate issued by NATA registered laboratory.	#.4.4			
WIRING AND ACCESSORIES - Cable pits - Proprietary cable pits - Provide structural certification from the manufacturer that the proprietary pit will support the expected loading.	#.13.1			
WIRING AND ACCESSORIES - Movement detector switching - Movement detectors - Advise the Superintendent so that final sensitivity tests may be witnessed.	#.16.1			
34 GENERATORS				
GENERATORS - Contractor's submissions - Operation and maintenance manuals - Submit all operational and maintenance documentation necessary to operate and maintain the systems installed. Refer to the Operation and Maintenance Manuals clause in the GENERAL ELECTRICAL worksection.	#.2.1			
GENERATORS - Contractor's submissions - Products and materials - Submit technical data including the following: <ul style="list-style-type: none"> • Technical description and specifications of each generating set, including output curves for base load and stand-by conditions, alternator and engine data, automatic voltage regulator, synchronising and load sharing modules and auxiliaries. • Type test reports as follows: <ul style="list-style-type: none"> • Generating sets. • Alternators: To AS 60034.1, AS 60034.5 and AS 60034.7. • Net continuous rated output. • Net short-time rated output. • Transient and subtransient reactance of the alternators. 	#.2.2			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> Voltage regulation grade. Generating set efficiency at 50%, 75% and 100% load. Calculations for performance of acoustic enclosures and silencers. Evidence that the engine type has previously passed cold starting tests at the minimum ambient site temperature. The generator must be a reputable brand with a local workshop and service provider with spare parts and service support available 24/7. For generators located in remote areas the service provider must be based in the Northern Territory and must be available to service remote areas. 				
<p>GENERATORS - Contractor's submissions - Shop drawings - Submit shop drawings indicating the following:</p> <ul style="list-style-type: none"> General arrangement of equipment, generating sets, fuel tanks, exhaust silencers, control panels, batteries, cable tray runs. Single line schematic showing the interconnection with the building electrical system. Operating sequence in test and emergency modes as well as restoration of normal supply. Location and size of fuel tanks. Physical size of exhaust silencers including clearances from other system, building and structural elements. Physical size of generating set base and clearances for maintenance. Location and estimated size of control and distribution boards. Location of control and starting batteries. Acoustic performance criteria (engine, exhaust, air flow), to determine the level of sound proofing required. Maximum mass and overall dimensions of each separable assembly. Access clearances for operational maintenance and dismantling. Electrical single line diagram, and general arrangement for the complete system. Control diagrams. Alarms and shutdown annunciator text engraving schedule. Details of foundations and anti-vibration mountings. <p><i>[Amend requirements to suit the project.]</i></p>	#.2.3			
<p>GENERATORS - Inspection – Notice - Give sufficient notice so that inspection and load testing may be made of the complete generating set and associated systems at the manufacturer's or supplier's premises before delivery to the site.</p>	#.3.1			
<p>GENERATORS - Completion - Pre commissioning tests - Give the Superintendent sufficient notice so that the following can be witnessed. For each generating set carry out the following:</p> <ul style="list-style-type: none"> Check tightness of connections and securing devices. Verify correctness of operation of protection devices and systems including sensor settings. Simulate actual conditions as far as possible, in order to test responses to faults imposed. Before connecting the generator to mains supply or project loads, verify that the correct electricity supply phase sequence is provided at 	#.6.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<p>switchboards and control panels, and that circuit protective devices are correctly sized and adjusted.</p> <ul style="list-style-type: none"> Functional checks to AS 4594.1, Table 7 - List C - Functional checks, items C1 to C5 inclusive. Cold start with the engine having been at rest for the previous 24 hours, timed from receipt of mains failure signal to acceptance of full rated load in 3 load steps to within the limits of output voltage and frequency. Continuous operational trial consisting of: <ul style="list-style-type: none"> 30 min at 50% rated power. 1 hour at 75% rated power. 1 hour at 100% rated power 1 hour at 75% rated power. 30 min at 50% rated power. Record fuel consumption for each step of the continuous trial. Sample engine oil from engine sump before and after tests. Perform laboratory analysis and submit a report on each oil sample. Continuous operational trial: During the trial, measure the following at maximum intervals of 30 minutes: <ul style="list-style-type: none"> Generator kW and kVAr output. Generator output voltage. Generator output current. Generator output frequency. Power factor. Oil pressure and water temperature. Electrical power requirements of continuously running electric motor driven ancillaries. Each battery charger current and voltage readings Noise level. <p>Synchronisation and load sharing tests: For generating sets running in parallel perform tests to verify automatic synchronisation and load sharing including the following:</p> <ul style="list-style-type: none"> Sequence start and shutdown of each generating set. Parallel operation of generating sets. Synchronising of generating sets. Equal load sharing of kW and kVAr over 5 equal load steps. Neutral switching sequence and operation, where provided. Operation of controls, switchgear and auxiliaries. 				
GENERATORS - Completion - Temporary test loads - Provide test loads including power and control wiring, ancillary equipment and test instruments to achieve the kW, kVAr and necessary load steps.	#.6.2			
GENERATORS - Completion – Reports - Submit reports from manufacturers or suppliers verifying the performance of safety and control functions of each system.	#.6.4			
GENERATORS - Maintenance - Maintenance period - Conduct routine testing and routine maintenance and servicing training to the Principal prior to final completion.	#.7.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
35 LIQUID FUELS				
LIQUID FUELS - Fuel Transfer and Fuel Polishing Equipment - Operation and maintenance manuals - Submit to the Superintendent all operational and maintenance documentation necessary to operate and maintain the equipment installed. Refer to the Operation and Maintenance Manuals clause in the GENERAL ELECTRICAL worksection.	#.14.4			
LIQUID FUELS - Fuel Transfer and Fuel Polishing Equipment - Manufacturer's test certificates - Submit to the Superintendent all manufacturer's factory test certificates.	#.14.5			
LIQUID FUELS - Fuel Transfer and Fuel Polishing Equipment – Warranties - Submit to the Superintendent the manufacturer's published product warranties in the name of the Principal.	#.14.6			
36 PHOTOVOLTAIC INSTALLATIONS				
PHOTOVOLTAIC INSTALLATIONS - Contractor submissions - Rebate application - Submit complete timely application documentation for a grant under the appropriate Rebate Program. <i>[Review for each specification to check on any changes to the grant programme. Delete if not applicable.]</i>	#.2.1			
PHOTOVOLTAIC INSTALLATIONS - Contractor submissions – Tests - Before the date of Practical Completion submit test reports from manufacturers or suppliers verifying the performance of safety and control functions of each system.	#.2.5			
PHOTOVOLTAIC INSTALLATIONS - Completion – Warranties - Submit warranties from the supplier for materials in the name of the Principal, and warranties from the installer for workmanship in the name of the Principal.	#.12.4			
37 UNINTERRUPTIBLE POWER SUPPLY (UPS)				
UNINTERRUPTIBLE POWER SUPPLY (UPS) - Contractor's submissions - Design documentation - Calculations: Submit calculated input power factor and harmonic content.	#.2.1			
UNINTERRUPTIBLE POWER SUPPLY (UPS) - Contractor's submissions - Operation and maintenance manuals - Submit all operational and maintenance documentation necessary to operate and maintain the systems installed.	#.2.2			
UNINTERRUPTIBLE POWER SUPPLY (UPS) - Contractor's submissions – Tests - Submit all results of on-site tests, as documented.	#.2.4			
UNINTERRUPTIBLE POWER SUPPLY (UPS) - Maintenance - Maintenance period - Conduct routine testing and routine maintenance and servicing training to the Principal prior to final completion.	#.11.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
38 SWITCHBOARDS				
SWITCHBOARDS - Inspection – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> Assembly installed and connected, prior to site tests Commissioned and complete. 	#.2.1			
SWITCHBOARDS - Contractor's submissions - Manufacturers data - Submit type test certificates for components, functional units and assemblies including internal arcing-fault tests and factory inspection and test report.	#.3.1			
SWITCHBOARDS - Contractor's submissions - Manufacturers data - Submit confirmation that no composite wood product used in the switchboard or all composite wood product is low emission formaldehyde.	#.3.1			
SWITCHBOARDS - Contractor's submissions – Calculations - Submit detailed certified calculations verifying design characteristics.	#.3.2			
SWITCHBOARDS - Contractor's submissions – Calculations - Submit design calculations of non-type-tested and non-proprietary busbar assemblies.	#.3.2			
SWITCHBOARDS - Contractor's submissions - Type test data - Submit records of alterations made to TTA's since the tests.	#.3.3			
39 LUMINAIRES				
LUMINAIRES - Contractor's submissions - Operation and maintenance manuals - Requirement: Submit operational and maintenance documentation necessary to operate and maintain the equipment and systems installed.	#.2.1			
LUMINAIRES - Contractor's submissions - Products and materials - Lighting: Submit technical data on the following: <ul style="list-style-type: none"> Luminaires. Lamps. Ballasts. Power factor correction equipment. Lighting control systems. All accessories. 	#.2.2			
LUMINAIRES - Contractor's submissions - Products and materials - Type test: Submit photometric test results from an Accredited Testing Laboratory as evidence of luminous efficacy for the applicable CCT for the following: <ul style="list-style-type: none"> Light-emitting diode luminaires. Light-emitting diode lamp replacement modules. 	#.2.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
LUMINAIRES - Contractor's submissions – Samples – If specified as required - Lighting: Submit samples of all luminaires and accessories complete with lamp, control gear and three core flex and plug.	#.2.3			
LUMINAIRES - Contractor's submissions – Data sheets - Provide product data sheets of all luminaires, control gear, and associated equipment.	#.2.4			
LUMINAIRES - Re-Use Of Luminaires - Modifications and refurbishing - Modify and refurbish existing luminaires to manufacturer's current recommendations. Test for conformance with current Australian Standards before returning to service. Provide test results.	#.10.1			
40 COMMUNICATIONS				
COMMUNICATIONS - Inspection – Notice - Give sufficient notice so that the following stages of installation may be inspected and the testing witnessed: - At first fix - prior to internal lining installation to witness installation compliance and segregation.	#.2.1			
COMMUNICATIONS - Inspection – Notice - Give sufficient notice so that the following stages of installation may be inspected and the testing witnessed: - At testing stage to witness the certification process and request sample tests.	#.2.1			
COMMUNICATIONS - Inspection – Notice - Give sufficient notice so that the following stages of installation may be inspected and the testing witnessed: - Before Practical Completion to witness labelling and quality of the installation.	#.2.1			
COMMUNICATIONS - Contractor's submissions – Certification - Submit to the Superintendent certification for the product and certification for the installation.	#.3.1			
COMMUNICATIONS - Contractor's submissions - Technical data - Submit to the Superintendent technical data including the following: <ul style="list-style-type: none"> • System design parameters: Performance. • Voice and/or data transfer rate. • Cable type and characteristics. • Segregation requirements for EMI/EMR. • Maximum length of cables. • Cross-connect type and characteristics. • Cross-connect block. • Patch cords. • Fibre optic terminations. • Patch panel module. • Cable management for racks. • Rack. • Fly leads. 	#.3.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
COMMUNICATIONS - Contractor's submissions – Samples - Submit to the Superintendent product data and samples for the telecommunications outlet(s). Submit the samples before commencing the installation.	#.3.3			
COMMUNICATIONS - Contractor's submissions - Shop drawings - Telecommunications cabling: Submit to the Superintendent the following: <ul style="list-style-type: none"> • Layouts of equipment racks. • Cross-connect layout. • Location of consolidation points and access hatches. • Cabling diagram for complete system. • Cable management system. • Proposed fire stop system for penetrations through fire rated building elements. 	#.3.4			
COMMUNICATIONS - Distributors - Cross connect patch panels - Certification: Provide vendor certification including the warranty period for a minimum of 20 years for the integrated voice/data copper cabling systems. Warranty to be in the name of the Principal.	#.6.3			
COMMUNICATIONS - Distributors - Optical fibre termination panels - Certification: Provide vendor certification, including the warranty period for a minimum of 20 years, for the optical fibre cabling systems. Warranty to be in the name of the Principal.	#.6.4			
COMMUNICATIONS - Completion - Operations and maintenance manuals - Provide an Operational and Maintenance manual for the installation. Provide two hardcopies contained in A4 binders and one electronic copy. The Operational and Maintenance manual for the communications installation shall include the following: <ul style="list-style-type: none"> • Contents Page. • Contact details of installation contractor, Superintendent and builder. • Certification and warranty details including a TCA1 form. • Technical data for cabinets, cabling and accessories. • Equipment schedules. • Details of any scheduled servicing requirements. • As built drawings. • Test Results. Test results shall be submitted to the Superintendent for review by the client or the client representative for approval to achieve Practical Completion.	#.14.3			
COMMUNICATIONS - Completion – Warranty - Submit a manufacturer's Performance and Application Warranty for a period of not less than 20 years for the completed installation.	#.14.4			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
41 MASTER ANTENNA TV				
MASTER ANTENNA TV - Inspection – Notice - Give sufficient notice so that the installation may be inspected and the testing witnessed.	#.2.1			
MASTER ANTENNA TV - Contractor's submissions – Certification - Submit certification of conformance of product installation to AS/NZS 1367. <i>[Delete if the project does not include a network connection.]</i>	#.3.1			
MASTER ANTENNA TV - Contractor's submissions – Documentation - Submit documentation to AS/NZS 1367, Documentation and Labelling appendix.	#.3.2			
MASTER ANTENNA TV - Contractor's submissions - Technical data - Before commencing the work submit the following: <ul style="list-style-type: none"> Design frequencies. Free-to-air reception quality report, citing methods used for determination. Address all signals that the system is to receive. Calculations of signal levels at outlets and at the input and output of amplifiers, splitters and taps. 	#.3.3			
MASTER ANTENNA TV - Contractor's submissions - Products data - Submit product data for all system components.	#.3.4			
MASTER ANTENNA TV - Contractor's submissions - Record drawings - Submit documents showing minimum and maximum signal frequency (channel) and their levels at the input and output of amplifiers, splitters, taps, tap ports and outlets.	#.3.5			
MASTER ANTENNA TV - Contractor's submissions - Correspondence with network operators - Correspondence: Provide copies of correspondence and notes of meetings with all subscription network operators.	#.3.6			
MASTER ANTENNA TV - Contractor's submissions - Correspondence with network operators - Service agreements: Arrange for each service provider to submit service agreements for execution by the principal.	#.3.6			
MASTER ANTENNA TV - Contractor's submissions – Samples - System components: Submit samples of components which will be visible after installation, including but not limited to: <ul style="list-style-type: none"> Outlets Labelling. <i>[Samples of system components should be submitted for coordination, or technical review.]</i> Submit the samples before commencing installation of the components.	#.3.7			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
MASTER ANTENNA TV - Contractor's submissions - Shop drawings - Before commencing the work submit the following in accordance with AS/NZS 1367 Documents and Labelling appendix, Schematic Diagrams clause and, Operating System Parameters and Levels clause. <ul style="list-style-type: none"> Schematic diagram, proposed location of all components and interconnecting cabling. Antennae types and their method of mounting. User connection points and their method of connection - 'F' type socket. Cable types and their method of termination - 'F' type. 	#.3.8			
MASTER ANTENNA TV - Commissioning – Testing - Submit results of system testing to the Superintendent for approval.	#.8.1			
42 FIRE DETECTION				
FIRE DETECTION – Block Diagram - Provide documentation verifying that the block diagram is approved by NTFRS, NTFAS Section.	#.23			
FIRE DETECTION – Multi point aspirating smoke detection system - Allow to commission the entire installation in the presence of the Superintendent. Provide notice to the Superintendent. Refer to the Commissioning clause for required advance notice.	#.25			
FIRE DETECTION - Commissioning – Commissioning tests - Submit a commissioning program to the Superintendent prior to testing: <ul style="list-style-type: none"> Minimum 2 days for metropolitan location. Minimum 5 days for rural location. Minimum 8 days for remote location. Test and commission the entire installation in accordance with AS 1670.1, in the presence of the Superintendent, prior to Practical Completion. All defects found during commissioning testing or during inspections by shall be corrected at no additional cost to the Principal. Test reports shall be delivered to the Superintendent on completion.	#.26.1			
FIRE DETECTION - Commissioning – Acceptance testing - Submit a written acceptance test procedure (ATP) for compliance with this Specification for approval by the Superintendent.	#.26.2			
FIRE DETECTION - Commissioning – Hot smoke tests - Submit a copy of the test results to the Superintendent.	#.26.3			
43 LIGHTNING AND SURGE PROTECTION				
LIGHTNING AND SURGE PROTECTION - Lightning Protection Contractor Submissions - Operation and maintenance manuals - Submit the operational and maintenance documentation necessary to operate and maintain the equipment and systems installed.	#.2.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
LIGHTNING AND SURGE PROTECTION - Lightning Protection Contractor Submissions – Records - Submit records to AS 1768.	#.2.2			
LIGHTNING AND SURGE PROTECTION - Lightning Protection Contractor Submissions – Subcontractors - Submit names and contact details of proposed supplies and installers.	#.2.4			
LIGHTNING AND SURGE PROTECTION - Lightning Protection Contractor Submissions – Tests - Site tests: Submit all results of completion tests to AS 1768, Testing and maintenance section, Testing clause.	#.2.5			
44 ELECTRONIC SECURITY AND ACCESS CONTROL				
ELECTRONIC SECURITY AND ACCESS CONTROL - Contractor's submissions - Submit a copy of cabler(s) registration(s). Registration must be issued by an ACMA accredited registrar.	#.2			
45 GENERAL MECHANICAL REQUIREMENTS				
GENERAL MECHANICAL REQUIREMENTS - Inspections – Notice - Give written notice of the time, date, and place of each test of not less than 2 full working days for test locations within 80 km of Darwin, Katherine, Alice Springs and Nhulunbuy and not less than 5 full working days for other locations. If the Superintendent is unable to witness tests due to insufficient notice he may order any test repeated at the Contractor's cost. Pay the Superintendent's costs for witnessing repeats of failed tests. Such costs will be charged at the same rates as charged by Power and Water Corporation for repeats of failed electrical inspections Concealment: If notice of inspection is required for parts of the works that are to be concealed, advise when the inspection can be made before concealment.	#.2.1			
GENERAL MECHANICAL REQUIREMENTS - Contractor's Submissions - Sequences of operation - Submit where changes to the operating sequence are proposed to enhance operation and efficient use of energy.	#.6.1.18			
GENERAL MECHANICAL REQUIREMENTS - Contractor's Submissions – Products - Submit products and materials data, including manufacturer's technical specifications and drawings, evidence of conformance to product certification schemes, performance and rating tables and installation and maintenance recommendations.	#.13			
GENERAL MECHANICAL REQUIREMENTS - Installation - Shop drawings - Submit shop drawings of fixings, together with design calculations, for information.	#.16.6			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
GENERAL MECHANICAL REQUIREMENTS – Control systems – Plant operation – Sequences of operation - Where the Contractor considers a change to the operating sequence would enhance operation and efficient use of energy submit documentation detailing the rationale for an intended change for review.	#.20.3.7			
GENERAL MECHANICAL REQUIREMENTS - Testing - Notice for inspection of commissioning - Inspection: Give sufficient notice for inspection to be made of the commissioning and completion testing of the installation.	#.27.4			
GENERAL MECHANICAL REQUIREMENTS - Testing – Certification - For each completed test, provide a report or certificate suitable for inclusion in a manual recording details of the testing method, procedure, instrumentation, readings, calculations, and the test results. Indicate the date, time and place of the test, the name and status of the persons present representing the Contractor and the Superintendent, and include the signatures of the person conducting the test, the Contractor's representative and the Superintendent's representative.	#.27.8			
GENERAL MECHANICAL REQUIREMENTS - Testing - Manufacturer's certificates - Provide a manufacturer's certificate for each factory tested item certifying that it complies with all specified requirements, and for each type tested item certifying that the production item is identical to that type tested. Manufacturer's certificates for imported items may be accepted or rejected at the discretion of the Superintendent.	#.27.9			
GENERAL MECHANICAL REQUIREMENTS - Testing - Calibration certificates - For each test instrument, provide a current calibration certificate to AS/NZS ISO 10012 from a testing facility approved by NATA for the particular purpose.	#.27.10			
GENERAL MECHANICAL REQUIREMENTS - Commissioning - Air balancing tests - Give sufficient notice so that the Superintendent may attend the following tests: Balance air systems to give flow rates for 'Standard Air' to within - 0% to + 10% of those specified, under the following conditions: <ul style="list-style-type: none"> • All dampers are initially open, and are closed only as much as necessary to provide the lowest possible total resistance to air flow. • All fans are set to operate at the lowest possible speed and power consumption. • Air is distributed evenly over faces of outlets and grilles. • Cooling coils are fully wetted and filter resistance is the mean of the initial and final filter resistance. Commence balancing only when the building is clean and sealed. Clean air handling system, remove all dust and foreign matter before energising fans for balancing. Simulate additional filter resistance if necessary. Balance multiple systems with all systems operating. <ul style="list-style-type: none"> • Use pitot tube and manometer to measure fan total air flow and main branch air flows. 	#.28.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> • Use direct reading velocity meters or vane anemometers in conjunction with adapter duct or cone to measure individual flow at grilles and diffusers. <p><i>[Delete water balancing requirements for DX systems]</i></p>				
<p>GENERAL MECHANICAL REQUIREMENTS - Commissioning - Water balancing tests - Give sufficient notice so that the Superintendent may attend the following tests:</p> <p>Balance water systems to give flow rates within $\pm 5\%$ of those specified, under the following conditions:</p> <ul style="list-style-type: none"> • All flow control valves are initially fully open, and are closed only as much as necessary to provide the lowest possible total hydraulic pressure loss. • All by-pass flow control valves are precisely adjusted to the hydraulic pressure drop of that portion of the system across which they are connected. • All pump impellers are machined to the minimum possible diameter and all pumps are set to operate at the lowest possible speed and power consumption. • Water supply and bleed rates are adjusted to give the lowest practicable water consumption. <p>Vent all air from piping systems. Preclean, decontaminate and chemically treat all water systems. Balance each system with the circulating water at its specified temperatures.</p>	#.28.3			
<p>GENERAL MECHANICAL REQUIREMENTS - Commissioning - Noise testing tests - Give sufficient notice so that the Superintendent may attend the following tests:</p> <p>For external noise, take measurements to AS 1055, Measurements section and Investigation of Specific Environmental Noise Situations section, Measurements clause, for compliance with the adjusted average maximum A-weighted sound pressure specified. For internal noise from unitary air conditioners installed wholly within occupied areas test as for external noise. Otherwise take measurements to AS/NZS 2107, Method of Measurement section for compliance with the specified sound level, when measurements exceeding the specified maxima will be acceptable provided the drop in any octave band centre frequency when all mechanical plant is stopped is less than 3 dB.</p>	#.28.4			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
GENERAL MECHANICAL REQUIREMENTS - Commissioning - Vibration testing tests - Give sufficient notice so that the Superintendent may attend the following tests: Have all vibration measurements made by an approved specialist. Measure and evaluate vibration severity to AS 2625.4 for rotating machines up to 300 kW power and to AS 2625.1 for larger rotating machines. Labour and materials: Provide all labour, test apparatus, instruments, and materials required for carrying out all testing. Unless otherwise specified elsewhere, provide all energy required for testing, including electricity, liquid fuels and solid fuels. Testing conditions: If ambient temperatures, available loads or other conditions are such that definitive test results cannot be obtained, the Superintendent may either modify the test requirements and/or test result to suit the prevailing conditions or he may defer the testing until suitable conditions occur.	#.28.5			
GENERAL MECHANICAL REQUIREMENTS - Commissioning - Acceptance tests - Give sufficient notice so that the Superintendent may attend the following tests: When the Superintendent considers preliminary testing to be satisfactorily completed, carry out all tests necessary to prove that all works comply with all specified requirements and are acceptable for hand over.	#.28.6			
GENERAL MECHANICAL REQUIREMENTS - Commissioning - Final tests - Give sufficient notice so that the Superintendent may attend the following tests: At the end of the Defects Liability Period and before Final Completion, carry out such testing as necessary to demonstrate that the works have been satisfactorily maintained and are in the same condition as at the Date of Practical Completion.	#.28.7			
46 MECHANICAL SYSTEMS				
MECHANICAL SYSTEMS - Contractor's Submissions – Calculations - Submit calculations as documented including: <ul style="list-style-type: none"> • Fan and ducting system head losses and pressure nomograms. • Pump and piping system head losses and pressure nomograms. • Radiated sound pressure levels. • Plantroom sound transmission. • Electricity maximum demand calculation, calculation consistent with peak thermal delivery demand. • Combustion fuel maximum demand. 	#.7.1			
MECHANICAL SYSTEMS - Contractor's Submissions - Electrical loading information for mechanical services - Loading and connection: Submit the information for items not supplied from the services switchboards.	#.7.3			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
MECHANICAL SYSTEMS - Contractor's Submissions - Electrical loading information for mechanical services - Starting characteristics: Submit details for motors with reduced current starting. Starting characteristics must be within the characteristics of the respective submain protection devices.	#.7.3			
MECHANICAL SYSTEMS - Contractor's Submissions - Electrical loading information for mechanical services - Switchboards: Submit the following information for each building services switchboard: <ul style="list-style-type: none"> • Board location and designation. • For each submain connected to the board, submit the following for each item connected to it: <ul style="list-style-type: none"> – Submain designation. – Item designation and name. – Power rating in kW. – Number of phases. – Full load amps per phase. – Power factor. – Total amps on each phase for respective submain. 	#.7.3			
MECHANICAL SYSTEMS - Contractor's Submissions - Technical data - Equipment: Before ordering equipment, calculate the respective system pressure losses based on the equipment offered and layouts shown on the shop drawings and submit the proposed selections.	#.7.5			
MECHANICAL SYSTEMS - Contractor's Submissions - Technical data - Submit technical data for all items of plant and equipment. Data to be submitted: Include at least the following information in technical submissions: <ul style="list-style-type: none"> • Assumptions. • Calculations. • Model name, designation and number. • Capacity of all system elements. • Country of origin and manufacture. • Materials used in the construction. • Size, including required clearances for installation. • Certification of conformance to the applicable code or standard. • Technical data schedules corresponding to the equipment schedules in the contract documents. If there is a discrepancy between the two, substantiate the change. • Manufacturers' technical literature. • Type-test reports. 	#.7.5			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
MECHANICAL SYSTEMS - Contractor's Submissions - Control function descriptions - Submit descriptions of control sequences. Maintain as a working document with current sequences throughout the course of design, workshopping, programing, commissioning and during the course of system tuning and maintenance through the defects liability period.	#.7.6			
MECHANICAL SYSTEMS - Inspections – Notice - Give notice so inspection may be made of the following: <ul style="list-style-type: none"> • Off-site duct construction methodology. • First install trade component fixing concealed services. • First install trade based components fixing exposed services. • Piping pressure tests. • Switchboard thermal imaging. • Fire and life safety operating sequence. 	#.8.1			
49 CHILLERS - COMBINED				
CHILLERS - COMBINED - Contractor's Submissions – Certification - Energy and performance: Submit manufacturer's certification for testing to AS/NZS 4776.1.2 of the following for each chiller: <ul style="list-style-type: none"> • Ratings to AS/NZS 4776.1.1 Published Ratings section, Standard Ratings clause. • If documented, NPLV. 	#.2.1			
CHILLERS - COMBINED - Contractor's Submissions – Tests - <i>[If off-site factory performance testing is required, include in the Chiller schedule. If not, delete this subclause.]</i> Factory performance testing: If documented, provide evidence of testing by a registered testing authority as follows: <i>[Registered testing authority is defined in the GENERAL MECHANICAL worksection in the same manner as the term is defined in the BCA. For chillers tested overseas, this would be an organisation outside Australia registered by an authority recognised by NATA through a mutual recognition agreement.]</i> <ul style="list-style-type: none"> • Standard: To AS/NZS 4776.1.2. • Condenser water temperature depression: To AS/NZS 4776.1.1. • Centrifugal and screw chillers: Provide COP at 100%, 75%, 50% and 25% of full load and Integrated Part Load Value (IPLV). <i>[If IPLV is defined for the project, substitute NPLV for IPLV.]</i> • Reciprocating chillers: To AS/NZS 4776.1.2, at full load. <i>[Detail the tests required in Products or Commissioning clause, as appropriate, and list the submissions required here.]</i> 	#.2.2			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
CHILLERS - COMBINED - Contractor's Submissions - Product data - Provide the following: <ul style="list-style-type: none"> • Manufacturer's rated performance data for the chillers offered. • Weights including loading diagrams. • Drawings showing the dimensions of the fully assembled chiller. • Diagrams showing maintenance access and clearance requirements. • Details of facilities and services required for the chillers offered but not documented. • Details of accessories and features provided with the chillers offered but not documented. • Electrical requirements for the chillers. • Wiring diagrams. • Evidence of conformance to AS/NZS 5149.1, AS/NZS 5149.2 and AS 1210. <i>[In addition, for noise critical situations include certified sound power levels.]</i>	#.2.3			
CHILLERS - COMBINED - Commissioning – Commissioning - Commission the chiller system under the supervision of the equipment manufacturer's representative. Complete the manufacturer's commissioning checklist and include a copy, signed by the manufacturer's representative, in the maintenance manuals. <i>[Electrical testing of switchboards: If required, specify in the 0781 Mechanical electrical worksection.</i> <i>Noise testing: If required, specify in the MECHANICAL COMMISSIONING worksection.]</i>	#.16.1			
50 COOLING TOWERS				
COOLING TOWERS - Contractor's Submissions - Technical data - Submit documentary evidence of the following: <ul style="list-style-type: none"> • Conformance to the provisions of AS/NZS 3666.1. • Drift loss to AS 4180.1. • Thermal performance. 	#.2.1			
COOLING TOWERS - Completion Tests - Type tests/production tests - Prove by test measurements and calculations that cooling towers satisfy performance criteria. Carry out tests during October to March. Drift loss: ≤ 0.002% to AS 4180.1. Thermal performance: Select from the following: <ul style="list-style-type: none"> • Testing to CTI Acceptance and Test Code CTI ATC-105. • Testing to BS 4485-2. • Testing to ASME PTC 23. Provide copies of test results to the Superintendent <i>[The default time period for tests may give a conservative result. Tests should be able to be carried out in suitable conditions outside this period, e.g. a heat wave in April.]</i>	#.12.1			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<i>[Thermal performance: Specify criteria if those in the referenced documents are not adequate, e.g. at least 95%. If pre-completion testing to the CTI Code is documented, completion tests should not be necessary if the tower is certified under the CTI Certification Scheme. Refer to CTI STD-201RS.]</i>				
51 DUCTWORK				
DUCTWORK - Inspections – Notice - Give notice so that inspection may be made of the following: • Leakage testing of each duct system documented to be tested.	#.3.1			
DUCTWORK - Contractor's Submissions – Calculations - Submit duct dynamic pressure loss calculations, attenuation performance and radiated sound pressure calculations and duct pressure nomograms.	#.4.1			
DUCTWORK - Contractor's Submissions - Construction standards - Submit duct construction methodologies to meet pressure performance requirements.	#.4.2			
DUCTWORK - Contractor's Submissions - Execution details - Access panels: Submit proposed alternative sizes, if any.	#.4.4			
DUCTWORK - Contractor's Submissions - Execution details - Mechanical fire dampers: For positions where dampers cannot be installed to close in the direction of the air flow, submit proposed installation details.	#.4.4			
DUCTWORK - Contractor's Submissions - Execution details - Sealing: Submit details of proposed sealing methods and materials. Include the following: • Proposals for conforming to the sealing requirements of AS 4254.2 and this specification. • Proposed sealing materials including mastics and tapes. • Proposed standard for leakage testing. • Proposals for sealing builders' work components incorporated into the air path including, but not limited, to plenum ceilings, outside and return air plenums and risers. • For each system to be leakage tested, a drawing showing the extent of the system to be tested including the total surface area of the system and the surface area of the portion to be tested.	#.4.4			
DUCTWORK - Contractor's Submissions - Fire hazard properties - Submit evidence of conformance to Materials and components clause, Fire hazard properties sub-clause.	#.4.5			
DUCTWORK - Contractor's Submissions – Tests - Rigid ductwork: Submit test data verifying the assembled ductwork conforms to AS 4254.2 Duct Construction and Installation section, Ductwork clause, Rigid ductwork sub-clause.	#.4.7			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
DUCTWORK - Contractor's Submissions – Tests - Type tests: Submit type test certificates showing conformance with the following standards: • Sealants: To AS/NZS 1530.3. • Tapes: To ASTM E2342/E2342M.	#.4.7			
52 DUCTWORK INSULATION				
DUCTWORK INSULATION - Contractor's Submissions – Calculations - Insulation barriers: Provide calculations indicating insulation values are greater than either to limit thermal loss at peak load to less than 2% or eliminate surface condensation at the vapour barrier.	#.3.1			
DUCTWORK INSULATION - Contractor's Submissions – Calculations - Vapour barriers: Prepare and submit statements to support selection of products and method fixing to provide a continuous vapour barrier to all cold surfaces. Where access to cold surfaces is required for maintenance purposes propose methods of insulation and vapour barrier segment removal and replacement	#.3.1			
DUCTWORK INSULATION - Contractor's Submissions - Exposed cold surfaces - Provide details for review of locations where fixing insulation and vapour barriers will be impractical and the substitution of condensation trays to adequately collect and remove condensate is warranted.	#.3.2			
DUCTWORK INSULATION - Contractor's Submissions - Acoustic performance - Provide details for review of acoustic performance of insulating materials for in duct and break out radiated noise.	#.3.3			
DUCTWORK INSULATION - Contractor's Submissions - Fire hazard properties - Submit evidence of conformance to Products clause, Fire hazard properties sub-clause in this worksection, including assembled duct systems.	#.3.4			
DUCTWORK INSULATION - Contractor's Submissions - Products and materials - Thermal insulation performance: Submit evidence of conformance to AS/NZS 4859.1 and AS 4859.2.	#.3.5			
53 AIR GRILLES				
AIR GRILLES - Contractor's Submissions - Products and materials - Type tests: Submit test results as follows: Acoustic performance: To ISO 5135 or ANSI/ASHRAE 70	#.2.1			
AIR GRILLES - Contractor's Submissions – Samples - Submit a sample of each type of air grille. Include plenum box or cushion head box and blanking plates, as documented.	#.2.2			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
54 MECHANICAL PIPEWORK				
MECHANICAL PIPEWORK - Contractor's Submissions - Products and materials - Valves and pipeline components: Submit manufacturer's specifications. Include a statement from the manufacture recommending selections are fit for purpose for a minimum free from fault service life of 20 years.	#.3.1			
MECHANICAL PIPEWORK - Contractor's Submissions - Products and materials - Calibrated balancing valves: For each type and size of valve, submit a manufacturer's calibration chart relating pressure drop to fluid flow across the valve opening range. Submit independent test reports giving accuracy and repeatability tolerances.	#.3.1			
MECHANICAL PIPEWORK - Contractor's Submissions - Products and materials - Automatic/dynamic system balancing valves: For each type and size of valve, submit a manufacturer's report verifying a flow rate control accuracy of $\pm 5\%$ or better is maintained over the selected pressure differential control range.	#.3.1			
MECHANICAL PIPEWORK - Installation – General - Submissions: Calculate structural point loads and submit details to the Superintendent for review.	#.24.1			
MECHANICAL PIPEWORK - Testing - Hydrostatic testing - Give sufficient notice so that the Superintendent may attend hydrostatic testing. Submit test results to the Superintendent.	#.33.2			
55 MECHANICAL PIPEWORK INSULATION				
MECHANICAL PIPEWORK INSULATION - Contractor's Submissions – Calculations - Insulation barriers: Provide calculations indicating insulation values are greater than either to limit thermal loss at peak load to less than 2% or eliminate surface condensation at the vapour barrier.	#.3.1			
MECHANICAL PIPEWORK INSULATION - Contractor's Submissions – Calculations - Vapour barriers: Prepare and submit statements to support selection of products and method fixing to provide a continuous vapour barrier to all cold surfaces. Where access to cold surfaces is required for maintenance purposes propose methods of insulation and vapour barrier segment removal and replacement.	#.3.1			
MECHANICAL PIPEWORK INSULATION - Contractor's Submissions - Exposed cold surfaces - Provide details for review of locations where fixing insulation and vapour barriers will be impractical and the substitution of condensation trays to adequately collect and remove condensate is warranted.	#.3.2			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
MECHANICAL PIPEWORK INSULATION - Contractor's Submissions - Acoustic performance - Provide details for review of acoustic performance of insulating materials for in duct and break out radiated noise.	#.3.3			
MECHANICAL PIPEWORK INSULATION - Contractor's Submissions - Fire hazard properties - Submit evidence of conformance to Products clause, Fire hazard properties sub-clause in this worksection.	#.3.4			
MECHANICAL PIPEWORK INSULATION - Contractor's Submissions - Products and materials - Thermal insulation performance: Submit evidence of conformance to AS/NZS 4859.1.	#.3.5			
56 WATER TREATMENT				
WATER TREATMENT – Inspection - Give notice so that inspection may be made of the contents of strainer baskets after initial chemical cleaning and flushing.	#.2			
WATER TREATMENT - Contractor's Submissions - Execution details - Methods and equipment to be used: Submit proposals which include the following: <ul style="list-style-type: none"> • Cathodic protection systems: Details, including a statement of experience, of proposed designer and installer. <i>[Delete if there are no cathodic protection systems.]</i> • Microbial testing authority: Accreditation details. <i>[Authorities accredited for other water treatment testing may not necessarily be accredited for bacterial tests.]</i> • Water treatment systems: Details for each system of: <ul style="list-style-type: none"> – Chemicals. Include safety data sheets. – Method of dosing. – Method of control. – Method of minimising water consumption. 	#.3.1			
57 BUILDING MANAGEMENT SYSTEMS				
BUILDING MANAGEMENT SYSTEMS - Contractor's Submissions – Documentation - Submit documentation including: <ul style="list-style-type: none"> • A system hardware architecture schematic. • A system software architecture schematic. • Populated graphics schematics. • An outline functional specification containing a list of standard software modules used in the system and a brief summary of function and location. • Schedule of all input and output points cross-referenced to the functional specification. • For each software module: <ul style="list-style-type: none"> – A detailed functional description. Provide flow charts if necessary. 	#.4.3			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> – The sequence of operation. – Decision points. – Calculations performed. – Action in the event of a fault condition. – Instructions for manual control. – Start-up sequence and shutdown sequence under normal conditions. – Start-up sequence and shutdown sequence under fault and power failure. – A schedule of inputs and outputs for the module including details of the source. <ul style="list-style-type: none"> • Conversations <ul style="list-style-type: none"> – Proposed naming conventions for BACnet objects. – Proposed description properties for BACnet objects and their formats. – Proposed non-standard BACnet assignments. – Proposed assignment of priority levels not assigned in BACnet. – Proposed conventions for network numbering. – Proposed device object identification convention. – Proposed convention for the use of text for multistate objects. 				
<p>BUILDING MANAGEMENT SYSTEMS - Contractor's Submissions - Products and materials - Product data: Submit for each hardware component including:</p> <ul style="list-style-type: none"> • LPC hardware. • DGP hardware. • Service tool data retrieval application. • Web server. • Monitors. • Keyboards. • Power supplies. • Battery backups. • Interface equipment between server and control panels. • Operating system software. • Operator interface software. • Colour graphic software. • Third-party software. 	#.4.8			
<p>BUILDING MANAGEMENT SYSTEMS - Contractor's Submissions - Subcontractor's qualifications - Installer's qualifications: Submit evidence of successful completion by installers and operators employed on the installation of control system manufacturer's training for installers and operators. Provide course outlines.</p>	#.4.9			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
BUILDING MANAGEMENT SYSTEMS - Contractor's Submissions - Technical data - Requirement: Submit technical data including: BACnet Protocol Implementation Conformance Statement (PICS) for each component.	#.4.10			
BUILDING MANAGEMENT SYSTEMS - Contractor's Submissions - System hardware - Provide manufacturer's literature and samples of hardware devices including but not limited to the following: <ul style="list-style-type: none"> • Local Plant Controllers. • Remote User Interfaces. • Communications Network. • Data Gathering Panels. • Power Supplies. 	#.4.11			
BUILDING MANAGEMENT SYSTEMS - Contractor's Submissions - System software - Requirements: Provide programming, software, operating protocols and password access.	#.4.12			
58 MECHANICAL COMMISSIONING				
MECHANICAL COMMISSIONING – Inspections - Give notice so that inspection may be made of the following: First official start-up of each item (give 5 working days notice).	#.2			
MECHANICAL COMMISSIONING – Inspections - Give notice so that inspection may be made of the following: Commissioning of the installation.	#.2			
MECHANICAL COMMISSIONING - Contractor's Submissions – Certification - Instrumentation: Submit copies of current calibration certificates issued by a Registered testing authority	#.5.1			
MECHANICAL COMMISSIONING - Contractor's Submissions – Certification - Conformance to contract documents: Submit certification of conformance to the contract documents.	#.5.1			
MECHANICAL COMMISSIONING - Contractor's Submissions – Certification - Statutory requirements: Submit certification of conformance to the relevant statutory requirements.	#.5.1			
MECHANICAL COMMISSIONING - Contractor's Submissions – Certification - Compliance certification: Submit a compliance certification report at the completion of commissioning for each separable portion or project stage prior to Client occupancy. Provide as a minimum requirement certification of compliance for the following: <ul style="list-style-type: none"> • All fire and life safety equipment and systems installed and tested in accordance with performance requirements. • All manual and automatic safety devices installed and tested in accordance with safe operating practices. • All services penetrating fire, smoke, acoustic, thermal insulating, 	#.5.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<p>water proofing and vapour barrier membranes and any other barriers are sealed utilizing an approved method of penetration to maintain the static and dynamic integrity of the barrier.</p> <ul style="list-style-type: none"> • All deemed to comply provisions of building approvals are documented and constructed and tested in accordance with the provisions of the approvals. • All requirements of physical identification of components, devices, barrier penetrations and any safe operating procedures have been affixed. 				
<p>MECHANICAL COMMISSIONING - Contractor's Submissions – Certification - Provide as an integral part of compliance certification names and signatures of personnel responsible for the following:</p> <ul style="list-style-type: none"> • Trades person responsible for installation of a component or plant item which is defined by a statutory standard. • Technician responsible for commissioning of the component or plant item. • Commissioning engineer/authority responsible for delivering all technical aspects of operation of the scope of work. • Contractor officer responsible for delivering the contracted scope of work. 	#.5.1			
<p>MECHANICAL COMMISSIONING - Contractor's Submissions - Completion program - Submissions: Submit a program consistent with, and forming part of, the construction program as follows:</p> <ul style="list-style-type: none"> • Set out the proposed program for completion, commissioning, testing and instruction. • Identify related works and timing of the works prerequisite to successful and timely completion of the works. 	#.5.2			
<p>MECHANICAL COMMISSIONING - Contractor's Submissions - Completion program - Revisions: Submit revisions of the program as the project proceeds.</p>	#.5.2			
<p>MECHANICAL COMMISSIONING - Contractor's Submissions – Records - Report: Submit a report demonstrating that equipment has been properly installed and is functioning correctly, including not less than the following:</p> <ul style="list-style-type: none"> • Plant commissioning reports. • Sequence of operation reports. • Operational and safety set point settings. • Air balance: To Air balance reports clause in this worksection. • Air flow rate: To Air balance reports clause in this worksection. Shows on the reports where return and exhaust quantities have been varied from design values to achieve differential pressures. • Room air pressure differential: Submit the measured or detected room pressure differentials to Room air pressure differentials clause in this worksection. • Water balance: To Water balance reports clause in this 	#.5.3			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<p>worksection.</p> <ul style="list-style-type: none"> • Factory test certificates. • Specialist plant commissioning reports. • System integration reports. • Collaborative operation reports (in conjunction with other trades). 				
<p>MECHANICAL COMMISSIONING - Commissioning – Reports - Submit reports indicating observations and results of tests and compliance or non-compliance with requirements.</p>	#.6.3			
59 MECHANICAL MAINTENANCE				
<p>MECHANICAL MAINTENANCE – Inspections - Give notice so that an inspection may be held simultaneously with the final programmed maintenance visit.</p>	#.4			
<p>MECHANICAL MAINTENANCE - Contractor's Submissions – Records - Periodic maintenance and performance report: At the frequency documented, submit reports summarising the maintenance performed and the performance of the mechanical plant in the preceding period. Set out the report in a form approved by DIPL and that permits comparison with previous reports. Include the following as minimum requirements:</p> <ul style="list-style-type: none"> • Dates and number of site labour hours for periodic maintenance. Exclude travelling time. • Dates, number of site labour hours and nature of work for emergency repairs. Exclude travelling time. • Dates and number of site labour hours for defects liability rectification if within the defects liability period. Exclude travelling time. • Quantity and type of refrigerant used. • Peak load and load profile for chillers. • Peak load and load profile for electrical power consumed by mechanical plant. • For each separately metered item, the water or energy use for each month of the reporting period. • Flow rates and pressure drops across heat exchangers. • Mechanical plant gas consumption and load profile. • Mechanical plant electrical power consumption and load profile. • List of any motors for which the motor current varied by more than 10% from the current measured during commissioning. • Results of recommissioning if scheduled for the period. • Flow rates and pressure drops across heat exchangers. • Details of energy efficiency maintenance undertaken including any corrective action. • Recommended action by the Principal. 	#.5.1			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
MECHANICAL MAINTENANCE - Contractor's Submissions - Statutory certification - Annual and other certification: Inspect and submit inspection reports and certification for all items required to be inspected annually or more frequently under any statutory requirements including but not limited to air handling systems required for fire and smoke control, boilers, pressure vessels, cooling towers and warm water systems.	#.5.2			
MECHANICAL MAINTENANCE - Contractor's Submissions - Statutory reporting - Requirement: Submit statutory reports to the Superintendent in accordance with AS 1851, AS/NZS 3666.2, AS/NZS 3666.3 and AS/NZS 3666.4 including those required for pressure vessels.	#.5.3			
MECHANICAL MAINTENANCE - Replacement materials and consumables - Substitution: If proposing substitution of materials or consumables, submit the following: <ul style="list-style-type: none"> • Evidence that replacement materials of the same brand, type and model as the original are no longer available. • Evidence that the performance of the proposed substitution is equal to or greater than the original. • Evidence of conformity of the proposed substitution to cited standards. • Essential technical information relating to the proposed substitution, in English. • Statement of cost implications including costs outside the contract. • Statement of consequent alterations to other parts of the works. 	#.9.2			
60 PAVING				
PAVING - Inspections – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> • Completed base preparation ready for paving. • Completion of trial set-out for unit paving. • Completed unit paving. • Commencement of surface preparation ready for asphalt. • Commencement of asphalt surfacing. • Completion of asphalt surfacing. 	#.2.1			
PAVING - Spray Sealed Surfacing Works - Spray sealing - Give the Superintendent 48 hours notice of intention to spray bitumen.	#.6.2			
PAVING - Dense Graded Asphalt – Spreading - Give the Superintendent 24 hours notice before commencement of asphalt material spreading.	#.7.4			
61 CIVIL WORKS				
CIVIL WORKS - Earthworks - Proof rolling Give the Superintendent not less than 24 hours notice of the location and commencement time for the proof rolling	#.3.6			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
CIVIL WORKS - Spray sealing – Spraying - Give the Superintendent 48 hours notice of intention to spray bitumen.	#.5.14			
CIVIL WORKS - Dense Graded Asphalt - Surface preparation - Give the Superintendent not less than 24 hours notice of the location and scheduled commencement time of surface preparation works.	#.6.8			
CIVIL WORKS - Dense Graded Asphalt – Spreading - Give at least 24 hours notice to the Superintendent before commencement of asphalt material spreading.	#.6.9			
CIVIL WORKS - Dense Graded Asphalt – Spreading - Provide a construction program and paving plan at least 7 working days prior to commencement of works. Paving plans must be confirmed prior to the commencement of each shift.	#.6.9			
CIVIL WORKS - Dense Graded Asphalt – Compaction - The Contractor must advise the Superintendent of temperature limits relating to compaction. Conform to the Standard Specification for Roadworks latest edition DENSE GRADED ASPHALT worksection Compaction clause.	#.6.10			
CIVIL WORKS - Conformance Testing - Notice of testing - Provide the Superintendent with a copy of the order for testing simultaneously with the order being sent to the Panel Period Contractor. Any communication with the Panel Period Contractors, other than the ordering of testing or inquiring on the timing of test results, must be forwarded through the Superintendent. Provide the Superintendent with the results of process control testing as identified in the relevant ITP with all requests for conformance testing.	#.7.3			
CIVIL WORKS - Conformance Testing - Notice of testing - Notify the Superintendent prior to any rework of failed lots.	#.7.3			
CIVIL WORKS - Pavement Marking - Road marking paint - Submit a 'Certificate of Compliance' for the paint with the relevant Australian Standards or APAS specification.	#.8.2			
CIVIL WORKS - Pavement Marking – Application - Obtain approval from the Superintendent for the type of equipment to be used for applying pavement marking materials.	#.8.5			
CIVIL WORKS - Pavement Marking – Application - Produce documented evidence to show that the spraying equipment has been calibrated in accordance with NTTM 405.1.	#.8.5			
62 FABRIC SHADE STRUCTURES				
FABRIC SHADE STRUCTURES - Contractor's Submissions – Samples - Provide samples of the fabric that is proposed to be used on this project including the manufacturer's technical data sheets providing the following information: <ul style="list-style-type: none"> Test reports on material strength. 	#.5.2			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> • Test reports on UV stability through accelerated tests. • The manufacturer's colour range. • The % shade and UV penetration in a tensioned state. • The manufacturer's warranty. • Flammability test results. 				
<p>FABRIC SHADE STRUCTURES - Inspections – Notice - Give sufficient notice to the Superintendent so that inspections may be carried out at the following stages:</p> <ul style="list-style-type: none"> • Steel work cleaned ready for application of coating. • Footing holes before steel structure is placed in the holes. • Before concrete footings are poured. <p><i>[Edit this list to suit the specific project.]</i></p>	#.7.1			
<p>FABRIC SHADE STRUCTURES - Maintenance manual - At Practical Completion provide 2 copies of the Maintenance manual in A4 format bound in a 4 ring plastic binder, and an electronic version as PDF or Microsoft Word, and containing the following information:</p> <ul style="list-style-type: none"> • The name and contact numbers of the contractor • A copy of the as constructed drawings including the Practical Completion date. • The manufacturer's details of the fabric membrane • The manufacturer's warranty on the fabric membrane • Instructions on assembly and disassembly of the membranes including special tools or equipment required. • Details on maintenance of the fabric membrane including cleaning, damage repairs and restitching of the seams. 	#.14			
63 FENCING				
<p>FENCING - Inspections – Notice - Give notice so that inspection may be made of the following:</p> <ul style="list-style-type: none"> • Boundary survey location if applicable. • Set-out before construction. • Foundation conditions before placing concrete in footings. <p><i>[Amend to suit project requirements.]</i></p>	#.2.1			
64 LANDSCAPE				
<p>LANDSCAPE - Inspection – Notice - Give sufficient notice so that inspection may be made at the following stages:</p> <ul style="list-style-type: none"> • Subgrades cultivated or prepared for placing topsoil. • Grassing bed prepared prior to turfing, seeding, or temporary grassing. • Set out of planting holes prior to excavation. • Plant holes excavated and prepared for planting. • Grassing or turfing completed. • Planting, staking and tying completed. • Completion of planting establishment work. <p><i>[Edit this list to suit the project requirements.]</i></p>	#.2.1			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
LANDSCAPE - Contractor's Submissions - Supplier's data - Submit the following supplier's data: <ul style="list-style-type: none"> • Certificates identifying seed species and germination viability. • Material source of supply. • Recommendations for planting and maintenance of plants. 	#.3.1			
LANDSCAPE - Contractor's Submissions – Warranties - Submit a product warranty in the name of the Principal with the supplier's written statement certifying that plants are: <ul style="list-style-type: none"> • True to the required species and type. • Free from diseases, pests, and weeds. • Comply with the contract requirements. 	#.3.4			
LANDSCAPE - Topsoil - Imported topsoil - Provide a 5 kg sample of topsoil proposed for the works. Do not order soils without Superintendent's approval of the sample. Provide copies of delivery dockets for the topsoil delivered to site for the works.	#.8.2			
LANDSCAPE - Mulching – Mulch - Provide a 5 kg sample of mulch proposed for the works. Do not order mulch without Superintendent's approval of the sample	#.18.1			
LANDSCAPE - Mulching – Mulch - Provide copies of delivery dockets for the mulch delivered to site for the works.	#.18.1			
65 IRRIGATION				
IRRIGATION - Inspections – Notice - Give sufficient notice so that inspection may be made of the following: <ul style="list-style-type: none"> • Excavated surfaces ready for installation. • Installation ready for testing. • Concealed or underground services ready for backfill. <i>[Edit this list to suit the project requirements.]</i>	#.2.1			
IRRIGATION - Contractor's submissions - Manufacturer's data - Submit all manufacturers' performance data for the irrigation system design.	#.3.2			

SCHEDULE 2 – WITNESS POINTS				
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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
66 PLAY EQUIPMENT				
<p>PLAY EQUIPMENT - Inspection – Notice - Give notice so that inspection by the nominated Level 3 Comprehensive Playground Safety Inspector and the Superintendent can be made of the following:</p> <ul style="list-style-type: none"> • Set out before excavation. • Prepared subgrade. • Prepared base with subsoil drainage in place. • Prepared base prior to placement of impact attenuating layers. • Footing holes before equipment posts are installed. • Before concrete footings are poured. • During placing of any in situ concrete. • Installation completed. <p><i>[Edit this list to suit the project. Coordinate with PLAYGROUND SURFACING worksection.]</i></p>	#.2.2			
<p>PLAY EQUIPMENT - Contractor Submissions – Subcontractors - Submit to the Superintendent names and contact details of proposed suppliers and applicators/installers.</p>	#.3.4			
<p>PLAY EQUIPMENT - Contractor Submissions – Subcontractors - Submit to the Superintendent evidence of experience of the applicators/installers.</p>	#.3.4			
<p>PLAY EQUIPMENT - Completion - Test reports - Submit to the Superintendent copies of test reports for each item of equipment and for the impact attenuating surfacing.</p>	#.16.1			
<p>PLAY EQUIPMENT - Completion – Warranties - Submit warranties from the supplier for materials, and warranties from the installer for workmanship, in the name of the Principal</p>	#.16.2			
67 PLAYGROUND IMPACT ATTENUATING SURFACING				
<p>PLAYGROUND IMPACT ATTENUATING SURFACING - Inspection – Notice - Give notice so that inspection by the nominated Level 3 Comprehensive Playground Safety Inspector and the Superintendent can be made of the following:</p> <ul style="list-style-type: none"> • Footing holes before equipment posts are installed. • Before concrete footings are poured. • During placing of any in situ concrete. • Installation of play equipment completed. <p><i>[Edit this list to suit the project. Coordinate with PLAY EQUIPMENT worksection.]</i></p>	#.2.2			
<p>PLAYGROUND IMPACT ATTENUATING SURFACING - Inspection - Competent person - Give notice so that inspection by the Superintendent and the Competent Person can be made of the following:</p>	#.2.3			

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CLAUSE TITLE	CLAUSE NUMBER	PAGE No	INITIALS	DATE
<ul style="list-style-type: none"> • Set out before excavation. • Prepared subgrade. • Prepared base with subsoil drainage in place. • Prepared base after drainage trenches are backfilled and compacted. • During installation of rubber impact-attenuating sub layer (shock pads). • Completion of rubber impact-attenuating sub layer (shock pads). • During installation of impact-attenuating surface. • Completion of impact-attenuating surface. • Fall zone site testing. <p><i>[Edit this list to suit the project. Coordinate with PLAY EQUIPMENT worksection.]</i></p>				
PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor Submissions – Subcontractors - Submit to the Superintendent names and contact details of proposed suppliers and applicators/installers.	#.3.4			
PLAYGROUND IMPACT ATTENUATING SURFACING - Contractor Submissions – Subcontractors - Submit to the Superintendent evidence of experience of the applicators/installers.	#.3.4			
PLAYGROUND IMPACT ATTENUATING SURFACING - Loose-Fill impact-attenuating material - Material properties - Provide documentary evidence that the sand proposed to be supplied meets the requirements of AS 4422.	#.10.1			
PLAYGROUND IMPACT ATTENUATING SURFACING - Loose-Fill impact-attenuating material - Material properties - Provide a 5 kg sample to the Superintendent for approval.	#.10.1			
PLAYGROUND IMPACT ATTENUATING SURFACING - Testing - On-site impact-attenuating layer(s) tests - Give the Superintendent sufficient notice so that on-site testing can be witnessed.	#.11.1			