



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

The University of Newcastle

Infrastructure and Facilities Services

Project Briefing Document

Post-Completion Maintenance and Defects Management Procedure

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CONTENTS

1	Background	4
2	Site Meeting – Post-Completion Maintenance / Defects Management	4
3	Maintenance	4
4	Defects	5
5	Post-Completion Defects	6
6	Defects Management Process	6
7	UON Response Priorities.....	7
8	UON Contractor Requirements.....	7
	Appendix A.....	8
	APPENDIX B.....	14
	APPENDIX C.....	15

1 BACKGROUND

The Post Completion period of a project represents a period where the product has been delivered and accepted, but issues still arise and need to be addressed; and the product and each of its parts must be maintained. It is critical that appropriate contact and involvement of the contractor and project manager is continued during this period to ensure the requisite maintenance activities are undertaken, and to respond to and address issues/defects that are experienced with the delivered product. It is a period where the focus of both the Principal Contractor and project manager may have shifted to their next major project, so appropriate processes must be established prior to project completion to ensure responsiveness and action.

2 SITE MEETING – POST-COMPLETION MAINTENANCE / DEFECTS MANAGEMENT

Projects will require a dedicated project meeting to discuss and agree requirements for the Post-Completion period including the management of defects and maintenance during this period. The meeting should be held in advance of project completion and may be combined with the Project Handover site meeting if applicable. For larger projects this meeting should be detailed as part of the Commissioning Plan.

A pro-forma agenda for the meeting would include:

- rectification of identified defects prior to completion
- terms of agreement for any defects to carry over into the Post-Completion period
- responsiveness during Post-Completion
- defects management and after-hours callouts
- maintenance activities during the Post-Completion period

The project manager will arrange this meeting with the Principal Contractor, subcontractors as applicable and relevant University of Newcastle Infrastructure & Facilities Services (UON IFS) personnel or delegates.

3 MAINTENANCE

The Principal Contractor will be responsible for all maintenance during the Post-Completion period. This includes both statutory and non-statutory planned maintenance; any unplanned maintenance of assets; and completion of the annual fire safety statement at the applicable time during the Post-Completion period.

The University's asset management system, Maximo, will be used to log, prioritise and allocate maintenance responsibilities to the Principal Contractor in line with the identified maintenance frequencies and when the need for reactive maintenance is identified.

Prior to project completion the Principal Contractor must complete the Asset Data Collection Lists as detailed in the UON Project Handover Guideline, and clearly identify the maintenance requirements for each asset as well as who will be responsible to perform the maintenance. Maintenance requirements shall be identified by reference to statutory requirements and manufacturer's specifications. The prompt completion and handover of these lists is prerequisite to the scheduling and realisation of planned maintenance activities during the Post Completion Period and beyond; and facilitates the identification of assets to which a defect is attributed.

3.1 MAINTENANCE SCHEDULE

Prior to project completion, the contractor shall provide a comprehensive maintenance schedule for all assets, for UON confirmation and for upload into Maximo. This maintenance schedule shall include both statutory maintenance requirements and all non-statutory (planned) maintenance requirements as specified by the Manufacturer and by all relevant Standards, Codes, Regulations and Practices. The UON maintenance planned maintenance frequency table is provided as Appendix D for reference.

3.2 MAINTENANCE ACTIVITIES

Maximo will generate work orders for each planned maintenance activity as identified in the maintenance schedule, and transmit these work orders on a monthly basis to both the Principal Contractor and Project Manager. The Principal Contractor will ensure the applicable maintenance activity is undertaken, with the evidence of this activity being test certificates and/or work records as applicable to be uploaded back into the Maximo work order to verify completion. Evidence of completion of the maintenance activity shall be provided within thirty business days of completion of the activity.

The Project Manager will be responsible for ensuring the maintenance activity has been undertaken and will undertake random audits of completed maintenance activities to verify compliance. Non-compliance of maintenance tasks must be remedied immediately.

3.3 UNPLANNED / REACTIVE MAINTENANCE ACTIVITIES

Unplanned (reactive) maintenance activities will also be the responsibility of the Principal Contractor. Work orders for unplanned maintenance activities shall be generated on an as needs basis, with urgent work requests notified by telephone in the first instance. Where the work is deemed urgent or a safety issue, the University will endeavour to make contact with the Principal Contractor in the first instance to provide an urgent response. If contact cannot be established in good time, or the Principal Contractor is not able to provide a response within the necessary timeframe, the University maintenance contractor will make safe and make good. It will be determined on a case by case basis whether further works to complete repair will be undertaken by the University maintenance contractor or the Principal Contractor. Any reasonable costs incurred for such urgent response activities and subsequent works are to be reimbursed by the Principal Contractor.

3.4 ACHIEVEMENT OF ENGINEERING SYSTEM PERFORMANCE AND ENVIRONMENTAL TARGETS

During the month prior to the end of the PCP, a report must be submitted to the project manager from the various engineering consultants identifying how the various engineering systems/installations/works actually performed as compared to the design criteria; achievement of environmental targets including energy and water consumptions; quality of the indoor environment; and outline any inadequacies and adjustments made.

At the conclusion of the PCP, final inspections must be certified, including final seasonal adjustments undertaken to ensure proper operation of all systems.

4 DEFECTS

Defects can be defined as aspects of the works that are not in accordance with the contract. Defects may arise from:

- Design deficiencies
- Material deficiencies
- Specification problems
- Workmanship deficiencies

The premature failure of a component of a structure that causes damage to a person or property can be considered a construction defect. However, the manifestation and/or evidence of a construction defect must be considered in relation to the timing of its occurrence, to assist in distinguishing between natural wear and tear, the results of poor maintenance, and a true construction defect.

Construction defects can be categorised as either patent or latent.

- Patent defects can be established by reasonable inspection, e.g. handrails omitted in stairways, or weep holes not installed in brick veneers. With thorough inspection, the larger number of patent defects can be identified and rectified prior to project completion.
- Latent defects however are concealed and are often not discovered by reasonable inspection, only becoming apparent after a passage of time when the asset is put into use and the effects of the defects gradually become evident. An example of a latent defect would be improperly installed flashing and/or the total lack of flashing within the building envelope assembly.

It should be noted that there is often a difference between a *latent defect* and the *manifestation of the defect*. The manifestation of a particular defect is the visible condition that gives the observer notice of the possible existence of a latent defect. Evaluation of the defect must include not only the visible condition, but the root cause of the defect to determine what corrective works are required. The importance of distinguishing between the *manifestation of the defect* and its root cause is critical since the visible manifestation of a defect may be the clue to the existence of a latent defect.

5 POST-COMPLETION DEFECTS

During the Post-Completion period issues will be identified by the client, via building occupants or inspections, and a decision will be required to determine whether these issues are defects or could be classified as general wear and tear.

This document outlines how Defects will be managed at the completion of a project, who will be involved and the roles and responsibilities of all parties.

The University's asset management system, Maximo shall be the primary IT management system used by all parties for recording, prioritising, notifying and providing evidence of the rectification of defects during the Post-Completion period.

6 DEFECTS MANAGEMENT PROCESS

6.1 DEFECT RECTIFICATION

Management of defects consists of a number of related challenges:

- being able to carry out inspections efficiently to quickly identify and communicate any defects
- instituting a tracking mechanism to manage defect notification and rectification
- correcting the defect in a timely manner whilst minimising knock-on effects to the rest of the project or the operation of the asset

The University of Newcastle has implemented a standard process for managing defects during the Post Completion period of a project, using Maximo to:

- record issues as they are identified
- allocate the priority of response required after triaging
- identify the related asset to be under management as part of a Post-Completion Period
- identify whether each issue is classed as a defect, a maintenance issue or other
- allocate rectification to the appropriate party, e.g. Principal Contractor
- assign each defect to the Project Manager to monitor and manage the defect schedule and confirm the resolution of the defect

A detailed breakdown of the UON Maintenance / Defects Management Process is provided as Appendix A.

7 UON RESPONSE PRIORITIES

The University has established a priority matrix detailing the maximum rectification times to respond and rectify in the event of damage to assets or failure of an asset to operate in accordance with the standards prescribed by its manufacturer. This priority matrix is provided as Appendix B. It is supported by Appendix C which links the Maximo classification asset type to a particular criticality rating to be applied when determining the priority of rectification works.

8 UON CONTRACTOR REQUIREMENTS

Contractors shall be considerate that project sites are no longer under their direct control and as a result, all contractors undertaking maintenance or defect rectification works on UON sites are required to comply with UON general contractor requirements. Principal Contractors and Project Managers shall ensure that all personnel working on site are both aware of UON requirements and compliant with these requirements, including but not limited to:

1. Contractor Induction
2. Restricted Spaces Induction
3. LV Electrical and SK Key Induction
4. Contractor identification card
5. Permit to Work Process
6. Notification Process

All works shall be undertaken under a safety management plan, with applicable supervision, Safe Work Method Statements, risk assessments etc. in place as required.

APPENDIX A

UON MAINTENANCE / DEFECTS MANAGEMENT PROCESS

Ref	Item	Deliverable	Indicative Time Frame	Responsibility	Output issued to
1	Pre-cursor Activities				
1.1	<p>Design</p> <p>Asset Data Collection Form / Asset Decommission Collection Form initial compilation</p> <p>Asset Lists should initially be populated by the Design team identifying assets to be provided as part of the project; and identifying assets which will be removed/decommissioned as part of the project.</p>	Asset Lists	Design	Design Team	Principal Contractor as part of tender
2	Construction / Commissioning Period				
2.1	<p>Small Scale Plans</p> <p>New or updated small scale plans (as specified in UON Project Handover Guideline) to be provided for input into Archibus</p>	Small Scale plans	Prior to Handover	Principal Contractor	Project Manager and Systems Coordinator
2.2	<p>List of Project Locations</p> <p>List of specific project locations (building, rooms etc) using Archibus building and room labelling convention – i.e. locations which will be identified in the Post-Completion period to be the responsibility of the Principal Contractor for maintenance and defect rectification.</p>	Project Locations List	Practical Completion	Project Manager	UON
2.3	<p>Identify Location as “under DLP” in Maximo</p> <p>Locations to be identified in Maximo as under Warranty, with location warranty date identifying the end of Post-Completion period.</p>	Locations under Warranty in Maximo	Practical Completion	UON	Project Manager

Ref	Item	Deliverable	Indicative Time Frame	Responsibility	Output issued to
2.4	Handover Asset Data for input into Maximo All Asset Data Collection forms and Asset Decommission Collection form completed and submitted for input into Maximo. (Provision of draft documents prior to completion is strongly encouraged!)	Asset Lists	Practical Completion	Principal Contractor	Project Manager and to UON
2.5	Allocation of Asset numbers Asset numbers will be allocated by use of UON Asset stickers with clear identification which asset the number defines	Asset numbers	Practical Completion	UON	Principal Contractor
2.6	Asset Labelling All assets to be labelled with the applicable UON Asset sticker as allocated in 2.5	Confirmation of Labelled assets	Practical Completion	Principal Contractor	UON
2.7	Maintenance Schedule Maintenance schedule to be completed for each asset type, identifying all maintenance requirements as identified by Manufacturer and/or Australian Standard including frequency	Maintenance schedule	Practical Completion	Principal Contractor	Project Manager / UON
2.8	Maintenance Schedule input into Maximo	Maximo update	Practical Completion	UON	Project Manager
2.9	Warranty v Maintenance decision-maker Agree with Principal Contractor who will be the final arbiter in a dispute between warranty v maintenance issue (if applicable)	Conflict Resolution process	Practical Completion	Project Manager	Principal Contractor
3	Initiate Planned Maintenance Activities				
3.1	Maximo Access Set up Project Manager and Principal Contractor with Maximo licenses	Maximo Access enabled	Practical Completion	Project Manager / UON	Project Manager / Principal Contractor
3.2	Maximo Training	Ability to use Maximo	Practical Completion	UON	Project Manager / Principal Contractor

Ref	Item	Deliverable	Indicative Time Frame	Responsibility	Output issued to
	Provide Maximo training to Project Manager and Principal Contractor as required				
4	Implement Maintenance Process - Planned and Unplanned Activities				
4.1	Allocation of Monthly Maintenance Plan Maximo allocates monthly planned maintenance works to the Principal Contractor for all locations under Post-Completion.	Monthly Plan	Month on month	UON	Principal Contractor
4.2	Allocation of Unplanned Maintenance Activities Work Orders for reactive maintenance activities will be allocated for all locations under Post-Completion	Work Order	As required	UON	Principal Contractor
4.3	Urgent Unplanned Maintenance Activities Work Orders / direction for urgent maintenance activities for all locations under Post-Completion to make safe and make good.	Work Order / Direction / Phone Call	Immediate	UON	University Maintenance contractor
4.4	Urgent Unplanned Maintenance Activities Follow-up Follow-up Work Orders for completion of urgent unplanned maintenance activities – to be determined on a case by case basis. May be completed by University Maintenance Contractor or may be allocated to Principal Contractor to complete after made safe.	Follow up Work Order	As required	UON	UON OR Principal Contractor
4.5	Maintenance works completed Principal Contractor or subcontractor completes maintenance activities and associated test certificates or records. Completion notification and documentation is uploaded to Maximo	Maintenance works completed and evidence in Maximo	Within Work Order identified time frame	Principal Contractor	UON via Maximo
5	Initiate Defects Management Process				

Ref	Item	Deliverable	Indicative Time Frame	Responsibility	Output issued to
5.1	<p>Agree residual defects to be managed in Post Completion</p> <p>Agreement between Project Manager and Principal Contractor to determine an acceptable level (ideally zero) of project defects to be continued into the Post-Completion period and managed using Maximo.</p> <p>Prepare list of defects in acceptable format for input into Maximo</p>	Agreed Residual Defects Register	Practical Completion	Project Manager	Principal Contractor / UON
5.2	<p>Transfer list of residual defects across to Maximo</p> <p>Receive and input the list of residual defects into Maximo system</p>	Confirm Maximo defect list uploaded	Practical Completion /or Early in Post Completion Period?	UON	Project Manager
6	Implement Defect Management Process				
6.1	<p>Issue identification & Maximo Service Request initiated</p> <p>Possible defect identified. Service Request to be raised in Maximo as potential defect (unless immediate identification as a maintenance issue).</p>	Maximo Service Request raised (SR)	1 day	Client Internal/External	UON
6.2	<p>Urgent Response</p> <p>Upon notification or assessment of an URGENT issue the UON Operations team will organise for an immediate response by the UON maintenance contractor to make safe or make good.</p>	Urgent Phone call / Direction & Work Order	Immediate	UON	UON
6.3	<p>Urgent Response Follow-up</p> <p>Follow-up Work Orders for completion of urgent unplanned issues – to be determined on a case by case basis. May be completed by University Maintenance Contractor or may be allocated to Principal Contractor to complete after made safe.</p>	Follow up Work Order	As required	UON	UON or Principal Contractor

Ref	Item	Deliverable	Indicative Time Frame	Responsibility	Output issued to
6.4	UON Facilities Team Technical Triage				
6.4.1	Work Request Assessment by UON Operations Team The work request is assessed by the UON and confirmation provided as to type of issue	Progress to next step	Day of receipt	UON	N/A
6.4.2	Triage as Warranty / Post-Completion issue Work Order triaged. Location and/or asset will flag as ' <i>under warranty</i> ' in Maximo. Work type to be input as WARR and directed to Project Manager.	Work Order under WARR	Same day as 3.3	UON	Project Manager
7.	Project Manager Defect Review				
7.1	Project Manager reviews Defect work order to confirm: a. legitimacy of defect against contract terms; b. defect is new issue (not previously identified)	Defect confirmation		Project Manager	NA
7.2	If the defect is a new issue and legitimate, the Principal Contractor is formally notified	Defect reporting		Project Manager	Principal Contractor
7.3	Rectification works to commence in accordance with priority rating on Work Order.	Contract reporting		Principal Contractor	
7.4	If the Defect is disagreed, then Contract dispute resolution procedure is enacted.	Contract reporting			
7.5	If defect is confirmed, return to Step 7.3 If defect is rejected, notation is made in Maximo work order, and returned to UON.	Contract reporting			
8.	Post Completion Period on-site activities				
8.1	Access to site process engaged (SOP). Permit to work and stakeholder notifications completed as required. All relevant inductions completed.			Principal Contractor	

Ref	Item	Deliverable	Indicative Time Frame	Responsibility	Output issued to
6.	Defects Close Out				
6.1	Defect Work Order items to be reviewed and closed out by Project Manager.	Maximo Close out	Upon completion of job	Project Manager	UON

APPENDIX B

UON MAXIMUM RECTIFICATION TIMES PRIORITY MATRIX

Priority	Response Time	Definition of Works & Examples
1	2 hours to respond and where reasonably practicable to do so, rectify immediately; or 2 days to rectify	The works are classified PRIORITY 1 if: <ul style="list-style-type: none"> - Immediate risk to life or of serious injury - Disruption to multiple locations or to Critical assets such as multiple functions of the Principal cannot be performed. - Major damage has occurred to an asset and/or there is a high likelihood of catastrophic damage if the failure is not addressed immediately. - Location is in a high risk area, including: Animal Care Facility, Anatomy Labs, Clean/Sterile Rooms
	30 minutes to respond and where reasonably practicable to do so, rectify immediately; or 2 hours to rectify	<ul style="list-style-type: none"> - People are trapped in a lift - Cleans associated with bodily fluids or blocked sewer lines and toilets
2	Respond and where it is reasonably practicable to do so, rectify by midday on the next business day; or 5 days to rectify	The works are classified PRIORITY 2 if: <ul style="list-style-type: none"> - Low risk of injury requiring first aid. - Disruption to multiple users in multiple locations, but functions of the Principal can still be performed or disruption to multiple users in a single location and the functions of the Principal cannot be performed or relocated. - Damage has occurred to an asset and the asset is still available however, it will potentially be unavailable if the failure is not addressed. - Where the location is in any of the following rooms: residential room.
	30 minutes to respond and where it is reasonably practicable to do so, rectify immediately; or 4 hours to rectify	Where the location is in a residential accommodation, kitchen, laundry or bathroom.
3	3 business days to respond, 10 business days to rectify.	The works are deemed to be PRIORITY 3 if: <ul style="list-style-type: none"> - there is no risk of injury - Disruption to a single user, in one location and the functions of the Principal can still be performed. - Minor damage has occurred to an asset, low risk of further damage and the asset remains available; or - Risk identified with likelihood of minor damage to Asset
4	10 days to respond, 20 days to rectify.	The works are deemed to be PRIORITY 4 if: <ul style="list-style-type: none"> - No risk of injury - No disruption to users - Minor damage has occurred to an asset and the asset remains available; or - Risk identified with potential to cause minor damage to asset.
9	As agreed	Negotiated and Project Works (e.g. may require work to be completed during semester break or at an otherwise agreed time)

APPENDIX C

UON MAXIMO CLASSIFICATIONS ASSET RATING SCHEDULE

This schedule is provided to inform the criticality of specific assets to UON ongoing safety and operation.

1 = Critical Asset – Highest Priority Rating



5 = Low priority asset

Classification	Description	Parent Classification	Rating
ACCESSCC	Access Control - Controllers	SPECIALIST SERVICES	2
ACCESSPCSU	Access Control - Power Supply Units	SPECIALIST SERVICES	2
ACEVAP	Evaporative Air Conditioner	HVAC	5
ACOMPR	Air Compressors	SPECIALIST SERVICES	3
ACPORT	Portable Air Conditioning Units	HVAC	5
ACURTAIN	Air Curtain	SPECIALIST SERVICES	5
ADD	Desiccant Compressed Air Dryers	SPECIALIST SERVICES	4
ADR	Refrigerated Compressed Air Dryers	SPECIALIST SERVICES	4
AHOAP	Air Handling Outside Air Plenum	HVAC	5
AHU	Air Handling Units	HVAC	3
AUTOCLVE	Autoclaves	SPECIALIST SERVICES	2
AUTODOOR	Automatic Doors and Gates	SPECIALIST SERVICES	3
AUTOSKYLIGHT	Automatic Skylight Systems	SPECIALIST SERVICES	4
AUTOWINDOW	Automatic Windows and Louvres	SPECIALIST SERVICES	4
BACKFLOW	Backflow Prevention Device	PLUMBING	1
BCUEL	Battery Bank Charger Unit Emergency Lighting	ELECTRICAL	3
BCUHV	Battery Bank Charger Unit HV Control	ELECTRICAL	3
BIKEPARK	Bicycle Parking Facilities	GROUNDINGS	5
BLRSTHP	Boiler high pressure steam	SPECIALIST SERVICES	2
BMSDELTA	Delta BMS Controls	HVAC	3
BMSSIEM	Siemens BMS Controls	HVAC	3
BOLLARD	BOLLARD	GROUNDINGS	5
CARPARK	Car Park	GROUNDINGS	4
CCW	Condenser Cooling Water	HVAC	3
CHILLAIR	Chillers-Air Cooled	HVAC	2
CHILLWTR	Chillers-Water Cooled	HVAC	2
CHW	Chilled Water Systems	HVAC	3
CHWPW	Chilled Water Pipework	HVAC	3
CMSNGS	Condition Monitoring System - Natural Gas Supply	SPECIALIST SERVICES	3
CMSOS	Condition Monitoring System - Oxygen Sensor	SPECIALIST SERVICES	1
CMSPH	Condition Monitoring System - PH	SPECIALIST SERVICES	3
CT	Cooling Towers	HVAC	1
CTDOSE	Biocide & TDS Control Equipment	HVAC	1
CWCR	Condenser water cooler	HVAC	3
CWPW	Condenser Water Pipework	HVAC	3
DHWCP	DHWCP-Domestic Hot water Control Panel	PLUMBING	4
DHWTMV	Domestic Hot Water Thermostatic Mixing Valve	PLUMBING	1
DHWTV	Domestic Hot Water Tempering Valve	PLUMBING	2
DHWUEI	Domestic hot water unit-Electric instantaneous	PLUMBING	4
DHWUES	Domestic hot water unit-Electric storage	PLUMBING	4
DHWUGI	Domestic hot water unit-Gas instantaneous	PLUMBING	4

Classification	Description	Parent Classification	Rating
DHWUGS	Domestic hot water unit-Gas storage	PLUMBING	4
DHWUR	Domestic hot water unit-Refrigerative	PLUMBING	4
DHWURS	Domestic hot water unit-Refrigerative storage	PLUMBING	4
DHWUSES	Domestic hot water unit-Solar electric boost storage	PLUMBING	4
DHWUSGS	Domestic hot water unit-Solar Gas boost storage	PLUMBING	4
DHWUSP	DHWUSP - Domestic hot water unit-Solar	PLUMBING	4
DHWUSS	Domestic hot water unit-Solar Storage (Pre Heat)	PLUMBING	4
DHWUV	Domestic Hot Water Ultra Violet Sterilisation System	PLUMBING	1
DISH	Dishwasher	PLUMBING	5
DWUB	Drinking Water Unit - Boiling	PLUMBING	5
DWUBC	Drinking Water Unit - Boiling & Chilled	PLUMBING	4
DWUC	Drinking Water Unit - Chilled	PLUMBING	5
ELECEDB	Electrical Distribution Boards	ELECTRICAL	2
ELECEXTLB	ELECEXTLB - External Light Bollard	ELECTRICAL	3
ELECEXTLCP	ELECEXTLCP - External Light Car Park	ELECTRICAL	3
ELECEXTLR	ELECEXTLR - External Light Road	ELECTRICAL	3
ELECHVBD	Electrical High Voltage Switchboard	ELECTRICAL	1
ELECHVC	Electrical High Voltage Cable	ELECTRICAL	1
ELECHVSW	Electrical High Voltage Switchgear	ELECTRICAL	1
ELECHVTX	Electrical High Voltage Transformer	ELECTRICAL	1
ELECLCS	Electrical Local Control Stations	ELECTRICAL	3
ELECLP	Electrical Lightning Protection System	ELECTRICAL	3
ELECLVBD	Electrical Low Voltage MSB	ELECTRICAL	2
ELECMSB	Electrical Main Switchboard	ELECTRICAL	1
ELECPFCU	Electrical Power Factor Correction Unit	ELECTRICAL	2
EMGEN	Emergency Generator	ELECTRICAL	1
EMLIGHTS	Emergency Lighting Systems	ELECTRICAL	1
EMPHONE	Emergency Phone	SPECIALIST SERVICES	1
EMSHWR	Emergency Shower & Eyewash station	PLUMBING	1
EXTBBQ	External BBQ	GROUNDINGS	5
FAB	Building Fabric	EXTERNAL FAB & FINISH	3
FANBAGH	Fan Bag House Exhaust	HVAC	3
FANEXH	Fans-Exhaust	HVAC	4
FANFUME	FANS - Fume Hood Extraction Fans	SPECIALIST SERVICES	2
FANHEX	FANS - Heat Exchange Units	HVAC	4
FANRA	Fan Return Air	HVAC	4
FANS	Fans-General	HVAC	4
FANSA	Fans Supply Air	HVAC	4
FANTOIL	FANS - Toilet & Amenities Ventilation	HVAC	4
FCAB	Fume cabinets	SPECIALIST SERVICES	2
FCABFS	Fume Cabinet Fume Scrubber	SPECIALIST SERVICES	2
FCU	Fan Coil Units	HVAC	3
FDCR	Forced draft coolers-coolers/freezers	SPECIALIST SERVICES	4
FDCRRC	FD Cooler/Freezer remote condenser unit	SPECIALIST SERVICES	4
FIP	Fire indication panel	FIRE PROTECTION	1
FIPAFSS	Fire indication panel-fire suppression system	FIRE PROTECTION	1
FIPDAMPER	Fire Dampers	FIRE PROTECTION	1
FIPDOOR	Fire Doors	FIRE PROTECTION	1
PIPEWIS	Fire Panel Emergency Intercommunication Warning System	FIRE PROTECTION	1
FIPPASSIVE	Building Passive Fire Protection & Penetrations Register	FIRE PROTECTION	1

Classification	Description	Parent Classification	Rating
FIPPMPD	Fire Pump Diesel	FIRE PROTECTION	1
FIPPMPE	Fire Pump Electric	FIRE PROTECTION	1
FIPPORT	Fire Portables / Hydrants / Hose Reels	FIRE PROTECTION	1
FIPSMOKED	Smoke Detection Systems - Battery Operation	FIRE PROTECTION	1
FIPSPR	Fire Sprinkler System	FIRE PROTECTION	1
FIPSV	Smoke Ventilation Damper System (Non Fan-Forced)	FIRE PROTECTION	1
FIPSVF	Smoke Ventilation System Fan	FIRE PROTECTION	1
FMTTOOLS	FM Tools and Equipment	SPECIALIST SERVICES	5
FURNDIS	Disability Furniture	SPECIALIST SERVICES	5
HARDSCAPE	Paved areas, side walks	GROUNDNS	4
HEX	Heat exchangers	HVAC	4
HOIST	Hoists, Cranes and Lifting Devices	ELECTRICAL	3
HTRED	Heater-Electric duct	HVAC	3
HTRGD	Heater-Gas duct	HVAC	2
HTRHPR	Heater - Hydronic Panel Radiator	HVAC	5
HUFS	Hydraulic - Urinal Flushing System	PLUMBING	4
HW	Heating Water Systems	HVAC	3
HWGENAC	Hot water generators-A/C	HVAC	3
HWGENDW	Hot water generators-Domestic water	PLUMBING	4
HWGENPOOL	Heating water generators-Pool	SPECIALIST SERVICES	4
HWPW	Heating water pipework	HVAC	3
ICE	Ice Machine	PLUMBING	4
LANDSCAPE	Landscape	GROUNDNS	5
LIFT	Lifts & Elevators	TRANSPORT	1
MCC	Motor Control Centre Board	GROUNDNS	3
MICRTURB	Microturbine	ELECTRICAL	5
MSSB	Mechanical Switchboards & Control Panels	HVAC	3
MTRE	Metering - Electrical	ELECTRICAL	4
MTRNG	Metering - Natural Gas	PLUMBING	5
MTRWM	Metering - Mains Water	PLUMBING	5
MTRWR	Metering - Rain Water	PLUMBING	5
MTRWW	Metering - Waste Water	PLUMBING	5
MUSP	Pressurised Make-up systems	HVAC	3
PAC	Package air conditioners	HVAC	4
PACA	Package air conditioners Air Cooled	HVAC	4
PACCR	Package air conditioner - computer room	HVAC	5
PACRCC	Package air conditioner Computer Room remote condenser	HVAC	5
PACSPLTI	Package Air Conditioning Split Indoor Unit	HVAC	4
PACSPLTO	Package Air Conditioning Split Outdoor Unit	HVAC	4
PACW	Package air conditioners Water Cooled	HVAC	4
PCLAB1	Physical Containment 1 Laboratories	SPECIALIST SERVICES	2
PCLAB2	Physical Containment 2 Laboratories	SPECIALIST SERVICES	1
PCLAB3	Physical Containment 3 Laboratories	SPECIALIST SERVICES	1
PGCAB	Plant Growth Cabinet	SPECIALIST SERVICES	2
PGCABC	Plant Growth Cabinet Condenser Unit	SPECIALIST SERVICES	2
PMP	Pumps	HVAC	3
PMPPOOL	Pool Pumps	SPECIALIST SERVICES	4
PMPRETIC	Reticulation Pumps	GROUNDNS	4
PMPSEWER	Sewer Pumps	PLUMBING	1
POOL	Pool	SPECIALIST SERVICES	3
POTBCHWU	Potable combined boiling & chilled water unit	PLUMBING	5
POTBWU	Potable boiling water unit	PLUMBING	5

Classification	Description	Parent Classification	Rating
POTCHWU	Potable chilled water unit	PLUMBING	5
PTICKET	Parking Ticket Machine	SPECIALIST SERVICES	4
PV	Pressure Vessel	HVAC	1
PW	Pool Water Systems	SPECIALIST SERVICES	4
RAC	Room Air Conditioners	HVAC	5
ROAD	Roads, Streets and Lanes	GROUNDNS	3
ROF	Building Roof	SUPERSTRUCTURE	2
ROFHSS	Roof Height Safety Systems	SUPERSTRUCTURE	1
ROUNDABOUT	Roundabouts	GROUNDNS	3
SPLTACDI	Split Air Conditioner-Ducted Indoor Unit	HVAC	5
SPLTACDO	Split Air Conditioner-Ducted Outdoor Unit	HVAC	5
SPLTACI	Split Air Conditioner-Indoor Unit	HVAC	5
SPLTACIM	Split Air Conditioner-Indoor Unit Multi-head	HVAC	5
SPLTACO	Split Air Conditioner-Outdoor Unit	HVAC	5
SPLTACOM	Split Air Conditioner-Outdoor Unit Multi-head	HVAC	5
SPORTSFIELD	Fields, Grounds, Ovals	GROUNDNS	4
STOVE	Stove	PLUMBING	5
STR	Building Structure	SUBSTRUCTURE	3
TKAIR	Air Compressed tank	SPECIALIST SERVICES	4
TKAN	Tanks - Acid Neutralising	PLUMBING	1
TKEXP	Tanks-Expansion	HVAC	3
TKIRR	Tanks - Irrigation Storage Water	GROUNDNS	4
TKSCHW	Tanks-Storage chilled water	HVAC	3
TKSCW	Tanks-Storage condenser water	HVAC	3
TKSDHW	Tanks-Storage domestic hot water	PLUMBING	4
TKSEWER	Sewer Tank	PLUMBING	2
TKSHW	Tanks-Storage heating water	HVAC	3
TKSPA	Tanks - Settling (Plaster Arrestor)	PLUMBING	2
TKSRain	Tanks - Storage Rainwater	PLUMBING	5
TKTRADE	Tanks - TRADE WASTE	PLUMBING	1
UPS	Uninterrupted Power Supply	ELECTRICAL	1
VAVBX	Variable Air Volume boxes	HVAC	3
VRVACI	VRV Air Conditioner-Indoor Unit	HVAC	4
VRVACO	VRV Air Conditioner-Outdoor Unit	HVAC	4
VSD	Variable Speed Drives	HVAC	3
WFBLRST	Water Filtration - Steam Boilers	SPECIALIST SERVICES	4
WFFS	Water Filtration-Sand filters	SPECIALIST SERVICES	4
WFPOTW	Water Filtration-Potable water filters	SPECIALIST SERVICES	3
WFRain	Water Filtration - Rainwater	SPECIALIST SERVICES	5
WFROS	Water Filtration - Reverse Osmosis	SPECIALIST SERVICES	3
WIN	Building Windows	EXTERNAL FAB & FINISH	3

APPENDIX D

MAINTENANCE FREQUENCY TABLE

This schedule is provided to inform planned maintenance activities.

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Batteries						6M	Y					AS 2293.1
Earthing Testing							Y					AS 3017
Electrical Test & Tag							Y			5Y		AS 3760
Emergency Lighting						6M	Y					AS 2293.1
Intruder Alarm System							Y					AS 2201.1
Lightning Strike Protection							Y					AS 1768
Power Transformer							Y					AS 2374
Residual Current Devices RCD							Y					AS 3760
Resistance Test of Main Earthing Conductor							Y					AS 3017
Resistance Test Protective Earthing & Equipotential Conductor							Y					AS 3017
Single Point Lighting						6M	Y					AS 2293.1
Solar Panel Grid-connected Power Systems							Y					*No Standard Applicable
Solar Panel Stand-alone Power Systems							Y					*No Standard Applicable
Solar Water Heater - Active Systems							Y					*No Standard Applicable
Solar Water Heaters - Pasive Systems							Y					*No Standard Applicable
Switchboard & Wiring				M	Q		Y					AS 3000
Switchboard Thermal Scanning					Q		Y					AS 2467
Switchgear - Air-Break at Voltages Up to 1000V A.D and 1200V D.C							Y					AS 2467
Switchgear - Oil							Y					AS 2467
Switchgear - Voltages Up to 1000V A.D & 1200V D.C							Y					AS 2467
UPS						6M	Y					OEM
Automatic Doors					Q	6M						AS 5007
Helicopter Landing Site				M	Q							

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Roof Anchors							Y					AS 4488.2
Air Control Damper						6M	Y					AS 1851
Aspirating Smoke Detector (Vesda)				M		6M	Y	2Y				AS 1851
Delivery Lay Flat Hose							Y					AS 1851
Electric Heater - Ducted or Unit Mounted							Y					AS 1851
Fire - Beams, Columns & Trusses							Y					
Fire - EWIS				M			Y			5Y		AS 1851
Fire - Intercom Systems for Emergency Purposes							Y					AS 1851
Fire - Special Hazard Systems				M		6M	Y				10Y	AS 1851
Fire - Water Storage Tanks for Fire Protection				M		6M	Y				10Y	AS 1851
Fire & Smoke Barriers - Walls, Ceilings, Floors							Y					AS 1851
Fire & Smoke Curtains					Q	6M	Y					AS 1851
Fire & Smoke Rated Access Panel & Hatches							Y					AS 1851
Fire Blankets						6M	Y					AS 1851
Fire Dampers							Y					AS 1851
Fire Detection and Alarm Systems				M		6M	Y			5Y		AS 1851
Fire Doors - Hinged & Pivoted					Q	6M						AS 1851
Fire Doors - Horizontal Sliding					Q	6M						AS 1851
Fire Emergency Evacuation Procedures						6M	Y					AS 1851
Fire Extinguishers - Portable						6M	Y			5Y		AS 1851
Fire Extinguishers - Wheeled						6M	Y			5Y		AS 1851
Fire Hose Reels						6M	Y					AS 1851
Fire Hydrants				M		6M	Y			5Y		AS 1851
Fire Isolated Exit Pressurisation Systems					Q		Y					AS 1851
Fire Motorized Relief Opening Windows & Shutters						6M	Y					AS 1851
Fire Protected Air Ducts							Y					AS 1851
Fire Pumpset				M		6M	Y			5Y		AS 1851
Fire Ratted Glazing							Y					AS 1851
Fire Shutters							Y					AS 1851

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Fire Sprinklers - Deluge & Water Spray Systems				M		6M	Y			5Y		AS1851
Fire Sprinklers - Dry Pipe Systems				M		6M	Y			5Y		AS1851
Fire Sprinklers - Pre Action Systems				M		6M	Y			5Y		AS 1851
Fire Sprinklers - Wet Pipe Systems				M		6M	Y			5Y		AS 1851
Motor Control Centres							Y					AS 1851
Rotating Frame Bed							Y					
Smoke & Heat Alarms						6M	Y					AS 1851
Smoke & Heat Vents						6M	Y					AS 1851
Smoke Damper							Y					AS 1851
Smoke Doors - Hinged & Pivoted						6M						AS 1851
Smoke Exhaust System					Q		Y					AS 1851
System Changeover Under Fire Condition					Q		Y					AS 1851
VFI - Variable Frequency Inverters					Q	6M	Y					AS 1851
Aeration Waste Water Treatment Plant	D	W			Q							
Backflow Prevention Devices							Y					AS 2845.3
Drinking Water Treatment Unit							Y					AS 3497
Gas Systems							Y					AS 5601
Grease Traps & Arrestors					Q		Y					Local Council requirements
Hot Water Services				M								AS 3500.4
Humidifiers				M	Q		Y		3Y			DA 19
Sanitary Plumbing & Drainage							Y					AS 3500.3
Septic Tanks							Y					AS 1546.1
Stormwater Drainage							Y					AS 3500.3
Tempering Valve							Y					AS 4032.3
Thermostatic Mixing Valves				M			Y					AS 4032.3
Water Circulating Pump						6M	Y					
Water Services				M								AS 3500.1
Boiling Water Unit							Y					
Doors						6M						

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Waste Disposal Unit						6M						
Water Cooler							Y					
Water Filter						6M						
Windows							Y					
A/C Plant Commercial Unit				M		6M	Y					DA 19
A/C Split and Room Domestic Size				M		6M	Y					DA 19
Activated Carbon Filters				M								DA 19
Active Chilled Beams						6M	Y					DA 19
Air Compressor				M		6M	Y					DA 19
Air Cooled Condensers				M			Y					DA 19
Air Handling Plant				M	Q	6M	Y					DA 19
Automatic Dampers						6M	Y					DA 19
Belt Drives				M		6M			3Y			DA 19
Boiler Electric				M	Q		Y					DA 19
Boiler Gas Fired				M	Q	6M	Y					DA 19
Boiler Oil Fired				M	Q	6M	Y					DA 19
Calorifiers				M	Q		Y		3Y			DA 19
Ceiling Cassette Air Conditioner				M			Y					DA 19
Chiller - Centrifugal					Q	6M	Y					DA 19
Chiller - Magnetic Compressor					Q		Y		3Y			DA 19
Chiller - Reciprocating Compressor					Q	6M	Y					DA 19
Chiller - Screw Compressor					Q		Y					DA 19
Chillers				M		6M	Y		3Y			DA 19
Compressed Air and Gas Pipe Work				M			Y					DA 19
Condensing Units				M	Q		Y					DA 19
Cool & Freezer Rooms				M	Q	6M	Y					DA 19
Cooling Coils				M		6M	Y					DA 19
Cooling Towers				M	Q	6M	Y					DA 19
CRAC Unit		W		M	Q		Y					DA 19

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Cranes & Hoist					Q		Y					AS 1418.1
Daily Service Feed & Expansion Tanks				M		6M	Y					DA 19
Diesel Generator				M		6M	Y					OEM
Direct Drives					Q							DA 19
Dry Media & Panel Filter				M	Q	6M	Y					DA 19
Duct Insulation				M			Y					DA 19
Electric Motors				M	Q	6M	Y		3Y			DA 19
Electric, Electronic & DDC Controls				M	Q	6M	Y					DA 19
Electrostatic Filters				M	Q							DA 19
Evaporative Air Coolers					Q							DA 19
Evaporative Condensers				M	Q	6M	Y					DA 19
Fan Coil Units				M		6M	Y					DA 19
Fans				M		6M	Y		3Y			DA 19
Fuel Oil - Above Ground				M					3Y			DA 19
Fuel Oil - Below Ground				M	Q				3Y			DA 19
Fume Cupboard					Q	6M						DA 19
Gas Fired Furnaces				M			Y					DA 19
Gear Drives				M	Q	6M	Y		3Y			DA 19
General Ductwork							Y					DA 19
Heating Coils						6M	Y					DA 19
Kitchen Exhaust Ducts				M			Y					DA 19
Kitchen Exhaust Hood				M			Y					
Lift - Passenger & Goods				M			Y			5Y	10Y	AS 1735.2
Liquid Filters				M			Y					DA 19
Metal Viscous Oil Filters				M	Q				3Y			DA 19
Oil Fired Furnaces				M			Y					DA 19
Oil Pipe Work				M			Y					DA 19
Passive Chilled Beams						6M	Y					DA 19
Pipes & Pressure Vessels				M		6M	Y					DA 19

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Plant Rooms				M		6M						DA 19
Pneumatic Controls				M	Q	6M	Y					DA 19
Pumps				M	Q	6M	Y		3Y			DA 19
Refrigeration Compressors				M			Y					DA 19
Refrigeration Pipe Work				M		6M	Y					DA 19
Room Air Conditioner				M			Y					DA 19
Steam Pipe Work				M		6M						DA 19
Variable Speed Electrical					Q	6M	Y					DA 19
Variable Speed Mechanical Drives				M	Q	6M	Y		3Y			DA 19
VAV Terminals				M								DA 19
Vibration Isolation					Q		Y					DA 19
VRV Air Conditioner				M			Y					
Water Cooled Condensers							Y					DA 19
Water Pipe Work				M		6M						DA 19
Electrically-Powered Mobile Towing Unit (TUG)				M	Q	6M						
Medical Air Compressor		W			Q	6M	Y	2Y				AS 2568
Medical Gas Alarm Panel							Y					AS 2896
Medical Gas System					Q	6M	Y					AS 3551
Medical Suction Pump	D	W			Q	6M	Y					AS 2896
Nurse Call System		W					Y					AS 3811
Patient Lifter					Q							AS 3581
Swimming Pool Automatic Chemical Monitoring Equipment	D											Swimming Pool Code of Practice
Swimming Pool Automatic Dosing Equipment				M								Swimming Pool Code of Practice
Swimming Pool Balance Tank							Y					Swimming Pool Code of Practice
Swimming Pool Chlorine Pump							Y					Swimming Pool Code of Practice
Swimming Pool Filter		W								5Y		Swimming Pool Code of Practice
Swimming Pool Foot Valve							Y					Swimming Pool Code of Practice
Swimming Pool Hair & Lint Strainer	D						Y					Swimming Pool Code of Practice

Asset	D	W	F	M	Q	6M	Y	2Y	3Y	5Y	10Y	Standard
Swimming Pool Inlets							Y					Swimming Pool Code of Practice
Swimming Pool Main Circulation Pump and Pump Motor							Y					Swimming Pool Code of Practice
Swimming Pool Plant Room Gauges							Y					Swimming Pool Code of Practice
Swimming Pool Suction System		W										Swimming Pool Code of Practice
Swimming Pool Water Testing	D				Q							Swimming Pool Code of Practice
Wheelchair						6M						
Wind Up Bed							Y					