

Landmark Air Conditioning Policy

Background

Air conditioning is the responsibility of the registered owner of each unit. This includes maintenance, repairs and, if necessary, replacement. Replacement, whether the replacement is like-for-like or an upgrade to increase air conditioning capacity requires an application to the Executive Committee (EC) on the Air Conditioning Replacement Form, attached hereto at "Annexure A".

Air conditioning systems used at Landmark consist of one or more internal units, external units, associated piping and cabling and control units. The external units are located in machinery spaces including, in some cases, on the roofs of the Blackall Street buildings.

Because the refrigerant used in the systems provided at Landmark during the construction process is being phased out, it may be necessary to install new piping when replacing an air conditioning system. This may require drilling or cutting structural building components, which means that risks to fire safety, structural integrity and existing services have to be addressed. These engineering issues require expertise not generally available within the EC.

However, in some units it may be possible to replace the air conditioning system while reusing the existing pipework, thus requiring no work at all on structural building components.

Application

This policy applies whenever an owner wishes to replace an air conditioning system or a significant component thereof on or after 31 August 2016.

Policy

The EC will approve applications for the replacement of air conditioning systems or significant components thereof which satisfy the following criteria, and conform to the maximum power demand as specified by the fact sheet provided by the consulting engineers Norman Disney Young¹ (NDY) and attached hereto at Annexure "B". It is noted that NDY recommends that, wherever possible, inverter systems are selected as the replacement outdoor units. The criteria are:

- 1 Under no circumstances will external units be allowed to be installed on balconies.
 - 2 The new air conditioning system must be installed using an installer qualified to install the system. The installer must hold relevant insurance.
 - 3 The air conditioner to be replaced must be disconnected and removed from Landmark by the installer according to relevant regulations.
 - 4 The installer is required to capture the redundant R22 gas and to certify its safe disposal and to ensure any unused pipes and wiring are safely sealed off.
 - 5 If it is proposed that existing pipework be reused, owners must confirm, through the installer or manufacturer, that these refrigerant pipe sizes are compatible/suitable for integration with the new system. Riser pipework considered for reuse must be pressure tested to ensure that its integrity allows suitable system operation at the higher pressures associated with R410A gas.
 - 6 The replacement system must be of such capacity that it will not be capable of operating outside the limitations
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- 1 Norman Disney Young was engaged by the Executive Committee to review Landmark's power usage and the capacity of the complex's electrical infrastructure to support additional demand to meet requests to upgrade air conditioning system by owners. NDY's report of 31 March 2016 is available for inspection at the building manager's office.

imposed by Annexure "B".

- 7 Where it is necessary to drill or cut structural components, the owner must first obtain a report from a structural engineer certifying that such work:
 - a. will not reduce structural integrity;
 - b. will not reduce fire safety;
 - c. will not interfere with existing services or other units;
and
 - d. will be fully compliant with any relevant standards and applicable regulations.
- 8 The installer must make good any repairs after installation.
- 9 External units will be placed in an existing machinery space (but not necessarily in exactly the same position or machinery space as the unit being replaced). Where the external unit is to be located on a roof and is larger than the one being replaced NCA approval will also be required and this is the responsibility of the owner. The NCA has advised that its approval would be granted provided the new unit is not visible at ground level in Blackall Street or Bowen Drive.
- 10 External units to be affixed to a roof on steel grid mesh platforms or in the basement on angle steel brackets must have anti-vibration mounts as detailed in pages 8-10 of the NDY report of 31 March 2016 (refer footnote page 2).
- 11 External units must comply with relevant ACT Noise Standards and Requirements.
- 12 Where external units are located to be on a roof and are larger than the ones to be replaced, they must be adequately screened from view. If necessary the Owners' Corporation will arrange for expanded louvre screening to be installed.
- 13 The owner will be responsible for any damage whatsoever caused to common property or other apartments in

Landmark by the replacement air conditioning works and will be responsible for rectification of the damage.

As with all modifications and alternations requiring approval, the owner is required to give an indemnity in the terms of the application form and is required to lodge a bond of \$500.00 before work commences made payable to the Landmark Owners' Corporation. This bond will be returned in full if the work is carried out in accordance with this policy to the satisfaction of the Executive Committee and a signed and dated commissioning certificate from the installer is provided.

Implementation

An owner shall provide appropriate documentation from a licensed installer, engineer or authority, as appropriate, which satisfies the following requirements:

A) EXTERNAL DIMENSIONS

Advice that the external unit is to be of no larger dimensions and weight than the existing unit and will be installed in the same location without compromising any other owner's unit or the potential replacement of any other unit, **or** where the external unit will be larger and is to be:

- i) located on a roof, the owner shall obtain approval from the NCA for the installation of the external unit and request the EC to provide additional louvre screening if necessary.
- ii) located on separate brackets in a basement, the owner shall ensure the documentation confirms that the brackets are capable of securely supporting the weight of the proposed external unit.

B) MAXIMUM POWER DEMAND (MPD)

Documentation shall advise the MPD of the proposed system and whether it is greater than the MPD of the air conditioning unit to be replaced. In such cases, if requested by the EC, a certificate from an electrical engineer confirming that the

proposed replacement system is within the limitations imposed by Annexure "B" shall be provided.

C) PIPEWORK

A distinction is made between air conditioning systems that do or do not require new pipework and work potentially affecting structural building components such as cutting or drilling. Documentation shall advise whether such work is required or whether existing pipework will be reused and that no work involving alterations to structural components of the building will be required.

Where such work is required, documentation shall include a certificate from a structural engineer advising that all proposed drilling or cutting of structural components will be compliant with clauses 6 (a) to (d) above of the Air Conditioning Policy.

Following installation the owner shall obtain a certificate from the installer stating that all work has been completed in accordance with this policy.

AMPS	Existing Unit	Proposed Unit
Cooling		
Heating		

If the proposed unit's MPD is greater attach full details confirming that the proposed replacement system is within the limitations imposed by Annexure "B". **Note: the EC may request that an electrical engineer provide a certificate confirming this requirement**

8. Proposed site and dimensions of new external unit:

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Centimeters	Existing Unit	Proposed Unit
Height		
Width		
Depth		

9. If the new external unit is larger than the unit to be replaced attach full details of its proposed site including advice from the National Capital Authority that it has approved the installation.

10. If the new external unit is larger than the unit to be replaced will additional louvre screening be required?
NO **YES**, if so attach full details.

11. Is there a need for any structural work on common property?
NO **YES**, if so attach full details including a certificate from structural engineer.

Indemnity and Undertakings

The owner agrees to consult with the building manager, prior to work commencing, regarding access to machinery spaces, any need for hoists, the extent of any drilling or cutting required and any proposal for removal of old machinery.

The owner agrees that he/she will ensure that:

1. on completion of the works, all debris will be removed from common property;
2. during construction, any working areas on common property will, as far as practicable, be kept clean and tidy; and
3. at the conclusion of each working day, any working areas on common property will be not pose a risk to other Landmark residents.

The owner agrees that he/she will be responsible for rectification of any damage caused by the air conditioning works to Landmark common property and other units in Landmark.

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Owner's Signature and Date.



Consultant Advice

From: **Sherry Xu** Date: **19 Aug. 16** File No: C09517\001\E-21\ca160818c0003 Pages: 2
 Project: **Landmark Apartments - Air conditioning Review** No: **E-002[2.0]**

Existing Electrical Condition & Procedure to AC Upgrades

The intent of this advice is to provide information in regards to the existing power demand and distribution at Landmark Apartments and the procedure for undertaking the upgrade of an apartment air conditioning unit.

Existing Condition

The table below outlines the existing power demand in regards to each apartment block as of Wednesday, 31 August 2016:

Apartment Block: (Address)	Substation Number:	Fuse Rating:	Existing Maximum Demand:			Existing Spare Capacity:		
			Red	White	Blue	Red	White	Blue
1 (47 Blackall)	8781	400A/ph	235A	290A	190A	165A	110A	210A
2 (45 Blackall)	8781	400A/ph	283A	282A	289A	117A	118A	111A
3 (43 Blackall)	8780	315A/ph	194A	196A	232A	121A	119A	83A
4 (3 Bowen)	8781	400A/ph	127A	90A	132A	65A	138A	84A
5 (5 Bowen)			208A	172A	184A			
6 (41 Blackall)	8780	400A/ph	298A	319A	315A	102A	81A	85A
7 (7 Bowen)	8780	200A/ph	85A	114A	93A	115A	86A	107A
8 (9 Bowen)	8780	200A/ph	130A	92A	151A	70A	108A	49A

Procedure to Upgrade

The contractor is required to propose a complete solution to the Executive Committee for approval before a new air conditioning unit is installed. The following is the minimum information that must be provided for the committee to approve the installation:

- Identify and inform which phase the apartment and air conditioning unit is being supplied from.
- Provide technical data of the new air conditioning unit proposed and outline the below information, at a minimum, for the new and existing units ensuring adequacy of electrical supply with reference to the above information.



Block:	Unit:	Phase:	Unit Capacity (kW):		Max. Operational Current (A):		Additional Load (A):	New Max. Demand (A): <i>(refer above)</i>
			Existing	New	Existing	New		

- Indicate whether load transfer to another phase is required in order to achieve overall load balancing at building main switchboard level. Mark-up the existing condition table to clearly indicate that load balance will be achieved after load transfer, and submit to Executive Committee for approval.
- Indicate the supply capacity of the existing submains cabling from the building main switchboard to the unit load centre and identify whether or not the cabling requires upgrading to accommodate the load of new air conditioning unit. Voltage drop calculations must be provided to justify this reasoning.
- Indicate the supply capacity of the existing subcircuit cabling from the unit load centre to the air conditioning unit and identify whether or not the cabling requires upgrading. Voltage drop calculations must be provided to justify this reasoning. It is recommended that the voltage drop over the final subcircuit is less than 2%.
- Indicate which circuit breakers require upgrading and provide information as to the size, brand, type and suitability of discrimination and cascading. Should new circuit breakers be required, the type and brand of circuit breaker must match that of existing circuit breaker. Should a new circuit breaker with a different rating be required, confirm with the circuit breaker manufacturer for suitability of discrimination and cascading with all upstream circuit protection devices.

The contractor can proceed with the installation of the new air conditioning unit once receiving full approval from the Executive Committee. The below documents must be provided back to the committee upon completion of the installation:

- Certificate of Electrical Wiring Installation and a certificate of compliance with AS3000 and AS3008.
- Testing results of all wiring components and devices installed including all mandatory and optional tests outlined in AS3000.
- As-installed drawings showing route of electrical wiring, conduit runs concealed from view, cable sizes and protection devices ratings.
- Information on twelve month defects liability period.
- All warranty details of devices and items installed.

NORMAN DISNEY & YOUNG

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