

**T H O M S O N**  
ELEVATOR CONSULTANCY SERVICES

## LIFT AUDIT REPORT

**MACQUARIE GARDENS**  
**1-15 FONTENOY ROAD MACQUARIE PARK**  
March 2017

FOR

**The Owners SP 52948**  
**C/O Waratah Strata Management**



*Macquarie Gardens*  
*1-15 Fontenoy Road*

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**OVERVIEW**

The lift installation, as inspected, consisted of the following basic configuration:

NUMBER AND TYPE OF LIFTS	:	Lift 1 to 4 – Passenger Lifts
FLOORS SERVED	:	B, G 1 to 7
POWER SYSTEM	:	Geared machine located at the bottom level VVAC (Miccompact 330)
CONTROL SYSTEM	:	Microprocessor Control Simplex Two Button Directional Collective (Daldoss Cory)
DOOR TYPE	:	Two Panel, Centre Opening (GAL operator with Dupar locks) (Lifts 1 & 3 are thru cars)
DOOR PROTECTION	:	Electronic infra-red scanners
CAPACITY	:	17 Persons / 1156kg
SPEED	:	1.5 metres/second

There are 4 passenger lifts installed on the property. One in each residential tower. The property is a modern apartment complex close to the M2 Motorway and the Macquarie Shopping Centre. The lifts were originally manufactured and installed by Liftronic Pty Ltd around 1995.

The lifts are currently being maintained by ThyssenKrupp Elevator Australia under the terms and conditions of a Comprehensive Maintenance Contract. We have been supplied with a copy of this contract.

The lift installations are a standard arrangement for low-mid rise buildings. There are many lifts identical to these in and around Sydney. The lifts were designed and built locally, however the company who installed them no longer installs equipment like this.

The operation of the lifts on the day of the inspection was acceptable.

The lift car interiors are in fair condition.

This report will comment on the equipment installed, its condition and standard of maintenance, operation, reliability, performance and Lift Code compliance.



## **MAINTENANCE, INSTALLATION, RELIABILITY & PERFORMANCE**

### **Standard of Maintenance and Operation**

The details in this report are based on a site inspection undertaken on 22 March 2017. Some details were obtained from information provided by ThyssenKrupp Elevator Australia who are the current maintenance provider.

The installation was reviewed from both a maintenance and general housekeeping viewpoint. On the matter of general housekeeping (or basic cleanliness) we found the installation to be unsatisfactory for this type and age of installation. Most of the lift pits are very dirty and have not been cleaned in a long time. Lift shaft equipment such as door headers, rail brackets and most ledges require a thorough clean down to remove excess dust/fluff etc.

Two of the lifts have inoperative lift car emergency lighting and one lift has a faulty lift car emergency telephone - this is unacceptable.

The machine rooms and tops of the lift cars all require cleaning and removal of rubbish and redundant parts etc. Lift 4 has a lot of red rouge dust all over the top of the lift car and the shaft from the rusted lifting ropes.

We last undertook an audit on these lifts in February 2014 and many of the items identified then have not been completed. Of particular concern here is the rusted lifting ropes on lift 4 which should have been replaced over 5 years ago and still have not been done.

The reliability of the lifts varies. Lift 1 had no recorded breakdowns in the 12 month period to March 2017 whilst lifts 2, 3 & 4 averaged 6 calls each for the same 12 month period. More details on this are found later in this report.

The information for the fault report tables and summary was obtained from the lift company's own records.

In general, the ride quality is acceptable (some minor adjustments are required) and is compatible with the low speeds and operation of this type of building.

The lifts' mechanical operation was acceptable on the day of the inspection (taking into consideration their age and type) with some minor adjustments required on the door equipment.

The following specific matters of maintenance that require attention were noted during the inspection.

These items have been sent to ThyssenKrupp Elevator Australia for their attention and are also listed separately at the end of this report.

### Lift 1

1. Clean the lift machine
2. Seal oil leaks in the lift machine
3. Clean the lift machine room floor
4. The lift car emergency telephone is inoperative – communication with the call centre was not possible
5. Clean the top of the lift car
6. Clean the lift pit – it has not been cleaned in a very long time
7. Replace the missing screws in the car operating panel
8. Replace the worn lift car roller guide

### Lift 2

1. The lift car emergency lights are inoperative
2. Adjust the emergency telephone speaker volume – very difficult to hear in the lift car
3. Correctly fit or replace the auxiliary contact block on MR relay in the lift controller
4. Clean the lift machine
5. Clean the lift machine room
6. Clean the lift pit – this has not been cleaned in a very long time
7. Clean oil off the lift pit floor
8. Clean the top of the lift car
9. Replace the broken maintenance switch on top of the lift car
10. Adjust the landing door upthrusts on levels 4 & 6
11. Replace the missing screws in the car operating panel

### Lift 3

1. The lift car emergency telephone is inoperative on battery supply
2. Refit the drive cover in the lift controller
3. Clean the lift machine
4. Clean the machine room and remove all rubbish
5. Clean the lift pit
6. Replumb the Ground floor landing doors
7. Adjust the landing door upthrusts on level 1

### Lift 4

1. Replace the rusted lifting ropes
2. The lift car emergency lights are inoperative
3. Clean the machine room
4. Label all controller relays
5. Refit the drive cover in the lift controller
6. Replace the missing car operating panel screws
7. Clean the top of the lift car
8. Refit the power door operator cover
9. Adjust the landing door upthrusts on level 2



### **Maintenance Summary:**

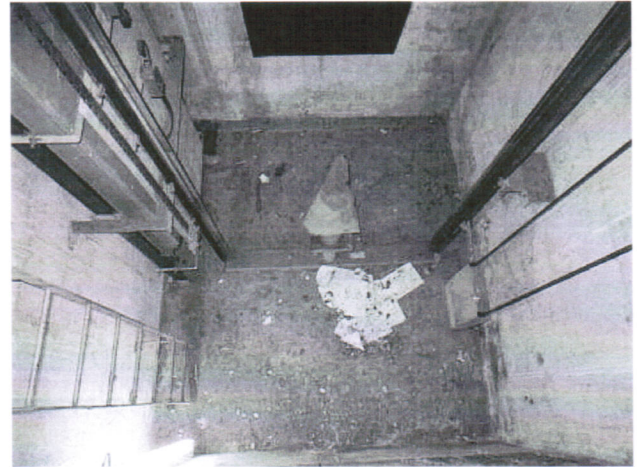
The standard of housekeeping is poor.

The standard of maintenance is acceptable however the lifting ropes on lift 4 need to be changed immediately.

It appears that the lifts are receiving routine maintenance as the call rate is not very high. The overall operation of the lift system appears acceptable when taking into account the type and age of the control and speed system.

The maintenance contractor should be advised of the items raised above as requiring attention and given 4 to 6 weeks to rectify the items.

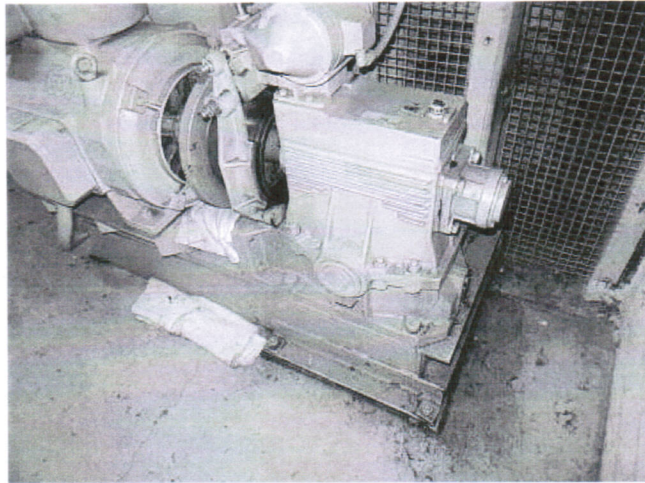
### PHOTOS



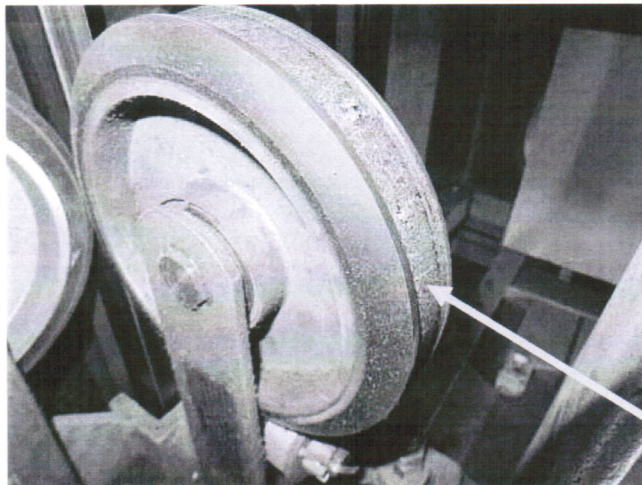
The lift pits for lifts 1, 2 & 3 are filthy and have not been cleaned in a long time



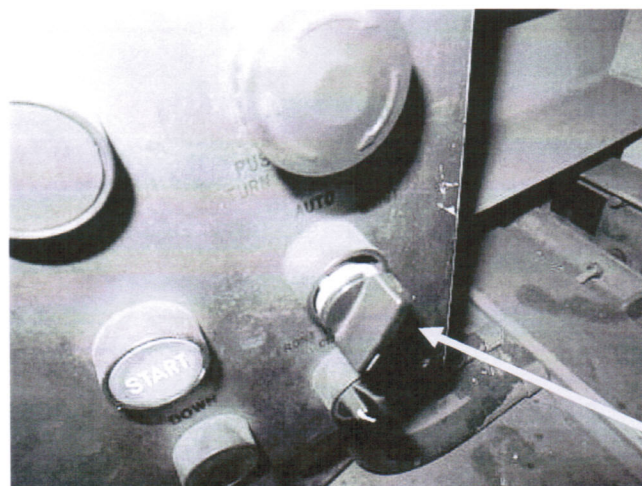




Lift 1 – the lift machine requires cleaning and resealing to stop oil leaks

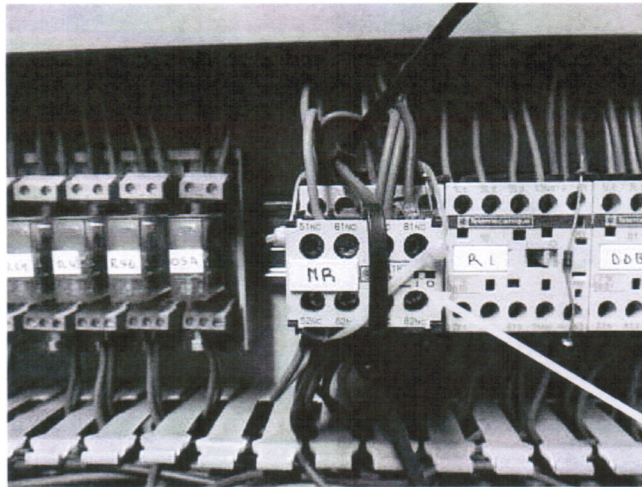


Lift 1 – worn lift car guide rollers need to be replaced ASAP

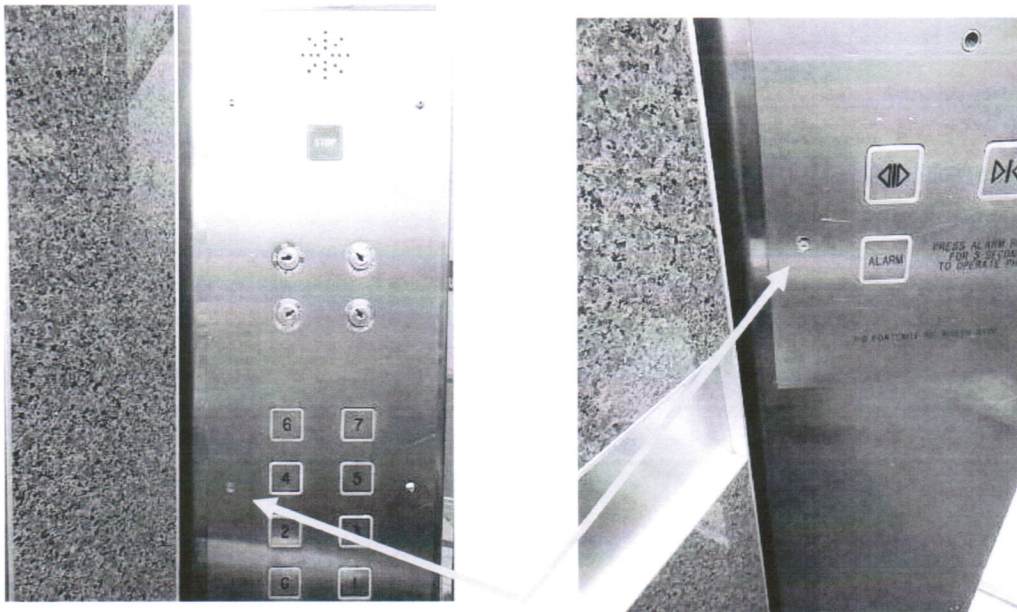


Lift 2 – the broken maintenance switch on top of the lift car needs to be replaced

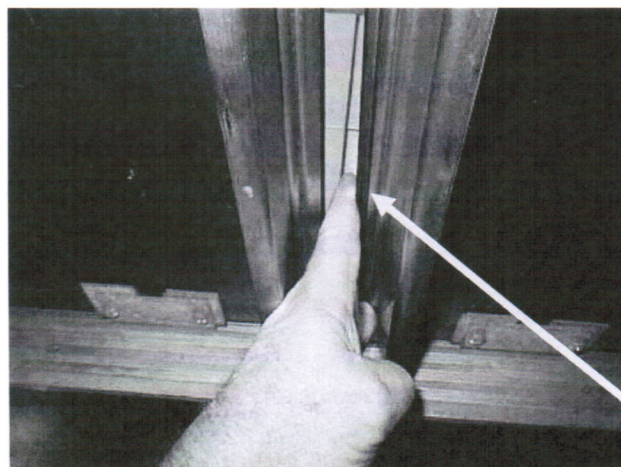




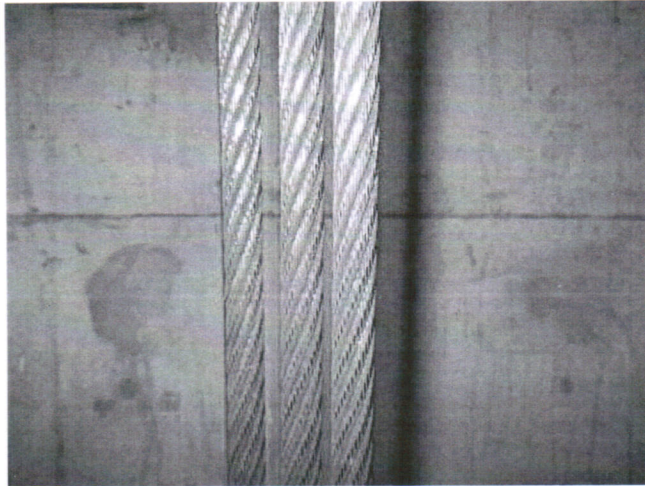
Lift 2 – broken auxiliary contact on MR relay needs to be repaired or replaced



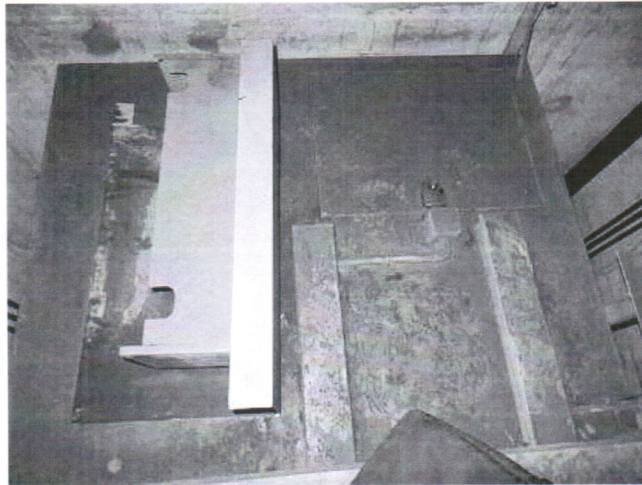
Missing screws need to be replaced in all car operating panels



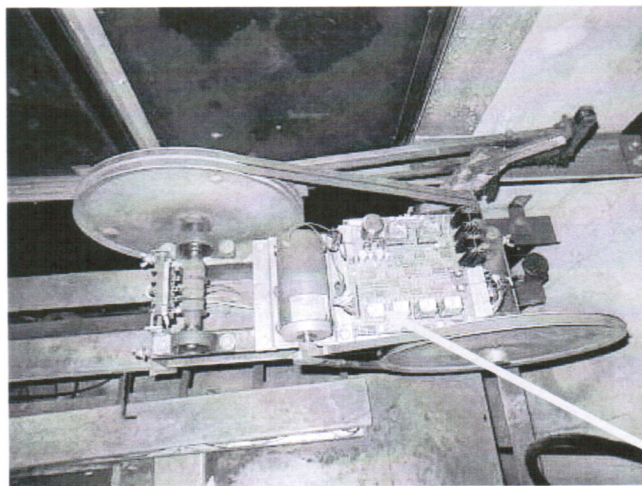
Several landing door upthrusts require adjustment



Lift 4 – rusted lifting ropes need to be replaced immediately



Lift 4 - Red rust dust on top of the lift car



Lift 4 – the power door operator cover needs to be refitted ASAP



## Installation

The equipment itself when installed was reasonable quality and a robust design. Most of the equipment is non-proprietary.

Many of the installed components are obsolete with replacement parts very difficult, if not impossible to find.

The lift car and landing buttons have not been available for some time.

The lift drive unit is obsolete and whilst it can be repaired, this will result in a prolonged down time of the lift whilst repairs are made. The drive unit is a variable voltage alternating current (VVAC) type which are not very energy efficient when compared to modern equipment. Power savings of at least 25% would be realised by upgrading these drives to new variable voltage variable frequency (VVVF) types.

The lift controller microprocessors are still able to be supported, however they are an old design with numerous separate boards plugged into a "rack" arrangement.

The door equipment is fairly robust, but operates crudely compared with modern lifts.

The lifts are now 22 years old and much of the equipment is at the end of its economic life. An upgrade, especially to the control and door equipment, would help future-proof these lifts.

As far as compliance with Statutory Authority, Lift Code and WH&S compliance is concerned the lifts do not fully comply with the latest requirements. Some examples include the following.

- RCD protection is required for all light and power circuits
- There are no emergency communication facilities fitted to the top of the lift car or the lift pits
- There are no switches fitted to the lift pit buffers to
- There are no switches fitted to the governor tension sheaves in the lift pits to detect a slack or broken governor rope
- Access devices are not fitted to all landing doors
- Guard rails are required on top of the lift cars to eliminate fall hazards

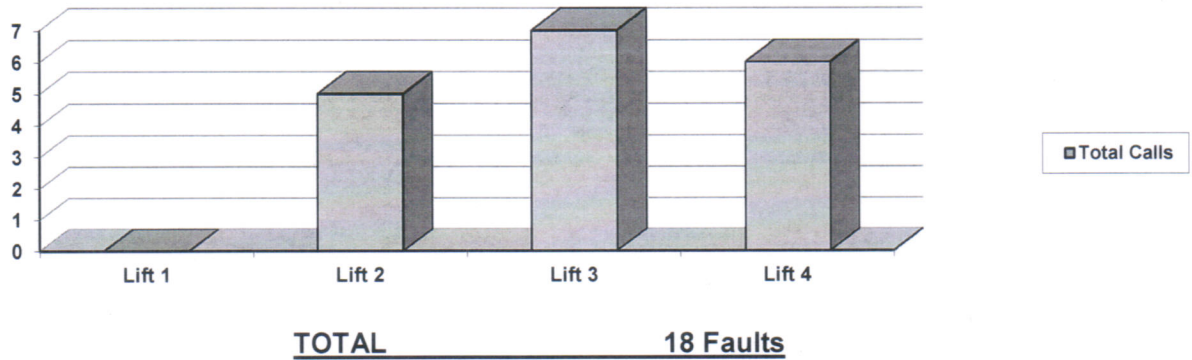
Current Work Health and Safety (WH&S) Regulations require that all plant, including lifts, have a Hazard and Risk Assessment (HARA) carried out and a plan implemented to address all the hazards and risks identified.

We do recommend that a Hazard and Risk Assessment be carried out before the above Code items are attended to so that a complete scope of work can be defined and a plan can be implemented to eliminate or at least control all hazards and risks. Your maintenance provider can provide this service or if you wish we can also provide this service.

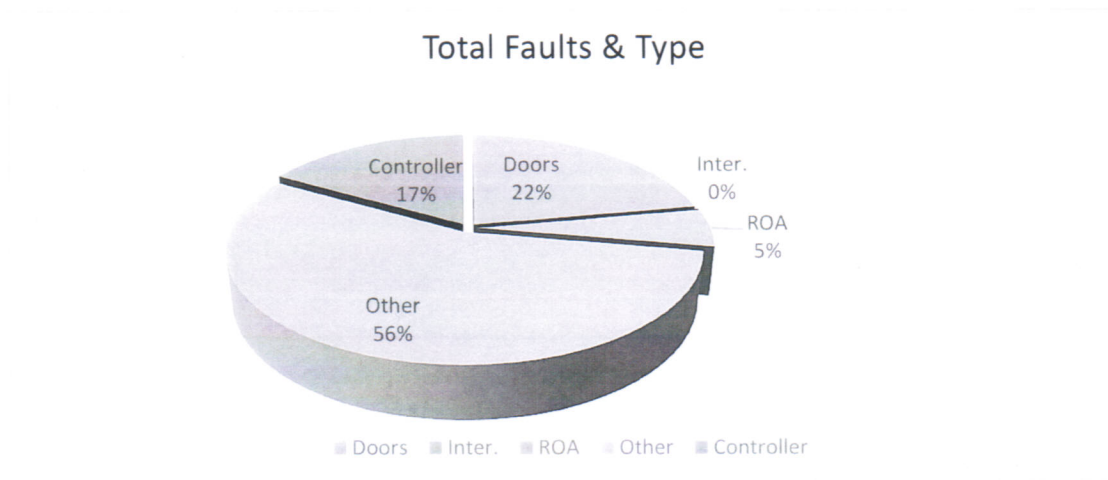
Our other recommendations are outlined later in this report.

**Reliability**

A detailed review of all lift malfunctions has been carried out over the previous 12-month period to March 2017. This review revealed the following statistics:



These overall statistics were then further redefined, in greater detail, into the following specific areas:



Lift No.	Doors	Interference	R O A	Controller	Other	Total per Lift
Lift 1						0
Lift 2	1			4		5
Lift 3	2		1	2	2	7
Lift 4	1			4	1	6
<b>Total</b>	<b>4</b>		<b>1</b>	<b>10</b>	<b>3</b>	<b>18</b>



**Definition of terms**

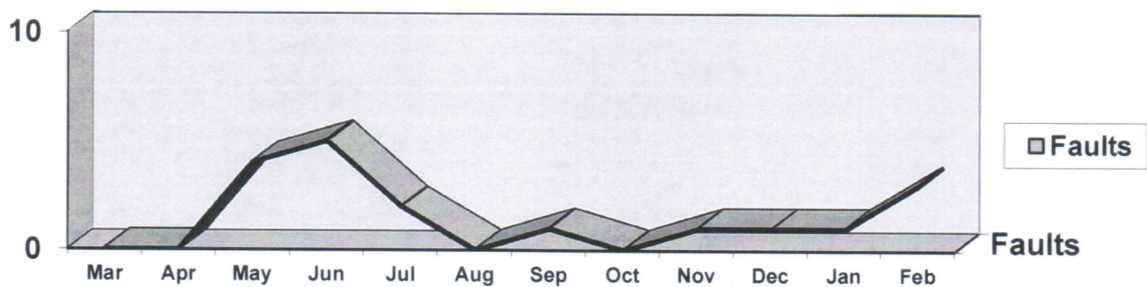
- **Controller.** These are faults directly attributed to the control system such as fuses, processor lock up, drive faults, etc.
- **Doors.** Any fault attributed to the door such as out of mesh, timed out, scanner faults, locks, etc.
- **Interference.** These are faults that cannot be controlled by the lift contractor and are often charged to the client as additional work. Wilful damage by others, incorrect use by others, power failure, etc.
- **ROA. Running On Arrival.** When a mechanic attends a breakdown and the unit is working correctly it is known as an ROA. There may have been no problem to begin with or there may be an intermittent fault that may only appear infrequently.
- **Other.** This can be anything other than the items listed. Often there had not been any apparent problems and no fault could be found. Very similar to an ROA.

The reliability of a lift is expressed as the numbers of faults per lift per month. Obviously the lower the number of faults the better. The number of faults will vary with the age and usage of the lifts as well as the type of lift and standard of maintenance applied. Interference calls are not counted as they are outside of the control of the lift contractor.

Lift No.	Faults/Month
Lift 1	0.00 Faults/Month
Lift 2	0.42 Faults/Month
Lift 3	0.58 Faults/Month
Lift 4	0.50 Faults/Month

**Average for both lifts      0.37 Faults/Lift/Month**

**Fault Trend Chart – March 2016 to March 2017**



### **Fault Summary**

We usually recognise the fault rate as the "bottom line" in assessing the standard of lift maintenance on a site.

A call rate of 0.37 faults/month for the lifts in this complex is acceptable. A breakdown rate of approximately 0.5-0.6 faults/month would be considered average for a lift installation of this type, usage and vintage.

Most of the faults were related to the lift controllers and shaft information systems.

There were several faults to the door equipment however no calls for interference.

Several faults occurred a number of times before they were eventually fixed – this happened on lifts 2 & 4 in particular. These appear to have been due to intermittent type faults which can be very difficult to find as the fault can clear itself whilst the lift is being tested.

There were no recorded breakdowns on lift 1 and this is an excellent result.



## **Maintenance, Installation & Reliability Summary**

We believe that ThyssenKrupp Elevator Australia need to improve the maintenance applied to these lifts especially with regards housekeeping on site.

All of the lifts require a thorough clean down.

Safety items such as inoperative emergency lighting and telephones need to be repaired immediately.

The main problem are the rusted lifting ropes on lift 4 which should have been replaced at least 5+ years ago. These need to be replaced immediately.

The door operation is not up to the standard of new equipment however the doors are performing as well as expected for the type of equipment installed.

The overall fault rate is acceptable.

The fault rate is the "bottom line" in assessing the standard of lift maintenance overall and from this perspective alone ThyssenKrupp's performance is acceptable.

### **POTENTIAL UPGRADES AND IMPROVEMENTS**

The lifts are generally in good mechanical condition however the door equipment operates crudely and the buttons, position indicator units and VVAC drive units are obsolete.

The lift controllers, whilst a relatively simple design, should be reliable and spare parts are available.

The lifts are around 22 years old and we recommend consideration be given to upgrading some of the some of the equipment to ensure reliability into the future.

We recommend that consideration be given to an upgrade of the lift car and landing door equipment (running gear and locks etc) as well as replacement of the poor quality buttons and position indication units.

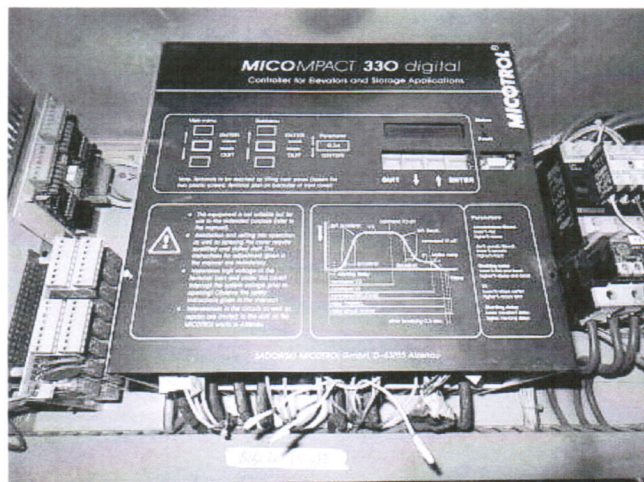
An upgrade of the lift controllers, drive units and shaft information systems would improve the overall performance and also provide energy savings of at least 25-30% on current usage.

There are some areas of non-compliance with the current Lift Code, Statutory Authority and WH&S requirements.

Some of these items are:

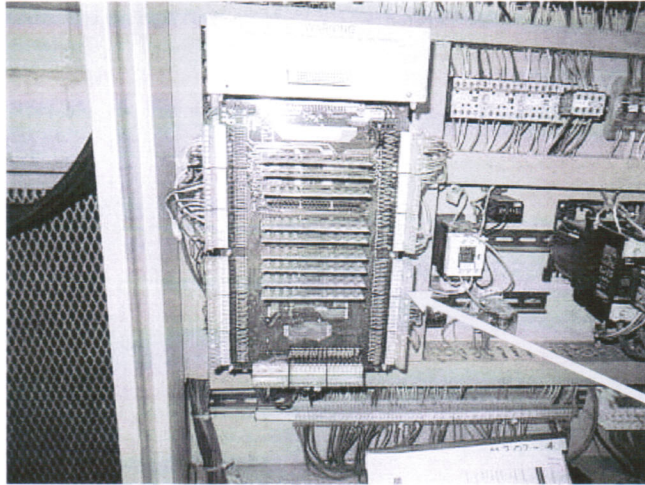
- RCD protection is required for all light and power circuits
- There are no emergency communication facilities fitted to the top of the lift car or the lift pits
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- There are no switches fitted to the governor tension sheaves in the lift pits to detect a slack or broken governor rope
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- Guard rails are required on top of the lift cars to eliminate fall hazards

We recommend that any upgrade always include Lift Code and WH&S items to improve the overall safety of the installation for both the users of the lifts and maintenance personnel.

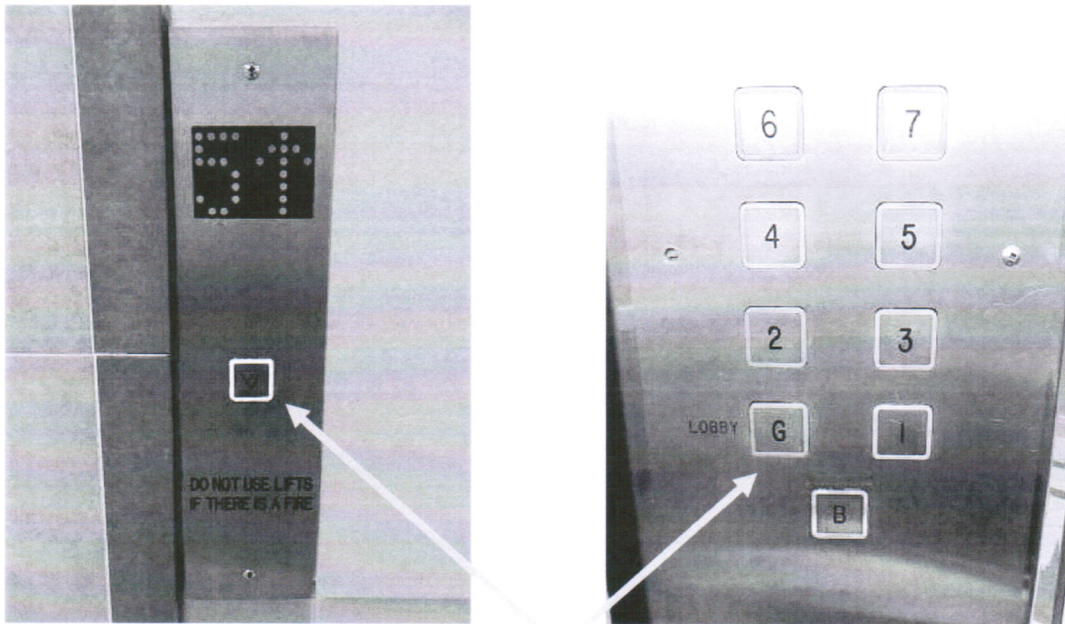


The VVAC drive unit is obsolete with no new replacement parts available





The lift controller microprocessor is an old design however parts are still available. There are numerous separate boards which all plug into a central rack arrangement



All lift car and landing buttons are obsolete with no new replacement parts available

## **CONCLUSION**

These lifts are critical to the correct and efficient operation of the buildings.

The basic design of these lifts is robust and the equipment when installed was of reasonably good quality. We recommend that consideration be given to an upgrade of the lift door equipment, buttons, controllers and drive units as outlined above.

The performance by ThyssenKrupp Elevator Australia is not acceptable due to poor housekeeping, inaction on the replacement of items identified 4 years ago and numerous fault safety items such as emergency lighting and emergency telephones.

The maintenance items listed should be attended to ASAP – a copy has been forwarded to ThyssenKrupp for their attention.

We thank you for the opportunity to provide this report and should you have any enquiries at all please do not hesitate to contact us at any time.

Yours faithfully,

Stephen Williams  
Associate Manager  
Thomson Elevator Consultancy Services  
7 April 2017



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**ELEVATOR CONSULTANCY SERVICES**

**LIFT AUDIT CORRECTIVE ITEMS**

**MACQUARIE GARDENS 1-15 FONTENOY ROAD MACQUARIE PARK**

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Lift 1

1. Clean the lift machine
2. Seal oil leaks in the lift machine
3. Clean the lift machine room floor
4. The lift car emergency telephone is inoperative – communication with the call centre was not possible
5. Clean the top of the lift car
6. Clean the lift pit – it has not been cleaned in a very long time
7. Replace the missing screws in the car operating panel
8. Replace the worn lift car roller guide

Lift 2

1. The lift car emergency lights are inoperative
2. Adjust the emergency telephone speaker volume – very difficult to hear in the lift car
3. Correctly fit or replace the auxiliary contact block on MR relay in the lift controller
4. Clean the lift machine
5. Clean the lift machine room
6. Clean the lift pit – this has not been cleaned in a very long time
7. Clean oil off the lift pit floor
8. Clean the top of the lift car
9. Replace the broken maintenance switch on top of the lift car
10. Adjust the landing door upthrusts on levels 4 & 6
11. Replace the missing screws in the car operating panel

Lift 3

1. The lift car emergency telephone is inoperative on battery supply
2. Refit the drive cover in the lift controller
3. Clean the lift machine
4. Clean the machine room and remove all rubbish
5. Clean the lift pit
6. Replumb the Ground floor landing doors
7. Adjust the landing door upthrusts on level 1

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**LIFT AUDIT CORRECTIVE ITEMS**

**MACQUARIE GARDENS 1-15 FONTENOY ROAD MACQUARIE PARK**

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Lift 4

1. Replace the rusted lifting ropes
2. The lift car emergency lights are inoperative
3. Clean the machine room
4. Label all controller relays
5. Refit the drive cover in the lift controller
6. Replace the missing car operating panel screws
7. Clean the top of the lift car
8. Refit the power door operator cover
9. Adjust the landing door upthrusts on level 2