

# Environmental Ratings and the Facilities Manager

*Phillip Carruthers  
Norman Disney &Young, Brisbane*

## ***Abstract:***

We have lived for a number of years with environmental rating tools such as NABERS and Greenstar. They've been given lip service in the past but that is changing as they are gaining teeth. Indeed there's evidence emerging where predicted results are not being achieved giving rise to landlords being in default of lease conditions, and the legal fraternity gearing up. Ultimately it is the Facility Manager who has to deliver the real result, and often with limitations upon the tools provided and actual information about how things are supposed to work. The buck may stop with the Facility Manager and that could be costly.

This paper has nothing to do with NABERS or Greenstar. It explores the responsibility of the facility management team in meeting strict performance goals set by others without courtesy of input from the team.

Discussion centres on how to set up an effective monitoring regime to assess actual performance against benchmark, and then how to react when things are going wrong. Indeed how to recognise that it's going wrong

Key factors discussed include:

- Skill sets needed to meet the challenge,
- where to go to get the skill sets, and
- What those skills should be worth to the Landlord.

There is an emphasis upon protecting the Facility Manager, and the Facility Manager will be challenged by the discussion.

Living with and maintaining an environmental rating will become the most important facilities role in coming years and the paper suggests that Managers are not ready.

## ***Biography:***

Phillip Carruthers is an Associate Director with Norman Disney and Young, Consulting Engineers in Brisbane, having joined the practice in 1985. He has been associated with the building services industry in contracting and consulting since 1969 in both NSW and Queensland. He has specific interest in sustainable design and eco-efficiency, and is a contributor to the NDY Environmental research and development group. Phillip is a Presidential Fellow and Life Member of AIRAH, a Member of ASHRAE and a past contributor to FMA Conferences. He is a founding and current member of the Sustainable Development and Management Committee of Property Council of Australia, Queensland Division.

## **INTRODUCTION**

There's an ever increasing focus upon the green credentials of property and those credentials are being mandated by legislation and in lease documents. We've seen the Commercial Building Disclosure (CBD) scheme emerge for all property transactions in buildings over 2000m<sup>2</sup> with massive fines for breaches, but the most onerous of all is the lease that demands a continuance of a particular star rating. Invariably it will be a NABERS rating for energy or water as they are required to be reassessed annually. Greenstar ratings are issued at completion of construction and remain in place perpetually.

Maintaining a NABERS rating is the responsibility of whoever is charged with running the building, and that is usually the Facility Manager who bears the rigour of responsibility.

This paper examines the hazards of the Managers role, offers suggestions to mitigate risk, and discusses the skill sets needed to successfully maintain a rating.

## **Scenario – The Building**

The building located in Brisbane has recently been refurbished or constructed, and a commitment made to meet a certain star rating of say 4.5 Stars under the NABERS energy. It really doesn't matter which

scheme the commitment is made as the Management responsibility is the same regardless.

Tenants, who have underpinned the development of the building or refurbishment, have entered leases that require the base building rating to be 4.5 Stars or better, and in this instance have also agreed to provide a 4.5 Star fitout.

The Operations Manager and the team have received the minimum training in the building services required by the contract and left to run the plant using that training and the manuals provided.

Brief plant details include:

- Power supply from the grid,
- Main Switchboard with all circuits metered,
- Distribution boards with tenant consumption metered,
- Various services sub boards with metered circuits,
- Mechanical services comprise:
  - Two water cooled chillers with variable speed screw compressors,
  - Low load chiller with a capacity of 30% of the capacity of one main chiller,
  - Cooling towers in parallel and with variable speed drives on the fans,
  - Chilled water and condenser water pumps with variable speed drives,
  - On floor fan coil units arranged with one unit per face of the building with a centre zone unit. All fans have variable speed drives and there is a ventilation cycle,
  - Air distribution is low temperature VAV with swirl diffusers,
  - Lighting is T5 technology with zone motion detection control, and
  - Emergency lighting is by LED.
- Metering is NABERS compliant
- An integrated digital control and building automation system provides the monitoring and control functions for all services. And it's been set up correctly with trends established.

There is a small FM team in place but they're shared with at least one other site. The Operations Manager (Facility Manager) has an Electrical Trade background and there are two Handymen available.

In essence, the building services design has provided the best opportunity of achieving the 4.5 Star target so it's up to on going management to ensure the targets are met.

## **Responsibility**

The Property Management team has the responsibility of delivering the promises made by the Leasing people who generally have no further involvement in running the building.

It's the Operations Manager who has accepted the role of running the building on behalf of the Property Manager and therefore the Landlord. The flow on from that is the responsibility to maintain the 4.5 Star accreditation, and let's be real, maintenance of the accreditation is the crucial part to keep the landlord out of a breach of lease situation.

However, maintaining a 4.5 Star performance from a building will not be achieved by simply letting the control and automation system run it. It is essential that a continual monitoring regime be in place and the Manager has a clear understanding of the monitoring output. Monitoring data in itself is of little value unless it can be compared to historic data or a benchmark that point to the performance needed to achieve the target.

The Operations Manager has a responsibility to be fully aware of how the building works and what factors impact upon the performance that counts to the NABERS rating. Moreover, it's essential for the Manager to know how to correct anomalies identified by the monitoring trends and that implies an in depth understanding of how the services work and what impacts upon energy consumption.

In essence, the Operations Manager must know what he or she is doing, or the consequences could be very expensive.

## **THE BASICS**

There are fundamentals that an Operations team must know:

- How the building works! A lot of this sort of knowledge will come from manuals and drawings but they are not always correct. The Operation team need to watch the plant, understand the nuances of how it functions under varying conditions, and the best source of this sort of knowledge is the Automation system.
- Gain full functional knowledge of the Automation system. That is the tool to provide the information and manipulation that will be needed.
- What impacts upon energy consumption? This is crucial to success. Controlling energy consumption is not just a case of letting the Automation system run the building. There needs to be a regime of monitoring, watching, understanding, manipulation to extract the best result possible. The knowledge of what impacts upon energy consumption is arguable the most important piece of knowledge the Operations team can gather.
- Establish benchmarks. The original NABERS models should give some indication of the consumption pattern, in fact it should have been provided as part of the training. If there is no benchmark given, construct one using some logical pattern of consumption.

In essence, learn everything there is to know about the building and then learn to drive it.

## **PROBLEMS**

At the outset of this paper there was comment to the effect that Facilities Managers face a problem in maintaining high rating number. Contributing factor to the problems include:

- Training of the Operations team is usually rushed and inadequate.
- The Operations Manager may not have the experience needed to absorb the level of training provided.
- With an electrical trade background the Operations Manager may not have a full understanding of Mechanical Services.
- Fundamentally the Operations team are probably not paid enough!!
- Documentation is most probably incomplete and As Installed drawings are usually not 'As Installed'.

The main problem is that Operations Staff are probably under trained, slightly inexperienced and have been provided with limited accurate documentation.

There is potential for some very expensive errors to be made.

## **SKILL SETS NEEDED**

The skill sets needed don't necessarily relate to qualifications. A degree or diploma does not guarantee knowledge. The most important skill is logical lateral thinking.

This paper suggests that two levels of skill are needed. They relate to the skills of the Operations Team plus some external skills that can be called upon when needed or be on tap at any time.

### **Operations Staff**

- Preferably NABERS accredited. The Operations Manager should have basic NABERS accreditation so the reporting needs can be understood and that reactions can be planned when problems occur.
- Computer literacy with spreadsheets is essential so that data can be extracted from all sources and analysed to minimise consumption. This is where benchmarking is critical. Output of trends established

in the Automation system can be analysed against benchmarks to ensure the consumption is on track.

- It is essential for the Operations Manager to have a detailed understanding of Air Conditioning or HVAC. This is the single most manageable consumer in the building and if it's not understood, monitored and controlled, the ratings will not be achieved.
- Understanding of both Power and Control circuitry is also critical.
- Arguably the most important skill is an intimate knowledge of the Automation system. How to manipulate the system, how the set up trends, etc. Without this level of knowledge it will be difficult to meet targets.
- Ability to think laterally and logically. There is no use have all the tools and spreadsheets, etc. unless there is the basic ability to look at the results and determine what is going wrong.

## **External**

Have access to the original design Engineers including the Consultants and Contractors. In reality these people should have left the Operations Team with sufficient knowledge to run the building but it rarely happens. Key skills of the external advisers include:

- The ability to monitor the Automation system remotely. This is not a personal skill but a functional facility that should be provided. However, the Engineers need the same skill sets as the Operations Manager but at a higher level.
- Quickly recognise anomalies.
- Provide advice to the Operations Manger relating to rectification of anomalies. This is the key function as the Engineer should have an intimate knowledge of how it all works and what impacts upon performance.

## **WHAT TO DO**

Only the Operations Manager can determine what to do but some key initiative are:

- Establish Benchmarks
  - The NABERS model should be able to predict benchmark performance. Establish the benchmark in a spreadsheet then track actuals as regularly as possible
  - Interpolate the benchmark to give some indication of potential daily consumption.

Trends

- Understand the control rationale and establish trends in the BAS to prove the function.
- Assess the effectiveness of the routines against benchmark performance

Alarms

- Set logic alarms such as plant running when it shouldn't

## **RECOMMENDATIONS**

### **Property Manager**

- Establish a rapport with the design team and have them on retainer to assist and review. This will support the Operations Team with a level of expertise that may not exist in the team. However, the expertise will build and reliance upon the design team will diminish.
- Allow remote access to the BAS by the Consultant. This is a very strong tool allowing the original concept design team to review the way the building operates.

### **Operations Manager**

- Spend time understanding the building. This is crucial and a significant investment in meeting the targets.
- Set benchmarks and trends to prove performance.

- Set up alarms that tell you when something is wrong (Logic)
- Rely on external support from your Consultant. They are there to help not hinder!

## **CLOSURE**

This paper has suggested that a high NABERS rating cannot be maintained or achieved by allowing the building to simply run. The Operations Staff must drive it to achieve the desired results. Trend feedback is the key to the knowledge needed.

Failure to meet guaranteed Star ratings will cost money and the buck will stop with Facilities Management.

**Norman Disney and Young**  
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