

## **CHAPTER 10**

### **Nedbank's Green Building Journey**

Exciting and Inspiring Many

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#### **ABSTRACT**

Banks own and occupy a number of building infrastructures in South Africa and beyond its borders. Most of these buildings accommodate hundreds of employees and attract customers, who travel from varying locations and distances to perform their duties and acquire services. Such duties and services result in the consumption of resources that lead to environmental

the online survey revealed that some occupants were not comfortable with the noise level, the temperatures (that are either too hot in summer or too cold in winter), unpleasant odours from selected sources in the building and the lack of any allocated smoking areas in the building. The findings can be used to improve green building designs within and outside the Nedbank Group.

## INTRODUCTION AND BACKGROUND

The green building process and its resultant green buildings cannot be dissociated from the sustainable development and sustainability debates. Nor can the green building process be removed from the discourses about the general environmental decay and degradation, as well as climate change and the carbon-intensive growth pathways. The United Nations provides a simplified definition of sustainable development that has been accepted the world over. From its perspective, sustainable development must look after our needs today without placing the needs of future generations into jeopardy.<sup>1</sup> In a way, the current generations are borrowing resources from the future and should use them wisely. To this end, matters of sustainability

bank was the first to build a Five-star Green Star SA-rated green building in Menlyn Maine, City of Tshwane, designated as Africa's first green precinct.

Nedbank is one of the five big banks in South Africa, the other four being Capitec, Standard Bank, Absa and First Rand Bank. Nedbank Group's primary market remains in South Africa, although there is a deliberate movement to expand into the rest of Africa, especially the Southern African Development Community (SADC). Nedbank's main business is to offer a wide range of wholesale and retail banking services as well as to grow its insurance, asset management and wealth management services.<sup>2</sup> As the bank expands its banking footprint, so will its carbon footprint increase. Growing infrastructure and increased customer travel cause an increase in GHG emissions. Eventually, this trajectory would be unsustainable as it would be financially and environmentally costly to the bank and its clients. As such, reducing the number of customers travelling to the bank is the first step towards green banking.

Nedbank is the first bank in South Africa to champion the green funding initiatives. Green funding involves funding of projects that either promote or adhere to environmentally sound practices. The bank supports the green economy and all deals that are structured around creating innovative solutions for sustainable growth.<sup>4</sup> In 2011, Nedbank launched South Africa's first green bond, a platform for green conscious investors. In the area

of 15 448 m<sup>2</sup>. Falcon is the third Green Star SA-rated building in the Group's portfolio that is contributing to Nedbank's carbon neutral journey.<sup>7</sup> In the words of Mike Brown, Nedbank's Chief Executive, "[T]he innovative design and construction of Falcon building represent tangible proof of Nedbank's desire to entrench environmental sustainability across all its operations, thereby making Nedbank a great place to work, bank and invest."<sup>8</sup> In fact, the Group's scattered 16 premises across the City of Tshwane are now consolidated in one place through Falcon campus, leading to a reduction in Nedbank Group's carbon footprint.<sup>9</sup> The building was put up through a number of actors<sup>10</sup> that include Menlyn Maine Investment Holdings (Pty) Ltd as developer, Boogertman & Partners as architects, Rowling Wales & Partners as electrical engineers and C3 Engineers as mechanical engineers, and S J Franklin as wet services engineers. Pro Arnan contributed as project managers, Pentad Quantity Surveyors (PTY) Ltd did the quantity surveying work, WSP Structures stood in as structural engineers and WSP Green by Design were the sustainable design consultants.<sup>11</sup> Falcon was the first green building to be erected in Menlyn Maine, as seen in Figure 10.1.

**Figure 10.1:** Falcon as the First Green Building in Menlyn Maine (October 2010)

principles of 'New Urbanism'.<sup>12</sup> New Urbanism aims to establish a vibrant urban character that responds to good environmental stewardship fundamentals that embrace the following key features: "connectivity, mixed land use, legibility, walkability, robustness, visual appropriateness, biodiversity and security".<sup>13</sup> In fact, Menlyn Maine entered into a partnership with the Clinton Climate Initiative to be among the 16 global sites pushing for a 'Climate Positive Development'. As for the design of Falcon, the architectural thinking could be summarised as follows: The desire to integrate with the bigger Menlyn Maine precinct context, especially to accommodate pedestrians, ensuring a viable interaction between the public and private spaces, and lastly, having activity-driven interaction zones.

Falcon's site history is of interest. The building is located on six previously low-density residential suburb sites within Waterkloof Glen Extension 2.<sup>14</sup> The six sites had houses that were demolished with all recyclable and re-usable building material salvaged. The endemic trees were relocated to an on-site nursery for later replanting within Menlyn Maine. Since increased volumes of storm water runoff were envisaged from Falcon, the building design had to slow the flow of water collected on the roof, holding an estimated 390m<sup>3</sup> of storm water on its rooftop and some additional 90m<sup>3</sup> that could be stored within the building for re-use. The water collected on the roof that could be stored would eventually be released into the municipal

**Figure 10.3: Falcon West Elevation**



Source: Photo supplied by Nedbank

**Figure 10.4: Falcon East Elevation**



facilities, with 53 bicycle racks, are also located in the same basement for occupants, and a cycle path that is separated from the vehicular traffic by means of a barricade is provided. There are also visiting cyclists' lock-up facilities at street level outside the building, although there is no access to showers, change rooms and locker facilities for visiting cyclists. However, 17 bicycle racks are provided for visitors in the basement. These end-of-trip facilities (ETFs) are reserved for Nedbank Group staff. The pedestrians to Falcon use the entrance on Aramist Avenue. A total of 613 bays are available, with five per cent of these dedicated to fuel-efficient and low-carbon emitting vehicles, as well as carpool vehicles. Another five per cent of bays are dedicated for mopeds, scooters and motorbikes so as to promote the use of fuel-efficient vehicles.<sup>17</sup> Falcon building is also accessible from a range of public transport options. These include the Tshwane Municipal, Northwest Star and PUTCO bus services. Taxi services are also catered for.

Falcon features a range of mechanical systems, including ventilation, cooling and heating, peak energy demand reduction, thermal comfort, heat rejection and refrigerants.<sup>18</sup> Some of these features will be discussed briefly. Offices are supplied with fresh air via two fans. These fans are located on the building rooftop and supply fresh air directly into the ceiling where it is mixed with conditioned air before distribution into offices. The ventilation fans do not operate during unoccupied hours as these are fitted with

**Figure 10.5:** Falcon's Interiors and Floors



Source: Photo supplied by Nedbank

The electrical installation is one of the major features of the building. The Falcon building uses highly efficient lighting systems, including LED lighting, and has a highly efficient electrical system.

E2 taps are fitted in all pause areas and the main kitchen. These taps are known to be water efficient as they deliver 10 litres/minute, while flow restrictors installed in the taps reduce this flow further to a rate of five litres/minute. Hansgrohe Crometta 85 Green low-flow showerheads are fitted in both the cyclist and staff changing facilities and these deliver a flow rate of a maximum of six litres/minute.<sup>21</sup> A central hot water installation comprising twin 1 000 litres capacity is provided at the rooftop and heated by twin 12kW output (3kW input) air-to-water-type heat pumps. This system of heat pumps is much more energy efficient than conventional systems. Irrigation water is also supplied from a gravity tank located on the rooftop that draws groundwater that seeps into the basement. If there is no groundwater, the irrigation tank is supplied by rainwater from the 90 000 litre storage tank in the basement. It is only when both sources of raw water are not available that irrigation water is supplied from the municipal water supply. In order to save on irrigation water, the 605m<sup>2</sup> of landscape is populated with waterwise indigenous plants. Rainwater from the 90 000-litre storage tank is further supplied to the 10 000-litre WC flushing tank used for flushing toilets.

As for amenities, Falcon has a staff restaurant and coffee bar on the ground floor.<sup>22</sup> In addition, every floor has a number of pause areas for staff for eating and drinking, as this may

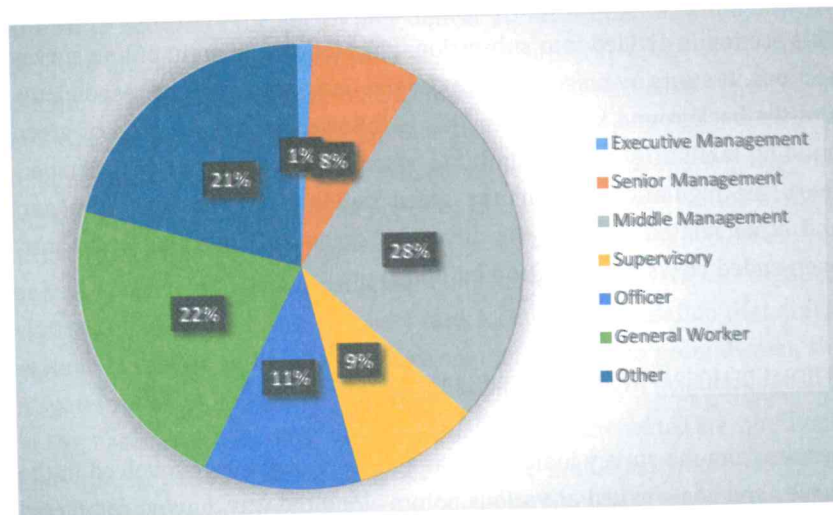
## OCCUPANT PERCEPTIONS OF FALCON BUILDING

This section is divided into subsections that follow the main online survey sections. It starts by presenting the general demography of the respondents and the background knowledge. This is followed by a discussion of green building familiarity and proximity to amenities, the psychosocial perspectives, the regulations within the green building environment, transport and other related matters, the drivers of green building, and occupants' open-ended views on the Falcon building.

### GENERAL DEMOGRAPHY AND BACKGROUND KNOWLEDGE

Results from the survey indicated that 87 respondents were involved in the survey and some exited at various points along the way, having completed the bulk of the questionnaire. A total of 74 occupants, therefore, completed the survey, while 13 respondents exited. Given that respondents are not forced to answer all questions, all valid responses were analysed and this resulted in different realised samples across the questions. From the 87

Figure 10.6: Falcon's Occupants by Position



Source: Fieldwork, 2018<sup>24</sup>

Respondents were further probed to indicate their employment status. The majority (98 per cent) of the 85 respondents who completed this question

this respondent could have made a mistake or probably moved from another green building elsewhere. Respondents were further asked questions around related facilities, as shown in the Table 10.1.

**Table 10.1: Familiarity with Green Building and Related Facilities**

Question	Responses (%)			Sample (n)
	Yes	No	Don't know	
Our green building has electric vehicle charging stations	34	25	28	87
Our building is partially powered by renewable energy (for example, solar, natural gas, etc.)	53	2	29	84
Our green building uses raw water	54	4	25	83

Source: Fieldwork, 2018<sup>25</sup>

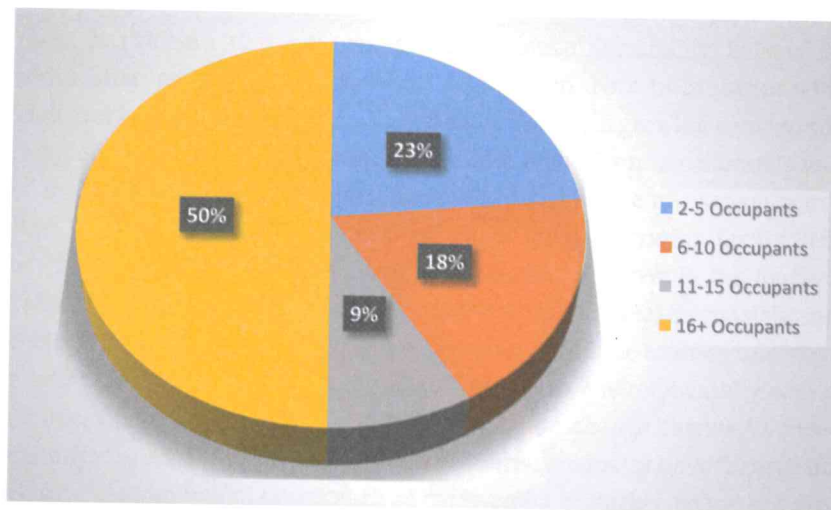
The survey results show that all the respondents were aware that Falcon has restaurant/canteen facilities. Furthermore, the majority (98 per cent) of respondents indicated the building is located close to amenities such as banks, shops, schools and public transport.

conditioning, as well as the number of hours spent at the workstation and the type of office the occupants used (open plan or private). The detailed responses to the questions raised are the subject of this sub-section. The majority of the occupants were on the first and second floors (48 per cent), followed by those on the third and fourth floors (37 per cent), with the remainder (15 per cent) on the ground floor. Table 10.2 gives an overview on the occupants' responses to some of the questions. A mere four per cent of the respondents indicated that they were not sharing offices.

**Table 10.2: Responses to Psychosocial Questions**

Question	Responses (%)		Sample (n)
	Yes	No	
My workspace has access to external views	81	19	84
Do you have natural light in your workspace?	79	21	84
Do you have access to air-conditioning?	84	16	82
Is air conditioning centrally controlled?	95	5	85
I am in an open plan (shared) office	96	4	83

Figure 10.7: Number of Occupants in Open Plan Offices



Source: Fieldwork<sup>28</sup>

The number of hours spent at one's workstation was another element of interest to the researchers. The findings (based on a sample of 87 respondents) are shown in Figure 10.8. The majority (45 per cent) of the occupants

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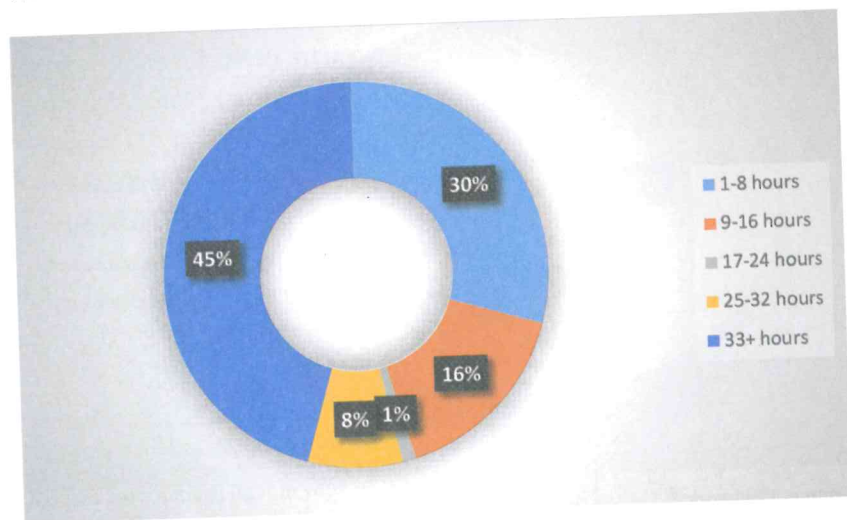
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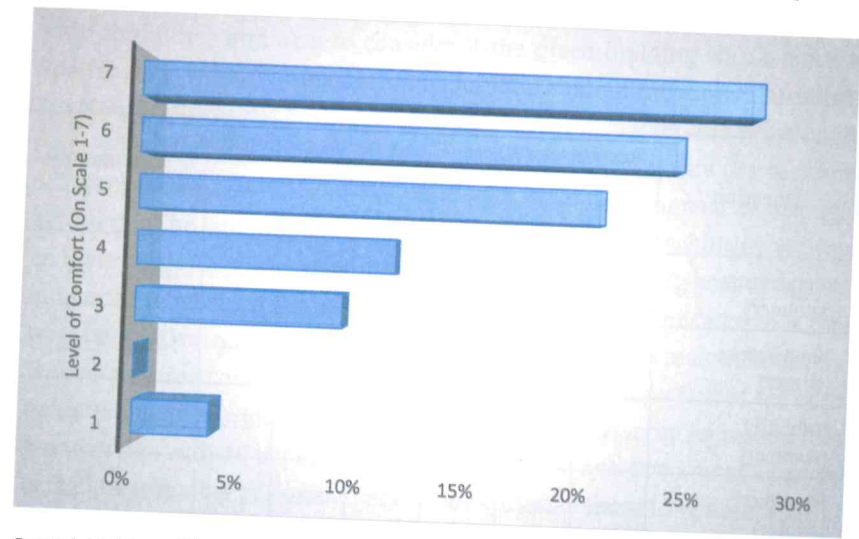
**Figure 10.8:** Number of Hours Spent at Workstation in a Five-day Working Week



Source: Fieldwork<sup>29</sup>

Given the emerging picture, where occupants are almost split equally between those who spend 33 hours or more at their workstations (45 per cent) and the others who spend 16 or less hours (46 per cent) at their worksta-

Figure 10.9: Level of Comfort at the Amount of Workspace you Occupied



Sourced: Fieldwork<sup>30</sup>

day Working

- 1-8 hours
- 9-16 hours
- 17-24 hours
- 25-32 hours
- 33+ hours

equally be-

As to the indoor climate...

online survey question, "I have seen colleagues with cooling fans inside the green building", 63 per cent of the occupants ( $n = 86$ ) responded 'Yes'.

**Table 10.3: Indoor Climate Conditions Assessments**

Question	Responses (Where '1' was 'Least comfortable' and '7' 'Most comfortable')							Sample (n)
	1	2	3	4	5	6	7	
Temperature (summer)	6%	6%	9%	14%	28%	22%	16%	87
Temperature (winter)	2%	6%	7%	15%	29%	24%	16%	82
Humidity (summer)	4%	7%	7%	19%	18%	27%	18%	84
Humidity (winter)	2%	4%	6%	17%	20%	33%	18%	82
Lighting (day)	2 %	1 %	7%	4%	18%	35%	33%	85
Lighting (night)	0 %	1 %	4 %	6%	17%	40%	32%	81
Indoor air quality (summer)	8%	5%	4%	22%	15%	20%	26%	85

The Falcon building occupants also had a chance to respond to questions investigating meeting rooms, friendliness of the building to people living with disabilities and also to consider if the green building was a motivation for their work. The occupants had to rate their responses on a scale of 1 (strongly disagree), 2 (disagree), 3 (not sure), 4 (agree) and 5 (strongly agree). The findings are presented in Table 10.4. The majority (81 per cent) of Falcon occupants were of the view that they either agreed or strongly agreed that the building takes care of people living with disabilities. However, there was only a 61 per cent indication that the building kept occupants motivated to work. In fact, 14 per cent of the occupants indicated that they were not motivated, with a further 25 per cent choosing to remain neutral. A related question concerned productivity. Slightly more than half of the occupants (51 per cent) indicated that the Falcon building setup increased their productivity, with 19 per cent indicating that it did not. Even more worrying is the large number of occupants (30 per cent) that chose to remain neutral. A further question requested that occupants indicate if the conditions in the Falcon building could prompt them to relocate to a non-green building. A total of 36 per cent of the respondents indicated that they would not, while a significant 26 per cent indicated that they would. The biggest group (30

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32

14

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## REGULATIONS WITHIN THE GREEN BUILDING ENVIRONMENT

We often hear of the regulated environment in green buildings. To this end, three questions were included in the questionnaire to get responses from the occupants of the Falcon building. One of the questions focused on understanding if the building rules resulted in any negative perceptions or experiences. If so, how did the occupants adapt to this to be comfortable? Another question checked if there could have been occupants who had left their employment due to the Falcon building setup. The responses (based on a sample of 71) to the first questions are reflected in Figure 10.10. Only 10 per cent of the occupants agreed to the notion that there were worrying rules in Falcon, with none indicating that they strongly agreed with the notion. Half of the occupants indicated that the rules were not worrying. However, it is of concern that 41 per cent of the occupants chose the 'not sure' option. As for the occupants managing to adjust to the rules, 54 per cent indicated that they had done so, with only 13 per cent indicating that they had not. The percentage for those who were not sure was significantly lower, at 33 per cent. Overall, there was a 3.52 score out of a possible 5 points on this question, showing that the occupants have managed to adjust to the rules. Regarding the possibility of some workers having to leave the organisation

The list of common rules the occupants were asked to indicate included the following: restrictions on hot beverage (tea/coffee) preparation in the office, no warm water in bathrooms, no eating at workstations, no smoking areas at all and a call to maintain low noise levels at all times. From the findings, the most common rules the occupants were familiar with included restrictions on hot beverage (tea/coffee) preparation in the office, no eating at workstations and the need to maintain low noise levels at all time.

#### TRANSPORT AND OTHER RELATED MATTERS

Other facilities, such as bicycle parking and drop-off areas, are critical aspects of green buildings. Eighty-eight percent of 86 respondents indicated that there is a bicycle parking area available at their building, while 82 per cent of the respondents indicated that there is a drop-and-go facility at Nedbank Menlyn Maine. Over 90 per cent of respondents indicated that there are no gym facilities available at the Nedbank Menlyn Maine. This resulted in most of the occupants using other gym facilities such as the Virgin Active gym that is available at the Menlyn Maine precinct, a few kilometres away from Nedbank. Energy-efficient technologies in heating and cooling systems play an important role in boosting indoor quality and in...

Our green building is easily accessible using general train services like Metro Rail	9	76	15	86
Our green building is accessible using taxis	91	4	6	85
Our green building is accessible using other public and private and municipal buses	83	6	12	86
Our green building has facilities for bicycle parking	88	0	12	86
Our green building has drop-and-go facilities	82	9	8	85
Our green building has restaurant/canteen facilities	100	0	0	86
Our green building has gym facilities	2	90	8	86
Our building is located close to amenities such as banks, shops, schools and recreational facilities	98	2	0	86

Source: Fieldwork<sup>54</sup>

From Table 10.5, it is clear that the most accessible transportation mode is

their responses on a scale of 1 (strongly disagree), 2 (disagree), 3 (not sure), 4 (agree) and 5 (strongly agree). The findings are shown in Table 10.6.

**Table 10.6: Behavioural Change due to Working in a Green Building**

Question	Average Score out of Possible 5 Points	Sample (n)
Owing to working in a green building environment, I now recycle at home	3.18	74
I now use energy-efficient bulbs at home as a result of working in a green building environment	3.76	72
I now use renewable energy at home because of my encounter with my work's green building environment	2.99	72
My working in a green building resulted in increased environmental awareness and being in a good environmental steward	3.59	74
My employer has changed the nature of corporate gifts to staff and guests to those that are more environmentally friendly since the occupation of this green building	3.31	72

86

85

86

86

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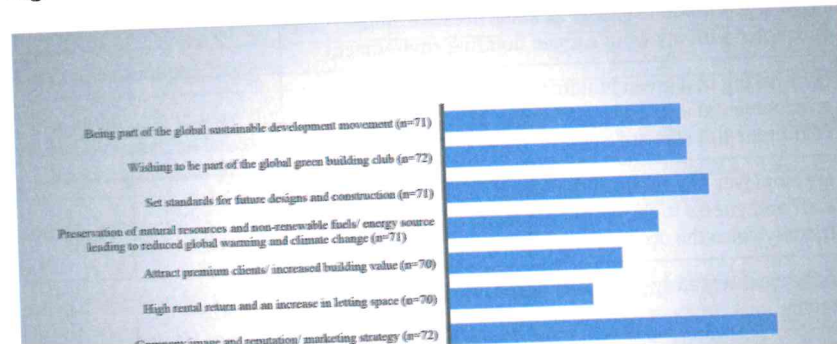
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86

## DRIVERS OF GREEN BUILDING

Occupants remain important stakeholders in the green building sector. Different drivers behind the green building evolution were identified in literature. These included water and energy efficiency, image and reputation, and improved occupant's health, comfort and satisfaction. Occupants were asked to rate these drivers, using a five-point scale, where 1 = strongly disagree, 2 = disagree, 3 = not sure, 4 = agree and 5 = strongly agree. Figure 10.11 shows the drivers behind green building as applicable to the Falcon building.

Figure 10.11: Drivers of Green Building



## EXPRESSIONS OF OPEN-ENDED VIEWS BY FALCON OCCUPANTS

To get further insights from the occupants of Falcon, two open-ended questions were included in the online survey. One question sought to generate information on the potential improvements that the occupants had in mind to make the green building even better. The other question requested general comments from the occupants at random. While the written responses confirm that, generally, the occupants of Falcon building are happy, there are other matters that arose that require attention from management. The happiness was probably summarised by this one written response: "Just happy with the concept of Green Buildings". In fact, 36 (45 per cent) of the 80 responses indicated that occupants did not have anything negative to say about the building.

This section will now present some of the negative observations from the online survey open-ended questions. To try and quantify the open-ended responses, all responses were noted cumulatively and tallied, resulting in the summary shown in Figure 10.12. Up to 17 issues of concern emerged from the Falcon occupants. These included the need to brighten workstations, the temperature being too cold or too hot, unpleasant odours in the building and bathrooms, wastage of water by cleaners, the need for a smoking area, and the state of plants on the vertical wall.

The concern about the state of the plants on the vertical wall was of interest to the authors and further investigations were made. Figures 10.13a and b show the plants during the time of commissioning of the building. Indeed, the site is pleasing. However, several years down the line from the commissioning of the vertical wall garden, some occupants noticed some differences. In their view, the garden seems not to be maintained well. One occupant stated, "Our wall plant feature must be kept up and looked after." Another occupant voiced a more dramatic concern, "The living wall is dead." A third occupant said, "The vertical garden is a disgrace. Either remove or get it going again." On further investigation, it emerged that during the time of the survey, Nedbank management was in the process of replacing the vertical garden with a more modern system, which has since been installed. This explains why the vertical garden could have been in the unusual state reported by occupants.

The issue of an unpleasant odour was of major concern to occupants. One respondent wrote, "The SMELL!!", which signalled a real concern. The same respondent went on to write, "Using raw water is one thing, but having to sit in an office that smells like sewage from 11:00 hours every day is horrible!" Another was quick to point out that the bad smell was all because of the green building idea. In our view as authors, this issue requires the management to pay closer attention to this

facilities' management team after the survey, it came to our attention that there is now a new dedicated smoking area outside the building.

**Figure 10.13a:** Plants on the Vertical Wall after the Falcon Commissioning



Other concerns were about temperatures becoming too hot in summer. This point has been discussed in detail earlier in this chapter. In addition, temperature differences on the same floor and/or in the same area emerged as a further concern.

Although not ranked highly, two occupants noted the lack of variety and possibly good food from the local canteen. To this end, a suggestion was made to request the catering company be more creative with the meals on offer.

Chairs were also noted to be a matter of concern. In one of the respondent's view, Nedbank was requested to consider procuring a new set of chairs with a user-friendly design. This emerged from the observation that the available chairs caused back pain and resulted in occupants reducing work periods at their workstations without taking breaks.

An interesting observation was made concerning water use and the cleaners. "Cleaners waste water tremendously!! Cups are washed and rinsed UNDER RUNNING WATER, and then put in the dishwasher!" Certainly, this raises a concern about the level of awareness and the common vision on the green building. To this end, the management of Falcon may wish to regularly raise awareness, especially when new cleaning and other staff are appointed.

linked to open-plan office space orientations. A key element the chapter did not investigate is the matter of monitoring the commitments by management to energy efficiency and water use. Further work could focus on this element and should include obtaining independent verifications for such commitments by the Nedbank Group and other entities. The green building movement remains relevant now and into the future.

## NOTES AND REFERENCES

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- 2 Nhamo, G. and Swart, R., 2012. A Scholarly Framework for Measuring Business Responsibility to Climate Change in South Africa. *Issues in Social and Environmental Accounting*, 6(1/2), pp. 50-71.
- 3 Nedbank, 2017. Sustainability – Nedbank Corporate and Investment Banking is fully committed to green funding, responsible lending and supporting sustainability initiatives.
- 4 Ibid.
- 5 Nedbank, 2013a. Nedbank Menlyn Maine Falcon Building Users' Guide revision 3 – March 2013. Pretoria: Nedbank Group.
- 6 Ibid