

WORKZONE WEST - 6 STAR NABERS

202 PIER STREET, PERTH, WA

Case Study 6 Star NABERS Energy Rating at 202 Pier Street, Perth, Western Australia



THE PROJECT

Workzone West is a seven level "A" grade office building with 15,602sqm NLA located on the outskirts of the Perth CBD in Western Australia. The building is owned by Elanor Funds Management and managed by Knight Frank Australia.

In December 2018 Infrared Services was awarded the electrical maintenance contract for the property on a three year term. As Infrared Services have worked collaboratively with Knight Frank Australia on many similar assets in the past, creating significant improvements to energy efficiency in the process, we were excited to see what could be achieved at this property. In August 2021 the building was awarded a 6 star NABERS energy rating (the highest possible). This is an impressive achievement for all involved. Of course the approach to the improvements to electrical efficiency was multifaceted and carefully staged over the previous few years; Rome was not built in a day.

On the electrical infrastructure side the opportunities for improvement at this asset consisted primarily of upgrades to the lighting and lighting controls. All lighting solutions were carefully selected to ensure they met with the original design intent and aesthetic of the building, and importantly did not compromise illumination levels or general appearance in any areas.









STAGE 1 - CARPARK LIGHTING

3rd Quarter 2019 - total value approx. \$28k

The original carpark lighting at consisted of twin 36w T8 fluorescent lights and 250w HID "lowbay" lights at the ramped entrance. Light switching was via Dynalite PIR occupancy sensors, and there had been significant issues with the reliability of the Dynalite system at this site in the past.

The fluorescent lights were removed and replaced with 40w LED batten lights from Haneco and Clevertronics, the HID lowbays were replaced with Robus Sonic 100w LED highbay lights. In total 123 luminaires were upgraded, resulting in a reduction of total lighting load from 10.1kW to 5.4kW, or approximately 47.5%. Lighting controls were substantially reviewed and correct operation of the Dynalite PIR occupancy sensors was made possible. This resulted in significant energy savings in the base building carpark and basement plantroom areas and reduced maintenance costs to virtually zero.

STAGE 2 - STAIRWELL LIGHTING

2nd Quarter 2020 - total value approx. \$18k

The stairwells were constructed with surface mounted oyster lights with 36w compact fluorescent lamps, with DALI control and DALI monitored emergency lighting. Similar to the carpark areas, there was also a history of unreliable operation from the PIR occupancy sensors.

The fluorescent lights were removed and replaced with 25w LED oyster lights from Ektor, with DALI addressable drivers and emergency lighting control gear. In total 47 luminaires were replaced. This resulted in a reduction of total lighting load from 1.7kW to 1.2kW, or approximately 30%. The Dynalite lighting control system was also carefully reviewed to ensure correct operation of the PIR occupancy sensors. Again, this gave rise to considerable energy savings, and created an installation that is virtually maintenance-free. Since the upgrade was complete no lighting repairs or replacements have been required in the stairwells.





STAGE 3 - BOH LIGHTING

2nd Quarter 2020 - total value approx. \$7.5k

The standard and specification of the lighting in the back of house areas on the ground floor and chiller plantrooms was similar to that of the carpark. The original construction called for twin 36w T8 fluorescent lights throughout, including DALI monitored emergency lighting. Utilising a similar specification to the carpark lighting upgrade, Infrared Services and Knight Frank Australia were able to build on previous success and develop a program to upgrade these areas as well.

In total 40 fluorescent lights were removed and replaced with LED equivalents from Haneco and Clevertronics. The total connected lighting load in these areas was reduced from 3.2kW to 1.6kW, or a decrease of circa 50%, and the upgraded lighting system remains maintenance (and maintenance cost) free to this day. Again, the controls were reviewed for correct operation to ensure optimal energy efficiency throughout.

STAGE 4 - EXTERNAL LIGHTING

2nd Quarter 2020 - total value approx. \$6k

In order to improve the external aesthetics of the property, as well as create even further energy and maintenance efficiencies, a further upgrade plan was formulated to convert the external lighting on the main structure of the building to LED, as well as pole mounted lights in the private courtyard and public open spaces.

The existing external lighting consisted of 35w HID downlights, and 70w HID pole mounted floodlights. The HID downlights were replaced with 25w LED COB downlights from Haneco, and the pole mounted floodlights were replaced with 35w LED streetlights from S-Tech. In total 35 luminaires were upgraded, and the total connected load was reduced from approximately 1.4kW to 0.9kW, a decrease of close to 35%. Continuing the theme of energy improvements for this asset, of course this gave rise to considerable energy savings, and again created an installation that is virtually maintenance-free.





STAGE 5 - GARDEN LIGHTING

4th Quarter 2020 - total value approx. \$5k

Between Workzone West and the adjoining property there is a large private courtyard and public open space. These areas had originally been fitted with compact fluorescent recessed wall lights in the garden retaining walls. Replacement luminaires had to be carefully selected to ensure their exact dimensions would allow for a proper fit, and custom mounting arrangements fabricated to ensure a seamless installation into the fabric of the building without the requirement for costly builders' works.

The original luminaires were specified with 20w CFL lamps, fed via 240v low voltage cabling. The 240v supply in particular was a challenge, as ingress of water into the luminaires and buried cable joints had previously resulted in inevitable, and inconvenient, nuisance tripping of the protective devices. The cabling was carefully removed, jointed, weather proofed, and resupplied at 24v ELV to ensure ongoing reliability and ease of maintenance. The fittings were replaced with a 3w LED equivalent from SAL, resulting in a reduction in connected load of 85%.

STAGE 6 - LOBBY LIGHTING

2nd Quarter 2021 - total value approx. \$12k

The main lobby of Workzone West was fitted with T5 35w "cove" lighting, concealed within feature bulkheads throughout the lobby, as well as extruded aluminium architectural feature lights above the main entrance. These luminaires consume considerable energy and require regular (inconvenient) maintenance and repairs.

Because it was necessary to maintain the existing aesthetic of these areas, fit seamlessly into the existing building fabric of the lobby, and avoid any potentially costly builders' works, planning and experience in similar works was required. The old T5 fluorescent cove lights were removed and high-power linear LED strip and aluminium mounting extrusions from Robus were carefully retrofit in their place. In total more than 100 linear metres of fluorescent lighting was upgraded to the LED. Prior to the upgrade the connected lighting load in these areas was approximately 2.4kW, after the completion of the upgrade it was reduced to 1.3kW. This represents a decrease of approximately 45%. Of course, as an added benefit the LED solution can be expected to remain maintenance free for the foreseeable future.