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LED Lighting report, Gracefield School, February 2015

As part of the Dynamis Project trial, Ecopoint, Gracefield School and the Ministry of Education combined forces to convert the whole of Gracefield School to LEDs. This included not only the fluorescent tube lighting in the classrooms, but also the office and flood lighting outside.

As part of the on-going development of the Dynamis Project, one aspect we wanted to investigate was the advantages of LED lighting. LED lights turn on instantly and do not flicker - a common problem with fluorescents. These LED units are also significantly safer, as they are made of polycarbonate and not glass.

I took an average of seven light meter readings at desk-height, in each room, with a professional lux meter throughout the school both before and after the LEDs were installed. Overall, I found the lighting levels were 36% higher. There was some variation in some areas. Some levels were lower after the changeover, mainly due to changed classroom layout or through additional material hanging across the room.

Some examples: The staffroom showed an average increase in lighting levels of 46%, the Learning Support room averaged 51% and Room One increased by 25%.

Conclusions/Suggestions:

- ✓ The new lighting throughout the school showed an average increase of 36% overall. The lighting levels are now much brighter and more even throughout the rooms, with more accurate colour rendition.
- ✓ Some classrooms with higher ceilings (eg Rooms 1, 3, 4 and 5) would benefit even more by having their lights lowered using chains.
- ✓ A number of the light fittings have the original plastic light covers (diffusers) on them, - these are now not needed and removing them would help increase the light spread.
- ✓ True power savings will be even higher, as the componentry on older fluorescent units heat up and draw a lot more power than is needed for efficient operation.

One of the Dynamis Project's initiatives is to support the reduction of power consumption in schools and the use of LED lighting significantly reduces this. True power reduction readings are not possible as solar PV was also installed around the same time as the LED lighting.

However, it is possible to calculate the power savings from measuring the power draw difference between the old and new technologies.

Based on an average of the lights being used for nine hours a day, over the 200 days a year Gracefield School operates, the original lights used 168 kW a day and the LED lights use 53 kW, a 68% saving. At an average of 15.57 cents a kW/h, this represents a saving of \$3,581.00 every year.

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