▪ report

Eden Park Redevelopment - Assessment of Environmental Effects - Lighting.

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Prepared for

Eden Park Trust Board

By

Beca Carter Hollings & Ferner Ltd

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Revision History

Revision N°	Prepared By	Description	Date
A	Geoff Waller	Draft Issue for Comment	22/6/06
B	Geoff Waller	Draft Issue	23/6/06
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Document Acceptance

Action	Name	Signed	Date
Prepared by	Geoff Waller		7/8/06
Reviewed by	Greg Williams		7/8/06
Approved by	Andrew Collow		
on behalf of	**Beca Carter Hollings & Ferner Ltd**		

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Appendices

1 Introduction

Eden Park is to be redeveloped to provide a world-class national facility for and beyond the Rugby World Cup 2011, for both rugby and international cricket matches.

The South Stand is to be demolished and a new stand provided to incorporate additional seating, offices, conference and function facilities.

The existing South Stand lighting will be replaced and upgraded to meet the current and expected lighting standards appropriate for international broadcasting.

Beca have been commissioned to evaluate the environmental lighting issues of the upgrade in relation to Spill light, Glare, Skyglow and Building Illuminance and how these effects may be mitigated to minimise effects on the surrounding residential areas.

2 Proposed Lighting Installation

Floodlighting was installed at Eden Park in April 1999 enabling night fixtures to take place at the Park. This existing floodlighting is mounted on of four lighting towers, two installed on the roof for the ASB Stand and another two on the roof of the South Stand. They provide an average light level of approximately 1,600 lux on the cricket block and average light levels of approximately 1,200 lux across the No. 1 playing field.

The redevelopment will incorporate changes to the existing lighting system to meet the future sporting and broadcasting requirements for on field lighting, increasing the lighting levels on the playing field, whilst reducing or maintaining existing spill light and glare levels from the stadium.

2.1 Lighting Structures

The roof of the new South Stand will be higher than the existing stand, and the intention is to remove the two lighting towers on the south side of the stadium and replace them with floodlights mounted under the edge of the new roof. These floodlights will be more efficient than the existing floodlights with a better-controlled beam and higher light output.

The existing lighting towers on the north side of the stadium will be retained as the existing ASB stand has insufficient height for a similar mounting method. However, the floodlights in the ASB lighting towers may be replaced by newer technology floodlights similar to the new South Stand. There would be no field floodlights on the proposed new East Stand.

In effect, the new floodlights will remain at the same height on the northern towers but the lighting on the southern side will be lower than those currently installed and will be located under the roof of the new South Stand.

2.2 Illuminance Levels

The proposed floodlighting levels for the redevelopment of Eden Park are set out in Table 1 below.

Table 1: Proposed lighting levels

	Cricket Levels (lux)	Rugby Levels (lux)
Televised	2,000 lux within the oval (based on initial 100hrs lumen output)	1,200 lux average (maintained)
Non – televised	N/A	850 lux

These lighting levels are consistent with other international venues in New Zealand, as set out in Table 2 below.

Table 2: Typical lighting levels of other national stadia

Stadium	Cricket Levels (lux)	Rugby Levels (lux)
Carisbrook	2,000	Not given
Jade (Christchurch)	1,400 wicket/ 1,200 within oval (claimed manufacturer's figures)	1,200
Westpac (Wellington)	1,600 wicket/ 1,200 within the oval	1,200
Mt Smart	No night cricket	1,100 - 1,200
North Shore Stadium	No night cricket	1,200 - 1,500
McLean Park, Napier	Proposed 2,000 wicket/ 1,500 in oval	1,500 – 1,700
Rugby Park, New Plymouth	No cricket	Approx 1,100

Cricket night games require the highest lighting levels for both players and cameras as it involves a small ball going very fast. Rugby has a larger and slower ball and therefore requires less lighting for cameras.

For the purpose of this assessment the higher lux levels have been modelled i.e. 2,000 lux across the cricket oval. These higher illuminance levels may be required during the Rugby World Cup 2011 matches. This would be for the international broadcasting of High Definition Television, even though this technology may not be available at this time as a broadcasting system in New Zealand.

2.3 Lighting Installation during Construction Period

Temporary floodlighting is required for night games during the construction period, when the existing South Stand is demolished and prior to the completion of the new South Stand roof and the installation of the new lights within the roof. During this interim period, it is proposed to use cranes or towers to elevate the existing southern floodlights to their current approximate height and position. The top of the temporary lighting structures will be a maximum of 47 metres above the centre of the No 1 ground (RL 34.28). This temporary floodlighting is proposed for a maximum period of two years.

Lighting will also be required during the construction period particularly during winter periods when there is not adequate natural light in which to work. This construction