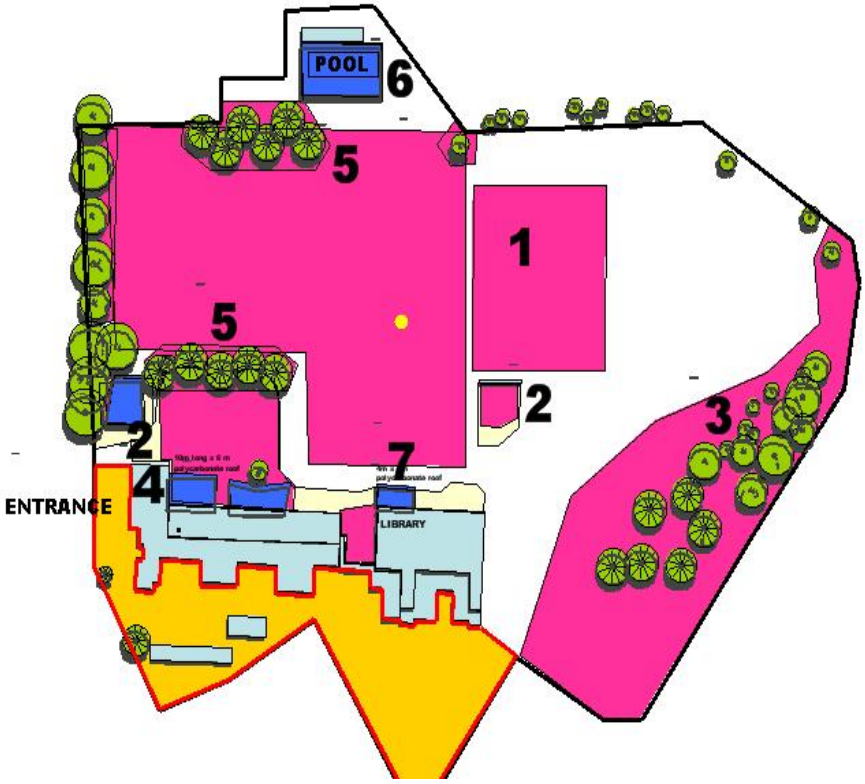
New Zealand Shade Audit Study Summary

July 2008



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Executive Summary

Reducing exposure to ultraviolet radiation (UVR) among children and increasing the provision of shade in public settings are priority outcomes of the Cancer Control Strategy adopted by the New Zealand government.

To accurately assess whether the shade at outdoor locations effectively protects users from harmful exposure to UVR, the Cancer Society of New Zealand recommends a process known as the Shade Audit.

In May 2008, the Health Sponsorship Council funded experts to undertake Shade Audits in eight New Zealand schools. The purpose of the project was to determine:

1. If the amount and quality of shade in participating schools was adequate to provide students with effective protection from UVR

2. If the Shade Audit process was an effective way to identify and manage the issues of UVR protection in schools.

This report considers the findings of the eight Shade Audits and the responses of the schools to the Shade Audit process.

The key findings of this report are:

- Students in all eight schools were unnecessarily exposed to high UVR levels during summer.

- Identifying which activities expose students to risk of harmful exposure to UVR and the planning of effective shade are beyond the expertise currently available within schools.

- In all schools, the Shade Audits identified a number of low cost strategies to reduce harmful exposure to UVR.

- Three quarters (6) of the schools had experience of failed shade projects.

- All schools reported that the Shade Audit process enabled them to identify their risk of harmful exposure to UVR, and provided them with the knowledge necessary to develop appropriate solutions and to better manage their resources.

A mandatory programme to undertake expert, independent Shade Audits in all NZ schools would be a significant step towards achieving the objectives of the Cancer Control Strategy. As well as enhancing a key public health outcome, such a programme would be cost effective.

Introduction

Promoting the use of shade is a priority objective of the Cancer Control Strategy, with a particular focus on reducing the incidence of skin cancer in New Zealand by:

- reducing exposure to Ultraviolet radiation (UVR) for children 0 - 12yrs
- increasing provision of shade in public areas and settings.
  (Cancer Control Taskforce, 2005)

In order to reduce harmful exposure to UVR among children, and therefore reduce sunburn, both the Cancer Control Strategy Action Plan and the Cancer Society of New Zealand recommend that schools participate in the SunSmart Schools Accreditation programme. One of the criteria to gain accreditation to this programme is that a school has sufficient shade, or is working towards providing sufficient shade in the school grounds.

While some exposure to UVR is essential for the production of vitamin D over exposure is harmful and strategies to reduce harmful exposure are recommended. Strategies such as the provision of appropriate shade mean that children can be protected from UVR when undertaking passive activities for longer periods of time and therefore avoid sunburn.

The Cancer Society recommends the Shade Audit as the first step in accurately assessing whether there is adequate shade at a location. A Shade Audit provides a strategic plan for the provision of sufficient UVR protective shade at a site by:

- establishing the usage patterns
- assessing the quantity and usability of existing shade
- assessing the need for additional shade
- providing recommendations on creating additional shade or modifying usage patterns. (*Cancer Society of New Zealand, 2000*)

If it can be shown that the Shade Audit process is an effective shade planning tool, government could take a significant step towards achieving the objectives of the Cancer Control Strategy by making Shade Audits mandatory for all existing and new schools in New Zealand.

The purposes of this project were to determine:

1 If the amount and quality of shade in participating schools is adequate to provide students with effective protection from UVR

2 If the Shade Audit process is an effective way to identify and manage the issues of UVR protection in schools.

This report presents the findings of Shade Audits undertaken in eight schools in May 2008.

The funding for this project was provided by the Health Sponsorship Council (HSC). The HSC works in the prevention of the incidence of sunburn and this project supports the objective of the SunSmart Steering Committee Framework for 2008-11 which is to improve the efficacy of sun protection tools and products.

Objectives

The objectives of the project were to:

1 Undertake a Shade Audit of each school

2 Determine whether existing shade is effective in protecting against harmful exposure to UVR

3 Identify risk areas and/or risk activities within each school

4 Propose and test strategies to reduce harmful exposure to UVR

5 Establish whether schools have the necessary skills and resources to plan effective shade

6 Determine whether participants have a better understanding of UVR risks and shade issues following a Shade Audit.

Methods

The Shade Audits were conducted by expert shade planners, trained in the use of WebShade, a web-based shade planning software program developed by Australian architect John Greenwood.

WebShade assesses the extent and effectiveness of existing shade and determines the risk of harmful exposure to solar UVR for each of the activities undertaken at the site. The software allows users to test various options to reduce the risk of these activities through a range of strategies, one of which could be the creation of new shade.

Participants

Seven Wellington primary schools and one secondary school, mainly low decile and with differing student populations, participated in this study (see Fig. 1).

The primary schools were recruited on recommendation from either the Health Promotion Coordinator at the Cancer Society Wellington Division or members of the Health Promoting Schools Team at Regional Public Health, Wellington. The schools were recommended as they had identified shade as an issue in their schools.

The secondary school was recruited as the researcher was aware of its interest in shade.

Figure 1: Details of participating schools

School	Type	Decile Rating (*)	Students (approx)	SunSmart School?
Cannons Creek School	Primary Yr 1- 6	1	170	Yes
Corrina School	Primary Yr 1- 8	1	300	Yes
Maoribank School	Primary Yr 1- 6	4	165	No
Rata Street School	Primary Yr 1- 6	1	420	Pending
St Anne's School	Primary Yr 1- 6	4	200	Yes
Strathmore Community School	Primary Yr 1- 6	2	39	Pending
Titahi Bay School	Primary Yr 1- 6	3	285	Yes
Wellington College	Secondary	10	1,560	No

(*) Decile ratings taken from Ministry of Education – Directory of Schools 2007

Procedure

Following an initial introduction from the Health Promoter or Health Promoting Schools team member, the Principal or Deputy Principal was contacted and the Shade Audit process discussed. Schools were advised they would each receive a Shade Audit that would include shade recommendations specific to their school.

Schools were asked to provide information and access in order to complete the Shade Audit including:

- a site map of the school that identified north
- permission for the experts to take on-site measurements
- a guided tour of the school and interview time with the Principal/Deputy Principal
- discussion time with student representatives

A questionnaire was sent to participating schools prior to the Shade Audit. The purpose of this was to gather their perceptions around shade issues within their school, prior to receiving any expert input.

Consent to participate was obtained from each school. A copy of the information provided to the school and the consent form are available upon request.

Once complete, the Shade Audit was sent to each school for their consideration, along with a short questionnaire about the Shade Audit process. Following this, each school was phoned by an expert to discuss their Shade Audit and answer any questions arising.

Findings

Data has been taken from a number of different sources to strengthen and triangulate the findings.

The schools completed two questionnaires, one prior to the Shade Audit process and one after receiving their Shade Audit. Questionnaire data provided information regarding the perceptions of shade issues within the schools.

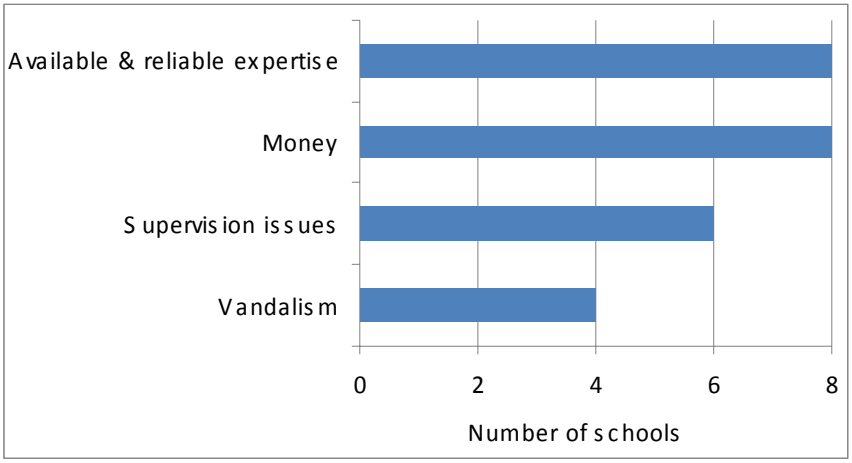
The Shade Audits of the schools provided actual shade usage and UVR exposure risk data (see Example Shade Audit report for an example of a completed Shade Audit.

While the number of schools studied was small and limited to one region, the findings are strengthened by using the two sources of information.

School perceptions prior to Shade Audit process

In response to the questionnaire filled out prior to the Shade Audit all schools identified the need for more shaded areas. All eight schools also identified insufficient money and lack of access to reliable expertise as the key barriers to providing more shade. Fig. 2 below shows the most common barriers to providing sufficient shade.

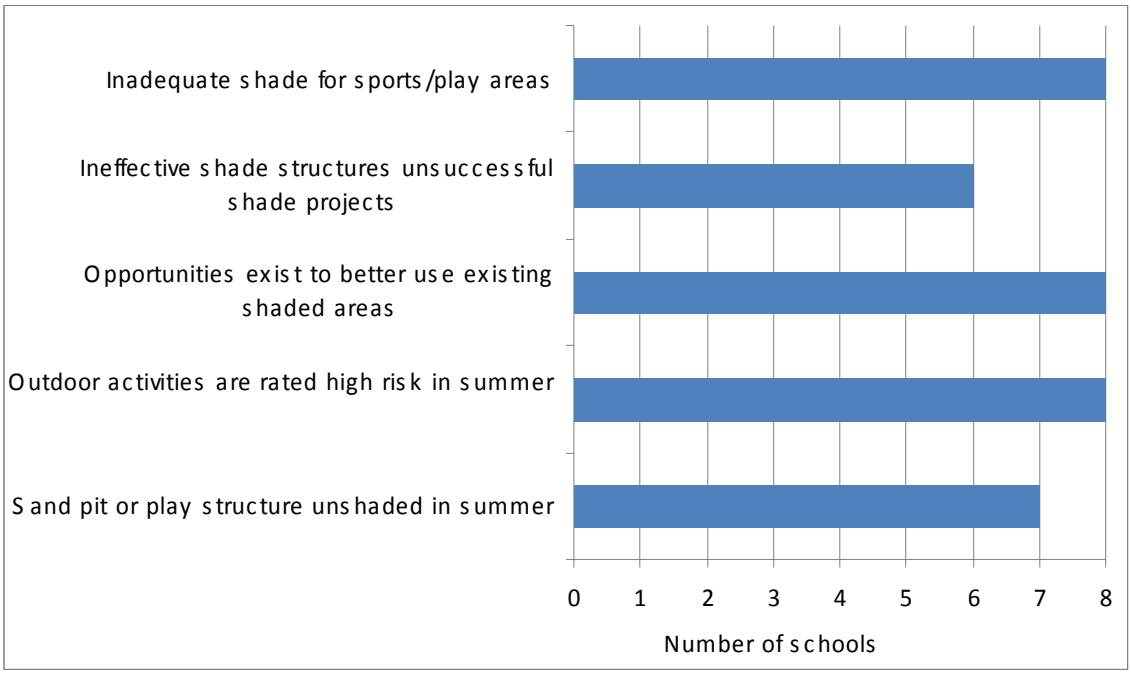
Figure 2: Barriers to providing more shade



Key findings

In addition to the use of two sources of information, the results of this study are strengthened by the consistency of the key findings across the eight schools, as shown in Fig. 3. All schools had a high number of high-risk activities, inadequate shade and opportunities to better utilise existing shaded areas and most had ineffective shade structures or had experienced failed shade projects.

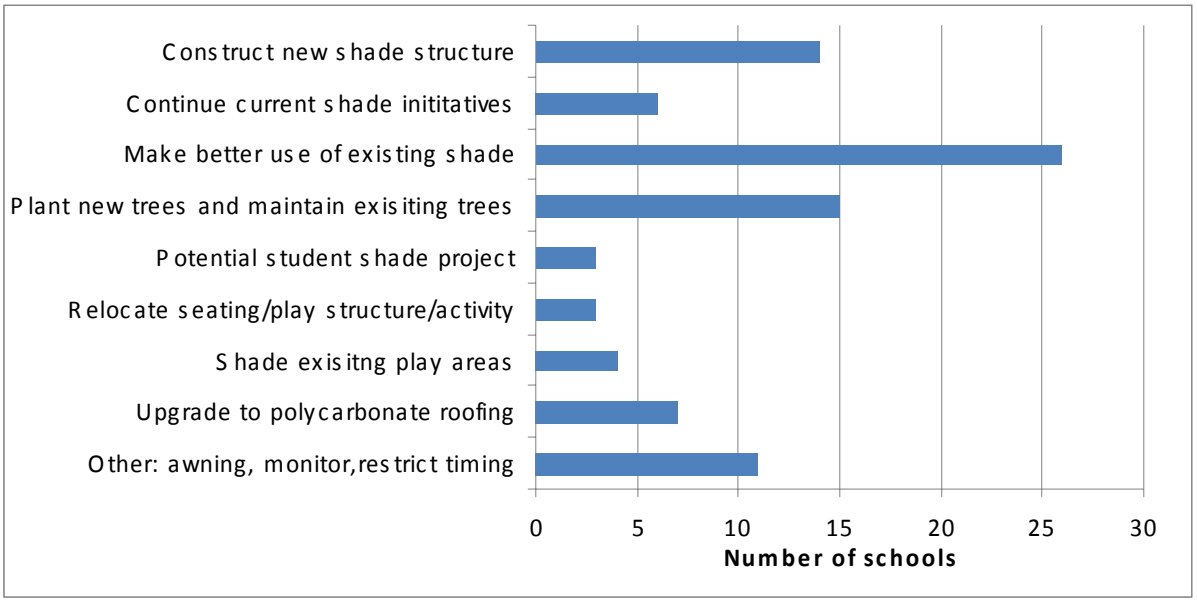
Figure 3: Key findings of the Shade Audit process



Recommendations

The Shade Audits provided recommendations specific to each school, as set out in Fig. 4 below. A total of 89 recommendations were made, 49 (or 55%) of which were low cost options.

Figure 4: Recommendations to reduce UVR risk



Risk Profiles

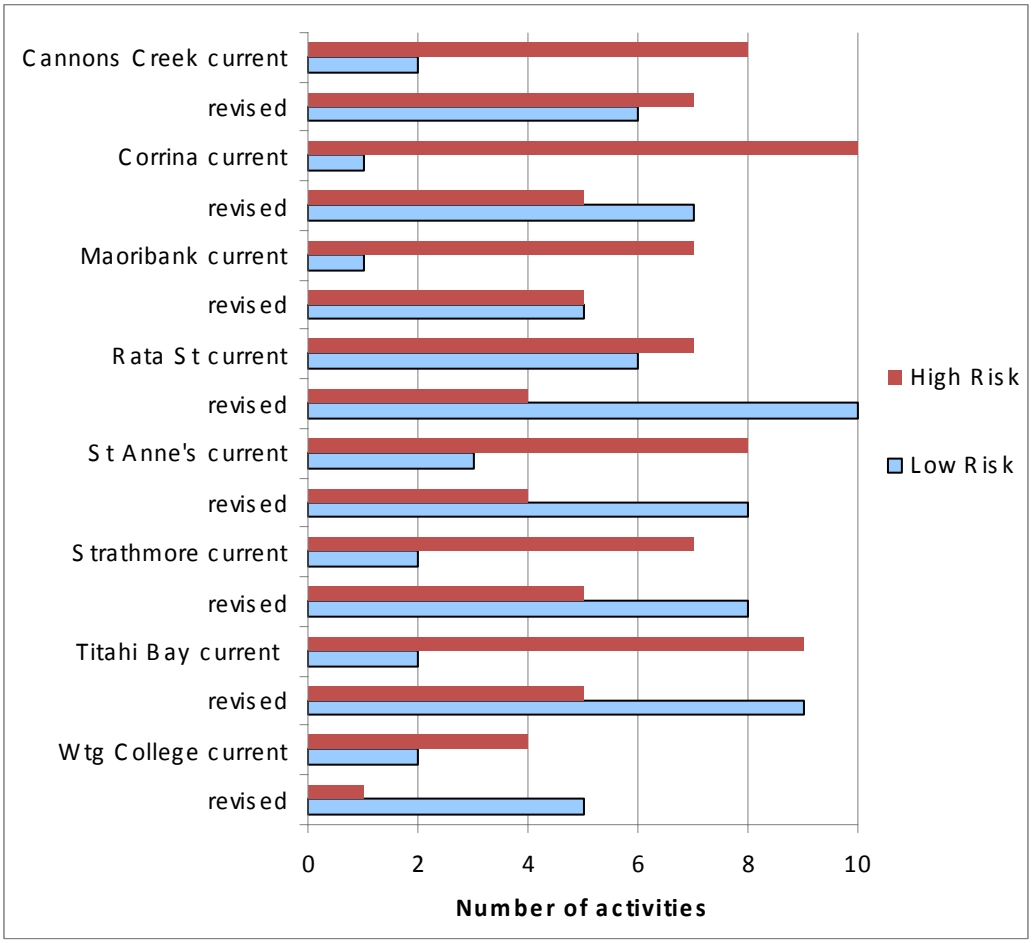
The Risk Profile is an important feature of the WebShade software which significantly assists the Shade Audit process.

Information gathered regarding outdoor activities is entered into the software. The program assesses the actual risk of harmful exposure to UVR for each activity, depending on the duration, time of day, amount of existing shade and the number of students. Proposed changes in usage or shade provision can be trialled and the risk re-assessed to ensure an appropriate outcome is achieved.

Fig. 5 below illustrates how the Shade Audit process can effectively minimise the risk for students participating in activities by increasing the number of low risk activities and decreasing the number of high risk activities. For example, activities can be relocated to make better use of existing shade or, where necessary, new shade can be created (see Fig. 4 for a full list of recommendations).

The graph compares the current activities to the revised activities, assuming all the recommendations from the Shade Audit were implemented. In all schools, the number of high risk activities was able to be substantially reduced and the low risk activities increased.

Figure 5: Risk Profiles



School responses

The second questionnaire was sent to the schools after they received their Shade Audit. The results of the questionnaire were consistent and convincing.

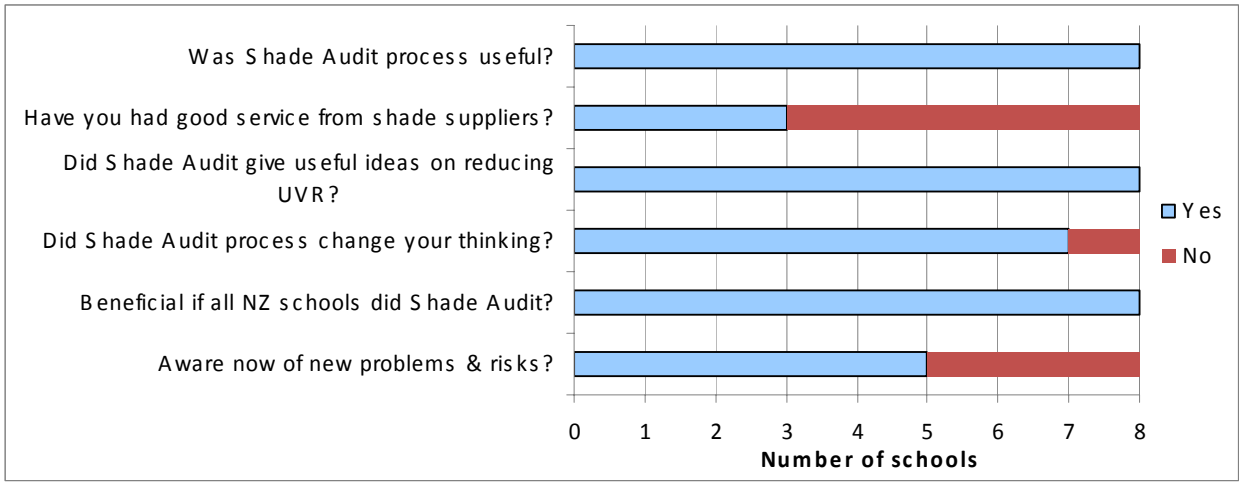
Support for the Shade Audit process was unanimous, as was the opinion that all schools in New Zealand would benefit from undertaking a Shade Audit.

"information gained from the Shade Audit has informed me well prior to talking to shade suppliers and in knowing what we need in terms of best options"

"I was very impressed with the written report and very pleased that you included our students as part of the consultation process"

A summary of the responses is set out in Fig. 6 below.

Figure 6: Feedback from schools regarding Shade Audit process



Discussion

The key findings show that the students in all schools are unnecessarily exposed to high UVR levels while participating in school activities, highlighting that inadequate shade was a common problem in all the schools audited. All schools had inadequate shade for sports/play areas and many sandpit and play structures were unshaded in summer.

All schools reported a lack of adequate shade prior to the Shade Audit process commencing. However none were able to correctly identify where shade was most needed or what solutions would be most effective. Only four of the schools had shade development plans for their school.

All schools reported that their lack of shade expertise/knowledge was a significant barrier to successfully implementing shade solutions. Only three of the schools reported that they had received good advice or service from shade suppliers. Three quarters (6) of the schools reported unsuccessful shade projects or currently had ineffective shade structures in their school grounds. The Shade Auditors identified alternatives to replace the failed structures, demonstrating that such mistakes could be avoided in future by using the Shade Audit process.

All schools identified a lack of funding as the other key barrier to providing effective shade solutions. Whilst this is undoubtedly a significant problem for schools, and the need for additional funding is clear, in every school the Shade Audits identified opportunities for better use of existing shade, often at low or no cost. This suggests that increased use of the Shade Audit process offers opportunities to achieve increased UVR protective outdoor environments in a cost effective manner and that Shade Audits can provide independent expertise to ensure limited resources are effectively spent.

It is interesting to note that half of the schools audited identified themselves as SunSmart Schools (accredited under the Cancer Society's SunSmart School Accreditation Programme). In every case, the Shade Audit process demonstrated that these schools still have a number of high risk activities. As with the other schools, the SunSmart Schools reported they did not have the expertise to implement shade solutions. This suggests that schools, whether part of the SunSmart Accreditation Programme or not, do not have the necessary tools to feel confident about providing safe and effective shade solutions.

It is also possible that staff and students from the self identified SunSmart Schools may feel a false sense of protection as they are enrolled in a programme that identifies them as SunSmart.

Seven of the schools reported a change in their thinking towards shade solutions after receiving the Shade Audit, with a greater awareness of which activities exposed students to risk and effective strategies to manage shade solutions. One school commented that the process had been *"well worthwhile – highlighted some problems and made some very good suggestions for us to look into"*.

Importantly, the knowledge, expertise and ideas provided by the Shade Audit process enabled schools to prioritise solutions, some of which could be put in place immediately at no cost to the school. Decisions about which areas to shade first could also be ranked according to the risk they represented.

The schools were unanimous in believing that the Shade Audit process would be beneficial to all NZ schools. As one Principal explained, the Shade Audit provides "*realistic ideas for solving existing issues".* Another was succinct in describing it as "*A very worthwhile process.*"

Conclusions

- All of the schools had significant shade issues, resulting in students and staff being at risk of harmful exposure to UVR. This was the case whether or not the schools were SunSmart Accredited.

- Prior to the Shade Audit process, all schools acknowledged problems with shade provision but were unable to accurately identify the activities at risk or prioritise areas requiring shade.

- The schools did not have the skills or confidence to identify effective shade solutions.

- The Shade Audits identified the activities at risk and prioritised the areas and activities in most urgent need of intervention.

- All participants reported that the Shade Audit process contributed useful ideas on reducing harmful exposure to UVR. Seven reported that the process had changed their thinking on how to address shade issues. Significantly, the Shade Audit was seen as an important part of protecting the health of students and staff.

- The findings support the recommendation that an expert, independent Shade Audit should be undertaken in every New Zealand school.