

**REPORT OF THE AIR CONDITIONING COMMITTEE (261.10)**

Held on Tuesday 31 July 2001

Meeting No AC/01/01 commenced at 4.10 pm.

**ATTENDANCE**

Present:	Malcolm Brooks	Councillor
	Craig Doyle	Councillor
	Judith Penton	Councillor
	Chris Gallagher	Director – Corporate/Community Services
	Roland Soder	Manager – Property Services
	Steve Hennessy	AHA Management consultant

**CONFIRMATION OF PREVIOUS MINUTES**

The minutes of the meeting of the Air Conditioning Committee held on Tuesday, 3 July 2001, were confirmed.

**ITEMS FOR CONSIDERATION****AC.001 INTRODUCTION**

The Director – Corporate/Community Services welcomed Steve Hennessy, Director of AHA Management, Council's SEDA partner.

**AC.002 BRIEFING BY STEVE HENNESSY**

Mr Hennessy summarised his report of 24 July 2001 on the two options – proposed by David Shreeve & Associates and Y+B - for the rectification of thermal comfort problems within the Administration Building.

Mr Hennessy in his conclusion advised that the proposal of David Shreeve & Associates, although conservative, provided the best solution to the problems being experienced. The Y+B proposal, in his opinion, contained some fundamental flaws but did include some excellent ideas.

The Committee agreed that:-

- A Mr Hennessy be requested to discuss with David Shreeve all options provided in the Y+B proposal with a view to incorporating elements of the Y+B proposal into the base DSA design and a detailed report, with costings, be provided to Council as soon as possible.
- B If it is determined that reflecting material on the windows is desirable, the type and colour be discussed with Grenfell Fraser & Associates, architects.

- C The Director – Corporate/Community Services confirm the action to be taken to continue the consultant's (David Shreeve & Associates) engagement. (Moved Brooks/seconded Penton).

A copy of a further report from David Shreeve & Associates is attached.

### **CLOSE OF BUSINESS**

The meeting closed at 5.15 pm.

## ATTACHMENT TO AC.002

Fax From : 61 2 94370898

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**David Shreeve & Associates Pty Ltd**  
CONSULTING MECHANICAL ENGINEERS

ARN 47 068 441 305  
26 Clarke Street  
Crows Nest NSW 2065  
AUSTRALIA  
Ph 61 2 9436 3500  
Fax 61 2 9437 0890  
email dsaconsulting@dsaconsulting.com.au

**GOSFORD CITY COUNCIL**  
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**FAXMEMO**

To	Gosford Council	Mr Chris Gallagher	<input type="checkbox"/>	Fax No.	4323 2477
To	Gosford Council	Mr Roland Soder	<input checked="" type="checkbox"/>	Fax No.	4323 2477
To	Carrier Air Conditioning	Mr Colin Brooks	<input type="checkbox"/>	Fax No.	4940 8522
From	David Shreeve			Date	12 July 2001
Project	Gosford Council Administration Building			Pages sent	1
Subject	Alternative to base DSA design			Ref No.	20006 FM 08

Roland  
In follow up of our meeting and potential alternatives to the original DSA design.

**Option 1**

The deletion of the perimeter VAV boxes and the replacement with Thermally activated diffusers, this will be suitable if the ceilings are replaced with new two way grid system. If the current ceilings are maintained these devices will have to be installed out across the tiles, which will be messy. The centre zone system will be maintained as currently designed as the air quantity in the existing system is too low to achieve a suitable ventilation rate. The installation of thermally activated diffusers in the centre zone is not warranted, and conventional diffusers can be utilised as the air quantity will remain constant with the use of fan assisted boxes. We do not believe that the upgrade of the main air handling system can be deleted as the building still requires an increase in air quantity just to maintain a suitable ventilation rate.

**Option 2**

If part of the energy saving measures advised in the Pittcock Report are implemented the amount of ductwork upgrade and the size of the additional cooling plant could be lowered however we do not believe that the plant upgrade can be deleted totally. We would recommend consideration of the window tinting, though Low E film may not be the best solution and further investigation would be needed, the wall insulation could also be performed though the net effect on the load reduction is not as great. Any reductions in the overall load of the building will result in a saving of around \$500 per kW.

**Option 3**

We have reviewed the use of Liquid refrigerant pumps LRP (liquid pressure amplifiers), these can be fitted to both of the existing systems and to the proposed new system. With the use of a water cooled condenser the advantages achieved by the lowering of the condensing temperature can be picked up. The potential to increase the capacity of the existing refrigeration circuit by 15% could be achieved. This would increase the capacity of the system by around 20 kW. Where a problem exists is the existing cooling coil, which is restricted to 2.6m/s to limit water carryover. The building requires an increase in air quantity as well as increase in capacity. If we still maintain the fan assisted VAV boxes in the centre zone we can lower the air quantity in the perimeter zone and maintain the increased air flow in the centre zone, thus achieving the advantages of lower leaving air temperature from the coils. The LRP's can effectively reduce the capacity of the new cooling coil and condensing set by the 80kW. This cost saving would be around \$8000-\$10,000. The likely capital cost for these units would be \$14,000 each installed. The generated payback would be around 3.5 years.

**Combination of Options 2 and 3**

A combination of these two options has the potential to reduce the size of the additional condensing set to around 100 kW, if this was the case then we would delete the existing condensing set completely and install a pre-cooler in the outside air duct to lower the outside air too around 12°C so that the existing cooling coil does not see the outside air load. This has a big advantage as the cost of the cooling tower, pipe riser and coil installation would be removed and we would install an air cooled plant for the outside air system. This has the potential to save around \$50,000 capital cost.

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Page 1

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12/07/01 11:57 Pg: 2

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PAGE 2 of 2

**Option 4**

In this option we would consider the lowering of the operating costs for the hot water heating and domestic hot water with the installation of Desuperheaters on the existing condensing sets. The desuperheaters would cost around \$15,000 each installed so a total of around \$30,000 plus GST. The desuperheaters would raise the water temperature on the hot water circuit to around 60°C. The new hot water coils would be resized for a lower operating temperature so that the desuperheaters can provide the total heating. When they are not operational the existing boiler would still provide the heating to the building. These units are likely to produce a payback in around 5 years.

**General**

The above works has potential to save both operating cost and capital cost in the air conditioning systems, however they do not remove the requirement to provide additional cooling and air quantity to the building. By lowering the leaving air temperature on the coil reduces the duct size on the floors and has the potential to minimise some of the floor rework, however it will not eliminate this as the air distribution on the floor is still not satisfactory to achieve an even temperature across the whole floor. Both proposals on the table have merit, the DSA proposal fixes the ventilation, control and cooling problems in the building, by combining the two the capital cost of the Mechanical services can be reduced and the running cost can be reduced however we believe that the overall cost of construction will increase. Further analysis and design would be required to determine the full affects.

Regards

David

