

Wellington Hospital Total Energy Centre — myths dispelled

The Wellington Hospital Total Energy Centre complex has, since its inception in the 1970s, been the subject of controversy, perhaps fuelled by gossip, but more probably due to the lack of full understanding of what it is and what it does. I trust I will be able to dispel some of the myths by giving a better appreciation of the role this unit plays for the greater Wellington health service.

The words "total energy" and "total energy centre" have been used in different ways over recent years so I would like to clarify the use of these words.

This energy centre is not the place to get CNG, diesel or premium petrol for motor vehicles but one which provides the engineering services' life blood to all the buildings comprising Wellington Hospital.

The Total Energy Centre at Wellington Hospital houses the equipment and facilities to provide high temperature hot water for heating, chilled water for air conditioning, hot water for showers, wash hand basins and laundry, steam for sterilisers, electricity for lighting, lifts and equipment and this is all achieved within the complex using substantially one basic fuel — primarily natural gas.

What is more important is that this energy centre is able to extract more energy out of each gigajoule of gas than if the same amount of gas had been used to generate the same electricity in New Plymouth or Huntly Power Stations. This is achieved by the use of heat that, in other systems, is usually wasted.

Here, heat is saved from cooling water and oil lubricating the driving engines, also the engine exhaust gas, before it goes up the chimneys to waste.

This gives an energy recovery factor of better than 60 percent of the energy in the fuel compared with only 35-40 percent for more conventional systems. There is high energy recovery of the fuel input — hence the term "total energy".

The energy centre was conceived in the early 1970s at the time of the first oil shock, when oil prices started to skyrocket and the country's electricity demands were doubling every five years.

At that time the Hospital Board was embarking on a major redevelopment scheme looking to rebuild, over 15 to 20 years, nearly all of the facilities on the Wellington Hospital site. With the hospital then proposed at 1200 beds and the prospects for substantial increases in energy costs, both from the oil shock and the likely shortfall in electricity generating capacity looming in the 80s, means of providing reliable power, heating and cooling at

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realistic prices had to be found.

This climate also generated the desire of most world bodies to seek the efficient use of fuels, not only in the interests of economics but also to conserve world fuel resources and to reduce pollution.

The solution selected was to concentrate all the major heating and cooling plant for the site into a single building together with plant to generate enough electricity to supply the redeveloped complex.

This plant would run on a continuous basis with the objectives of high fuel efficiency and high reliability.

While these objectives have been met since the centre became operational in 1981, the full realisation of the benefits have not been achieved due to substantial curtailment of the proposed redevelop-

ment plan.

Total financial independence as a fully commercial revenue generating unit, as suggested by present user pays government policy, was not envisaged as one of this centre's primary objectives.

While important, the primary objective was not financial independence but the ability to provide the hospital with a secure supply of engineering services to allow it to serve the public of the Wellington region with essential medical services even in a time of significant natural disaster.

The whole of the redevelopment programme for Wellington Hospital, and especially the Total Energy Centre, was built with the "big quake" in mind. Special considerations have been given to foundations for equipment, buildings, interconnection of services between buildings and how the hospital could continue if its electricity, water and gas were isolated from the rest of the Wellington City supply system.



The Wellington Hospital Total Energy Centre