7 October 2010

Rice Daubney
110 Walker Street
NORTH SYDNEY NSW 2060

Attention: Paul Reidy

88 WALKER STREET - HIGH LEVEL PLANT ROOM

Dear Paul,

As requested we provide additional details of the plant and equipment serving the proposed development at 88 Walker Street to support our previous statements that the high level plant area shown on Rice Daubney's drawings cannot be reduced.

This correspondence will incorporate advice previously provided in our letter of 18 June 2010 and address issues such as:

- the distribution of plant throughout the building and the reasons why plant must be located at high level
- comparison of plant spatial requirements with that proposed for the previous scheme
- the consideration of using alternative plant and equipment
- the flexibility required for future client decisions and the impact of sustainability.

PLANT LOCATION AND DISTRIBUTION

Plant is positioned at various locations throughout the building for specific reasons.

Many systems, for example, need to discharge fumes or exhaust at roof level in order to comply with codes or for health reasons. These include systems such as the gas fired boilers, cooling towers, generators and kitchen exhaust.

Other systems - such as air handling plant serving the office levels - must be distributed at multiple locations:

a) to be in close proximity to the areas served (hence reducing energy) and,

b) because the connection to vertical risers would not be feasible if all air handling plant was compressed into a single location.

Each item of plant has therefore been located in the optimum position. The specific reasons why the plant within the high rise plant room has been located there is outlined in the following table.

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Item	Description	Reason for Location in Roof Plant Room
1	Water Storage and Pumps	Provides gravity feed to building.
2	Base Building and Tenant Generators	Exhaust flues to discharge at roof level, with large volumes of intake and exhaust ventilation. Double height space required.
3	Kitchen Exhaust Fans	Kitchen exhaust to discharge at roof level.
4	Heating Boilers	Exhaust flues to discharge at roof level.
5	Mid Rise and High Rise Air Handling Units (AHU)	Air handling units serve top portions of building and must feed into riser shafts at high level.
6	Exhaust Fans (General)	Exhaust fans to discharge at roof level.
7	Cooling Towers	Towers discharge to above and must be at the high point of the system. Large volumes of air required.
8	Pumps, Variable Speed Drives (VSD) and Electrical Switchboards	All need to be located close to the equipment which they serve in order to minimize energy losses.

Ideally, if additional space was available, the main chillers would also be located within the High Rise Plant level. This would minimise energy, by reducing the distance between the cooling towers and the chillers, however this is not possible within the current space available.

We also note that other major items of equipment, such as the chillers, black water treatment plant and main substations, already occupy significant plant space lower in the building, and there is currently insufficient space within these locations to accommodate any additional plant that may be relocated from the roof.

If we were to consider alternative locations for some of the plant, one option may be to transfer some of the equipment to the plant space at the base of the office tower, however in order to accommodate this the whole of the office tower may need to be lifted, to give more head room and clearance within the plant space. We anticipate that this increase in height will be counter-productive and therefore will not be acceptable.

A further option may be to extend the roof plant room further to the north. As you are aware, many of the services risers that are served by the roof plant room are located within the northern end of the core. This requires sufficient space for multiple ducts to cross and then align before entering the vertical risers Access to the core is therefore crucial to the spatial planning of the plant, and if additional space can be provided in this area, it may be possible to set back the façade in other areas. We appreciate that this option would have significant planning implications for the building, including the requirement to increase the footprint of the upper levels, and we therefore anticipate that this option will not be feasible.

PLANT SPATIAL REQUIREMENTS

It has been noted that whilst there has been a proposed reduction in the number of office levels and GFA, there has not been a corresponding reduction in the plant space required.

From the figures provided, we understand the nett lettable area (NLA) has reduced from 48,155m² in the original scheme, to 46,135m² in the S75W proposal. The capacity of the mechanical services - which comprise the majority of the plant located within the high rise plant room - relates to the NLA served and therefore a decrease in the area served (by 2,020m²) represents a capacity reduction of 4.2%. Unfortunately, this potential reduction in plant capacity does not result in a corresponding decrease in plant size.

The reasons for this are several and include:

a) All plant and equipment comes in discrete sizes and a reduction in capacity of only 4.2% would not normally be sufficient to enable the next smaller item of plant to be selected.

b) The size of many plant items is determined by the frame or module selected, and the physical size of a range of equipment with similar capacities are therefore often identical (i.e. two or more items with different capacities are often the same physical size).

c) If the size of a piece of equipment does change, the difference in dimensions resulting from an incremental capacity change, is likely to be small (say 100-300mm).

d) If the size of a piece of equipment changes, the clearance around the machine for maintenance and access normally remain constant, and this clearance constitutes a significant proportion of the plant space required.

As a consequence, the reduction in office area served has not had any significant impact on the plant space required.

USE OF ALTERNATIVE PLANT AND EQUIPMENT

The plant and systems serving this facility have been selected taking into consideration many factors.

The most important of these is the energy efficiency of the building when in operation, but many other factors have also been considered including:

- Environmentally Sustainable Design
- Stability of operation
- Indoor Environment Quality
- Ease of construction and maintenance
- Occupational Health and Safety
- Life expectancy
- Tenant's requirements
- Capital Cost.

We suggest that the design solution currently proposed reflects a balanced response to each of these issues, which is appropriate for this client and this building.

The adoption of alternative plant solutions may impact on the spatial requirements - either positively or negatively - but his may lead to compromises in the other aspects listed above.

We therefore recommend that the existing systems be retained because of their overall suitability for this project, and suggest it would be inappropriate to adopt alternative systems for reasons only of space reduction.

FUTURE FLEXIBILITY AND SUSTAINABILITY OPTIONS

The size of the plant and equipment proposed for this building are based on our current understanding of our client's requirements and the services capacity required.

However, we are still at the concept stage of our design and there are many details which are yet to be resolved.

NDY's experience over very many years in the industry tells us that our concepts need flexibility to adapt to design changes as the project develops. This flexibility includes the space required to adopt alternative solutions should they prove to be of benefit to the project.

The client's requirement for an energy efficient and sustainable building is a clear example of this. We are currently considering ways in which the building's energy performance can be optimised by the use of alternative energy saving techniques. One such consideration is the provision of air to air heat exchangers on key items of air conditioning and ventilation plant, to transfer energy from the exhaust systems and pre-cool (or pre-heat) the supply air, thus reducing the amount of raw energy consumed.

Whilst these heat exchangers can save energy they require significant additional plant space, not only for the heat exchanger itself, but also for the large sections of additional ductwork that are required to connect the exhaust discharge with the supply inlet.

Reducing the plant space available at this stage of our design may preclude the use of this or other energy reducing techniques in the future, all of which will undoubtedly require additional plant that is not reflected in our current design.

In view of the various reasons outlined above and the potential restriction it would place on future design options, we reiterate that we believe the current high rise plant room to be sized appropriately and recommend in the interests of the project that it not be reduced.

NORMAN DISNEY & YOUNG

Richard Pickering
Director