If a building becomes architecture, then it is art. Clearly, if a building is not functionally and technically in order, then it isn't architecture either – it's just a building.
Arne Jacobsen

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STEENSEN VARMING

Att. Andy Nixey
Department of Planning and Environment
GPO BOX 39
Sydney
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Dear Mr Nixey

Sydney May 3, 2019
Ref. No. 14702.PL.M.01

Joe Martin
Senior Mechanical Engineer

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This letter is in regard to the design change in selection of heat rejection systems serving the Sydney Modern development cooling systems.

Original system design incorporated a sea water heat rejection system, as detailed in the 'SSDA 6471 Sea Water Heat Exchange Report rev06' dated March 12th, 2018 and previous response to queries issued to yourself on June 22nd, 2018.

Following design reviews, it has been decided to amend the form of heat rejection serving the building. It should be noted that beyond the heat rejection system, all mechanical services are remaining as per the original proposal.

The design change in heat rejection encompasses the removal of the sea water heat rejection plant in its entirety up to the chillers located in the new building. In it's place a series of cooling towers shall be installed with condenser water loop back to the internal chillers. The cooling towers shall be closed loop systems and located within the landscaping area to the East of the building and located directly above the new loading dock area (refer to Architectural drawing DA_0100 Revision M).

The cooling towers shall discharge warm air only vertically through a grille located directly above them in the landscaping, make up air shall be drawn through this same grille. It is anticipated that the cooling towers will be supplied with makeup water through a rainwater harvesting system.

The cooling towers provide the following technical benefits as a source of heat rejection:

- Safe maintanance and plant replacement through elimination of confined space plantroom present in sea water system design.
- Eliminated requirement for chemical treatment of sea water for marine growth.
- More efficient parts replacement through standardised equipment souced from within Australia.
- By placing the heat rejection plant on site with the new building it removes the connecting pipework present in the sea water design. This eliminates any future development between the new building and the harbour from having the below ground pipes acting as an obstruction.
- Safer and simpler installation.

Early life cycle investigations carried out, demonstrated that the annual energy consumption for the cooling towers and sea water flooded chamber were almost equivalent in their $C0_2$ per annum.

It is our professional opinion that the cooling towers have significant benefits as a source of heat rejection serving the mechanical cooling system serving the Sydney Modern development.

Kind regards

Joe Martin

Joe Martin
Senior Mechanical Engineer

DRAFT