

MEMORANDUM

Report Name	RTS Item DPHI Cooling Systems
Project	AWS SYD086
Subject	Alternate Cooling Technologies
Author	David Caleo
Date	28/10/2025

DPHI	LCI Response
<p>Cooling System</p> <p>1. The Department notes the analysis of cooling systems options provided does not consider alternative cooling technologies such as liquid cooling (Direct-to-chip and immersive cooling). Please provide an updated options analysis which considers available cooling technologies</p>	<p>The cooling system has been designed specifically to meet the clients requirements for the Data Centre. The Data Centre application is for low density IT power which does not require Direct-to-chip or immersive cooling which is primarily used for high power density AI Data Centres. The cooling solution is based on direct evaporative cooling which uses non-compressor and non-refrigerant cooling. It is based on 100% outside air cooling. It is the most energy efficient cooling solution and will achieve PUE (Power Unit Effectiveness) of 1.15.</p>
<p>2. Please provide additional details on the level of redundancy as follows:</p>	
<p>a. The redundancy configuration for the cooling system)e.g. N. N+1, @N+1, etc)</p>	<p>a. The redundancy of the mechanical cooling systems is N+1.</p>
<p>b. the number of units and their capacity including any backup units</p>	<p>b. Each Data Hall is provided with dedicated cooling systems. There are a total of 9No. Data Halls consisting of 2 phases. Each Data Hall has two phases to form one datahall. Each Data Hall is served with 17No.Direct Evaporative Cooling Air Handling Units(DAHUs) in an N+1 arrangement (ie 8 per phase and one +1 to serve both phases). Each DAHU has a supply air capacity of 44.1 cubic metres per second (m3/s) and provides an effective cooling capacity of 550kWr with a power consumption of 40kWe. This equates to a COP 13 which is much greater than comparative compressor-based cooling system with a COP of 6. The coefficient of performance or COP is a ratio of useful cooling provided to work (energy) required.</p>
<p>c. the failover process and the duration for maintaining cooling during system failures or maintenance</p>	<p>c. The cooling systems are continuously monitored for failure and performance. Maintenance is undertaken on each DAHU separately. As N+1 redundancy is provided, the loss of one(1) DAHU per Data Hall does not affect the cooling function.</p> <p>In the event of power failure, the cooling is restored within 40 to 60 seconds, i.e. the time taken for the generators to operate. As the system is independent of large refrigeration cooling systems, cooling is quickly</p>

	restored. In the event of mains water failure, 24 hours of water storage is provided.
d. the testing and maintenance procedures for the cooling system to ensure ongoing reliability	d. A full time technical team is on site continually monitoring the operation of the cooling systems. A comprehensive regular testing and maintenance programme is performed monthly on the cooling systems to ensure their continuous operation. Due to the critical nature of the facility and reliance upon cooling systems for the Data processing, maintenance is especially important.