Appendix C - Proposed mitigation measures table

The following section provides recommendation for mitigation measures in response to potential impacts identified in **Section 6** of the EIS.

SEARs	Potential impact	Mitigation measure	EIS Reference
Traffic, Transport and Accessibility	Impacts on road network from construction and operational phase.	<u>Construction phase</u> ▪ Preparation and implementation of a detailed CTMP prior to commencement of works, incorporating approved Traffic Control Plans for all site accesses. ▪ Manage all vehicle movements in accordance with approved Traffic Control Plans at site accesses. ▪ Schedule heavy vehicle deliveries outside the AM and PM peak periods where practicable. ▪ Provide all construction worker parking within the site. ▪ Clearly delineate and separate pedestrian routes from construction plant and delivery vehicle movements. ▪ Undertake all deliveries, waste collection and laydown activities within the site boundary, with no queuing or obstruction on public roads. ▪ Maintain and periodically review the CTMP throughout all construction phases <u>Operational phase</u> ▪ Implement the Green Travel Plan to encourage sustainable transport choices and reduce reliance on private vehicles. ▪ Provide secure bicycle parking and high-quality end-of-trip facilities. ▪ Distribute public transport information to staff and visitors. ▪ Promote ridesharing and car-pooling initiatives. ▪ Monitor parking and access arrangements to ensure they continue to meet demand without affecting the surrounding road network.	**Section 6.3**

SEARs	Potential impact	Mitigation measure	EIS Reference
Ecologically Sustainable Development	Achieving a high level of ESD	<u>Energy and Carbon</u> ▪ Reduce operational energy demand by targeting a PUE of 1.35, thereby mitigating greenhouse gas emissions relative to the national average of 1.6. ▪ Mitigate energy inefficiency by designing systems to achieve a NABERS Energy for Data Centres rating of 4.5 stars. ▪ Mitigate office building energy and water consumption impacts by committing to a 5.5 Star NABERS Energy Base Building rating and 3 Star NABERS Water rating under an Agreement to Rate. ▪ Minimise energy consumption from cooling plant through elevated data hall conditions, direct-to-chip liquid cooling, waterside economy cycle/free cooling, and installation of high-efficiency chillers. ▪ Offset grid reliance through installation of on-site photovoltaic systems with a minimum output of 115kWe per data hall (~230kWe total). ▪ Reduce lighting demand by installing LED luminaires with occupant-responsive controls. ▪ Mitigate refrigerant-related emissions by specifying very low GWP refrigerants. ▪ Contribute to Net Zero 2050 targets by committing to procure 100% renewable electricity for all non-IT operational energy use. <u>Water</u> ▪ Reduce water consumption for cooling by using hybrid coolers capable of operating in dry air-cooling mode when ambient conditions allow. ▪ Minimise cooling water demand through elevated set-points and direct-to-chip liquid cooling, which reduce heat rejection requirements. ▪ Limit potable water demand by installing water-efficient fixtures and fittings and providing strategic sub-metering. ▪ Avoid ongoing irrigation requirements through use of drought-tolerant and endemic native planting.	**Section 6.5**

SEARs	Potential impact	Mitigation measure	EIS Reference
		<u>Waste and Materials</u> ▪ Reduce construction and demolition waste impacts through implementation of a waste management plan with landfill diversion targets. ▪ Minimise embodied emissions by using concrete mixes with supplementary cementitious materials and structural steel/reinforcement with high recycled content. ▪ Mitigate long-term material demand by selecting durable, low-maintenance finishes to extend service life. <u>Urban Heat and Ecology</u> ▪ Mitigate heat island impacts by applying low-absorptivity, high-SRI finishes to roofs and façades. ▪ Reduce localised heat build-up and improve amenity by landscaping more than 19% of the site, predominantly with deep soil planting to provide shading, evapotranspiration cooling, and biodiversity benefits. ▪ Minimise contribution to ambient dry-bulb temperatures by adopting evaporative cooling for heat rejection with rapid dissipation of residual humidity.	
Air Quality	Impacts of construction activities in relation to dust and impacts from ongoing operations	<u>Construction Phase</u> ▪ Implement a Construction Environmental Management Plan (**CEMP**) with a specific Air Quality Management Sub-Plan. ▪ Apply standard best-practice dust suppression techniques, including water sprays on exposed surfaces and during earthworks. ▪ Cover stockpiles when not in use and minimise material drop heights during handling. ▪ Use wheel-wash facilities at site exits to reduce track-out of material onto public roads. ▪ Undertake regular street sweeping along haulage routes to remove deposited material. ▪ Limit vehicle speeds on unsealed surfaces and maintain these surfaces to reduce dust generation.	**Section 6.6**

SEARs	Potential impact	Mitigation measure	EIS Reference
		▪ Ensure plant and equipment are well maintained to minimise exhaust emissions. <u>Operational Phase</u> ▪ Adhere to the proposed generator maintenance and testing schedule to minimise cumulative operational hours and emissions. ▪ Optimise generator load management during testing to reduce emissions intensity. ▪ Maintain all generators in accordance with manufacturer specifications to ensure efficient combustion and minimise pollutant output. ▪ Implement an operational air quality management plan if nearby sensitive land uses are realised in future, with the flexibility to introduce additional controls if required.	
Noise and Vibration	Impacts on surrounding receivers from construction and operational phase	<u>Construction Phase</u> ▪ Implement a CNVMP in accordance with the ICNG. ▪ Schedule high-noise activities (such as piling) within standard construction hours wherever possible and avoid extended periods of continuous high-noise works. ▪ Use quieter equipment and methods where practicable, and ensure all equipment is fitted with appropriate noise suppression devices. ▪ Provide advance notification to nearby sensitive receivers prior to particularly noisy works. ▪ Establish a complaints management system and designate a community liaison officer to respond promptly to concerns. ▪ Manage construction traffic to minimise impacts, including restricting access to designated haulage routes and avoiding night-time heavy vehicle movements. <u>Operational Phase</u> ▪ All chiller fans are to be fitted with acoustic attenuation in the form of minimum 1.5 metre rigid ductwork internally lined with 100 mm acoustic insulation.	**Section 6.7**

SEARs	Potential impact	Mitigation measure	EIS Reference
		▪ All generators are to be provided with an acoustic enclosure such that the cumulative noise (enclosure intake, enclosure discharge and exhaust) complies with the levels presented in Table 20 of the NVIA. ▪ An 8-metre acoustic barrier is to be provided around the full perimeter of the 330/66 kV transformers. The barrier is to be of solid construction and free of air gaps. Due to requirements for blast walls, the barrier is intended to be of minimum 300 mm precast concrete construction. ▪ 6 metre acoustic barriers are to be provided to the east, north and west sides of each 66/11 kV transformer cluster. The barriers are to be of solid construction and free of air gaps. Due to requirements for blast walls, the barrier is intended to be of minimum 300 mm precast concrete construction. ▪ Acoustic design to be undertaken during CC for all mechanical plant to be installed and appropriate acoustic treatments incorporated, where required, to meet the noise emission objectives presented in Table 12. ▪ To minimise the acoustic impact on surrounding receivers, it is recommended that servicing and testing of the emergency generators be conducted during the daytime period of 7:00 am to 6:00pm. ▪ The substation switch rooms are to be located within acoustic enclosures. The enclosure is to be acoustically designed such that noise emission from the substation, and any associated mechanical ventilation plant, when considered cumulatively with other development plant, such as the chillers, does not result in an exceedance of the established project noise objectives. ▪ An acoustic lid is to be implemented over the extent of the chiller plant decks. The lid is to be located at a height between the top of the chillers (RL 80.06), and the top of the chiller discharge ducts (RL 81.56). The lid is to be of solid construction and free of air gaps with penetrations to accommodate the discharge ducts to pass through. The acoustic lid is to have a minimum performance of Rw 30. Indicative constructions include 9 mm fibre cement sheet.	
Water Management	Potential impacts of stormwater on site	▪ Limit total site impervious area to ≤85% (target ≤80%) to comply with subdivision stormwater management parameters and avoid the need for additional detention or treatment infrastructure.	**Section 6.8**

SEARs	Potential impact	Mitigation measure	EIS Reference
	and surrounding sites	▪ Remove the existing GPT and replace it with an OceanProtect OceanSave-3300-870 unit in the downstream pit, installed in accordance with manufacturer specifications and positioned for safe maintenance access. ▪ Construct the internal pit-and-pipe drainage network to accommodate the 5-year ARI (minor) event with climate change allowance and provide overland flow paths to safely convey the 100-year ARI (major) event without causing property damage or safety risks. ▪ Install and commission two 400kL rainwater tanks to harvest roof runoff for toilet flushing and irrigation, with backflow prevention, inlet/overflow screening, and connections to building plumbing to meet at least 80% of projected annual non-potable demand. ▪ Prepare and implement a Construction Erosion and Sediment Control Plan (**CESCP**) in accordance with the *Blue Book*, including sediment fences, stabilised site access points, inlet protection, and progressive stabilisation of disturbed areas. ▪ Prevent construction runoff or pollutants from entering the adjacent Ropes Creek biodiversity corridor by maintaining containment measures and undertaking daily inspections during all ground-disturbing works. ▪ Establish a maintenance program for all stormwater quality devices, drainage infrastructure, and rainwater tanks, with inspections in accordance with manufacturer guidelines and after significant rainfall events. ▪ Connect wastewater to the Sydney Water sewer network under an approved trade waste agreement, ensuring no untreated discharge enters the stormwater system.	
Hazards and Risks	Potential impacts regarding storage and handling of dangerous goods	▪ Maintain separation distances between hazardous material storage and property boundaries in accordance with Australian Standards. ▪ Provide bunding and spill containment systems for all diesel storage tanks. ▪ Install ventilation systems and fire detection/suppression systems in battery and generator areas. ▪ Implement spill prevention and emergency response procedures, including staff training and equipment maintenance.	**Section 6.9**

SEARs	Potential impact	Mitigation measure	EIS Reference
		▪ Conduct regular inspections and maintenance of hazardous goods storage areas. ▪ Restrict generator testing and operation to minimal durations, consistent with operational requirements. ▪ Limit dangerous goods deliveries to off-peak times where practicable to reduce on-site traffic and handling risks. ▪ Maintain compliance with all applicable standards (AS/NZS 4681, AS IEC 62619, AS 1940) and FM Global recommendations.	
Aboriginal Cultural Heritage	Impacts on cultural heritage	▪ A copy of this report should be submitted with the SSDA application to support SSD-82211208. ▪ As the proposed works are unlikely to cause harm to Aboriginal objects, it is recommended that no further investigation is required for the present development and that the proposed development can proceed in line with the Archaeological Unexpected Finds Procedure and Human Remains Procedure outlined in the ACHAR. ▪ In the event of an unexpected archaeological find or human remains, works will cease immediately in the vicinity, the area will be secured, and relevant authorities and specialists will be notified. Works will only recommence once the find has been assessed and appropriately managed in consultation with Heritage NSW and, where applicable, NSW Police.	**Section 6.10**
Social impacts	Potential positive and negative social impacts associated with the proposal	▪ Develop and implement a Community Engagement Strategy targeting the immediate social locality, highlighting potential impacts and benefits. ▪ Maintain ongoing engagement with Penrith City Council, stakeholders, and surrounding landowners (particularly those with concurrent developments) to coordinate construction timelines and minimise cumulative impacts. ▪ Provide clear two-way communication channels, supported by a grievance mechanism and a dedicated Community Liaison Officer during construction. ▪ Deliver regular updates on design, construction milestones, and local employment and training opportunities. ▪ Consider preparing an Employment Strategy that prioritises local hiring and procurement.	**Section 6.11**

SEARs	Potential impact	Mitigation measure	EIS Reference
		▪ Collaborate with key industry and educational stakeholders to establish partnerships for skills development and future employment pathways. ▪ Implement the measures outlined in the Preliminary CTMP to mitigate traffic and parking impacts during construction. ▪ Apply the Preliminary Green Travel Plan to encourage operational workers to use alternative modes of transport, leveraging the existing bus corridor along Lenore Drive. ▪ Incorporate worker wellbeing initiatives into the design, including breakout spaces, communal kitchen facilities, and shaded outdoor areas to support health and amenity. ▪ Apply landscaping, shading and high-SRI external finishes to mitigate the site's contribution to the urban heat island effect.	
Ground and Water Conditions	To manage geotechnical, salinity and groundwater risks:	▪ Undertake groundwater monitoring from at least three on-site wells for a minimum of three months prior to bulk earthworks, and continue during construction, to confirm separation from the water table and identify fluctuations. Maintain a minimum 1 m clearance between the finished excavation levels and the maximum recorded groundwater table. Check groundwater levels daily during bulk excavation to ensure proposed cuts will not intersect the water table. ▪ Implement the Salinity Management Plan in full, including all site-specific strategies for sodic soil management, fill placement, drainage, landscaping, and structural design requirements. ▪ Cap exposed or placed sodic soils with a more permeable material to prevent ponding, reduce capillary rise, provide drainage, and minimise erosion. Match excavated material to in-situ soils of similar or higher salinity/aggressivity where possible. Restrict imported fill to non-aggressive and non- to slightly saline soils confirmed by testing. Avoid water collecting in low-lying areas, depressions, or behind fill. ▪ Incorporate effective drainage to direct runoff away from structures, prevent infiltration into permeable zones, and minimise salt mobilisation. Provide drains at the top of batter slopes to reduce concentrated flows and risk of scour. Ensure retaining walls are designed with adequate drainage to prevent salt accumulation in backfill.	**Section 6.12**

SEARs	Potential impact	Mitigation measure	EIS Reference
		▪ Implement erosion and sediment controls during construction and promptly stabilise exposed soils to prevent dispersion and sediment loss. Use salt-tolerant grasses and trees in landscaping to stabilise soils, reduce erosion, and maintain evapotranspiration and groundwater levels. ▪ Design concrete mixes, masonry and buried steelwork for salinity exposure in accordance with AS 3600, AS 2159, AS 4058 and Penrith DCP, including: – For mildly aggressive soils to concrete: minimum 32 MPa strength piles, 60 mm cover to reinforcement (AS 2159). – For moderately saline soils mildly aggressive to concrete minimum 25 MPa strength slabs and foundations, 45 mm cover to reinforcement, and minimum three-day curing period (AS 3600). – Use AS 4058-compliant reinforced concrete pipes (general purpose Portland cement) with minimum 10 mm cover to reinforcement, or fibre-reinforced pipes, to achieve a design life >100 years. – For mildly aggressive soils to steel (<1000 Ohm-cm), allow for a corrosion rate of 0.01–0.02 mm/year or equivalent protection if coating life is shorter than structure life. ▪ Identify and manage any unsuitable fill encountered during excavation, including oversized or organic material, to maintain foundation performance and limit potential for settlement or instability. Compact all engineered fill in accordance with AS 3798 Level 1 requirements. ▪ Manage soil stockpiles to prevent the spread of saline material and revegetate disturbed areas promptly. Limit irrigation volumes to reduce salt accumulation and use salt-tolerant landscaping species.	
Contamination and Remediation	Disturbance of contaminated soil and impacts on land, air, water, and users and occupants of the site.	▪ Prior to civil works along the northern boundary, inspect for and remove any dumped material. If contamination indicators (e.g. asbestos, odours, staining) are present, engage a suitably qualified environmental consultant to manage removal and disposal. ▪ Implement both an unexpected finds protocol and an asbestos finds protocol during all earthworks. Cease works in affected areas until assessment and clearance is provided. ▪ Undertake additional assessment (inspection, sampling, analysis) to confirm final waste classifications for any surplus materials. Consider assessment of fill material under the NSW EPA	**Section 6.13**

SEARs	Potential impact	Mitigation measure	EIS Reference
		Excavated Natural Material Order 2014 prior to, or in conjunction with, assessment under the Waste Classification Guidelines (2022). ▪ Implement erosion and sediment controls to prevent off-site migration of sediments or contaminants during construction.	
Waste Management	Waste associated with the construction and operation of the data centre	▪ Apply the waste hierarchy (avoid, reduce, reuse, recycle, dispose) across all stages of the project. ▪ Establish designated, clearly signed waste storage areas with separation of materials to maximise recovery. ▪ Implement systems for on-site reuse where feasible (e.g. reusing fill for backfilling or landscaping). ▪ Arrange regular collection by licensed waste contractors and ensure all waste is transported to appropriately licensed facilities. ▪ Maintain accurate records of waste quantities, destinations, and recovery rates. ▪ Provide training and site inductions for all staff and contractors on waste minimisation and correct segregation practices. ▪ Implement hazardous waste protocols, including early identification, secure containment, and compliant disposal. ▪ Incorporate operational waste minimisation strategies, including recycling stations, reduced packaging procurement, and regular waste audits to improve recovery rates.	**Section 6.14**
Infrastructure Requirements and Utilities	High usage of water and electricity	▪ Continue liaison with utility providers (TransGrid, Sydney Water, telecommunications carriers) to confirm connection capacity, finalise designs, and coordinate works to minimise service disruptions. ▪ Incorporate high-efficiency cooling plant, water-saving fixtures, and renewable energy generation to reduce ongoing demand on public utilities. ▪ Implement traffic and access controls during utility installation works and schedule service tie-ins to avoid peak usage periods for surrounding businesses.	**Section 6.14**

SEARs	Potential impact	Mitigation measure	EIS Reference
Bushfire	Potential bushfire risk	▪ At the commencement of building works and in perpetuity, the entire site shall be maintained as an Asset Protection Zone. The APZ shall be established and maintained as an inner protection area as outlined within *Planning for Bushfire Protection 2019* and the NSW RFS document '*Standards for Asset Protection Zones*'. ▪ Proposed new buildings are to be constructed to comply with the National Construction Code (2019), Australian Standard AS 3959:2018, *Construction of buildings in bush fire-prone areas* and/or NASH Standard (1.7.14 updated), *National Standard Steel Framed Construction in Bushfire Areas – 2014*, and Section 7.5 of *Planning for Bush Fire Protection 2019* on a prescriptive (deemed to satisfy and/or acceptable solution) basis and/or performance basis to the extent identified in the Bushfire Hazard Assessment.	**Section 6.14**
BCA and Accessibility	Compliance with relevant regulations	▪ It is anticipated that a suitable condition of consent can be imposed on the proposed data centre to ensure the recommendations of the BCA Report and Access Capability Report are addressed prior to the issue of the relevant Construction Certificate.	**Section 6.14**
Greenhouse Gas Emissions	Impacts to greenhouse gas emissions	▪ Operating data halls at elevated temperature and humidity setpoints, incorporating direct-to-chip liquid cooling, and using waterside economy/free cooling to reduce reliance on chillers. ▪ Installing high-efficiency chillers with modern compressor technology, elevated chilled water temperatures, and refrigerants with a GWP of 1. ▪ Maximising rooftop solar PV, with a combined minimum capacity of approximately 230 kWe across both data centre buildings. ▪ Using high-efficiency LED lighting with occupant-responsive controls. ▪ Applying low-absorptivity/high-SRI external finishes, high-performance fabric/glazing, and shading to reduce thermal loads. ▪ Procuring 100% renewable electricity for all non-IT operational energy use from commencement of operations. ▪ Investigating renewable diesel alternatives at other sites, with potential future application to this facility.	**Section 6.14**