Talavera Road Data Centre Campus Expansion

17-23 Talavera Road, Macquarie Park

8 December 2023

NSW GOVERNMENT

Overview

- **DPE Assessment Team** – Industry Assessments
- **Applicant** – Macquarie Data Centres Pty Ltd
- **Proposal** – Data Centre expansion to an existing campus at 17-23 Talavera Road, Macquarie Park in the Ryde local government area
- **State significant development**
  - Data centre with a proposed total power consumption of 38 MW
    - Threshold with a total power consumption over 10 megawatts (MW) (or 15 MW from 1 June 2023)
  - Independent Planning Commission determination
    - Reportable political donation made by company connected to Applicant within previous 2 years
    - City of Ryde Council objection primarily due to stormwater pipe easement issue which has now been resolved

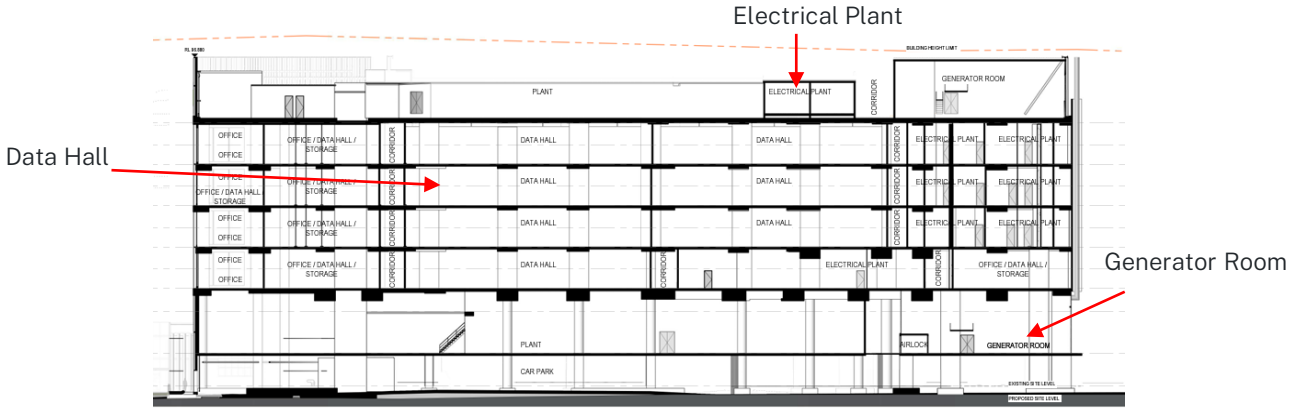
Data centres

- Data centres are places which are used by organisations to store their electronic computer applications and data.
- This could include personal data (such as a Facebook account or Instagram photos), corporate data (such as a business's payroll system) or sensitive government data (such as tax and Medicare records)
- There is a growing need for new, small and large-scale data centres to cater for the vast volume of data accessed and created by Australians

Example images of data centres

Data centres

- Data centres are usually very large buildings and can look similar to warehouses or a commercial office block
- Key components include:
  - Data halls
  - Emergency diesel back-up generators
  - Lithium-ion batteries
  - Diesel fuel storage
  - Cooling systems



Roof top plant

Data hall

Data centre operations

- Require complex cooling systems to ensure the computer equipment does not overheat
- Require emergency back-up systems to provide critical continuous uninterrupted power supply in the event of electrical mains failure (combination of diesel generators and lithium-ion batteries)
- A testing regime for the back-up generators is required to prepare for power failure events.

Amenity

- The components have the potential to generate significant amenity impacts in terms of noise and air quality, if not appropriately managed
    - Diesel generators – noisy and produce particulates (PM_{10}, $PM_{2.5}$,) and NO_X which can impact human health in significant concentrations
    - Air handling units and other cooling equipment (usually mounted on the roof), also produce noise

What Department looks at

- Assessment of air quality and noise impacts needs to be undertaken under two operating scenarios:
    - Standard operating scenario involving regular testing of back-up generators
    - Worst-case operating scenario with all back-up generators operating simultaneously during an emergency critical power failure

Site Context

Subject site within locality

Site history – existing approvals

2011 – JRPP approval for the conversion of an existing structure to a data centre.

2019 – LEC approval for the construction of an expansion to the existing data centre across two stages:

- subject to Section 34 agreement, as Council did not support the expansion being built over its existing easement/stormwater pipe.
- through this process, Macquarie Data Centres (MDC) and Council came to an agreement to provide:
  - an 8-metre high undercroft area over the existing pipe for maintenance access
  - a new stormwater easement around the expanded building, so that Council could construct an unencumbered pipe in the future (if needed).

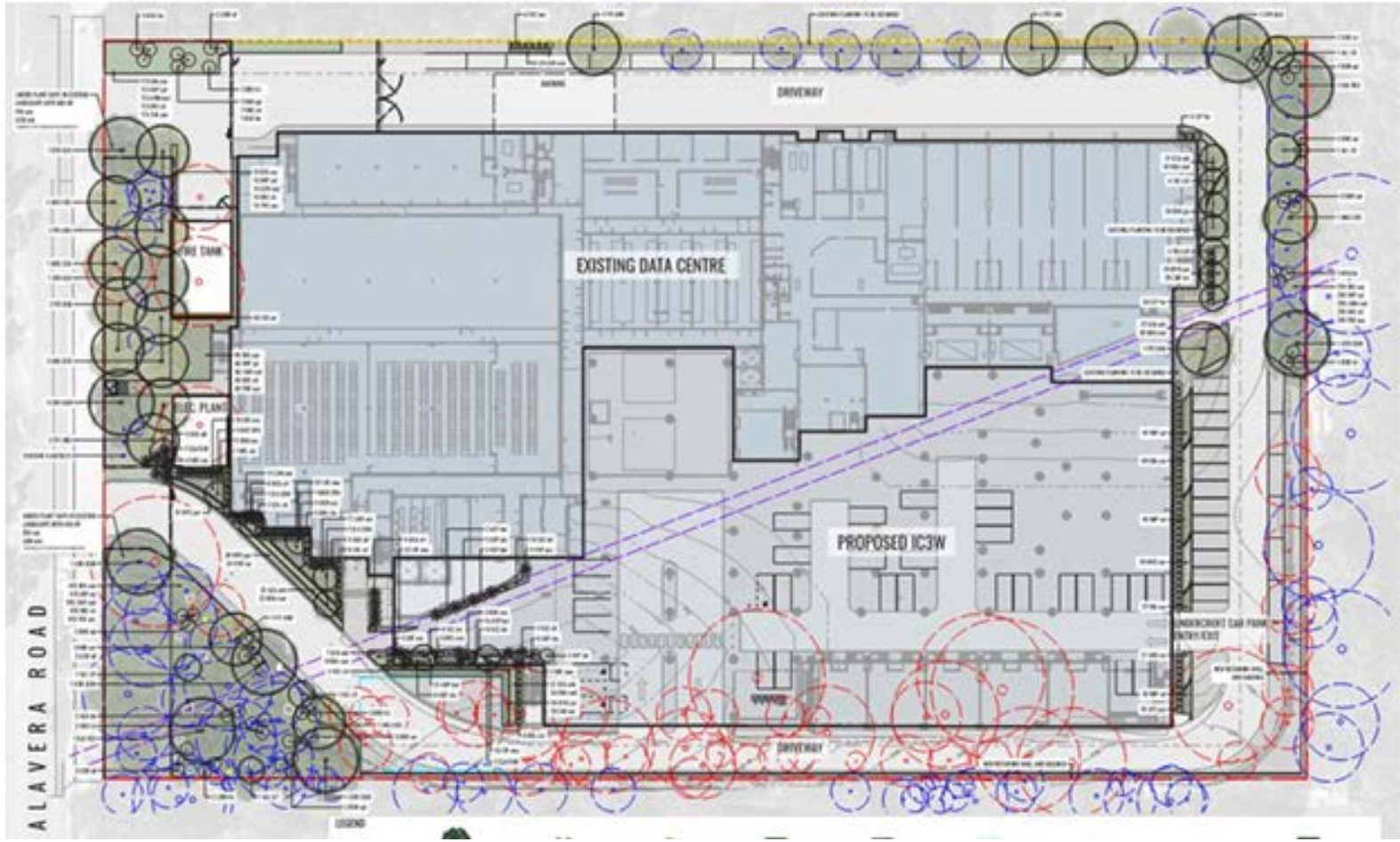
- While construction of Stage 1 of the LEC approval is complete, Stage 2 has not commenced.
- This SSD seeks to replace Stage 2 of the previous LEC approval with a larger data centre building and relocate the stormwater pipe easement

Previous development approvals and their relationship to the current proposal

Original Development Application (2021)

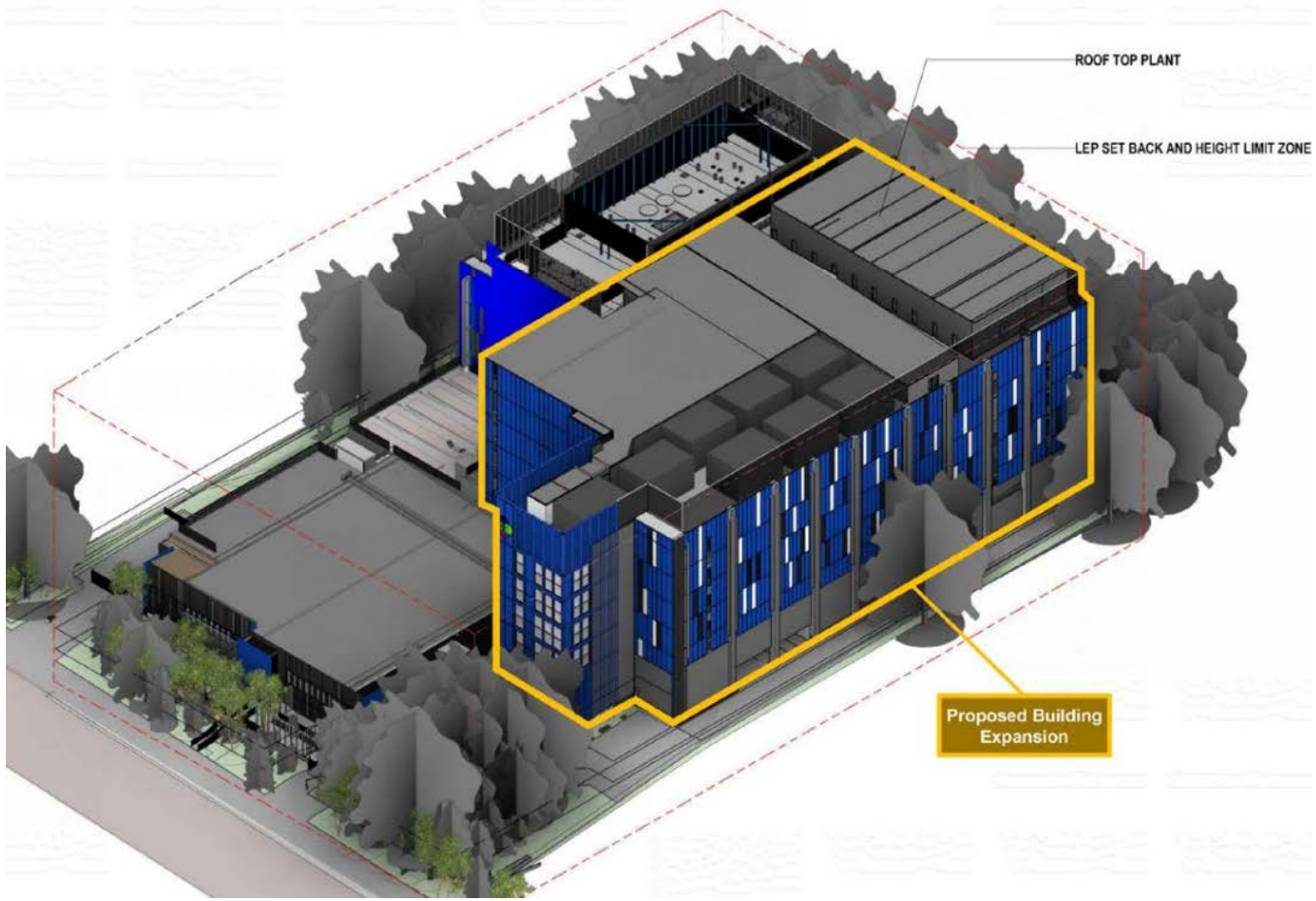
- Expansion of the existing data centre
  - eight-storey building (38 MW)
  - 45 m height, 16,142 m^2 GFA
  - 21 generators
  - diesel fuel storage
  - ancillary office space
  - 12.5 m undercroft to accommodate easement
  - options to relocate easement

- Exhibition from November – December 2021
  - Council objected (impacts on its existing stormwater pipe as well as flooding, stormwater, loss of trees, visual amenity)
  - 5 government agencies provided advice
  - No public submissions

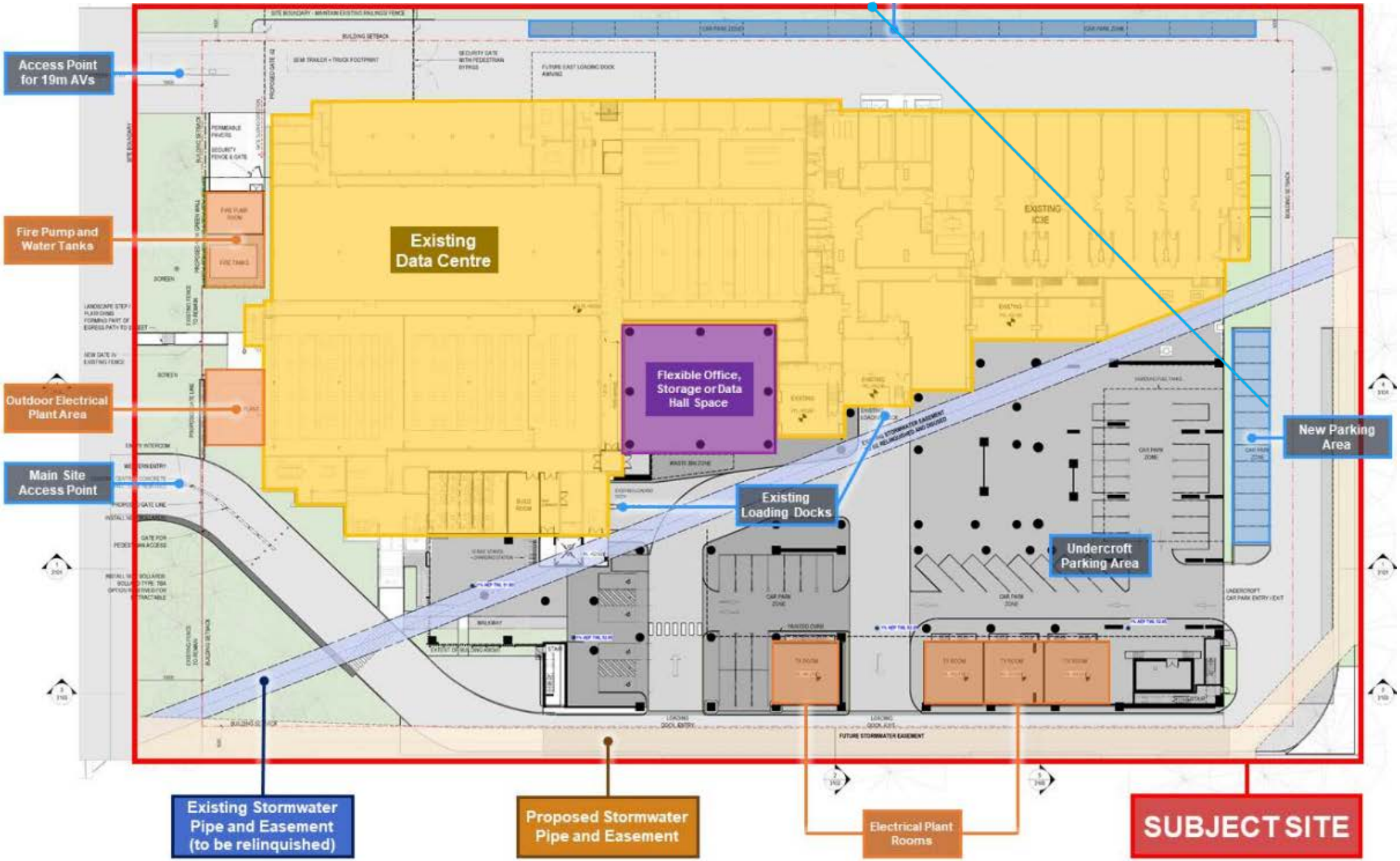


Amended Development (2022)

- Key Changes:
  - Amended application includes the construction of a new 2,100 mm stormwater pipe around the perimeter of the expanded data centre, to replace the existing stormwater pipe traversing the site
  - Reconstruction of an existing Sydney Water sewer main which intersects with the alignment of the new stormwater pipe
  - Reduction in height of undercroft area
  - Amendment to boundary of the SSD application to include Part Lot 3/DP 1043041



| 3D model of the site, with the development outlined in orange



Amended development layout (Ground floor)

How Key Issues Addressed in Amendment

- **Loss of Trees:**
  - With relocated stormwater and sewer, 79 trees will now be removed and replaced by 83 focussed primarily within the Talavera Rd setback
- **Visual Amenity:**
  - Further articulation including horizontal screening, pre-cast panelling to create a clear delineation between the building and rooftop.
  - Rear façade was not amended as intent of design was to provide a “one Campus” facility with existing facility

<u>Discussed on following slides</u>

- **Existing stormwater pipe/easement**
- **Flooding**
- **Noise**
- **Air Quality**
- **Hazards**
- **Ryde LEP Incentive Provisions**
- **IPC Questions**

Stormwater Easement

- Amended application initially did not specify payment arrangements for the relocation and construction of the stormwater pipe
- To resolve the impasse, the Applicant agreed it would build it, at no cost to Council
- The Applicant, Council and the site owner have since entered into a formal deed of agreement covering the relocation works, including timing of the relocation, decommissioning and construction of the data centre
- Council has provided recommended conditions of consent to include in any instrument for the development. Relevant conditions have been incorporated into the recommended instrument

Noise & Vibration - Construction

- **Applicant's Assessment:**
  - Staged construction process over 21 months
    - Noisiest Activities in initial earthworks and piling phase of 6 months
    - Noise management levels (NMLs) achieved for residential receivers
    - Excelsia College will experience elevated noise levels by up to 6 dB at times
  - Noise models represent worst-case scenario
  - No receiver is predicted to be highly noise-affected
  - Extended hours of construction sought
- **Recommended conditions:**
  - Construction noise and vibration management plan (CNVMP) with consultation with Excelsia College
  - Hours of construction consistent with recommendations of EPA's ICNG

Noise & Vibration - Operational

- **Operational noise sources**
  - cooling system (AHUs, chillers, cooling towers, water pumps, etc)
  - back-up power system (diesel generators)
  - vehicle movements to and from the site and manoeuvring around the main data centre building
- **Applicant's assessment:**
  - Back-up generators likely to only be required to operate for a maximum of 8.2 hours annually
  - Development would comply with the relevant noise criteria at all surrounding sensitive receivers during typical day-to-day operations
- EPA and Council satisfied with operational noise assessment
- **Recommended conditions:**
  - Restrictions on timing of back-up generator testing (Mon-Fri 7am-6pm)
  - Operational noise limits at residential receivers and compliance points
  - Noise Verification Report within three months of commencement of full operation

Air Quality

- **Applicant's Assessment:**
  - Conservative modelling of two realistic operating scenarios:
    - ‘typical operations’ scenario – five back-up generators being tested concurrently for 60 min/ day
    - ‘worst case’ scenario – all 37 back-up generators (16 existing, 21 proposed) operating concurrently during a power outage event (e.g. during severe weather events and/or planned works by electricity distributor)
- Typical operations - site would not result in adverse air quality impacts for surrounding sensitive receivers
- Power outage - exceedances of particulates and NOx, however, very conservative, and likelihood of occurrence very small.

- **Recommended conditions:**
  - Construction Environmental Management Plan (CEMP)
  - Back-up generator testing restrictions
  - Power Outage Notification Protocol to notify neighbours when the back-up generator system is operating
  - Incident Report when back-up generator system is used for at least 30 mins
  - Requirement to retrofit additional air pollution emission controls to the back-up generator system if power outage events become more frequent in the future

Hazards and Risk

The Department's Hazard and Risk specialist reviewed the proposal, including the use of diesel fuel and lithium-iron batteries.
Fire and Rescue NSW were also consulted as part of the assessment.

Diesel Storage – 676,600 L (572 t)

- Diesel is a combustible liquid (not flammable) and is not subject to the risk screening provisions of Chapter 3 of the Resilience and Hazard SEPP. Any fire risks can be managed by the recommended conditions:
  - Condition B16(c) - which requires the project to comply with Australian Standards - *1940 The storage and handling of flammable and combustible liquids.*
  - Condition B17(d)(iii) – consider fuel storage as part of a Fire Safety Study (FSS), to be approved by FRNSW and Planning Secretary, prior to construction

Lithium Ion Battery – 316,800 kg (317 t)

- Class 9 DG and is not subject to screening under Chapter 3 of Resilience and Hazard SEPP
- Department's Hazard and Risk specialist liaise regularly with FRNSW, SafeWork and industry stakeholders on lithium-ion batteries
- FRNSW indicate lithium battery charging could pose special fire hazards. However, there are Australian and International Standards to manage risks in a Data Centre setting. As such, fire and hazards can be managed by the recommended conditions:
  - Condition B17 – detailed FSS in accordance with the Department's HIPAP Fire Guidelines, AS's and International Standards and to satisfaction of FRNSW and Department
  - Condition B19 – prepare and implement an Emergency Plan in accordance with HIPAP Guidelines and emergency service requirements

Flooding

- **Flooding**
  - Chief Engineer worked closely with the Applicant and Council to agree on modelling methodology following the amended application and new, larger 2,100 mm stormwater pipe
  - Applicant's modelling demonstrated the increase in pipe flow capacity from the larger pipe would result in substantial decreases in flood depths experienced at adjacent properties during the 20% AEP, 5% AEP and 1% AEP events
  - The Department's Biodiversity and Conservation Division satisfied
  - The Department's assessment found the amended development was unlikely to have significant adverse flood impact on the subject site, adjacent properties or the Talavera Road corridor and would not adversely impact on the site's function as an overland flow path
  - Council did not raise any further issues

- **Recommended conditions:**
  - Flood Emergency Response Management Plan (FERMP)
  - Finished floor levels 1% AEP + 300 mm freeboard

Ryde LEP Incentive Provisions

- Clause 6.9 of the Ryde LEP bonus incentives to commercial development in the Macquarie Park Corridor
  - building height (up to 45 m) and floor space ratio (FSR) (up to 2:1)
- To access, consent authority is to be satisfied
  - adequate provision for recreation areas
  - access network that provides suitable connectivity within the precinct
- Applicant proposing building height to 45 m and FSR 1.02:1
- Development consistent as:
  (a) the site is not impacted by any future precinct roads or parks
  (b) the existing public domain located along the Talavera Road was recently upgraded as part of a 'works in kind agreement' under LDA2018/0322
  (c) landscaping provides a suitable transition between the eastern/southern boundaries and adjacent precinct roads (Road 1 and Road 17, both yet to be constructed).

IPC Questions

- Heritage
  - Extensive clearing and construction of site over last 50 years, no recorded Aboriginal cultural sites, no RAPs provided specific comments on significance. Condition for an unexpected finds
- Section 73
  - Applicant provides copy of certificate to the certifier to obtain the OC
- Other Approvals/ Strategic Context
  - LEC approval permitted two stages of campus expansion. Applicant only acted on Stage 1. This DA replaces Stage 2. Applicant not seeking to amend LEC consent as part of this application
  - Macquarie Park Place Strategy has gone on public exhibition in November 2023. Stage 1 does not include this site.
- Traffic and Parking
  - Low traffic generation when compared with warehousing or commercial development. Car parking aligns with LEC approval of 71 spaces.
- Contributions
  - Work-in kind agreement with Council in lieu of Stage 2 payment. As this DA replaces Stage 2, no further contributions are required.

Recommendations and Conclusion

- Strict conditions in consultation with agencies and Council:
  - Monitoring of impacts throughout construction and operation
  - Operational noise limits including restricted hours of back-up generator testing
  - Verification of predictions for operational noise
  - Management plans – to ensure effective management of issues
  - Requirements to report on use of back-up generators and protocols to keep community informed
  - Requirement to retrofit additional air pollution emission controls to the back-up generator system if power outage events become more frequent in the future to mitigate potential future human health and environmental impacts
- Construction staging will be managed to ensure the new 2,100 mm pipe and relocation of the sewer main is completed before decommissioning of the existing pipe and construction of the main building