ARUP

EIS

Project Echidna

Resilience and Hazards SEPP Screening

Reference: SSD-47320208

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Executive Summary

The purpose of this report is to address the relevant Secretary's Environmental Assessment Requirements (SEARs) for Hazards and Risk for the Proposal at 10 Eastern Creek Drive, Eastern Creek NSW ("the Site"). Specifically, this report contains a preliminary risk screening in accordance with the *State Environmental Planning Policy (Resilience and Hazards)* (Resilience and Hazards SEPP). The scope for this screening covers the dangerous goods stored at the Site; including Building 1, Building 1A, The Proposal and the substation.

Development Application (DA) consent has been provided for Building 1 and Building 1A under the Resilience and Hazards SEPP process. As the development of the Site continues, the entirety of the Site's dangerous goods is assessed in this report.

Of the dangerous goods stored at the Site, only the valve regulated lead acid (VRLA) batteries meet the criteria for screening in the Resilience and Hazards SEPP process, as they are classified as Class 8, under the *Australian Dangerous Goods Code* (ADGC). Across the Site, there are 29,310 kg of VRLA batteries. The screening threshold in which a Preliminary Hazard Analysis (PHA) would be required for Class 8 materials is 50 tonnes.

The transportation frequency threshold that would trigger a route evaluation study is more than 30 vehicle movements per week above 5 tonnes for Class 8 materials and more than 60 vehicle movements per week for Class 9 materials. At peak times for both classes (VRLA and lithium-ion batteries), the maximum number of deliveries is approximately 5 per week[1].

The outcome of this assessment concludes that the Site is not a potentially hazardous industry and therefore a PHA is not required as the quantity and transportation thresholds have not been exceeded.

In addition to the requirements of the Resilience and Hazards SEPP, the legislative requirements of the *Work Health and Safety Regulation* (WHS Regulation) and the *Protection of the Environment Operations Act 1997* (POEO Act 1997) have been assessed. The following conclusions were made:

- The manifest quantity thresholds for diesel as set out by Schedule 11 of the WHS Regulation are exceeded. A manifest of all Schedule 11 chemicals must be prepared.
- The placard quantity thresholds for diesel as set out by Schedule 11 of the WHS Regulation are exceeded. Placards in accordance with Schedule 13 of the WHS Regulations will be required to be displayed.
- The criteria for an environment protection licence for chemical and petroleum product storage under the POEO Act 1997 has not been exceeded and so an environment protection licence is not required for chemical storage.

This report details design and management measures to minimise and manage the residual risk associated with the diesel and battery storages that are part of the proposed development only. Building 1 and Building 1A are not included as DA consent has already been obtained, and the substation development will be assessed in a future application.

[1] Note, this is for The Proposal only

Glossary

Abbreviation	Meaning
ADGC	Australian Code for the Transport of Dangerous Goods by Road & Rail
AS	Australian Standard
DA	Development Application
DG	Dangerous Good
EPA	Environment Protection Agency
FRL	Fire Resistance Level
LEL	Lower Explosive Limit
PHA	Preliminary Hazard Analysis
POEO Act 1997	Protection of the Environment Operations Act 1997
SDS	Safety Data Sheet
SEARs	Secretary's Environmental Application Requirements
SEPP	State Environmental Planning Policy
SFAIRP	So Far as is Reasonably Practicable
SSD	State Significant Development
VRLA Battery	Valve Regulated Lead Acid Battery
WHS	Work Health and Safety

1. Introduction

1.1 Purpose of the Resilience and Hazards SEPP Screening Report

This report has been prepared to support State Significant Development Application (SSD-47320208). The purpose of this report is to address the relevant Secretary's Environmental Assessment Requirements (SEARs) requirements for Hazards and Risk. Specifically, this report assesses the development against the *State Environmental Planning Policy (Resilience and Hazards)* (Resilience and Hazards SEPP) to determine if a development is a potentially hazardous industry due to the quantity of dangerous goods stored on site and therefore if a preliminary hazard analysis (PHA) is required as part of the development application documentation.

1.2 Development Overview

Arup on behalf of the Proponent is seeking development consent to construct a data centre (the Proposal) at 10 Eastern Creek Drive, Eastern Creek NSW, legally described as Lot 4001 DP 1243178 (the Site). The Proposal involves the construction of a two-storey data centre comprising of data halls, mechanical and electrical equipment rooms, offices, other ancillary support spaces, and external/rooftop mechanical and electrical equipment.

The Site is situated within the Blacktown Local Government Area (LGA) on the corner of Eastern Creek Drive and Old Wallgrove Road. Building 1 is a two-storey data centre in the vicinity of the Proposal and broadly similar in nature, which has already been approved under the DA SPP-19-00013 and is currently under construction. Building 1A is a smaller data centre building nearby, also approved under an amendment to the DA SPP-19-00013, and is expected to be constructed prior to the Proposal.

The Proposal's site coverage is approximately 9,225 square metres. The design of the Data Centre is based on the end-client's reference design as well as applicable Australian Standards and will deliver capacity for approximately 35.2 MW of IT equipment. The two level facility will reach a building height of approximately 25 m including all significant plant and rooftop equipment. The facility will include two levels of data hall space and supporting plantrooms, and supporting administrative spaces incorporating secure entry facilities, loading dock, storage, staff offices, common areas and amenities.

Utility power will be delivered via a dedicated on-site electricity substation to the west of the Proposal (subject to a separate development application), with emergency backup power provided by a combination of lithium-ion battery systems and standby generators. The back-up generators will occupy an external equipment yard to the west of the main building, and some mechanical equipment will be located at roof level. Cooling will be delivered by highly efficient fresh air free-cooling systems in the Winter and evaporative cooling in the Summer to ensure energy consumption is minimised as far as practical.

Landscaped areas are proposed where mature local trees will be used to improve aesthetics and amenity for local businesses.

On-site car parking spaces will be provided for staff and visitors, including disabled and electric vehicle parking.

Figure 1 shows the Site in context with surrounding land users. Figure 2 shows a layout drawing of the Site.

Figure 1: Site context (drawing no. SSDA-50)

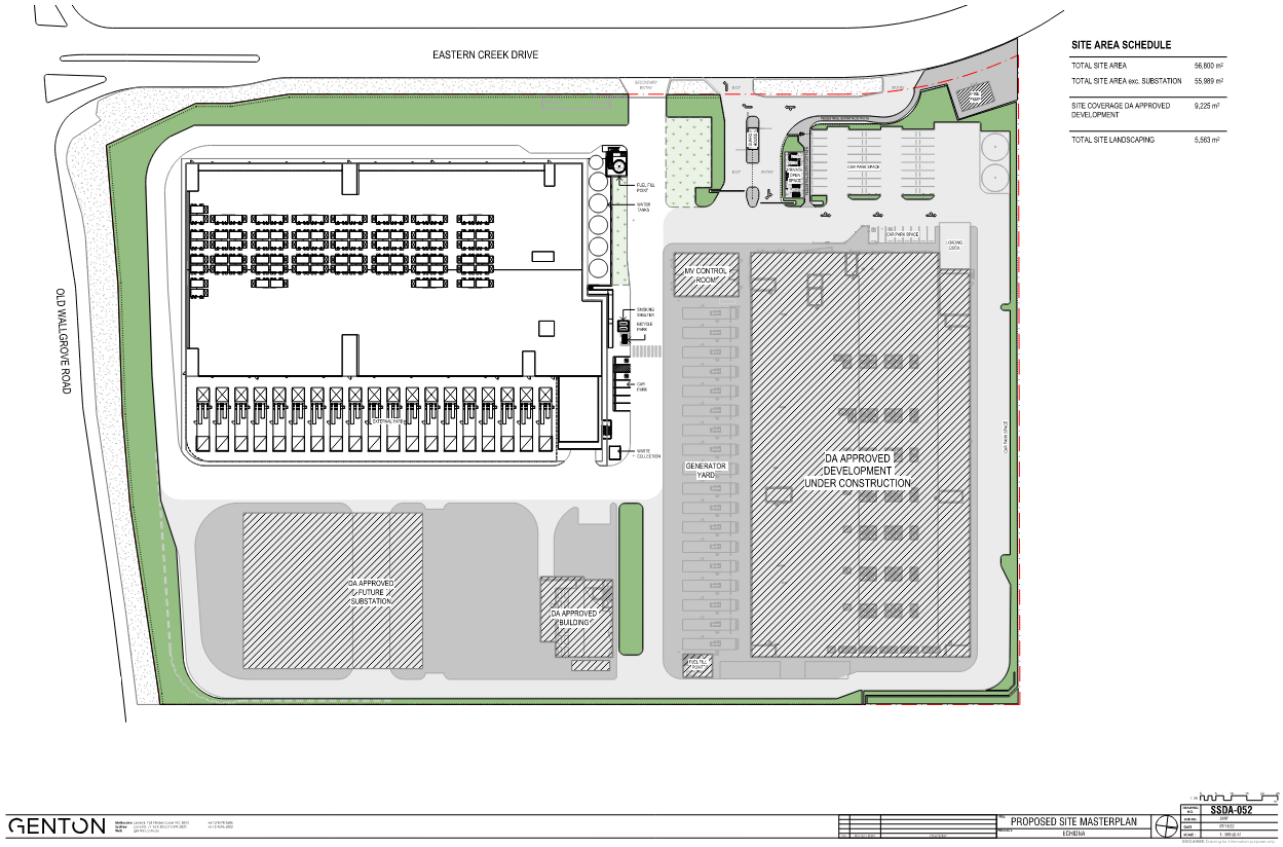

Figure 2: Site figure (drawing no. SSDA-052 in Appendix A)

1.3 Relevant SEARs requirements

Table 1 identifies the SEARs requirements which are relevant to this technical assessment.

Table 1: SEARS requirements for Hazards and Risks

SEARs relevant to this technical report	Where addressed in this technical report
Where there are dangerous goods and hazardous materials associated with the development provide a preliminary risk screening in accordance with Chapter 3 of SEPP (Resilience and Hazards) 2021. Where required by SEPP (Resilience and Hazards) 2021, provide a Preliminary Hazard Analysis prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis*. If the development is adjacent to or on land in a pipeline corridor, report on consultation outcomes with the operator of the pipeline and prepare a hazard analysis.	This report forms the preliminary risk screening. Section 4 demonstrates that the development is not potentially hazardous.

1.4 Other Appliable Legislative Requirements

This report, in addition to assessing the Site against Resilience and Hazards SEPP, also assesses the applicability of the Work Health and Safety Regulation 2017 (WHS Regulation) and the Protection of the Environment Operations Act 1997 (POEO Act 1997) for the entire site. This includes Building 1, Building 1A and the future substation.

2. Policy and Planning Context

2.1 Applicable Legislation and Guidance Material

The following legislation, regulations and policies form the basis of this assessment:

- *State Environmental Planning Policy (Resilience and Hazards) 2021*
- *Applying SEPP 33* Guidelines
- Part 7.1 of the *Work Health and Safety Regulation 2017*
- *Protection of Environment Operations Act 1997*
- Australian Standard (AS) 1940-2017: *The storage and handling of flammable and combustible liquids*

2.2 Resilience and Hazards SEPP

The New South Wales *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP) commenced on 1 March 2022 [1]. The Resilience and Hazards SEPP consolidates the following SEPPs, which were withdrawn on the same day:

1. SEPP (Coastal Management) 2018 (Coastal Management SEPP)
2. SEPP 33 – Hazards and Offensive Development (SEPP 33)
3. SEPP 55 – Remediation of Land (SEPP 55)

SEPP 33 was previously used as the basis for assessing whether a development fell under the policy's definition of "potentially hazardous industry" or "potentially offensive industry".

The consolidation of the three previous SEPPs into the new Resilience and Hazards SEPP is part of the NSW Government's SEPP consolidation project, which is aimed at reducing the complexity of the NSW planning system; 45 previous SEPPs have been consolidated into 11 new SEPPs.

No policy changes have been made in the Resilience and Hazards SEPP; all changes are administrative. The same screening process used to assess whether a development is "potentially hazardous" or "potentially offensive" is applicable. Thus, the Hazardous and Offensive Development Application Guidelines *Applying SEPP 33* (2011) [2] remains relevant. *Applying SEPP 33* outlines the screening process used to assess whether the Resilience and Hazards SEPP applies (in the context of potentially hazardous or potentially offensive industry).

Any references to SEPP 33, particularly in extracts from *Applying SEPP 33*, should be taken as references to the Resilience and Hazards SEPP.

3. Methodology

3.1 The Resilience and Hazards SEPP Study Area

The preliminary risk screening covers the entire Site as illustrated in Figure 1. This includes Building 1, Building 1A, the Proposal and the future substation.

DA consent has already been provided for Building 1 and Building 1A under the Resilience and Hazards SEPP process. However, as development of the Site progresses, the entirety of the Site needs to be assessed each time to determine the extent of the cumulative impact of incremental changes.

The following DGs are stored across the Site; this includes approvals under previous DA consents (Building 1 and Building 1A) and the future substation.

Table 2: Total DG quantities across the Site

Substance	UN Number	DG Class	Quantity
Building 1			
Lithium-ion batteries	3480/3481	9	144,818 kg
Diesel	1202	N/A – not a DG but it is a C1 combustible liquid	328 kL
VRLA batteries	2800	8 PGIII	12,128 kg
Building 1A			
Lithium-ion batteries	3480/3481	9	12,315 kg
Diesel	1202	N/A – not a DG but it is a C1 combustible liquid	9.5 kL
VRLA batteries	2800	8 PGIII	527 kg
The Proposed Development			
Lithium-ion batteries	3480/3481	9	139,542 kg
Diesel	1202	N/A – not a DG but it is a C1 combustible liquid	388.1 kL[Note 1]
VRLA batteries	2800	8 PGIII	14,542 kg
Substation			
VRLA batteries	2800	8 PGIII	2,113 kg
Transformer oil	-	C2	45 kL

Note 1: Total pipework conservatively estimated to be 200 m, assuming DN100 pipes used throughout, the estimated volume of diesel within the pipework is 1.57 kL

3.2 The Resilience and Hazards SEPP Screening Process

Applying SEPP 33 describes the process to be followed when assessing whether a development application is to be considered potentially hazardous. Figure 1 of *Applying SEPP 33* (The SEPP 33 Process) is reproduced below in Figure 3.

Figure 1: The SEPP 33 Process

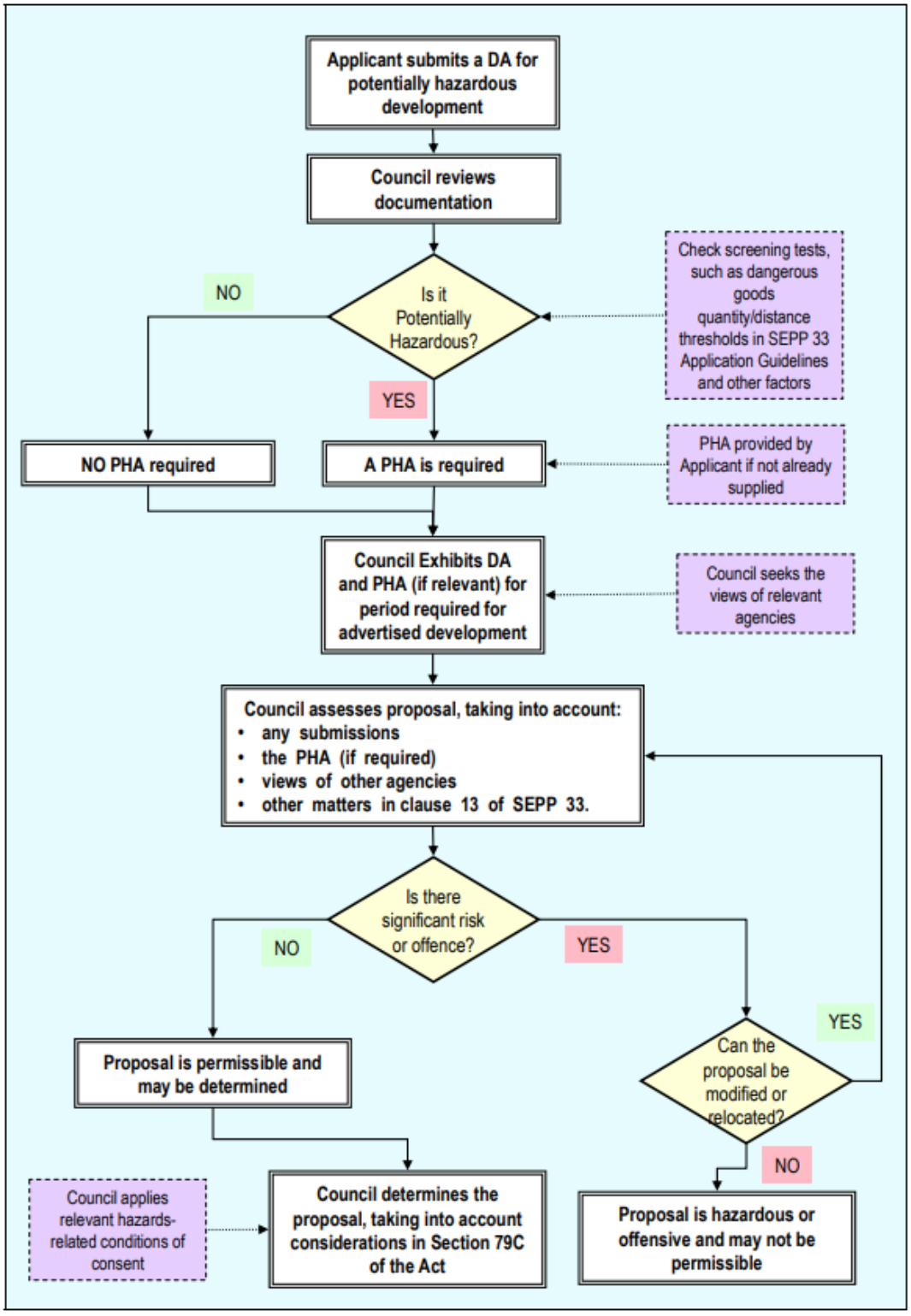

Figure 3: The Resilience and Hazards SEPP Process (extract from *Applying SEPP 33* [2])

The screening method used to determine whether a development is potentially hazardous varies based on the class of dangerous good being assessed. Table 3 lists the table and figure references in *Applying SEPP 33* for the respective screening methods for each class of dangerous good.

Table 3: Screening Method References in *Applying SEPP 33* [2]

Class	Description	Method to Assess Quantity (*Applying SEPP 33* references)	Method to Assess Transportation (*Applying SEPP 33* references)
1.1	Explosives – substances and articles which have a mass explosion hazard	Figure 5 (if > 100 kg)	Table 2
1.2	Explosives – substances and articles which have a projection hazard but not a mass explosion hazard	Table 3	Table 2
1.3	Explosives – substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both but not a mass explosion hazard	Table 3	Table 2
2.1	Flammable gases - pressurised (excluding LPG)	Figure 6 (if > 100 kg)	Table 2
2.1	Flammable gases - liquefied (pressure) (excluding LPG)	Figure 7 (if > 500 kg)	Table 2
2.1	Flammable gases - LPG (above and below ground)	Table 3	Table 2
2.3	Toxic gases	Table 3	Table 2
3PGI	Flammable liquids	Figure 8 (if > 2 tonne)	Table 2
3PGII	Flammable liquids	Figure 9 (if > 5 tonne)	Table 2
3PGIII	Flammable liquids	Figure 9 (if > 5 tonne)	Table 2
4	Flammable solids	Table 3	Table 2
5	Oxidisers, organic peroxides	Table 3	Table 2
6	Toxic substances	Table 3	Table 2
7	Radioactive material	Table 3	Table 2
8	Corrosive substances	Table 3	Table 2

Classes 1.4, 1.5, 1.6, 2.2 and 9 are excluded from the risk screening as they are considered to not be potentially hazardous with respect to off-site risk [2]. Combustible liquids such as diesel are not considered dangerous goods and are also excluded.

3.3 Other Legislation & Guidance Material

This section outlines the relevant requirements needed to satisfy the Resilience and Hazards SEPP.

The hazards associated with the materials being stored and used across the entire Site must still be managed appropriately, regardless of the outcome of the Resilience and Hazards SEPP screening. Recommendations are provided in Sections 5, 6 and 7 of this report.

3.3.1 Hazardous Goods Storage Standards

This current SSD submission applies to the Proposal only. DA consent has already been obtained for Building 1 and Building 1A. Therefore, when determining compliance and subsequent recommendations against relevant Australian Standards, only this Proposal has been considered.

The storage locations and quantities of all dangerous goods and hazardous materials such as standby generators, diesel fuel storage tanks, lithium-ion and VRLA batteries have been detailed in Section 5 below. The potential risks that may arise as a result of the storage of these hazardous materials have also been addressed to mitigate these risks so far as is reasonably practicable (SFAIRP).

3.3.2 Work Health and Safety Regulation (Section 7.1)

Part 7.1 of the *Work Health and Safety Regulation 2017* (WHS Regulation) is applicable to the use, handling and storage of hazardous chemicals at a workplace. Section 6 below sets out the WHS requirements for workplaces that exceed the manifest and placard quantities of hazardous chemicals.

Note, the entire Site has been screened against the WHS Regulations, not only those associated with the Proposal.

3.3.3 Protection of the Environment Operations Act

The *Protection of the Environment Operations Act 1997* (POEO Act 1997) sets out the conditions that would necessitate the issuance of an environment protection licence. Section 7 below assesses whether any of these conditions are met and therefore if the Site would require an environment protection licence.

4. Resilience and Hazards SEPP Screening Results

4.1 Resilience and Hazards SEPP Screening: Storage Threshold

Table 2 shows the total storage of hazardous substances across the entire Site, including Building 1, Building 1A, The Proposal and the future substation. DA consent has been provided for Building 1 and Building 1A under the Resilience and Hazards SEPP process. As the development of the Site continues, the entirety of the Site's DGs needs to be assessed.

The substances to be stored onsite are listed in Table 4 below. This table shows the UN number, DG class, and approximate quantities.

Table 4: Applicable *Applying SEPP* 33 dangerous goods in Building 1, Building 1A, The Proposal and substation

Substance	UN Number	DG Class	Quantity	Threshold	Threshold Exceeded?
VRLA	2800	8 PGIII	29,310 kg	50 tonnes	No

Class 9 DGs and C1 & C2 combustible liquids are excluded from the risk screening [2].

The storage thresholds set out in Table 1 of *Applying SEPP 33* **are not exceeded**. While the development is not considered "potentially hazardous" according to *Applying SEPP 33* criteria, the DG stores must be designed and managed appropriately, primarily though relevant Australian Standards, as outlined in Section 5.

4.2 Resilience and Hazards SEPP Screening: Transportation Threshold

As the only dangerous goods as classified by the ADGC is the lithium-ion batteries and VRLA batteries, the transportation screening has been carried out only for the batteries. The batteries will be delivered and replaced for each phase. During commissioning on average, the vehicle movement for these items is once per week and five per week for peak times. Additionally, the typical replacement is once every 5 to 15 years for lithium-ion batteries and 7 years for VRLA batteries.

Table 5: Transportation of dangerous goods

DG Class	Peak Weekly Movements Expected	Weekly Movements Threshold	Threshold Exceeded
8	5	>30	No
9	5	>60	No

Table 5 shows that transportation thresholds set out in Table 2 of *Applying SEPP 33* **are not exceeded**.

4.3 Resilience and Hazards SEPP Screening: Conclusion

As neither the storage thresholds nor the transportation thresholds are exceeded, the development is not considered "potentially hazardous" with respect to the Resilience and Hazards SEPP.

While the development is not considered "potentially hazardous", the DG stores must be designed and managed appropriately, primarily though relevant Australian Standards, as outlined in Section 5.

4.4 Other Hazardous Materials

As diesel is classified as a C1 combustible liquid (having a flash point greater than 60 °C but no greater than 93 °C) it is not included in the *Applying SEPP 33* screening process. However, due to the large quantity of diesel stored within The Proposal, it was considered in the transportation frequency risk.

Diesel is used in the standby generators when back-up power is required, and testing undertaken. Additionally, diesel refuelling will typically occur every six months during operation. Therefore, it was concluded that the diesel transportation is not considered a significant risk.

4.5 Pipelines

A Dial Before You Dig enquiry found that there are no gas pipelines in the vicinity of the Site.

5. Hazardous Goods Storage

5.1 Back-up Generators & Diesel Storage

Back-up generators will be installed in external packaged enclosures. Figure 4 below shows the arrangement of generators and proposed locations of generators outside the data hall building of The Proposal.

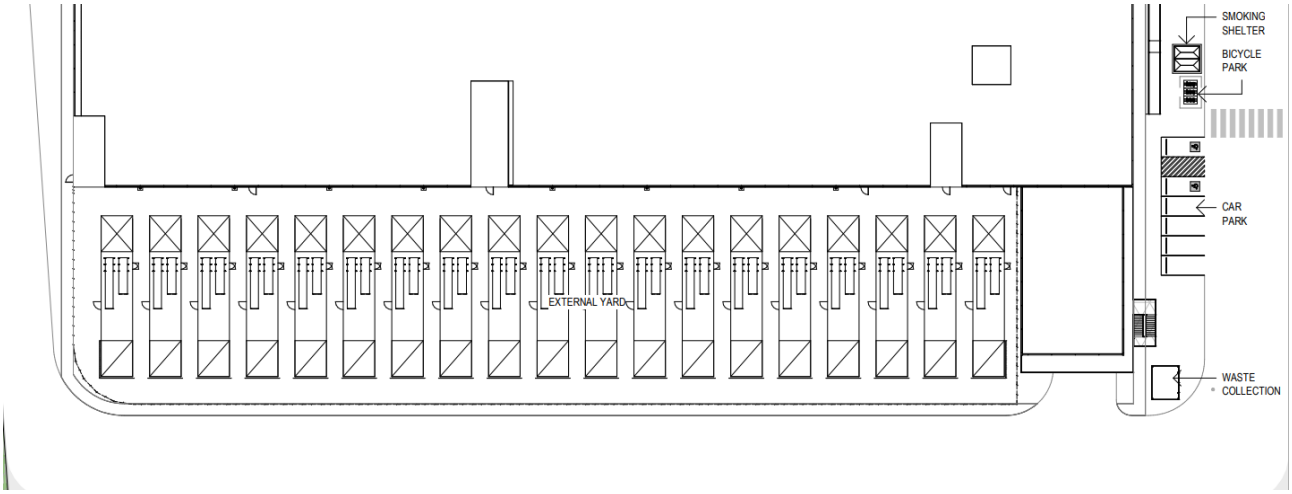

Figure 4: Indicative generator location

The main diesel storage for The Proposal comprises 19 above-ground belly tanks, each located beneath the corresponding generator enclosure to the east of the data centre building. Each belly tank will contain up to approximately 18.24 kL of fuel, with a sub-total of up to 346.56 kL of fuel. Additionally, there is an aboveground tank located at the fuel delivery/filling point, outside the northwest corner of the building. This tank will have a nominal capacity 40 kL. Combining all the tanks and with an allowance for pipework (estimated to total 1.57 kL, see Note 1 in Table 2), totalling approximately 388.1 kL of diesel stored onsite. Figure 5 below shows the proposed locations of diesel fuel storage tanks (highlighted in red).

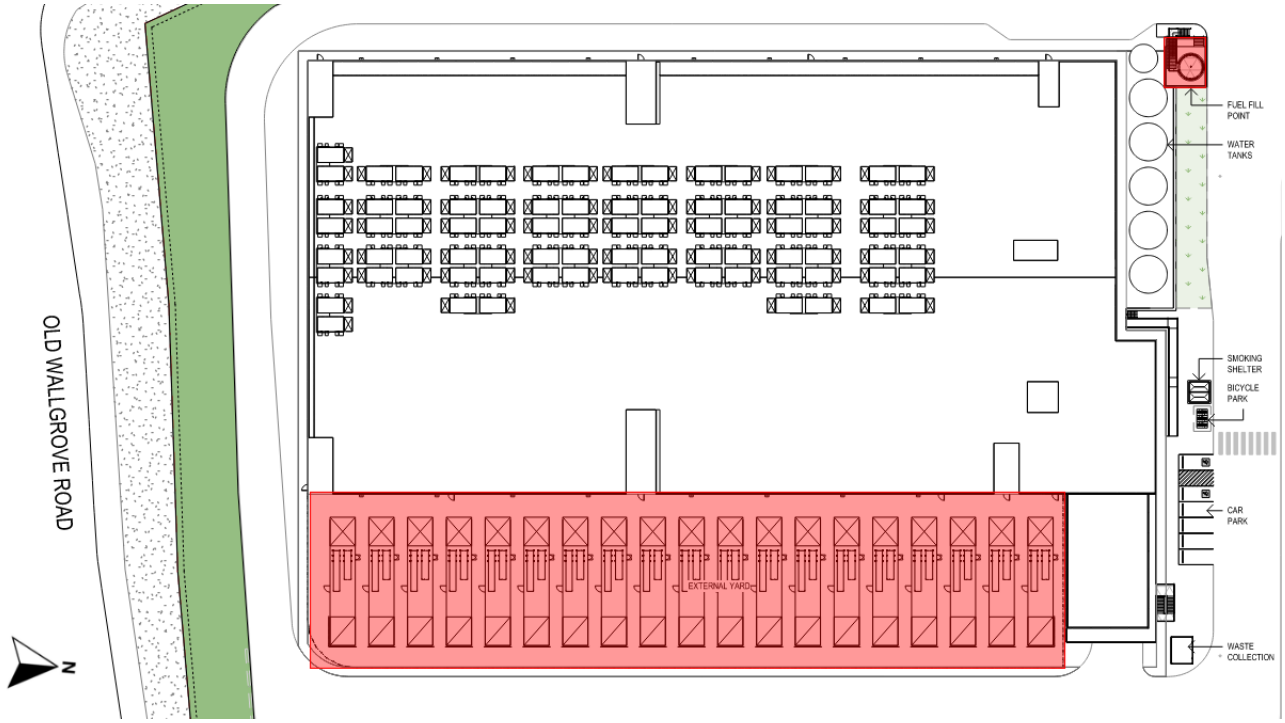

Figure 5: Indicative location of the diesel storage tanks (highlighted in red)

While diesel is not classified as a dangerous good by the ADGC, it is a Class C1 combustible liquid. If there is a pre-existing fire, then diesel will be an additional source of fuel for that fire.

In order to mitigate this potential loss of control, the diesel storage tanks are to comply with AS 1940-2017: *The storage and handling of flammable and combustible liquids* (AS 1940).

Table 6: AS1940 storage compliance

AS1940 Clause	Requirement	Compliance?
5.7.2	A tank or tanks shall be located so that the following minimum separation distances are maintained: - To security fences and on-site protected places, Table 5.3 - To a protected place beyond the site boundary, Table 5.4	Yes Both tank storages (belly tanks and singular 40 kL tank) comply Table 5.3 The required separation distance to the security fence is 7.5 m. The closest belly tank is more than 20 m to the boundary, see Figure 2. The 40 kL tank is approximately 23 m to the boundary. See dwg no. SSDA-052 in Appendix A. The required separation distance from the belly tanks and singular 40 kL tank to office buildings on the same premises is 3.8 m and 5 m, respectively. The belly tanks are 4 m to the closest point of The Proposal. The singular 40 kL tank is 9.7 m to the closest point of The Proposal. See dwg no. SSDA-052 in Appendix A. Both tank storages (belly tanks and singular 40 kL tank) comply Table 5.4 The required separation distance from the belly tanks and singular 40 kL tank to off-site protected places is 3.8 m and 5 m, respectively. Both of these required separation distances are achieved within the site boundary. See dwg no. SSDA-052 in Appendix A.

AS1940 Clause	Requirement	Compliance?
5.7.6 (b) and (c)	The distance between horizontal tanks shall be at least 600 mm Tanks shall not be arranged end-to-end. Tanks may be arranged in parallel (side-by-side)	Yes, the distance between horizontal tanks is 2.25 m and that the tanks are positioned side-to-side. See dwg no. SSDA-052 in Appendix A.
5.8.2 Note, Clause 5.8 does not apply to the 19 belly tanks due to their integral secondary containment	The net capacity of a compound shall be at least 110% of the capacity of the largest tank or 25% of the total capacity of all tanks within the bund whichever is the greater	Yes, the bund will be able to contain 110% of the tank capacity. This will be incorporated in detailed design.
5.8.3 Note, Clause 5.8 does not apply to the 19 belly tanks due to their integral secondary containment	A compound and its associated bund shall comply with the following requirements: - In fire situation, the bund shall retain the structural integrity, which includes any bund wall joints and penetrations. Such joints and penetrations shall include suitable fire resistant fillers in combination with metal waterstops - A bund shall not be higher than 1.5m above interior grade unless means for safe and rapid entry and exit are provided - The location of a bund relative to the closest tank shall be such that the top inside perimeter of the bund is not inside the crest locus limit specified in Figure 5.2, except where it can be demonstrated that a reduced distance would be appropriate due to viscosity or other considerations	Yes, - The bund wall will retain the structural integrity in a fire situation - Stair positioning for safe entry and exit in bund - The top inside perimeter of the bund is not inside the crest locus limit These requirements will be incorporated in the detailed design
5.8.6	A compound shall be drained in accordance with the following requirements: - The drainage provision shall slope away from any tank to a sump which is in turn drained from the lowest level either by gravity or by pumping - The discharge from any sump which could contain combustible liquid shall be through an interceptor, located outside the compound and designed to prevent the discharge of flammable or combustible liquids to any natural watercourse, public sewer or drain	Yes - The diesel storage area to be fitted with a sump at the lowest level and associated submersible pumps fitted - An interceptor is provided outside the diesel storage bund that will cause the sump pump to automatically pump liquid into the oil water interceptor These requirements will be incorporated in the detailed design.
5.8.7	Consideration in the design of the site shall be given to containment of fire water resulting from the management of a site emergency. Figure 5.2 demonstrates the bund location limits.	Yes, - For the 40 kL tank, the top inside perimeter of the bund is not inside the crest locus limit. This will be incorporated in the detailed design.

AS1940 Clause	Requirement	Compliance?
5.9.1 Note, Clause 5.9 only applies to the 19 belly tanks	A tank complying with Clause 5.9 shall be one of the following: - A double-walled tank - A tank having secondary containment and an external, fire rated covering - A tank with an attached or integrated spillage compound	Yes, - The 19 belly tanks are all double walled. Detailed in the end client's generator specification
5.9.3	The following requirements apply in addition to those in Clause 5.9.2: - Primary and secondary containment shall be wholly constructed of steel and shall be designed in accordance with AS 1692 or equivalent Standard - Separation distances as given in Clause 5.7 shall apply.	Yes, compliance with Clause 5.9.2 has been achieved, notably the following: - The maximum individual tank capacity does not exceed 110 kL (belly tanks have a maximum capacity of 18.24 kL each and the singular bunded tank is 40 kL), in compliance with Clause 5.9.2(b) - Regarding impact protection, the generator yard housing the 19 belly tanks is surrounded by fencing and the entrance into the adjacent loading dock is lined with bollards (as confirmed in DWG No. SSDA-100), in compliance with Clause 5.9.2(i) Yes, - Compliance with Clause 5.9.3 has been achieved as the primary and secondary containment is constructed of steel and the separation distances as given in Clause 5.7 is complied with (see above)
11.12 Note: applies to the belly tanks only	Where Class C1 liquid is stored without flammable liquid but with or without Class 2 liquid, the installation shall be provided with: - A hose reel and foam-making equipment complying with Clause 11.5.3, for use where the water supply is adequate; or - Two powder-type extinguisher plus additional sets of fire extinguishers shall be provided for multiple installations, as required. The maximum travel distance to access a fire extinguisher shall not exceed 15 m	These requirements will be incorporated in the detailed design.
11.11.3 Note: applies to 40kL tank only	Any outdoor tank storage shall be provided with hydrant protection when storing < 60 m^3 of C1 combustible liquids in accordance with Table 11.4. Where C1 liquids are stored, at least one powder-type extinguisher shall be provided for a singular tank installation	These requirements will be incorporated in the detailed design.

Due to confidentiality, drawings detailing specific internal details cannot be supplied. Drawing numbers are provided.

5.2 Batteries

5.2.1 Lithium-ion

Lithium-ion batteries will be installed within the data halls interspersed in the data racks. Additional spare and exhausted battery units will be stored within separate dedicated battery rooms. Figure 6 below shows the proposed locations of the lithium-ion batteries in The Proposal

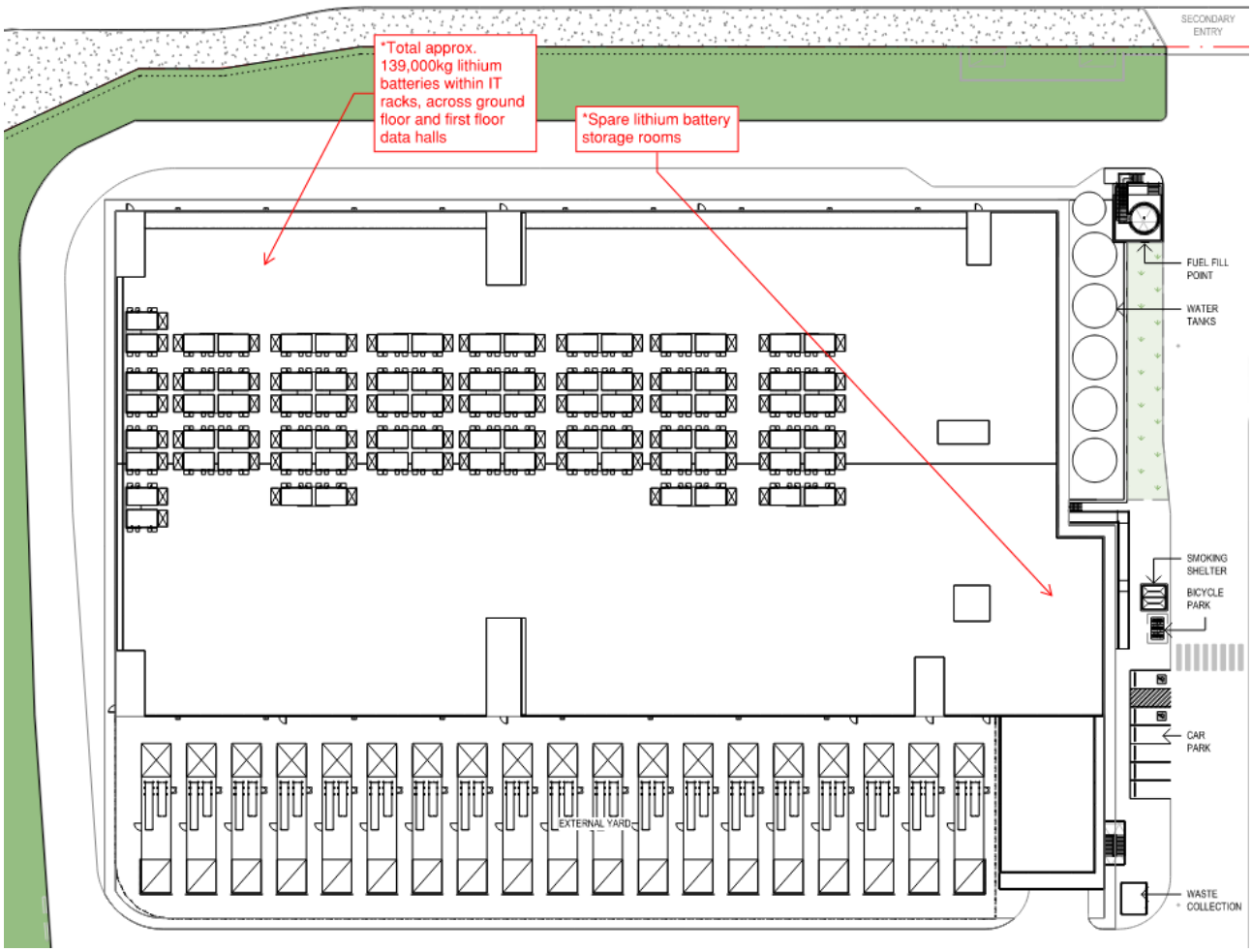

Figure 6: Indicative lithium-ion battery locations

There will be approximately 139,000 kg of lithium-ion batteries installed within the data halls and battery storage rooms onsite. Lithium-ion batteries do have the potential for thermal runaway and the following controls are considered sufficient to mitigate this risk SFAIRP. Each data hall and storeroom storing battery standby units is to be provided with the following measures:

- A fire resistance level (FRL) of 120/120/120 separating the rooms with lithium-ion batteries from the rest of the building.
- Adequate ventilation and sensors to ensure the combustible gas generated from a battery fire does not exceed the lower explosive limit (LEL).
- Smoke detection.
- Double knock pre-action sprinkler system.

The inclusion of lithium-ion batteries has been incorporated into the overall Fire Engineering Concept Strategy prepared by Arup, dated 1 August 2022.

5.2.2 VRLA

For The Proposal, see the following Figure 7 for the locations of the VRLA batteries.

Figure 7: VRLA battery locations within The Proposal

VRLA batteries are classified as a Class 8 DG (UN number 2800). These batteries are non-combustible and not considered to be a significant fire risk, according to the SDS for VRLA batteries [3]. The batteries must comply with AS 3780-2008: *The storage and handling of corrosive substances*.

There will be 14,542 kg of VRLA batteries installed throughout the MV switchroom, generator enclosures and within electrical switchrooms.

Each room or enclosure in which these batteries are located is to be provided with the following measures:

- In accordance with AS 3780-2008 Clause 4.4(n), in stores where hydrogen gas may be generated (e.g., where the VRLA batteries are being charged) a hazardous zone may exist, as described in AS/NZS 60079.10.1-2022. In such a case, all electrical equipment in such hazardous zones shall be suitable for use in those zones.
- Ventilation is required within the stores/enclosures to prevent the potential build-up of hydrogen gas released from stationary VRLA. In accordance with Clause 2.1.5 of AS 3011.2-2019: *Electrical installations – Secondary batteries installed in buildings Part 2: Sealed cells*, the average hydrogen concentration by volume in a battery room or enclosure shall be maintained below 2% v/v. Additionally, an airflow sensor shall be incorporated to initiate an alarm if the ventilation fan becomes inoperative.
- Distribution boards, rotary machinery other than exhaust fans, and other equipment not directly part of the battery and charging facilities shall be located outside the battery room, in accordance with Clause 2.2.1 of AS 3011-2.2019. Therefore, when storing these batteries, they must be within a self-contained room external to the generators and switchrooms that are not directly part of the battery systems.

6. Work Health and Safety Regulation

Part 7.1 of the WHS Regulation sets out the requirements for the use, handling, and storage of hazardous chemicals at a workplace. Specifically, this report assesses requirements for exceeding manifest and placard quantities found in Division 3 and 4 of Part 7.1, respectively.

Regulation 328(4) sets out the exclusions from Part 7.1 for hazardous chemicals in certain circumstances. Regulation 328(4)(a) excludes "hazardous chemicals in batteries when incorporated in plant". As such, the use of lithium-ion and VRLA batteries at the facility is considered to be excluded from the requirements of Part 7.1.

It should be noted that Regulation 328(4)(b) excludes "fuel, oils or coolants in a container fitted to a vehicle, vessel, aircraft, mobile plant, appliance or other device, if the fuel, oil or coolant is intended for use in the operation of the device". This would also exclude diesel stored in tanks with connecting pipework to the generators from the requirements of Part 7.1. However, due to the large total quantity of diesel present at the facility, it is considered best practice to follow the requirements of Part 7.1. Recommendations have therefore been made for the storage of diesel in line with Part 7.1 of the WHS Regulation.

The assessment against the WHS Regulation applies to the total quantity of hazardous chemicals on site, not only The Proposal.

6.1 Manifest quantities

Regulation 347 sets out the requirements for maintaining a manifest of hazardous chemicals if they exceed the manifest quantities. Regulation 348 sets out the requirements for the notification of the regulator if manifest quantities are exceeded. Regulation 361 also requires and emergency plan to be prepared if manifest quantities are exceeded.

The maximum allowable quantity before a manifest is required for diesel (category 4 flammable liquid[2]) as per Schedule 11 of the WHS Regulation is 100 000 L (100 kL). The approximately 725.6 kL of diesel either currently being stored or proposed to be stored across the entire site (Building 1, Building 1A, The Proposal and the substation) **exceeds the manifest quantity**. As such, the following recommendations have been made:

- A manifest of all Schedule 11 chemicals should be prepared in accordance with Regulation 347 and Schedule 12 of the WHS Regulation.
- The SafeWork NSW should be notified of diesel storage exceeding manifest quantities in accordance with Regulation 348 of the WHS Regulation.
- An emergency plan should be prepared for the Site and provided to the NSW Fire and Rescue as per the requirements of Regulation 361 and Division 4 of Part 3.2 of the WHS Regulation.

6.2 Placard quantities

As the total diesel storage at Building 1, Building 1A, The Proposal and the substation of 725.6 kL exceeds the placard quantity stated in Schedule 11 of the WHS Regulation (10 000 L / 10 kL) the following recommendations have been made:

[2] Note that the WHS Regulation refers to combustible liquids as flammable liquid category 4

- Outer warning placards regarding quantities of diesel stored should be displayed at any entrance where emergency services may enter the workplace in accordance with Regulation 349 and Schedule 13 of the WHS Regulation.
- Placards should be displayed on or near the diesel storage tanks in accordance with Regulation 350 and Schedule 13 of the WHS Regulation.

7. Protection of the Environment Operations Act

The *Protection of the Environment Operations Act 1997* (POEO Act 1997) sets out the scheduled activities for which a licence is required. Table 7 below shows the threshold criteria for chemical storage to be declared a scheduled activity and therefore requiring a licence.

Table 7: Criteria for chemical storage under the POEO Act 1997, Schedule 1 Part 1-9 Chemical Storage

Activity	Criteria
General chemicals storage	Capacity to store more than: 20 t (pressurised gases) 200 t (liquefied gases) or 2000 t (chemicals in any other form)
Petroleum products storage	Capacity to store more than: 200 t (liquefied gases) or 2000 t (chemicals in any other form)

General chemical storage is defined to include all chemical substances classified as dangerous goods by the ADGC.

The assessment against the POEO Act considers the chemical storage on the Building 2 site, comprising Class 8 and Class 9 DGs and combustible petroleum products.

Lithium-ion and VRLA batteries are classified as Class 9 and Class 8 DGs, respectively, by the ADGC; therefore, a licence would be required if more than 2000 t (general chemical storage) of lithium-ion and VRLA is stored onsite. Diesel is classified as a C1 combustible liquid by the ADGC; therefore, a licence would be required if more than 2,000 t (petroleum product storage) of diesel stored onsite.

The Building 2 storage quantities are shown in Table 8.

Table 8: Chemical storage assessement (POEO Act)

Chemical	Quantity (tonnes)
General chemicals storage	
Class 8 (VRLA batteries)	14.5 t
Class 9 (Lithium-ion batteries)	139.5 t
Total general chemicals storage	**154.1 t**
Petroleum products storage	
C1 (diesel)	329.9 t [388.1 kL at 0.85 kg/L]
Total petroleum products storage	**329.9 t**

As the criteria for general chemicals storage and petroleum products storage to be declared a scheduled activity under the POEO Act 1997 have not been met, a licence is not required for chemical storage.

8. Findings and Recommendations

8.1 Resilience and Hazards SEPP Screening

As neither the quantity screening threshold nor the transport screening threshold is exceeded, a preliminary hazard analysis is **not** required. This report therefore satisfies the relevant requirements with respect to the Resilience and Hazards SEPP.

8.2 Other Findings

In addition to the requirements of the Resilience and Hazards SEPP, the legislative requirements of the WHS Regulation and the POEO Act 1997 have been assessed.

- The manifest quantity thresholds for diesel as set out by Schedule 11 of the WHS Regulation are exceeded. A manifest of all Schedule 11 chemicals must be prepared.
- The placard quantity thresholds for diesel as set out by Schedule 11 of the WHS Regulation are exceeded. Placards in accordance with Schedule 13 of the WHS Regulations will be required to be displayed.
- The criteria for an environment protection licence for chemical and petroleum product storage under the POEO Act 1997 has not been exceeded and so an environment protection licence is not required for chemical storage.

8.3 Conclusion

- As confirmed in the Fire Engineering Concept Strategy, each room in the data halls storing lithium-ion battery cabinets will be installed with the following measures:
  - A fire resistance level (FRL) of 120/120/120 separating the rooms with lithium-ion batteries from the rest of the building.
  - Adequate ventilation and sensors to ensure the combustible gas generated from a battery fire does not exceed the lower explosive limit (LEL).
  - Smoke detection.
  - Double knock pre-action sprinkler system.
- The following requirements in accordance with AS1940-2017: *The storage and handling of flammable and combustible liquids* have been implemented as described by Table 6 for the storage of diesel fuel in storage tanks:
  - Both the belly tanks and the singular 40 kL diesel tank comply with the separation distances to the security fence, office buildings and off-site protected places in accordance with Clause 5.7.2.
  - The belly tanks are arranged side-to-side and the separation between each tank is 2.25 m, complying with the 0.6 m specified in Clause 5.7.6 (b) and (c).
  - The 40kL tank bund (100kL) is greater than 110% of the tank capacity as specified in Clause 5.8.2
  - The 19 belly tanks are double walled, therefore complying with Clause 5.9.1
  - All individual tanks do not exceed 110 kL capacity and are protected from impact damage from the loading dock adjacent to the belly tank yard, in compliance with Clause 5.9.3
- The regulator should be notified of diesel storage exceeding manifest quantities in accordance with Regulation 348 of the WHS Regulation.

- Outer warning placards regarding quantities of diesel stored should be displayed at any entrance where emergency services may enter the workplace in accordance with Regulation 349 and Schedule 13 of the WHS Regulation.
- Placards should be displayed on or near the containers of diesel in accordance with Regulation 350 and Schedule 13 of the WHS Regulation.
- An emergency plan should be prepared for the Site and provided to the NSW Fire and Rescue as per the requirements of Regulation 361 of the WHS Regulation.

9. References

[1] NSW Department of Planning and Environment, “Resilience and Hazards SEPP | Fact sheet - March 2022,” March 2022. [Online]. Available: https://www.planning.nsw.gov.au/-/media/Files/DPE/Factsheets-and-faqs/Policy-and-legislation/SEPP-2021/Fact-Sheet---Resilience-and-Hazards-SEPP.pdf?la=en.

[2] NSW Department of Planning, “Applying SEPP 33,” January 2011. [Online]. Available: https://www.planning.nsw.gov.au/~/media/Files/DPE/Guidelines/hazardous-and-offensive-development-application-guidelines-applying-sepp-33-2011-01.ashx?la=en.

[3] “Safety Data Sheet - Valve Regulated, AGM, Gel, Non-Spillable Battery,” [Online]. Available: https://www.centurybatteries.com.au/getattachment/Technical-Support/SDS/SDS-1898-VALVE-REGULATED,-AGM,-GEL,-NON-SPILLABLE-BATTERY.PDF?lang=en-AU. [Accessed 17 August 2022].

[4] Australian Standards, *1940-2017: The storage and handling of flammable and combustible liquids.*.

[5] *Protection of the Environment Operations Act,* 1997.

[6] *Work Health and Safety Regulation,* 2011.

[7] Australian Standards, *AS3780-2008: The storage and handling of corrosive substances.*

[8] Australian Standards, *Electrical installations - Secondary batteries installed in buildings Part 2: Sealed cells.*

A.1 Drawings

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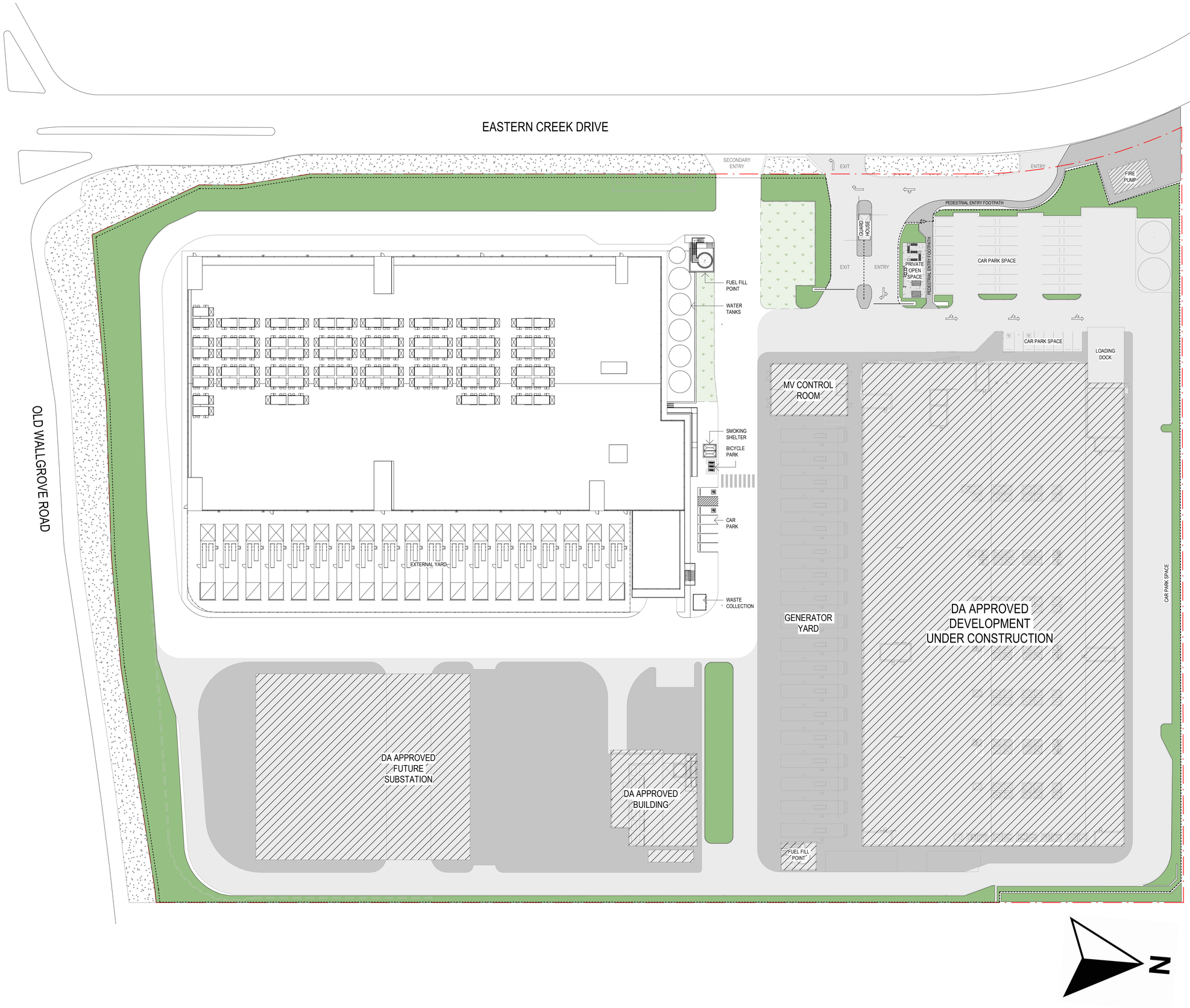
No.	Revision Date	Description

TITLE. SITE LOCATION PLAN
PROJECT. ECHIDNA

DRAWING NO.	SSDA-050
JOB NO.	2207
DATE	07/18/22
SCALE :	NTS @ A1



SITE AREA SCHEDULE

TOTAL SITE AREA	56,800 m^2
TOTAL SITE AREA exc. SUBSTATION	55,989 m^2
SITE COVERAGE DA APPROVED DEVELOPMENT	9,225 m^2
TOTAL SITE LANDSCAPING	5,563 m^2

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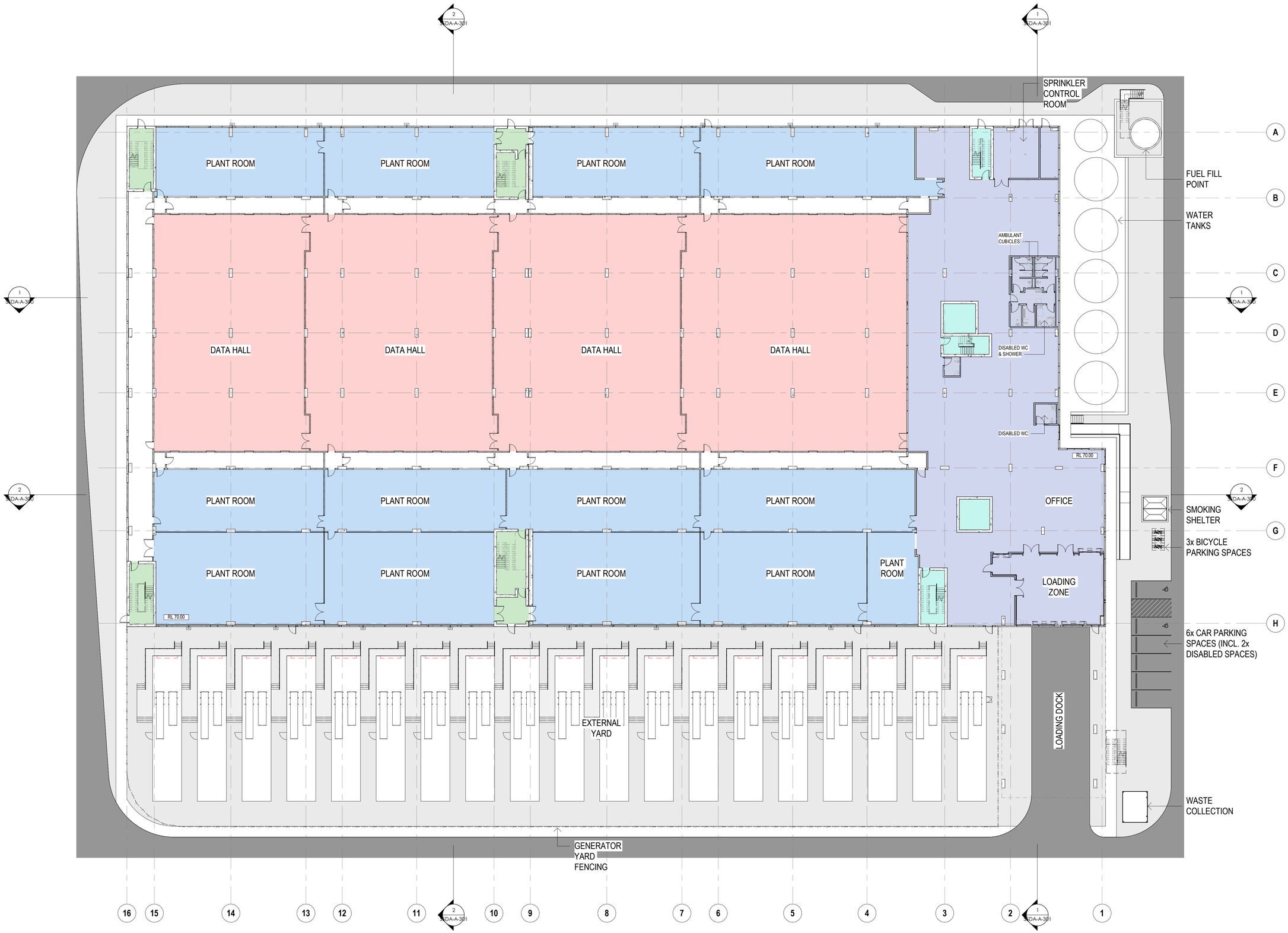
No.	Revision Date	Description

TITLE. PROPOSED SITE MASTERPLAN
PROJECT. ECHIDNA

1 : 500 @ A1 — 0 5 10 15 20 25 m

DRAWING NO.	SSDA-052
JOB NO.	2207
DATE	07/18/22
SCALE :	1 : 500 @ A1



ECHIDNA AREA SCHEDULE

NAME	AREA
GROUND LEVEL	
PLANT AND SERVICES AREAS	3,094 m²
FRONT OF HOUSE AND ADMINISTRATION AREAS	1,374 m²
DATA HALL AREA	3,352 m²
	7,820 m²
CIRCULATION AREA	
VERTICAL CIRCULATION AREA - OFFICE	94 m²
VERTICAL CIRCULATION AREA- - WAREHOUSE	146 m²
CIRCULATION AREA (CORRIDOR)	623 m²
	863 m²

LEGEND

- PLANT AND SERVICES AREAS
- FRONT OF HOUSE AND ADMINISTRATION AREAS
- DATA HALL AREA
- VERTICAL CIRCULATION AREA - OFFICE
- VERTICAL CIRCULATION AREA - WAREHOUSE
- CIRCULATION AREA (CORRIDOR)

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No.	Revision Date	Description
A	18/AUG/2022	SSDA SUBMISSION

TITLE. GROUND FLOOR PLAN
PROJECT. ECHIDNA

1 : 250 0 2.5 5 7.5 10 12.5 m

DRAWING NO.	SSDA-A-100 A
JOB NO.	2207
DATE	18/AUG/2022
SCALE :	1 : 250 @ A1