SMITHFIELD BATTERY ENERGY STORAGE SYSTEM

Water Assessment

31 October 2023

Smithfield Battery Energy Storage System

Environmental Impact Statement

31 October 2023

Our Ref:

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A	27/10/2023	Draft	M.Gostelow	S.Mitchell
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1 INTRODUCTION

1.1 Project overview

Smithfield BESS Pty Ltd (Smithfield BESS), as owned by Iberdrola Australia Limited (Iberdrola) (the Proponent) is seeking development consent for the construction, operation and maintenance of a Battery Energy Storage System (BESS) at the Smithfield Energy Facility (SEF) (Lot 33, DP850596) at 6 Herbert Place, Smithfield NSW 2164 (the Project Site). The BESS will be approximately 72 Megawatt (MW) and would provide up to 260 Megawatt hours (MWh) of battery storage capacity.

The Project is considered to support the NSW Government's electricity strategy for a reliable, affordable and sustainable electricity future that supports a growing economy. BESS facilities, such as the Project, would assist with intermittency risks associated with renewable energy generation in NSW, and is considered a key element of the transformation of the NSW energy sector.

The Project is considered to meet the definition of State Significant Development under Clause 2.6 of the *State Environmental Planning Policy (Planning Systems) 2021*. The Project would be for electricity generating works on land that is permitted with development consent under Clause 2.35 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* and would have a capital investment value greater than $30 million. The Proponent is seeking State Significant Development (SSD) approval for the Project under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project would involve construction and operation of the following:

- A BESS including battery enclosures, inverters, transformers, switch room and control room
- Medium voltage cables between transformers and the existing switchgear building in the northeast corner of the SEF
- Switchgear building upgrades to facilitate connection of the BESS
- Site access to the BESS from Herbert Place
- Utilities to support operation of the BESS
- Stormwater management infrastructure, lighting, fencing and security.

The BESS would operate 24 hours a day, seven days a week.

1.2 Location and context

The Project is located at the Smithfield Energy Facility (SEF) (Lot 33, DP850596) at 6 Herbert Place, Smithfield NSW 2164 (the Project Site). The Project is within the Cumberland Local Government Area (LGA) in Western Sydney, around 30 kilometres west of the Sydney Central Business District (CBD). The Project location is shown in Figure 1.1. An overview of the Project Site is shown in Figure 1.2.

The Project is located within an existing industrial area, part of the Smithfield Recycling and Manufacturing Precinct (SRMP). The Project is bounded to the south, west and east by the Visy Smithfield Recycling Facility (Visy site), and to the north by Kingspan. The Visy site operates a paper and plastics sorting and recycling facility. The Kingspan site includes a large carparking area and a warehouse used for assembly, service and storage of retail and commercial water tanks. The nearest residential receiver is located approximately 400 metres (m) south of the Project Site.

The SEF is owned and operated by Smithfield Power Generation Pty Ltd on land leased from Visy. The SEF has been in operation since 1996, originally designed and operated as a gas Combined Cycle Gas Turbine (CCGT or cogeneration) power plant, supplying both electricity to the NSW electricity grid and heat in the form

of steam to the adjacent Visy Smithfield Recycling Facility. Since 2017, the SEF has operated as a gas peaking power plant supplying electricity to the NSW electricity grid during periods of peak demand and no longer supplies steam to the adjacent Visy Smithfield Recycling Facility. Access to the Project Site is via Herbert Place, a 40 km/hr dual lane local road. Herbert Place is accessed by Cumberland Highway (a state road) from the north and south, and Long Street (a local road) from the west.

1.3 Assessment framework and purpose

The purpose of this Water Assessment is to identify, evaluate and mitigate the expected impacts resulting from the construction and operational stage of the Project on the surrounding water network.

The assessment was prepared in accordance with the requirements of the NSW Department of Planning and Environment (DPE), which are set out in the Secretary's Environmental Assessment Requirements (SEARs) (SSD 59325460) for the Project, issued on 13 July 2023. The SEARs identify matters which must be addressed in the Project Environmental Impact Statement (EIS).

Table 1-1 lists requirements for the Project relevant to this assessment and references where they are addressed in this report or in the EIS.

Table 1-1 SEARs for the assessment of water

Requirement	Section reference
Water	
An assessment of the likely impacts of the development (including flooding) on surface water and groundwater resources and measures proposed to monitor, reduce and mitigate these impacts	Section 4 and Appendix E
Details of water requirements and supply arrangements for construction and operation	Section 3
Description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004)	Section 5.1.2

Table 1-2 lists the water related comments submitted by Cumberland City Council (herein referred to as Council) to the DPE on 11 July 2023 as part of their input to the SEARs (provided as Appendix A). Furthermore, this Water Assessment has been prepared to address both the NSW Environmental Protection Agency and Biodiversity and Conservation input to the SEARs, specifically in relation to water, soil, flooding and site water management aspects.

A consultation meeting was held with Council on 29th of August 2023 to gain a better understanding of their concerns related to the Project and in particular in relation to water. The issue of the Project land use being considered critical utilities and its appropriateness given the existing flood risk of the Project Site was discussed. During the meeting, Council noted an exemption may be plausible to council related requirements given the existing context and approved operations at the Project Site (which consists of an existing electricity generating asset – the SEF) which would be reviewed upon receipt of the EIS. This issue is further discussed in Section 1.4.5.

Table 1-2 Cumberland City Council comments

Requirement	Response / Reference
Planning comments related to water	
The following SEPPs and any relevant clauses shall be addressed in any forthcoming application: • State Environmental Planning Policy (Biodiversity and Conservation) 2021. Chapter 6 – Water Catchments. *The site is located within the Georges River Catchment Area. Any forthcoming application shall ensure the proposal does not impact on water quality of the catchment area and demonstrate compliance with all relevant clauses of the SEPP.* • State Environmental Planning Policy (Resilience and Hazards) 2021. Chapter 2 - Coastal Management. *It is noted that Council's internal mapping system identifies the rear south portion of the site to be subject to Prospect Creek.*	Relevant legislation, policy and guidelines are described in Section 1.4. Potential impacts of the Project are discussed in Section 4.
Cumberland Local Environmental Plan 2021 • The site is identified as a flood control lot. Pre - flood advice letter shall be applied for from Council prior to assessment of any application. Any forthcoming application shall ensure compliance with the flood advice letter and Council's flood controls.	Council's flood advice letter (Appendix A) and flood model was obtained from Council and has been reviewed and considered in this report.
Water protection	
Prospect Creek is located nearby to the development. When the EIS is prepared it should include any potential impacts to the creek	Potential impacts of the Project, including discussion of potential impacts on Prospect Creek are discussed in Section 4.
Flooding	
• Subject site is a flood control lot. It appears development is located within Medium Flood Risk precinct. Critical utilities are not acceptable within the Medium Flood Risk precincts. • In this regard, flood advice letter shall be obtained from Council and flood risk shall be verified. • Development shall comply with the flood advice letter and Council's Flood Risk Management Policy. Supporting documents shall be submitted for assessment. • It appears, the proposed development may not be suitable within the subject site as critical utilities are not acceptable within Medium Flood Risk precinct. It should be noted access to the site may be affected during the 1%AEP flooding.	Council's flood advice letter (Appendix A) and flood model was obtained from Council and has been reviewed and considered in this report. As mentioned above, these items were further discussed with Council on 26/08/2023. Commentary regarding compliance with Council's flood controls is included in Section 1.4.5.

Requirement	Response / Reference
Stormwater	
• Stormwater plan has not been submitted. Stormwater runoff from the entire site shall be discharged by gravity system to street gutter or Council's system. Existing and proposed stormwater details shall be provided. • Onsite Stormwater Detention (OSD) shall be provided as part of the proposal. The details shall be prepared by a suitably qualified person and must be in accordance with Council's DCP and the Upper Parramatta River Catchment Trust "On-Site Detention Handbook. In this regard: - Stormwater plan shall be prepared by suitably qualified hydraulic engineer. - OSD shall be located outside the building floor areas. - OSD calculations, cross section discharge control pit and cross section of the OSD tank shall be submitted. • Overland flow from adjacent properties shall be maintained. Allowances shall be made for surface runoff from adjacent properties, and to retain existing surface flow path systems through the site. • Stormwater runoff from the manoeuvring area including access ways will have to undergo some form of standard primary treatment/separation prior to disposal into existing stormwater systems. In this regard, stormwater treatment device capable of removing litter, oil, grease and sediment shall be provided prior to discharge to the stormwater system	Details of the existing stormwater system at the SEF are described in Section 2.3 and illustrated in Appendix D. The existing Project Site drainage network includes OSD. Given that the Project does not propose to increase the impervious area of the site, additional OSD is not proposed. This is further discussed in Section 1.4.4. The Project is not expected to impact any overland flow paths or drainage connections from adjacent properties as discussed in Section 4. Stormwater runoff from the Project will be collected and treated in line with the existing stormwater management system of the Project Site as outlined in Section 3.3.

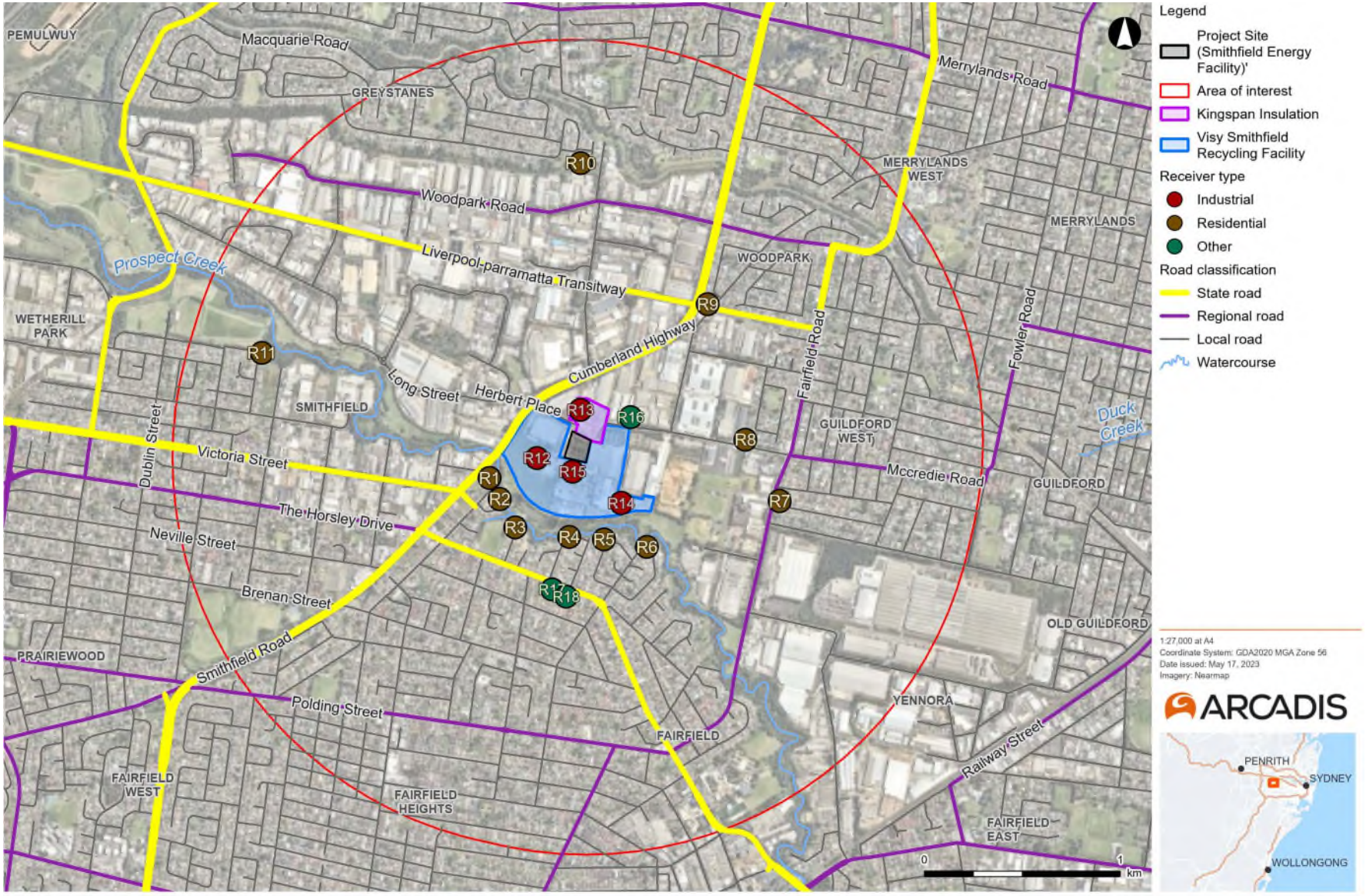


Figure 1.1 Local context

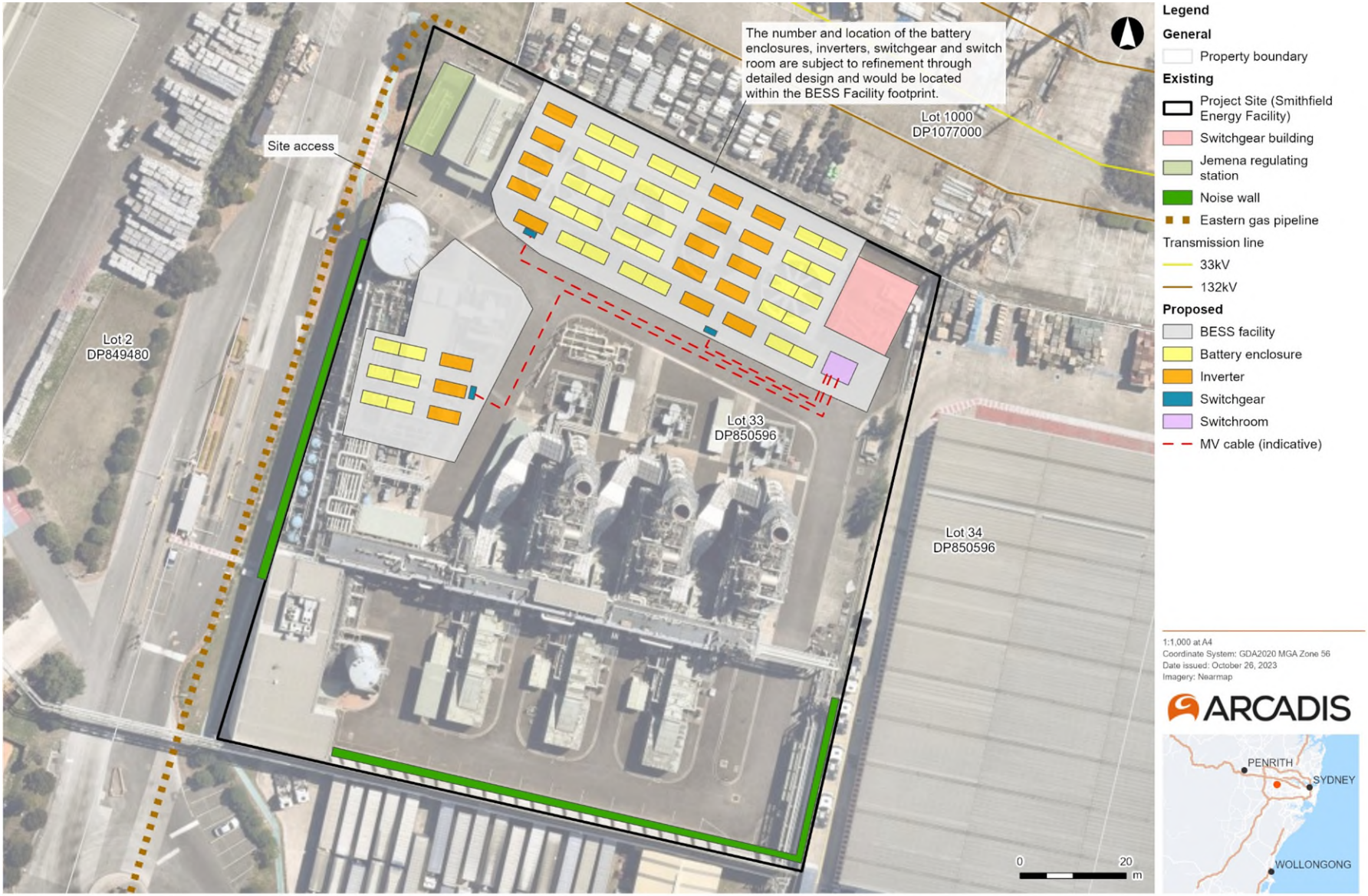


Figure 1.2 Project overview

1.4 Relevant legislation, policy and guidelines

1.4.1 NSW Protection of the Environment Operations Act 1997

The NSW *Protection of the Environment Operations Act 1997* (POEO Act) objectives are to achieve the protection, restoration and enhancement of the quality of the NSW environment. Administered by the Environmental Protection Authority (EPA), the Act regulates and requires licencing for environmental protection including water pollution.

The SEF currently operates under Environmental Protection Licence (EPL) No. 5701. This licence includes the requirement to comply with Section 120 of the POEO Act, however does not include any other specific requirements related to the current water management. As noted in consultation feedback from the EPA, the operation of the BESS does not require an EPL. The EPA would be consulted further to confirm the need to vary EPL 5701 prior to the commencement of any work in relation to this Project.

1.4.2 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The *State Environmental Planning Policy (Biodiversity and Conservation) 2021* consolidated a number of SEPPs and environmental plans under the EP&A Act. SEPP Chapter 6 - Water catchments applies to the Project Site as it is located within the Georges River Catchment.

Relevant to the site are the following sections:

- Chapter 6 - Water catchments, Part 6.2 Development in regulated catchments, Division 2 Controls on development generally:
  - 6.6 Water quality and quantity
  - 6.7 Aquatic ecology
  - 6.8 Flooding

In response to these controls, the potential impacts of the Project are discussed in Section 4.

1.4.3 State Environmental Planning Policy (Resilience and Hazards) 2021

The *State Environmental Planning Policy (Resilience and Hazards) 2021* aims to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objectives of the *Coastal Management Act 2016*. SEPP Chapter 2 - Coastal management applies to land within the coastal zone. Whilst the Project Site is located beyond the coastal zone, consideration is to be given to the receiving waterway environment of Prospect Creek located approximately 330 metres downstream of the Project Site to the south.

A coastal wetland is noted along Prospect Creek in Vineyard Reserve. The Project Site is around 200m north the coastal wetland and littoral rainforest proximity area, and 300 m north of this coastal wetland.

It is understood that the existing site drainage network discharges from the southeast corner of the Project Site to the east ultimately draining to Prospect Creek downstream of this coastal wetland as outlined in Section 2.3. The entirety of the Project Site area and property lot, as well as the downstream outlet to Prospect Creek are beyond the proximity area for coastal wetlands.

The Project Site is approximately 3 kilometres upstream of De Freitas Wetland located along Orphan School Creek at Makepeace Oval, Fairfield. This wetland area is classified coastal wetland, coastal land use area and coastal environment area along Prospect Creek.

1.4.4 Cumberland Development Control Plan (DCP) 2021

Under Section 2.10 of the *State Environmental Planning Policy (Planning Systems) 2021*, development control plans, developed under local environmental plans (LEPs), are not applicable to SSD. Notwithstanding, the Cumberland Development Control Plan (DCP) 2021 has been considered in determining existing conditions and constraints and ensuring impacts are minimised where feasible and reasonable.

The DCP, Part G4 Stormwater and Drainage specifically provides objectives and controls related to stormwater management and flooding. Key development controls relating to on-site detention and water quality treatment are outlined below.

On-site Detention

On-site detention (OSD) is required for industrial uses, alterations and additions in line with the DCP, Part G4, Section 2.4. Council have also noted that the Project should provide OSD as per the 11/07/2023 letter response to DPE (provided in Appendix A).

The DCP objectives of providing OSD are:

- Ensure that through the OSD of stormwater, discharge is controlled thereby ensuring the development does not increase the risk of downstream flooding of roads and properties, or erosion of unstable waterways
- OSD of stormwater is generally incorporated into all development as a means of controlling and managing the flow of stormwater to Council's drainage system
- Ensure that sufficient storage is provided to ensure peak flow rates at any point within the downstream drainage system do not increase as a result of the development during all storm events up to the 100 year ARI.

As outlined in Section 2.3, the existing Project Site includes an onsite detention tank that controls the stormwater discharge leaving the site. As outlined in Section 3.3, the Project proposes to collect and manage stormwater runoff and drain to the existing Project Site drainage network and OSD. The Project does not propose any increase to the impervious area of the site, or alterations of overland flow paths or catchment areas. As such, additional OSD is not proposed. The Project is not anticipated to increase the amount of stormwater runoff from the Project Site or significantly impact the peak flow rates leaving the Project Site. The existing stormwater system would continue to manage water discharge consistently with current operations at the Project Site.

Water Quality Treatment

Under the DCP, Part G4, Section 2.5 – Water quality, all development shall seek to achieve the stormwater quality targets set out below in Table 1-3.

Table 1-3 Cumberland DCP stormwater quality targets

Pollutant	Description	Reduction in Load
Litter e.g., cans, bottles, wrapping materials, food scraps	All anthropogenic materials with a minimum dimension >5mm	90%
Coarse sediment	Coarse sand and soil particles (<0.5mm diameter)	85%

Pollutant	Description	Reduction in Load
Nutrients	Total phosphorous nitrogen	60%
Fine particles	Coarse sand and soil particles (<0.05mm diameter)	85%
Cooking oil and grease	Free floating oils that do not emulsify aqueous solutions	90%
Hydrocarbons inc. motor fuels, oils and greases	Anthropogenic hydrocarbons that can be emulsified	90%

The DCP, Part G4, Section 2.6 – Water Sensitive Urban Design, water quality and water re-use, also requires:

- All development applications for sites of 2,500m^2, or more in area must be supported by a Water Sensitive Urban Design Strategy, prepared by a qualified civil engineer with suitable experience.
- Water quality devices are required to prevent pollutants from commercial, industrial developments and car parking areas entering the waterways in order to improve waterway health and to develop and maintain ecologically sustainable waterways.
- For all developments (excluding single dwellings and dual occupancies), rainwater tanks or a water reuse device shall be incorporated into the stormwater drainage system with a minimum storage size of 5,000 litres (for site area less than 1500m^2) and 10,000 litres (for site area greater than 1500m^2).

Council's commentary on the Project (refer to Appendix A) notes that stormwater runoff from the manoeuvring area including access ways will have to undergo some form of standard primary treatment/separation prior to disposal into existing stormwater systems. A stormwater treatment device capable of removing litter, oil, grease and sediment shall be provided prior to discharge to the stormwater system. Council's commentary does not mention the water quality targets above.

As outlined in Section 2.3, the existing stormwater management of the Project Site includes treatment measures to improve water quality prior to flow discharging from the site. As outlined in Section 3.3, the Project proposes to collect and manage stormwater runoff in line with the existing stormwater management strategy utilising the existing water quality treatment measures.

1.4.5 Cumberland Council Flood Risk Management Policy

As specified in the DCP, developments must also comply with Cumberland Council's Flood Risk Management Policy (2021). This policy covers the three floodplains within Cumberland City namely Haslams Creek, Duck River and the Cooks River floodplain. The Project is located further west of these floodplains and is within the Prospect Creek catchment. In the absence of specific flood controls for Prospect Creek, it has been assumed that those specified in this policy would apply to the Project.

The Project's proposed land use in the context of the Council's Flood Risk Management Policy, as well as the assigned flood risk precinct, impacts whether development is permitted. Cumberland Council's commentary on the Project (refer to Appendix A) indicates that the site is a flood control lot located within the Medium Flood Risk Precinct. This risk classification aligns with Council's flood maps discussed further in Section 2.4 with mapping extracts provided as Appendix C.

The Council comments dated 11 July 2023 to DPE state that the proposed development may not be suitable given that critical utilities are not acceptable within this flood risk precinct. The suitability of the Project was discussed with Council on the 29th of August 2023. The meeting was held to gain a better understanding of their concerns related to the Project. During the meeting, Council noted an exemption may be plausible to council related requirements given the existing context and approved operations at the Project Site (which

consists of an existing electricity generating asset – the SEF) which would be reviewed upon receipt of the EIS.

With respect to the assigned land use category for the Project, the "Commercial or Industrial" classification is considered more appropriate for the Project than "Critical Utilities". Council's policy defines critical utilities as:

> *Telecommunications facilities; fill; electricity generating works or infrastructure land uses which may cause pollution of waterways during flooding, are essential to evacuation during periods of flood or if affected during flood events would unreasonably affect the ability of the community to return to normal activities after flood events.*

With regards to the potential to cause pollution, as outlined in Section 3.1.1, the proposed batteries are housed in weather-proof enclosures and would be situated above the 1% AEP flood event (refer to Section 4.2.1). It is understood that during a period of inundation no release of pollutants is expected. Sufficient safety measures would be incorporated into the design of the BESS facility to prevent any discharge of electrical current into flood waters such as the Battery Management System which would include fault detection and shut-off functions.

The batteries form part of a private electricity network. Their operation is not critical to any end users at any time. The batteries operate as offline storage only providing additional power during peak periods when needed. For the operational life of the Project, should the batteries be offline for any reason, the electricity users supply would be supplemented by ample electricity within the larger electricity network without interruption.

The batteries will be operated remotely with no additional site attendance required during day-to-day operations or potential flood events. The existing Project Site offices are located within a second story building with the office floor level above the PMF flood level.

Given the above, the operation of the Project is not considered critical to the users or wider community, that its operation will not have any impact on emergency management responses, or that it poses a critical threat during a flood event.

In considering the Project as a "Commercial or Industrial" land use, the development controls outlined in Table 1-4 would be applicable to the Medium Flood Risk Precinct within the Project Site. Below is an assessment of the Project against these development controls.

Table 1-4 Commercial or industrial land use flood related development controls

Development Control	Project Assessment
Floor level	
Floor levels of open car parking areas to be equal to or greater than the 20 year ARI flood level plus freeboard. This may be achieved with a suspended floor which allows the continued passage of flood waters or filling if justified by a site specific assessment as required with reference to flood affectation and other controls below. Enclosed car parking (e.g. garages or basement car parking) must be protected from the 100 year ARI flood.	Not applicable – no proposed additional parking as part of the proposed works.
Habitable* floor levels to be equal to or greater than the 100 year ARI flood plus freeboard.	Not applicable – no new habitable buildings or spaces proposed which are to be occupied neither

Development Control	Project Assessment
	frequently nor for extended periods. Refer to Section 3.1 for an overview of the proposed built form. An additional switch room is the only proposed building structure.
Building components and method	
All structures to have flood compatible building components below or at the 100 year ARI flood level.	Applicable - to be incorporated into the detailed design of the Project.
Structural soundness	
Applicant to demonstrate that any structure can withstand the forces of floodwater, debris and buoyancy up to an included a 100 year flood.	Applicable - to be incorporated into the detailed design of the Project.
Flood affectation	
The impact of the development on flooding elsewhere to be considered. Note" When assessing flood affectation the following must be considered: 1. Loss of storage area in the floodplain (except for filling occurring up to the 20 year ARI). 2. Changes in flood levels caused by alteration of conveyance of flood waters. 3. Fill in between the 20 year and 100 year ARI flood levels will not be permitted.	Applicable. A flood impact assessment has been completed as part of this assessment as outlined in Section 4 and Appendix E.
Evacuation	
Reliable access for pedestrians or vehicles is required from the dwelling commencing at a minimum flood level equal to the lowest habitable floor level to an area of refuge above the PMF level, either on-site or off-site.	Not applicable – no new habitable dwellings are proposed as part of the Project with the infrastructure to be operated remotely. Note the existing Project Site offices are located within a second story building with the office floor level above the PMF flood level.
Applicant to demonstrate that the development is to be consistent with any relevant DISPLAN or flood evacuation strategy.	Applicable. Evacuation is further discussed in Section 5.2.1. Not that no current floodplain risk management plan has been developed by Cumberland Council for the catchment area.
Management and design	
Site Emergency Response Flood plan required (except for single dwelling houses) where floor levels are below the design floor level.	Not applicable – no new habitable buildings or spaces proposed which are to be occupied neither frequently nor for extended periods. Refer to Section 3.1 for an overview of the proposed built form.

Development Control	Project Assessment
Applicant to demonstrate that area is available to store goods above the 100 year flood plus 0.5m (freeboard).	Not applicable – no new material storage areas are proposed as part of the Project.
No external storage of materials below design floor level which may cause pollution or be potentially hazardous during any flood.	Not applicable – no new material storage areas are proposed as part of the Project.

(*) Habitable definition see note below.

Note the DCP defines a habitable room as a room used for normal domestic activities and:

- includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room and sunroom;
- excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room and other spaces of a specialised nature occupied neither frequently nor for extended periods.

1.4.6 Cumberland Council flood advice letter

Council provided a flood advice letter for the Project Site dated the 2nd of August 2023, provided in Appendix A. The letter notes the property has been identified as a flood control lot affected by the 1% AEP flood and assessed as a medium flood risk and outlines the following development controls shown in Table 1-5. Below is an assessment of the Project against these development controls.

Table 1-5 Flood advice development controls

Development Control	Project Assessment
Council has determined that part of the flood control lies in one of the five items above – item A, B, C, D and E; therefore, a CDC cannot be issued on this site. The identified flood items are represented by the darker area within the 1% AEP flood extent on the attached map. If the development is proposed within any part of this zone (dark blue area), a pre and post flood study must accompany the Development Application. Alternatively, if the development is proposed within the uncoloured and/or light blue areas (flood fringe zone), a CDC may be considered for this site. However, the surface flows must not be impeded (blocked) and the redevelopment shall allow the free movement of the flood around any proposed structure(s).	A flood impact assessment has been completed as part of this assessment as outlined in Section 4 and Appendix E.
In all cases, flood level on adjacent properties shall not be increased. Supporting documentation is to accompany the development.	A flood impact assessment has been completed as part of this assessment as outlined in Section 4 and Appendix E.
Minimum habitable floor levels shall be 0.5m above the flood level at the upstream side of the structure. Minimum non-habitable floor levels (garages, laundry, sheds, etc.) shall be	No new habitable buildings or rooms are proposed as part of the Project. Refer to Section 3.1 for an overview of the proposed built form.

Development Control	Project Assessment
0.15m above the flood level at the upstream side of the structure. Interpolation between flood levels is allowed.	An additional switch room is the only proposed building structure. Should this room be located within the 1% AEP flood extent where the flood depth is greater than 100mm, the floor level will be located 0.15m above the 1% AEP flood level.
The brown shaded area on the attached Map represents the flood waters with a depth of flow less than 100mm and does not attract any flood controls. It is presented on the flood map to show the continuity of flooding within the area. However, if development occurs within the brown areas, the structure shall not impede or divert flows to adjacent properties.	No flood controls (including minimum floor level requirements) are to be adopted for areas within the site where the 1% AEP flood depth is less than 100mm.

1.4.7 Australian and New Zealand Guidelines for Fresh and Marine Water Quality

The New South Wales Water Quality and River Flow Objectives provide guideline levels to help manage water quality that have been developed for each catchment in NSW. For Prospect Creek where waterways are affected by urban development, the water quality objectives include the protection of aquatic systems, visual amenity, secondary contact recreation (as a short term objective, within 5 years) and primary contact recreation (assess opportunities to achieve as a longer term objective, 10 years or more). River objectives for Prospect Creek include maintain wetland and floodplain inundation, maintain natural flow variability, maintain natural rates of change in water levels and minimise effects of weirs and other structures.

These water quality and river objectives draw examples of water quality criteria from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC, 2000). Any required water quality monitoring is to refer to the ANZECC guidelines for the selection of appropriate monitoring parameters and assess measurements against the defined trigger values. The trigger values may require refinement for local conditions but must still protect the environmental value and drive local protection or improvement of water quality.

1.4.8 Standards and guidelines

The following standards and guidelines are relevant to the Project:

- Managing Urban Stormwater: Soils and Construction – Volume 1, commonly known as the ‘Blue Book’ (Landcom, 2004)
- Flood Risk Management Manual (State of NSW and Department of Planning and Environment, 2023)
- Australian Rainfall and Runoff (Commonwealth of Australia, 2019)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC, 2000)
- Liquid Chemical Storage, Handling and Spill Management: Review of Best Practice Regulation (DEC, 2005)
- Storing and Handling liquids: Environmental Protection: Participant’s Manual (DEC, 2007)

1.5 Report structure

This report has been structured as below:

- **Section 1**: An overview of the Project, purpose of the assessment and pertinent references.
- **Section 2**: A description of the existing environment within and surrounding the Project.
- **Section 3**: An overview of the Project including proposed stormwater water management.
- **Section 4**: Identification of potential impacts of the Project on stormwater quality, quantity and flooding during both the construction and operational phases.
- **Section 5**: Required mitigation measures to avoid, minimise, mitigate and/or manage the potential impacts of the Project.
- **Section 6**: An overall conclusion of the report with respect to stormwater management and potential impacts of the Project.

2 EXISTING ENVIRONMENT

2.1 Existing land use

The layout of the existing Project Site is shown below in Figure 2.1 with site photos from 2023 provided as Appendix B.

The existing site is comprised of various industrial facilities including the cooling towers to the north, steam turbine generator in the west and power trains in the southeast. Site personnel areas including the administration offices and workshop are located in the southwest corner of the site.

The site includes an internal road network of sealed asphalt roads with roll kerbs. Portions of the roadway used as bunded areas are concrete hardstands. Outside of the various buildings and concrete slabs around the site, the ground cover is either concrete or a layer of gravel overlaying the soil. No significant vegetation is present on the site. The majority of the existing Project Site is impervious surfaces.

The properties surrounding the site are similarly industrial land uses with large warehouses, minimal vegetation and highly impervious surfaces.

The existing site is fully fenced. A Colourbond fence runs along the northern site boundary. The majority of the eastern boundary has a short wall of blockwork with a chain wire fence extending above. A very tall solid acoustic wall wraps around the remainder of the site continuously from the site entry in the northwest corner of the site, south along the western and southern site boundaries continuing approximately 30m along the eastern boundary. A vehicle roller shutter door and personnel access door are located along the acoustic wall in the southeast corner of the site.

The Project requires the removal of existing infrastructure within the footprint of the Project including the existing cooling towers along the northern boundary of the SEF. A separate development application (DA 94/165 MOD 3) would be undertaken prior to this Project to remove the existing cooling towers and construct and operate a replacement cooling system within the SEF.

2.2 Existing topography and hydrology

A review of the site topography has been undertaken based on the 1 metre 2019 digital elevation model data sourced from the NSW Government Spatial Services. The site and internal road network are relatively flat with a fall from 19.1m AHD in the northwest corner of the site to 17.7m AHD in the southeast corner of the site. The low point of the site is at a low point on the roadway with a drainage pit provided.

The SEF is located within the Prospect Creek catchment with the waterway located approximately 330 metres downstream to the south of the site. From this location, Prospect Creek continues to drain southeast to the Georges River and Botany Bay.

The Prospect Creek catchment is highly urbanised. The NSW Department of Planning and Environment (DPE) Water Sharing Plan Report Card for the Prospect Creek Water Source (dated April 2022) notes the water source as having a low ecological value. The Georges River Report Card 2021-2022 (Georges Riverkeeper) assessing river health indicators against environmental guidelines notes the Prospect Creek Upper as having an overall fair grade with the following gradings:

- Riparian vegetation – A^{+} excellent
- Water quality – C^{-} fair
- Freshwater macroinvertebrates – E^{-} poor

A coastal wetland is noted along Prospect Creek in Vineyard Reserve bordering the Visy site boundary. It is understood that the existing site drainage network discharges from the southeast corner of the site to the east ultimately draining to Prospect Creek downstream of this coastal wetland.

Figure 2.1 Existing SEF layout

2.3 Existing drainage network

An existing drainage network is present throughout the Project Site as illustrated in the site drawings provided in Appendix D. No drainage infrastructure from surrounding properties runs through the Project Site or drains into this existing site drainage network.

The existing SEF stormwater management system separates rainfall runoff collected from “clean” and “dirty” (potentially contaminated) catchments to allow for appropriate treatment before discharge as outlined below:

- “Clean” runoff - rainfall runoff from roof and gravel areas is collected via subsoil drains and downpipes and drained via gravity to on-site detention (OSD) tanks.
- “Dirty” runoff - rainfall runoff from roadways and parking areas is collected via road drainage pits and drained to a 35m^3 first flush tank. Oil contaminated water from the first flush tank is recovered and pumped to an oil water separator for treatment. The capacity of the oil water separator is 30KL/hr. In the event that the first flush tank is full a weir allows flows to discharge directly to the OSD tanks. The water phase from the separator is released to the OSD tanks.
- Steam turbine runoff – rainfall runoff from the steam turbine area is collected in floor drains and drained via an isolation valve to a collection pit. This water is then pumped to the 30KL/hr oil water separator for treatment.

- On-site detention – two OSD tanks are located along the eastern site boundary with a total volume of 350m^3. From the OSD tanks stormwater discharges to an outlet control pit before draining south to the neighbouring Visy site via a pipeline which ultimately drains south to Prospect Creek. It is uncertain if an easement is in place for this pipeline.
- Outlet control pit - In the event of a fire or a major spill, an isolation valve can be closed to prevent stormwater discharging from the site. An alternative outlet for the pit to discharge directly to the sewer is also available.
- Washdown runoff – runoff from the enclosed workshop and power trains is collected in floor drains and treated by a 3KL/hr oil water separator before being discharged to the sewer.
- Bunded areas - runoff from bunded site areas is controlled by valve releases in line with the site's spill management protocols. Runoff from these areas drains to an oil water separator.

Spill management procedures are in place for the existing Project Site. The Spill Prevention Control and Contaminant (SPCC) Report, Revision 3, outlines the spill management procedures and includes routine monitoring of the site stormwater system. Chemical storage areas are under cover and all bulk liquid chemicals are within bunded areas. All spill or chemical releases in bunded areas are treated and/or discharged to the sewer.

It is understood that a Sydney Water trade waste agreement was previously in place for the discharge to the sewer. Based on the quality and quantity of discharges and inclusion of an inline water quality treatment it is understood that Sydney Water have stated they no longer require a trade waste agreement for these operations.

2.4 Existing flood conditions

Information on the existing flood conditions for the SEF and surrounding areas has been sourced from the various flood mapping provided on the Cumberland City Council website dated 27/10/2021, and a review of the flood model provided by Council. Extracts from the Council flood maps are provided in Appendix C.

It is worth noting that Council's flood modelling has been based on:

- September 2011 aerial photography
- April 2013 airborne laser scanning survey
- Australian Rainfall and Runoff 1987 methodology
- Council's GIS pit and pipe drainage network
- TUFLOW hydraulic modelling:
  - 2m cell size
  - inclusion of the Council drainage network
  - buildings represented as areas of high hydraulic roughness
  - 2013-12-AC-w64 TUFLOW version
- DRAINS hydrological modelling applied as inflows to the TUFLOW 2D domain.

The external walls surrounding the Project Site have not been incorporated into Council's modelling. Additional refinement of the TUFLOW model has been undertaken as part of the flood impact assessment as outlined in Section 4 and Appendix E. The following commentary is based on the information sourced from Cumberland City Council.

The SEF and surrounding lots are classified as flood control lots and therefore impacted by the 1% AEP (100 year ARI) flood event. The 1% AEP flood depth is shown below in Figure 2.2. The critical duration of the 1% AEP flood event for the Project Site is relatively short ranging from 25 minutes to 120 minutes resulting in flash flooding conditions with little warning time.

During the 1% AEP flood event, portions of the Project Site are inundated and classified as medium risk. The 1% AEP flood extent covers the majority of the SEF with flood depths of up to 0.5 metre along the main overland flow paths. Overland flows from the surrounding areas appear to drain into the site from the site access road along the western site boundary in the north and also across the eastern site boundary in the north. These overland flows follow the topography to drain southeast crossing the southern site boundary.

The overland flow paths in the area are informal where flow finds a way downstream crossing multiple site boundaries.

The vehicle access to the Project Site is impacted by flood depths ranging from 0.5 to 1 metre in the 1% AEP flood event at the Herbert Place cul-de-sac.

During a Probable Maximum Flood (PMF) event the entirety of the Project Site is inundated as well as Herbert Place and the neighbouring properties to the west, south and east from Prospect Creek. The majority of the Project Site are considered low hazard, with some portions of the Project Site to the south classified as high hazard in the PMF event.

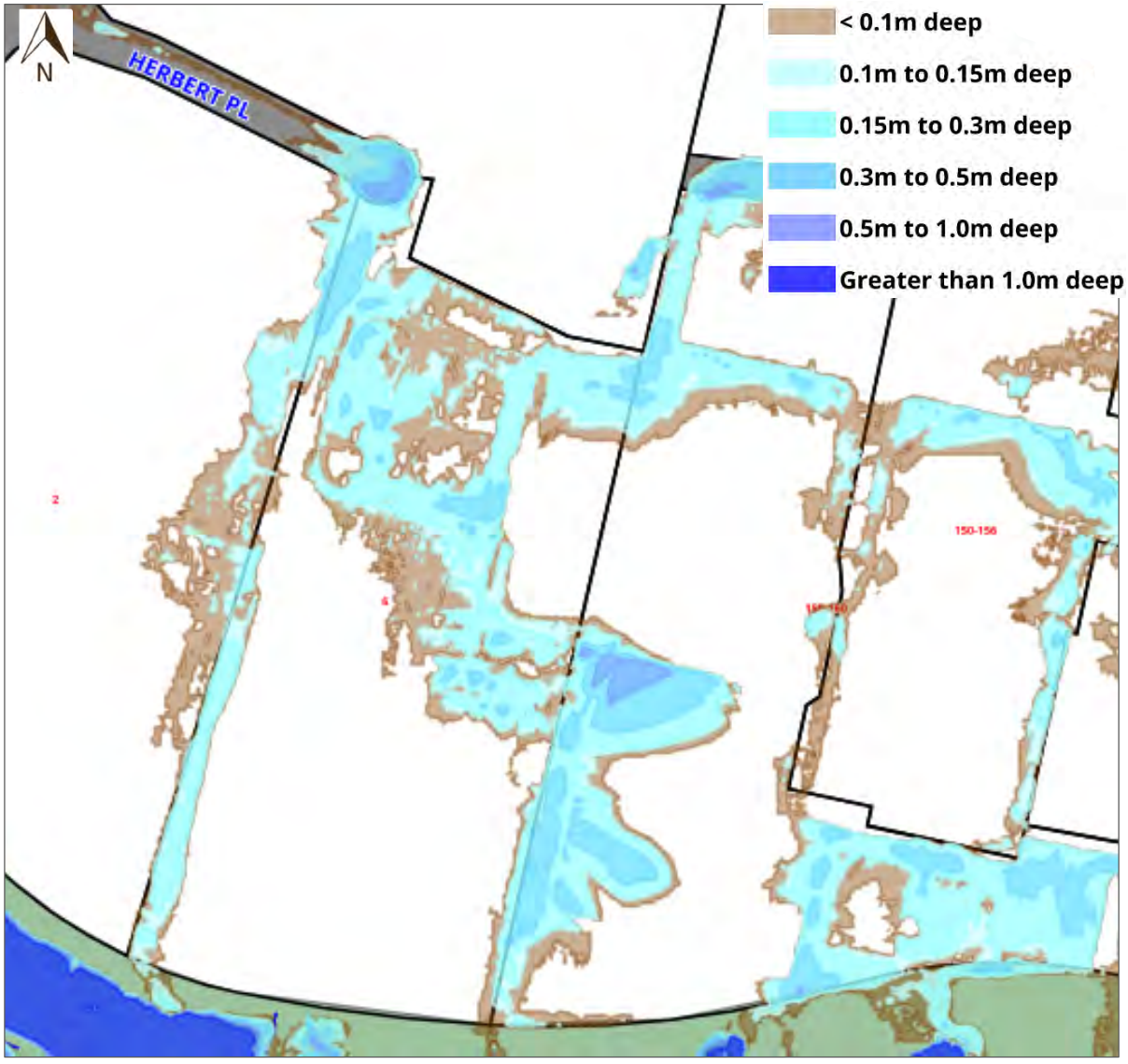


Figure 2.2 Existing 1% AEP flood depths
Source: https://www.cumberland.nsw.gov.au/stormwater-and-flood-maps dated 27/10/2021 accessed June 2023

2.5 Existing site water use

Potable water sourced from Sydney Water is currently used for Project Site operations with wastewater discharged to the sewer. Recent site water usage data is provided below in Table 2-1. No water reuse is evident for the existing site operations.

Table 2-1 Recent water usage data

Month 2023	Potable Water Usage (kL)	Discharge to Sewer (kL)
February	154	135
March	911	801
April	1053	926
May	1988	1749
June	861	758
July	841	739
August	967	850

2.6 Groundwater

There are a total of 36 groundwater bores located within a 1 km radius of the Project Site, used predominantly for monitoring purposes. One groundwater bore is used for commercial or industrial purposes, located approximately 700 m west of the Project Site. This bore is 204 m AHD in depth and has recorded salinity levels of 5,750 mg/L. Based on the location of the identified surface water courses and topography of the Project Site, the inferred groundwater flow direction is considered likely to be towards the southeast.

3 PROJECT DESCRIPTION

3.1 Project design and built form

An indicative overview of the Project is shown in Figure 1.2. The number and location of the battery enclosures, inverters, switchgear and switch room are subject to refinement through detailed design.

The Project would be located within the SEF and would utilise some existing facilities / infrastructure, including:

- Stormwater drainage and management measures
- Security
- Water storage tank
- Car parking
- Site office and amenities.

The extent of the Project built form as shown in Figure 1.2 is limited to the north and northwest portions of the SEF. The Project requires the removal of existing infrastructure within the footprint of the Project including the existing cooling towers along the northern boundary of the SEF. A separate development application (DA 94/165 MOD 3) would be undertaken prior to this Project to remove the existing cooling towers and construct and operate a replacement cooling system within the SEF.

3.1.1 Batteries

Each battery unit would contain a group of lithium-iron-phosphate batteries, housed within weather-proof enclosures. The BESS would also contain inverters, transformers, switchgear, and associated control systems. The batteries and inverters have ventilating and air conditioning systems that maintain the equipment within safe operational temperature limits.

The size of the individual battery units would be dependent on the selected supplier. Typical BESS model dimensions are provided in Table 3-1 and an example of a battery module is provided in Figure 3.1.

Table 3-1 Typical BESS model dimensions

OEM	Dimensions (w, d, h) (mm)
Wartsila	3169 x 2076 x 2462
CATL	6058 x 2462 x 2896
Tesla	8800 x 1650 x 2785
Sungrow	9340 x 2600 x 1730
Energy Vault	9990 x 2440 x 2930
Powin	12192 x 2438 x 2896

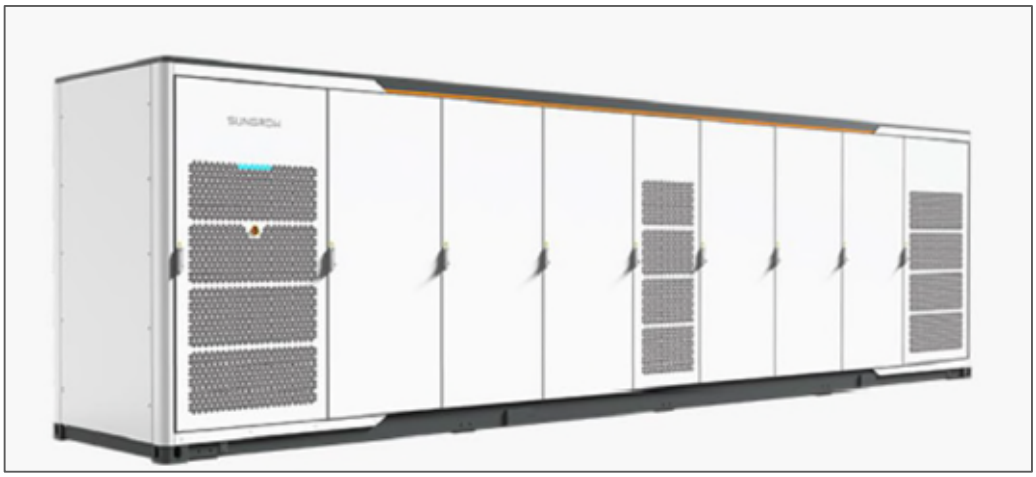


Figure 3.1 Example module of BESS unit

Each battery unit would be mounted on concrete footings, built foundations, or piles. The layout and spacing would be designed in accordance with appropriate standards to ensure the integrity of the system. The battery units would be connected via underground cables to a control room.

The BESS would use equipment that has been tested for fire safety and fire protection systems and would be installed according to suppliers' recommendations and the Fire Safety Study. Additionally, fire water would be available on-site (through the existing SEF water tank) to protect against fire propagation. The detailed design would consider fire water reticulation around the Project Site. All fire safety systems would be detailed in a Fire Safety Study prepared in consultation with Fire and Rescue NSW.

3.1.2 Switchgear building upgrade

To establish a connection between the BESS and the grid (i.e. the Guildford substation), transformers will be employed to convert the electricity at the BESS to 33 kV. A 33kV reticulation system will link those transformers to the existing switchgear building positioned in the northeast corner of the SEF via a 33/132 kV switch room. Minor upgrades at the switchgear building would be undertaken to enable to the connection.

3.1.3 Ancillary design elements

To support the operation of the Project several ancillary elements are proposed. These are described Table 3-2 and shown in Figure 1.2.

Table 3-2 Project ancillary design elements

Design element	Description
Site access and parking	Access to and from the Project Site would be via the existing entrance off Herbert Place. Herbert Place is accessed via the Cumberland Highway. The existing internal road network can be used. The existing car park area at the SEF would accommodate a total of five spaces for operational and maintenance staff and visitors.
Fencing	Security fencing (e.g., chain link or palisade) would be installed along the perimeter of the BESS operational boundary. The existing fencing along the Project Site would be maintained.

Design element	Description
Signage	Signs would be situated at various locations across the Project Site. These signs would be for the purposes of way finding, safety and building identification.
Lighting	Standard lighting would be required for the BESS facility for safety and security and to allow for out of daylight hours maintenance, as required. External lighting design would be consistent with *AS/NZS 1680.5:2012 Australian and New Zealand Interior and workplace, Part 5: Outdoor workplace lighting and AS 4282-1997 Control of the obtrusive effects of outdoor lighting.*
Drainage infrastructure	The Project would include the installation of stormwater management infrastructure, incorporated into the design of the Project to manage water quality during operation of the Project as discussed further below.
Services and utilities	Proposed service and utility connections to the Project Site include: • Connections to telecommunications infrastructure via fibre optic cable for high-speed internet • Electrical supply for supervisory control and data acquisition (SCADA) system • Sewage would be managed via the existing sewage treatment system.
Fire management	The Smithfield Energy Facility is connected to water mains and the existing fire management system would be used for fire management of the BESS.

3.2 Construction activities

Construction of the Project is expected to comprise of the following key activities:

- Site enabling works, including:
  - Establishment of temporary environmental and safety controls.
  - Establishment of construction laydown areas, as required, in consultation with landowner.
  - Utility works (including disconnections) to enable construction.
  - Establishment of temporary construction site offices and laydown area.
  - Surveying and investigations of onsite condition to implement final design (where required).
- Earthworks, levelling, and other civil and ground preparation activities, including the removal of spoil from the site, as required.
- Delivery, installation and electrical fit-out for the Project, including control building, battery enclosures, inverters, transformers and associated cabling and infrastructure.
- Connections between the BESS and the existing SEF switchgear building.
- Permanent environmental management and pollution control measures.
- Testing and commissioning.
- Removal of construction equipment and rehabilitation of construction areas.

It is likely that some elements would be prefabricated offsite and transported to the Project Site via heavy vehicles, where they would then be installed. The batteries would be containerised on areas of hardstand.

Construction would begin as soon as practicable after all regulatory approvals are obtained and would take approximately 12 months to complete.

3.2.1 Construction water requirements and supply arrangements

Water used directly on-site for construction would predominantly relate to dust suppression. Water sources would be confirmed during detailed design but are likely to be from the municipal water supply (in agreement with the relevant authority).

3.2.2 Construction compound

A temporary compound would be required to support the construction of the Project. The location of the compound is indicative and subject to confirmation by the construction contractor, once appointed. It is anticipated that the temporary construction compound will be located within the adjacent Visy or Kingspan sites (subject to further consultation) as presented in Figure 3.2. Not all these areas presented would be used and would be refined during detailed design and consultation outcomes. It is anticipated that the compound area will be used for any of the following:

- Site office and amenities.
- Staff parking area.
- Equipment and vehicle storage areas.
- Laydown areas for construction materials.
- Stockpiling of excavated materials and soil.
- Bunded fuel storage areas.

The construction compound would be temporary in nature and removed / decommissioned at the completion of construction. Decommissioning of the construction compound would include rehabilitation of the location to the pre-construction standard.

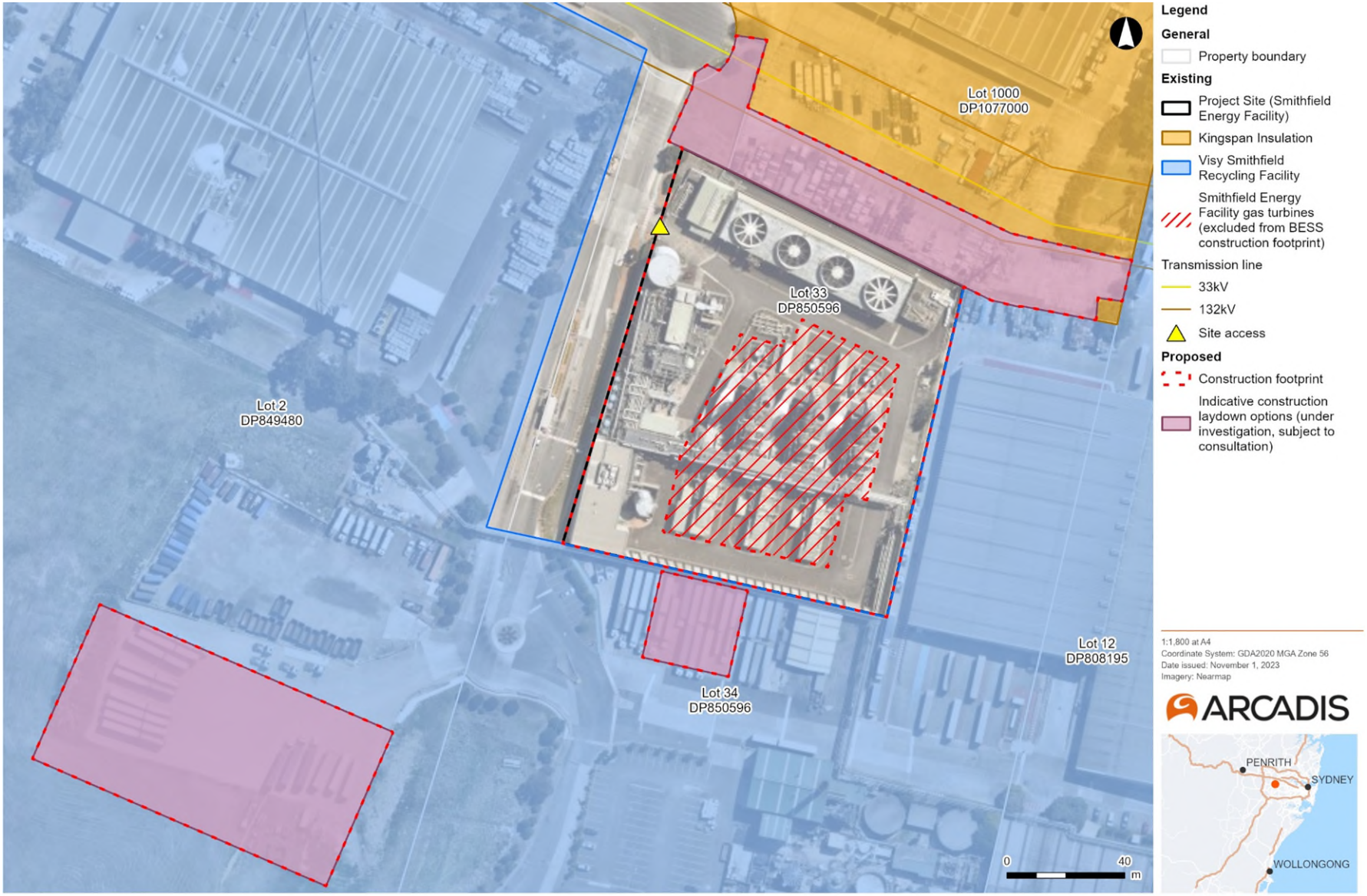


Figure 3.2 Construction overview

3.3 Proposed stormwater management

Stormwater runoff from the Project site area will be collected and conveyed via pit and pipe drainage infrastructure. The drainage lines will discharge to the existing Project Site drainage network for treatment and flow mitigation prior to discharging from the Project Site. The stormwater management of the Project will align with the existing stormwater management strategy for the Project Site.

Where required the existing drainage infrastructure will be modified to accommodate the Project infrastructure, both above and below ground level. Additional stormwater collection pits and drainage pipes may be required to ensure adequate collection of the 5% AEP (20 year ARI) design event, and to maintain a flow hazard regime depth velocity product of no greater than 0.4m^2/s in the 1% AEP (100 year ARI) design event. The Project is not anticipated to alter catchment areas within the site, redirect any overland flow paths or alter the discharge location from the existing Project Site.

The Project aims to align with the existing water quality treatment train on the Project Site. Stormwater runoff from potentially contaminated sources will be collected and drained to the existing 30kL/hr oil water separator for treatment. Stormwater runoff from the internal roadways will be collected and conveyed to the existing first flush tank. Prior to discharge from the site, all stormwater runoff will pass through the existing on-site detention tank. In the event of needing to contain firefighting / BESS contaminated runoff, the isolation valve at the drainage outlet of the Project Site would be closed to prevent any stormwater discharge from the Project Site drainage network. This existing incident response procedure will be reviewed and updated as required to manage the response.

With the removal of existing structures within the BESS facility, and construction of the Project works, no net increase in the impervious area of the site is anticipated. On this basis, no additional OSD is proposed for the Project. Should the detailed design of the Project result in an increase in peak flows discharging from the Project Site, flow mitigation measures will be required. This may involve incorporating additional onsite detention volume or modifying the existing SEF onsite detention to further improve its performance.

3.4 Operational water use requirements and supply arrangements

The operation of the Project will require water for:

- Staff amenities
- Firefighting purposes (in consultation with Fire and Rescue NSW)

Minimal water use is proposed for the Project as:

- The proposed BESS infrastructure does not require water to operate and would be remotely operated
- The existing amenities would continue to be utilised by the staff that operate the SEF (no additional amenities are required)

Any potential water storage on-site required for fire-fighting purposes (subject to the Fire Safety Study during detailed design) will be sourced from the existing Sydney Water potable water main for the Project Site. There is a Sydney Water hydrant available at the Project Site which will be used for fire-fighting purposes.

4 POTENTIAL IMPACTS

Surface water quality and quantity may be impacted where changes are made to land use, topography or drainage networks. Potential impacts of the Project on surface water quality and quantity during construction and operation are discussed below. Potential impacts are identified for both within the Project site and surrounding areas.

If not adequately managed, construction activities and infrastructure development have the potential to impact surface water quality and quantity either directly or indirectly by providing contaminant sources, altering ground cover, concentrating flows, altering flow paths and reducing flood storage. This may result in increased surface runoff volumes, velocities and peak flows, scouring and mobilisation of pollutants. Ultimately this can lead to increased pollutant loads and flood impacts adversely impacting the surrounding environment.

The potential impacts identified for the Project can be avoided, minimised, mitigated and/or managed by implementing suitable mitigation measures through the Project design and construction management.

4.1 Construction

Construction activities with the potential to impact the surface water quality and quantity of the downstream environment associated with the Project construction include:

- Alteration of the topography of the Project site
- Removal or modification of existing drainage infrastructure structures
- Use of water for construction activities such as dust suppression and dewatering
- Stockpiling of materials
- Spills or leaks of substances such as oil, hydraulic fluids and fuels
- Waste materials from construction activities
- Movement of vehicles and equipment.

The risk of construction activities impacting water quality or water quantity is increased in proximity to areas such as:

- Concentrated flow paths such as the existing pit and pipe drainage lines
- Areas within flood extents that may be impacted by flooding in a large rainfall event
- Construction compound areas where stockpiling of materials and equipment occurs.

It is not anticipated that the Project would intercept groundwater and the construction of the Project would have a limited water demand during construction. Water and hydrology impacts arising from the construction of the Project are considered minimal due to the limited duration and intensity of construction activities.

4.2 Operation

4.2.1 Flooding

The design of the Project has the potential to impact flood conditions (within and surrounding the site) due to changes in ground surface conditions. A flood impact assessment for the Project has been undertaken as documented in Appendix E. This assessment demonstrates that development within the BESS facility area is unlikely to cause a significant impact on flood conditions within the Project Site and for the surrounding properties.

Flooding has the potential to increase risks on-site to people and infrastructure. Building structures and equipment need to be able to withstand the forces of flood waters, debris and buoyancy. The Project will elevate infrastructure above flood levels in accordance with applicable industry standards and guidelines. For the batteries and electrical equipment these will be elevated above the 1% AEP flood level as a minimum. Sufficient safety measures would be incorporated into the design of the BESS facility to prevent any discharge of electrical current into flood waters such as the Battery Management System which would include fault detection and shut-off functions to prevent any discharge of electrical current into flood waters.

Whilst the Project will be operated remotely, the potential risk of flooding on-site is to be adequately addressed through operational procedures. Flooding in the local area is expected to be flash flooding in nature with little warning time. Vehicle access to the site is expected to be impacted during a flooding event with flood depths ranging from 0.5 to 1 metre in the 1% AEP flood event at the Herbert Place cul-de-sac. Flood refuge on-site above the PMF level is available within the existing site offices located on the second floor of the building.

4.2.2 Water quantity

Reductions to the pervious area of the Project Site, increases to catchment areas and alterations to overland flow paths have the potential to increase stormwater runoff peak flows. The Project proposes to maintain the existing catchment areas and overland flow paths with no increase in the impervious area. Prior to discharge from the site, all stormwater runoff will pass through the existing on-site detention tank. Therefore, the Project is not expected to significantly impact the peak flow rates leaving the Project Site.

4.2.3 Water quality

Without mitigation measures the Project may mobilise, transport, and disperse pollutants in the downstream environment. The Project does not propose to store any additional materials on-site which may be potential contaminant sources. The existing Project Site includes designated storage areas and bunded areas of storage and handling of potential pollutants.

Stormwater runoff from any potentially contaminated sources will be collected and treated by an existing oil water separator within the Project Site. Stormwater runoff from the internal roadways will be collected and conveyed to the existing first flush tank.

The proposed battery units are understood to be housed in weather-proof enclosures elevated above the 1% AEP flood level which are not expected to release any pollutants should they be inundated in a rarer extreme flood event.

Given the existing site conditions, proposed Project operations and stormwater management strategy, the Project is not expected to have a significant impact on the water quality discharging from the Project Site.

5 MITIGATION MEASURES

Mitigation measures can be implemented during the design and construction phases of the Project to avoid, minimise, mitigate and/or manage the potential impacts. These include adequate consideration of the stormwater management strategy and flood conditions in the design, the staging and timing of construction work to limit the disturbance of areas and avoid wet weather periods, best practice erosion and sediment control procedures and undertaking ongoing inspection and monitoring of activities to identify and rectify issues.

5.1 Construction

5.1.1 Erosion and Sediment Control

A Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP), or equivalent, would be incorporated into the Construction Environmental Management Plan (CEMP) for the construction of the Project. The SWMP and ESCP would be developed in accordance with the principles and requirements of the Landcom 2004 Managing Urban Stormwater: Soils and Construction – Volume 1 (commonly known as the 'Blue Book').

Temporary construction erosion and sediment control measures that would be implemented prior to construction of the Project include sediment fences, temporary sediment basins, shaker grids and/or wash down areas at all vehicle access points, and sandbags (or similar) for protection of all existing stormwater infrastructure (on-site and off-site).

The ESCP will be progressively updated to reflect the changing nature of the Project site as construction activities progress. The following aspects would be addressed within the SWMP and ESCP:

- Appropriate sediment and erosion controls are to be implemented prior to soil disturbance.
- Limiting the area and duration of disturbance and avoid working in wet weather.
  - Staging and timing of works are particularly important when working in higher risk areas for impacts such as near concentrated flow paths (existing or temporary), the existing pit and pipe drainage network and areas below the 1% AEP flood level.
- Stormwater management to avoid flow over exposed soils
- Location of stockpiles to be outside of localised depressions, overland flow paths and areas below the 1% AEP flood level as far as practicable
- Inspection of all erosion and sedimentation control works and existing stormwater drainage network prior to and post rainfall events
- Stabilisation of disturbed areas is to be undertaken as soon as practicable, progressively, throughout the phased works to minimise disturbed areas exposed to the forces of erosion at any one time
- Wheel wash or rumble grid systems installed at Project Site entry/exit to minimise transfer of dirt onto external roadways
- Pre-start checks, as well as maintenance in accordance with manufacturer requirements to be undertaken on equipment to minimise the potential for leaks and spills from vehicles
- Storage of materials on-site to be minimised
- Suitable waste receptacles to be provided and maintained
- Storage of any fuels, oils, lubricants, chemicals, Dangerous Goods and similar products will be stored in accordance with appropriate standards with emergency spill kits maintained on-site
- Wet weather monitoring protocol including water levels for Prospect Creek at Smithfield (station number 213009) as well as predicted rainfall events.

In general, the ESCP will aim to maximise the separation of 'clean' water from offsite, and 'dirty' water from on-site. Site boundary controls will be implemented (e.g. sediment fencing, earth banks, mulch bunds, swales and table/diversion drains) around the perimeter of the Project site, as early in the construction process as possible.

An incident response procedure will be reviewed and updated as required to manage the response for potential spills on-site. This may include closing off the isolation valve at the drainage outlet of the Project Site to prevent any stormwater discharge from the Project Site drainage network.

5.1.2 Monitoring

Inspection and monitoring of the erosion and sediment control measures and the internal SEF drainage network will be undertaken regularly throughout the construction period and following large rainfall events.

Any increase in sediment loads resulting from construction activities may necessitate more frequent maintenance of the SEF drainage network, including the on-site detention tank and oil-water separators.

5.2 Design

To avoid adverse impacts, where feasible the design of the Project should consider the following stormwater management principles:

- Maintaining existing sub-catchment areas
- Maintaining existing overland flow paths to the downstream
- Maintaining existing drainage outlet connection to the downstream
- Maximising pervious areas
- Minimising fill, infrastructure and building footprints below the 1% AEP flood level
- Ensuring potentially contaminated runoff is sufficiently collected and treated appropriately
- Minimising potential contaminant sources on site, and where feasible ensuring any dangerous goods are stored above the 1% AEP flood level plus 500mm freeboard.

The detailed design needs to meet applicable Australian standards and guidelines including the Australian Building Codes Board – Construction of buildings in flood hazard areas.

5.2.1 Flooding

The detailed design is to verify that flood impacts off-site are minimised and to confirm flood levels within the Project Site to inform the design. Project infrastructure is to be elevated above flood levels in accordance with applicable industry standards and guidelines. For the batteries and electrical equipment these will be elevated above the 1% AEP flood level as a minimum. Sufficient safety measures are to be incorporated into the design to prevent any risk of electrical current discharging during a flood event.

Proposed works are to be structurally sound to withstand the forces of flood waters, debris and buoyancy up to the 1% AEP event. Flood compatible building materials are to be adopted. Consideration is also to be given to the potential impacts of the PMF event.

Whilst no habitable buildings or spaces are currently proposed, the floor level for such structures would be 0.5 metre above the 1% AEP flood level at a minimum where the 1% AEP flood depth is greater than 100mm. Any non-habitable floor levels (such as the proposed additional switch room) would be located 0.15 metre above the 1% AEP flood level at a minimum where the 1% AEP flood depth is greater than 100mm.

Project Site operational procedures are to be reviewed to ensure sufficient flood emergency management procedures are in place. Flooding in the local area is expected to be flash flooding in nature with little warning time. Flood refuge is to be provided for any site personnel and visitors in the existing site offices located above the PMF flood level.

5.2.2 Water quantity

To avoid impacts to the downstream environment the detailed design is to verify that the Project will not result in any increase to stormwater runoff peak flows discharging from the site for all design storm events up to the 1% AEP.

5.2.3 Water quality

The detailed design of the site will include appropriate water quality treatment measures to avoid impacts on the downstream environment. This will include a review of the existing water quality treatment measures and maintenance schedules. The Project aims to align with the existing water quality treatment train on the Project Site as described in Section 3.3.

6 CONCLUSION

The construction and operation of the Project presents a range of potential water quality and quantity impacts. However, it is expected that these impacts can be suitably managed through the detailed design process and the well planned application of standard erosion and sediment controls in accordance with the Landcom 2004 Managing Urban Stormwater: Soils and Construction – Volume 1 (commonly known as the 'Blue Book').

The Project is not anticipated to have any significant operational impacts on water quality and quantity compared to the existing site conditions given that the Project:

- Aligns with and maintains the existing water quality treatment train within the Project Site
- Maintains existing catchment areas and overland flow paths with no net increase in imperviousness
- Battery units are fully enclosed, would be elevated above the 1% AEP flood level
- Battery units do not present a risk of contamination and would include sufficient safety measures to prevent any discharge of electrical current into flood waters
- Does not require additional material storage
- Does not require significant water usage.

The flood impact assessment demonstrates development of the BESS facility is unlikely to result in a significant impact on flood conditions within the Project Site and for the surrounding properties. To ensure any impacts of the Project are minimised, mitigated and/or managed appropriately mitigation measures have been proposed for both the design and construction phases of the project.

7 REFERENCES

- Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality
- Cumberland Council (2021) Cumberland Development Control Plan
- Cumberland Council (2021) Flood Risk Management Policy
- Georges Riverkeeper (2022) Georges River Report Card 2021-2022
- Landcom (2004) Managing Urban Stormwater: Soils and Construction – Volume 1
- Lyall & Associated Consulting Water Engineers (2017) Holroyd City LGA Overland Flood Study
- NSW Department of Planning and Environment (2022) Report Card for the Prospect Creek Water Source

APPENDIX A – Cumberland council correspondence

1) Council Commentary regarding the proposed Smithfield Battery Energy Storage System (received 11/07/2023)
2) Flood Advice Letter for 6 Herbert Street Smithfield (received 02/08/2023)

CUMBERLAND
CITY COUNCIL

Ref: OA2023/0009

11 July 2023

Philip Nevil
Department of Planning and Environment
PARRAMATTA NSW 2150

Dear Sir/Madam,

Subject: **Council commentary regarding proposed Smithfield Battery Energy Storage System**

Application No: **OA2023/0009**

Property: **6 Herbert Place SMITHFIELD NSW 2164**

Proposal: **Construction, operation and maintenance of a Battery Energy Storage System, at the Smithfield Energy Facility (Visy)**

Reference is made to the Department of Planning, Industry and Environment referral received on 28 June 2023 inviting Council's comments for the proposed development.

Council has reviewed the submitted information and the following response is provided.

A. Planning Comments

- Environmental Planning and Assessment Act 1979
  The proposed State Significant Development will have a cost of works which exceeds 30 million dollars, and therefore will be approved under part 4.7 of the Environmental Planning and Assessment Act 1979.

- The following SEPPs and any relevant clauses shall be addressed in any forthcoming application:

  - State Environmental Planning Policy (Biodiversity and Conservation) 2021.
    Chapter 6 – Water Catchments.
    The site is located within the Georges River Catchment Area. Any forthcoming application shall ensure the proposal does not impact on water quality of the catchment area and demonstrate compliance with all relevant clauses of the SEPP.

  - State Environmental Planning Policy (Resilience and Hazards) 2021.
    Chapter 2 - Coastal Management.
    It is noted that Council's internal mapping system identifies the rear south portion of the site to be subject to Prospect Creek.

  - State Environmental Planning Policy (Biodiversity and Conservation) 2021.

- State Environmental Planning Policy (Resources and Energy) 2021.

- State Environmental Planning Policy (Planning Systems) 2021.

- State Environmental Planning Policy (Transport and Infrastructure) 2021.

- Cumberland Local Environmental Plan 2021

  - The site is zoned E4 General Industrial under Cumberland Local Environmental Pan 2021. Any forthcoming application shall demonstrate permissible and zone objective compliance.

  - The site is identified as a flood control lot. Pre - flood advice letter shall be applied for from Council prior to assessment of any application. Any forthcoming application shall ensure compliance with the flood advice letter and Council's flood controls. *Refer to engineering comments below.*

  - The site identified as having Potential Moderate Salinity. This shall be addressed and identified in any future application.

- Cumberland Development Control Plan 2021

  - Parts D (Development in Industrial Zones) and Parts G (Miscellaneous Development Controls) shall be considered in the assessment of the development.

B. Environmental Health Comments

The following comments have been provided by Council's Environmental Health Unit.

NOISE/ACOUSTICS

Noise and vibration assessment for construction and operational activities including cumulative impacts to the area and any sensitive receiver impacts should be carried out as part of the application.

ENVIRONMENTAL IMPACT STATEMENT

The EIS will be carried out at the design phase and should be submitted to Council for review and comment when completed. The EIS will contain;

- Preliminary Hazard Analysis which will qualitatively discuss the potential operational risks of the Project with particular regard to the potential risk to people, property and the biophysical environment that may occur as a result of the accidental release of potential hazardous material and energy.
- A detailed description of the Project including its components, construction activities and potential staging
- A comprehensive assessment of the potential impacts on the key issues including a description of the existing
- environment, assessment of potential direct and indirect and construction, operation and staging impacts
- Description of measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor the
- potential impacts
- Identify and address issues raised by stakeholders

BATTERY ENERGY STORAGE SYSTEM

The battery storage system would comprise modular units on pad mounted foundations, which are containerised. Each unit contains a number of battery pods strung together and connected to an inverter, which will convert the direct current from the batteries into alternating current and connect into the electricity grid.

- Full diagram and location of the pod system recommended.

COOLING TOWERS

The location of the large pod installation appears to be going located where the current cooling towers for the plant are currently located.
A full demolition, management, and decommissioning plan will be required to ensure the sage removal of the old Water Colling System will be removed.
Will a new water cooling System be required as part of the energy plant for future use? If yes, full details of the new system will be required.

CONTAMINATION / REMEDIATION

Demolition and earthworks will be required as part of the project so a PSI and Hazardous Material Survey would be recommended.

AIR QUALITY / WATER PROTECTION / GENERAL ENVIRONMENTAL

Prospect Creek is located nearby to the development. When the EIS is prepared it should include any potential impacts to the creek.

POEO Act – Scheduled 1 Activities

The activities listed in Schedule 1 to the Act (broadly, activities with potentially significant environmental impacts) require an EPL. The operation of the BESS does not constitute any of the scheduled activities and therefore does not require an EPL

Recommendations

The Minister for Planning is the consent authority for SSD projects. The Minister for Planning has issued a general delegation of the consent authority function for SSD projects to the Independent Planning Commission in instances where more than 50 public objections are received on the application, the applicant has made a reportable political donations disclosure and/or Cumberland City Council object to the Project.

The EHU do not have any objections to the project, however as we have only received the scoping report more details in the development will be required as they are prepared. It is recommended that;

1. The Environmental Impact Statement be submitted to Council for review and comment once prepared.

2. A noise and vibration assessment should be carried out from a suitably qualified acoustic consultant with the proposal. The acoustic assessment must demonstrate that the development will comply with the NSW EPA's Noise Policy for Industry (NPfI) and any relevant noise requirements of Council's DCP. The report should give consideration to all noise impacts on any sensitive receivers in the vicinity of the proposed development that may be caused by the development including, but not limited to, mechanical plant, traffic noise, communal areas, operational noise from the site. The report must also give recommendations where noise attenuation measures are required.

3. A Preliminary Site Investigation (Stage 1) report should be prepared to accompany the development application with respect of the suitability of the site for the proposed site. The report shall be prepared by a suitably qualified consultant in accordance with relevant EPA

guidelines. Please be advised that depending on the findings of the Preliminary Site Investigation (Stage 1) report, it may be necessary to conduct further contamination investigations and furnish Council with more reports namely a Detailed Site Contamination Investigation (Stage 2) Report and/or Remediation Action Plan and/or Site Audit Statement. If this is required, it is recommended to submit all reports with the application, so the assessment of the DA is not delayed.

4. A Hazardous Materials Survey Report should be prepared by a suitably qualified person (such as a certified Occupational Hygienist) The report must identify and record the type, location and extent of any hazardous materials on the site and make recommendations as to the safe management and/or removal to ensure the site is safe for demolition, construction and future use/occupation.

5. A full demolition, management, and decommissioning plan will be required to ensure the sage removal of the old Water Colling System will be removed.
    - Will a new water-cooling System be required as part of the energy plant for future use? If yes, full details of the new system will be required.

C. Engineering Comments

The following comments have been provided by Council's Engineering Department.

1. Flooding

    i. Subject site is a flood control lot. It appears development is located within Medium Flood Risk precinct. Critical utilities are not acceptable within the Medium Flood Risk precincts.
    ii. In this regard, flood advice letter shall be obtained from Council and flood risk shall be verified.
    iii. Development shall comply with the flood advice letter and Council's Flood Risk Management Policy. Supporting documents shall be submitted for assessment.
    iv. It appears, the proposed development may not be suitable within the subject site as critical utilities are not acceptable within Medium Flood Risk precinct.
    v. It should be noted access to the site may be affected during the 1%AEP flooding.

2. Stormwater

    i. Stormwater plan has not been submitted. Stormwater runoff from the entire site shall be discharged by gravity system to street gutter or Council's system. Existing and proposed stormwater details shall be provided.
    ii. Onsite Stormwater Detention(OSD) shall be provided as part of the proposal. The details shall be prepared by a suitably qualified person and must be in accordance with Council's DCP and the Upper Parramatta River Catchment Trust "On-Site Detention Handbook. In this regard:
        a. Stormwater plan shall be prepared by suitably qualified hydraulic engineer.
        b. OSD shall be located outside the building floor areas.
        c. OSD calculations, cross section discharge control pit and cross section of the OSD tank shall be submitted.
    iii. Overland flow from adjacent properties shall be maintained. Allowances shall be made for surface runoff from adjacent properties, and to retain existing surface flow path systems through the site.
    iv. Stormwater runoff from the manoeuvring area including access ways will have to undergo some form of standard primary treatment/separation prior to disposal into existing

stormwater systems. In this regard, stormwater treatment device capable of removing litter, oil, grease and sediment shall be provided prior to discharge to the stormwater system.

3. Parking/Access
   i. Traffic impact assessment report shall be submitted to ensure proposed development will not have adverse impact on the street traffic and parking. The traffic impact assessment report shall address the impacts of the proposed developments. These should include, but not limited to, queuing, parking, traffic generation, entry and exit.
   ii. Parking space numbers are provided as per Council's DCP requirements.
   iii. Details of the service vehicle and loading arrangement shall be provided.
   iv. It appears site is used by other tenancy. Proposed development shall not interfere with the approved existing parking, loading, and access arrangements. In this regard, approved details for the existing use shall be submitted.
   v. The design of the driveway, car parking spaces, circulation aisles and sight distance shall comply with Council's DCP and Australian Standards (i.e. AS2890.1 and AS2890.6) if not covered by the DCP.

D. Waste Comments

The following comments have been provided by Council's Waste Department.

A Waste Management Plan has not been submitted for pre-assessment, however, the battery storage facility will not generate a significant amount of waste materials. The management of any small amounts of waste can easily be managed on site and is deemed overall satisfactory

Should you have any further enquiries please do not hesitate to contact Emma Di Rita on 8757 9936 in relation to this matter.

Yours faithfully,

Michael Lawani
Coordinator Major Development Assessment

CUMBERLAND
CITY COUNCIL

Ref: EC2023/0707

02 August 2023

Arcadis
Level 16 580 George Street
SYDNEY NSW 2000

Dear Sir/Madam,

Subject: **Flood Levels at 6 Herbert Place SMITHFIELD NSW 2164, Lot 33 DP 850596, Lot 34 DP 850596**
Application No: **EC2023/0707**
Property: **6 Herbert Place SMITHFIELD NSW 2164,**

Council refers to your request dated 1 August 2023 requesting flood information at the above property.

The above property is shown to be **affected** by the 1% Annual Exceedance Probability (AEP) flood, according to the information available to Council from the "Prospect Creek Overland Flood Study" prepared by Lyall & Associates Consulting Water Engineers in June 2017.

The 1% AEP flood level refers to a flood which has a 1% chance of being equalled or exceeded in any one year and this site has been assessed as **a medium flood risk**. It should be noted that a flood could occur that is more severe than the 1% AEP flood at any time.

The maximum 1% AEP flood level relevant to the subject property has been determined (see the attached plan) to Australian Height Datum (AHD) as follows:

1. At location A - 19.2 mAHD
2. At location B - 19.0 mAHD
3. At location C - 18.6 mAHD
4. At location D - 18.5 mAHD
5. At location E - 18.3 mAHD
6. At location F - 17.9 mAHD
7. At location G - 17.5 mAHD
8. At location H - 17.0 mAHD
9. At location I - 16.9 mAHD
10. At location J - 16.7 mAHD
11. At location K - 16.5 mAHD

The subject property has been identified as Flood Control lot. Under the SEPP (Exempt & Complying Development) 2008 Regulation 3.5(1), a Complying Development Certificate must not be issued for, "Development under this code must not be carried out on any part of a flood control lot, other than a part of the lot that the council or a professional engineer who specialises in hydraulic engineering has certified, for the purpose of the issue of the relevant complying development certificate, as not being any of the following:

a) **a flood storage area,**
b) **a floodway area,**
c) **a flow path,**
d) a high hazard area,
e) a high risk area.

Council has determined that part of the flood control lies in one of the five items above – **item A, B, C, D and E;** therefore, a CDC cannot be issued on this site. The identified flood items are represented by the darker area within the 1% AEP flood extent on the attached map. If the development is proposed within any part of this zone (dark blue area), a pre and post flood study must accompany the Development Application. Alternatively, if the development is proposed within the uncoloured and/or light blue areas (flood fringe zone), a CDC may be considered for this site. However, the surface flows must not be impeded (blocked) and the redevelopment shall allow the free movement of the flood around any proposed structure(s).

In all cases, flood level on adjacent properties shall not be increased. Supporting documentation is to accompany the development.

Minimum habitable floor levels shall be 0.5m above the flood level at the upstream side of the structure. Minimum non-habitable floor levels (garages, laundry, sheds, etc.) shall be 0.15m above the flood level at the upstream side of the structure. Interpolation between flood levels is allowed.

The relationship between these levels and the ground surface may be determined by a survey of the property undertaken by a Registered Surveyor.

It should be noted that where the development or redevelopment of the property is proposed, reference should be made to the relevant Development Control Plan with regard to flooding and drainage issues. Please include a copy of this letter and map with any Development Application that you may lodge with Council for the subject site.

For modelling purposes, the models (pre and post development flood study) shall be calibrated to Council's 1%AEP Flood levels (or interpolated levels) at least 10 metres upstream and downstream from the property boundaries. A 2D model is recommended for these purposes.

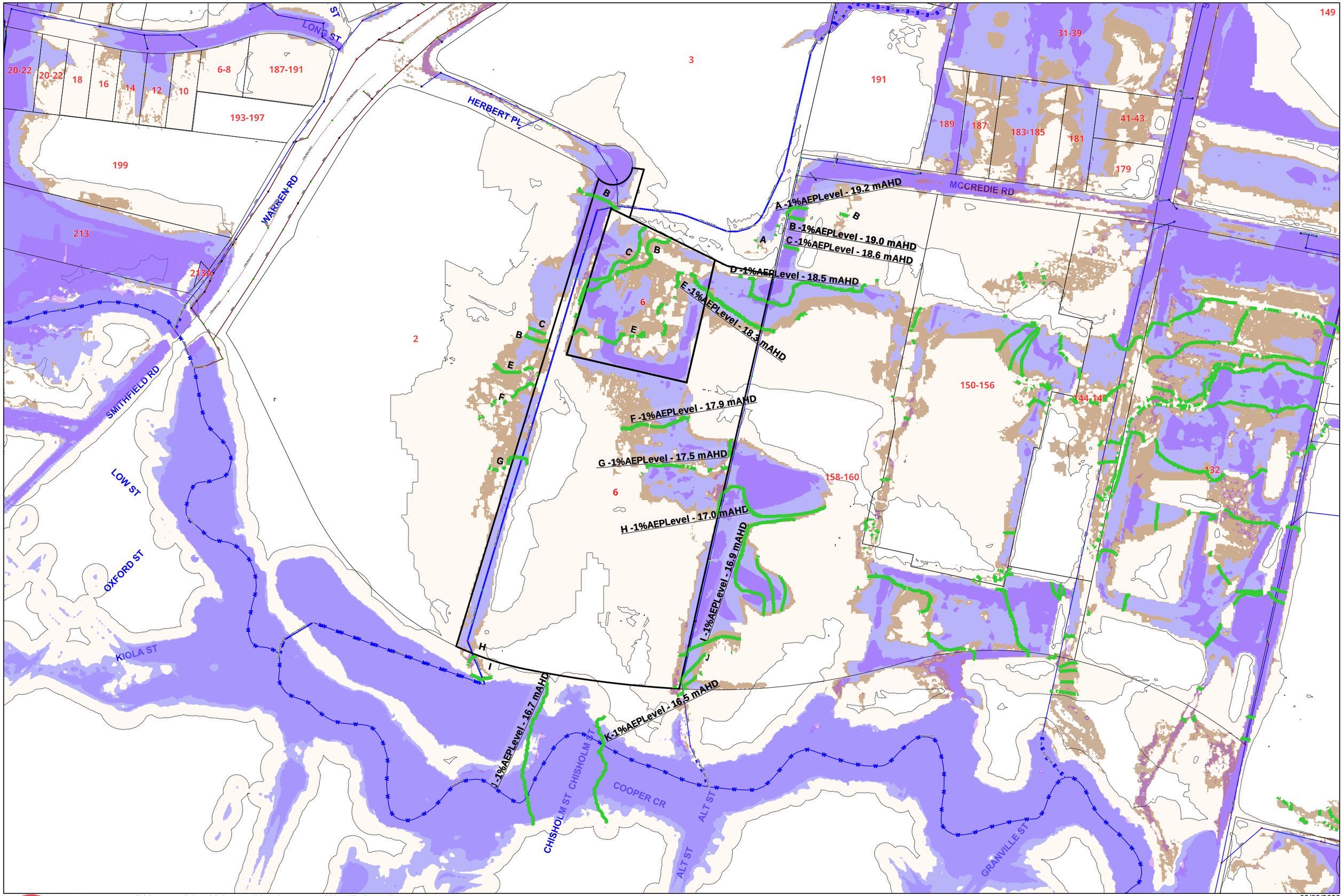
Note:
The brown shaded area on the attached Map represents the flood waters with a depth of flow less than 100mm and does not attract any flood controls. It is presented on the flood map to show the continuity of flooding within the area. However, if development occurs within the brown areas, the structure shall not impede or divert flows to adjacent properties.

Flood levels are not static due to changing circumstances (e.g., revision of the flood model) and accordingly the above flood level is only valid for one year from the above date.

Should you have any further enquiries in this regard, please contact Luiza Atakulova, Planning Systems Support Officer during normal office hours, Monday to Friday on 8757 9955.

Yours sincerely,

Manisha Devarapalli
STORMWATER ENGINEER



02/08/2023

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APPENDIX B – 2023 site photos

Figure 1 SEF workshop and site office entrance

Figure 2 Southern SEF boundary 3kL/hr oil water separator

Figure 3 Southern SEF boundary acoustic wall and southern internal road

Figure 4 Southern SEF outlet control pit and vehicle roller shutter door

Figure 5 Eastern SEF boundary 30kL/hr oil water separator

Figure 6 Eastern SEF boundary and eastern internal road

Figure 7 Eastern SEF boundary (north) blockwork and chain wire fence

Figure 8 SEF western boundary site entrance and water tank

Figure 9 Cooling towers and northern internal road

Figure 10 Northern SEF boundary fence and cooling towers

Figure 11 SEF western internal road

Figure 12 Steam turbine area collection pit and pump