Simec Zen Energy c/- AECOM
Construction of a 100 MW battery energy storage facility and associated infrastructure

Lot 2 Port Paterson Road, Port Paterson
660/V001/19

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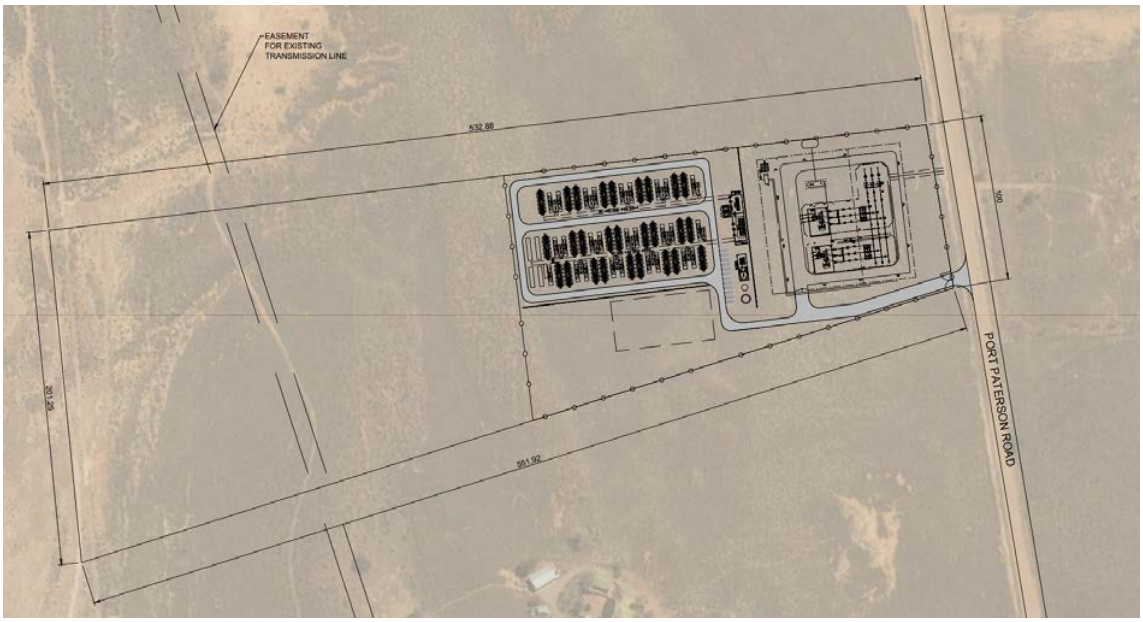

OVERVIEW

Application No	660/V001/19
Unique ID/KNET ID	2019/03160/01
Applicant	Simec Zen Energy C/- AECOM Sponsored for the purpose of public infrastructure by the Department for Energy and Mining
Proposal	Construction of a 100MW battery energy storage system and associated infrastructure
Subject Land	Lot 2 Port Paterson Road, Port Paterson
Zone/Policy Area	Industry Zone
Relevant Authority	Minister for Planning
Role of the Commission:	Section 49(7)&7(e): the SCAP must undertake an assessment of the proposal and report to the Minister for Planning.
Lodgement Date	4 April 2019
Council	Port Augusta City Council
Development Plan	Port Augusta (City) Development Plan Consolidated 7 July 2016
Type of Development	Merit
Public Notification	Yes – development cost exceeds $4 million
Representations	1 representation wishes to be heard
Referral Agencies	Department for Environment & Water, Essential Services Commission, Northern & Yorke Natural Resource Management Board, Commissioner for Highways
Report Author(s)	Janine Philbey, Planning Officer

EXECUTIVE SUMMARY

The proposed development seeks to construct a 100MW battery energy storage system within an Industry Zone to the south of Port Augusta. The development was sponsored for the purposes of 'public infrastructure' under Section 49 of the *Development Act 1993.*

The development provides the necessary frequency control and grid stability requirements for the Cultana Solar Farm (previously granted approval by the Minister for Planning).

The development utilises a portion of an existing vacant allotment and is comprised of 27 containers and supporting buildings for the purposes of connection to the electricity network (via the Davenport substation).

The application was referred to the Port Augusta Council, Department for Environment & Water, Essential Services Commission, Northern & Yorke Natural Resource Management Board, and the Commissioner for Highways. No objections were raised.

The development was publicly notified in the Advertiser and Transcontinental newspapers on 27 March 2019. One representation was received and raised issues such as electricity infrastructure connection and augmentation, traffic, access, and dust as relevant to the application.

The proposal is consistent with the State Government's approach to energy within South Australia, with trends towards storage and renewable energy sources. The application can be recommended for approval subject to appropriate conditions.

ASSESSMENT REPORT

1. DESCRIPTION OF PROPOSAL

Construction of a 100MW/MWH battery energy storage (BES) system at Port Paterson in order to support other electricity infrastructure developments within the Upper Spencer Gulf region of South Australia, including the Cultana Solar Farm located at Whyalla Barson.

SCAP considered the Cultana Solar farm proposal on 11 April 2019 (item 3.2.1) and provided a supportive recommendation to the Minister for Planning, who subsequently approved the proposal on 4 May 2019.

The proposal consists of 27 BES containers and inverters, transformers and associated electrical equipment. In addition, the proposal includes a Medium Voltage and Low Voltage (MV/LV) building, control office building, substation and associated infrastructure, security fencing and lighting, access, internal roads, car parking, drainage, stormwater management and connection to transmission.

A summary of the proposal is as follows:

- 27 BES containers in the form of 45 foot containers (approximately 2.92m tall X 13.71 long X 2.43m wide). Each container will contain five batteries within a climate controlled environment.
- The 27 containers will be connected to one inverter container within which are two inverters. These containers are similar in their form to the previously described BES containers.
- The MV & LV Building is expected to be an 88m^2 transportable building with access stairs and a weather canopy to shield staff from rain or sun when required.
- A control room and office building is also proposed in the same dimensions as the MV & LV building to contain staff amenities and the associated offices.

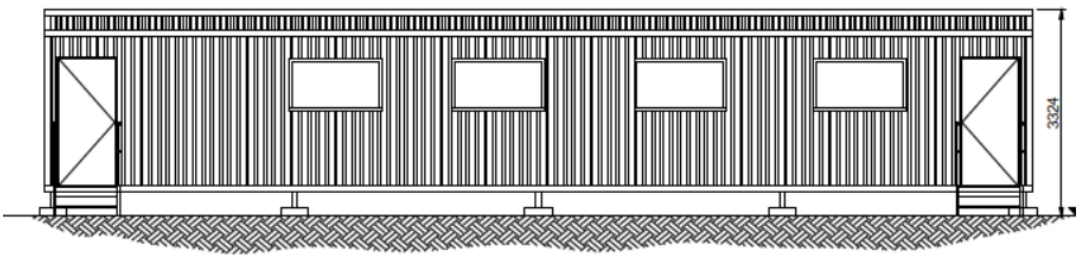

Figure 1 - control room

Application details are contained in the ATTACHMENTS.

2. SITE AND LOCALITY

2.1 Site Description

The site consists of one allotment measuring approximately 7.8ha described as follows:

Lot No	Plan No	Street	Suburb	Hundred	Title
2	D78595	Port Paterson Road	Port Paterson	Davenport	CT 6019/256

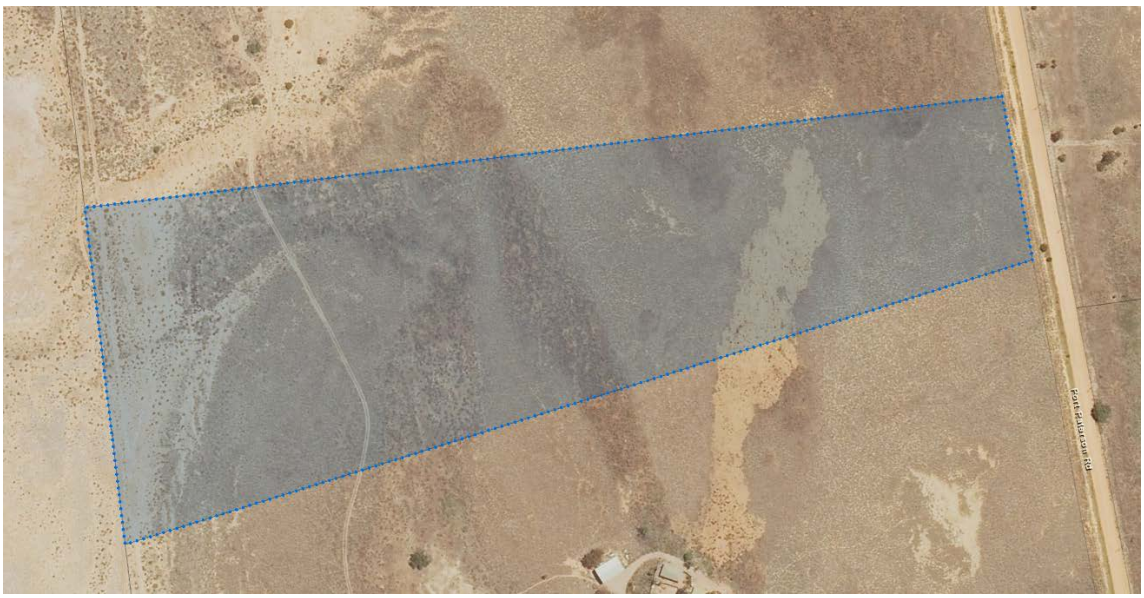

Figure 2 - subject site aerial view

The subject land (8ha) is located 550m south of the Davenport electricity substation and 4.5km south east of Port Augusta (and its urban centre).

The land is currently vacant, with low-open scrubland typical of its coastal location. The land contains a SA Power Networks distribution line, running in a north-south direction, towards its western end.

The land has direct access to Port Paterson Road, with the nearest dwelling situated 100m to the north-east (within an adjoining Rural Living Zone).

The proposed development is expected to be sited within a development footprint of 3 hectares. There is a slight fall across the site from the east, allowing for natural drainage towards to coast. No wells or bores are located on the land.

The western most portion of the allotment is located within the Upper Spencer Gulf Wetland, which is classified as a Wetland of National Importance. This portion of the allotment will not be impacted by the proposed development.

No threatened species, threatened ecological communities or migratory species were record during the applicant's field survey.

2.2 Locality

The locality is characterised by generally undeveloped land, with the former Port Augusta Power Station (now demolished) to the north-west, and pastoral lands situated on a coastal plain to the south and south-east.

Figure 3 - ellipse view of the site with Port Augusta to the north with subject site highlighted by star

3. COUNCIL COMMENTS or TECHNICAL ADVICE

3.1 Port Augusta City Council

The Port Augusta City Council has provided in principle support of the proposal.

Council raised the following aspects of the proposal which require further investigation or provision of information through conditions.

- site access – engineering standard and stormwater drainage,
- stormwater management,
- traffic management– i.e. dust, noise and road condition, heavy vehicle routes and volume's, and
- transmission line route

In general terms the conditions relate to further detailed information which can be provided to the relevant authority prior to construction work commences.

Applicant's response
The applicant proposes to address the Council's road maintenance and dust suppression requirements in the Construction Environment Management Plan (CEMP) and traffic management plan.

The applicant acknowledged the Council's comments referring to B-Double/Road Trains and narrowed the occurrence of these type of movements to the relocation of the generator transformers from the defunct power station site as the only oversize/overmass loads (OSOM) for the proposal. All required consents will be obtained before work occurs.

The 50-200 vehicles per day identified by the proponent in their application for movements to and from the site were based on conservative modelling and the updated estimates are reduced to 25 on average and 50-100 vehicle movements during peak periods. The Traffic Management Plan (TMP) for the proposal should control these movements appropriately.

The TMP is also expected to control movements at the Augusta Highway Intersection and Port Paterson Road.

4. STATUTORY REFERRAL BODY COMMENTS

Referral responses are contained in the ATTACHMENTS.

4.1 Department for Environment and Water

The Department for Environment and Water is a non-mandatory referral in accordance with Schedule 8 of the Development Regulations 2008.

No response was supplied in regard to this development.

4.2 Northern & Yorke NRM Board

The Northern & Yorke NRM Board is a non-mandatory referral in accordance with Schedule 8 of the *Development Regulations 2008*.

The western portion of the subject site intersects with the Upper Spencer Gulf Wetland.

Within this area are Samphire vegetation associations which are a food source for the rare Elegant Parrots when seeds are ripe. While Elegant Parrots use a wide range of habitats and food sources, their density is greatest within areas of samphire.

There are records of Elegant Parrot sightings in the vicinity of that site according to Atlas of Living Australia and Birdata.

Construction activities on the subject site have the potential to impact on local ecological communities through the introduction and spread of declared weeds and pathogens.

Proper plant, soil and debris management would need to be undertaken to ensure adequate hygiene practices to prevent the spread of seed or plant materials away from the site.

The NRM Board has recommended that a weed management plan be developed to prevent future re-infestations of these weed species on site.

Applicant's response
The applicant has stated in their response that the development will be undertaken in an environmentally sensitive manner including weed management and preservation of ecological value. Further information will be provided through a Construction Environment Management Plan (CEMP).

4.3 Commissioner for Highways

The Commissioner for Highways is a non-mandatory referral in accordance with Schedule 8 of the *Development Regulations 2008*.

Port Paterson Road (Council road) intersects with the Augusta Highway which forms part of the national highway network and has a speed limit of 110km/h. Augusta Highway carries approximately 4,600 vehicles per day with 20% of these being commercial vehicles.

The Commissioner for Highways has recommended that a Construction Traffic Management Plan be drafted before commencement of construction to define the transport routes for employees, equipment and materials.

Referral advice also highlights the limited capacity of the Port Paterson Road and Princes/Augusta Highway intersection given the current narrow width for heavy vehicles turning left or right from Augusta Highway onto Port Paterson Road. Referral advice indicates this increases the potential for vehicular conflict.

The Commissioner for Highways has recommended a condition of approval that requires the intersection to be modified for B-Double movements prior to the commencement of construction in order to provide safe access.

The nature of any upgrade, modification or improvements would be negotiated between the relevant parties.

Applicant's response
The applicant is not supportive of any condition of approval that requires an 'upgrade' of the Port Paterson Road / Augusta Highway Junction. It was noted that DPTI Transport are not a formal referral agency pursuant to the *Development Act 1993* and that the recommended condition – which is 'open-ended' - does not relate to the application and is outside the scope of the development . SIMEC ZEN should not be responsible in resolving an existing design defect in DPTI's current road network.

It was noted that the TIS provided with the application considered a worst-case scenario, as a result, other appropriate mitigation measures may be available to resolve DPTI's concerns, such as, the implementation of appropriate temporary traffic management practices during the construction period. It is noted that after the construction stage the operation of the facility will result in negligible traffic generation/impacts. Furthermore, the nature of the condition raises concerns in relation to fairness and equity given the proposed works will benefit existing property owners/occupiers that utilise the intersection, future developers/developments, particularly within the Industry Zone and wider community.

5. PUBLIC NOTIFICATION

The application was subject to public notification in accordance with Section 49(7d) of the *Development Act 1993* as the development cost exceeds $4 million.

A notice was published in the Adelaide Advertiser and Transcontinental on 27 March 2019 for a period of 4 weeks. One representation was received during the notification period and wishes to be heard personally before the panel in support of their submission.

Representor ID	Issue	Applicant's Response
R1	Underground cable route in the same location as the applicant's approved development	The final location of the underground cable will be determined as part of detailed design. The cable is exempt from the assessment under Schedule 14(c) of the *Development Regulations 2008*. The applicant will be working with Council to assess the location of the proposed underground cable and the physical implications to other surrounding development. The applicant notes that the proposed location does not appear to affect the representor's infrastructure. The applicant has been in contact with the representor to further discuss the matter.
	Dust and contamination of solar panels from construction works Potential for cumulative impacts	The applicant notes the representors concerns regarding dust, traffic and access impacting the adjacent development. The applicant expects that these concerns will be managed by the CEMP and TMP.
	Traffic and access during construction and impacts on approved adjacent development	

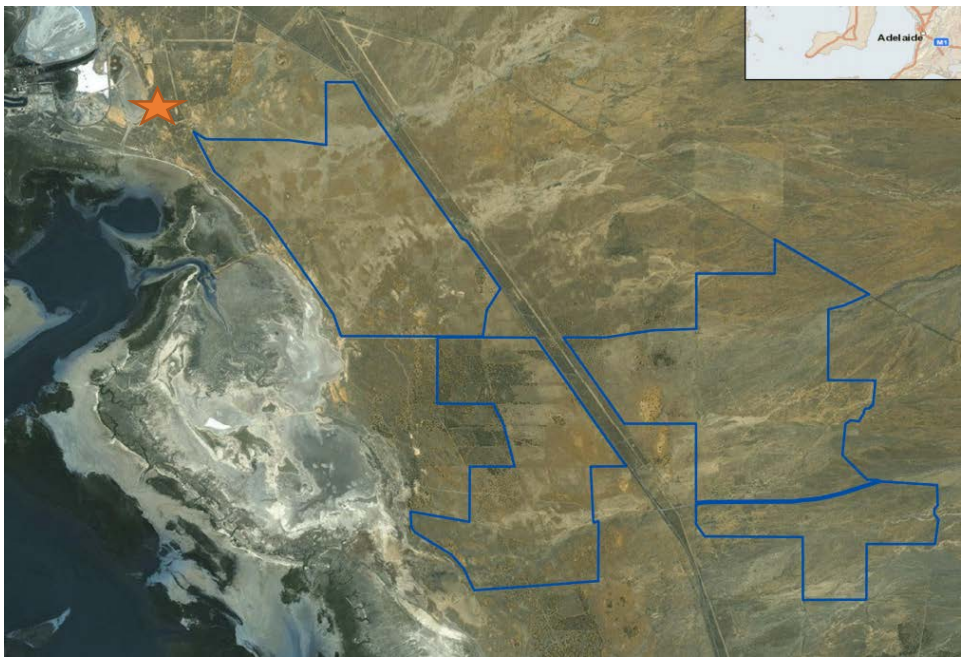

Figure 4 - representation map - representation site area shown by blue outline

A copy of the representation and the applicant's response is contained in the ATTACHMENTS.

6. POLICY OVERVIEW

The subject site is within the Industry Zone as described within the Port Augusta (City) Development Plan, consolidated 7 July 2016.

Relevant planning policies are contained in the attachments and are summarised below.

6.1 Industry Zone

The proposal is wholly within the Industry Zone and abuts the Rural Living Zone to the East. The Industry Zone is intended to be developed with intensive, high quality, landscaped industrial land uses.

The Industry Zone is expected to be protected from intrusion of residential and sensitive land uses. To complement this, generous setbacks are expected to minimise visual disruption to views.

Buildings are expected to be designed in a manner that reduces visual impact as viewed from public roads and surrounding properties; this includes the materials and colours. Variation of facades, roof pitch and building modules are expected to reduce bulk.

Public infrastructure in the form of a wastewater treatment plant is expected in the Industry Zone, but the policy is silent on battery energy storage.

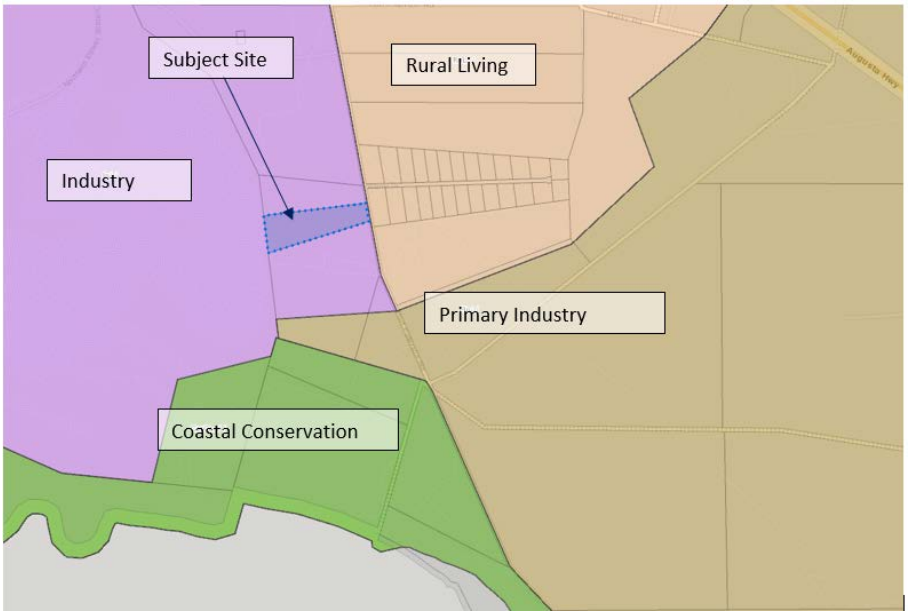

Figure 5 - Zoning Map

6.2 Council Wide

General Principles of Development Control

PDC 2 Development should be orderly and economic.

PDC 4 The operation of intensive uses, such as industrial activity, should not be affected through the encroachment of noise sensitive uses, such as residential.

Infrastructure

PDC 9 Development should not be undertaken unless it can be connected to an adequate and permanent water supply suitable for human consumption, and to a satisfactory effluent disposal system.

PDC 10 Development should neither interfere with, nor obstruct, watercourses.

Environment

PDC 14 Development should not impair the amenity of the locality or any other development or cause hazards to any member of the public by the emission of noise, vibrations, smell, fumes, smoke, vapour, steam, soot, ash, dust, waste water, waste products, grit, oil, or otherwise.

Appearance of Land and Buildings

OBJ 18 The amenity of localities not impaired by the appearance of land, buildings and objects.

In areas of high scenic value, electric supply and telecommunications structures should be so sited and designed to preserve the attractiveness of such areas.

OBJ 19 Development landscaped in a manner appropriate to the region.

General

PDC 43 The apparent bulk, height or scale of any large buildings which may be required for specific functional reasons should be minimised by the careful articulation and composition of building forms and facades.

Building Set-backs

PDC 45 Buildings should be set-back from road and side boundaries a distance dependent on the scale and height of the buildings relative to other buildings in the locality.

PDC 46 Buildings and structures should be set-back from the road frontage no less than the adjacent buildings except where the adjacent allotment is vacant, buildings and structures should be set-back eight metres from the front boundary and three metres from the side boundary.

Landscaping

PDC 47 Building development should be landscaped in a manner which requires minimal artificial watering, utilises rainfall and run-off, provides shade, reduces dust and acts as a wind break. Such landscaping should promote a pleasant character in the locality and aid in the climatic control of building temperatures.

PDC 48 Landscaping should:

(a) not result in the introduction or increased spread of scheduled pest plants or environmental weeds;

(b) predominantly be comprised of indigenous species relevant to Port Augusta and its environs;

(c) include species that are appropriate for the environmental conditions surrounding the development; and

(d) when required to screen development, be of a suitable height, growth rate and year round foliage to facilitate the screening function.

OBJ 22 The preservation of trees of historical, ecological, or particular visual, significance.

Hazards - Acid Sulfate Soils

PDC 135 Development and activities, including excavation and filling of land, that may lead to the disturbance of potential or actual acid sulfate soils should be avoided unless such disturbances are managed in a way that effectively avoids the potential for harm or damage to any of the following:

(a) the marine and estuarine environment;

(b) natural water bodies and wetlands;

(c) agricultural or aquaculture activities;

(d) buildings, structures and infrastructure;
(e) public health.

Industrial Development

OBJ 88 Industrial, warehouse, storage, commercial and transport distribution development on appropriately located land, integrated with transport networks and designed to minimise potential impact on these networks.

OBJ 90 Industrially zoned allotments and uses protected from encroachment by adjoining uses that would reduce industrial development or expansion.

OBJ 91 Industrial development occurring without adverse effects on the health and amenity of occupiers of land in adjoining zones.

OBJ 92 Compatibility between industrial uses within industrial zones.

OBJ 93 The improved amenity of industrial areas.

PDC 306 Any building or structure on, or abutting the boundary of, a non-industrial zone should be restricted to a height of 3 metres above ground level at the boundary and a plane projected at 31 degrees above the horizontal into the development site from that 3 metre height…

PDC 307 Industrial development should enable all vehicles to enter and exit the site in a forward direction, where practical.

PDC 308 Industrial development abutting an arterial road, a non-industrial zone boundary, or significant open space should be developed in a manner that does not create adverse visual impacts on the locality.

PDC 310 Industrial development should minimise significant adverse impact on adjoining uses due to hours of operation, traffic, noise, fumes, smell, dust, paint or other chemical over-spray, vibration, glare or light spill, electronic interference, ash or other harmful or nuisance-creating impacts.

PDC 311 Landscaping should be incorporated as an integral element of industrial development along non-industrial zone boundaries.

Noise

PDC 337 Development should be sited, designed and constructed to minimise negative impacts of noise and to avoid unreasonable interference.

PDC 338 Development should be consistent with the relevant provisions in the current Environment Protection (Noise) Policy.

7. PLANNING ASSESSMENT

The application has been assessed against the relevant provisions of the Port Augusta (City) Development Plan (Consolidated 7 July 2016), which are contained in the attachments.

The proposal seeks to establish a large scale battery energy storage system, with an underground cable connecting to the Davenport substation. This component of the development is exempt from requiring development approval pursuant to Schedule 14 of *Development Regulations 2008*.

7.1 Land Use and Character

The subject site is characterised by its open nature and adjacency to the former Port Augusta coal fired power station site. The large allotment sizes available would be suitable for a wide range of industrial, warehouse, storage and transport land uses.

The proposed battery energy storage system is similar in scale and form with other industrial and commercial type developments envisaged within the zone, whilst electricity infrastructure is a common feature within the locality more generally. An Industry zone would be the most appropriate area for a BESS to be developed.

There are limited opportunities to screen the development, such that the nature of the coastal soils and harsh climate mitigate against a landscaping solution that could be applied in more favourable conditions – however the relatively low scale of the structures and generous road setback helps minimise any visual impact.

7.2 Design and Appearance

The physical form of the development will be similar to that of a substation facility with a cluster of shipping containers.

The tallest component of the development is the electricity infrastructure which has a maximum height of 10.8m.

A 3m tall noise barrier is shown on plans adjacent to the offices, LV/MV rooms and control room.

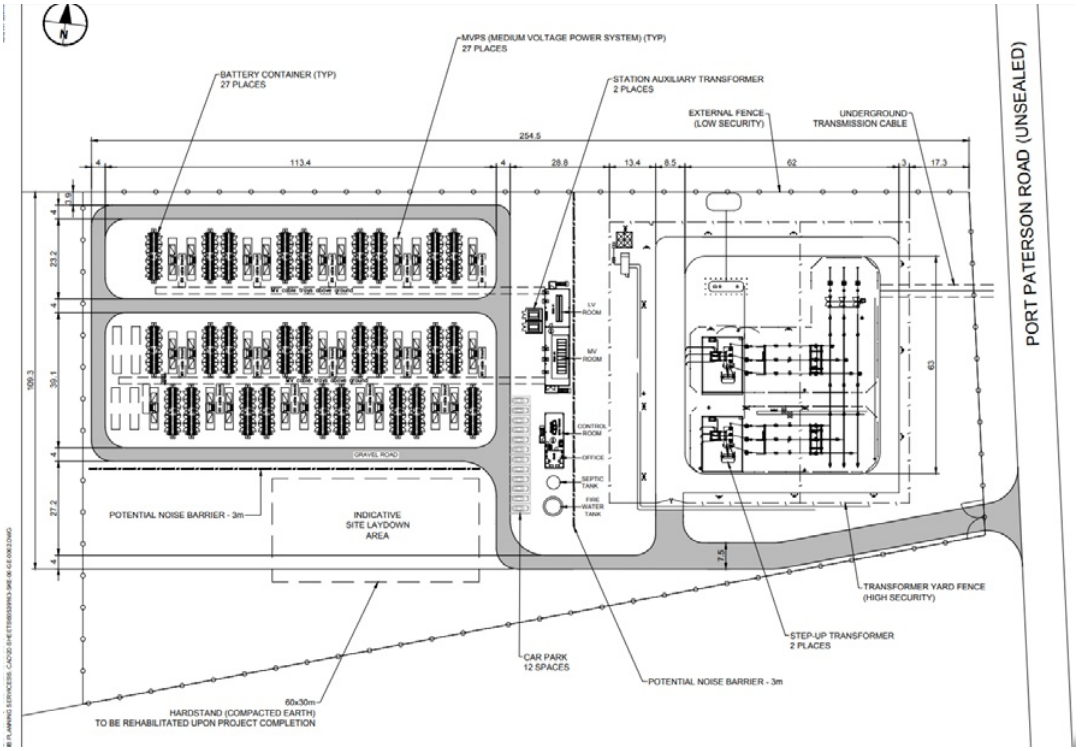

Figure 6 - proposed site layout

As shown by Figure 7 above, the setback from Port Paterson Road to the transformer yard is expected to be 17.3m. The site will be fenced with a low security structure and the transformer yard will be surrounded by a high security fence.

The bulkiest part of the development is located approximately 150m from Port Paterson Road, which are the battery energy storage system containers.

The development will not be directly visible from the Augusta Highway or from any significant tourist routes or points of interest.

The proposed setback is consistent with PDC 5 & 6 of the Industry Zone.

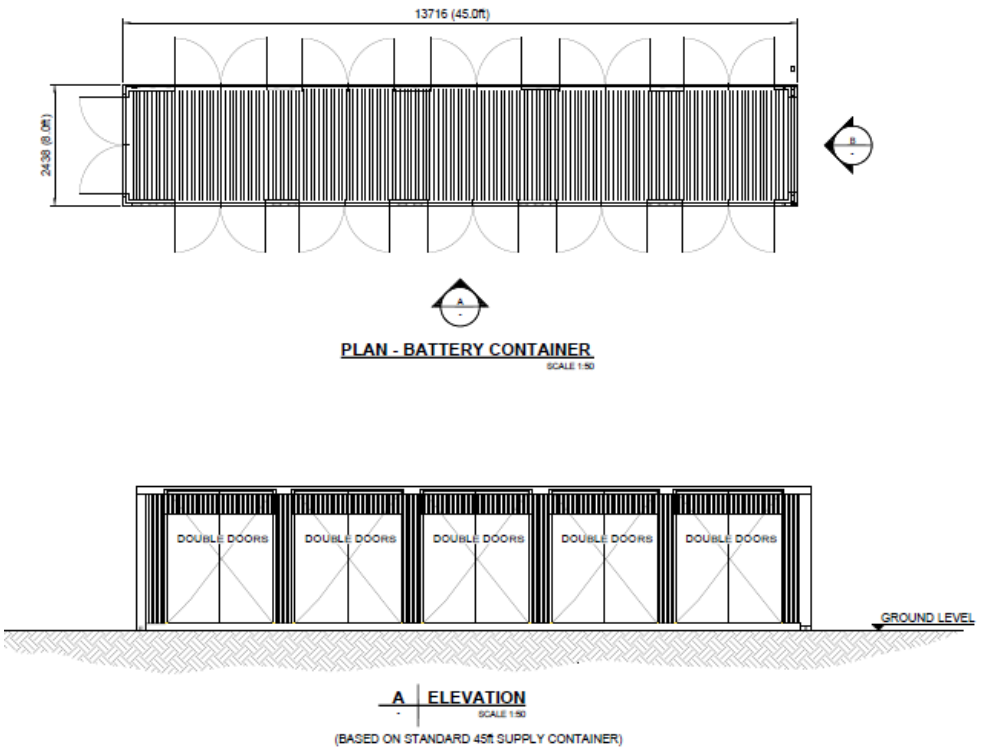

Figure 7 - battery container (supplied by applicant)

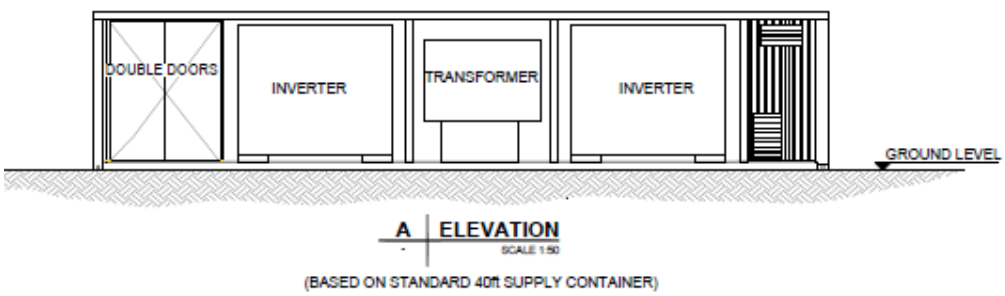

Figure 8 - inverter container side on view (supplied by applicant)

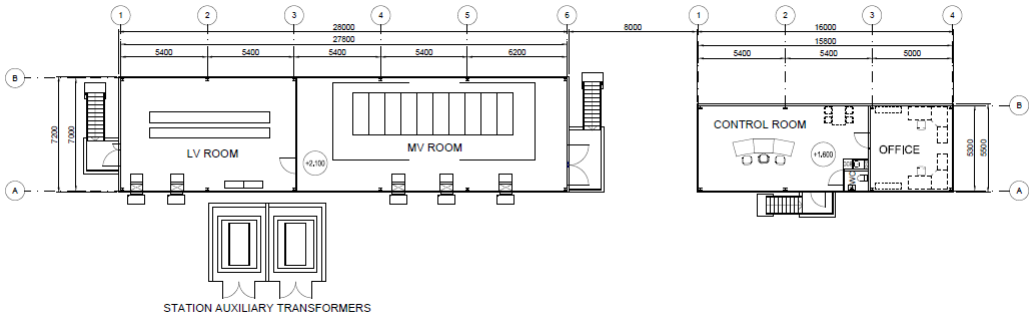

Figure 9 - layout of the MV/LV and control rooms overview

7.3 Traffic Impact and Access

The applicant has provided a traffic impact statement with their documentation. The document outlines the potential origin of some plant and equipment to be transported to the site from Port Adelaide, Port Augusta, Port Pirie and Whyalla.

The applicant has indicated in their response to representations and Council comments that further work will be undertaken to provide a Traffic Management Plan and Construction Environment Management Plan.

The oversize overmass (OSOM) loads (seven in total) are expected to involve the relocation of the Playford generator transformers from the old Playford Power Station site (76 tonnes of infrastructure delivered by 19m semi-platform trailer). In addition, water tanks (3.2m tall X 4.6 diameter) are to be delivered by 19m semi-low loader.

The largest ongoing traffic impact to the site and local area is expected during the construction period and Council provided comments through their referral response.

Figure 4 - corner of Princes Highway and Port Paterson Road looking south west

Figure 5 - Princes Highway looking east, Port Paterson road at intersection

Port Paterson Road is an unsealed two-way local road which provides access to the site.

The applicant's traffic impact statement notes that 25 dwellings are serviced by Port Paterson Road and some disruptions are expected including from raised dust, noise, increased traffic and damage to the roadway due to an increase in vehicle traffic loads.

The applicant states that dust suppression methods, traffic speeds and planning to avoid peak times is expected to reduce these impacts where possible.

In terms of the workforce access to the site – the lodged documentation has assumed one vehicle/employee with entry/exit per day. These assumptions have been revised with employee journey management measures, such as buses and car pooling, expected to reduce overall trip numbers.

Internal roadways will be constructed using crushed rubble or similar leading to a grade level hardstand car park adjacent to the control room and office building.

DPTI traffic has provided advice with regard to the Augusta Highway intersection modification. The applicant has queried the need for an open-ended intersection upgrade for temporary construction traffic.

However, there may be a need for appropriate modifications for safety and efficiency reasons – particularly if B-Doubles are used, whilst Council's road maintenance and permission requirements will also need to be met.

Further discussions will be needed between the Department / Council and applicant to detail the required measures in this regard. A conditional matter is recommended that implements the findings of an appropriately prepared Traffic Management Plan (TMP), which should then be approved by the Minister.

7.4 Drainage and Stormwater

The applicant does not anticipate that stormwater or drainage will be a significant issue as the site is generally pervious. The proposed buildings will be plumbed to drainage or rainwater tanks in accordance with a stormwater management plan.

7.5 Environmental Factors

7.5.1 Wetlands and Native Vegetation

The applicant's ecological assessment notes that the site is partly within the boundary for a nationally important/significant wetland which consists of low shrub land (see figure 12 below). The proposed design and layout has avoided impacts on more sensitive areas (supported by a site survey conducted in 2018, which considered the optimal location, for both the BESS and cable route).

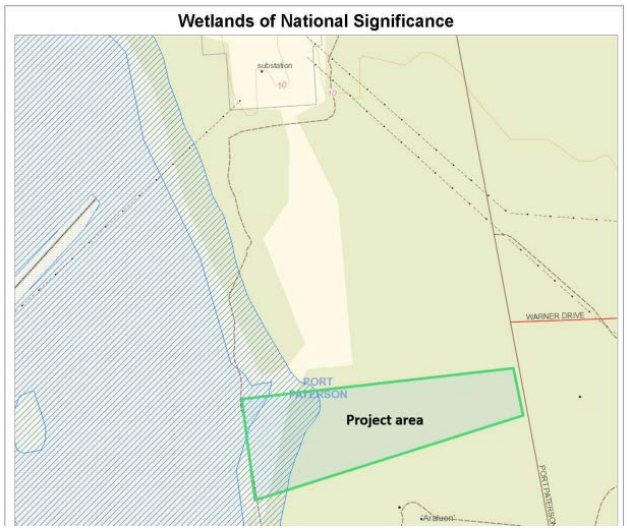

Figure 6 - supplied by applicant - ecology report

The applicant anticipates the clearance of 3ha to accommodate the footprint of the development with an additional .45 or .51 hectares depending on the best option for the transmission route as shown below in figure 13.

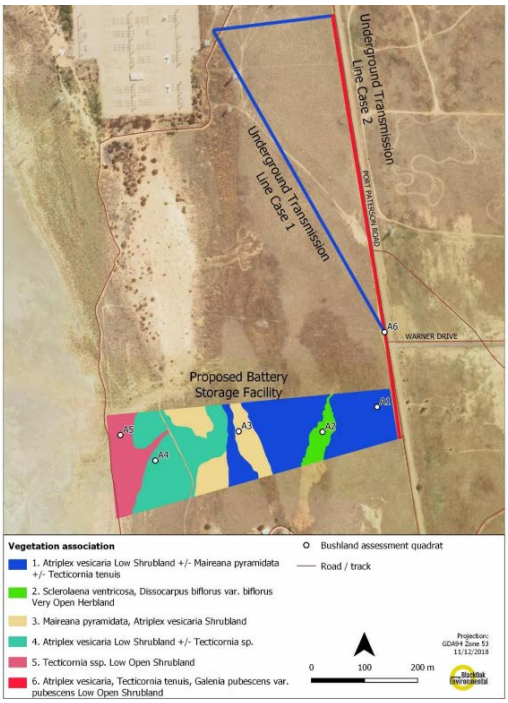

Figure 7 - vegetation assessment - supplied by applicant - ecology report

The applicant will be required to seek approval for native vegetation clearance under Division 5 of the *Native Vegetation Regulations 2017* and a contribution to the Native Vegetation Fund is expected by the applicant as noted in their ecological assessment.

7.5.2 Noise Sources

The applicant has undertaken an acoustic assessment with the identified noise sources expected to be:

- HVAC units X 54 to cool batteries
- Power inverters X 54
- 27 X transformers
- 2 X step up transformers

The subject noise sources will be acoustically treated to reduce the impact of noise on surrounding land and measurements will be undertaken during installation and commissioning to further understand the potential impacts.

The applicant expects that the acoustic treatments will meet the environmental noise criteria with conservative modelling showing the predicted levels are in accordance with the levels relating to each surrounding zone.

If proposed noise monitoring indicates a tonal result, a 3m tall Colorbond fence would be constructed to further control any impacts on surrounding land uses.

7.5.3 Interface

The proposal will be setback from the public roadway to the east of the site, which meets Objectives 18, 19 and PDCs 43, 45, 46 of the Development Plan's General Section given the relative distance to height requirement.

The battery storage component (comprising shipping containers) is located to the west of the on-site substation, which is more than 150m from the eastern boundary of the allotment. No undue amenity or operational impacts are anticipated by the development at the nearest sensitive land use.

Figure 8 - site overview supplied by applicant

7.6 Employment Generation

The proposed development is expected to generate 100 jobs at construction and 5 full time jobs through operations and maintenance.

8. CONCLUSION

The proposed development is located within an Industry Zone where commercial features – in terms of larger buildings and open storage areas – are anticipated. The operation of the development is not expected to impact nearby uses or compromise the amenity of rural-residential dwellings.

Oversized vehicle loads are expected to be limited in number and can be managed through a traffic management plan. Construction impacts will need to be carefully managed, including particular attention to raised dust and site activities, which can be more difficult to address in semi-arid environments.

DPTI Traffic has sought the resolution of access to the site through an upgrade or similar of the arrangements on Princes Highway. A condition is proposed that allows the nature and extent of the modifications to be negotiated between the relevant party's post decision.

Generally, the proposal is expected to support other renewable energy proposals, through the provision of enhanced network stability and frequency response capacity, consistent with the State's energy policy and recently released State Planning Policies.

If no further information is required, and all relevant assessment matters have been considered, this planning report can be endorsed by the State Commission Assessment Panel pursuant to Section 49 (7e) of the *Development Act 1993,* and a formal recommendation with appropriate conditions provided to the Minister for Planning for his further review and decision.

Janine Philbey
PLANNING OFFICER
PLANNING AND LAND USE SERVICES (DPTI)

ISO A1 594mm x 841mm

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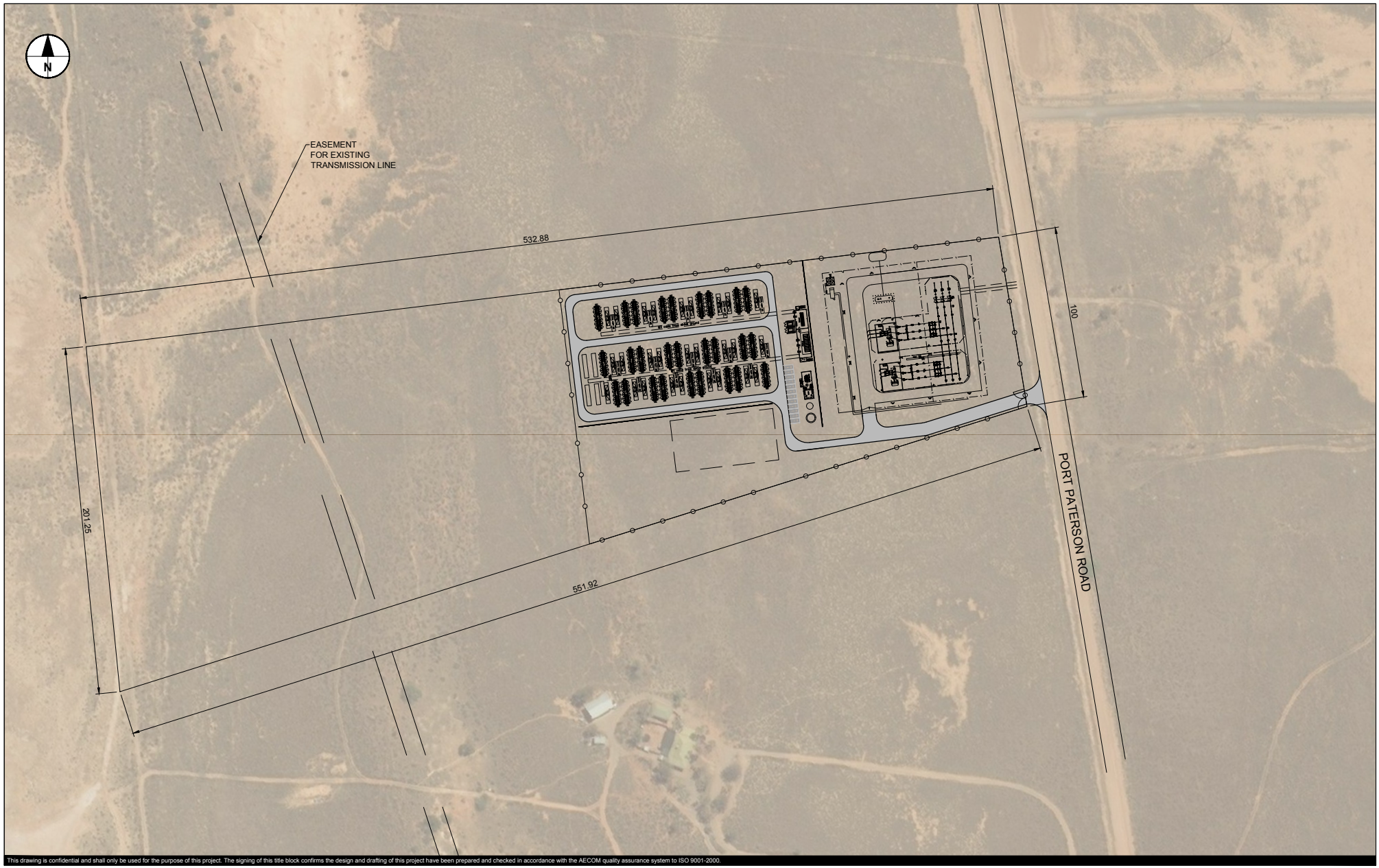

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OAKLAND PARKS, SA 5046
www.zenenergy.com.au

Prepared for: SIMEC ZEN TECHNOLOGIES (POWER AND ENERGY) PTY LTD
A.B.N 82 110 224 005

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PROJECT DATA

DATUM		SURVEY	MGA Z53

ISSUE/REVISION

UR		UNDER REVISION
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60539163

SHEET TITLE

PLAYFORD UTILITY BATTERY PROJECT
SITE LAYOUT

SHEET NUMBER

60539163-SKE-00-GE-0001

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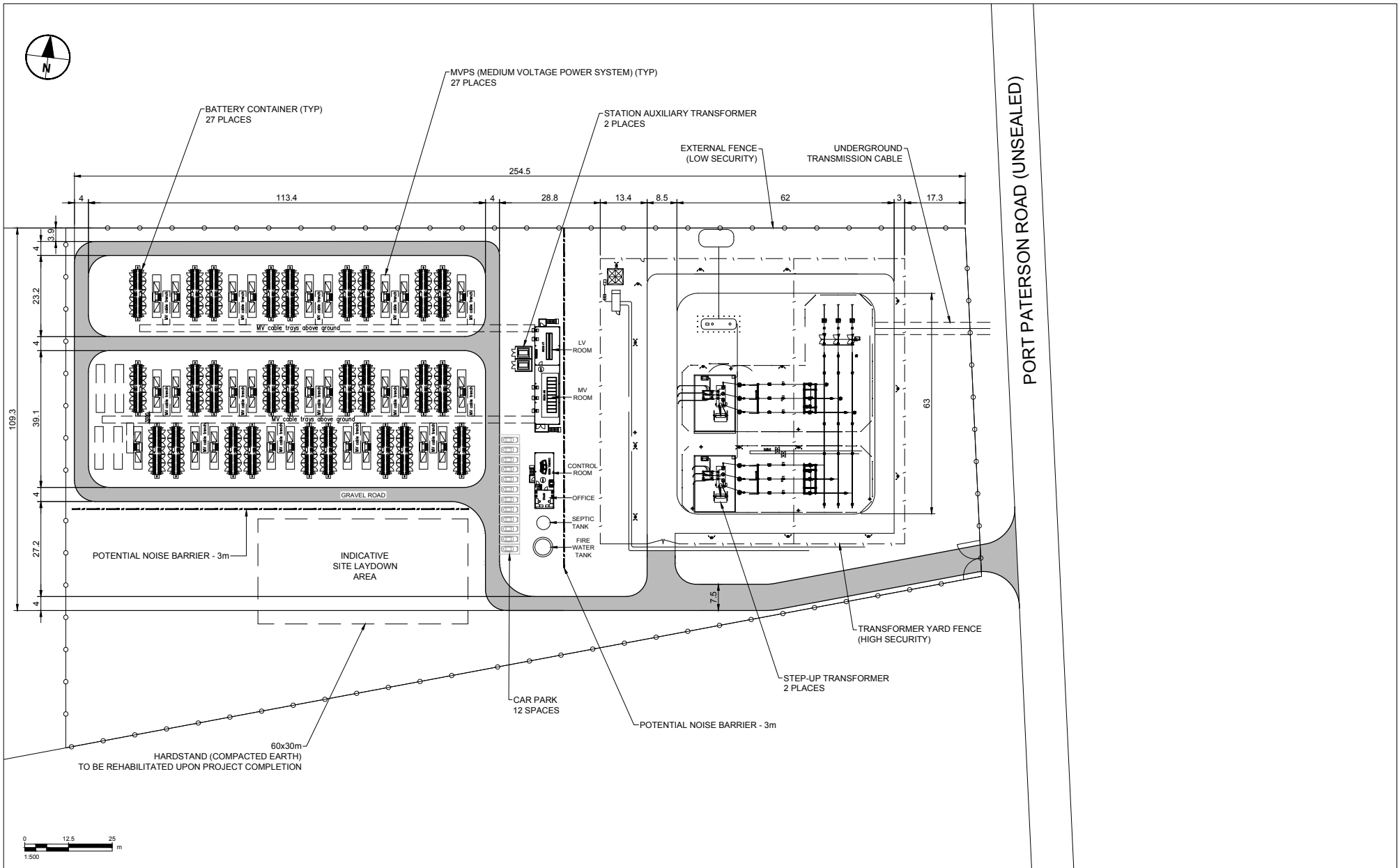

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CONSULTANT

AECOM Australia Pty Ltd
A.B.N 20 093 846 925
www.aecom.com

PROJECT

PLAYFORD UTILITY BATTERY PROJECT

PORT PATERSON ROAD, PORT PATERSON

CLIENT

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PROJECT DATA

DATUM	AHD	SURVEY	MGA Z53

ISSUE/REVISION

UR		UNDER REVISION
I/R	DATE	DESCRIPTION

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PLAYFORD UTILITY BATTERY PROJECT
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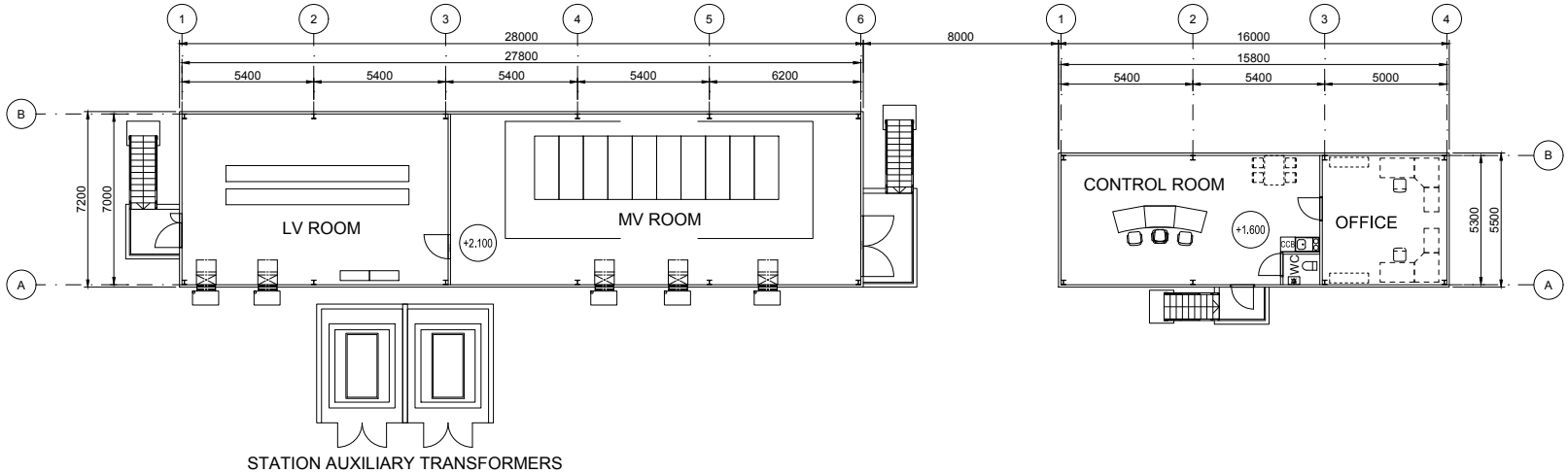

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PROJECT

PLAYFORD UTILITY BATTERY PROJECT

PORT PATERSON ROAD, PORT PATERSON

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PROJECT MANAGEMENT INITIALS

DESIGNER	CHECKED	APPROVED

ISSUE/REVISION

UR		UNDER REVISION
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60539163

SHEET TITLE

PLAYFORD UTILITY BATTERY PROJECT
MASTER LAYOUT
MV, LV AND CONTROL BUILDING

SHEET NUMBER

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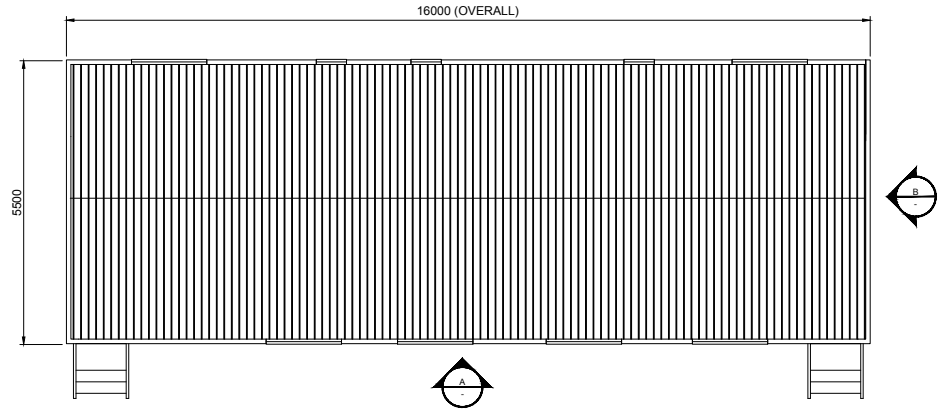

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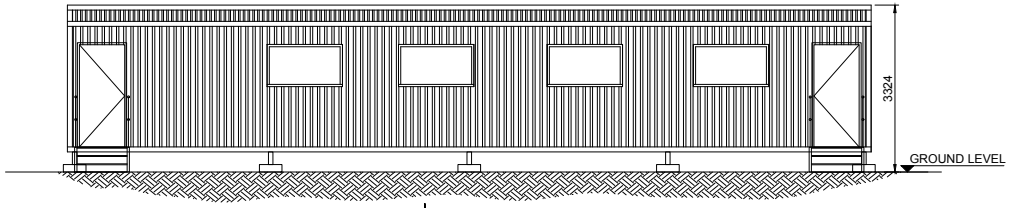

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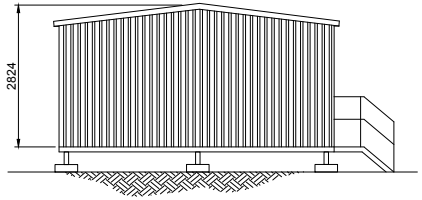

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PROJECT

PLAYFORD UTILITY BATTERY PROJECT

PORT PATERSON ROAD, PORT PATERSON

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I/R	DATE	DESCRIPTION

PROJECT NUMBER

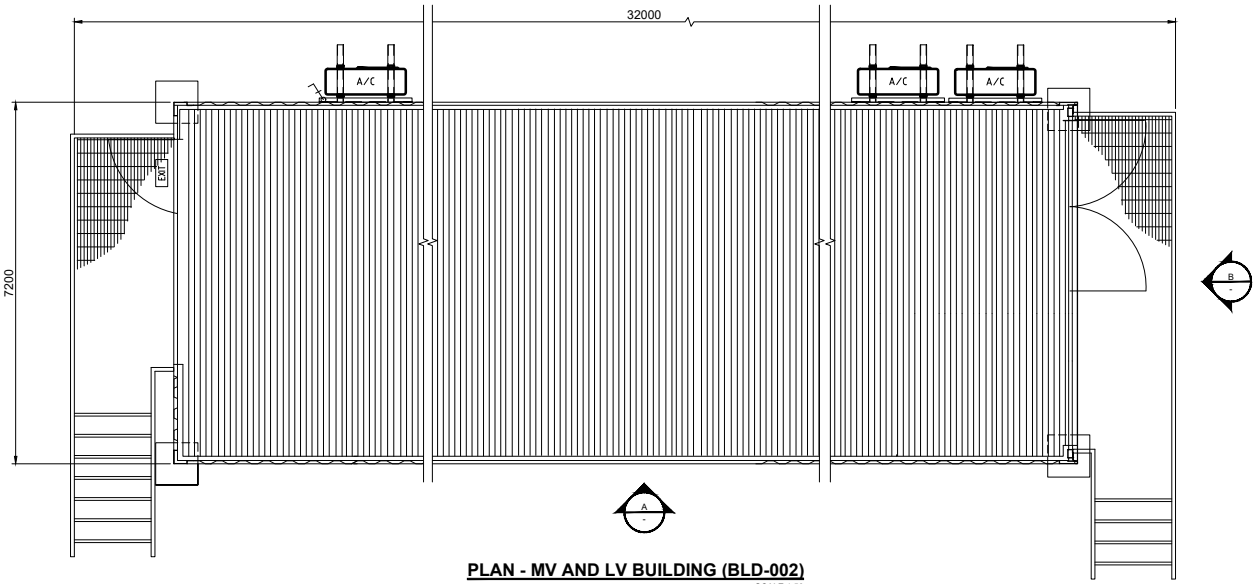
60539163

SHEET TITLE

PLAYFORD UTILITY BATTERY PROJECT
CONTROL ROOM AND OFFICE BUILDING
LAYOUT AND ELEVATIONS

SHEET NUMBER

60539163-SKE-00-GE-0021



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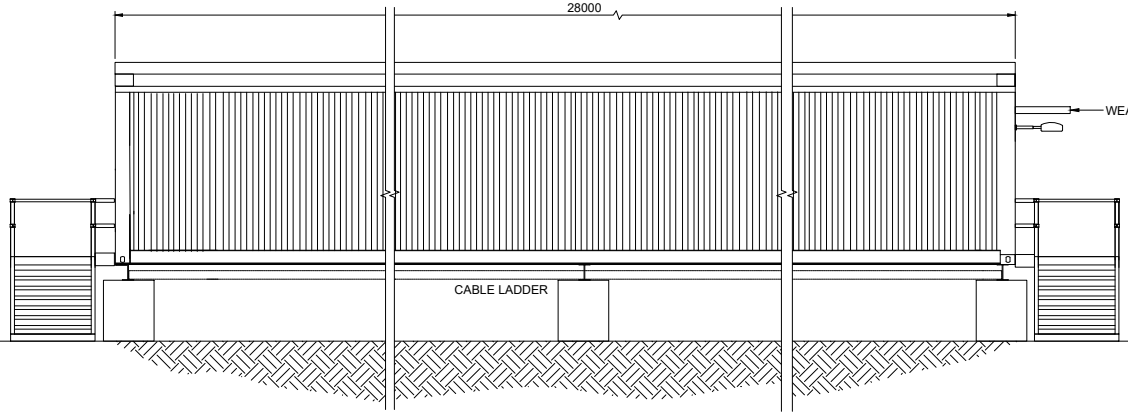

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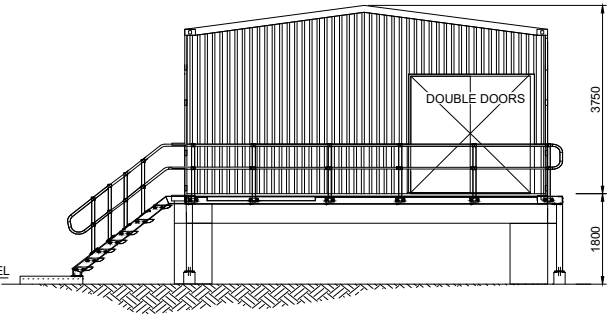

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SCALE 1:50

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PROJECT
PLAYFORD UTILITY BATTERY PROJECT

PORT PATERSON ROAD, PORT PATERSON

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PROJECT MANAGEMENT INITIALS

DESIGNER	CHECKED	APPROVED

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UR		UNDER REVISION
I/R	DATE	DESCRIPTION

PROJECT NUMBER
60539163

SHEET TITLE
PLAYFORD UTILITY BATTERY PROJECT
MV AND LV BUILDING
LAYOUT AND ELEVATIONS

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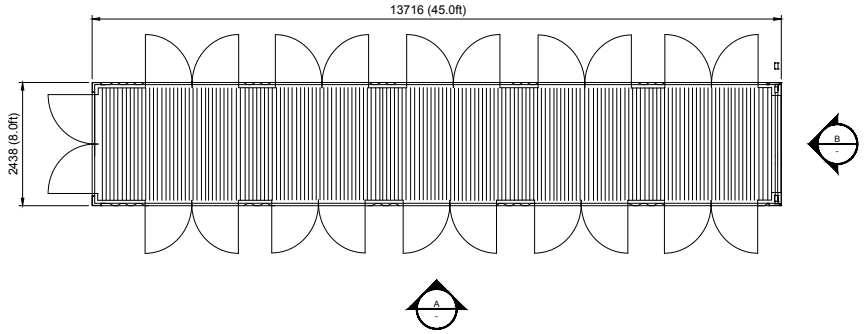

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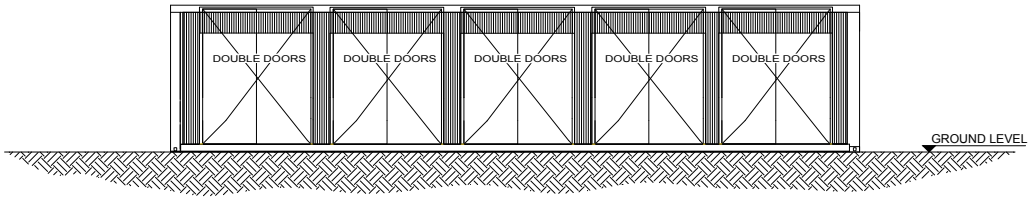

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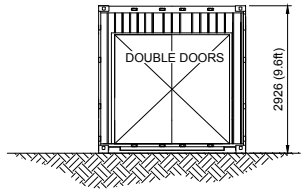

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(BASED ON STANDARD 45ft SUPPLY CONTAINER)

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PROJECT
PLAYFORD UTILITY BATTERY PROJECT

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PROJECT MANAGEMENT INITIALS

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PROJECT NUMBER
60539163

SHEET TITLE
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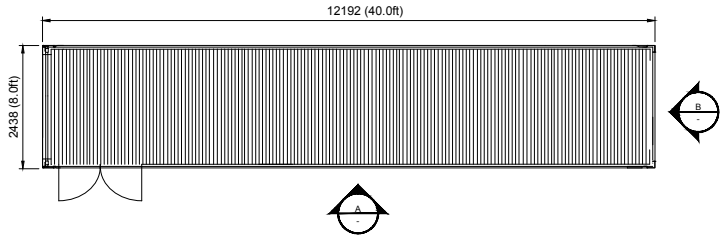

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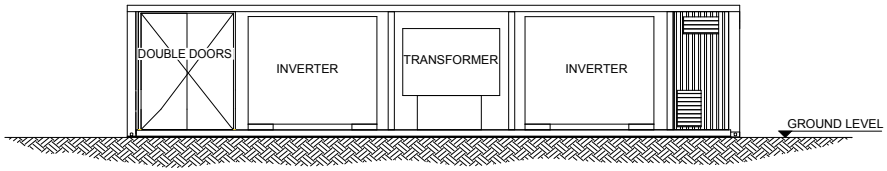

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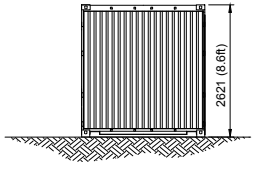

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SCALE 1:50

(BASED ON STANDARD 40ft SUPPLY CONTAINER)

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PLAYFORD UTILITY BATTERY PROJECT

PORT PATERSON ROAD, PORT PATERSON

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PROJECT MANAGEMENT INITIALS

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I/R	DATE	DESCRIPTION

PROJECT NUMBER

60539163

SHEET TITLE

PLAYFORD UTILITY BATTERY PROJECT
BATTERY CONTAINER
LAYOUT AND ELEVATIONS

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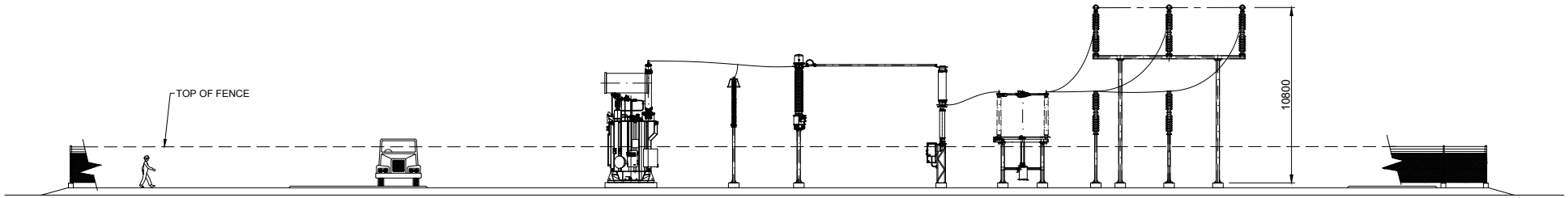

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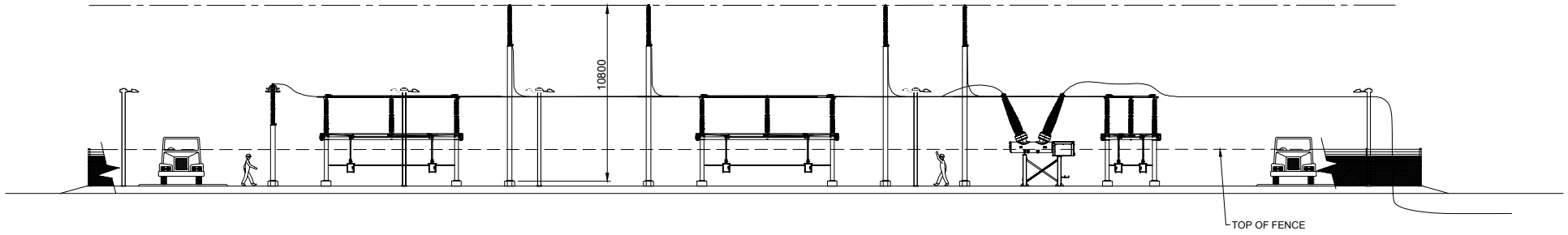

SECTION OF SUBSTATION LOOKING WEST
SCALE 1:125

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PROJECT NUMBER
60539163

SHEET TITLE
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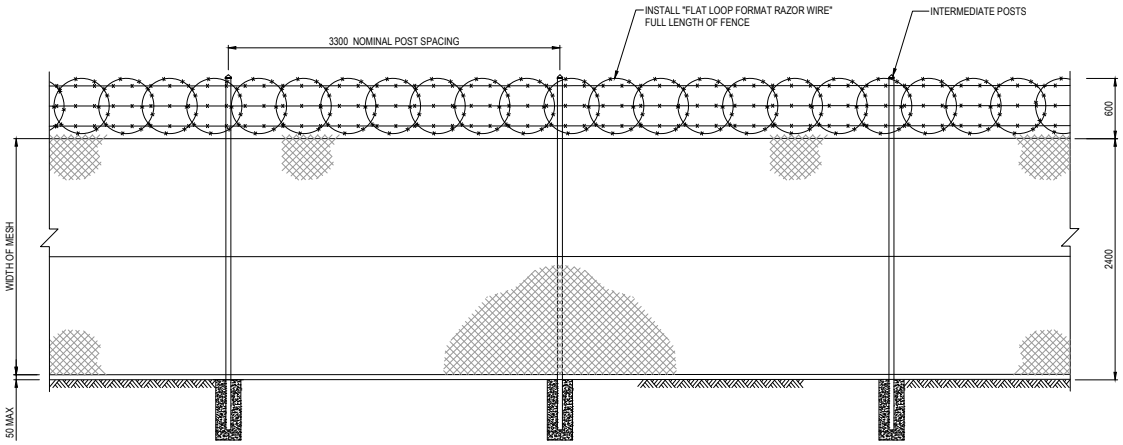
SUBSTATION SECTION

SHEET NUMBER
60539163-SKE-00-GE-0031



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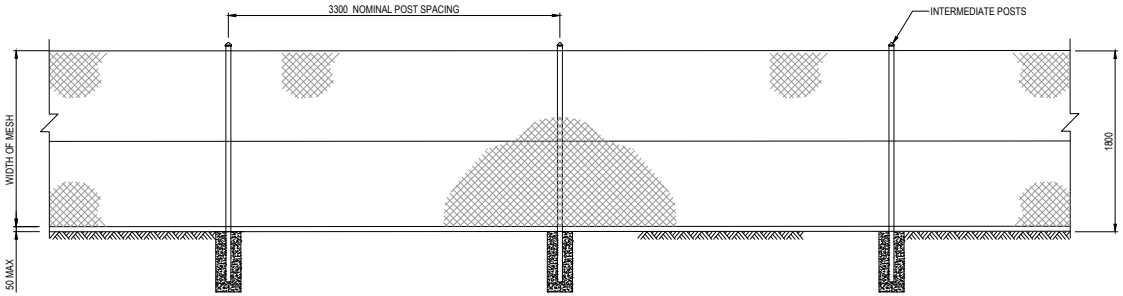

LOW SECURITY FENCING
SCALE 1:25

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PROJECT

PLAYFORD UTILITY BATTERY PROJECT

PORT PATERSON ROAD, PORT PATERSON

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www.zenenergy.com.au

Prepared for: SIMEC ZEN TECHNOLOGIES (POWER AND ENERGY) PTY LTD
A.B.N 82 110 224 005

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PROJECT MANAGEMENT INITIALS

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ISSUE/REVISION

I/R	DATE	DESCRIPTION

PROJECT NUMBER

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SHEET TITLE

PLAYFORD UTILITY BATTERY PROJECT
FENCING DETAILS

SHEET NUMBER

60539163-SKE-00-GE-0041

Government of South Australia
Department of Planning, Transport and Infrastructure

Product	Register Search (CT 6019/256)
Date/Time	25/09/2018 09:46AM
Customer Reference	Davenport South
Order ID	20180925002074
Cost	$28.75

REAL PROPERTY ACT, 1886
South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

Certificate of Title - Volume 6019 Folio 256

Parent Title(s) CT 5146/328

Creating Dealing(s) RTU 11016311

Title Issued 24/09/2008 **Edition** 1 **Edition Issued** 24/09/2008

Estate Type

FEE SIMPLE

Registered Proprietor

ANGELIKA TOUNE
OF PO BOX 1398 STIRLING NORTH SA 5710

Description of Land

ALLOTMENT 2 DEPOSITED PLAN 78595
IN THE AREA NAMED PORT PATERSON
HUNDRED OF DAVENPORT

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART (T 2891633)

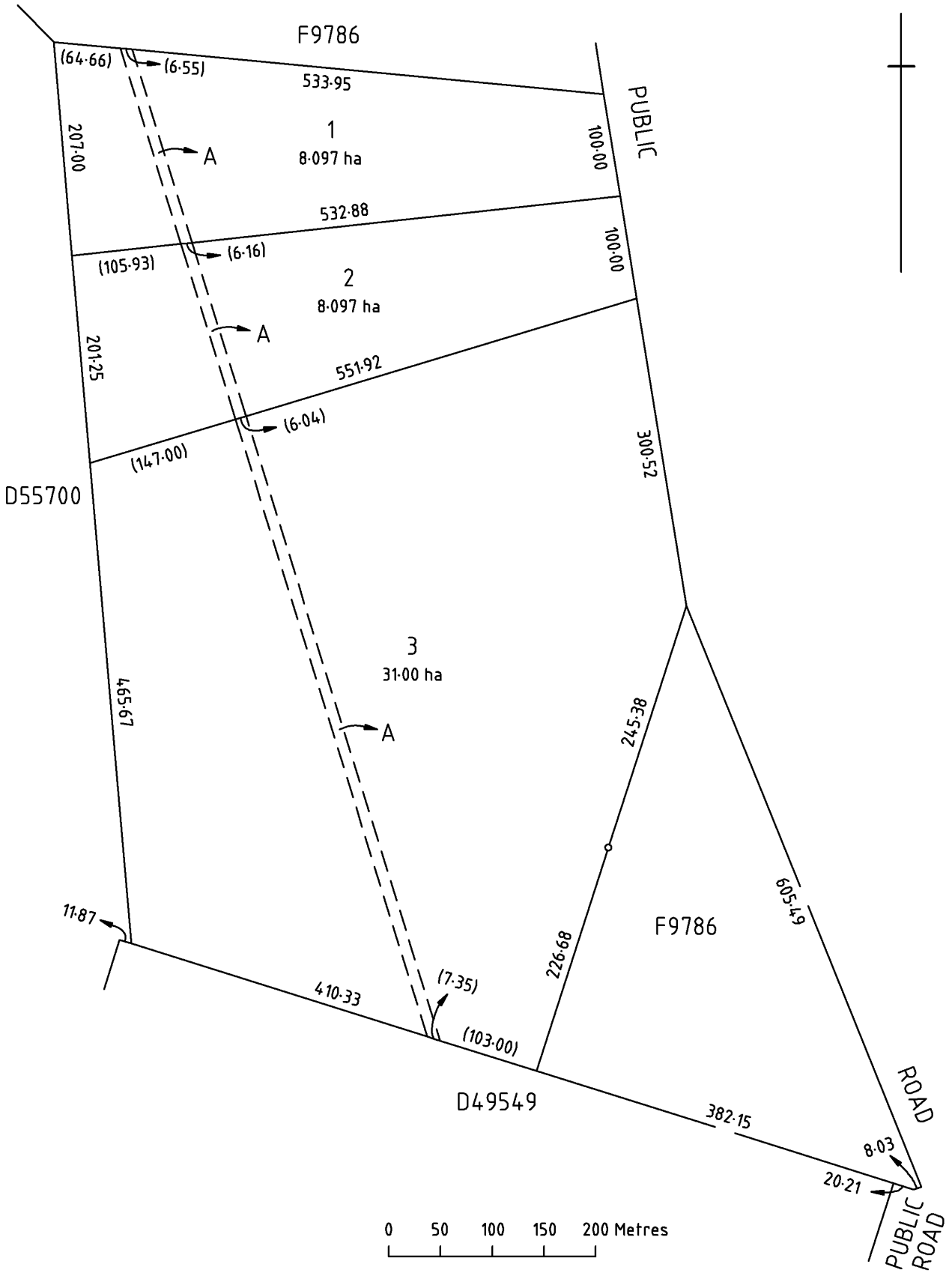
Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL

Product	Register Search (CT 6019/256)
Date/Time	25/09/2018 09:46AM
Customer Reference	Davenport South
Order ID	20180925002074
Cost	$28.75



Playford Utility Battery Storage Facility

SIMEC ZEN Technologies (Power and Energy) Pty Ltd

22-Feb-2018

AECOM Imagine it. Delivered.

Playford Utility Battery Storage Facility - Development Assessment Report

Section 49 Development Application

Playford Utility Battery Storage Facility - Development Assessment Report

Section 49 Development Application

Client: SIMEC ZEN Technologies (Power and Energy) Pty Ltd

ABN: 82 110 224 005

Prepared by

AECOM Australia Pty Ltd
Level 28, 91 King William Street, Adelaide SA 5000, Australia
T +61 8 7223 5400 F +61 8 7223 5499 www.aecom.com
ABN 20 093 846 925

22-Feb-2018

Job No.: 60539163

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Playford Utility Battery Storage Facility - Development Assessment Report
	60539163
Ref	p:\605x\60539163 pub planning services\6. draft docs\6.1 reports\s49 davenport south\da\simeczenenergy_section 49 da report_final 220219.docx
Date	22-Feb-2018
Prepared by	Tom Hateley
Reviewed by	Brenton Burman

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
0	22 Feb 2019	Final	Tom Hateley Senior Planner	

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Executive Summary

SIMEC ZEN Energy is seeking to develop a 100MW/100MWh (nominal) Battery Energy Storage System (BESS) in the Port Augusta Council Area at Port Paterson, to complement renewable energy generation projects proposed to be development by SIMEC ZEN Energy within the Upper Spencer Gulf region.

As a reference to the extensive history of power generation in the region, the development is named the 'Playford Utility Battery Project' (PUBP).

The PUBP comprises of a number of battery storage structures, along with associated inverters, transformers and other electrical equipment installed on-site and connected to the existing electricity transmission network via ElectraNet's Davenport substation.

This development application is submitted pursuant to Section 49 of the *Development Act 1993* with the endorsement from the Department for Energy and Mines.

A variety of technical and environmental investigations have been undertaken to assess the potential impact of the proposed development. These included:

- Ecological Assessment
- Cultural Heritage Assessment
- Traffic Impact Statement
- Acoustic Assessment
- Planning Assessment of the *Port Augusta Council Development Plan,* consolidated on 7 July 2016.

The above investigations did not identify any issues which would likely preclude the proposed development from being developed. Any issues identified as part of the investigations can be mitigated by the design and management of the proposed facility.

The PUBP is being developed on the basis of its limited environmental impact, significant economic benefits to the State, regional and local community, contribution to the diversity of the energy supply, zero carbon emissions and its contribution to the security of the South Australian electricity network. Furthermore, the proposed development accords with the relevant provisions of the Port Augusta Council Development Plan, and thus, warrants approval.

1.0 Introduction

SIMEC ZEN Energy serves as one of Australia's leading renewable energy brands in the design and installation of solar energy and energy storage systems. SIMEC ZEN Energy is a part of the GFG Alliance. The GFG Alliance owns iron ore mining assets in Whyalla and iron ore bulk handling facilities at the Whyalla port, which are part of SIMEC. Through acquisition and new developments, SIMEC is steadily building up its renewable energy portfolio and has set a target to become a large green power generator by 2021 with 1 Gigawatt of capacity.

SIMEC ZEN Energy has very recently been rebranded as SIMEC Energy Australia. For the purposes of continuity with the initial works to date, this Development Application will continue use the name SIMEC ZEN Energy to minimise confusion.

SIMEC ZEN Energy is seeking to develop a 100MW/100MWh (nominal) Battery Energy Storage System (BESS) at Port Paterson. As a reference to the extensive history of power generation in the region, the development is named the 'Playford Utility Battery Project' (PUBP).

SIMEC ZEN Energy has engaged AECOM Australia Pty Ltd (AECOM) to assist in obtaining relevant approvals for the proposed development. This includes development approval in accordance with the *Development Act 1993*.

The Department for Energy and Mines has endorsed the proposal as a Crown Development in accordance with Section 49(2)(c) of the Development Act (refer to Appendix A).

This report provides:

- Applicant details
- A description of the proposed development
- Description of the subject land and locality
- As assessment of potential site constraints and environmental impacts
- Details of the development application process (under section 49 of the Act)
- Assessment of the project against the relevant provisions of the Port Augusta Development Plan.

2.0 Applicant Details

2.1 SIMEC ZEN Energy Background

SIMEC ZEN Energy was founded in Australia in 2004 to develop innovative and sustainable energy technologies. The company began with a range of system packages to power portions of, and entire homes. In 2008, Zen Energy demonstrated the capability of community installations for the Mildura Buyers Club in Victoria. In 2010, Zen Energy assisted in launching a Solar Community Program in South Australia. Demand from businesses and farmers in regional Australia led to the development of Zen Energy's commercial solar energy and storage sector.

In 2015, Zen Energy emerged as Australia's first dedicated Community Energy Provider. Today, Zen Energy offers an integrated and affordable solution to sustainable energy consumption and storage capacity for households, communities and businesses.

On 20 September 2017 GFG Alliance established a strategic partnership to become SIMEC ZEN Energy. GFG Alliance's businesses, SIMEC Mining Australia, SIMEC Infrastructure Australia and Liberty OneSteel (formerly Arrium), are substantial consumers of energy, therefore the opportunity to invest in large-scale power projects to meet its own industrial requirements and support the domestic economy was a key driver for GFG's strategic entry into Australia.

SIMEC ZEN Energy serves as one of Australia's leading renewable energy brands in the design and installation of solar energy and energy storage systems. It has several energy capture and storage projects in South Australia, including:

- a large-scale solar development proposed for Whyalla (Cultana Solar Project);
- $1 million battery storage on State Government-owned buildings (including the State Library of South Australia, Art Gallery of South Australia and Adelaide High School);
- Visitor's Centre at Jacob's Creek Winery; and
- 100MW Playford Utility Battery storage facility at Port Paterson (this project).

SIMEC ZEN Energy's related entities are also involved in several energy production and storage projects in South Australia, including:

- Middleback Ranges Pumped Hydro Storage; and
- Power Upgrade projects at the Liberty Onesteel steelworks.

The development of these projects will enable SIMEC ZEN Energy Retail to deliver low-cost, reliable energy to its preferred customers.

3.0 Description of Proposed Development

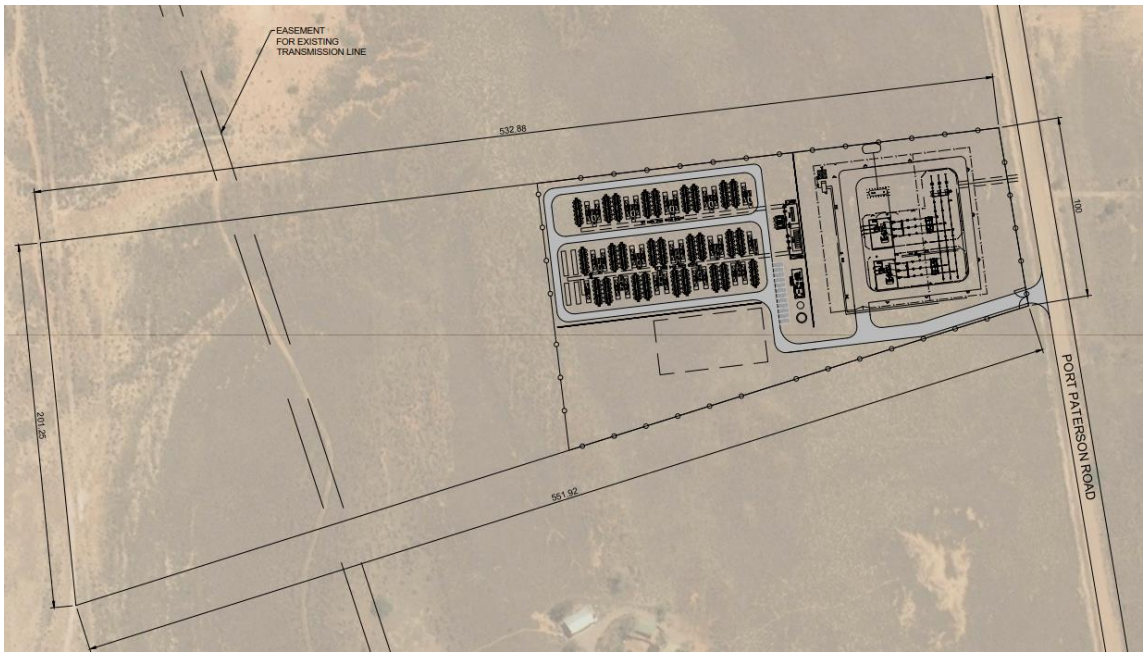
SIMEC ZEN Energy is developing a 100MW/100MWh (nominal) BESS on land to the east of the former Playford A and Northern Power Stations, and to the south of the existing Davenport Substation at Port Paterson.

The development is proposed to include up to 27 battery storage and inverter structures, along with associated transformers and other electrical equipment installed on-site and connected to the existing electricity transmission network. The development will occupy an area of approximately 3 hectares with the eastern portion of the affected allotment (refer to Figure 1).

Local manufacturing of key elements of the battery storage systems, including storage cells and inverters, is currently not available within Australia. As such, these components will be imported from their country of origin. Fabrication of the storage system housing, assembly of the storage system, and provision of balance of plant, including civil and electrical work will be carried out by local contractors.

Although the proposed project will have a commercial life and operate for 15 years under the current contract structure, the facility will have a design life of 30 years. SIMEC ZEN Energy will review and consider a 'repower' of the facility to account for battery degradation, should the business case permit.

Figure 1 Proposed development



3.1 Project Elements

The proposed battery storage facility will be comprised of the following components:

- Battery Containers
- Inverters
- MV & LV Building
- Control & Office Building
- Substation and associated infrastructure
- Security fencing and lighting
- Access, internal roads and car parking
- Drainage and stormwater management
- Transmission connection

Application plans for the development are included in Appendix D.

The key components of the project are discussed in further detail below.

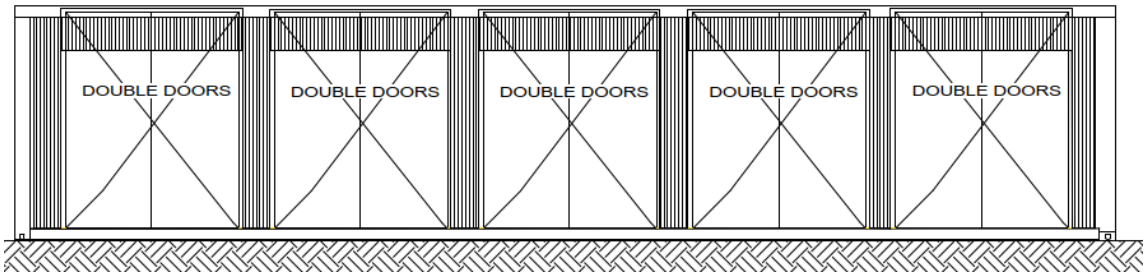
3.1.1 Battery Containers

27 battery containers are proposed to be established on site. The battery containers will be a standard 45-foot container (approximately 2.92 metres in height, 13.71 length and 2.43 metre wide).

The batteries will be housed in five battery rooms per container which would be similar in nature to a data centre with racks of equipment in a climate controlled environment.

The batteries will be grouped together onsite towards the northern boundary

Figure 2 Battery Containers

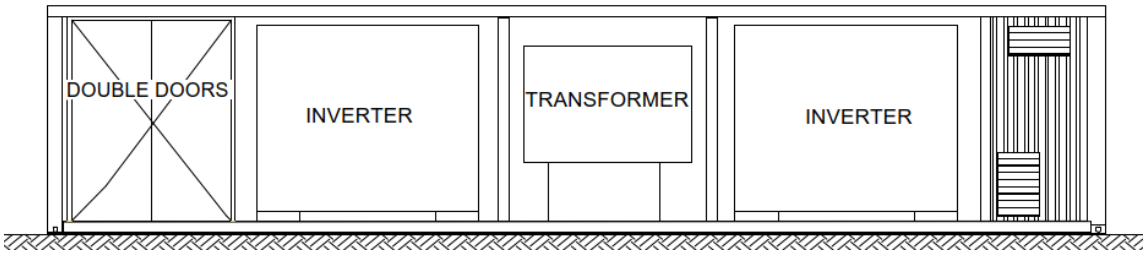


3.1.2 Inverters

Each battery container will be serviced by one inverter container, each comprising two inverters, a transformer and associated infrastructure. The inverters will be similar in scale to the battery containers and be based on a standard 40-foot container

The inverters will be located adjacent the associated battery.

Figure 3 Inverters

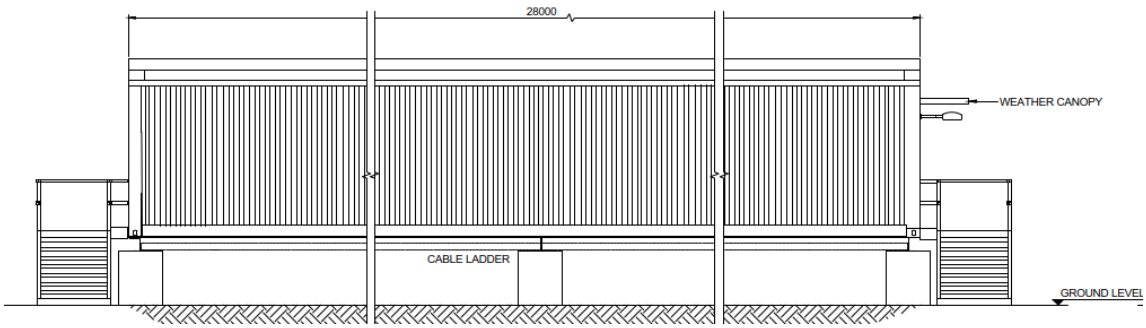


3.1.3 MV & LV Building

The MV and LV building is to be located between the batteries and the proposed substation and comprises a floor area of approximately 200 square metres.

The MV and LV building is a transportable building and will be elevated above ground level. The building will comprise a maximum height of approximately 5.5 metres. Stair access is to be provided at either end of the building.

Figure 4 MV & LV Building

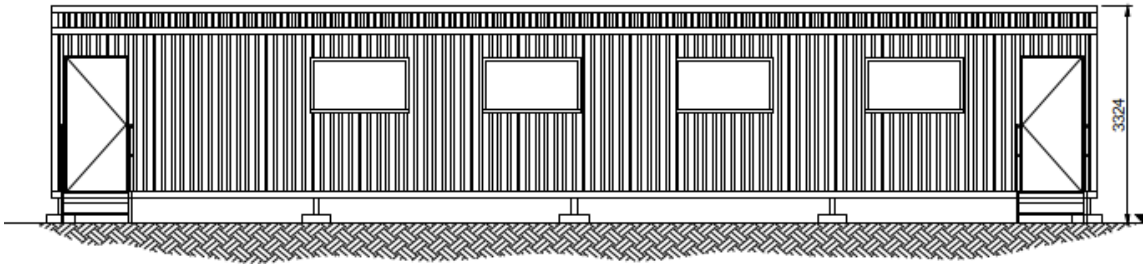


3.1.4 Control Room & Office Building

The control room and office building will house staff and manage the operations of the PUBP. The building will be located adjacent the MV and LV Building.

The building comprises an area of 88 square metres and a maximum height of 3.32 metres. This building will contain staff amenity facilities and will be connected to an onsite wastewater management system.

Figure 5 Control Room and Office Building



3.1.5 Substation and associated infrastructure

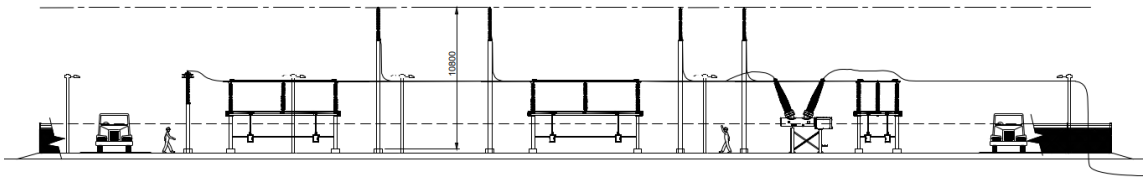
The PUBP includes a substation which is proposed to be located within the north east corner of the site.

The proposed substation will contain the electricity transformers and switchgear required to step-up the voltage supplied from the inverters to the supply voltage for connection to the Electranet network.

Infrastructure within the substation will comprise a maximum height of 10.8 metres.

The substation comprises an area of 3,906 square metres and will be enclosed by security fencing up to 3 metres in high. Gates will be provided within the southern boundary fence to allow vehicle access.

Figure 6 Substation elevation – view from Port Paterson Road



3.1.6 Security fencing and lighting

Boundary security fencing will be installed around the development site. The fencing will be a 1.8 metre high chainmesh fence.

As discussed previously, internal security fencing will be constructed around the substation.

Subject to the final design an internal acoustic wall may be constructed adjacent the battery and inverter area. If required, it is envisaged that the acoustic wall will likely be a sheet metal fence up to 3 metres high.

Lighting will be installed onsite for safety and security purposes. All lighting will be appropriately sited and designed to avoid any light spill impacts to adjoining properties.

A final lighting plan will be developed at the detailed design stage.

3.1.7 Access, internal roads and car parking

A new access point to the site from Port Paterson Road is proposed.

A network of internal roads will be constructed to provide connectivity onsite. These roads will be formed with crushed rubble or similar material.

Car parking will be located adjacent the control room and office building to accommodate staff, visitors and temporary contractor parking. The car park will be hardstanding and will be a sufficient area to accommodate expected demand.

3.1.8 Drainage and stormwater management

It is anticipated that any increase in stormwater runoff generated by the proposed development will be negligible compared to current levels. The majority of the site will remain in a pervious state as per the current condition of the land. Additional runoff will likely be generated from the proposed buildings and hardstanding areas surrounding the batteries, inverters and substation. However, these elements occupy a relatively small footprint of the entire allotment.

The development will be provided with appropriate drainage and stormwater management systems (rainwater tanks, swales, detention basins etc) to allow stormwater to be managed onsite and to avoid any impacts to downstream systems. A stormwater management plan is proposed to be prepared at the detailed design stage.

The land has access to mains water and a dedicated firefighting water supply is proposed to be provided onsite.

3.1.9 Transmission connection

The battery storage facility will be connected to the ElectraNet transmission network via a proposed 1 kilometre underground high voltage cable. The cable will connect the site substation to the ElectraNet Davenport substation which is located 550 metres to the north of the site.

The transmission cable is proposed to be located within the Port Paterson Road reserve then connecting into the substation, through land owned by ElectraNet surrounding the substation. A map showing the proposed transmission line route is provided in Figure 7.

The final location of the transmission cable will be determined as part of the detailed design phase.

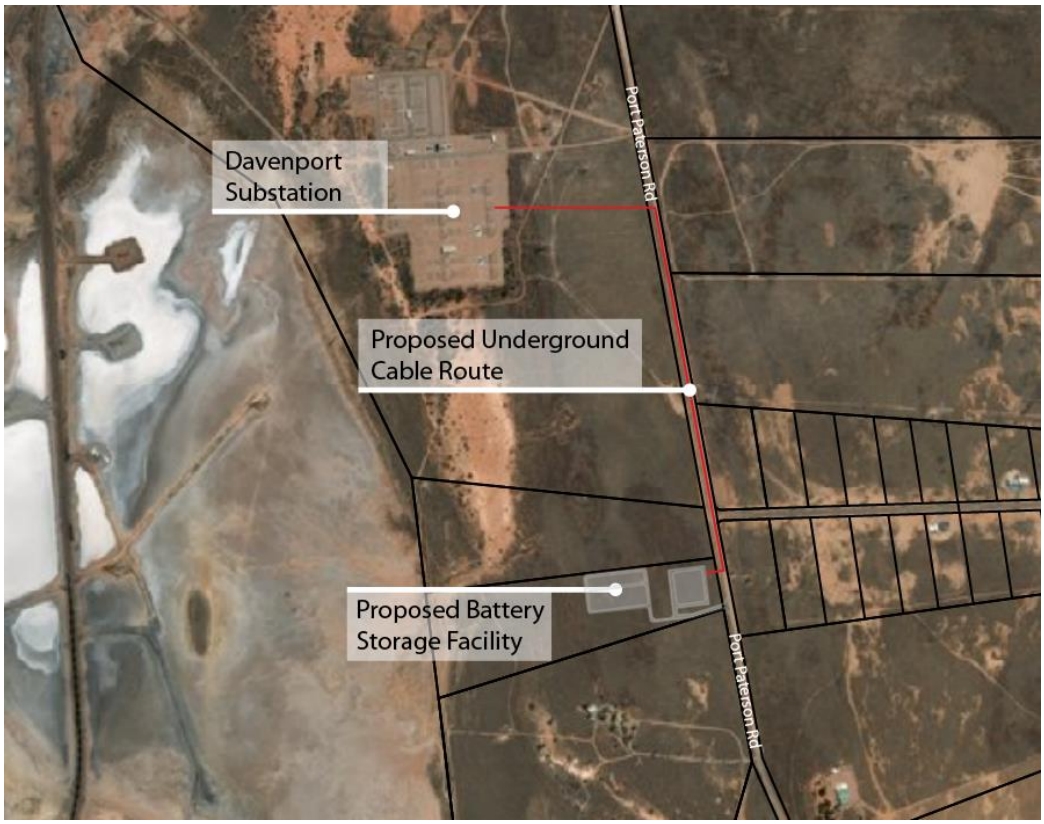
Appropriate easements for the transmission cable are proposed to be established with Council and ElectraNet.

It is noted that the underground transmission cable is a form of development exempt from approval pursuant to Schedule 14 (c) of the *Development Regulations 2008.*

3.1.10 Temporary Facilities

During the construction period temporary facilities, such as a site office, worker amenities, storage/laydown and car parking areas will be established onsite. All temporary facilities will be contained within the project area where possible to minimise vegetation clearance.

Figure 7 Proposed Transmission Route



3.2 Construction and Operation Details

This section provides a summary of the construction and operations phases of the project.

3.2.1 Construction Details

The proposed development will be constructed over an approximate 12 month period. It is anticipated that the construction activities will occur in the following stages:

- Site mobilisation
- Site clearing, fencing and establishment of laydown area
- Construction of batteries and inverters and associated infrastructure
- Construction of substation
- Construction of transmission cable
- Testing and commissioning

Employee numbers on the site during the construction phase will vary depending on the stage of works, however, it is estimated that a maximum of 100 staff will be required at the peak of construction.

The majority of construction work is anticipated to occur during daylight hours.

As outlined in the Traffic Impact Statement it is expected that the construction phase will generate approximately 480 heavy vehicle trips to the site during the 12 month construction period, whilst the traffic generated by staff would range between 50 to 200 light vehicle trips per day.

3.2.2 Operation Details

The operation of the facility will be limited to maintenance, operational and monitoring activities. It is estimated that 5 employees will present on the site on a regular basis for operational and maintenance needs.

It is expected that staff will primarily be onsite during daylight hours (7am-7pm). After hours work may occur intermittently when required.

In comparison to the construction phase, traffic generation during the operations phase will be minimal.

3.2.3 Management Plans

To ensure potential environmental impacts are appropriately managed during the construction and operational phases of the development, a Construction Environmental Management Plan (CEMP) and an Operational Environmental Management Plan (OEMP) will be prepared and implemented.

These plans will be prepared and finalised prior to the commencement of the construction and operation phases of the project.

The key objectives of the plans will include:

- Describing the implementation of the project's environmental management and mitigation measures;
- Ensuring that the project complies with environmental legislation;
- Managing the environmental risks associated with the construction and operation of the PUBP
- Applying environmental best practice during the construction and operation of the development

The plans will include a range of control measures to manage and minimises environmental risks during the construction and operational phases of the project. The control measures will be specific to the site and will principally relate to the following key aspects:

- Air Quality (Dust Management)
- Bushfire

- Cultural Heritage
- Flora and Fauna
- Noise
- Stormwater and Water Quality
- Traffic
- Visual
- Waste Management

4.0 Description of the subject land and locality

4.1 The Subject Land and Locality

The subject land is identified in Certificate of Title Volume 6019 Folio 256 as Allotment 2 Deposited Plan 78595 in the area name Port Paterson. A copy of the Certificate of Title is included in Appendix C.

Allotment 2 is a near rectangular shaped parcel of land comprising an area of approximately 8 hectares. The land is vacant, largely covered in native vegetation and gently undulating with levels generally ranging from 5 AHD to 10 AHD across the entire property (refer to figure 8 and 9).

The proposed PUBP will occupy approximately 3 hectares within the eastern portion of the allotment.

The land has frontage to Port Paterson Road, along the site's eastern boundary, which provides access to the site.

The subject land is located within the Industry Zone of the *Port Augusta (City) Development Plan*. No Policy Areas or Precincts apply to the subject site. The adjoining land to the north, west and south is also contained within the Industry Zone, whilst the land to the east is zoned Rural Living. Coastal Conservation and Primary Industry zoned land is located further to the south and south east of the site (refer to figure 10).

There are SA Power Networks overhead distribution lines that run through the western portion of the site and adjacent the eastern boundary of the site along Port Paterson Road. A number of ElectraNet transmission lines are located to the east and north east of the site. A water main is also located along Port Paterson Road adjacent the site (refer to figure 11)

The western most portion of the allotment is located within Upper Spencer Gulf Wetland, which is classified as a Wetland of National Importance. It is noted that this area of the allotment will not be impacted by the proposed development.

The Davenport substation is located approximately 550 metres to the north of the subject land. Whilst the nearest dwelling to the site is located approximately 100 metres to the south, within the Industry Zone. A number of other dwellings are located to the south and east of the subject land.

Similar to the site, land within the locality is principally covered in low lying vegetation and is gently undulating with a fall generally to the west towards the coast.

Other key features in the locality include:

- The former Playford and Northern Power Stations approximately 2 kilometres to the west ;
- Sundrop Farm approximately 2 kilometres to the east;
- Coast located approximately 1.5 kilometres to the south
- Augusta Highway approximately 2.1 kilometres to the north east
- Urban area of Stirling North approximately 2.70 km to the north east; and
- Urban area of Port Augusta approximately 4.5 km to the north west.

The proposed site and locality is further depicted in Figures 8 -12 below.

Figure 8 Subject Land (Source: NatureMaps)

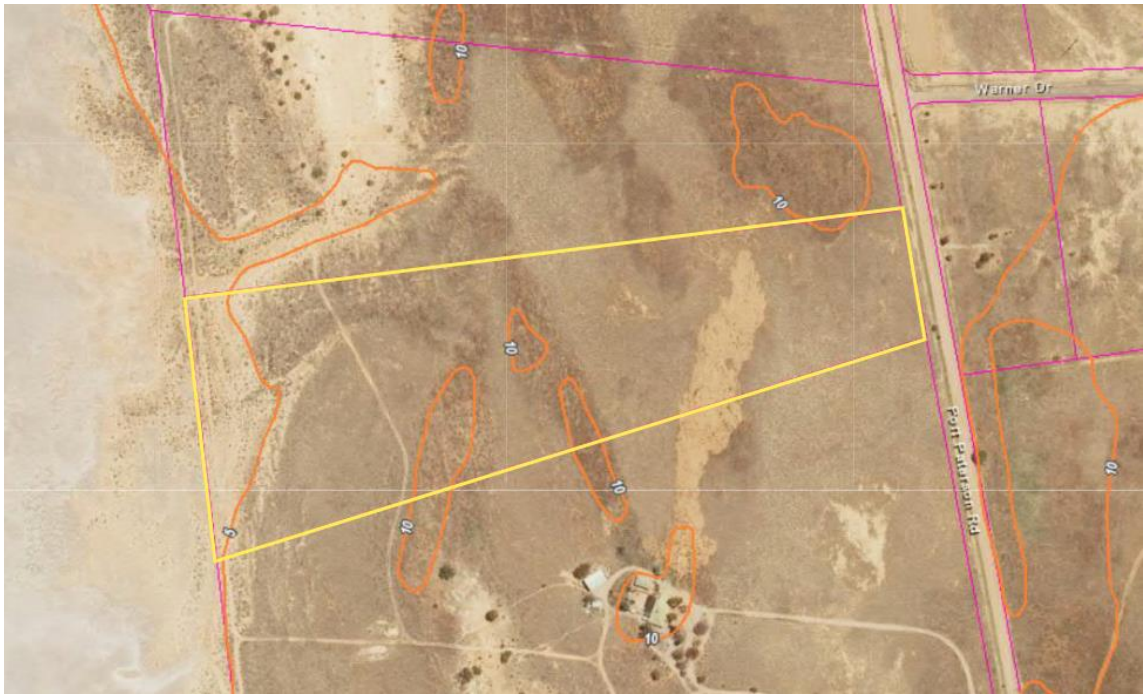


Figure 9 View of site from Port Paterson Road

Figure 10 Zone Map (Source: Property Location Browser)

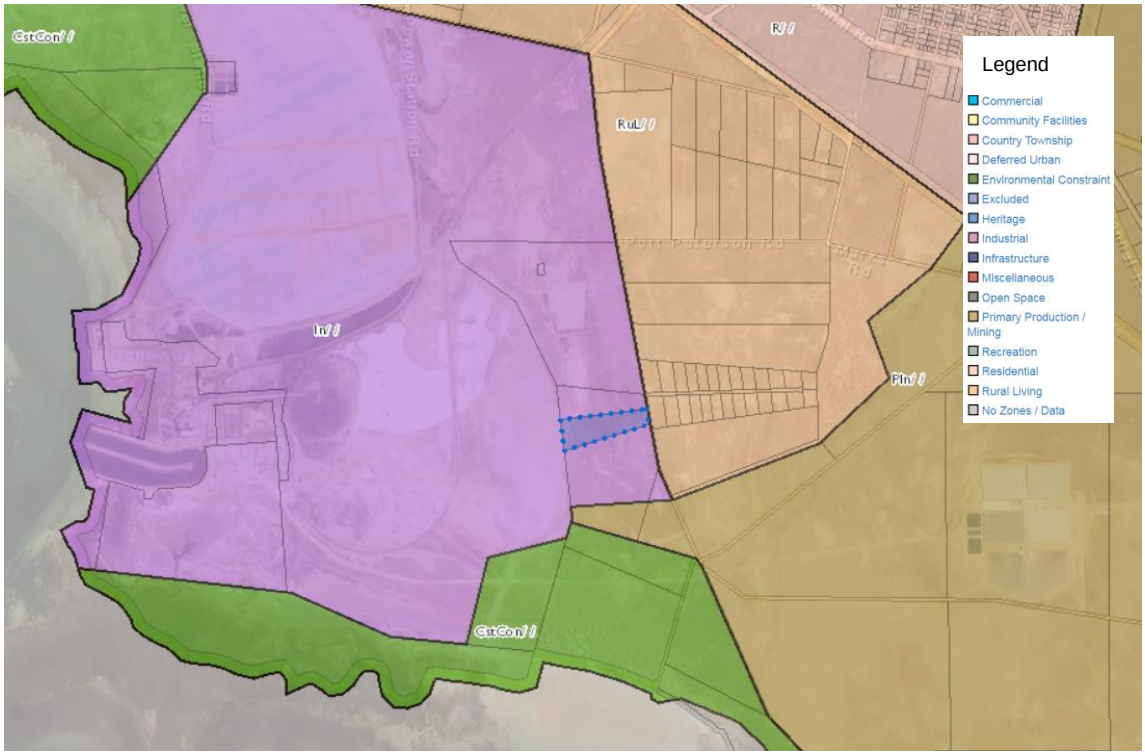


Figure 11 Proposed Site (Source: SARIG 2018)

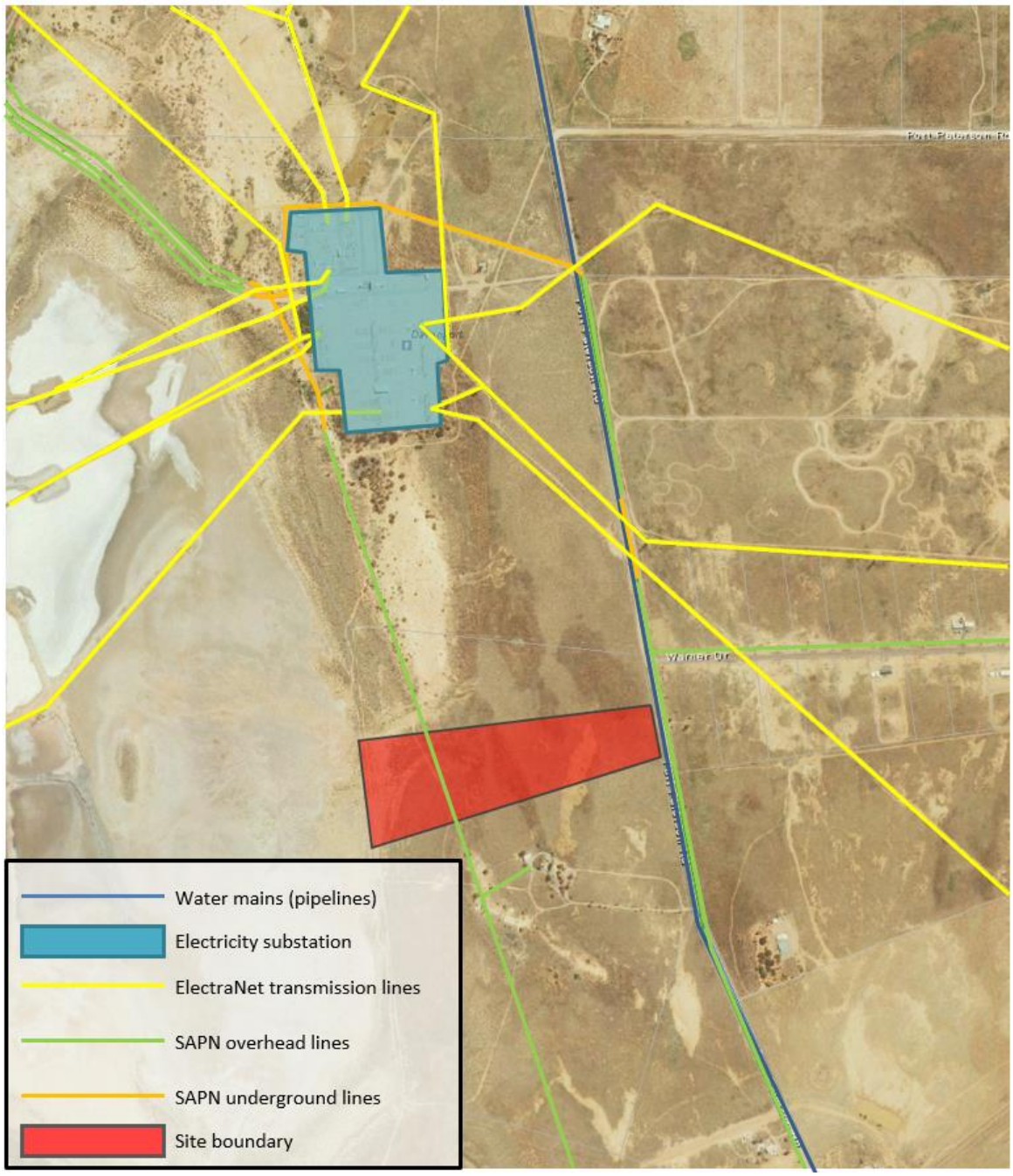
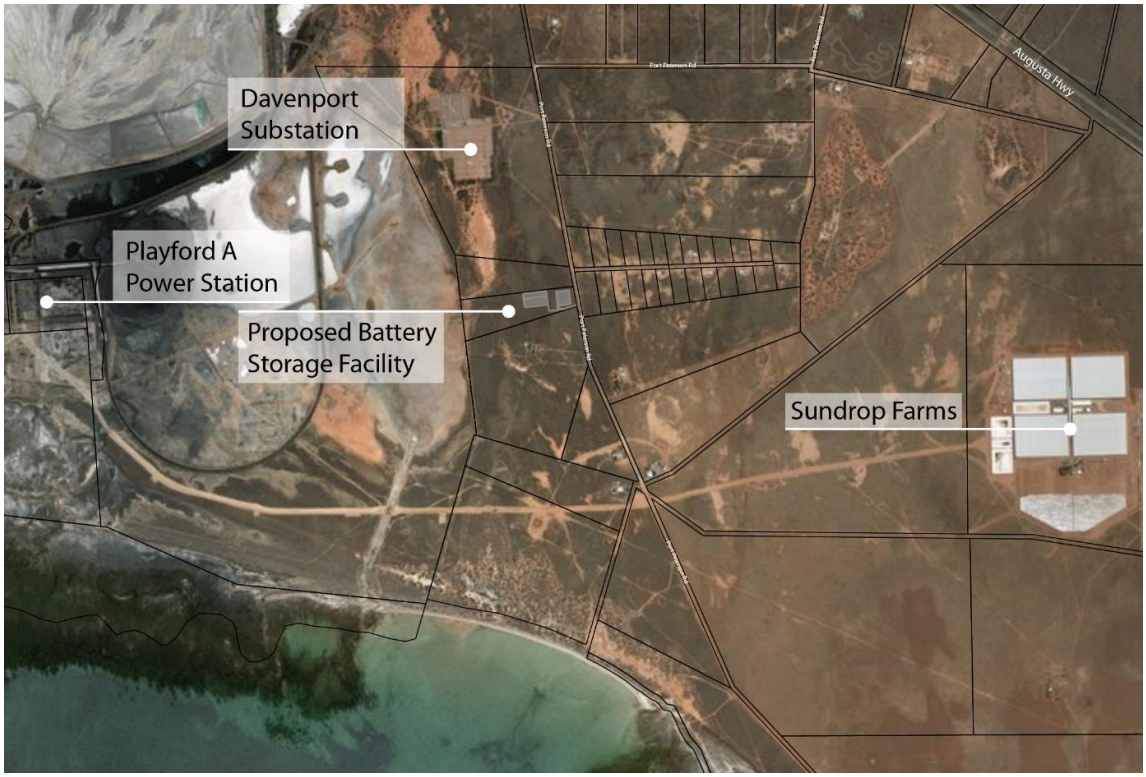


Figure 12 Locality



5.0 Site and Environmental Analysis

5.1 Site History

A desktop review was undertaken to identify previous land uses on the subject land and adjoining properties.

The investigations indicated that there has been limited change in the use of the sites outside of their current use, with the properties remaining largely undeveloped and covered in native vegetation. It is noted that some low-intensity grazing activities may have occurred.

The risk of contamination at the project site is considered to be low due to the historical use of the site.

5.2 Ecology

An Ecological Assessment of the project area (including transmission route) was undertaken by BlackOak Environmental to identify the potential impacts of the proposed PUBP on native vegetation and threatened flora and fauna species. The assessment included a desktop study and a two-day field survey.

The subject land is located within the Gawler IBRA Biroregion, the Gawler Lakes IBRA Subregion and Arden IBRA Environmental Association and contains six vegetation associations as summarised in table 1 below.

Table 1 Vegetation associations (Source: Ecological Assessment, BlackOak Environmental

Vegetation number	Vegetation association	Landforms	Area surveyed (ha)
1	*Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis*	Plain	3.68
2	*Sclerolaena ventricosa, Dissocarpus biflorus var. biflorus* Very Open Herbland	Sandy rise	0.37
3	*Maireana pyramidata, Atriplex vesicaria* Shrubland	Sandy rise and low dune	1.21
4	*Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp.*	Undulating plain	2.08
5	*Tecticornia ssp.* Low Open Shrubland	Sandy rise and edge of claypan	1.07
6	*Atriplex vesicaria, Tecticornia tenuis, Galenia pubescens var. pubescens* Low Open Shrubland	Plain and artificial depression (roadside verge)	0.37

The desktop assessment identified one Threatened Ecological Community (TEC), the Subtropical and Temperate Coastal Saltmarsh, as potentially occurring within the project area. The project area contains 1.07 ha of Tecticornia ssp. Low Open Shrubland along the western boundary of the allotment, however, this vegetation association does not meet all the key diagnostic characteristics to qualify as the listed TEC. Notwithstanding, the development will not impact the Low Open Shrubland.

The western section of the allotment occurs within the boundary designated as a nationally important or significant wetlands (Upper Spencer Gulf). This area contains Tecticornia ssp. Low Open Shrubland and Atriplex vesicaria Low Shrubland +/- Tecticornia sp. vegetation and will not be impacted by the development of the project.

No threatened species, threatened ecological communities or migratory species were record during the field survey.

As a result of the Biological Databases of South Australia (BDBSA) search and the habitat assessment, it is possible that the *National Parks and Wildlife Act 1972* (NPW) listed vulnerable Malacocera gracilis (Slender Soft-horns) and NPW listed rare Elegant Parrot (Neophema elegans) could occur within the project area. Malacocera gracilis (Slender Soft-horns) if present, is likely to be restricted to the Tecticornia ssp. Low Open Shrubland vegetation association which will not be

impacted by the development of the project. The Elegant Parrot could possibly occur within the entirety of project area on an infrequent basis. However, the Elegant Parrot can be found in a wide variety of habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland.

Based on this assessment the project is unlikely to have any significant impact on any matter protected by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Accordingly, it was recommended that there is no requirement to refer the project under the EPBC Act.

A copy of the Ecological Assessment Report is provided in Appendix E.

5.3 Heritage

5.3.1 European Heritage

There are no Commonwealth, State or Local Heritage places within the project area or in close proximity of the battery storage site or proposed transmission line route. The nearest heritage place (State Heritage item) is located approximately 6.7 kilometres to the north east of the site.

5.3.2 Native Title

Investigations have identified that there are two Native Title Claims within the proposed site. The Nukunu people have a registered Native Title Claim within the City of Port Augusta and an area of approximately 12,800 square kilometres east and south-east of the Port Augusta Township. The claim was accepted and entered on the Register of Native Title Claims on 10 April 1996.

The Kokatha people registered a Native Title Claim on 21 March 2016 for an area of approximately 1062 square kilometres, that has not been accepted on the Register of Native Title Claims at this stage.

As the site is freehold land, it is understood that Native Title has been extinguished.

Preliminary discussions with representatives from the Nukunu and Kokatha people regarding the PUBP have been undertaken.

5.3.3 Indigenous Heritage

An Aboriginal Heritage Assessment of the project area was undertaken by Independent Heritage Consultants (IHC).

The assessment included a heritage register search, review of relevant background information and site inspection. Based on the outcomes of the investigation a heritage risk assessment and management recommendations, in accordance with legislative requirements, were provided.

A search of the DPC-AAR Register of Aboriginal Site and Objects, did not identify any Aboriginal sites within the project site. One registered Aboriginal cultural heritage area and two registered Aboriginal cultural heritage sites were identified within two kilometres of the proposed site. No archaeological features were observed during the site inception.

Notwithstanding the above, the assessment identified potential risks associated with sub-surface archaeological deposits being disturbed during the construction phase.

Management actions will be adopted throughout the preliminary site investigations and construction stages of the project with respect to investigating and responding to any Aboriginal heritage related discoveries on the site in accordance with legislative requirements.

The IHC Heritage Assessment is a confidential report containing cultural information not for public circulation, and as such, a copy of the report has not been provided as part of this Development Application. A copy of the report may be made available upon request.

5.4 Hydrology

There are no clear drainage lines present on the proposed site. However, the slight gradient from east to west indicates that surface water travels west towards the Upper Spencer Gulf. The sites lie within a large catchment area, and it is anticipated that water would sheet flow across the site during large

storm events. The slight fall across the site from the east would encourage infiltration into the well-drained sandy soils.

Nature Maps identifies that the subject land is not subject to coastal inundation and the land is located outside of the Stirling North Flood Plain Area identified on Figure Pln/1 with the Port Augusta Council Development Plan. The boundaries of the flood plain are located approximately 450 metres to the south of the subject land.

A search of the registered groundwater bores located within a two kilometre radius of the site was undertaken using the Department for Environment and Water (DEW) WaterConnect online groundwater database on 26 October 2018. No wells exist on the site.

Well locations are shown in Figure 13.

Figure 13 Well Locations (Source: DEW)

5.5 Geology and Geotechnical

The western portion of the site sits on St Kilda Formation comprising sands, shelly silts and clays of the litorial lagoons and mangroves swamps (Geological Survey of South Australia 1:250,000). The remainder of the site sits on Pleistocene coastal plain dune sand swamps (Geological Survey of South Australia 1:250,000).

The sands within the St Kilda Formation include supratidal sand/mud flats and sands along the upper gulf are Calcareous sands. This formation includes supertidal sand/mud flat, gypseous clay and can present geotechnical issues due to the strength and compressibility of this unit and also associated potential for acid sulphate soils associated with this unit.

Development is proposed within the eastern portion of the allotment and outside of the St Kilda Formation.

A review of the SARIG drillhole information and WaterConnnect groundwater well database did not identify any drillholes within the site. There are two investigation wells located within the vicinity of the site:

- A water well drilled for investigation purposes in 1982 is located to the north west of the site. The well was drilled to 1.2 metres, with groundwater struck at 0.68 metres.
- A water well drilled for investigation purposes in 1982 is located to the south west of the site. The well was drilled to 2.0 metres, with groundwater struck at 0.34 metres.

In summary, based on the above historical data, groundwater could be expected at approximately 0.5 metres depth.

5.6 Acid Sulphate Soils

A search of the National Acid Sulphate Soils Atlas through the Australian Soil Resource Information System (ASRIS) identified the soils on the subject land have a low probability of occurrence of acid sulfate soils. The soils located directly to the west of the subject land associated to the Upper Spencer Gulf Wetland have a high probability of occurrence of acid sulfate soils. However, the proposed development will not disturb any coastal soils.

5.7 Traffic

The scale and nature of the PUBP has the potential to impact the surrounding road network particularly during the construction phase of the project. As a result, a Transport Impact Statement (TIS) has been prepared (refer to Appendix F)

Access to the site will be provided from Port Paterson Road, an unsealed local road, via the Augusta Highway which is an arterial road.

The key potential traffic impacts are associated with additional vehicle movements on Port Paterson Road during the construction period. The traffic generated by the PUBP is likely to have a minimal impact on the broader transport network.

It is expected that the construction phase will generate approximately 480 heavy vehicle trips to the site during the 12 month construction period, whilst the traffic generated by staff would range between 50 to 200 light vehicle trips per day. On average the project would increase the current estimated daily traffic volume on Port Paterson Road from 175 vehicles to between 235 to 415 total vehicles (10 to 40 heavy vehicles).

The TIS provided a series of recommendations to limit the effect of construction traffic on residents living within close proximity to Port Paterson Road which included:

- Where possible, plan for heavy vehicle movements to and from the site to occur at off peak times to reduce the impact of noise on surrounding residents.
- Provide for clear turning circles on-site to reduce heavy vehicle engine noise associated with revving, reversing, beeping and generation of excess dust.
- Suppress dust with water on Port Paterson Road and the construction site at regular intervals as required.
- Prohibit vehicles from idling on any roads in the vicinity of residential properties.
- Enforce vehicle speed limits on the construction site and Port Paterson Road to reduce dust.
- Minimise soil deposit on surrounding sealed roads using rumble grids or wheel-wash facilities if needed.
- Transport construction crews to and from site each day with the use of buses to reduce traffic volumes. Staff travelling by bus would have less exposure to risks associated with traversing unsealed roads and interacting with heavy vehicles accessing the site each day.

Allowing for the implementation of mitigation measures and compliance with relevant permit conditions, the impacts from traffic and traffic related activities are considered acceptable for the area in which the PUBP is proposed.

Following construction and throughout the operational life of the battery, transport impacts are expected to be minimal, with traffic scaled back to the level needed for service and maintenance of the PUBP.

5.8 Acoustics

The proposed development includes a number of noise sources and as a result an acoustic assessment of potential noise impacts on nearby sensitive receivers has been undertaken (Appendix G).

The assessment was undertaken having regard to the South Australian Environment Protection Authority's (EPA) *Environment Protection (Noise) Policy 2007 (Noise EPP)* which is the relevant document to be used by proposed developments for demonstrating their compliance with the General Environmental Duty under the *Environment Protection Act 1993 (SA).*

Noise criteria for proposed developments are based on the relevant zones for both the source and nearby sensitive receivers (e.g. residences), and these criteria account for both developed and undeveloped land. Land near the proposed development includes both developed and undeveloped land, which have been accounted for within the acoustic assessment.

Noise predictions indicated that noise levels at the two adjoining undeveloped rural living allotments would exceed environmental noise criteria without noise mitigation. Additionally, there is a risk that noise levels from the battery storage facility would be fundamentally tonal, and therefore subject to an adjustment of 5 dB(A).

Should noise from the facility be tonal, then planning noise guidelines would be exceeded at two additional locations. In order to comply with environmental noise criteria, a three-stage mitigation strategy is proposed:

1. Acoustic treatment to the controlling noise source (the inverters), to reduce emitted noise levels.
2. Undertake noise level measurements of the inverters during installation and commissioning to confirm whether noise from the inverters is likely to be tonal at receivers.
3. If noise from the inverters at residences is deemed to be tonal, installation of a noise barrier around the noise sources to achieve environmental noise criteria.

With the proposed mitigation strategies, it is predicted that all locations will achieve the environmental noise criteria.

5.9 Air Quality

The proposed development is likely to generate dust during the construction phase associated with vegetation clearance and increased traffic on the unsealed Port Paterson.

It is noted that the wider Port Augusta community has recently experienced air quality issues and dust generation and mitigation was the key issued raised by Council and local residents as part of the consultant SIMEC ZEN have had with these key stakeholders on the project.

It is proposed that dust will be managed during construction through the implementation of various mitigation strategies in accordance with the project CEMP. SIMEC ZEN propose to work closely with Council to ensure appropriate mitigation measures are adopted.

6.0 Socio-Economic Assessment

6.1 Economic Impacts

The $100 million battery storage facility project will result in significant economic benefits to the State and local community. Key economic benefits associated with the development will include:

- Improved network security and diversified energy generation offering within South Australia;
- Support for increased renewable power generation during daytime peak periods, placing downward pressure on wholesale electricity prices;
- Generation of up to 100 direct jobs during the peak of the project construction phase;
- Diversification of skills and employment, and growth of the local economy during the operational phase; and
- Direct financial benefits to local businesses and the local community.

6.2 Employment Opportunities

There is estimated to be up to 100 local personnel employed in the delivery of the project across the 12-month construction and commissioning phase.

Once the proposed battery storage facility moves into its operational phase, local skills will be required for operational and maintenance roles. The local skill base (high-voltage electrical systems) in the Port Augusta region is expected to be strong due to the Northern Power Station. As part of the community engagement plan for the project, SIMEC ZEN Energy will seek to understand the local skills and services available and collaborate with the selected EPC contractor to maximise use of this local expertise.

Across the various operations and maintenance functions required, it is expected that up to five fulltime jobs will be created. The further development of an energy storage industry in South Australia will also lead to additional full-time positions within the energy storage supply chain.

7.0 Stakeholder and Community Engagement

SIMEC ZEN have developed a stakeholder engagement strategy which identifies key stakeholders which will be engaged during the planning process. These key stakeholders include:

- South Australian Government
- Local Government
- Regulatory Bodies
- Community (land owner, neighbours and broader community)
- Traditional land owners and various community groups
- Local contractors and suppliers
- Local Media

Prior to lodging the Development Application SIMEC ZEN have held discussions with the following stakeholders:

- Various South Australian Government Agencies including:
  - Department for Energy and Mines
  - Department of Planning, Transport and Infrastructure
  - Department of Environment and Water
  - Office of the Technical Regulator
- City of Port Augusta (elected members and staff)
- Regulatory Bodies (ESCOSA & Electranet)
- Representatives from the local Aboriginal groups
- Residents within the locality of the project site

In addition to the statutory notification requirements pursuant to Development Act, SIMEC ZEN intend to actively consult with other key stakeholders including, potential local contractors and suppliers, relevant community groups and wider local community during and post the development assessment process.

8.0 Procedural Matters

8.1 Public Infrastructure

Section 49 of the Development Act, relating to 'Crown Development and Public Infrastructure', has been utilised for most energy infrastructure projects in South Australia. This has included development applications for traditional thermal generation, renewable sources of energy, and associated transmission lines.

Section 49(1)(a) of the Act defines 'public infrastructure' as:

> *"… the infrastructure, equipment, structures, works and other facilities used in or in connection with the supply of water or electricity, gas or other forms of energy, or the drainage or treatment of waste water or sewage".* (our emphasis)

The proposed development is for a battery storage facility associated with the supply of electricity. This is consistent with the above definition of public infrastructure.

The Minister for Planning is the relevant authority for a Crown Development. The Minister must, in making his decision on a Crown Development, have regard to the provisions of the relevant Development Plan.

Section 49 (2)(c) of the allows a State agency to sponsor a development for public infrastructure. Specifically, section 49(2)(c) states:

> *"… a person proposes to undertake development initiated or supported by a State agency for the purposes of the provision of public infrastructure and specifically endorsed by the State agency for the purposes of this section".*

The Department for Energy and Mines provided formal sponsorship on 12 December 2018.

As the development cost for the project exceeds $4 million, the application will be subject to public notification, with a consultation period of at least 15 business days pursuant to section 49(7)(d) of the Development Act.

Pursuant to section 49 the application will be referred to City of Port Augusta and Council have a two month period to provide comment. It is considered that no other statutory referrals are required to Government agencies pursuant Schedule 8 of the *Development Regulations 2008.*

8.2 Nature of Development

The proposed development requires a development approval under the Development Act.

A 'battery storage facility' is not defined with the Development Act of Regulations.

Advice from the planning division of the Department of Planning, Transport and Infrastructure (DPTI) has confirmed that a 'battery storage facility' is more appropriately defined as an 'electricity generation station'.

8.3 Office of the Technical Regulator Technical Conditions

Pursuant Regulation 70(1)(c) of the *Development Regulations 2008*, a certificate from the Technical Regulator certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system is required to be obtained and submitted as part of the development application.

SIMEC ZEN Energy has liaised with the Office of the Technical Regulator and has obtained a Certificate that the proposal meets the technical requirements for power generation projects.

A copy of the certificate is included in Appendix B.

9.0 Development Plan Assessment

The Minister must, in making a decision on a Crown Development, have regard to the provisions of the relevant Development Plan. The relevant Development Plan is the *Port Augusta (City) Development Plan*, consolidated on 7 July 2016. The site of the proposed battery storage facility is located within the Industry Zone as illustrated on Zone Map PtAu/38.

The assessment of the proposal against the relevant Zone and Council Wide Development Plan policies is provided below.

9.1 Zone Assessment.

Industry Zone – Relevant Provisions	
Objective	1, 2
Principles of Development Control	1, 2, 3, 5, 8, 9

The Industry Zone envisages a range of industrial, commercial and infrastructure land uses. An 'electricity generation station' is not listed as either a complying or a non-complying development within the Zone

A battery storage facility (electricity generation station) is considered to be congruent with the type of uses envisaged within an industrial zone and is consistent with existing forms of development (i.e. various types of electricity infrastructure) that exists within the zone and locality. A battery storage facility is a relatively passive form of development with respect to amenity impacts and it is anticipated that any potential interface issues to surrounding development and non-industrially zoned allotments, can be effectively managed via the design and siting of the facility.

The proposed development will be setback a minimum 17.3 metres (substation fence) from Port Paterson Road which exceeds the 8 metre minimum requirement outlined in Principle 5. It Is noted that the buildings and larger equipment will be setback further from the road.

Principle 9 seeks for development on land adjoining a residential zone should provide a 50 metre vegetated buffer along the zone boundary. The subject land adjoins a Rural Living Zone and whilst not a residential zone, it is acknowledged that primary objective of the Rural Living Zone, is to accommodate low density residential development within a semi-rural setting.

The existing native vegetation located between the road boundary and substation is proposed to be retained which will assist to provide a buffer along the site's interface with the Rural Living Zone which is consistent with the intent on Principle 9. The development has been sited within the eastern portion of the allotment to avoid more environmentally sensitive areas within the western portion of the allotment, therefore increasing the buffer by moving the development further to the west, is restricted.

9.2 Council Wide Assessment

The following Council Wide sections have been identified as relevant to the proposed development, and are discussed in order of reference below:

- Renewable Energy Facilities
- Form of Development
- Appearance of Land and Buildings
- Environment Protection
- Natural Resources
- Hazards
- Heritage
- Industrial Development

- Infrastructure
- Interface Between Land Uses

9.2.1 Renewable Energy Facilities

Renewable Energy Facilities – Relevant Provisions	
Objective	119, 120, 121
Principles of Development Control	392

The proposed battery storage facility is considered to be a renewable energy facility as it is being developed in association with the various large scale renewable energy generation projects SIMEC ZEN are proposing in the wider Upper Spencer Gulf Region.

The Development Plan envisages renewal energy facilities:

- That benefit the environment, the community and the state.
- Located in areas that provide opportunity to harvest natural resources and maximise the efficient generation and supply of electricity.
- Located, sited and designed to minimise adverse impacts on the natural environment and other land uses.

The proposed development largely satisfies the intent of the Renewal Energy provisions.

The proposed renewal energy development will benefit the state and local community, resulting in economic benefits, improvements to network security, whilst assisting to reduce the state's reliance on fossil fuels.

The location and characteristics of the development will assist the project maximise the efficient generation and supply of electricity. The site's proximity to existing electricity infrastructure (Davenport Substation) allows for the efficient connection to the grid.

In order to provide system security in times of critical need, it is important that the storage facility be located in a strong part of the electricity network. The Davenport substation is in a highly strategic position in the network. The main backbone 275 kV system runs both west and south from the Davenport substation, with three separate 275kV lines to Adelaide. Supply to the major industrial loads of Roxby Downs and Whyalla are also routed through Davenport. As a result, the risk of network outage or constraint impacting the ability of the battery to supply during times of critical need is considered very low.

Minimising any adverse environmental impacts has been a key consideration as part of the site selection and design process. The battery facility is to be located within an Industry Zone and is well separated from environmental sensitive areas. The detailed environmental investigations undertaken to inform this application have identified that the project will likely be a low risk of impacting threatened flora and fauna species found within the locality.

Rural living is the primary land use in the locality and the proposed development has been designed to mitigate against any adverse interface issues with existing and future rural living activities.

9.2.2 Form of Development

Form of Development – Relevant Provisions	
Objective	1, 9
Principles of Development Control	5, 14

The PUBP is considered to be orderly and economic development which will result in significant economic benefits to the State, regional and local community and will create direct and indirect employment. The proposal will assist to expand on the economic base of the region in a sustainable manner.

9.2.3 Appearance of Land and Buildings

Appearance of Land and Buildings– Relevant Provisions	
Objective	18
Principles of Development Control	41, 43, 45, 46, 47, 48

The overall intent on the Appearance of Land and Buildings is to ensure that the amenity of localities is not impaired by the appearance of land, building and objects.

The design of the project is considered to accord with the relevant Appearance of Land and Buildings provisions.

The following design and siting features of the project will assist to minimise the visual impacts of the project:

- The development proposed for the site is relatively small scale in both height and site coverage
- All proposed buildings and structures will comprise low reflective materials.
- Major building elements are to be grouped together within the north east corner of the site and comprise a scale consistent with the type of buildings expected to be found within an Industry Zone.
- The proposed underground transmission cable avoids the need for further transmission poles and lines to be established within the locality.
- Existing vegetation on the subject allotment, outside the area required for the development, will be retained which will assist with screening of the development.
- The site is well separated from the Augusta Highway which is a key tourist route, and thus, views of the site from the Highway will be limited.
- Given its locality on the western side of Port Paterson Road, the proposed development will not impact on views towards the Flinders Ranges from existing dwellings in the locality. It is noted the views to the gulf from the adjoining rural living area are already impacted by existing electricity infrastructure.

9.2.4 Environment Protection and Natural Resources

Environment Protection – Relevant Provisions	
Objective	21, 23, 25
Principles of Development Control	49, 50, 76, 77, 78, 79
Natural Resources – Relevant Provisions	
Objective	36, 38, 40, 43
Principles of Development Control	80, 81, 83, 87 105, 106, 107, 108,109, 110, 111, 112

The intent of the provisions within the Environment Protection and Natural Resources section of the Development Plan are largely consistent and seek that development protect the environment and natural resources within the Council area including the following key elements:

- Native vegetation and biodiversity
- Water resources, including stormwater management
- Soil resources.

The proposed development will require the clearance of native vegetation, however, the siting of the development avoids areas of higher ecological value such as the Tecticornia ssp. Low Open Shrubland vegetation association which exists in the wider locality.

As outlined in the ecology assessment undertaken by BlackOak no threatened species, threatened ecological communities or migratory species were detected within the project area during the survey.

The project will not impact existing ground or surface water resources.

It is anticipated that any increase in stormwater runoff generated by the proposed development will be negligible compared to current levels. The majority of the project site will remain in a previous state as per the current condition of the land. Additional runoff will likely be generated from the proposed buildings and hardstanding areas. However, these elements occupy a relatively small footprint of the total allotment area. The development will be provided with appropriate drainage and stormwater management systems (rainwater tanks, detention basins etc) to allow stormwater to be managed onsite and to avoid any impacts to downstream systems.

A drainage and stormwater management plan, incorporating water sensitive design principles, is proposed to be prepared at the detailed design stage.

Similarly, the proposed development will unlikely impact on the existing soil resources.

Natural Resources Objective 40 seeks that development minimises disturbance and modification of the natural landform. Site works will be required to clear the land and to provide benching sites for development. Finished site levels will be confirmed as part of the detailed design, however, the area of the allotment proposed to be developed is relatively flat and thus, the required site works are not likely to be excessive.

The protection of the scenic qualities of natural and rural landscapes is desired by a number of the Environmental Protection and Natural Resources provisions. This issue has been addressed above in section 9.2.3.

9.2.5 Hazards

Hazards – Relevant Provisions	
Objective	44, 45, 47, 48, 50, 52
Principles of Development Control	119, 120, 121, 124, 125, 128, 135, 136, 137

The Development Plan seeks to limit development in areas susceptible to natural hazard risks, including:

- Flooding
- Acid Sulphate soils
- Bushfire
- Site contamination

The subject land is unlikely to be subject hazard risks in accordance with the abovementioned Hazard provisions.

The risk of flooding on the subject land is considered to be low. The land does not contain any watercourse or water bodies. The land is also located outside of the Stirling North Flood Plain Area identified on Figure Pln/1 of the Development Plan, which is located approximately 450 metres to the south to the site.

The detailed design of the project will ensure stormwater will be appropriately managed on site in order to minimise any flooding risks and ensure downstream systems are not affected.

Acid sulphate mapping data shows that the likelihood of the subject land containing acid sulphate soils is low. As a result, the risk of the construction and operation of the PUBP giving rise to the potential disturbance of acid sulphate soils is low.

Unlike other Development Plans within South Australia, Council's Development Plan does not assign bushfire risk categories to the various parcels of land within the Council area. However, Hazards Principle 124 states:

124 Buildings and structures should be located away from areas that pose an unacceptable bushfire risk as a result of one or more of the following:

(a) vegetation cover comprising trees and/or shrubs

(b) poor access

(c) rugged terrain

(d) inability to provide an adequate building protection zone

(e) inability to provide an adequate supply of water for fire-fighting purposes

The subject land is not considered to be an unacceptable bushfire risk area given the site:

- Is well separated from areas dense/hazardous vegetation
- Is provided with good road access
- Is relatively flat
- Is a large site and building protections area and a dedicated firefighting water supply can be provided around buildings.

With regards to site contamination risk, the former limited use of the site indicates that the risk of site contamination within the project area is low.

9.2.6 Heritage

Heritage – Relevant Provisions	
Objective	54, 55
Principles of Development Control	149, 152

The proposed development is not likely to result in any impacts to items and areas of heritage value.

There are no Commonwealth, State or Local Heritage places within the project area or in close proximity of the battery storage site or proposed transmission line route. The nearest heritage place (State Heritage item) is located approximately 6.7 kilometres to the north east of the site.

As discussed previously, DSD-AAR advised that the central archive, which includes the Register of Aboriginal Site and Objects, has no entries for Aboriginal sites and objects with respect to the proposed site. In addition, a field survey did not identify any sites or objects on the site.

Appropriate management actions, in accordance with legislative requirements, will be required to be adopted throughout the preliminary site investigations and construction stages of the project with respect to investigating and responding to any Aboriginal heritage related discoveries on site. In addition, SIMEC ZEN Energy are consulting directly with the two Traditional Owners to ensure that processes provide due consideration of their respective cultures in the unlikely event of finding heritage artefacts.

9.2.7 Industrial Development

Industrial Development – Relevant Provisions	
Objective	90, 91, 92, 93
Principles of Development Control	306, 307, 308, 309, 310, 311, 312

The development is to be located within the Industry Zone and has been designed and sited in a manner which addresses the intent of the relevant Industrial Development provisions.

Currently the Industry Zone is largely undeveloped with the exception of the Davenport substation and associated transmission line connecting to the substation. Further, a dwelling is located on the adjoining industry allotment to the south of the subject land.

The proposed development being associated with electricity is consistent and compatible with the primary form of existing development in the zone. Also impacts to the existing dwelling within the zone are not expected.

As a result, the character and amenity to the zone will not be impacted by the proposed development. In addition, the amenity of occupiers of land in adjoining zones will not be adversely affected, this issue is further discussed in section 9.2.9.

9.2.8 Infrastructure

Infrastructure – Relevant Provisions	
Objective	97, 98
Principles of Development Control	320, 326, 328, 330

Whilst associated with a renewable energy development, electricity infrastructure is a form of development which is guided by the Infrastructure provisions.

The relevant infrastructure policies envisage:

- Infrastructure provided in an economical and environmentally sensitive manner.
- The visual impact of infrastructure facilities minimised.
- The efficient and cost-effective use of existing infrastructure.
- Infrastructure be provided with adequate, utilities and easement

The design and siting of the project largely complies with the above policies.

The proposed development has been sited and designed to minimise its visual impact and environmental impacts.

The project will be supplied with all the relevant utilities and services and appropriate easements are proposed to be established, where required, for the various infrastructure.

In addition, the development is conveniently located near the existing Davenport substation to allow an efficient connection to the ElectraNet system.

9.2.9 Interface between Land Uses

Interface between Land Uses – Relevant Provisions	
Objective	99, 100
Principles of Development Control	331, 332, 333, 337, 338

As discussed in section 9.1 above, the Industry Zone is considered to be an appropriate zone for the PUBP and the development is a land use that can coexist with existing and desired uses within the locality.

It is noted that that there are sensitive uses (dwellings) adjoining the subject site and throughout the locality, and thus, there is a potential for interfaces impacts to occur.

Potential amenity impacts created by the project include, dust, traffic, noise and light spill.

It is noted that interface impacts are most likely to occur during the construction period, which will be limited to 12 months. Once operational the proposed development will be benign in terms of intensity and will generally have minimal amenity impacts such as, dust and traffic. It is noted that given the rural setting occasional/seasonal impacts relating to dust and heavy vehicle traffic movement associated with primary production activities, that occur in the wider locality, would be expected.

The management of dust will be a key focus during the construction phase, this issue will be addressed via the implementation of appropriate mitigation strategies to be included within the CEMP.

Noise has been identified as a potential impact during the operation phase of the development. The acoustic assessment undertaken demonstrates that the development can be designed and sited to meet the relevant provisions of the *Environment Protection (Noise) Policy* which accords with Principle 338.

Lighting will be installed onsite for safety and security purposes. All lighting will be appropriately sited and designed to avoid any light spill impacts to adjoining properties.

9.2.10 Transportation

Transportation – Relevant Provisions	
Objective	103
Principles of Development Control	345, 348, 349

The scale and nature of the development has the potential to impact the surrounding road network particularly during the construction phase of the project. As a result, a TIS has been undertaken to assess the level of impact likely to be created by the project (refer to Appendix F).

The TIS concluded that whilst the proposed development will increase the existing traffic volumes on the adjoining roads, particularly during the construction stage, with the implementation of recommended mitigation measures and compliance with permit conditions, the impacts from traffic and traffic related activities are considered acceptable for the area.

The proposed development can be provided with safe and convenient access from the adjoining local roads and as a result, no additional access from the arterial roads in the locality is proposed.

The design of the project includes sufficient area for the manoeuvring, loading, unloading and parking of all vehicles anticipated to visit the site to occur onsite.

All internal access tracks and parking areas will be appropriately surfaced to minimise dust and mud nuisance.

Further assessment and monitoring of the local road network adjoining the site during the construction period will be undertaken to manage any impact associated with the increase of traffic volumes, principally heavy vehicle movements.

With regard to the above, the proposed development largely complies with the relevant Transportation provisions.

10.0 Summary

The proposed battery storage facility at Port Paterson will provide limited environmental impact, zero carbon emissions and contribute to the security of the South Australian electricity network.

The location of the proposed development has been strategically chosen based on its proximity to the existing electrical network. It has been designed and sited to have minimal impact on adjoining land uses and character and amenity of the locality.

The proposed development is considered to be an appropriate form of development that meets the objectives of the Port Augusta Council Development Plan, given:

- The subject site is a suitable and appropriate location for the proposed development, considering its location within an Industrial Zone.
- The proposed development has been designed to mitigate against any adverse interface issues with surrounding land uses.
- There will not be any adverse impacts to the existing or wider community of Port Augusta and Upper Spencer Gulf region.
- There will be a positive economic benefit to the region, providing employment both during construction and operational maintenance.

The proposed development seeks favourable assessment by the State Commission Assessment Panel and Development Approval by the Minister for Planning.

Playford Utility Battery Project

SIMEC ZEN Technologies (Power and Energy)

15-Feb-2019

AECOM Imagine it. Delivered.

Proposed Battery Storage Facility, Port Paterson

Transport Impact Statement

15-Feb-2019
Prepared for – SIMEC ZEN Technologies (Power and Energy) – ABN: 82 110 224 005

Proposed Battery Storage Facility, Port Paterson

Transport Impact Statement

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Executive summary

SIMEC ZEN Energy is developing a 100 MW / 100 MWh battery storage facility on land to the east of the former Playford A and Northern Power Stations and to the south of the existing Davenport substation at Port Paterson. The development is proposed to include up to 27 battery storage structures and 27 inverter stations, along with associated transformers and other electrical equipment installed on-site and connected to the existing electricity transmission network. As the location of the proposed site is one of a rural nature, long-distance transportation of both locally made and imported items for construction is inevitable and will form the basis for this report.

AECOM Australia Pty Ltd has been engaged by SIMEC ZEN Energy to conduct a Transport Impact Statement. This assessment evaluates the risks posed to road infrastructure and road users including the impact on local traffic networks. With construction activity estimated to extend over a 12-month period, reducing the impact on residents during this phase is of high importance and therefore a series of recommendations has been made to mitigate traffic-related issues associated with local unsealed roads.

Also identified as part of the assessment are key transportation routes via road and/or rail for the numerous imported components that will be transported from the Port of Adelaide, some 300 km from the proposed site.

Due to the need for transportation of large items to and from the site, oversize and overmass heavy vehicles are likely to be utilised. The use of large heavy vehicles could also achieve efficiency gains and remove the number of heavy vehicles generated by the project. In order to meet compliance under Heavy Vehicle National Law, liaison with the National Heavy Vehicle Regulator, Department of Planning, Transport and Infrastructure and Port Augusta City Council will be required for use of any vehicles that exceed General Access provisions.

1.0 Project description

1.1 Introduction

In recent years South Australia has shifted towards the generation of energy from renewable sources. It is this shift that has seen the closure of fossil fuelled power plants such as the Port Augusta Northern Power Station. Closures of these facilities have provided an opportunity to re-purpose redundant equipment and brown field sites that are ideal for Battery Energy Storage Systems (BESS), such as the Playford Utility Battery Project. The Playford Utility Battery Project will complement existing renewable energy infrastructure and work toward safeguarding South Australia's energy network and the wider National Electricity Market against blackouts and aid in the transition from fossil fuels to more sustainable forms of energy.

The aims of this Transport Impact Statement are as follows;

- Identify the type and amount of traffic that may access the site on any given day.
- Provide recommendations to mitigate the effects of construction on the local community.
- Identify over-mass and over-size loads and assess potential transportation routes.
- Identify heavy vehicle routes for goods and services deliveries to site.
- Assess sight distances at access points to local roads.

1.2 Project overview

Key aspects of the proposed project relevant to the Transport Impact Assessment are as follows;

- The battery will be comprised of containerised battery and transformer/inverter (PCU) blocks, switchgear and HV transformers.
- There will be an installed power connection capacity of 135 MVA (inverters, transformers and switchgear).
- The design offers flexibility to add additional capacity, either into a single container or through adding additional containers should a business case warrant such potential expansion.

2.0 Location and existing road conditions

2.1 Location

The proposed Playford Battery Storage Facility site is to be located approximately 300 km north of the capital city of Adelaide and approximately 10 km south of the major regional city of Port Augusta on Port Paterson Road. The site is to the east of the former Port Augusta Northern Power Station and falls within the boundaries of Port Augusta City Council (Council).

2.2 Proposed site subject land

The proposed site for the Playford Battery Storage Facility is a rectangular-shaped parcel of 'Industry' zoned land with an area of approximately 8 hectares lying within the locality of Port Paterson. The land is vacant, gently undulating and largely covered in native vegetation. Any clearing of native vegetation would be subject to approval under the South Australian Native Vegetation Act 1991. Vehicular access to the site is via Port Paterson Road along its eastern boundary.

2.3 Surrounding road network and transport routes

Access to the proposed site is via Port Paterson Road which is a two-way unsealed local road under the care and control of Port Augusta City Council (Council). Port Paterson Road intersects with the Augusta Highway approximately 7 km south-east of Port Augusta. The road distance from the

intersection of the Augusta Highway and Port Paterson Road to the development site is approximately 3 km. Port Paterson Road provides access for up to 25 large-lot 'Rural Living' zoned residential dwellings, whilst also providing access to 'Industry' zoned land and 'Primary Industry' zoned agricultural land.

During construction and decommissioning of the BESS there will inevitably be some disruptions to the residents of these properties. Disruptions may include dust, noise, increased traffic and potential deterioration of the road surface due to an increase in vehicle traffic loads. Section 4.0 discusses ways to mitigate these risks and suggest solutions that will help reduce the impact on residents, and other members of the public who wish to access Port Paterson.

2.3.1 Arterial road network

Transportation of imported componentry for the construction of the BESS will be primarily from the Port of Adelaide. Other plant, equipment and materials associated with construction of supporting infrastructure may be sourced from other locations which could include:

- Adelaide
- Port Augusta
- Port Pirie
- Whyalla.

Included below in Table 1 is a list of the main Arterial roads, under the care and control of DPTI, which will be used for the transportation of goods and materials. For convenience the estimated Average Weekday Traffic volumes (AWT) for each of the roads obtained from DPTI has also been provided. It must be noted that the AWT for each of the arterial roads is based on data obtained between 2014 and 2018. Given that the data collected by DPTI is typically from short-term sample counts, there may be slight differences between reported and actual volumes.

Table 1 Key Classified State (Arterial) Roads – estimated traffic volumes and composition of heavy vehicles

Major Road	Locality	Surface	AWT	HVs	Year
Augusta Highway	Port Paterson	Sealed	4,400	19.5%	2017
Port Wakefield Highway	Port Wakefield	Sealed	8,600	18.5%	2017
Port Wakefield Highway	Two Wells	Sealed	10,100	18.0%	2017
Port Wakefield Road	Mawson Lakes	Sealed	66,100	13.5%	2017
Main North Road	Blair Athol	Sealed	40,300	5.0%	2016
Salisbury Highway	Dry Creek	Sealed	67,300	11.5%	2015
Port River Expressway	Wingfield	Sealed	42,200	13.5%	2015
Victoria Road, Osborne	Osborne	Sealed	16,500	14.5%	2015
Eyre Highway (Joy Baluch AM Bridge)	Port Augusta	Sealed	17,600	7.0%	2018
Eyre Highway	Port Augusta West	Sealed	2,700	20.5%	2014
Lincoln Highway (Whyalla/Pt Bonython)	Cultana	Sealed	2,000	17.0%	2017
Spencer Highway (east of Pt Pirie)	Solomontown	Sealed	2,700	9.5%	2017

2.3.2 Local road network

The 'last-mile' access to the Playford Battery Storage Facility site is via Port Paterson Road, which is an unsealed two-way Local road under the care and control of Council. Up to 25 dwellings are serviced by Port Paterson Road, which carries an estimated average weekday traffic volume of 185 vehicles just west of its intersection with the Augusta Highway. This estimate is based on a rate of 7.4 daily vehicle trips per dwelling obtained from surveys undertaken by NSW Roads and Maritime Services in 2013, which is generally considered the Australian standard for estimating trip generation.

Port Paterson Road also provides access to the Davenport substation, which is likely to generate some local traffic impacts associated with maintenance vehicles for routine and unplanned events. Nearby low-intensity agricultural land is also accessed via Port Paterson Road, however any associated traffic generation is expected to be minimal.

Northern Power Station Road is a sealed two-way Local road under the care and control of Council. It is proposed to be utilised for this project for the transportation of the 2 x 76 tonne transformers which are currently located at the former Northern Power Station Playford A&B switchyard site. Formally the road would have been a main transport route for staff and maintenance crews for the Power Station. However, given the fact that the Power Station has now been decommissioned, traffic on the road is expected to be minimal.

2.4 Functional hierarchy

As componentry and materials for the construction of the BESS will involve travel along the State's Arterial road network, an important consideration is DPTI's *Functional Hierarchy for South Australia's Land Transport Network*. The Functional Hierarchy identifies which of South Australia's transport corridors are important for the movement of both people and freight.

The Augusta Highway in the vicinity of the BESS is identified as having the following functions:

- Major Traffic Route – Roads that are to cater safely and efficiently for all types of road users at all times of the day.
- Freight Route – Roads that are to cater for the safe and efficient movement of freight vehicles at all times of the day.
- Direct/Scenic Tourist Route – Roads that provide a direct link to/from key regional activity centres.

These key functions indicate that the road network serving the BESS site is appropriate for accommodating large heavy vehicles, however they also reinforce the need to consider the use of this road for regional travel of all vehicle types.

Outback arterial roads provide connections between strategically important regional cities, industrial lands and sea ports within the geographic location of the proposed Playford Utility Battery site. The functionality of these roads means they already carry high proportions of heavy vehicles (see Table 1). This suggests they will be well suited as transport routes for goods and material deliveries for the proposed development. Included in Section 2.5 of this report are the approved routes for certain categories of heavy vehicles.

2.5 Approved heavy vehicle routes

The transportation of componentry for the construction of the BESS will be conducted via the public road network, predominantly from the Port of Adelaide with some materials sourced from elsewhere in Adelaide or from other ports and centres such as Port Augusta, Port Pirie and Whyalla. Included in Table 2 overleaf is a summary of the main roads that may form potential freight routes for good and materials for the BESS. Each road listed has been classified with the use of RAVnet, which was accessed via the DPTI website and identifies the approved routes for each vehicle class.

All roads apart from Port Paterson Road listed in Table 2 are also rated on RAVnet under the Performance-Based Standards (PBS) Scheme. The PBS Scheme is administered by the National Heavy Vehicle Regulator (NHVR), which assesses vehicles and assigns classes based on dimensions and performance. PBS vehicle routes are classified into four national network levels, with additional sub-class categories of A and B as defined in Table 3.

Table 2 Maximum allowable heavy vehicles by road

Major Road	Road Authority	Road Class	Surface	PBS Level	Maximum Allowable Vehicle
Augusta Hwy, between Northern Power Station Rd and Footner Rd (Port Augusta)	DPTI	Arterial	Sealed	3B	4.0 m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Augusta Hwy, between Footner Rd and Warnertown	DPTI	Arterial	Sealed	3B	4.5m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Augusta Hwy / Port Wakefield Hwy / Port Wakefield Rd, between Warnertown and Sailsbury Highway	DPTI	Arterial	Sealed	3B & 3A	4.0 m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Main North Road	DPTI	Arterial	Sealed	1A	4.0 m wide up to 93.5 t low loader; or 19 m GML Semi Trailer
Salisbury Highway	DPTI	Arterial	Sealed	3A	4.0 m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Port River Expressway	DPTI	Arterial	Sealed	3A	4.0 m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Victoria Road	DPTI	Arterial	Sealed	3A	4.0 m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Eyre Highway	DPTI	Arterial	Sealed	3B	4.5m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Lincoln Highway	DPTI	Arterial	Sealed	3A	4.5m wide up to 93.5 t low loader; or 36.5 m HML Road Train
Spencer Highway	DPTI	Arterial	Sealed	3A	2.5m wide up to 59.5 t low loader; or 36.5 m HML Road Train
Port Paterson Rd	Council	Local	Unsealed	n/a	General Access
Northern Power Station Rd	Council	Local	Sealed	3B	23m 42.5 t Low Loader; or 36.5 m HML Road Train

Table 3 PBS Vehicle Route Standards

Road Network	Vehicle Length	Close present vehicle description
Level 1A	≤ 20m	Single articulated vehicle or truck trailer combination
Level 2A	≤ 26m	B-double
Level 2B	26m ≤ 30m	B-double fitted with quad axle groups
Level 3A	≤ 36.5m	Double road train (type I)
Level 3B	36.5 ≤ 42m	Double road train (type I)
Level 4A	≤ 53.5m	Triple road train (type II)

Oversize Overmass (OSOM) vehicles are those that have dimensions or loads in excess of General Access provisions under Heavy Vehicle National Law (HVNL). General Access vehicles are typically no wider that 2.5 m, no taller than 4.3 m, no longer than 19 m with a single articulation only, and with a Gross Vehicle Mass (GVM) no greater than 46.5 t. Vehicle mass limits can vary based on axle configurations.

OSOM vehicles that require access on roads that have not been approved for dimensions and/or vehicle masses in excess of General Access provisions are required to apply for a permit through the NHVR.

2.6 Rail network and intermodal locations

The strategic geographical location of Port Augusta along with past and present nearby industries, has defined the city as a road traffic and rail junction for Australia's national land transport network. Port Augusta is a stop on the Indian Pacific transcontinental train service on the Sydney-Perth railway and provides a stop for The Ghan service between Adelaide, Alice Springs and Darwin. Other networks include the Leigh Creek railway line which extends some 250 km north of Port Augusta. The Leigh Creek rail line formerly provided coal fuel for the now decommissioned Northern Power Station.

In March 2018 South Australian rail company Bowmans Rail opened an intermodal terminal 12 km north of Port Augusta as indicated in Figure 1. Situated adjacent to the Bungala solar plant, the intermodal terminal was constructed to support the agriculture, mining and the pipeline of renewable energy projects planned and underway in the Upper Spencer Gulf region. The facility has a 3,600 m^2 hard stand area with semi-trailer access, 24/7 operation, and handling a capacity of 3,000 containers a year.

Transportation of goods via rail has the potential of reducing the effects of construction related heavy vehicle movements on the existing arterial road networks. However, the road network which forms the link between the intermodal site and the Augusta Highway consists of approximately 10.5 km of unsealed roads, which are not currently gazetted for heavy vehicle use above general access provisions. Therefore, a special permit may need to be obtained through the NHVR for any components that are Oversize and/or Overmass, or for any Restricted Access Vehicles (e.g. B-doubles).

However, given that the intermodal facility is located approximately 21 km by road to the BESS facility, it may be feasible to transport goods from an intermodal facility in Adelaide by rail, with General Access semi-trailers used for final site delivery. This would have the potential to eliminate reliance on long-distance travel of multiple heavy vehicles via road. The utilisation of this facility would be subject to further investigations into feasibility, including obtaining any consent conditions related to vehicle access.

Alternatively, discussions with Bowmans Rail indicates that there is also the potential to utilise the former Northern Power Station site as an intermodal facility. This site includes a rail loop and is gazetted for access by 36.5 m HML road trains via Northern Power Station Road. Further investigations would be required to determine the feasibility of this option.

Figure 1 Location of Bowmans Port Adelaide intermodal facility

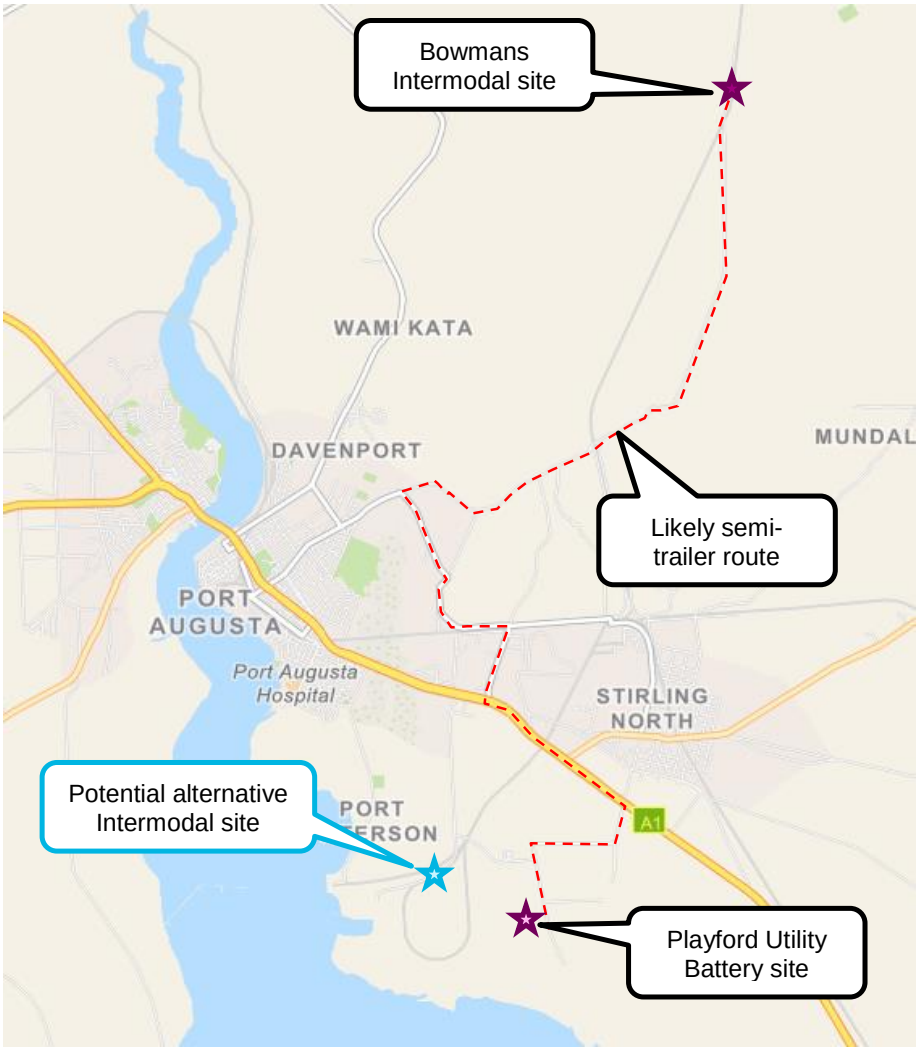

Image source: AECOM GIS

3.0 Construction phase traffic

3.1 Staff movements

During the construction phase of the project there will be an increase to the volume of heavy and light vehicles that will be accessing the site each day. As different construction phases progress, the number of employees on site per day is likely to fluctuate significantly. It has been estimated that the likely number of employees on site during the 12-month construction phase could typically be in a range of between 25 to 100, with lower numbers expected on average.

Whilst it is likely that workers would arrive as multiple persons per vehicle, including the opportunity to bus workers to the site from a common meeting point(s) in Port Augusta, for a conservative analysis it has been assumed that each staff member would travel to and from the site individually in their own vehicles. Therefore, the maximum potential traffic generated by staff would be in a range of between 50 to 200 light vehicle trips per day based on 25 to 100 staff, i.e. one trip to the site to start a work shift, and another trip from the site at the end of shift.

3.2 Equipment deliveries

Equipment deliveries will make up the majority of heavy vehicle traffic over the 12-month construction phase. Following each delivery most trucks will leave empty, however, it has been estimated that approximately 50 containers will leave the site and return to the Port of Adelaide. Other deliveries to site may include concrete and related items associated with construction which have been sourced locally. Following construction, the facility will be typically unmanned but may still need to be accessed by maintenance crews at intermittent times during its operational lifespan.

Under current contract structure an option has been allowed for to re-power the facility, to account for degradation of the batteries thus potentially doubling the life of the project. Re-powering may include an exchange of the batteries, therefore, the road network which has previously been discussed would see an increase in the volume of both heavy and light vehicles during this major maintenance event, however at a lower intensity compared to the initial construction phase.

At the end of the project's lifespan, decommissioning would be expected to occur which would again involve an increase in the volume of both heavy and light vehicles during a concentrated period, however this would also be at a lower intensity compared to the construction phase.

Included below in Table 4 is a summary of equipment and material deliveries that will be expected on site over the 12-month construction phase.

Table 4 Estimated heavy vehicle deliveries to site

Quantity	Likely Vehicle Type	Pay Load	Returning to Origin Yes/No	OSOM Yes/No	Permit Yes/No
2-3	19 m Semi Low Loader	Water Tanks 3.2m height by 4.6m diameter	No	Yes	Yes
2	19 m Semi Platform Trailer	11/275kV transformers	No	Yes	Yes
27	19 m Semi Trailer	45-foot ISO container	No	No	No
35	19 m Semi Trailer	40-foot ISO refrigerated container	Yes	No	No
27	19 m Semi Trailer	40-foot ISO container Inverter/Transformer Skid	No	No	No
15	19 m Semi Trailer	40-foot ISO container	Yes	No	No
1	19 m Semi Trailer	*Control and office	No	*No	*No
1	19 m Semi Trailer	*MV/LV building	No	*No	*No
60	Large 8.6 m^3 concrete truck	Concrete (estimated)	No	No	No
91	26 m B-double tipper (38t)	Crushed rock & rubble (estimated)	No	No	Yes**
200	26 m B-double tipper (38t)	Excavated spoil material (estimated)	No	No	Yes**

**It has been assumed based on known information that the switchgear and control room buildings will be modular and constructed offsite. The assumption is that they will be constructed in such a manner that they can be split in sections for transport and that no special road permits will be required. If circumstances change and the buildings do become oversize and or over mass, then application for the appropriate permit would need to be made through the NHVR.*

*** As B-doubles longer than 19 m are in excess of General Access provisions, a permit would be required for access to Port Paterson Road.*

Based on Table 4, it is possible that approximately 480 individual heavy vehicles would be required to access the site over the entire duration of the construction phase. The periods of highest heavy vehicle activity are likely to be during the following:

- Excavation of site material in preparation for foundations, trenches etc.
- Delivery of concrete, crushed rock and rubble
- Delivery of battery and inverter equipment.

Whilst further detailed program planning is required to determine likely maximum daily truck movements, it would be reasonable to expect that the construction phase would generate anywhere between 10 and 40 movements per day on average during the busiest periods.

For vehicle combinations exceeding General Access provisions or gazetted Restricted Access Vehicle routes, an application must be made to the NHVR for a permit for each vehicle type, e.g. B-doubles, OSOM vehicles, road trains etc. Each application currently costs $73 and can be requested for periods of up to three years in duration.

Preliminary vehicle turning path checks for the likely combinations accessing the site indicate that no major constraints have been identified. Turning path checks should be undertaken in greater detail in the preparation of any construction traffic management plan.

3.2.1 Water tank transportation

The proposed size of water tanks to be delivered to the site would be in excess of the approved vehicle dimensions. With a diameter of 4.6 m and height of 3.2 m, it is likely to be more convenient to transport these tanks on their side, so that the load width would be 3.2 m, and total vehicle height 4.6 m plus trailer platform height. The total vehicle plus load height would require a permit under the NHVR on all roads. In addition, a vehicle width greater than 3.2 m would also require a permit to travel on Port Paterson Road.

Should it be determined to be more feasible to transport the tanks sitting on their base, a load width of 4.6 m would also require a permit to travel on all roads, with escort provisions and some temporary road closures likely to be required.

3.2.2 Transformer transportation

The proposed construction of the BESS would utilise 2 x 76 tonne transformers (11 kV / 275 kV, 67 / 40 MVA) from the now decommissioned Northern Power Station. It is a requirement that the transformers be transported from their current resting position at the former Playford A&B switchyard to the location of the Playford Battery construction site (Davenport South).

Dimensions of each transformer are as follows:

- Height – 4,320 mm
- Length – 6,620 mm
- Width – 2,520 mm.

The transportation of each transformer would be via the following route:

- Northern Power Station Road, then right turn onto Augusta Highway
- Augusta Highway, then right turn onto Port Paterson Road
- Port Paterson Road to site (approximately 3 km).

An access permit obtained through NHVR would be required for the transportation of each transformer, given that GVM would exceed maximum allowable loads on Northern Power Station Road and Port Paterson Road.

Furthermore, the transformer height would result in the vehicle being in excess of the 4.3m general access provisions. Therefore, permit approval would likely require liaison with infrastructure authorities that may have assets overhanging the roads (e.g. ETSA utilities wires, DPTI electronic sign gantries etc.).

In addition to the above route, a secondary option was considered that would utilise existing private roads through the Davenport Substation site, thus negating the need for the transformers to be transported via Augusta Highway. However, it was determined that this route would not be appropriate due to inadequate pavement strength and risks of transporting goods through an active substation site.

Figure 2 Transportation route for transformers

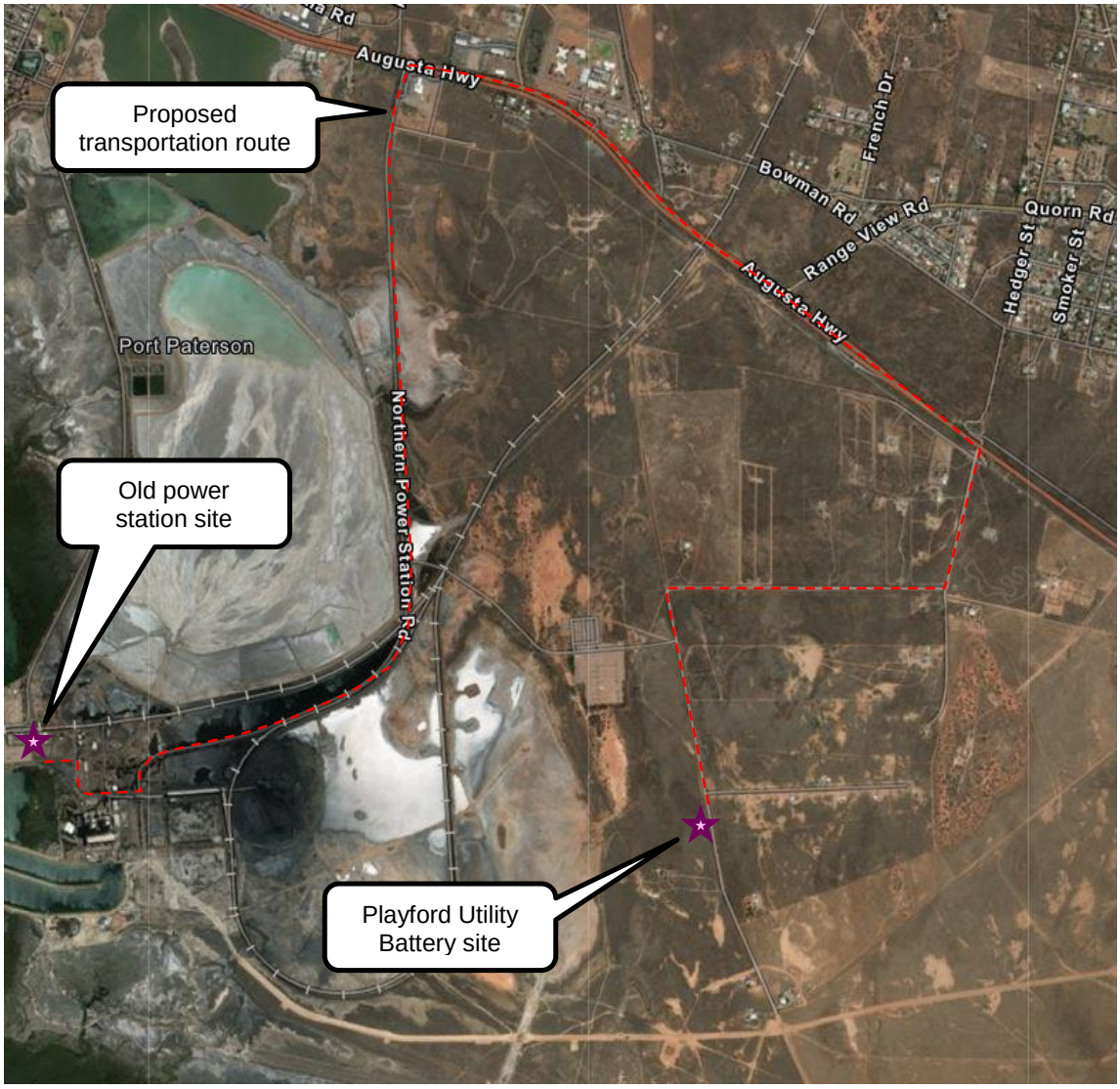

Image source: AECOM GIS

3.2.3 Use of B-doubles and larger combinations

The use of B-doubles would result in an overall reduction in total heavy vehicle movements, given their ability to carry greater loads. However, access to the site by B-doubles would require a permit to travel along Port Paterson Road as this road is not an existing approved route.

As the road network from Port Adelaide to Port Augusta via Augusta Highway is an approved route for 36.5 m road trains, it may be possible to transport two containers per vehicle to the site, should the appropriate permit be granted for travel on Port Paterson Road.

4.0 Mitigating impacts of additional traffic

As previously mentioned, access to the Playford Utility Battery Project is only possible via Port Paterson Road which is unsealed. Daily traffic volumes have the potential to increase by around 50 to 200 light vehicles (based on 25 to 100 employees on site, with a single staff member per vehicle) and between 10 to 40 heavy vehicles. This would increase the current estimated daily traffic volume of 175 vehicles to between 235 to 415 total vehicles.

As a result, residents within the area would be exposed to additional dust, noise and vehicle movements associated with the construction of the BESS. Consideration has been made for these impacts and associated risks and as a result a series of recommendations has been suggested:

- Where possible, plan for heavy vehicle movements to and from the site to occur at off peak times to reduce the impact of noise on surrounding residents.
- Provide for clear turning circles on-site to reduce heavy vehicle engine noise associated with revving, reversing, beeping and generation of excess dust.
- Suppress dust with water on Port Paterson Road and the construction site at regular intervals as required.
- Prohibit vehicles from idling on any roads in the vicinity of residential properties.
- Enforce vehicle speed limits on the construction site and Port Paterson Road to reduce dust.
- Minimise soil deposit on surrounding sealed roads using rumble grids or wheel-wash facilities if needed.
- Transport construction crews to and from site each day with the use of buses to reduce traffic volumes. Staff travelling by bus would have less exposure to risks associated with traversing unsealed roads and interacting with heavy vehicles accessing the site each day.

5.0 Safety considerations

With the exception of Port Paterson Road, all routes have been gazetted for Restricted Access Vehicles by DPTI and published on RAVnet. Therefore, the sight distances at intersections on the main arterial roads and highways have been deemed to be adequate. Provided below in the following two sections are screen grabs from Google Street View depicting the approach to local roads which will form access to the site.

Figure 3 and Figure 4 below illustrate the southern and northern approaches to Port Paterson Road on the Augusta Highway respectively. This section of road is straight and flat, and sight distance is deemed to be adequate in both directions.

Figure 3 Intersection of Augusta Highway and Port Paterson Road, facing northwards

Image source: Google Street View

Figure 4 Intersection of Augusta Highway and Port Paterson Road, facing southwards

Image source: SIMEC ZEN Technologies (Power and Energy)

Given the narrow width of Port Paterson Road as indicated in Figure 5, additional measures to address potential conflicts between entering and exiting vehicles may be required. In particular, heavy vehicles turning left or right from the Augusta Highway may need to utilise the full width of Port Paterson Road to undertake these manoeuvres.

Options to mitigate these potential conflicts should be considered in the project's Workzone Traffic Management Plan, e.g. provision of advanced warning signage, temporary traffic controllers etc.

Figure 5 Port Paterson Road at its intersection with Augusta Highway, facing westwards

Image source: SIMEC ZEN Technologies (Power and Energy)

Figure 6 below illustrates the southern approach to Northern Power Station Road on the Augusta Highway. This section of road is straight and flat, and sight distance is deemed to be adequate for a left-hand manoeuvre. A left-hand turning lane is also a feature of this intersection.

Figure 6 Intersection of Augusta Highway and Northern Power Station Road, facing northwards

Image source: Google Street View

Figure 7 below illustrates the northern approach to Northern Power Station Road on the Augusta Highway. This section of road is straight and flat; however, some shrubbery does exist on the centre median and considerations may be needed to facilitate the transportation of the two transformers to the new site.

Figure 7 Intersection of Augusta Highway and Northern Power Station Road, facing southwards

Image source: Google Street View

6.0 Conclusion

The traffic generated by the Port Paterson Utility Battery development is likely to have a minimal impact on the broader transport network. The construction phase is estimated to extend over a 12-month period with an estimated 106 equipment deliveries. To accommodate these deliveries, considerations may need to be made for the 3 km stretch of unsealed road that connects the proposed site of the BESS with the Augusta Freeway. Section 4.0 of this report provides a series of recommendations to limit the effect of construction on residents living within close proximity to Port Paterson Road.

The use of heavy vehicles with loads and/or dimensions exceeding general access provisions would require liaison with the National Heavy Vehicle Regulator, DPTI and the City of Port Augusta. There are options for the long-range transport of componentry to solely utilise the road network, or to utilise rail to the new Port Augusta intermodal facility with heavy vehicles to complete the delivery process via road.

Following construction and throughout the operational life of the battery, transport impacts are expected to be minimal, with traffic scaled back to the level needed for service and maintenance of the battery only.

In conclusion, allowing for the implementation of mitigation measures and compliance with permit conditions, the impacts from traffic and traffic related activities are considered acceptable for the area in which the Port Paterson Utility Battery project is proposed.

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Playford Utility Battery Storage Facility
SIMEC ZEN Technologies (Power and Energy) Pty Ltd
20-Feb-2019
Doc No. 60535163-A19B01RP

Playford Utility Battery Storage Facility

Planning Acoustic Assessment

Playford Utility Battery Storage Facility

Planning Acoustic Assessment

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Appendix A
Acoustic Nomenclature A

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Executive Summary

The Playford Utility Battery Storage Development is a proposed development by SIMEC ZEN Energy, located south east of Port Augusta. As part of the development authorisation application for this development, AECOM were engaged to carry out an acoustic assessment of potential noise impacts on nearby sensitive receivers.

The proposed site is located within an *Industry* zone under the *Port Augusta (City) Development Plan*, with adjacent zones including *Rural Living*, *Primary Industry*, and *Coastal Conservation*. The South Australian Environment Protection Authority's (EPA) *Environment Protection (Noise) Policy 2007* (Noise EPP) is the relevant document to be used by proposed developments for demonstrating their compliance with the General Environmental Duty under the *Environment Protection Act 1993 (SA)*.

Noise criteria for proposed developments are based on the relevant zones for both the source and nearby sensitive receivers (e.g. residences), and these criteria account for both developed and undeveloped land. Land near the proposed development includes both developed and undeveloped land, which have been accounted for within the acoustic assessment.

Modelling of predicted noise levels at nearby developed and undeveloped land was carried out using the SoundPLAN program, implementing the CONCAWE algorithm. The CONCAWE algorithm is commonly used within South Australia as it allows for the prediction of noise under varying weather conditions. In accordance with industry practice and EPA guidance, CONCAWE Category 6 was used for predicting night time noise levels, reflective of worst-case weather conditions (that is, most conducive to increased noise levels at nearby residences).

Noise sources for the Project include:

- 54 HVAC units designed to provide cooling to batteries, with 2 HVAC units in each Battery Container
- 54 power inverters, with 2 inverters located within each Inverter Container
- 27 transformers, with 1 at each Inverter Container
- 2 step up transformers

Noise predictions indicated that noise levels at nearby undeveloped land would exceed environmental noise criteria without noise mitigation. Additionally, there is a risk that noise levels from the battery storage facility would be fundamentally tonal, and therefore subject to an adjustment of 5 dB(A). Should noise from the facility be tonal, then planning noise guidelines would be exceeded at two additional locations. In order to comply with environmental noise criteria, a three-stage mitigation strategy is proposed:

1. Acoustic treatment to the controlling noise source (the inverters), to reduce emitted noise levels.
2. Undertake noise level measurements of the inverters during installation and commissioning to confirm whether noise from the inverters is likely to be tonal at receivers.
3. If noise from the inverters at residences is deemed to be tonal, installation of a noise barrier around the noise sources to achieve environmental noise criteria.

With the proposed mitigation strategy, it is predicted that all locations will achieve environmental noise criteria.

1.0 Introduction

AECOM has been engaged by SIMEC ZEN Energy to undertake an acoustic assessment of the proposed Playford Utility Battery Storage Development (the project). The purpose of this acoustic assessment is to satisfy the acoustic requirements of a development application for the project under the *Development Act 1993* (SA).

This report derives the relevant noise criteria for the project, presents the results of acoustic modelling and discusses conceptual noise mitigation treatments where necessary to comply the noise criteria.

1.1 Site Location

The project site is located to the South East of Port Augusta, adjacent to Port Paterson Road, Port Paterson.

According to the *Port Augusta (City) Development Plan*, the Site is zoned *Industry*, with *Industry* to the north, *Rural Living* to the east, *Primary Industry* to the south-east and *Coastal Conservation* to the south.

An aerial image overlaid with the nearest noise-sensitive receiver locations is shown in Figure 1.

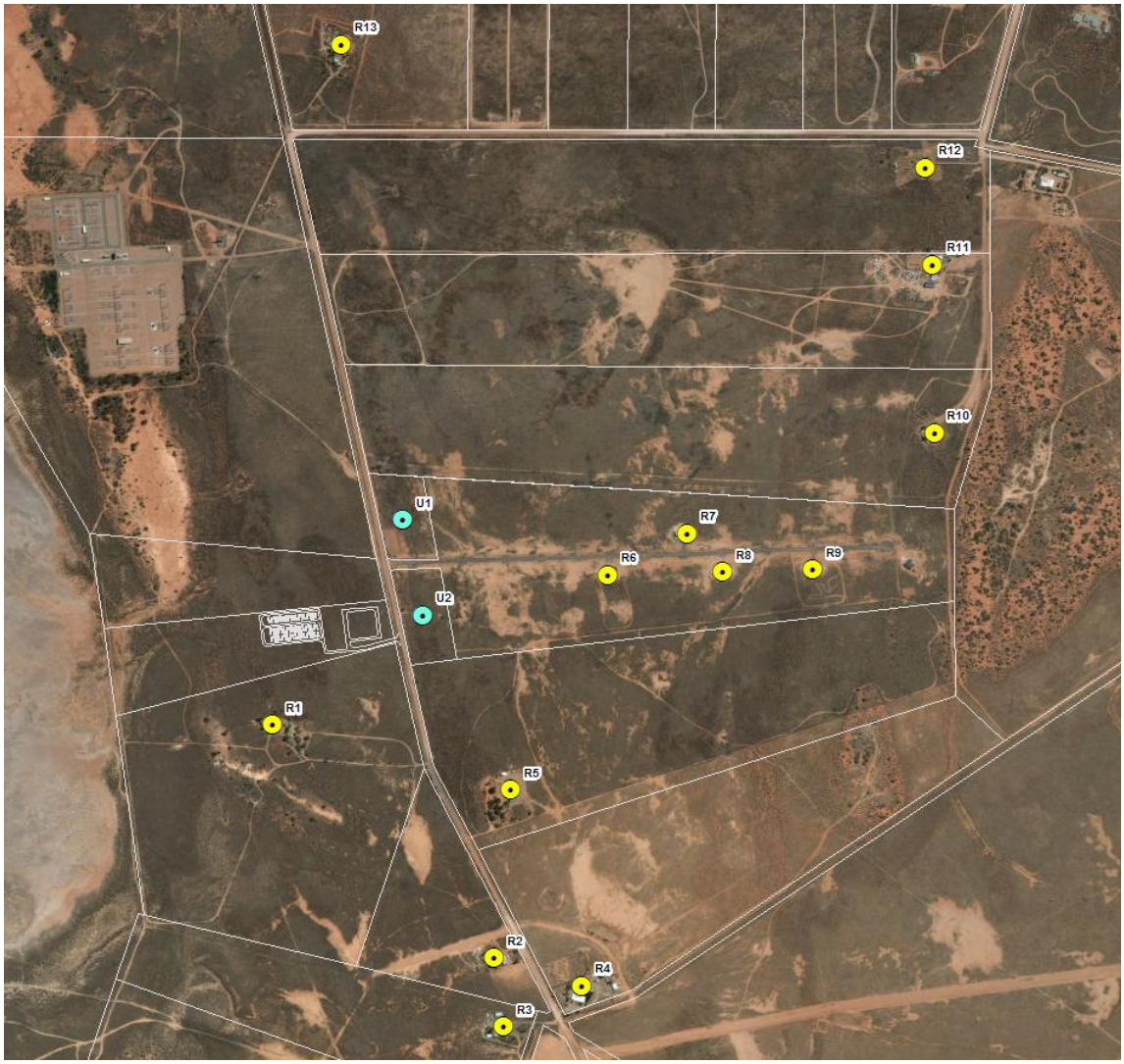

Figure 1 Noise Sensitive Receivers (yellow) and nearest undeveloped lots in the Rural Living zone (blue)

2.0 Noise Targets

The South Australian Environment Protection Authority (EPA) provides Indicative Noise Levels that if planned noise sources can achieve, they can be deemed to achieve the General Environmental Duty, as defined under the *Environment Protection Act 1993 (SA)*. These Indicative Noise Levels are set by the *Environment Protection (Noise) Policy 2007 (SA)* (Noise EPP).

Under the Noise EPP, Indicative Noise Levels are determined based on the land uses promoted by the relevant Development Plan for both the noise source and receiver. The noise criteria (also known as relative indicative noise level) for each land use category are set out in Tables 1 and 2 of the Noise EPP.

Part 5 of the Noise EPP applies to development authorisation applications under the *Development Act 1993*.

Part 5 states that:

> *(3) A predicted source noise level (continuous) for the development should not exceed the relevant indicative noise level less 5 dB(A).*
>
> *(4) In addition, if the noise-affected premises are situated in a quiet locality –*
>
> *(a) a predicted source noise level (continuous) for the development, as determined by the Authority for a period between 7.00 a.m. and 10.00 p.m. on the same day, should not exceed 45 dB(A); and*
>
> *(b) a predicted source noise level (continuous) for the development, as determined by the Authority for a period between 10.00 p.m. on one day and 7.00 a.m. on the following day, should not exceed 52 dB(A); and*
>
> *(c) a predicted source noise level (maximum) for the development, as determined by the Authority for a period between 10.00 p.m. on one day and 7.00 a.m. on the following day, should not exceed 60 dB(A).*

In relation to this project, dwellings within the *Coastal Conservation* zone and *Rural Living* zone are situated in a quiet locality. The Indicative Noise Levels derived for dwellings in these zones are lower than the quiet locality levels and therefore the lower levels, plus the maximum of 60 dB(A) source noise level (maximum) requirement will apply.

2.1 Undeveloped Land

Part of the *Rural Living* zone immediately adjacent to the project has been subdivided but is still predominantly undeveloped. We understand that there are no current development applications or building rules consent applications submitted to council to develop these parcels of land as of January 2019.

In accordance with page 46 of the SA EPA Publication No. 47715 (June 2009) '*Guidelines for the use of the Environment Protection (Noise) Policy 2007*', the 5 dB(A) reduction in noise criteria for development authorisation applications is not applied to undeveloped land. Therefore, the undeveloped lots will be assessed against the Indicative Noise Levels without the 5 dB(A) development application penalty. This approach reduces the risk of noise compliance issues in relation to these lots and ensures a reasonable level of amenity for potential future dwellings.

2.2 Summary

Indicative Noise Levels for the noise-sensitive locations surrounding the project are summarised in Table 1 with further details on the derivation of these levels included in Appendix A

Table 1 Indicative Noise Levels Summary

Location	Receiver location zoning as defined in the relevant Development Plan	Applicable Noise EPP Land Use Category for receiver	Indicative Noise Levels, $L_{Aeq, 15min}$	
			Day (7:00-22:00)	Night (22:00-7:00)
R1	Industry	General Industry	60	60
R2, R4	Primary Industry	Rural Industry	56	47
R3	Coastal Conservation	Rural Living(2)	51	42 60 L_{max}
R5-R13	Rural Living	Rural Living(2)	51	42 60 L_{max}
U1, U2	Rural Living	Rural Living(1)	56	47

Notes:

1. In accordance with page 46 of the SA EPA *Guidelines for use of the Environment Protection (Noise) Policy 2007* (June 2009) the 5 dB(A) reduction in noise criteria for development authorisation applications is not applied to undeveloped land.
2. These receivers are situated in a quiet locality.

In accordance with the Noise EPP, measured noise levels must be adjusted by the following amounts if the noise source contains modulation, tonal, impulsive or low-frequency characteristics:

- noise source contains 1 characteristic, add 5 dB(A)
- noise source contains 2 characteristics, add 8 dB(A)
- noise source contains 3 or 4 characteristics, add 10 dB(A)

3.0 Acoustic Assessment

3.1 Methodology

The noise emissions from the proposed works were predicted using SoundPLAN version 7.4 environmental noise modelling software and SoundPLAN's implementation of the CONCAWE[1] algorithm. The CONCAWE algorithm allows for the prediction of overall noise levels under specified meteorological conditions. The CONCAWE algorithm is widely used in Australia for predicting industrial noise and is accepted by the EPA.

The project has proposed times of operation spanning 24 hours per day, 7 days per week and it is understood that all equipment may operate concurrently at any time. Consequentially, the more stringent night time noise levels would control any noise mitigation requirements. Therefore, any mitigation required to achieve compliance with the night time noise levels would also be able to achieve meet the day time noise levels. To determine whether the noise levels are met and any noise mitigation requirements, the proposed project operation has been modelled and assessed against the night time noise levels only.

Noise levels were predicted with Meteorological Category 6 (clear night, wind speed: 2 ms^{-1} blowing from source to receiver), which is the category generally considered most conductive for noise propagation during the night time period. Light to moderate winds in a south to south-easterly direction are typical conditions in Port Augusta.

Iterations of the model were run with two possible calculation methods: CONCAWE and ISO 9613-2[2]. It was found that the CONCAWE algorithm would be more conservative at this location and therefore, CONCAWE was applied to this project.

3.2 Noise Model Inputs

The following inputs were included in the 3D acoustic model:

- *Terrain* is based on ten-metre elevation contour lines of the project and surrounding area sourced from the South Australian Government's Open Data Directory.
- *Ground Absorption* has been modelled as 80% absorptive as the project surrounds are rural land, which tends to be quite absorptive.
- *Site Buildings* (MV/LV Building, Control/Office Building) have been included in the model with dimensions taken from the AECOM drawing: 60539163-SKE-00-GE-0022.
- *27 Battery Containers and 27 Inverter Containers* have been modelled as solid structures with noise sources (including battery container HVAC, Inverters and Transformers) attached to each container to model container open areas. The dimensions and configuration of battery containers and inverter containers have been based on the AECOM drawing set: 60539163-SKE-GE-0001, 0002, 0021-0024, 0031, 0041.

3.2.1 Noise Sources

Table 2 summarises the overall Sound Power Level, quantity and data source for each noise source included in the model. The position and quantity of noise sources have been based the site layout drawings provided by AECOM: 60539163-SKE-GE-0001, 60539163-SKE-GE-0002.

All noise sources have been modelled as operating continuously over the modelled 'worst-case' 15-minute period.

[1] CONCAWE Report No. 4/81, "*The Propagation of Noise from Petroleum and Petrol Chemical Complexes to Neighbouring Communities*", Published 1981.
[2] ISO 9613-2: 1996 "*Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*"

Table 2 Noise Sources

Noise Source	Quantity	Sound Power Level per Item	Noise Data Source
Battery Container – HVAC	54 (2 per Container)	90 dB(A) (1)	Industrial Climate Engineering (Airxcel) ECUA90ACD "*82 dB(A) at 1m*". Octave spectrum from Temperzone Vertical Package Unit (VPA 160).
Inverter Container – Inverter	54 (2 per Container)	92 dB(A)	Sound Power Level for SC/SCS 2500-EV from "*White Paper BU-U-019: Sunny Central and Sunny Central Storage: Sound Power Measurements on SC/SCS xxxx (-EV) (-US) central inverters*" Third-octave spectrum from SMA Solar Technology AG, "*SC2200/SC2500 - Acoustic Power Levels of the of the Third Octave Band Frequencies According to EN ISO 9614-2*"
Inverter Container – Transformer	27 (1 per Container)	77 dB(A) (1)	Wartsila Acoustic Report "Noise Impact Study ZEN 27x Battery Container" "Sound pressure level of 69 d(B)A at 1 metre distance" NEMA Octave Spectrum.
Step-Up Transformer	1	83 dB(A)	"SL Data – Alstom Transformer" NEMA Octave Spectrum.
Step-Up Transformer	1	76 dB(A)	"SL Data – Alstom Transformer" NEMA Octave Spectrum.

Note:

1. Sound Power Level was derived from the provided Sound Pressure Level by approximating the noise source as a single point.

4.0 Results and Discussion

Table 3 presents the predicted noise levels for the proposed site operation in comparison to the more stringent night time criteria, with any exceedances outlined in **bold**.

Table 3 Noise Modelling Results

Receiver No.	Zone	Night Indicative Noise Level, $L_{Aeq,15min}$, dB(A)	Predicted Level, $L_{Aeq,15min}$, dB(A)	Complies
R1	Industry	60	55	Yes
R2	Primary Industry	47	36	Yes
R3	Primary Industry	47	33	Yes
R4	Coastal Conservation	42	33	Yes
R5	Rural Living	42	41	Yes
R6	Rural Living	42	40	Yes
R7	Rural Living	42	36	Yes
R8	Rural Living	42	35	Yes
R9	Rural Living	42	33	Yes
R10	Rural Living	42	30	Yes
R11	Rural Living	42	28	Yes
R12	Rural Living	42	27	Yes
R13	Rural Living	42	30	Yes
U1	Rural Living	47	**48**	**No – 1 dB(A)**
U2	Rural Living	47	**50**	**No – 3 dB(A)**

All existing dwellings are predicted to achieve the Indicative Noise Levels. However, the two undeveloped lots directly adjacent to the project site are predicted to exceed the night time levels by up to 3 dB(A). The predicted noise level at the worst affected undeveloped lot (U2) was controlled by noise emissions from the inverters.

Note that all undeveloped lots in the subdivision were checked, only U1 and U2 were predicted to exceed the Indicative Noise Levels.

4.1 Characteristic Adjustments

We have been informed by Wartsila that the proposed inverters will not be fundamentally tonal at nearby receptors during operation of the facility. However, the third-octave band data for the inverters indicate that there is a risk of tones being present near 3,150 Hz and 6,300 Hz. Should noise from the project at residences be fundamentally tonal, then the noise predictions in Table 3 will be subject to a 5 dB(A) penalty to account for this annoying characteristic.

If a 5 dB(A) penalty were applied, the level of noise control measures required from the site would increase from 3 dB(A) to 8 dB(A).

No other adjustments for annoying characteristics are expected (i.e. amplitude modulation, impulsiveness or low frequency) are not expected to be fundamental characteristics of the noise source.

4.2 L_{max} assessment

As all proposed noise sources are continuous, an assessment which complies with the continuous noise levels will also satisfy the higher L_{max} noise levels.

5.0 Noise Control

Noise modelling has shown that noise mitigation would be required to comply with the Noise EPP Indicative Noise Levels at the two nearest undeveloped lots (U1 and U2). Additionally, if tones are present in noise levels at receivers, R5 and R6 would also need mitigation in order to comply with target noise levels.

We have been advised that noise levels from inverters should not be tonal; however, there remains a degree of risk that they may, based on third octave band source levels. If reorientation of the site is deemed to be not feasible due to other environmental impacts, a multi-staged approach to noise mitigation is therefore proposed:

1. Acoustic treatment to the controlling noise source (the inverters), through installation of acoustic treatment (e.g. silencers) to all inverters. We recommend the Sound Power Level of each inverter is reduced from 92 dB(A) to 88 dB(A) or lower to achieve compliance.
2. During installation of inverters, undertake noise level measurements at a close distance, and an intermediate distance to nearby residences from the inverters to confirm whether noise from the inverters is likely to be tonal at receivers.
3. If noise from the inverters is deemed to be tonal, and the resultant predicted noise level in exceedance of environmental noise targets, noise barriers will also be required around the ‘container farm’ area of the site. A conceptual barrier design with 3 metre height barriers around the container farm has been predicted to achieve compliance at all noise-sensitive receivers. A noise barrier needs to be an acoustically solid construction e.g. “Colorbond” steel and installed without gaps between panels or between the barrier and the ground. If required, the existing barrier configuration and construction will be designed at this stage to achieve environmental noise criteria.

Based on this mitigation strategy, noise level targets would be achieved at all receivers, including both existing and undeveloped locations. It is noted that the predicted noise levels are based on the supplied noise data and the predicted levels at the receivers not requiring tonality adjustments. Any changes in the design or variation in equipment locations, emission levels etc. would not necessarily comply and may require a reassessment.

6.0 Conclusion

AECOM have undertaken an acoustic assessment to support a development application for the proposed Playford Utility Battery Storage project.

Noise modelling has predicted that operation of the facility can meet the Noise EPP indicative noise levels at the assessed noise-sensitive receivers for all time periods with the implementation of some noise control strategies. A staged approach to noise mitigation is proposed to confirm compliance with environmental noise targets:

1. Reducing the noise level of the inverters through installation of noise reduction controls (e.g. silencers).
2. Measurement of noise from inverters during installation to confirm whether noise from inverters would be considered fundamentally tonal.
3. Should noise from the inverters be fundamentally tonal and resultant adjusted noise levels in exceedance of noise level targets, noise barriers around the ‘container farm’ section of the site will be constructed.

With the above mitigation strategy, predicted noise levels comply with environmental noise targets.

Appendix A

Acoustic Nomenclature

Appendix A Acoustic Nomenclature

Term	Description
dB(A)	'A'-weighted Decibels, the unit of Sound Pressure Level. The 'A'-weighting adjusts the levels of frequencies within the sound spectrum to better reflect the sensitivity of the human ear to different frequencies.
Decibel [dB]	The measurement unit of sound. A 3 decibel increase or decrease is typically considered the smallest change in sound level that a listener can detect. A change of 5 dB is clearly noticeable. A 10 decibel increase is typically considered to sound twice as loud.
Frequency [f]	Frequency is measured in Hertz (Hz). The frequency corresponds to the pitch of the sound: a high frequency to a high pitched sound and a low frequency to a low pitched sound.
L_{Aeq}	The 'A'-weighted Equivalent Continuous Sound Pressure Level, which is the constant Sound Pressure Level that for a given duration would be equivalent in sound energy to the time-varying Sound Pressure Level measured over the same duration. L_{eq} Sound Pressure Levels are commonly referred to as the average Sound Pressure Level. [Unit: dB(A)]
L_{Amax}	The maximum 'A'-weighted Sound Pressure Level measured during a given time period usually as a result of a short-term (<1 second) impulsive event. L_{max} is a used as a descriptor in determining the likelihood of sleep disturbance and general annoyance.
Sound Power Level	The total sound energy emitted by a source.
Sound Pressure Level	The amount of sound at a specified receiving point.

Appendix B

Noise EPP Noise Criteria Derivation

Appendix B Noise EPP Noise Criteria Derivation

Clause 25 of the *Environment Protection Act 1993* provides the following general environmental duty:

> "*A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.*"

The *Environment Protection (Noise) Policy 2007* sets noise goals that compliance with will satisfy the general environmental duty. These noise goals are based on the uses principally promoted by the relevant Development Plan (Port Augusta (City) Development Plan).

The indicative noise factors from the Noise EPP for determining noise goals are presented in Noise EPP Table 1 and Table 2. Indicative noise factors are selected from Table 1 when both the noise source and noise-affected premises fall within one of the two specified industrial land uses, otherwise Table 2 is used. The day period refers to the time between 7am and 10pm, and the night period from 10pm to 7am.

Noise EPP Table 1 (Clause 5, subclause (9)(1a))

Land use category	Indicative noise factor – dB(A)	
	Day	Night
General Industry	65	65
Special Industry	70	70

Noise EPP Table 2 (Clause 5, subclause (9)(1b)) from the Noise EPP

Land use category	Indicative noise factor – dB(A)	
	Day	Night
Rural living	47	40
Residential	52	45
Rural Industry	57	50
Light Industry	57	50
Commercial	62	55
General Industry	65	55
Special Industry	70	60

Appendix C provides the zoning maps for the areas surrounding the Site, as an excerpt from the Port Augusta (City) Development Plan dated 7 July 2016.

The project site is wholly located within the Industry zone.

The nearest noise-sensitive receivers are located in Industry, Rural Living, Primary Industry and Costal Conservation zones.

The following are excerpts from the Council Development Plan which provides the objectives and principles of development control for these zones.

Industry Zone *(from Port Augusta (City) Development Plan)*

OBJECTIVES

Objective 1: *A zone primarily accommodating a wide range of industrial, warehouse, storage and transport land uses.*

Objective 2: *Development that contributes to the desired character of the zone.*

DESIRED CHARACTER

The Industry Zone will be an intensively developed, high quality, landscaped industrial area. The zone will accommodate a wide range of industrial, commercial and business activities including manufacturing, warehousing, transport and distribution. A portion of the zone north of Railway Terrace at Port Augusta East will be developed by SA Water for a waste water treatment plant. The zone will be protected from the intrusion of residential and other inappropriate uses which will reduce the land resource for industrial uses or create potential for land use conflicts. High impact industrial uses will be located well away from residential areas.

Development within the Industry Zone will achieve generous set-backs from roads and residential development in adjoining zones in order to minimise visual amenity and environmental impacts. The appearance of the zone will be improved by additional tree planting and landscaping which 'break-up' views to buildings and structures from adjoining roads. Where industrial development is proposed adjacent to a more sensitive use, vegetated buffers will be provided within individual development sites.

Development north of Eyre Highway in Port Augusta West will proceed in a coordinated manner once appropriate levels of essential infrastructure have been provided. In addition, development will ensure that any impact on the efficient operation of Eyre Highway is minimised while also reducing the potential for negative impacts on the Residential Zone to the south.

Industrial buildings will be designed to meet the needs of the intended use, however the mass and scale of the buildings will be located and designed to minimise the visual impact as viewed from public roads and surrounding properties.

Building mass will be well articulated, using smaller building modules, variation in the facades and varying roof form and pitch. Buildings materials and colours will reduce the apparent bulk of the buildings and will reflect the nature of the surrounding area, particularly for sites that are more publicly visible.

Rural Living Zone *(from Port Augusta (City) Development Plan)*

OBJECTIVES

Objective 1: *A zone consisting of large allotments, detached dwellings and rural activities that do not adversely impact the amenity of the locality.*

Objective 2: *Development that contributes to the desired character of the zone.*

DESIRED CHARACTER

The Rural Living Zone will primarily accommodate dwellings on large allotments within a semi-rural setting. In addition, small scale, low impact business activities associated with the use of the land will operate within the area in a manner that does not detract from the rural-residential character. Residential development will achieve generous setbacks and landscaped buffers will be established to provide some interface treatment to adjoining industrial areas. Allotments will be larger in that part of the zone located south of National Highway One in recognition of the proximity of the power station.

Development will be sparse, with buildings and other structures clustered on each allotment, generously set back from all boundaries. The open rural-residential character of the area will be maintained, with open informal street treatments enhancing the views towards the Flinders Ranges and the Upper Spencer Gulf. Earthworks, driveways and other site works will be minimised and designed to blend within the landscape.

The siting of buildings, including roof forms and massing will be designed to sit comfortably within the landscape and not dominate views from adjoining roads. The form of dwellings will be climatically responsive with good orientation to address solar access and to promote natural air-flow while including shading such as verandas, eaves and pergolas.

Building materials and colours will complement the semi-arid landscape of Port Augusta and will include corrugated iron, timber, brick and stone. Landscaping around buildings will provide important shading and screening.

Development in that portion of the zone to the north and east of the Port Augusta Racecourse will provide appropriate buffers/separation distances to:

(a) the high voltage transmission corridors (existing and proposed) that run north-south through the area;

(b) any sites identified as being of Aboriginal heritage significance;

(c) the potential use of the Footner Road continuation (north of the railway line) as a future alignment for the Yorkey Crossing bypass route.

Access for development within this area will be from Racecourse Road, Winton Road or Depot Creek Road, with direct access from Footner Road being limited to protect this alignment for a potential bypass route.

Development in that portion of the zone to the south of the Racecourse will need to provide appropriate buffers/separation distances to the railway line to the south. In addition, the land immediately to the east of the Racecourse, across Footner Road, is owned by SA Water for the future development of a waste water treatment plant. This land is situated within the Infrastructure Policy Area of the Industry Zone. Development of rural living areas adjacent to the Infrastructure Policy Area will not prejudice the future operation of the waste water treatment plant and will be located, designed and developed having regard to the potential environmental impacts associated with the treatment plant.

Primary Industry Zone *(from Port Augusta (City) Development Plan)*

OBJECTIVES

Objective 1: *Economically productive, efficient and environmentally sustainable primary production.*

Objective 2: *Allotments of a size and configuration that promote the efficient use of land for primary production.*

Objective 3: *Protection of primary production from encroachment by incompatible land uses and protection of scenic qualities of rural landscapes.*

Objective 4: *Accommodation of wind farms and ancillary development.*

Objective 5: *Development that contributes to the desired character of the zone.*

DESIRED CHARACTER

Development in the primary production areas will include a range of different types of farming activities, as well as appropriate value-adding uses. Large allotments of greater than 40 hectares in size will be maintained in the Primary Industry Zone to prevent the reduced viability of primary production and to acknowledge the semi-arid landscape.

New buildings will generally be associated with existing clusters of buildings and will be of complementary scale and massing to those buildings, while also being of appropriate dimensions to serve their intended function. New dwellings will generally be single storey and will include pitched roofs, verandas and porches to address climatic issues. Isolated new buildings, including large sheds, will be located and designed to blend with the existing landscape, with appropriate earthworks and building design to suit the natural landform. Other structures will be of a form that blends with, and does not detract from, the scenic qualities and function of the primary production area.

The open rural landscape is the dominant character element and new development will maintain that character, with new buildings appropriately sited, designed and screened by vegetation. New buildings will be constructed using materials and colours that blend with the rural landscape and are traditionally used within the rural environment including corrugated steel, stone and timber.

Wind farms and ancillary development such as substations, maintenance sheds, access roads and connecting power-lines (including to the National Electricity Grid) are envisaged within the zone and constitute a component of the zone's desired character. These facilities will need to be

located in areas where they can take advantage of the natural resource upon which they rely and, as a consequence, components (particularly turbines) may need to be:

(a) located in visually prominent locations such as ridgelines;

(b) visible from scenic routes and valuable scenic and environmental areas; and

(c) located closer to roads than envisaged by generic setback policy.

This, coupled with the large scale of these facilities (in terms of both height and spread of components), renders it difficult to mitigate the visual impacts of wind farms to the degree expected of other types of development. Subject to implementation of management techniques set out by general / council wide policy regarding renewable energy facilities, these visual impacts are to be accepted in pursuit of benefits derived from increased generation of renewable energy.

***Costal Conservation Zone** (from Port Augusta (City) Development Plan)*

OBJECTIVES

Objective 1: *Protection of coastal features from development, including mining, liable to permanently impair its scenic attractiveness or adversely affect its conservation significance.*

Objective 2: *Restriction of access to defined locations where the potential impact as a result of such access can not be minimised.*

Objective 2: *Low-intensity recreational uses in suitable locations where environmental impacts on the coast will be minimised.*

Objective 2: *The preservation and management of coastal land and features, environmentally important natural features, including lakes, wetlands, dunes, stands of native vegetation, wild life habitat, estuarine areas, exposed cliffs, headlands, hilltops, and areas which form an attractive background to urban and tourist developments.*

Objective 2: *The preservation and management of sites of heritage, cultural, scientific, environmental or educational importance.*

Objective 2: *Development only undertaken on land which is subject to, or can be appropriately protected from, coastal hazards and does not adversely affect the natural processes.*

Objective 2: *The avoidance of development which is likely to adversely affect the coast by pollution, erosion, damage or depletion of physical or biological resources.*

Objective 2: *Development which will not require now, or in the future, public expenditure on protection of the development or the environment.*

DESIRED CHARACTER

The Coastal Conservation Zone recognises the need to preserve and sensitively manage the limited coastal resources for current and future coastal and marine environmental health, landscape and scenery values, education, unstructured recreation and tourism, and open space opportunities. Some development, such as provision of public facilities may be suited to the zone, however the provision of such facilities should be secondary to the conservation and management of the environmental, landscape and wilderness values of the coastline.

This zone includes all the coastal land in the council area with the exception of the Port Augusta City locality and the Coastal Holiday Settlement Zone.

In general terms, the northern most reaches of Spencer Gulf have been kept free of development however it has suffered from the effects of uncontrolled vehicular access and human activities.

Based on the land uses principally promoted by the development plan, we are of the opinion that the land use categories in Table 4 are applicable to the assessed zones.

Table 4 Land use categories

Zone	Land use category
Industry	General Industry
Rural Living	Rural Living
Primary Industry	Rural Industry
Coastal Conservation	Rural Living

The Noise EPP in Clause 5 states:

"*(4) If the land uses principally promoted by the relevant Development Plan provisions for the noise source and those principally promoted by the relevant Development Plan provisions for the noise-affected premises all fall within a single land use category, the indicative noise level for the noise source is the indicative noise factor for that land use category.*"

(5) *Subject to subclause (6), if the land uses principally promoted by the relevant Development Plan provisions for the noise source and those principally promoted by the relevant Development Plan provisions for the noise-affected premises do not all fall within a single land use category, the indicative noise level is the average of the indicative noise factors for the land use categories within which those land uses fall.*

(6) Subclause (5) does not apply if the locality in which the noise source is situated is separated from the locality in which the noise-affected premises are situated by another locality that is (on an imaginary straight line joining the noise source and the noise-affected premises) at least 100 metres wide, but instead subclause (4) applies as if the land uses principally promoted by the relevant Development Plan provisions for the noise source were the same as those principally promoted by the relevant Development Plan provisions for the noise-affected premises.

"

Part 5 of the Noise EPP applies to development authorisation applications under the *Development Act 1993*.

Part 5 states that:

"(3) A predicted source noise level (continuous) for the development should not exceed the relevant indicative noise level less 5 dB(A).

(4) In addition, if the noise-affected premises are situated in a quiet locality –

(a) a predicted source noise level (continuous) for the development, as determined by the Authority for a period between 7.00 a.m. and 10.00 p.m. on the same day, should not exceed 52 dB(A); and

(b) a predicted source noise level (continuous) for the development, as determined by the Authority for a period between 10.00 p.m. on one day and 7.00 a.m. on the following day, should not exceed 52 dB(A); and

(c) a predicted source noise level (maximum) for the development, as determined by the Authority for a period between 10.00 p.m. on one day and 7.00 a.m. on the following day, should not exceed 60 dB(A).

"

Noise criteria for receivers around the Site, derived in accordance with Subclauses (4) (5) and (6) and Part 5 are shown in the Table below.

Location	Receiver location zoning as defined in the relevant Development Plan	Applicable Noise EPP Land Use Category for receiver	Noise criteria day / night [dB(A)]
R1	Industry	General Industry	60 / 60
R5-R13	Rural Living	Rural Living(1)	51 / 42 60 L_{max} at night
R2, R4	Primary Industry	Rural Industry	56 / 47
R3	Coastal Conservation	Rural Living(1)	51 / 42 60 L_{max} at night

Note 1: These areas were identified as quiet localities.

A significant portion of the *Rural Living* zone immediately adjacent to the project is undeveloped. We understand that there are no current development applications or building rules consent applications submitted to council to develop these parcels of land as of January 2019.

To ensure that the project will achieve the noise criteria at potential future dwellings on these undeveloped lots, these undeveloped parcels of land shall be considered but the 5 dB(A) development application penalty shall not be applied. This approach allows for a reasonable level of amenity for future dwellings and the ability of the project to operate in future because it will achieve the noise criteria.

This approach is in line with the recommendations set out in SA EPA Publication No. 47715 (June 2009) '*Guidelines for the use of the Environment Protection (Noise) Policy 2007*'.

For the undeveloped lots the table below summarises the noise criteria:

Location	Receiver location zoning as defined in the relevant Development Plan	Applicable Noise EPP Land Use Category for receiver	Noise criteria day / night [dB(A)]
U1, U2	Rural Living	Rural Living	56 / 47

Ecological Assessment for the Playford Utility Battery Project

November 2018

Prepared by: BlackOak Environmental NVC accredited consultants (Matt Launer and Rob Kelman) for AECOM

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Cover photograph: *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis* vegetation association.

Acronyms and definitions

Abbreviation	Description
AH Act	*Aboriginal Heritage Act 1988*
AECOM	AECOM Australia Pty Ltd
BAM	Bushland Assessment Method
BCM	Bushland Condition Monitoring
BDBSA	Biological Databases of South Australia
Coastal Protection Act	*Coast Protection Act 1972*
Development Act	*Development Act 1993*
DEW	Department for Environment and Water
DEWNR	Department of Environment, Water and Natural Resources
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
DoEE	Department of the Environment and Energy
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Environment Protection Act	*Environment Protection Act 1993*
Fire and Emergency Services Act	*Fire and Emergency Services Act 2005*
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NPW Act	*National Parks and Wildlife Act 1972*
NRM	Natural Resource Management
NRM Act	*Natural Resources Management Act 2004*
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
PMST	Protected Matters Search Tool
SEB	Significant Environmental Benefit
TEC	Threatened Ecological Community
Water Resources Act 1997	*Water Resources Act 1997*

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1 Introduction

BlackOak Environmental were engaged by AECOM Australia Pty Ltd (AECOM) to undertake an ecological assessment of a site selected for the construction of a battery storage facility. SIMEC ZEN Energy is proposing to develop a 100MW battery storage facility. The development is proposed to include up to 27 battery storage and inverter structures, along with associated transformers and other electrical equipment installed on-site and connected to the existing electricity transmission network.

The project area is located approximately 6 km to the south-east of Port Augusta, South Australia. The site's industrial zoning and proximity to the existing Davenport substation, to allow the efficient connection to the ElectraNet system, were key factors for establishing the proposed battery storage facility at the site.

The ecological assessment included a desktop study and a two-day field survey. The ecological assessment is intended to support the Development Application and native vegetation clearance proposed for the project.

2 Background

2.1 Purpose of the proposal

The purpose of the proposed vegetation clearance is to allow for the construction of the Playford Utility Battery Project and associated infrastructure. Refer to Appendix 1 for the native vegetation clearance proposal applicant details. Design and construction of the project will be managed by SIMEC ZEN Energy.

2.2 Location

The project area is located within the Port Augusta City Council Local Government Association (LGA) and the Northern and Yorke Natural Resource Management (NRM) region. The project area is located approximately 6 km to the south-east of Port Augusta at 309 Port Paterson Road, Port Paterson (Figure 1).

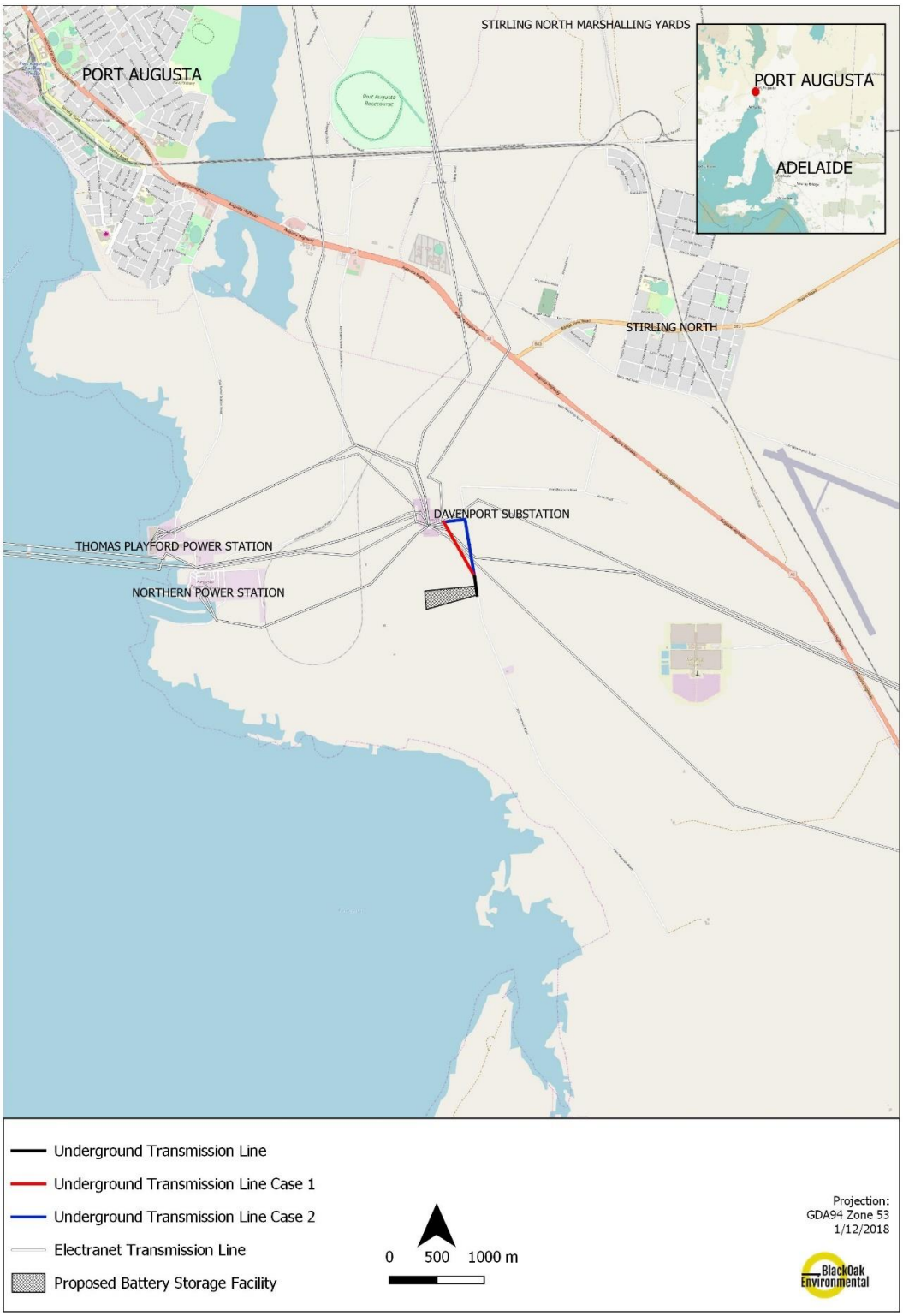

Figure 1. Location of the project area.

Interim Biogeographical Regionalisation of Australia (IBRA)

IBRA was developed in 1993-94 and is endorsed by all levels of government as a key tool for identifying land for conservation under Australia's Strategy for the National Reserve System 2009-2030 (DoEE 2018a). IBRA identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations.

The project area is located within the Gawler IBRA Bioregion, the Gawler Lakes IBRA Subregion and Arden IBRA Environmental Association. A summary of the IBRA Bioregion, Subregion and Environmental Association is provided in Table 1.

Table 1. IBRA bioregion, subregion, and environmental association summary.

Gawler IBRA Bioregion (GAW)	
Semi-arid to arid, flat topped to broadly rounded hills of the Gawler Range Volcanics and Proterozoic sediments, low plateaux on sandstone and quartzite with an undulating surface of aeolian sand or gibbers and rocky quartzite hills with colluvial footslopes, erosional and depositional plains and salt encrusted lake beds, with black oak (belah) and myall low open woodlands, open mallee scrub, bluebush/saltbush open chenopod shrublands and tall mulga shrublands on shallow loams, calcareous earths and hard red duplex soils.	
Gawler Lakes IBRA Subregion (GAW03)	
An undulating upland plain underlain by quartzite and sandstone, with shallow loamy soils. Encompasses the Woomera plateau, which is characterised by the absence of trees and tall shrubs, except on floodplains, where mulga (*Acacia aneura*), bullock bush (*Alectryon oleifolius ssp. canescens*), occasional red gums (*Eucalyptus camaldulensis*) and other species may be found. The gibber-covered areas are either bare or carry a scattered growth of samphire (*Halosarcia sp.)* and bindyi (Sclerolaena sp.). The depositional plains to the south and south-west of the plateau are covered with deep calcareous earths characteristically carrying an open myall (*Acacia papyrocarpa)* woodland with a bluebush (*Maireana sedifolia*) understorey, or red aeolian sand sheets and dunes with open mulga shrubland or a low woodland of Casuarina pauper or *Callitris glaucophylla*.	
Land type:	Erosional, Depositional or Volcanic
Landscape:	Depositional plain
Landform:	Undulating plains overlain with sand sheets and dunes, with occasional silcrete capped rises.
Geology:	Alluvium, colluvium (sand silt clay & gravels). Silcrete cappings & Ti-rich skins. Dune sand & residual sand mantles. Evaporites (gypsum & halite). Bleached Cretaceous shales. Silicified rhizomorphs & nodular silcrete (Tertiary)
Soil:	Brown calcareous earths, Crusty loamy soils with red clayey subsoils, Sand soils, brown and red, Shallow dense loams.
Vegetation:	Assumed native vegetation cover.
Arden IBRA Environmental Association	
Land type:	Erosional, Depositional or Volcanic
Landscape:	Coastal plain
Landform:	Plains with sand dunes and numerous lakes along the overflow course of Lake Torrens, and samphire or mangrove flats along the coastline.
Geology:	Alluvium and sand.
Soil:	Reddish calcareous earths, reddish sands and grey calcareous loams.
Vegetation:	Chenopod shrubland of saltbush and bluebush, low open woodland of myall and black oak, low woodland of mangroves and chenopod shrubland of samphire.

2.3 Approvals required *or* obtained under other legislation (including past clearance approvals)

Native Vegetation Act 1991

Clearance under the *Native Vegetation Act 1991* (NV Act) is the subject of this assessment and proposal. There have not been any past clearance applications or approvals for the subject land.

Development Act 1993

The *Development Act 1993* (Development Act) provides for planning and regulates development in the State. The Development Act (and regulations) regulates the use and management of land and buildings, and the design and construction of buildings. In addition, the Development Act makes provision for the maintenance and conservation of land and buildings where appropriate. It is understood that AECOM is currently preparing a development application for the project on behalf of the applicant (SIMEC ZEN Energy).

Fire and Emergency Services Act 2005

The *Fire and Emergency Services Act 2005* (Fire and Emergency Services Act) was established to enable the creation of the South Australian Fire and Emergency Services Commission and to provide for the Commission's role in the governance, strategic and policy aspects of the emergency services sector. The Fire and Emergency Services Act also provides for the continuation of a metropolitan fire and emergency service, a country fire and emergency service, and a State emergency service, and provides for the prevention, control and suppression of fires and for the handling of certain emergency situations. It is understood that all details relevant to the Fire and Emergency Services Act will be included in the development application for the project.

Water Resources Act 1997

The *Water Resources Act 1997* provides for the management of the State's water resources. It is understood that all details relevant to the Water Resources Act will be included the development application for the project.

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to any action which is likely to have a significant impact on a Matter of National Environmental Significance (MNES). There are nine MNES that act as "triggers" for the Commonwealth assessment and approval process. A Protected Matters Search Tool (PMST) report was generated on 16 November 2018 to identify MNES under the EPBC Act.

One threatened ecological community (TEC), 10 fauna species (excluding marine reptiles), and two flora species listed as threatened under the EPBC Act, as well as 13 bird species (excluding marine reptiles) listed as migratory under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the project area. The threatened ecological community was not recorded within the project area during the field survey. None of the 10 nationally threatened bird species, two threatened flora species or 13 migratory bird species identified in the PMST search results were recorded during the survey. Furthermore, none of the listed flora or fauna species are likely to occur within the project area due to a lack of preferred habitat and lack of previous records within the region to indicate potential presence.

It is understood that the proponent will undertake a 'self-assessment' to determine whether the project is likely to have a significant impact on any matter of national environmental significance.

Coast Protection Act 1972

The *Coast Protection Act 1972* (Coastal Protection Act) provides for the conservation and protection of the beaches and coast of South Australia. The Coastal Protection Act may apply to the western section of the project area. It is understood that all details relevant to the Coastal Protection Act will be included the development application for the project.

Pastoral Land Management and Conservation Act 1989

The *Pastoral Land Management and Conservation Act 1989* is not applicable as the project area is located within the agricultural zone and Northern and Yorke Natural Resource Management (NRM) region of South Australia.

Environment Protection Act 1993

The *Environment Protection Act 1993* provides the regulatory framework to protect South Australia's environment, including land, air and water. This legislation was the result of the streamlined integration of six Acts of Parliament and the abolition of the associated statutory authorities. It is understood that all details relevant to the Environment Protection Act will be included the development application for the project.

National Parks and Wildlife Act 1972

The *National Parks and Wildlife Act 1972* (NPW Act) provides for the establishment and management of reserves for public benefit and enjoyment; to provide for the conservation of wildlife in a natural environment; and for other purposes. The project area is located approximately 14 km north of Winninowie Conservation Park. Impacts to flora and fauna species listed under National Parks Schedules have been considered in this assessment and proposal.

Natural Resources Management Act 2004

The *Natural Resources Management Act 2004* (NRM Act) is designed to promote sustainable and integrated management of the State's natural resources and to ensure adequate provision is made for their protection. It is understood that all details relevant to the NRM Act will be included the development application for the project.

Aboriginal Heritage Act 1988

The *Aboriginal Heritage Act 1988* (AH Act) provides for the protection and preservation of the Aboriginal heritage. It is understood that all details relevant to the AH Act will be included the development application for the project.

3 Method

3.1 Desktop assessment

A desktop assessment was conducted to assess the potential for any threatened species (both Commonwealth and State listed) to occur within the project area. This was achieved by undertaking database searches of a 5 km buffer of the project area, as specified in the Bushland Assessment Method (BAM) manual (NVC 2017a).

A PMST report was generated on 16 November 2018 to identify MNES under the EPBC Act (DoEE 2018b). The PMST is maintained by DoEE and was used to identify flora and fauna species or ecological communities of national environmental significance that may occur or have suitable habitat within the project area.

Species listed under South Australia's NPW Act were assessed using the Biological Databases of South Australia (BDBSA). The dataset was obtained on 18 October 2018 and used to identify threatened species that have been recorded within the 5 km buffer of the project area (DEW 2018).

3.2 Field survey

The field survey was conducted from 19-20 November 2018 by Matt Launer and Rob Kelman and included a flora and fauna assessment. The survey covered the entire 8 ha area selected for the location of the Battery Storage Facility and two options for an underground transmission line. The clearance footprint for the Battery Storage Facility is approximated at less than 3 ha. The clearance width for the underground transmission line route is approximated at less than 6 m.

Flora assessment

The vegetation survey was performed in accordance with the BAM (NVC 2017a). The Native Vegetation Council (NVC) BAM is suitable for assessing vegetation that is located within the agricultural region of South Australia which includes the following NRM Regions:

- Adelaide and Mount Lofty Ranges
- Eyre Peninsula
- Kangaroo Island
- Northern and Yorke
- South Australian Murray-Darling Basin
- South East.

The BAM uses biodiversity 'surrogates' or 'indicators' to measure biodiversity value against benchmark communities. Each area to be assessed is termed an application area ('block'), within which different vegetation associations ('sites') are identified and compared to the Nature Conservation Society of South Australia's 'benchmark' vegetation communities. A representative 1 ha quadrat is surveyed for each site (NVC 2017a). Three components of the biodiversity value of the site are measured and scored. These are: vegetation condition, conservation value and landscape context. The three component scores are combined to provide Unit Biodiversity Score (per ha) and then multiplied by the size (ha) of the site to provide a 'Total Biodiversity Score' for the site. This is used to calculate a Significant Environmental Benefit (SEB) area and value for payment in to the Native Vegetation Fund derived from the clearance of native vegetation (NVC 2017a).

The entire project area was traversed on foot and a complete flora species list recorded. The locations of weed species declared under the NRM Act were recorded. This was carried out in addition to the BAM quadrats.

Fauna assessment

The project area was traversed on foot. All vertebrate fauna species, signs of species (scats, tracks etc.) and potential habitat for fauna was recorded. The value of habitat for the threatened fauna species identified in the desktop assessment was also determined when surveying the project area.

4 Assessment outcomes

4.1 Desktop assessment

Threatened ecological communities

One TEC, the Subtropical and Temperate Coastal Saltmarsh was identified in the PMST as potentially occurring within 5 km of the project area. The project area contains 1.07 ha of *Tecticornia ssp*. Low Open Shrubland (Figure 4) however this vegetation association does not meet all the key diagnostic characteristics to qualify as the listed TEC. To qualify as a TEC the ecological community requires some form of ongoing connection to the tidal regime (DSEWPC 2013). The *Tecticornia ssp.* Low Open Shrubland is located on the edge of a large clay pan which is unlikely to be connected to the upper Spencer Gulf tidal regime. The *Tecticornia ssp*. Low Open Shrubland will not be impacted by the development of the project.

Nationally important or significant wetlands

The western section of the project area (Battery Storage Facility location) occurs within the boundary designated as a nationally important or significant wetlands (Upper Spencer Gulf (SA020)) (Figure 2). This area contains *Tecticornia ssp.* Low Open Shrubland and *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp*. vegetation and will not be impacted by the development of the project.

Upper Spencer Gulf (SA020)

The upper Spencer Gulf is an inverse estuary containing shallow, warm saline waters. The area is characterised by intertidal mangrove forests, tidal sand and mud flats, with some areas of shingle and sandy beaches. The mud flats are dissected by a network of tidal channels, some of which include Chinaman Creek, First - Seventh Creek, Port Davis Creek and Fisherman Creek. Below sea level, extensive shallow seagrass meadows give way to a silty sea floor in deeper waters (DoEE 2018c).

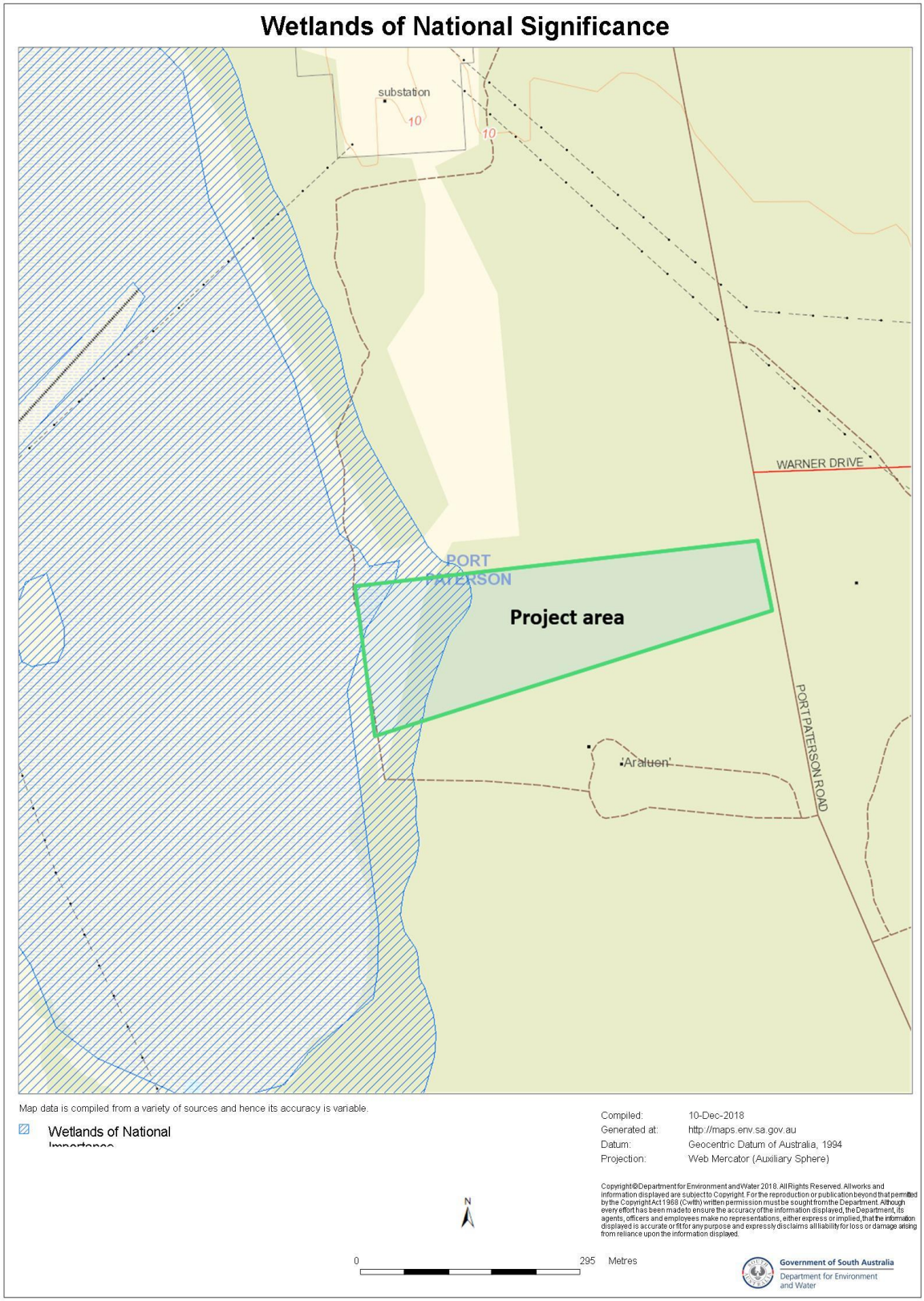

Figure 2. Location of project area and Wetland of National Significance (Upper Spencer Gulf (SA020)).

Nationally threatened flora

Three nationally threatened flora species were identified in the PMST as potentially occurring within 5 km of the project area. These were: *Caladenia tensa* (Greencomb Spider-orchid), *Senecio megaglossus* (Superb Groundsel) and *Frankenia plicata*. None of these three species were recorded during the field survey or considered to occur within the project area due to a lack of preferred habitat and lack of previous records within the region.

State threatened flora

One threatened flora species under the NPW Act was identified in the BDBSA search as being previously recorded within 5 km of the project area in the past 20 years (Figure 3). *Malacocera gracilis* (Slender Soft-horns) (SA: vulnerable) was not recorded during the field survey. *Malacocera gracilis* could potentially occur within the project area but would be restricted to the *Tecticornia ssp.* Low Open Shrubland vegetation association (Figure 4). The complete list of flora species identified in the 5 km BDBSA search is provided in Appendix 2.

Nationally threatened fauna

Twenty-three fauna species (excluding marine mammals, reptiles and sharks) listed as threatened under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the project area (Table 2).

The nationally threatened *Calidris ferruginea* (Curlew Sandpiper), *Numenius madagascariensis* (Far Eastern Curlew) and *Sternula nereis nereis* (Australian Fairy Tern) were also identified in the 5 km BDBSA search results (Figure 3). None of the 23 nationally threatened bird species identified in the PMST search results were recorded during the survey. Furthermore, none of these species are likely to occur within the project area due to a lack of preferred habitat.

State threatened fauna

Eleven fauna species (excluding fish, and marine mammals and reptiles) listed as threatened under the NPW Act were identified in the BDBSA search as being previously recorded within 5 km of the project area (Table 2 and Figure 3). All 11 species are bird species, two of which are also listed as threatened species under the EPBC Act. None of the 11 threatened bird species identified in the BDBSA search results were recorded during the survey. The Elegant Parrot (*Neophema elegans*) (SA: Rare) could possibly occur within the project area on an infrequent basis.

The complete list of fauna species identified in the 5 km BDBSA search is provided in Appendix 3.

Migratory species

Thirty migratory species (excluding fish, and marine mammals and reptiles) listed under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the project area (Table 3). None of the 30 listed migratory bird species are considered likely to occur within the project area due to a lack of preferred habitat. The presence of migratory birds would be limited to birds flying over the project area.

Table 2. Threatened fauna species (excluding marine mammals, reptiles and sharks) listed under the EPBC Act and NPW Act identified in the PMST (Source 1) and BDBSA (Source 2) database searches within 5 km of the study area. Only BDBSA records from the past 20 years are shown.

Species name	Common name	Conservation status		Source	Most recent record (BDBSA)	Likelihood of occurrence
		Aus	SA			
Amytornis textilis myall	Western Grasswren (Gawler Ranges)	VU		1		Unlikely
Biziura lobata	Musk Duck		R	2	28/03/2006	Unlikely
Calidris canutus	Red Knot, Knot	EN		1		Unlikely
Calidris ferruginea	Curlew Sandpiper	CE		1, 2	25/01/2000	Unlikely
Cladorhynchus leucocephalus	Banded Stilt		V	2	28/03/2006	Unlikely
Diomedea antipodensis	Antipodean Albatross	VU		1		Unlikely
Diomedea epomophora	Southern Royal Albatross	VU	V	1		Unlikely
Diomedea exulans	Wandering Albatross	VU	V	1		Unlikely
Diomedea sanfordi	Northern Royal Albatross	EN	E	1		Unlikely
Egretta garzetta	Little Egret		R	2	12/11/2000	Unlikely
Falco hypoleucos	Grey Falcon		R	2	20/09/2001	Unlikely
Haematopus fuliginosus	Sooty Oystercatcher		R	2	28/03/2006	Unlikely
Haematopus longirostris	(Australian) Pied Oystercatcher		R	2	12/11/2000	Unlikely
Leipoa ocellata	Malleefowl	VU	V	1		Unlikely
Limosa lapponica baueri	Bar-tailed Godwit (baueri)	VU		1		Unlikely
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	CE		1		Unlikely
Macronectes giganteus	Southern Giant-Petrel	EN	V	1		Unlikely
Macronectes halli	Northern Giant Petrel	VU		1		Unlikely
Neophema elegans	Elegant Parrot		R	2	5/05/2005	Possible
Numenius madagascariensis	Far Eastern Curlew	CE	V	1, 2	12/11/2000	Unlikely
Pachyptila turtur subantarctica	Fairy Prion (southern)	VU		1		Unlikely
Pedionomus torquatus	Plains-wanderer	CE	E	1		Unlikely
Pezoporus occidentalis	Night Parrot	EN	E	1		Unlikely
Phoebetria fusca	Sooty Albatross	VU	E	1		Unlikely
Podiceps cristatus	Great Crested Grebe		R	2	21/09/2002	Unlikely
Rostratula australis	Australian Painted-snipe	EN	V	1		Unlikely
Sternula nereis nereis	Australian Fairy Tern	VU	E	1, 2	31/10/1999	Unlikely

Species name	Common name	Conservation status		Source	Most recent record (BDBSA)	Likelihood of occurrence
		Aus	SA			
Stictonetta naevosa	Freckled Duck		V	2	16/01/1999	Unlikely
Thalassarche cauta cauta	Shy Albatross	VU	V	1		Unlikely
Thalassarche cauta steadi	White-capped Albatross	VU		1		Unlikely
Thalassarche impavida	Campbell Albatross	VU	V	1		Unlikely
Thalassarche melanophris	Black-browed Albatross	VU		1		Unlikely

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*).
Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Table 3. Fauna species (excluding marine mammals, reptiles and sharks) listed as migratory under the EPBC Act were identified in the PMST as potentially occurring or having suitable habitat potentially occurring within 5 km of the project area

Species name	Common name	Conservation status		Source	Most recent record (BDBSA)	Likelihood of occurrence
		Aus	SA			
Actitis hypoleucos	Common Sandpiper	Mi (w)	R	1		Unlikely
Apus pacificus	Fork-tailed Swift	Mi (m)		1		Unlikely
Ardenna carneipes	Flesh-footed Shearwater	Mi (m)		1		Unlikely
Arenaria interpres	Ruddy Turnstone	MI (w)	R	1		Unlikely
Calidris acuminata	Sharp-tailed Sandpiper	Mi (w)		1		Unlikely
Calidris alba	Sanderling	Mi (w)	R	1		Unlikely
Calidris canutus	Red Knot, Knot	EN, Mi (w)		1		Unlikely
Calidris ferruginea	Curlew Sandpiper	CE, Mi (w)		1, 2	25/01/2000	Unlikely
Calidris melanotos	Pectoral Sandpiper	Mi (w)	R	1		Unlikely
Calidris ruficollis	Red-necked Stint	Mi (w)		1		Unlikely
Diomedea antipodensis	Antipodean Albatross	VU, Mi (m)		1		Unlikely
Diomedea epomophora	Southern Royal Albatross	VU, Mi (m)	V	1		Unlikely
Diomedea exulans	Wandering Albatross	VU, Mi (m)	V	1		Unlikely
Diomedea sanfordi	Northern Royal Albatross	EN, Mi (m)	E	1		Unlikely
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Mi (w)	R	1		Unlikely
Limosa lapponica	Bar-tailed Godwit	Mi (w)	R	1		Unlikely
Limosa limosa	Black-tailed Godwit	Mi (w)	R	1		Unlikely
Macronectes giganteus	Southern Giant-Petrel	EN, Mi (m)	V	1		Unlikely
Macronectes halli	Northern Giant Petrel	VU, Mi (m)		1		Unlikely
Motacilla cinerea	Grey Wagtail	Mi (t)		1		Unlikely
Motacilla flava	Yellow Wagtail	Mi (t)		1		Unlikely
Numenius madagascariensis	Far Eastern Curlew	CE, Mi (w)	V	1, 2	12/11/2000	Unlikely
Pandion cristatus	Eastern Osprey	Mi (w)	E	1		Unlikely
Phoebetria fusca	Sooty Albatross	VU, Mi (m)	E	1		Unlikely
Thalassarche cauta cauta	Shy Albatross	VU, Mi (m)	V	1		Unlikely
Thalassarche cauta steadi	White-capped Albatross	VU, Mi (m)		1		Unlikely
Thalassarche impavida	Campbell Albatross	VU, Mi (m)	V	1		Unlikely

Species name	Common name	Conservation status		Source	Most recent record (BDBSA)	Likelihood of occurrence
		Aus	SA			
Thalassarche melanophris	Black-browed Albatross	VU, Mi (m)		1		Unlikely
Tringa nebularia	Common Greenshank, Greenshank	Mi (w)		1		Unlikely
Tringa stagnatilis	Marsh Sandpiper	Mi (w)		1		Unlikely

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. Mi (m): Migratory Marine. Mi (t): Migratory Terrestrial. Mi (w): Migratory Wetland.

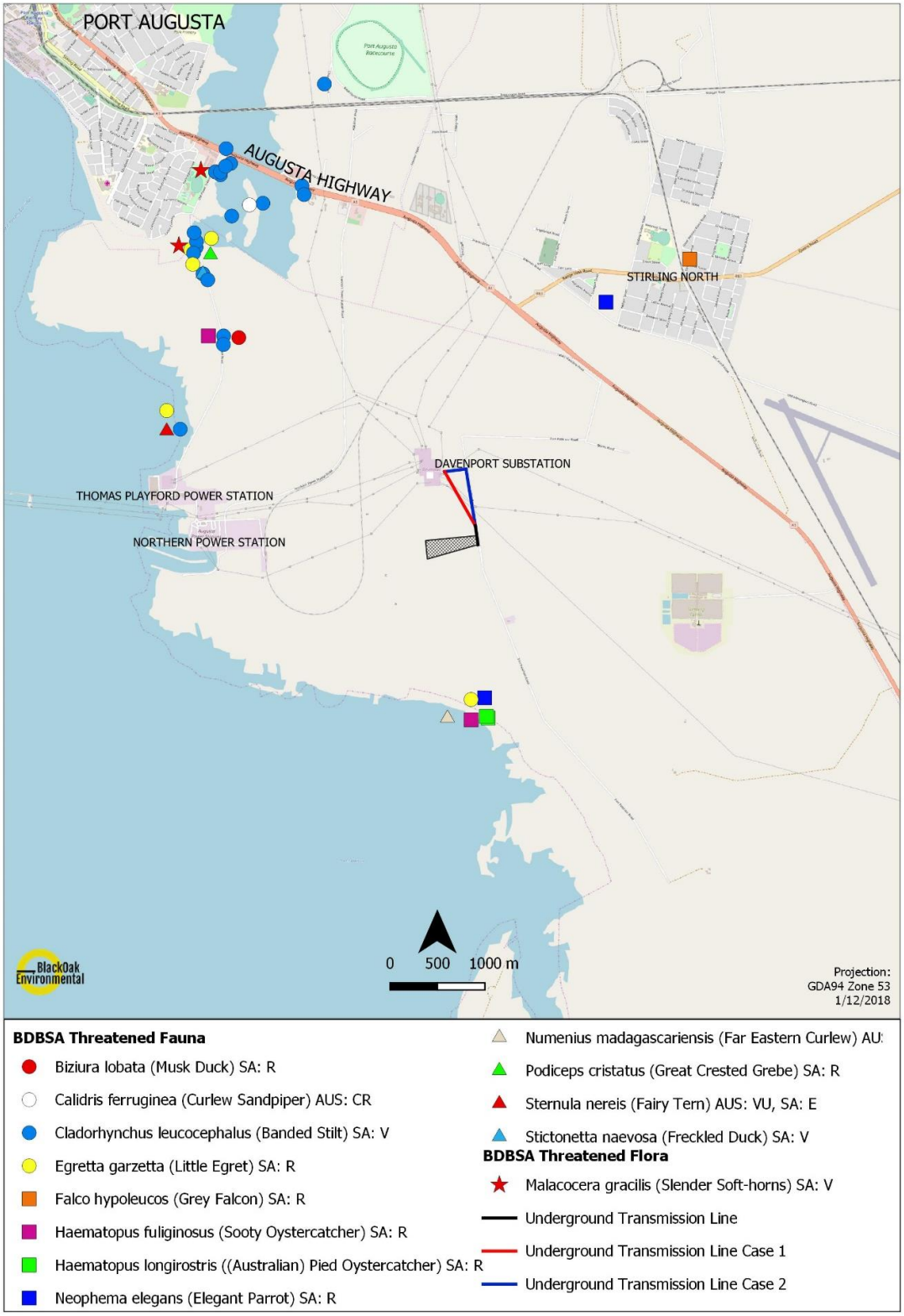

Figure 3. National and state threatened flora species identified within 5 km of the project area in the BDBSA search. Only BDBSA records from the past 20 years are shown (DEW 2018).

4.2 Vegetation survey

The project area contains six vegetation associations, six landforms and a narrow vehicle access track (Table 4 and Figure 4). A total of 54 flora species, including 34 native and 20 introduced species, were recorded within the project area (Appendix 4). Three of the introduced species recorded are listed as declared weed species under the NRM Act, these were: *Austrocylindropuntia cylindrica* (Cane Cactus), *Echium plantagineum* (Salvation Jane) and *Lycium ferocissimum* (African Boxthorn). The locations of the declared weeds are shown in Figure 5 and location data is provided in Appendix 5.

There were no threatened ecological communities or conservation rated flora species recorded within the project area. Each of the six vegetation associations are discussed further below.

Table 4. Summary of the vegetation associations and landforms recorded within the project area.

Vegetation number	Vegetation association	Landforms	Area surveyed (ha)
1	*Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis*	Plain	3.68
2	*Sclerolaena ventricosa*, *Dissocarpus biflorus var. biflorus* Very Open Herbland	Sandy rise	0.37
3	*Maireana pyramidata, Atriplex vesicaria* Shrubland	Sandy rise and low dune	1.21
4	*Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp*.	Undulating plain	2.08
5	*Tecticornia ssp.* Low Open Shrubland	Sandy rise and edge of claypan	1.07
6	*Atriplex vesicaria, Tecticornia tenuis, Galenia pubescens var. pubescens* Low Open Shrubland	Plain and artificial depression (roadside verge)	0.37

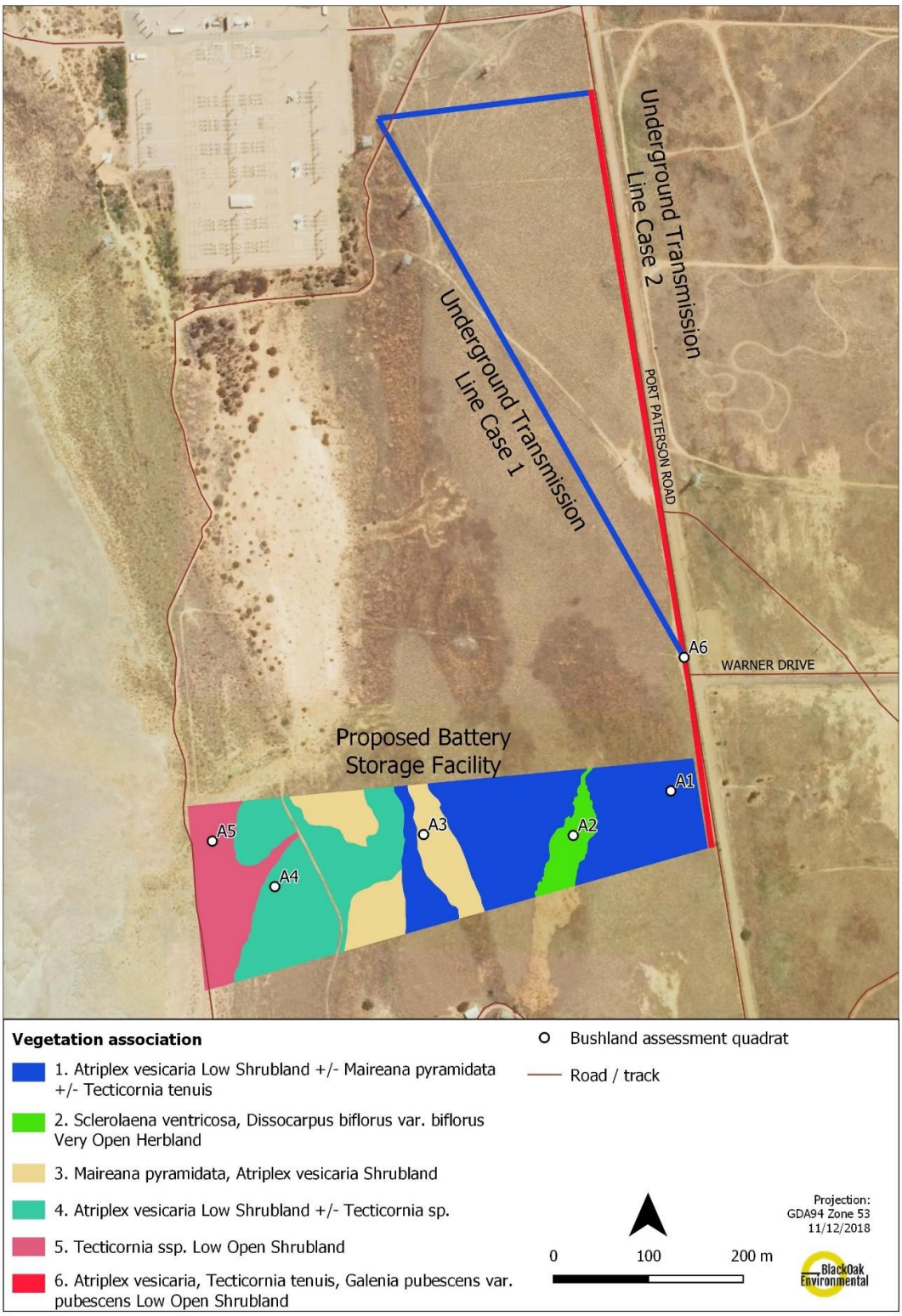

Figure 4. Vegetation associations and locations of the Bushland Assessment quadrats within the project area.

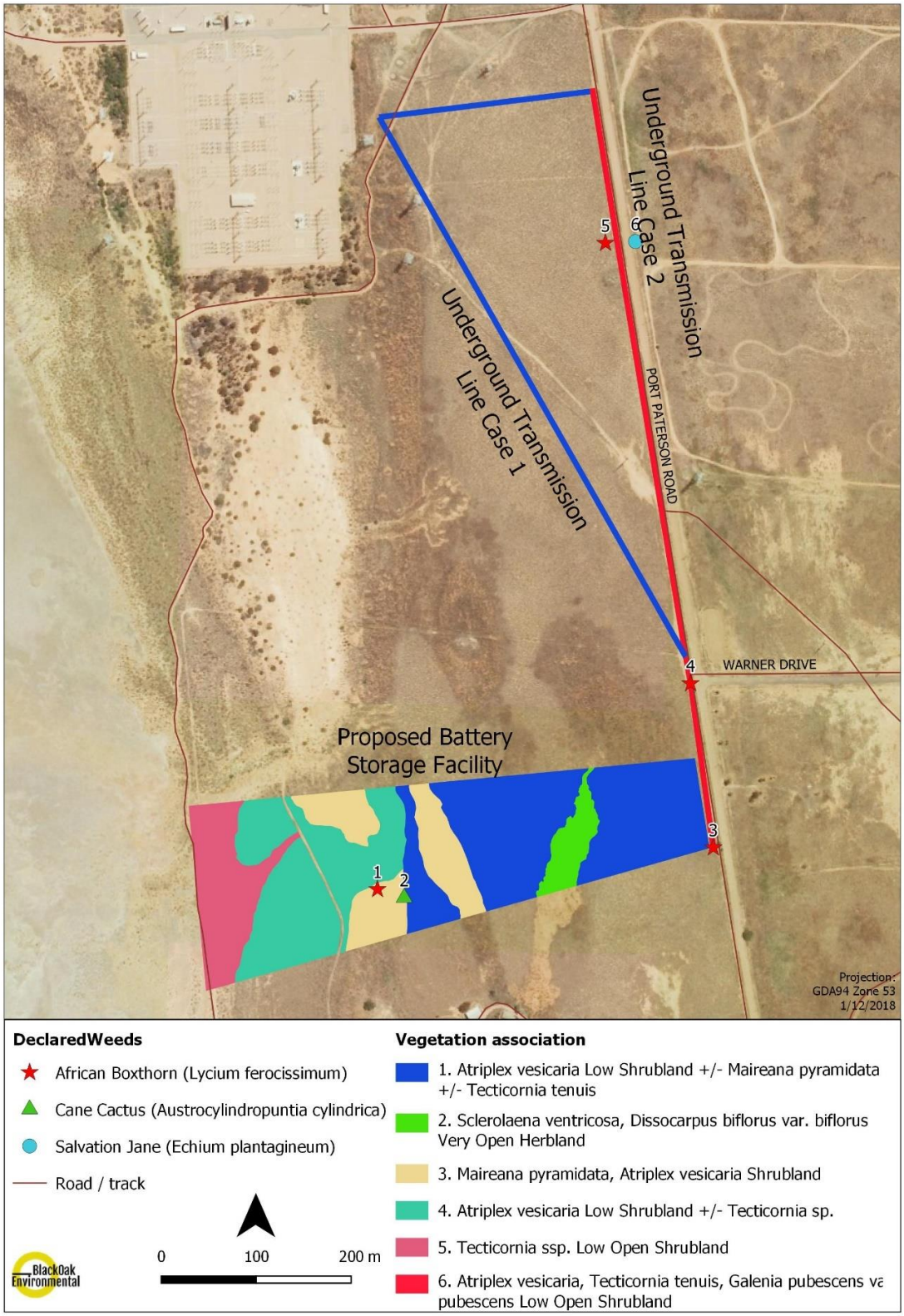

Figure 5. Location of declared weeds within the project area.

Vegetation Association 1: Atriplex vesicaria Low Shrubland +/- Maireana pyramidata +/- Tecticornia tenuis

The *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata +/- Tecticornia tenuis* occurs on a plain landform and covers 3.68 ha of the project area (Figure 4). A maximum of 2.59 ha of this vegetation association will require clearance for the construction of the project. The diversity of species and cover density of the vegetation association is quite homogenous throughout the project area and the large portion of land extending to the Davenport Substation. Sixteen flora species, including 12 native and 4 introduced species were recorded (Appendix 4). Common native species included *Atriplex vesicaria* (Bladder Saltbush), *Maireana pyramidata* (Black Bluebush), *Tecticornia tenuis* (Slender Samphire), *Dissocarpus biflorus var. biflorus* (Two-horn Saltbush) and *Sclerolaena divaricata* (Tangled Bindyi).

Weed species were sparsely distributed throughout the vegetation association and included *Carrichtera annua* (Ward's Weed), *Brassica tournefortii* (Wild Turnip), *Medicago polymorpha var. polymorpha* (Burr-medic) and *Medicago truncatula* (Barrel Medic).

One BAM Quadrat (A1) was established within the *Atriplex vesicaria Low Shrubland +/- Maireana pyramidata +/- Tecticornia tenuis* vegetation association (Figure 6). A summary of the BAM scoresheet is provided in Table 5.

Figure 6. Location of Bushland Assessment Quadrat A1. *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata +/- Tecticornia tenuis*.

Table 5. Summary of *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis* vegetation association (Bushland Assessment Quadrat A1).

Area (ha):	Battery Storage Facility: 3.15 Underground Transmission Line (Case 1): 0.39 Underground Transmission Line (Case 2): 0.14
BCM benchmark community:	NA 8 Coastal Plain Shrublands
Landscape context score:	1.14
Vegetation condition score:	53.27
Conservation significance score:	1.02
Unit biodiversity score:	61.95
Total biodiversity score:	227.97

Vegetation Association 2: Sclerolaena ventricosa, Dissocarpus biflorus var. biflorus Very Open Herbland

The *Sclerolaena ventricosa*, *Dissocarpus biflorus var. biflorus* Very Open Herbland occurs on a sandy rise landform and covers 0.37 ha of the project area (Figure 4). This area showed obvious signs of a recent (<3 years) fire and is now subsequently dominated by annual species such as *Sclerolaena ventricosa* (Salt Bindyi), *Dissocarpus biflorus var. biflorus* (Two-horn Saltbush) and *Sclerolaena obliquicuspis* (Oblique-spined Bindyi). Prior to the fire event it is likely that the vegetation would have contained the perennial species *Atriplex vesicaria* (Bladder Saltbush), *Maireana pyramidata* (Black Bluebush).

The introduced species recorded within the vegetation association were; *Carrichtera annua* (Ward's Weed), *Brassica tournefortii* (Wild Turnip), *Medicago polymorpha var. polymorpha* (Burr-medic).

A maximum of 0.30 ha of this vegetation association will require clearance for the construction of the Battery Storage Facility. One BAM Quadrat (A2) was established within the *Sclerolaena ventricosa*, *Dissocarpus biflorus var. biflorus* Very Open Herbland vegetation association (Figure 7). A summary of the BAM scoresheet is provided in Table 6.

Figure 7. Location of Bushland Assessment Quadrat A2. *Sclerolaena ventricosa*, *Dissocarpus biflorus var. biflorus* Very Open Herbland.

Table 6. Summary of *Sclerolaena ventricosa*, *Dissocarpus biflorus var. biflorus* Very Open Herbland vegetation association (Bushland Assessment Quadrat A2).

Area (ha):	Battery Storage Facility: 0.37
BCM benchmark community:	NA 8 Coastal Plain Shrublands
Landscape context score:	1.14
Vegetation condition score:	31.43
Conservation significance score:	1.02
Unit biodiversity score:	36.54
Total biodiversity score:	13.52

Vegetation Association 3: Maireana pyramidata, Atriplex vesicaria Shrubland

The *Maireana pyramidata*, *Atriplex vesicaria* Shrubland vegetation association is supported by a sandy rise and low dune landform. The vegetation association covers 1.21 ha within the project area (Figure 4). A maximum of 0.50 ha of this vegetation association will require clearance for the construction of the Battery Storage Facility. A total of 21 flora species were recorded, including 13 native and eight introduced species. Two of the introduced species recorded, *Austrocylindropuntia cylindrica* (Cane Cactus) and *Lycium ferocissimum* (African Boxthorn) are listed as declared species under the NRM Act.

Common native species recorded within the association included *Maireana pyramidata* (Black Bluebush), *Atriplex vesicaria* (Bladder Saltbush), *Maireana turbinata* (Top-fruit Bluebush) and *Maireana radiata* (Radiate Bluebush). Commonly recorded introduced weed species were *Carrichtera annua* (Ward's Weed), *Medicago polymorpha var. polymorpha* (Burr-medic) and *Asphodelus fistulosus* (Onion Weed).

One BAM Quadrat (A3) was established within the *Maireana pyramidata*, *Atriplex vesicaria* Shrubland vegetation association (Figure 8). A summary of the BAM scoresheet is provided in Table 7.

Figure 8. Location of Bushland Assessment Quadrat A3. *Maireana pyramidata*, *Atriplex vesicaria* Shrubland.

Table 7. Summary of *Maireana pyramidata*, *Atriplex vesicaria* Shrubland vegetation association (Bushland Assessment Quadrat A3).

Area (ha):	Battery Storage Facility: 1.21
BCM benchmark community:	NA 9.1 Shrublands & Low Shrublands on Coastal Dunes & Shell grit Ridges
Landscape context score:	1.14
Vegetation condition score:	47.49
Conservation significance score:	1.02
Unit biodiversity score:	55.22
Total biodiversity score:	66.81

Vegetation Association 4: Atriplex vesicaria Low Shrubland +/- Tecticornia sp.

The *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp*. occurs on an undulating plain landform and covers 2.08 ha of the project area (Figure 4). The soil crust was relatively intact and supported large areas of cryptograms.

Eleven flora species were recorded which included nine native and two introduced species. Common native species included *Atriplex vesicaria* (Bladder Saltbush), *Tecticornia indica ssp. leiostachya* (Brown-head Samphire), *Tecticornia tenuis* (Slender Samphire), *Disphyma crassifolium ssp. clavellatum* (Round-leaf Pigface) and *Sclerolaena ventricosa* (Salt Bindyi). The introduced species recorded were *Carrichtera annua* (Ward's Weed) and *Medicago polymorpha var. polymorpha* (Burr-medic).

It is very unlikely that the *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp*. will be impacted by the development of the project. One BAM Quadrat (A4) was established within the *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp*. vegetation association (Figure 9). A summary of the BAM scoresheet is provided in Table 8.

Figure 9. Location of Bushland Assessment Quadrat A4. *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp.*

Table 8. Summary of *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp.* vegetation association (Bushland Assessment Quadrat A4).

Area (ha):	Battery Storage Facility: 2.08
BCM benchmark community:	NA 8 Coastal Plain Shrublands
Landscape context score:	1.14
Vegetation condition score:	32.98
Conservation significance score:	1.02
Unit biodiversity score:	38.35
Total biodiversity score:	43.72

Vegetation Association 5: Tecticornia ssp. Low Open Shrubland

The *Tecticornia ssp.* Low Open Shrubland occurs on the edge of claypan and covers 1.07 ha of the project area (Figure 4). This area contains puffy saline soils, low sandy rises and salt tolerant flora species. This area is unlikely to be connected to the upper Spencer Gulf tidal regime but may contain water after large rainfall events. As per preliminary discussions with the proponent, it is very unlikely that the *Tecticornia ssp.* Low Open Shrubland will be impacted by the development of the project.

Ten flora species were recorded which included eight native and two introduced species. Common native species included *Tecticornia indica ssp. leiostachya* (Brown-head Samphire), *Tecticornia tenuis* (Slender Samphire), *Maireana oppositifolia* (Salt Bluebush) and *Disphyma crassifolium ssp. clavellatum* (Round-leaf Pigface). The introduced species recorded were *Carrichtera annua* (Ward's Weed) and *Medicago polymorpha var. polymorpha* (Burr-medic).

One BAM Quadrat (A5) was established within the *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp.* vegetation association (Figure 10). A summary of the BAM scoresheet is provided in Table 9.

Figure 10. Location of Bushland Assessment Quadrat A5. *Tecticornia ssp.* Low Open Shrubland.

Table 9. Summary of *Tecticornia ssp.* Low Open Shrubland vegetation association (Bushland Assessment Quadrat A5).

Area (ha):	Battery Storage Facility: 1.07
BCM benchmark community:	NA 10.2 Samphire Shrublands with Infrequent Inundation / Lower Salinity
Landscape context score:	1.14
Vegetation condition score:	43.24
Conservation significance score:	1.02
Unit biodiversity score:	50.28
Total biodiversity score:	53.28

Vegetation Association 6: Atriplex vesicaria, Tecticornia tenuis, Galenia pubescens var. pubescens Low Open Shrubland

The *Atriplex vesicaria*, *Tecticornia tenuis, Galenia pubescens var. pubescens* Low Open Shrubland is located on the Port Paterson road verge. The road verge is approximately 6 m wide and has been subject to previous disturbance from the development of an underground Telstra communication line and Port Paterson Road. The landform is now a combination of relatively flat ground and artificial drainage channel. The *Atriplex vesicaria*, *Tecticornia tenuis*, *Galenia pubescens var. pubescens* Low Open Shrubland contained 37 flora species including 19 native and 18 introduced *species* (Appendix 4). Two of the introduced species recorded, *Echium plantagineum* (Salvation Jane) and *Lycium ferocissimum* (African Boxthorn) are listed as declared weed species under the *Natural Resources Management Act 2007*.

One BAM Quadrat (A6) was established within the *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp.* vegetation association (Figure 11). A summary of the BAM scoresheet is provided in Table 10.

Figure 11. Location of Bushland Assessment Quadrat A6. *Atriplex vesicaria*, *Tecticornia tenuis*, *Galenia pubescens var. pubescens* Low Open Shrubland.

Table 10. Summary of *Atriplex vesicaria*, *Tecticornia tenuis*, *Galenia pubescens var. pubescens* Low Open Shrubland vegetation association (Bushland Assessment Quadrat A6).

Area (ha):	Underground Transmission Line (Case 2): 0.37
BCM benchmark community:	NA 8 Coastal Plain Shrublands
Landscape context score:	1.14
Vegetation condition score:	56.76
Conservation significance score:	1.02
Unit biodiversity score:	66.01
Total biodiversity score:	24.42

4.3 Fauna survey

A total of 13 bird species, six mammal species and one reptile species were detected within the project area (Table 11). Six of the fauna species recorded are introduced, this included one bird species and five mammal species. None of the fauna species recorded are listed as threatened under the EPBC Act or NPW Act. Bird and reptile activity were considered to be quite low due to the very windy and hot conditions experienced during the two-day field survey. Two Sheep (*Ovis aries*) skulls were recorded which suggests that the area may have been subject to livestock grazing in the past. The sandy rise and low dune landform contained several large Rabbit (*Oryctolagus cuniculus*) warren systems which also appeared to have been utilised by Foxes (*Vulpes vulpes*).

Additional surveys within the project area would likely result in additional species of regionally common birds and reptiles being recorded.

Table 11. Fauna observations within the project area.

Family name	Species name	Common name	Quantity	Additional signs
Birds				
ALAUDIDAE	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater	2	
ARTAMIDAE	*Anthus australis*	Australian Pipit	1	
CACATUIDAE	*Eolophus roseicapilla*	Galah	4	
COLUMBIDAE	*Falco cenchroides*	Nankeen Kestrel	3	
FALCONIDAE	*Gavicalis virescens*	Singing Honeyeater	1	
MALURIDAE	*Grallina cyanoleuca*	Magpielark	1	
MELIPHAGIDAE	*Gymnorhina tibicen*	Australian Magpie	3	
MELIPHAGIDAE	*Malurus leucopterus*	White-winged Fairywren	4	
MELIPHAGIDAE	*Manorina flavigula*	Yellow-throated Miner	2	
MONARCHIDAE	*Mirafra javanica*	Horsfield's Bush Lark	1	
MOTACILLIDAE	*Ocyphaps lophotes*	Crested Pigeon	7	
POMATOSTOMIDAE	*Pomatostomus superciliosus*	White-browed Babbler	5	
STURNIDAE	**Sturnus vulgaris*	Common Starling	1	
Mammals				
BOVIDAE	**Ovis aries*	Sheep (Feral Sheep)		Skull
CANIDAE	**Canis lupus familiaris*	Feral Dog		Scats/tracks
CANIDAE	**Vulpes vulpes*	Fox (Red Fox)		Scats/tracks
FELIDAE	**Felis catus*	Domestic Cat (Feral Cat)		Scats
LEPORIDAE	**Oryctolagus cuniculus*	Rabbit (European Rabbit)		Warrens, buckheaps and tracks
MACROPODIDAE	*Macropus robustus*	Euro	2	
MACROPODIDAE	*Macropus sp.*			Scats, tracks, skeleton, wallows
Reptiles				
SCINCIDAE	*Tiliqua rugosa*	Sleepy Lizard		Skeleton

* = Introduced species.

4.4 Requirements of the Native Vegetation Regulations

The following section provides information on how the proposed clearance meets the requirements of the Native Vegetation Regulations.

Regulatory requirements

The provisions of the NV Act provide for the clearance of native vegetation either by application to the NVC for consent to clear or under exemptions contained in the *Native Vegetation Regulations 2017*. The Playford Utility Battery Project in the feasibility stage and is likely to be submitted for approval under of the Development Act. It is considered that native vegetation clearance required for this project falls under the provisions of Division 5 of the NV Act which provide for the clearance of native vegetation under Part 6 (other Activities) Regulation 12 (clause 33 and 34).

33—New dwelling or building

(1) Clearance of vegetation required in order to erect a building or structure or other facility that is ancillary to a building, provided that any development authorisation required by or under the Development Act has been obtained.

(2) Subclause (1) does not apply to—

(a) clearance of vegetation established in accordance with a condition of a consent for clearance of vegetation; or

(b) clearance of vegetation undertaken in connection with subdivision of the land on which the vegetation is growing or is situated; or

(c) clearance that would be contrary to—

(i) a condition of a consent for clearance of vegetation; or

(ii) a condition imposed in connection with clearance of vegetation permitted under these regulations; or

(iii) a condition in respect of clearance permitted under the revoked regulations.

34—Infrastructure

(1) Clearance of vegetation—

(a) incidental to the construction or expansion of a building or infrastructure where the Minister has, by instrument in writing, declared that the Minister is satisfied that the clearance is in the public interest; or

(b) required in connection with the provision of infrastructure or services to a building or proposed building, or to any place,

provided that any development authorisation required by or under the Development Act has been obtained.

(2) In this clause—

infrastructure includes—

(a) flood mitigation works; and

(b) an airstrip; and

(c) a shipping channel; and

(d) a public reservoir.

infrastructure means—

(a) the infrastructure, equipment, structures, works and other facilities used in or in connection with the supply of water or electricity, gas or other forms of energy, the provision of telecommunications, or the drainage, removal or treatment of waste water or sewage; or

(b) roads and their supporting structures or works; or

(c) ports, wharfs, jetties, railways, trams and busways.

Risk Assessment

The level of risk was determined in accordance with Table 1 of the *Guide for applications to Clear Native Vegetation* (NVC 2017b). The level of risk has been assessed as 3 on the basis that the Total Biodiversity Score is less than 250. The total biodiversity score is dependent on the selection of the underground transmission line route. The total biodiversity scores for the two project layout options are provided in Table 12.

Table 12. Total biodiversity scores for the two project layout options.

	Option 1 (Biodiversity score)	**Option 2 (Biodiversity score)**
Battery Storage Facility	174.85	174.85
Underground Transmission Line	28.12	33.09
Total	**202.97**	**207.94**

4.6 Mitigation hierarchy

When exercising a power or making a decision under Division 5 of the *Native Vegetation Regulations 2017*, the NVC must have regard to the mitigation hierarchy. The NVC will assess the measures taken to avoid and minimize impacts on biodiversity and rare or threatened species or ecological communities within the property or immediate vicinity of the development. As previously mentioned, the Playford Utility Battery Project is in the early stages of planning. The design and vegetation clearance footprint are yet to be finalised.

Avoidance

A feasibility study by the proponent considered a number of options for the Battery Storage Facility. The site's industrial zoning and proximity to the existing Davenport Substation, to allow the efficient connection to the ElectraNet system, were key factors for establishing the proposed battery storage facility on the site.

Minimisation

The proponent has followed preliminary recommendations from BlackOak Environmental about the placement of the 3 ha construction footprint within the 8 ha allotment. As a result, none of the *Tecticornia ssp*. Low Open Shrubland and *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp.* vegetation and will be impacted by the development of the project. This area occurs within the boundary designated as a nationally important or significant wetland (Upper Spencer Gulf (SA020)).

Once the project design is finalised the proponent will work towards further minimising the clearance of native vegetation. As a minimum the method of clearance will be chosen so as to have minimum impact on the project site and adjoining native vegetation. Weed and pathogen hygiene measures will be employed as part of the removal process to ensure that no new weeds or other pathogens are introduced to existing native vegetation.

Rehabilitation or restoration

Rehabilitation or restoration is not suitable within the area selected for the construction of the Battery Storage Facility since the project will be permanent. The area cleared for the construction of the underground transmission line will be rehabilitated within three years of the clearance occurring. Re-establishment of the soil seedbank will commence immediately following construction of the underground transmission line. Follow up weed monitoring and control will also be implemented.

There is the opportunity for restoration or enhancement of native vegetation and control of introduced mammals (Rabbits, Cats and Foxes) in the areas surrounding the vegetation clearance footprint.

Offset

The proponent will consider the SEB offset when the project design and vegetation clearance footprint for the project is finalised. At this stage SIMEC ZEN are considering either a payment into the Native Vegetation Fund or suitable on-ground SEB area.

5 Significant Environmental Benefit

A SEB is required for approval to clear under Division 5 of the *Native Vegetation Regulations 2017*. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that an SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

5.1 Clearance area

As previously mentioned, there are currently two options under consideration for the underground transmission line which will connect the Battery Storage Facility to the existing Davenport Substation.

The estimated maximum clearance footprint area for the development of the Battery Storage Facility is 3.0 ha, across three vegetation associations. The Native Vegetation SEB Requirement for clearance of 3.0 ha of native vegetation under this proposal is 22.95 ha or a payment of $64,098.70 (including administrative fees) into the Native Vegetation Fund (Table 13).

The estimated maximum clearance footprint area for the development of the Underground Transmission Line (Case 1) is 0.45 ha across two vegetation associations. The Native Vegetation SEB Requirement for clearance of 0.45 ha of native vegetation under this proposal is 1.85 ha or a payment of $5,154.11 (including administrative fees) into the Native Vegetation Fund (Table 14).

The estimated maximum clearance footprint area for the development of the Underground Transmission Line (Case 2) is 0.51 ha across two vegetation associations. The Native Vegetation SEB Requirement for clearance of 0.45 ha of native vegetation under this proposal is 2.17 ha or a payment of $6,065.77 (including administrative fees) into the Native Vegetation Fund (Table 15).

Table 13. Summary of the SEB requirements for clearance of remnant vegetation for the development of the Battery Storage Facility.

	Vegetation association and BAM Quadrat			Total
	Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis **(BAM Quadrat A1)**	***Sclerolaena ventricosa, Dissocarpus biflorus var. biflorus* Very Open Herbland** **(BAM Quadrat A2)**	***Maireana pyramidata, Atriplex vesicaria*** **Shrubland (BAM Quadrat A3)**	
Area (ha) of proposed impact	2.20	0.30	0.50	3.00
Loss factor	1	1	1	
Mean rainfall for the site (mm)	266	266	266	
Unit Biodiversity Score	61.95	31.43	55.22	
Total Biodiversity Score	136.28	10.96	27.61	174.85
Reduction for rehabilitation of site	0	0	0	0
SEB points required	143.1	11.51	28.99	183.6
Hectares required	17.89	1.44	3.62	22.95
Payment into the Native Vegetation Fund	$47,580.28	$3,827.39	$9,638.71	$61,046.38
Administration fee	$2,379.01	$191.37	$481.94	$3,052.32
Total	**$49,959.29**	**$4,018.76**	**$10,120.65**	**$64,098.70**

Table 14. Summary of the SEB requirements for clearance of remnant vegetation for the development of the Underground Transmission Line (Case 1).

	Vegetation association and BAM Quadrat		Total
	Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis **(BAM Quadrat A1)**	***Atriplex vesicaria, Tecticornia tenuis, Galenia pubescens var. pubescens* Low Open Shrubland** **(BAM Quadrat A6)**	
Area (ha) of proposed impact	0.39	0.06	0.45
Loss factor	1	1	
Mean rainfall for the site (mm)	266	266	
Unit Biodiversity Score	61.95	66.01	
Total Biodiversity Score	24.16	3.96	28.12
Reduction for rehabilitation of site	0.5	0.5	
SEB points required	12.68	2.08	14.76
Hectares required	1.59	0.26	1.85
Payment into the Native Vegetation Fund	$4,217.34	$691.33	$4,908.67
Administration fee	$210.87	$34.57	$245.44
Total	**$4,428.21**	**$725.90**	**$5,154.11**

Table 15. Summary of the SEB requirements for clearance of remnant vegetation for the development of the Underground Transmission Line (Case 2).

	Vegetation association and BAM Quadrat		Total
	Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis **(BAM Quadrat A1)**	***Atriplex vesicaria, Tecticornia tenuis, Galenia pubescens var. pubescens* Low Open Shrubland** **(BAM Quadrat A6)**	
Area (ha) of proposed impact	0.14	0.37	0.51
Loss factor	0.6	0.6	
Mean rainfall for the site (mm)	266	266	
Unit Biodiversity Score	61.95	66.01	
Total Biodiversity Score	8.67	24.42	33.09
Reduction for rehabilitation of site	0.5	0.5	
SEB points required	4.55	12.82	17.37
Hectares required	0.57	1.60	2.17
Payment into the Native Vegetation Fund	$1,513.92	$4,263.19	$5,777.11
Administration fee	$75.50	$213.16	$288.66
Total	**$1,589.42**	**$4,476.35**	**$6,065.77**

7 Discussion

The development of the Playford Utility Battery Project is likely to require a maximum clearance of 3.51 ha (3.00 ha Battery Storage Facility and maximum of 0.51 ha for Underground Transmission Line) of native vegetation. The development of the Battery Storage Facility will avoid impacts to the *Tecticornia ssp.* Low Open Shrubland vegetation association which is located within the boundary designated as a nationally important or significant wetlands (Upper Spencer Gulf (SA020)).

No threatened flora or fauna species listed under NPW Act were recorded within the project area during the field survey. As a result of the BDBSA records and the habitat assessment it is possible that the NPW listed vulnerable *Malacocera gracilis* (Slender Soft-horns) and NPW listed rare Elegant Parrot (*Neophema elegans*) could occur within the project area. *Malacocera gracilis* (Slender Soft-horns) if present, is likely to be restricted to the *Tecticornia ssp*. Low Open Shrubland vegetation association which will not be impacted by the development of the project. The Elegant Parrot could possibly occur within the entirety of project area on an infrequent basis as they are usually only locally nomadic (Morcombe 2004). The Elegant Parrot can be found in a wide variety of habitats, including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland. Elegant Parrots, usually feed on the ground, where they take the seeds of grasses or low-growing shrubs (BirdLife Australia 2018).

No threatened species, threatened ecological communities or migratory species listed under the EPBC Act were detected within the project area during the survey. It is considered based on this assessment that the Playford Utility Battery Project is not likely to have any significant impact on any matter protected by the EPBC Act. Accordingly, there is no requirement to refer the project under the EPBC Act.

8 References

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NVC (2017b) Guide for applications to clear native vegetation Under the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*. Native Vegetation Management Unit. Available from: https://www.environment.sa.gov.au/topics/native-vegetation/clearing/clearance-applications. Native Vegetation Council, Adelaide.

9 Appendices

Appendix 1. Native vegetation clearance proposal applicant details.

Applicant:	SIMEC ZEN Energy		
Key contact:	Mark Sinclair, General Manager Design and Delivery (SIMEC ZEN Energy)		
Landowner:	SIMEC ZEN have on option over the land to purchase subject to gaining the necessary approvals.		
Site Address:	Proposed location for Battery Storage Facility: 309 Port Paterson Road, Port Paterson 5700, SA		
Local Government Area:	Port Augusta City Council	Hundred:	Davenport
Certificate of Title:	CT 6019/256	Section/Allotment:	Allotment 2
Summary of Application			
Proposed clearance area:	The project is in the early stages of planning and it is likely that the clearance footprint will be reduced from that initially assessed and proposed. <u>Battery Storage Facility</u> - 2.20 ha (loss factor of 1) *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis*. - 0.30 ha (loss factor of 1) *Sclerolaena ventricosa*, *Dissocarpus biflorus var. biflorus* Very Open Herbland. - 0.50 ha (loss factor of 1) *Maireana pyramidata*, *Atriplex vesicaria* Shrubland. and; <u>Underground Transmission Line (Case 1)</u> 0.39 ha (loss factor of 0.6) *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis*. 0.06 ha (loss factor of 0.6) *Atriplex vesicaria*, *Tecticornia tenuis*, *Galenia pubescens var. pubescens* Low Open Shrubland. or; <u>Underground Transmission Line (Case 2)</u> 0.14 ha (loss factor of 0.6) *Atriplex vesicaria* Low Shrubland +/- *Maireana pyramidata* +/- *Tecticornia tenuis*. 0.37 ha (loss factor of 0.6) *Atriplex vesicaria*, *Tecticornia tenuis*, *Galenia pubescens var. pubescens* Low Open Shrubland.		
Applicable regulation and purpose of the clearance	Clearance is required to facilitate the construction of the Playford Utility Battery Project and associated infrastructure. The Project has been determined to fall under Regulation 12 of the *Native Vegetation Regulations 2017*, under the New dwelling or building provisions of Schedule 1, Part 6 (clause 33) and the Infrastructure provisions of Schedule 1, Part 6 (clause 34).		
Level of risk	The level of risk has been assessed as 3 on the basis that the Total Biodiversity Score is likely to be less than 250. The total biodiversity score is dependent on the selection of the underground transmission line route. The two options available are: <u>Option 1</u> Battery Storage Facility = 174.85 Underground Transmission Line = 28.12 Total Biodiversity Score = 202.97 <u>Option 2</u> Battery Storage Facility = 174.85 Underground Transmission Line = 33.09 Total Biodiversity Score = 207.94		
Proposed SEB offset:	The proponent will consider the SEB offset when the clearance footprint for the project layout is finalised. At this stage SIMEC ZEN are considering either a payment into the Native Vegetation Fund or suitable on-ground SEB area.		

Appendix 2. Flora species recorded in the BDBSA within 5km of the project area (all years shown) (DEW 2018).

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
AIZOACEAE	*Carpobrotus rossii*	Native Pigface				15/07/2005
ACANTHACEAE	*Rostellularia adscendens var. pogonanthera*	Pink Tongues				15/03/1937
AIZOACEAE	*Carpobrotus rossii*	Native Pigface				15/01/2017
	Disphyma crassifolium ssp. clavellatum	Round-leaf Pigface				28/06/2010
	Galenia pubescens var. pubescens	Coastal Galenia			Y	15/01/2017
	Galenia secunda	Galenia			Y	27/10/2016
	Gunniopsis quadrifida	Sturt's Pigface				15/09/1974
	Mesembryanthemum aitonis	Angled Iceplant			Y	9/09/1962
	Mesembryanthemum crystallinum	Common Iceplant			Y	15/01/2017
	Mesembryanthemum nodiflorum	Slender Iceplant			Y	18/10/1996
	Mesembryanthemum sp.	Iceplant			Y	14/11/1998
	Sarcozona praecox	Sarcozona				18/10/1996
	Tetragonia tetragonoides	New Zealand Spinach				
AMARANTHACEAE	*Amaranthus viridis*	Green Amaranth			Y	1/08/2003
	Hemichroa diandra	Mallee Hemichroa				28/06/2010
	Ptilotus obovatus	Silver Mulla Mulla				1/01/1950
ANACARDIACEAE	*Schinus molle*	Pepper-tree			Y	15/01/2017
ASCLEPIADACEAE	*Cynanchum viminale ssp. australe*	Caustic Bush				7/03/1995
AVICENNIACEAE	*Avicennia marina ssp. marina*	Grey Mangrove				0/01/1900
BORAGINACEAE	*Echium plantagineum*	Salvation Jane			Y	14/11/1998
	Heliotropium amplexicaule	Blue Heliotrope			Y	16/03/1987
CACTACEAE	*Echinopsis spachiana*				Y	28/05/2005
	Opuntia elata	Riverina Pear			Y	27/05/2005

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Opuntia stricta	Erect Prickly Pear			Y	27/05/2005
CARYOPHYLLACEAE	*Herniaria cinerea*	Rupturewort			Y	18/10/1996
	Spergularia diandra	Lesser Sand-spurrey			Y	18/10/1996
	Spergularia diandra (NC)	Lesser Sand-spurrey			Y	18/10/1996
CASUARINACEAE	*Casuarina pauper*	Black Oak				11/04/1995
CAULERPACEAE	*Caulerpa flexilis var. muelleri*					25/11/1978
CHENOPODIACEAE	*Atriplex angulata*	Fan Saltbush				3/07/1995
	Atriplex holocarpa	Pop Saltbush				15/01/2017
	Atriplex lindleyi ssp. inflata	Corky Saltbush				18/10/1996
	Atriplex spongiosa	Pop Saltbush				18/10/1996
	Atriplex velutinella	Sandhill Saltbush				28/09/1920
	Atriplex vesicaria	Bladder Saltbush				15/01/2017
	Atriplex vesicaria ssp. (NC)	Bladder Saltbush				20/11/1998
	Dissocarpus biflorus var.	Two-horn Saltbush				15/01/2017
	Dissocarpus biflorus var. biflorus	Two-horn Saltbush				8/07/1999
	Dissocarpus paradoxus	Ball Bindyi				15/01/2017
	Enchylaena tomentosa var. tomentosa	Ruby Saltbush				15/01/2017
	Maireana appressa	Pale-fruit Bluebush				18/10/1996
	Maireana brevifolia	Short-leaf Bluebush				1/12/2005
	Maireana cannonii	Cannon's Bluebush				30/01/2015
	Maireana georgei	Satiny Bluebush				15/01/2017
	Maireana oppositifolia	Salt Bluebush				15/01/2017
	Maireana pyramidata	Black Bluebush				15/01/2017
	Malacocera gracilis	Slender Soft-horns		V		27/10/2016
	Malacocera tricornis	Goat-head Soft-horns				3/11/1936
	Osteocarpum acropterum var.	Bonefruit				15/01/2017
	Osteocarpum acropterum var. acropterum	Tuberculate Bonefruit				3/11/1936
	Osteocarpum dipterocarpum	Two-wing Bonefruit				27/10/2016

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Rhagodia spinescens	Spiny Saltbush				15/01/2017
	Salsola australis	Buckbush				15/01/2017
	Sclerolaena brachyptera	Short-wing Bindyi				15/01/2017
	Sclerolaena cuneata	Tangled Bindyi				28/06/2010
	Sclerolaena divaricata	Tangled Bindyi				3/11/1936
	Sclerolaena obliquicuspis	Oblique-spined Bindyi				16/03/2006
	Sclerolaena patenticuspis	Spear-fruit Bindyi				18/10/1996
	Suaeda aegyptiaca				Y	5/10/1996
	Suaeda australis	Austral Seablite				18/10/1996
	Tecticornia arbuscula	Shrubby Samphire				18/10/1996
	Tecticornia halocnemoides ssp. halocnemoides	Grey Samphire				28/06/2010
	Tecticornia indica ssp. leiostachya	Brown-head Samphire				15/01/2017
	Tecticornia medullosa					15/10/1937
	Tecticornia tenuis	Slender Samphire				9/01/2018
CLADOPHORACEAE	*Cladophora laetevirens*					25/11/1978
	Cladophora lehmanniana					25/11/1978
CLADOSTEPHACEAE	*Cladostephus spongiosus*					25/11/1978
COMPOSITAE	*Angianthus glabratus*	Smooth Angianthus				27/10/2016
	Brachyscome ciliaris var. ciliaris	Variable Daisy				15/01/2017
	Brachyscome ciliaris var. lanuginosa	Woolly Variable Daisy				4/12/1991
	Brachyscome lineariloba	Hard-head Daisy				9/01/1941
	Calendula arvensis	Field Marigold			Y	27/12/1997
	Calotis hispidula	Hairy Burr-daisy				10/11/1995
	Carthamus lanatus	Saffron Thistle			Y	15/01/2017
	Centaurea melitensis	Malta Thistle			Y	15/01/2017
	Centipeda crateriformis ssp. compacta	Desert Sneezeweed				17/09/1912
	Eriochlamys behrii	Woolly Mantle				

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Erodiophyllum elderi	Koonamore Daisy				30/09/1955
	Gazania sp.	Gazania			Y	1/01/2010
	Gnephosis tenuissima	Dwarf Golden-tip				10/11/1995
	Hyalosperma semisterile	Orange Sunray				
	Lawrencella davenportii	Davenport Daisy				1/07/1915
	Leiocarpa websteri	Narrow Plover-daisy				15/07/1968
	Minuria cunninghamii	Bush Minuria				15/01/2017
	Olearia pimeleoides	Pimelea Daisy-bush				15/01/2017
	Oligocarpus calendulaceus				Y	8/12/1954
	Pascalia glauca	Pascalia Weed			Y	10/04/1949
	Pycnosorus pleiocephalus	Soft Billy-buttons				28/08/1968
	Rhodanthe corymbiflora	Paper Everlasting				3/09/1962
	Rhodanthe microglossa	Clustered Everlasting				15/09/1973
	Rhodanthe polygalifolia	Milkwort Everlasting				15/09/1973
	Rhodanthe stricta	Slender Everlasting				18/10/1996
	Rhodanthe stuartiana	Clay Everlasting				24/10/1966
	Rhodanthe troedelii	Small Paper-everlasting				22/08/1960
	Senecio cunninghamii var. cunninghamii	Shrubby Groundsel				1/04/1909
	Senecio cunninghamii var. flindersensis	Shrubby Groundsel				4/06/1979
	Senecio glossanthus	Annual Groundsel				28/09/1930
	Senecio spanomerus					4/12/1991
	Sonchus oleraceus	Common Sow-thistle			Y	15/01/2017
	Tagetes minuta	Stinking Roger			Y	5/04/1982
	Vittadinia australasica var. australasica	Sticky New Holland Daisy				23/08/1935
	Vittadinia cervicularis var. cervicularis	Waisted New Holland Daisy				19/07/1943
CRASSULACEAE	*Crassula colorata var.*	Dense Crassula				18/10/1996

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Crassula colorata var. acuminata	Dense Crassula				27/09/1920
CRUCIFERAE	*Arabidella trisecta*	Shrubby Cress				4/07/1962
	Brassica rapa ssp. rapa	Turnip Rape			Y	27/09/1985
	Brassica tournefortii	Wild Turnip			Y	15/01/2017
	Carrichtera annua	Ward's Weed			Y	15/01/2017
	Diplotaxis muralis	Wall Rocket			Y	5/02/1935
	Raphanus raphanistrum	Wild Radish			Y	20/08/1989
	Sisymbrium erysimoides	Smooth Mustard			Y	18/10/1996
	Sisymbrium irio	London Mustard			Y	20/11/1998
	Sisymbrium orientale	Indian Hedge Mustard			Y	8/09/1968
CUPRESSACEAE	*Callitris glaucophylla*	White Cypress-pine				22/09/2009
DICTYOTACEAE	*Distromium flabellatum*					25/11/1978
	Lobophora variegata					25/11/1978
DILLENIACEAE	*Hibbertia exutiacies*	Prickly Guinea-flower				12/10/1959
EUPHORBIACEAE	*Beyeria lechenaultii*	Pale Turpentine Bush				29/07/1969
	Euphorbia inappendiculata var. queenslandica					
	Euphorbia terracina	False Caper			Y	1/01/1950
	Ricinus communis	Castor Oil Plant			Y	22/04/2014
GOODENIACEAE	*Goodenia lunata*	Stiff Goodenia				3/07/1995
	Scaevola collaris					27/10/2016
GRAMINEAE	*Austrostipa nitida*	Balcarra Spear-grass				18/10/1996
	Austrostipa scabra ssp.	Rough Spear-grass				15/01/2017
	Avena barbata	Bearded Oat			Y	14/11/1998
	Bromus diandrus (NC)	Great Brome			Y	14/11/1998
	Cenchrus ciliaris	Buffel Grass			Y	15/01/2017
	Chloris virgata	Feather-top Rhodes Grass			Y	12/06/1960
	Cynodon dactylon (NC)	Couch			Y	14/11/1998
	Cynodon dactylon var.	Couch				15/01/2017

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Cynodon dactylon var. dactylon	Couch			Y	7/03/1995
	Dactyloctenium radulans	Button-grass				15/01/2017
	Digitaria brownii	Cotton Panic-grass				1/05/1921
	Enneapogon avenaceus	Common Bottle-washers				15/01/2017
	Enneapogon polyphyllus	Leafy Bottle-washers				1/02/1952
	Eragrostis dielsii	Mulka				5/05/1966
	Eragrostis falcata	Sickle Love-grass				22/12/1992
	Eragrostis leptocarpa	Drooping Love-grass				1/05/1921
	Eragrostis setifolia	Bristly Love-grass				27/10/2016
	Eragrostis trichophora	Hairyflower Lovegrass			Y	26/02/2015
	Hordeum glaucum	Blue Barley-grass			Y	14/11/1998
	Lamarckia aurea	Toothbrush Grass			Y	13/10/1964
	Paractaenum novae-hollandiae ssp. reversum	Barbed-wire Grass				15/03/1937
	Paractaenum refractum	Bristle-brush Grass				28/04/1945
	Paspalum vaginatum	Salt-water Couch			Y	19/01/1988
	Piptatherum miliaceum	Rice Millet			Y	20/11/1998
	Rostraria cristata	Annual Cat's-tail			Y	18/10/1996
	Schismus barbatus	Arabian Grass			Y	18/10/1996
	Zygochloa paradoxa	Sandhill Cane-grass				16/08/1990
LABIATAE	*Ajuga australis f. A (A.G.Spooner 9058)*	Australian Bugle				29/08/1952
	Marrubium vulgare	Horehound			Y	3/12/1935
	Prostanthera behriana	Downy Mintbush				28/09/1952
	Salvia verbenaca var.	Wild Sage			Y	20/11/1998
LEGUMINOSAE	*Acacia calamifolia*	Wallowa				17/11/1958
	Acacia hakeoides	Hakea Wattle				19/08/1955
	Acacia ligulata	Umbrella Bush				20/11/1998
	Acacia oswaldii	Umbrella Wattle				15/01/2017
	Acacia salicina	Willow Wattle				1/01/1950

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Acacia victoriae ssp.	Elegant Wattle				20/11/1998
	Acacia victoriae ssp. victoriae	Elegant Wattle				17/11/1958
	Daviesia arenaria	Sand Bitter-pea				25/09/1912
	Daviesia leptophylla	Narrow-leaf Bitter-pea				1/10/1932
	Daviesia pectinata	Zig-zag Bitter-pea		R		1/09/1941
	Lotus cruentus	Red-flower Lotus				10/11/1995
	Medicago minima var. minima	Little Medic			Y	15/01/2017
	Medicago polymorpha	Burr-medic			Y	18/10/1996
	Parkinsonia aculeata	Jerusalem Thorn			Y	1/11/1985
	Prosopis juliflora	Mesquite			Y	5/09/1989
	Pultenaea graveolens	Scented Bush-pea				1/10/1932
	Senna artemisioides ssp. filifolia	Fine-leaf Desert Senna				1/01/1950
	Senna artemisioides ssp. petiolaris					18/10/1996
	Senna planitiicola	Yellow Pea				14/04/1993
	Vachellia farnesiana	Sweet Acacia			Y	29/03/2011
LILIACEAE	*Asphodelus fistulosus*	Onion Weed			Y	20/11/1998
LIMONIACEAE	*Limonium binervosum*	Dwarf Sea-lavender			Y	14/11/1998
	Limonium companyonis	Sea-lavender			Y	4/12/1991
	Limonium lobatum	Winged Sea-lavender			Y	22/10/1952
LORANTHACEAE	*Amyema miraculosa ssp. boormanii*	Fleshy Mistletoe				9/11/1928
	Amyema preissii	Wire-leaf Mistletoe				10/11/1995
	Amyema quandang var. quandang	Grey Mistletoe				16/08/1990
	Lysiana exocarpi ssp. exocarpi	Harlequin Mistletoe				16/08/1990
MALVACEAE	*Lagunaria patersonii*	Pyramid Tree			Y	19/01/1989
	Lawrencia glomerata	Clustered Lawrencia				27/10/2016
	Malva parviflora	Small-flower Marshmallow			Y	18/10/1996
	Sida ammophila	Sand Sida				1/01/1947
	Sida intricata	Twiggy Sida				15/01/2017

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Sida petrophila	Rock Sida				1/10/1932
MYOPORACEAE	*Eremophila alternifolia*	Narrow-leaf Emubush				23/08/1935
	Eremophila crassifolia	Thick-leaf Emubush				26/08/1964
	Eremophila glabra ssp. glabra	Tar Bush				1/01/1950
	Eremophila longifolia	Weeping Emubush				10/11/1995
	Eremophila scoparia	Broom Emubush				8/07/1999
	Myoporum montanum	Native Myrtle				27/09/1961
	Myoporum platycarpum ssp. platycarpum	False Sandalwood				14/10/1937
MYRTACEAE	*Eucalyptus calcareana*	Nundroo Mallee				1/04/1941
	Eucalyptus socialis ssp. socialis	Beaked Red Mallee				6/09/1912
	Eucalyptus sp.					14/11/1998
PITTOSPORACEAE	*Pittosporum angustifolium*	Native Apricot				15/01/2017
PLANTAGINACEAE	*Plantago drummondii*	Dark Plantain				29/07/1920
PORTULACACEAE	*Calandrinia eremaea*	Dryland Purslane				10/11/1995
	Calandrinia remota	Round-leaf Parakeelya				15/10/1937
	Calandrinia volubilis	Twining Purslane				10/11/1995
	Portulaca oleracea	Common Purslane				19/11/1993
	Portulacaria afra	Dwarf Jade Plant			Y	1/07/1991
POTAMOGETONACEAE	*Ruppia tuberosa*	Widgeon Grass				22/11/1982
RUTACEAE	*Citrus glauca*	Desert Lime		V		14/12/1965
SANTALACEAE	*Exocarpos cupressiformis*	Native Cherry				19/04/1940
	Santalum acuminatum	Quandong				14/11/1998
SAPINDACEAE	*Dodonaea baueri*	Crinkled Hop-bush				27/08/1975
	Dodonaea lobulata	Lobed-leaf Hop-bush				1/09/1945
	Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush				27/09/1920
SOLANACEAE	*Datura ferox*	Long-spine Thorn-apple			Y	22/04/2014
	Datura inoxia	Downy Thorn-apple			Y	6/01/1992
	Datura leichhardtii	Leichhardt's Thorn-apple			Y	22/04/2014

Family name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Lycium australe	Australian Boxthorn				18/10/1996
	Lycium ferocissimum	African Boxthorn			Y	15/01/2017
	Nicotiana glauca	Tree Tobacco			Y	19/07/1943
	Nicotiana goodspeedii	Small-flower Tobacco				3/11/1936
	Solanum petrophilum	Rock Nightshade				15/09/1973
STYPOCAULACEAE	*Halopteris platycena*					25/11/1978
	Halopteris pseudospicata					25/11/1978
THYMELAEACEAE	*Pimelea microcephala ssp.*	Shrubby Riceflower				15/01/2017
	Pimelea microcephala ssp. microcephala	Shrubby Riceflower				16/08/1990
ZYGOPHYLLACEAE	*Nitraria billardierei*	Nitre-bush				15/01/2017
	Roepera eremaea					15/01/2017
	Tribulus terrestris	Caltrop			Y	15/01/2017

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Appendix 3. Fauna species recorded in the BDBSA within 5km of the project area (all years shown) (DEW 2018).

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
AMPHIBIA	*Limnodynastes tasmaniensis*	Spotted Marsh Frog				14/09/2005
	Litoria ewingii	Brown Tree Frog				14/09/2005
AVES	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater				5/05/2005
	Accipiter cirrocephalus cirrocephalus	Collared Sparrowhawk				28/03/2006
	Anas castanea	Chestnut Teal				11/07/1999
	Anas gracilis	Grey Teal				28/03/2006
	Anas superciliosa	Pacific Black Duck				9/05/2002
	Anthochaera carunculata	Red Wattlebird				5/05/2005
	Ardea alba modesta	Great Egret				24/08/2000
	Artamus personatus	Masked Woodswallow				12/11/2000
	Aythya australis	Hardhead				9/09/2002
	Barnardius zonarius	Australian Ringneck				5/05/2005
	Biziura lobata	Musk Duck		R		28/03/2006
	Cacatua sanguinea sanguinea	Little Corella				5/05/2005
	Calidris acuminata	Sharp-tailed Sandpiper				9/09/2002
	Calidris ferruginea	Curlew Sandpiper	CR			25/01/2000
	Calidris ruficollis	Red-necked Stint				1/06/2004
	Charadrius ruficapillus	Red-capped Plover				28/03/2006
	Cheramoeca leucosterna	White-backed Swallow				12/11/2000
	Chlidonias hybrida	Whiskered Tern				30/10/2002
	Chroicocephalus novaehollandiae	Silver Gull				28/03/2006
	Cladorhynchus leucocephalus	Banded Stilt		V		28/03/2006
	Colluricincla harmonica	Grey Shrikethrush				12/11/2000
	Columba livia	Feral Pigeon			Y	5/05/2005
	Coracina novaehollandiae	Black-faced Cuckooshrike				5/05/2005
	Corvus bennetti	Little Crow				5/05/2005
	Corvus coronoides	Australian Raven				2/12/2000
	Corvus mellori	Little Raven				2/12/2000

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Cracticus torquatus	Grey Butcherbird				12/11/2000
	Cygnus atratus	Black Swan				28/03/2006
	Egretta garzetta	Little Egret		R		12/11/2000
	Egretta novaehollandiae	White-faced Heron				28/03/2006
	Elanus axillaris	Black-shouldered Kite				11/08/1997
	Eolophus roseicapilla	Galah				27/07/2005
	Epthianura albifrons	White-fronted Chat				28/03/2006
	Erythrogonys cinctus	Red-kneed Dotterel				9/09/2002
	Eurostopodus argus	Spotted Nightjar				1/01/1900
	Falco cenchroides	Nankeen Kestrel				28/03/2006
	Falco hypoleucos	Grey Falcon		R		20/09/2001
	Fulica atra	Eurasian Coot				28/03/2006
	Gavicalis virescens	Singing Honeyeater				28/03/2006
	Grallina cyanoleuca	Magpielark				28/03/2006
	Gymnorhina tibicen	Australian Magpie				5/05/2005
	Haematopus fuliginosus	Sooty Oystercatcher		R		28/03/2006
	Haematopus longirostris	(Australian) Pied Oystercatcher		R		12/11/2000
	Haliastur sphenurus	Whistling Kite				9/09/2004
	Himantopus leucocephalus	White-headed Stilt				28/03/2006
	Hirundo neoxena	Welcome Swallow				28/03/2006
	Hydroprogne caspia	Caspian Tern				21/09/2002
	Larus pacificus	Pacific Gull				9/05/2002
	Limosa limosa	Black-tailed Godwit		R		4/02/1984
	Malacorhynchus membranaceus	Pink-eared Duck				28/03/2006
	Malurus lamberti	Variegated Fairywren				12/11/2000
	Malurus leucopterus	White-winged Fairywren				11/07/1999
	Manorina flavigula	Yellow-throated Miner				31/10/1999
	Megalurus gramineus	Little Grassbird				9/09/2002

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Microcarbo melanoleucos melanoleucos	Little Pied Cormorant				28/03/2006
	Microeca fascinans	Jacky Winter				5/05/2005
	Milvus migrans	Black Kite				12/11/2000
	Neophema elegans	Elegant Parrot		R		5/05/2005
	Numenius madagascariensis	Far Eastern Curlew	CR	V		12/11/2000
	Ocyphaps lophotes	Crested Pigeon				5/05/2005
	Pachycephala pectoralis	Golden Whistler				1/05/1996
	Parvipsitta porphyrocephala	Purple-crowned Lorikeet				11/07/1999
	Passer domesticus	House Sparrow			Y	28/03/2006
	Pelecanus conspicillatus	Australian Pelican				30/10/2002
	Petrochelidon nigricans	Tree Martin				12/11/2000
	Petroica goodenovii	Red-capped Robin				5/05/2005
	Phalacrocorax carbo	Great Cormorant				9/09/2002
	Phalacrocorax sulcirostris	Little Black Cormorant				28/03/2006
	Phalacrocorax varius	Great Pied Cormorant				28/03/2006
	Pluvialis squatarola	Grey Plover				12/12/1999
	Podiceps cristatus	Great Crested Grebe		R		21/09/2002
	Poliocephalus poliocephalus	Hoary-headed Grebe				28/03/2006
	Pomatostomus superciliosus	White-browed Babbler				2/12/2000
	Ptilotula penicillata	White-plumed Honeyeater				27/07/2005
	Recurvirostra novaehollandiae	Red-necked Avocet				28/03/2006
	Rhipidura leucophrys	Willie Wagtail				11/07/1999
	Sternula nereis	Fairy Tern	VU	E		31/10/1999
	Stictonetta naevosa	Freckled Duck		V		16/01/1999
	Sturnus vulgaris	Common Starling			Y	28/03/2006
	Tachybaptus novaehollandiae	Australasian Grebe				21/09/2002
	Thalasseus bergii	Greater Crested Tern				28/03/2006
	Todiramphus pyrrhopygius	Red-backed Kingfisher				12/11/2000

Class name	Species name	Common name	Conservation status		Introduced species	Most recent record
			Aus	SA		
	Tringa nebularia	Common Greenshank				21/09/2002
	Tringa stagnatilis	Marsh Sandpiper				4/02/1984
	Turdus merula	Common Blackbird			Y	5/05/2005
	Vanellus miles	Masked Lapwing				1/04/2005
	Zosterops lateralis	Silvereye				5/05/2005
MAMMALIA	*Mus musculus*	House Mouse			Y	27/01/1980
	Sminthopsis macroura	Stripe-faced Dunnart				1/02/2004
REPTILIA	*Delma molleri*	Gulfs Delma				16/05/1977
	Furina diadema	Red-naped Snake				24/05/1978

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*).
Conservation codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Appendix 4. Flora species recorded within the project area.

Family name	Species name	Common name	Vegetation association					
			1	2	3	4	5	6
AIZOACEAE	*Disphyma crassifolium ssp. clavellatum*	Round-leaf Pigface	✓			✓	✓	✓
AIZOACEAE	**Galenia pubescens var. pubescens*	Coastal Galenia						✓
AIZOACEAE	*Sarcozona praecox*	Sarcozona		✓				
AMARANTHACEAE	*Hemichroa diandra*	Mallee Hemichroa					✓	
ANACARDIACEAE	**Schinus molle*	Pepper-tree						✓
BORAGINACEAE	**Echium plantagineum*	Salvation Jane						✓
BORAGINACEAE	**Heliotropium amplexicaule*	Blue Heliotrope						✓
CACTACEAE	**Austrocylindropuntia cylindrica*	Cane Cactus			✓			
CHENOPODIACEAE	*Atriplex vesicaria*	Bladder Saltbush	✓	✓	✓	✓		✓
CHENOPODIACEAE	*Dissocarpus biflorus var. biflorus*	Two-horn Saltbush	✓	✓	✓			✓
CHENOPODIACEAE	**Dysphania sp.*	Crumbweed/Rat Tails						✓
CHENOPODIACEAE	*Enchylaena tomentosa var.*	Ruby Saltbush						✓
CHENOPODIACEAE	*Maireana astrotricha*	Low Bluebush	✓					
CHENOPODIACEAE	*Maireana oppositifolia*	Salt Bluebush			✓		✓	
CHENOPODIACEAE	*Maireana pyramidata*	Black Bluebush	✓	✓	✓	✓		✓
CHENOPODIACEAE	*Maireana radiata*	Radiate Bluebush			✓			
CHENOPODIACEAE	*Maireana turbinata*	Top-fruit Bluebush			✓			
CHENOPODIACEAE	*Osteocarpum dipterocarpum*	Two-wing Bonefruit	✓	✓		✓		
CHENOPODIACEAE	*Rhagodia spinescens*	Spiny Saltbush						✓
CHENOPODIACEAE	*Salsola australis*	Buckbush			✓			✓
CHENOPODIACEAE	*Sclerolaena brachyptera*	Short-wing Bindyi	✓					
CHENOPODIACEAE	*Sclerolaena divaricata*	Tangled Bindyi	✓			✓	✓	✓
CHENOPODIACEAE	*Sclerolaena obliquicuspis*	Oblique-spined Bindyi		✓				
CHENOPODIACEAE	*Sclerolaena uniflora*	Small-spine Bindyi	✓					
CHENOPODIACEAE	*Sclerolaena ventricosa*	Salt Bindyi	✓	✓		✓		✓
CHENOPODIACEAE	*Tecticornia indica ssp. leiostachya*	Brown-head Samphire	✓			✓	✓	
CHENOPODIACEAE	*Tecticornia tenuis*	Slender Samphire	✓			✓	✓	✓
COMPOSITAE	*Brachyscome ciliaris var.*	Variable Daisy						✓
COMPOSITAE	**Calendula sp.*	Marigold						✓

Family name	Species name	Common name	Vegetation association					
			1	2	3	4	5	6
COMPOSITAE	*Minuria cunninghamii*	Bush Minuria			✓		✓	✓
CONVOLVULACEAE	*Convolvulus remotus*	Grassy Bindweed						✓
CRUCIFERAE	**Brassica tournefortii*	Wild Turnip	✓	✓				
CRUCIFERAE	**Carrichtera annua*	Ward's Weed	✓	✓	✓	✓	✓	✓
CRUCIFERAE	**Sisymbrium erysimoides*	Smooth Mustard			✓			✓
EUPHORBIACEAE	**Ricinus communis*	Castor Oil Plant						✓
GOODENIACEAE	*Scaevola collaris*							✓
GOODENIACEAE	*Scaevola spinescens*	Spiny Fanflower						
GRAMINEAE	*Austrostipa sp.*	Spear-grass			✓	✓	✓	✓
GRAMINEAE	**Avena barbata*	Wild Oats						✓
GRAMINEAE	**Cynodon dactylon var. dactylon*	Couch						✓
GRAMINEAE	**Hordeum leporinum*	Wall Barley-grass			✓			✓
GRAMINEAE	**Piptatherum miliaceum*	Rice Millet						✓
GRAMINEAE	*Rytidosperma caespitosum*	Common Wallaby-grass						✓
LEGUMINOSAE	*Acacia ligulata*	Umbrella Bush						✓
LEGUMINOSAE	*Acacia victoriae ssp. victoriae*	Elegant Wattle						✓
LEGUMINOSAE	**Medicago polymorpha var. polymorpha*	Burr-medic	✓	✓	✓	✓	✓	✓
LEGUMINOSAE	**Medicago truncatula*	Barrel Medic	✓		✓			✓
LEGUMINOSAE	**Vicia sativa ssp.*	Common Vetch						✓
LILIACEAE	**Asphodelus fistulosus*	Onion Weed			✓			✓
MYOPORACEAE	*Eremophila deserti*	Turkey-bush			✓			
SOLANACEAE	**Lycium ferocissimum*	African Boxthorn			✓			✓
THYMELAEACEAE	*Pimelea microcephala ssp. microcephala*	Shrubby Riceflower			✓			
ZYGOPHYLLACEAE	*Nitraria billardierei*	Nitre-bush			✓			✓
ZYGOPHYLLACEAE	*Zygophyllum aurantiacum/eremaeum*	Shrubby Twinleaf			✓			

Vegetation associations

1. *Atriplex vesicaria* Low Shrubland *+/- Maireana pyramidata +/- Tecticornia tenuis*.

2. *Sclerolaena ventricosa, Dissocarpus biflorus var. biflorus* Very Open Herbland

3. *Maireana pyramidata*, *Atriplex vesicaria* Shrubland
4. *Atriplex vesicaria* Low Shrubland +/- *Tecticornia sp*.
5. *Tecticornia ssp.* Low Open Shrubland
6. *Atriplex vesicaria*, *Tecticornia tenuis*, *Galenia pubescens var. pubescens* Low Open Shrubland

* = Introduced species.

Appendix 5. Location data for declared weed species (Datum WGS 84, Zone 53H).

Species name	Common name	Easting	Northing	Quantity	Map reference number
Lycium ferocissimum	African Boxthorn	764358	6395769	1	1
Austrocylindropuntia cylindrica	Cane Cactus	764365	6395765	3	2
Lycium ferocissimum	African Boxthorn	764695	6395817	1	3
Lycium ferocissimum	African Boxthorn	764671	6395990	1	4
Lycium ferocissimum	African Boxthorn	764594	6396453	1	5
Echium plantagineum	Salvation Jane	764594	6396453	5	6

Government of South Australia
Department of the Premier and Cabinet

Ref: 2017/01873.01 D17039505

Energy and Technical Regulation

Office of the Technical Regulator

Level 8, 11 Waymouth Street
Adelaide SA 5000

GPO Box 320
Adelaide SA 5001

Telephone: 08 8226 5500
Facsimile: 08 8226 5866

www.sa.gov.au/otr

10 October 2017

Scott Connell
Zen Technologies (Power and Energy) Pty Ltd
1284 South Rd
Tonsley SA 5042
By email: scott@clutchconsulting.com.au

Dear Scott,

RE: CERTIFICATE FOR FUTURE RENEWABLE GENERATION PROJECTS, IN COMBINATION WITH THE PLAYFORD UTILITY BATTERY PROJECT

Your proposal regarding the Playford Utility Battery Project has been assessed by the Office of the Technical Regulator (OTR) under Section 37 of the Development Act 1993.

Regulation 70 of the *Development Regulations 2008* prescribes if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

You explained that the Playford Utility Battery Project may proceed in the near future. You requested that – should further generation projects follow in the future – you should be able to count the Fast Frequency Response capability of this project towards the potential future developments.

In making a decision on your application, our office has taken the following information into account:

- Your email dated 7 October 2017 containing your proposal to achieve the required Fast Frequency Response

Government of South Australia
Department of the Premier and Cabinet

After assessing the information provided, I advise that approval is granted for the Playford Utility Battery Project (100 MW, 100 MWh), as well as for future projects to a limit of 195MW.

Please note that individual certificates from our office will still be required from our office for future generation projects. Our office will assess each individual project and account these projects against the capabilities of the proposed battery

Should you have any questions regarding this matter, please do not hesitate to call Reinhard Struve on (08) 8226 5879.

Yours sincerely

Rob Faunt
TECHNICAL REGULATOR

Energy and Technical Regulations

Level 8, 11 Waymouth Street Adelaide SA 5000 | GPO Box 320 Adelaide SA 5001 | DX541
Tel (+61) 8 8226 5500 | Fax (+61) 8 8226 5866 | www.dpc.sa.gov.au | ABN 83 524 915 929

Government of South Australia

Department for Energy and Mining

D18154963

Mr Joe Devries
Project Manager
SIMEC ZEN Energy Pty Ltd
PO Box 141
OAKLANDS PARK SA 5046

Email: jdevries@zenenergy.com.au

Dear Mr Devries

CROWN SPONSORSHIP PLAYFORD UTILITY BATTERY PROJECT

Thank you for your letter of 16 November 2018 requesting Crown Sponsorship under section 49 of the *Development Act 1993* to assist with SIMEC ZEN Energy's (SIMEC ZEN) proposed Playford Utility Battery Project (Project).

This Project has been considered within the South Australian Department for Energy and Mining (DEM) with input from the Department of Planning, Transport and Infrastructure, the Department for Environment and Water, the Environmental Protection Agency and the Technical Regulator. In principle, the Project is supported, recognising the possible environmental and community issues that will need to be addressed through the development assessment process.

On balance, the development of SIMEC ZEN's proposed Project has the potential to benefit South Australia and can be considered public infrastructure. Accordingly I, as Chief Executive of the DEM, will support the development and specifically endorse the Development Application to construct the Project comprising up to 100MW/100MWh of battery storage as a development of public infrastructure as required by section 49 of the *Development Act 1993* (the Act).

It is the responsibility of SIMEC ZEN to prepare all documentation as required by section 49 of the Act. All costs in the preparation of the Development Application, lodgement and any other subsequent action in relation to this Application are the responsibility of SIMEC ZEN.

The DEM makes no representations and gives no warranties in relation to the outcome of the Development Application or time that it takes to secure a planning outcome. It is SIMEC ZEN's responsibility to obtain all other statutory approvals, licences, connection agreements and permits from relevant authorities, manage community expectations and to fund the project. The South Australian Government makes no commitment to purchase any product or service related to the Project.

Government of South Australia

Department for Energy and Mining

A Development Application under this Crown sponsorship must be lodged with the State Planning Commission and is valid for 12 months from the date of this letter. If this is not achieved by that time, my support under Section 49(2)(c) of the *Development Act 1993* for SIMEC ZEN's Project will lapse.

If you have any questions regarding the preparation of the material to support this section 49 application, please contact Mr Mark Jackson on (08) 8429 2722 or via email: mark.jackson@sa.gov.au.

Yours sincerely

Paul Heithersay
CHIEF EXECUTIVE

12 / 12 / 2018

SOUTH AUSTRALIA

Government of South Australia
Department of Planning, Transport and Infrastructure

POLICY, STRATEGY AND PROGRAM DEVELOPMENT

Transport Assessment and Policy Reform

GPO Box 1533
Adelaide SA 5001

ABN 92 366 288 135

In reply please quote 2019/00344, *Process ID:*572834
Enquiries to Marc Hryciuk
Telephone (08) 7109 7877
E-mail dpti.luc@sa.gov.au

29 May 2019

State Commission Assessment Panel
C/- Ms Janine Philbey
Department of Planning, Transport and Infrastructure
GPO Box 1815
ADELAIDE SA 5001

Dear Ms Philbey,

SECTION 49 DEVELOPMENT ACT (CROWN DEVELOPMENT BY STATE AGENCIES) - REFERRAL RESPONSE

Development No.	660/V001/19
Applicant	Simec Zen Energy C/-AECOM
Location	Allotment 2 in DP 78595, Port Paterson Road, Port Paterson
Proposal	Playford Utility Battery Storage Facility: (a) establishment of a 100MW/100MWh (nominal) Battery Energy Storage System with up to 27 battery containers and invertor structures (including transformers and electrical equipment); (b) operational and support buildings; (c) substation; (d) electrical infrastructure; (e) transmission connection; and (f) associated site and civil works (including security fencing, lighting, carpark, access and internal roads, drainage and stormwater infrastructure). Access to the development site will be from the Port Paterson Road.

The above development proposal was referred to the Commissioner of Highways (CoH) by the State Commission Assessment Panel (SCAP) for advice to assist in its report to the Minister for Planning in accordance with the requirements of Section 49(7a) of the *Development Act 1993*.

The following response is provided in accordance with Section 49(7a) of the *Development Act 1993*.

CONSIDERATION

The subject proposal abuts Port Paterson Road, a local road under the care, control and management of the Port Augusta City Council. Port Paterson Road connects to Augusta Highway, an arterial road under the care, control and management of the CoH. The nearby section of Augusta Highway forms part of the National Land Transport Network and is designated as a Major Traffic Route, Primary Freight Route and Tourist Route under the Department of Planning, Transport and Infrastructure's (DPTI's) *'A Functional Hierarchy for South Australia's Land Transport Network.'* Augusta Highway has a posted speed limit of 110km/h in the vicinity of the Port Paterson Road junction, carries approximately 4,600 vehicles per day (20.5% commercial vehicles) and is a gazetted route for 36.5 metres long Road Trains.

The Traffic Impact Statement (TIS) for the proposal provides a reasonable overview of the potential access routes to the site, including the use of Port Paterson Road, Northern Power Station Road and the local road network from the Bowmans Intermodal Site 12km north of the site. It is understood that use of the Bowmans intermodal site is not supported by Council and that Council would more favourably consider the establishment of an intermodal site nearer to the development site. It is noted that the applicant has indicated that an intermodal site within the former Northern Power Station site may be possible, subject to further investigations.

Whilst the TIS has provided details of the potential daily vehicle movements and the number of heavy vehicle movements likely to be generated during the construction phase, the exact traffic impact of the construction phase is difficult to ascertain due to there being several options for bringing employees, equipment and materials to site. Consequently, a Construction Traffic Management Plan will be required to define the transport routes to be used, the traffic impacts on the adjacent road network and to identify what interventions will be required to enable safe access to the site.

The TIS indicates that given the narrow width of Port Paterson Road that heavy vehicles turning left or right from Augusta Highway onto Port Paterson Road may need to utilise the full width of Port Paterson Road to undertake these manoeuvres and is therefore not capable of facilitating the simultaneous two-way movement of heavy vehicles. The use of the Augusta Highway/Port Paterson Road junction in its current form by such vehicles will increase the potential for vehicular conflict at the junction, as well as result in damage to the edge of the road seal.

Whilst the use of temporary traffic control measures may be appropriate along Port Paterson Road (subject to Council consent), it will be necessary to upgrade the Augusta Highway/Port Paterson Road junction to safely cater for simultaneous two-way traffic (i.e. widening of the apron) and to provide shoulder sealing adjacent to the junction to ensure that left turning vehicles do not damage the edge of the road seal. In addition to the above, it is noted that the existing right turn treatment at this junction does not meet current standards and is not configured for long vehicles, thus this facility may not provide adequate protection for the volume of vehicles turning right into Port Paterson Road associated with the development. Consequently, consideration should be given to the conversion of this facility to a channelised right turn lane (CHR or CHR(s)).

With respect to the use of Northern Power Station Road for the movement of loads associated with the subject development, this road is gazetted for vehicles up to 36.5 metres long and therefore can be used for vehicles up to this size. However, as indicated by the TIS, it will be necessary for loads such as the transformers to be managed via permit from the National Heavy Vehicle Regulator. Notwithstanding this, in the event that an intermodal facility is established within the former Northern Power Station site, it will be necessary for the CTMP to consider how impacts on the Augusta Highway/Northern Power Station Road junction can be minimised (e.g. via scheduling of movements etc.).

ADVICE

DPTI is generally supportive of the proposed development. However, it is not possible to fully quantify the traffic impacts of the development at this point in time as there are several options being considered for bringing equipment and materials to the site. Accordingly, a Construction Traffic Management Plan will need to be developed for the construction period in consultation with the Port Augusta City Council and DPTI. Improvements to the Augusta Highway/Port Paterson Road junction will also be required.

Accordingly, the planning authority is advised to attach the following conditions to any approval:

1. Prior to construction within the site, a 'Construction Traffic Management Plan (CTMP)', prepared in consultation with the Commissioner of Highways and the Port Augusta City Council, shall be submitted for approval by the Minister for Planning. The CTMP shall address matters including, but not limited to the following:

   - Detail the impacts of construction traffic, as well as show all traffic devices to be utilised (including variable message signs) and any proposed traffic restrictions or modifications to road infrastructure required to facilitate movements to and from the site. The applicant shall notify DPTI's Traffic Management Centre on telephone 1800 018 313, prior to undertaking any works that would impact the arterial road network and contractor(s) shall complete a 'Notification of Works' form via the following link:

     https://www.dpti.sa.gov.au/contractor_documents/works_on_roads_by_other_organisations

   - Managing impacts to infrastructure within the road reserve.

   All access to the subject site shall be in accordance with the CTMP.

2. The Augusta Highway/Port Paterson Road junction shall be upgraded, with all required road works associated with the junction upgrading being designed and constructed in accordance with Austroads Guides/Australian Standards and to the DPTI's satisfaction. All associated costs (including project management and any necessary road lighting and drainage upgrades) shall be borne by the applicant. These road works shall be completed prior to occupation of the development.

   The applicant shall contact DPTI's Concept Planner, Mr Bonaventure Tan on telephone (08) 8648 5243, or via email at Bonaventure.Tan@sa.gov.au, to discuss the proposed road works prior to undertaking any detailed design. Furthermore, the developer shall enter into a 'Developer Agreement' to undertake the above works.

3. Any infrastructure within the road reserve that is demolished, altered, removed or damaged during the construction of the project shall be reinstated to the satisfaction of the relevant asset owner, with all costs being borne by the applicant.

The following note provide important information for the benefit of the applicant and is required to be included in any approval:

- In the event that Restricted Access Vehicles (including over-size and over-mass components) are proposed to be uitilised, the applicant must ensure that all necessary approvals/permits are obtained from the National Heavy Vehicle Regulator (https://www.nhvr.gov.au).

Yours sincerely,

for **MANAGER, TRANSPORT ASSESSMENT AND POLICY REFORM**
for **COMMISSIONER OF HIGHWAYS**

A copy of the decision notification form should be forwarded to dpti.developmentapplications@sa.gov.au

Northern and Yorke NRM Board Comment on Referral Application 3959 - 660/V001/19
Playford Utility Battery Storage Facility

SIMEC ZEN Energy is planning to develop a 100MW/100MWh (nominal) Battery Energy Storage System on land to the east of the former Playford A and Northern Power Stations, and to the south of the existing Davenport Substation at Port Paterson.

With regards to the referral there are areas for concern that have been addressed within the application document.

These include the western portion of the land section which intersects the Upper Spencer Gulf Wetland and is listed as no development will be undertaken on this area, (p16).

Within this area are Samphire vegetation associations which are a food source for the rare Elegant Parrots when seeds are ripe. While they don't rely exclusively on samphire as a food species, it is likely to be an important food resource at the end of summer/autumn when samphire fruits are generally ripe, and would be particularly important after breaking autumn rains when annual grass seeds on the soil surface mass-germinate and become unavailable to foraging granivores. While Elegant Parrots use a wide range of habitats, their density is greatest within areas of samphire. There are records of Elegant Parrot sightings in the vicinity of that site according to Atlas of Living Australia and Birdata.

Traffic management and the impact this may have on a wider area of the district, (p19).
The concern with traffic management is the earthworks being undertaken during the construction phase with the creation of unloading pad facilities during construction, and site preparation and levelling works for infrastructure installation and roads / parking.

The major issue of concern for the NYNRMB is the presence of weed populations on the site. These are listed on page 19 of Appendix E – Ecology Assessment.

Three of these weeds, Austrocylindropuntia cylindrica (Cane cactus), Lycium ferocissimum (African Boxthorn) and Echium plantagineum (Salvation Jane) are declared weeds within the Northern & Yorke Natural Resources Management Region. Lycium ferocissimum is also listed as a Weed of National Significance (WoNS). Another weed prevalent within the area is Cenchrus ciliarus (Buffel Grass), which is in highly invasive especially on disturbed ground, is present in the immediate area and a concern for the ecological communities on the site.

With any earthworks undertaken there is potential for soil disturbance to promote growth within the weed populations on the site. The removal of soil and plant materials from the site also presents risk for the spread of seed or plant material.

Proper plant, soil and debris management would need to be undertaken to ensure adequate hygiene practices to prevent the spread of seed or plant materials away from the site.

There should also be a weed management plan developed to prevent future re-infestations of these weed species on site.

Natural Resources Management Act 2004
Chapter 8 - Control of animals and plants
Part 2 - Control provisions

Division 1 - Specific controls

175 - Movement of animals or plants
(2) Subject to this Act, a person must not transport or move, or cause or permit to be transported or moved, on a public road within a control area for a class of animals or plants to which this subsection applies—
(a) an animal or plant of that class; or
(b) any animal, plant, soil, vehicle, farming implement or other produce, goods, material or thing carrying an animal or plant of that class.
Maximum penalty: $10 000.
Expiation fee: $500.

(3) Subject to this Act, a person who owns land within a control area for a class of animals or plants to which this subsection applies must not move, or cause or permit to be moved—
(a) an animal or plant of that class; or
(b) in the case of a class of plants any animal, plant, soil, vehicle, farming implement or other produce, goods, material or thing carrying a plant of that class,
from one part of the land to another part of that land that is not affected or infested with animals or plants of that class, or to any land within the control area.
Maximum penalty: $10 000.
Expiation fee: $500.

187 - Ability of Minister to control or quarantine any animal or plant
(2) A notice under subsection (1) may
(b) require the owner of any land or the occupier of any premises within the quarantine area to take measures (including the destruction of animals or plants), specified in the notice, that are, in the opinion of the Minister, necessary to control, or to prevent the spread of, the relevant animals or plants, or the spread of any disease;

SECTION 49 - REFERRAL

STATE COMMISSION ASSESSMENT PANEL
A COMMITTEE OF THE STATE PLANNING COMMISSION

Level 5, 50 Flinders Street
Adelaide SA 5000

GPO Box 1815
Adelaide SA 5001

Telephone: 08 7109 7060
ABN 92 366 288 135

http://www.saplanningcommission.sa.gov.au/scap

Reference: *2019/03160/01*
Contact Officer: *Simon Neldner*
Telephone: *7109 7058*
Email: *Simon.Neldner@sa.gov.au*

07 March 2018

Applicant:	Simec Zen Energy C/- AECOM
Application Number:	660/V001/19
Proposed Development:	Playford Utility Battery Storage Facility: (a) establishment of a 100MW/100MWh (nominal) Battery Energy Storage System with up to 27 battery containers and invertor structures (including transformers and electrical equipment); (b) operational and support buildings; (c) substation; (d) electrical infrastructure; (e) transmission connection; and (f) associated site and civil works (including security fencing, lighting, carpark, access and internal roads, drainage and stormwater infrastructure). Access to the development site will be from the Port Paterson Road.
Subject Land:	Lot 2, Port Patterson Road, Port Paterson

I write to advise that the State Commission Assessment Panel (SCAP) has recently received a copy of the proposed development described above, pursuant to Section 49 of the Development Act 1993.

Pursuant to section 49 (5), a copy of the development application is attached to this referral letter to afford Council the opportunity to provide a report on the abovementioned proposed development.

Councils attention is particularly drawn to the time allowed for reports under Section 49 (5) and (6).

49 (5) A council may report to the SCAP on any matters contained in a notice under subsection (4a).

(6) Where a notice is given to a council under subsection (4a), and a report from the council is not received by the SCAP within two months of the date of the notice, it will be conclusively presumed that the council does not intend to report on the matter.

When replying please attach a copy of this letter with your details below.

If you have any questions relating to this matter please contact Simon Neldner of this office by telephone on 7109 7058 or email Simon.Neldner@sa.gov.au

Yours faithfully,

For **STATE COMMISSION ASSESSMENT PANEL**

For **STATE COMMISSION ASSESSMENT PANEL**

I advise that this Council has **the attached** report to make on the proposed development described below.

Michael Walmesley
Reporting Officer

18 April 2019
Date

Thank you for the opportunity to provided comment on this proposal.

The Port Augusta City Council in principle supports the proposed development; however, it requests that the following engineering comments be taken into consideration in the deliberation of this application:

Access to site:

1. Construction of roadway (Driveway) on Port Paterson Road to be constructed to suit vehicle usage type. A suitable pavement thickness will be applied and compacted to a minimum of 95% relative modified compaction.
2. Material used to be at least PM2 standard.
3. Stormwater drainage of current roadway falls to the south, the placement of a second driveway will require the placement of concrete culverts and headwalls at an approved location or have the driveway constructed in a way so as to not restrict water flow.

Stormwater:

1. Stormwater Management plan to be provided to Council for approval at detailed design stage. Any design that allows stormwater disposal onto Council land i.e. road reserve will require the approval of Council.

Construction:

1. The impact of the above vehicles will have a significant impact to both existing road conditions and residents within the area (not just what is driven past). The roadway (Port Paterson Road) will be required to be monitored and maintained (section of Port Paterson Road) during the construction phase. Activity during the summer period will require full access to watercarts due to extra traffic numbers due to the development. Council only grades unsealed roadways every 6 weeks and any required grading activity outside of this will be the responsibility of the Developer. Council would be requesting Developer to submit a road management plan on how the section of Port Paterson Road will be maintained during this period.

Transport:

1. Proposed construction over 12 months which will involve trafficking of heavy vehicles (total 480) – At this stage no approvals for vehicles of class B-Double or Road Train.
2. Daily work vehicle totals to be approximately 50-200 vpd. It is unknown if these totals include only start and end of day activity. It would be anticipated that these total could represent an increase of traffic movements by 5x.

Cable Route:

1. The documentation does not include details contained to the cable route. Further clarification and approvals under Section 221 will be required as part of this development.

Traffic Impact Statement:

1. Increased volume of traffic turning on and off Augusta Highway with the inclusion of heavy vehicles. What considerations have been made in relation to this intersection with Port Paterson Road and the Augusta Highway and what strategies are to be put into place to make sure safe passage of vehicles.
2. It is unlikely that the average weekday traffic volumes would be 185vpd as stated within the TIS along Port Paterson Road. Existing vehicle use is assumed to be much less and increasing traffic movements will have significant issues.
3. No approval for Over Size Over Mass (OSOM) will be considered unless the Development considers and treats the impact this will have on Port Paterson Road.
4. Council would not approve the use of the Bowman's Intermodal site along Depot Creek Road. It would however look to support another Intermodal location nearer the site only to restrict movements on Port Paterson Road.
5. TIS has stated that between 25-100 workers will be onsite yet the report states numbers between 50-200 – Can these figures be clarified.
6. Equipment deliveries state 291 26m-B-Double loads (does this include both way transport or should this total be doubled). Without B-Double approval, these figures need to be altered to reflect what will be occurring.
7. The use of B-Double or road train activity will be determined by the response in relation to the maintaining of the roadway during the construction phase.
8. Mitigating impacts of additional traffic will need to include more details on the suppressing of dust. A similar development (larger) on another similar development has had to have 2 watertruck operating on the roadway during the construction phase. The wording within this section needs to address the need for fulltime watering and how and whom will make this determination. Grading and maintaining due to increased traffic will need clarification as it has not been mentioned within this section.
9. Councils consider that the increased traffic movements around the Port Paterson Road and Augusta Highway area are an increased risk that needs further investigation. Considerations for traffic turning left onto Port Paterson Road from Augusta Highway (heavy vehicles) will impact traffic that is travelling behind and the same is considered for the right turn off Augusta Highway onto Port Paterson Road will cause significant traffic issues. These are not an issue for Council as the roadway is under DPTI and thus Council is requesting commentary regarding these activities from DPTI so that any risks to residents within the area have been looked at.

DEVELOPMENT ACT, 1993
S49/S49A – CROWN DEVELOPMENT
REPRESENTATION ON APPLICATION

Applicant:	Simec Zen Energy
Development Number:	660/V001/19
Nature of Development:	Playford Utility Battery Storage Facility
Zone / Policy Area:	Industry Zone
Subject Land:	Lot 2, Port Patterson Road, Port Paterson (CT 6109/256)
Contact Officer:	Simon Neldner
Phone Number:	7109 7058
Close Date:	19 April 2019

My Name: Catherine Way My phone number: 0458 152 755

Primary method(s) of contact: Email: catherine.way@dpenergy.com

Postal Address: _____ Postcode: _____

You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard by the State Commission Assessment Panel in support of your submission.

My interests are: *(please tick one)*

- ☐ owner of local property
- ☐ occupier of local property
- ☑ a representative of a company/other organisation affected by the proposal
- ☐ a private citizen

The address of the property affected is:

The Port Augusta Renewable Energy Park as described in the development approval 660/V008/15 Postcode _____

My interests are: *(please tick one)*

- ☐ I support the development
- ☑ I support the development with some concerns
- ☐ I oppose the development

The specific aspects of the application to which I make comment on are: _____

I: *(please tick one)*

- ☑ wish to be heard in support of my submission
- ☐ do not wish to be heard in support of my submission *(Please tick one)*

By: *(please tick one)*

- ☑ appearing personally
- ☐ being represented by the following person *(Please tick one)*

Signature: C Way

Date: 18/4/19

Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide, SA 5001 /or **Email: scapadmin@sa.gov.au**

Your Ref: 660/V007/19
Our Ref: DPEACW_SimecRep_Apr2019

The Secretary
State Commission Assessment Panel
GPO Box 1815
Adelaide SA 5001

DP Energy Australia Pty Ltd
2/53 Mabel Street (PO Box 1451)
Atherton QLD 4883
T: 07 4091 2163
E: catherine.way@dpenergy.com

By Email: scapreps@sa.gov.au

18 April 2019

Dear Alison Gill,

Re: Development number 660/V001/19, SIMEC Zen Energy proposed Playford Utility Battery Storage Facility

I write to inform you of a number of concerns DP Energy has regarding the SIMEC Zen Battery proposal.

In principle, DP Energy is not opposed to this project and recognises the valuable contribution batteries (whether stand alone or embedded within a renewable project) can make to the increased penetration of renewable energy on the network. The concerns relate to the potential impacts of the development on our adjacent Port Augusta Renewable Energy Park (PAREP) approved under 660/V008/15 development approval - granted on 25 November 2015.

Transmission Line

Section 3.1.9 of the development assessment report states:

"The battery storage facility will be connected to the ElectraNet transmission network via a proposed 1 kilometre underground high voltage cable. The cable will connect the site substation to the ElectraNet Davenport substation which is located 550 metres to the north of the site.

The transmission cable is proposed to be located within the Port Paterson Road reserve then connecting into the substation, through land owned by ElectraNet surrounding the substation. A map showing the proposed transmission line route is provided in Figure 7.

The final location of the transmission cable will be determined as part of the detailed design phase.

Appropriate easements for the transmission cable are proposed to be established with Council and ElectraNet.

It is noted that the underground transmission cable is a form of development exempt from approval pursuant to Schedule 14 (c) of the Development Regulations 2008."

The cable location illustrated in Figure 7 of SIMEC Zen's development application shows its export route following along the Port Paterson road reserve in the same location as that of the PAREP export cable.

As noted in the SIMEC Zen submission, underground transmission cables are exempt from approval under the Development Regulations and usage agreements are thus addressed via local approvals. In order to secure approval from the Port Augusta City Council for its own cable route DP Energy was required to consider and reach agreement with other users including addressing possible interaction with Sundrop Farm's sea water pipes.

Should SIMEC Zen's underground cable remain in its current location without consideration of the DP cable route it will significantly jeopardise PAREP's ability to deliver its project.

Construction and Cumulative Impact

Dust and contamination of the panels is a significant issue for solar energy projects and depending on the timing of the SIMEC Zen proposal, dust arising from construction may have an impact on the solar yield of DP Energy's PAREP if appropriate mitigation measures are not implemented. DP Energy would seek clarification of dust treatment measures arising from on-site construction and road usage of the project.

In the event, that the timing of the construction of both the SIMEC Zen project, and PAREP is coincident there is also potential for cumulative impacts on dust, and traffic access and congestion for both DP Energy's PAREP project and adjacent users.

As the PAREP Decision Notification Form has conditions and obligations under its approval that may be impacted on by the SIMEC Zen proposal. Namely:

- Air quality and dust
- Traffic and access

DP Energy requests information on how SIMEC Zen proposes to address the impact of dust from the development on adjacent users and cumulative impact of dust and traffic if both projects are constructed at the same time.

Yours sincerely,

Catherine Way
Director, Country Manager

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2 May 2019

State Commission Assessment Panel
C/- Dr Simon Neldner
Department of Planning, Transport and Infrastructure
GPO Box 1815
ADELAIDE SA 5001

Dear Simon

RE: 660/V007/19 - SIMEC Zen Energy - Proposed Utility Battery Storage Facility - Response to Agency, Council and Public Submission.

AECOM Australia Pty Ltd (AECOM) has been engaged by SIMEC Zen Energy (the applicant), to provide planning advice and support in respect to their proposed battery storage facility at Lot 2 Port Paterson Road, Port Paterson.

The purpose of this letter is to respond to the submissions received by the State Commission Assessment Panel (SACP) as a result of the referral and notification process that has be undertaken pursuant to the *Development Act 1993*.

We note that responses were received from the following:

- Northern and Yorke Natural Resources and Management Board (NYNRMB)
- The Port Augusta City Council (the Council)
- One (1) public representor (DP Energy)

Our response to comments raised by the above respondents is provided below.

1.0 NYNRMB

The NYNRMB provided a formal response to the development proposal that was received on 23 April 2019.

Their response included background ecological information regarding the western portion of the land that intersects with the Upper Spencer Gulf Wetland. The NYNRMB reinforced the importance of maintaining this area, noting the presence of Samphire vegetation, that provides a food source for the rare Elegant Parrot.

The areas of greatest samphire density coincide with the most sodic and saline soils, towards the back (western end) of the allotment amongst the sand dunes. The relatively small footprint of the proposed development ensures that these areas will be avoided. As such, it is not anticipated that the proposed development will directly impact the Samphire vegetation or the Elegant Parrots.

The primary concern of the NYNRMB is the potential for the spread of weed populations identified within the site. The NYNRMB suggest that this risk can be mitigated through proper plant, soil and debris management to ensure adequate hygiene practices prevent the spread of seed or plant materials away from the site. The NYNRMB suggest that a weed management plan be developed to prevent future re-infestations of weed species on site.

The applicant is committed to undertaking the proposed development in an environmentally responsible manner that minimises the spread of weed species. The applicant will exercise due consideration to the mitigation hierarchy, which will include weed management and preservation of as much ecological value as possible. Further details on weed management practices will be provided within the Construction Environment Management Plan (CEMP).

2.0 Council Referral

The Council has provided comments in relation to the proposed development.

Council's submission confirms their 'in principal' support for the proposal, which states "*The Port Augusta City Council in principal supports the proposed development; however, it requests the following engineering comments be taken into consideration in the deliberation of this application."*

Many of the engineering comments relate to technical specifications, which are generally resolved at the detailed design phase. Notwithstanding, we have addressed each of Council's comments below

2.1.1 Access to Site and Stormwater Management

Council expressed their preference for construction of roadway (driveway) on Port Paterson Road to be constructed to suit vehicle usage type. More specifically, Council requested a suitable pavement thickness be applied and compacted to a minimum of 95 percent relative modified compaction and comprise materials of at least a PM2 standard. Council also requested the applicant considers appropriate stormwater drainage design and management.

The applicant notes Council's site access and stormwater management requirements and will proactively work with Council to ensure an agreeable solution is achieved. SIMEC Zen Energy is intending to incorporate Council's requirements into the Engineering Procurement Construction (EPC) contractor's work specifications and a Stormwater Management Plan will be prepared and submitted to Council as part of the detailed design phase.

2.1.2 Construction

Council requested that SIMEC Zen Energy submit a Road Management Plan that details how the section of Port Paterson Road impacted by the proposal will be maintained during the construction period. The applicant is committed to maintaining the standard of the road condition throughout construction and has confirmed that they have initiated conversations with their EPC contractor regarding road maintenance and dust suppression requirements.

It is proposed that road maintenance and dust suppression requirements will be detailed in the CEMP and Traffic Management Plan (TMP). Both of these will be provided to Council for review and comment during the detailed design phase. It is proposed that these plans will ensure the proposed control measures also consider the timing of any other development projects within the broader locality of the site and include a comprehensive approach to road maintenance and dust suppression.

2.1.3 Transport

Council noted that at this stage there are no approvals for vehicles of class B-Double or Road Train associated with the proposed development. SIMEC Zen Energy is aware of these requirements outlined by Council. In collaboration with the EPC contractor, the applicant has identified that the relocation of the Playford generator transformers from the old Playford Power Station site as the only Oversize Overmass (OSOM) loads for the project.

SIMEC Zen Energy will ensure that the EPC contractor obtains the necessary permits and approvals (i.e. National Heavy Vehicle Regulator, DPTI and Council) for any OSOM loads, B-double or Road Train deliveries required for the project. This will occur in the detailed design phase.

Council raised concerns in relation to the impact of daily work vehicle movements on Port Paterson Road, which was estimated at approximately 50-200 vehicles per day (vpd) within the development application.

The work vehicle totals included in the development application were based on early estimates provided by the project contractor. The numbers provided reflect both the start and end of day activity with the crude assumption of one (1) person per vehicle.

Updated estimates provided by the project contractor anticipate a workforce of between 25 (average) to 50 (peak). This would equate to a maximum of 100 vpd during peak periods. It is anticipated that these numbers would likely be significantly reduced due to journey management measures typically employed for the project such as the deployment of buses and car pooling.

The project TMP will be developed in consultation with the Council and will detail the control measures to mitigate risks associated with an increase in local traffic movements.

2.1.4 Cable Route

Council noted that further clarification and approvals under Section 221 of the *Local Government Act 1999* will be required in relation to the proposed underground transmission cable, which will be located within a local road reserve.

The final location of the cable route will be confirmed as part of the detailed design phase and a separate Section 221 application will be lodged for this component of the proposed development. SIMEC Zen Energy has already commenced discussions with the Council to obtain the relevant agreements and approvals and Council has indicated that SIMEC Zen Energy should anticipate receiving a letter of 'in-principle' support for the proposed siting of the underground cable by Friday 3 May 2019.

2.1.5 Traffic Impact Statement

Augusta Highway Intersection

Council queried what considerations have been made in relation to the Port Paterson Road and Augusta Highway intersection and what strategies are to be put in place to ensure safe passage of vehicles.

As discussed above, a project TMP will be developed in consultation with Council and DPTI that will outline comprehensive control measures. The applicant anticipates that the TMP will include project enforced temporary control measures such as a left turn only from Port Paterson Road to the Augusta Highway, as well as project enforced speed limits to mitigate disturbance to nearby residents and developments.

The applicant recognises that there is only one access road to the proposed development site that is shared by both residents and other developers. As such, due consideration needs to be given to ensure cumulative traffic impacts are minimised.

Port Paterson Road Traffic

Council queried whether the anticipated average weekday traffic volumes of 185 vehicles per day (as stated within the Traffic Impact Statement (TIS)) along Port Paterson Road is realistic.

In response, we reiterate that in the absence of local traffic count data the TIS outlines "*up to 25 dwellings are serviced by Port Paterson Road, which carries an estimated averaged weekday traffic volume of 185 vehicles just west of its intersection with the Augusta Highway. This estimate is based on a rate of 7.4 daily vehicle trips per dwelling obtained from surveys undertaken from NSY Roads and Maritime Services in 2013 which is generally considered the Australian Standard for estimating trip generation*".

Regardless of the specific number of existing movements per day, the applicant recognises that the construction phase of this project will result in a temporary measurable increase in vehicle movements on Port Paterson Road. As a result, a TMP will be developed in consultation with Council to outline comprehensive control measures that mitigate risks associated with an increase in traffic movements.

Bowman's Intermodal Site

The applicant acknowledges that Council would not support the use of the Bowman's Internodal site along Depot Creek Road, however, Council would look to support another intermodal location closer to the site that would restrict movements on Port Paterson Road.

SIMEC Zen Energy can confirm that intermodal transport is no longer being considered by the project logistic consultant and all Heavy Vehicle loads would instead be off-loaded in Port Adelaide to a holding yard prior to delivery to site. This approach will include the use of light weight skel trailers to reduce the transport impacts on Port Paterson Road residents by limiting the overall total weight of vehicle movements and number of vehicle movements associated with the proposed development.

Number of workers on site

Council requested clarification in relation to perceived discerptions relating to worker numbers stated in the application documents. Council notes that the development application states worker numbers to be both between 25-100 and between 50-200.

It is noted that 25 -100 figure relates to worker numbers whilst the 50-200 figure relates to the number vehicle trips (i.e. two trips per day per employee).

As previously stated, the preliminary estimates of workers associated with the project was conservative and the applicant can now confirm that the current 'best estimate' is 25 workers (average), with a peak of 50 workers for short term durations to complete mechanical and electrical activities.

B-Double loads

Council raised questions in relation to B-Double load numbers outlined in the TIS, particularly given B-Double approvals have not been obtained.

The current status is that the project is not likely to use B-Doubles and therefore the estimates will need to be revised once the transport strategy is confirmed during the detailed design stage. It is considered that appropriate mitigation strategies associated with the anticipated heavy vehicle movements can be addressed in consultation with Council as part of the TMP.

Notwithstanding the above, if B-Doubles are required to be used, the appropriate approvals will be obtained.

Heavy vehicle use and road maintenance

Issues raised by Council in relation to the use of B-Doubles or road trains and maintenance of the roadway, including dust suppression measures, have been addressed in sections 2.1.2 and 2.1.3 above.

Increased traffic movements

Council considers that the impacts of the increased traffic movements along Port Paterson Road and Augusta Highway require further investigation.

The TIS submitted with the application assessed the impacts associated with the project related traffic movements on these roads. This assessment concluded that, allowing for the implementation of mitigation measures and compliance with relevant permit conditions, the impacts from traffic and traffic related activities are considered acceptable for the area in which the project is proposed.

As discussed above, the applicant intends to work with Council and DPTI to ensure appropriate mitigation strategies are incorporated into the project TMP to assist minimise associate traffic impacts.

3.0 Representor

During the public notification period, one (1) representation was received from DP Energy.

DP Energy states that they *"are not opposed to this project"* and recognise the valuable contribution batteries can make to South Australia's electricity network.

The representation acknowledges that DP Energy has an interest in the proposed development, noting they obtained Development Approval to construct the Port Augusta Renewable Energy Park (PAREP) on land adjacent to the subject site. We note that DP Energy's project site is extensive (in excess of 800 hectares), with its northern boundary located approximately one kilometre to the south of the proposed battery site.

The concerns raised by the representor related to potential impacts to their project associated with:

- Conflicts with the location of the underground transmission cables
- Dust and traffic impacts

The concerns raised have been addressed below.

It is noted that the applicant has undertaken extensive pre-lodgement consultation with adjoining residents, which included door knocking, sending consultation letters and public information sessions. It is considered that the limited level of response to the public consultation process indicates a high level of comfort and support for the proposed development within the local community.

3.1.1 Underground cable location

DP Energy raised concerns regarding the location of SIMEC Zen Energy's proposed underground cable that will connect the battery storage facility to the ElectraNet transmission network. The transmission cable is proposed to be located within the Port Paterson Road reserve then connecting into the Davenport substation, through land owned by ElectraNet surrounding the substation. As detailed within the planning report, the final location of the underground transmission cable will be determined as part of the detailed design phase. However, DP Energy is concerned that the location of the underground cable may conflict with the DP Energy cable route and may jeopardise development of the PAREP.

We reiterate that the development of an underground transmission cable is an exempt form of development pursuant to Schedule 14(c) of the *Development Regulations 2008* and therefore this aspect of the proposal does not require an approval under the *Development Act 1993.*

The location of the underground cable will be confirmed and assessed by Council under Section 221 of the *Local Government Act 1999*. At the appropriate time, Council will assess the location of the proposed underground cable and give due consideration to the location of existing and planned infrastructure within the area.

The applicant has commenced discussions with Council and other current asset owners (SA Power Networks, SA Water and ElectraNet) regarding the location of SIMEC Zen Energy's underground cable within the road reserve. Council anticipates it will provide conditional in-principle support for the proposed cable location on 3 May 2019. We note that one of the conditions of Council's in-principal support relates to ensuring the final location of the cable does not affect DP Energy's proposed cable. SIMEC ZEN Energy has contacted DP Energy to discuss this matter further.

As a result of the above, this issue will be further considered and addressed as a part of Section 221 application and assessment process.

3.1.2 Construction impacts

DP Energy noted that dust arising from construction of SIMEC Zen Energy's project may impact on the solar yield of the PAREP project. In addition, DP Energy suggested that should construction of the SIMEC Zen Energy project and PAREP coincide, there is also potential for cumulative impacts for dust and traffic. In response to DP Energy's request for additional information regarding potential dust and traffic issues associated with the proposed development, we reiterate that extensive detail on this matter will be provided within the CEMP and TMP.

SIMEC Zen Energy intends to work with Council to ensure any potential impacts to locality are appropriately managed and mitigated.

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4.0 Conclusion

Based on our review of the comments from NYNRMB, Council and the one representor, we maintain our view that the proposed development represents appropriate and orderly development that warrants favourable consideration for approval.

In particular, we note that Council has carefully reviewed the proposed development and has expressed its in principal support for the proposed development, subject to a number of technical engineering matters that will be addressed during the detailed design phase. This is a common approach for a development of this nature and scale. The applicant intends to continue to work with Council to address the engineering matters and will ensure all other relevant approvals and agreements are obtained.

We also wish to reiterate that the one representation received from DP Energy similarity expresses general support for battery storage projects, and the comments raised relate to matters that will be addressed during the detailed design phase and through the Section 221 Local Government Act approval process.

The applicant is committed to undertaking the proposed development in an environmentally responsible manner that minimises the spread of weed species and aligns with the priorities of the NYNRMB. The applicant has confirmed that due consideration will be exercised for the mitigation hierarchy, which will include weed management and preservation of as much ecological value as possible. Further details on these matters will be provided within the CEMP.

We believe that the proposal is an appropriate form of development that is consistent with the relevant provisions of the Development Plan, and will make a positive contribution to the locality. As such, the proposal warrants approval by SCAP.

We confirm our desire to be heard in support of our application and will attend at the State Commission Assessment Panel meeting, at which the application is being considered.

Please do not hesitate to contact me should you require any further clarification in relation to this submission.

Yours faithfully

Tom Hateley
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Philbey, Janine (DPTI)

From: Hateley, Tom <Tom.Hateley@aecom.com>
Sent: Wednesday, 5 June 2019 4:57 PM
To: Philbey, Janine (DPTI)
Cc: Thomas Hill; mark.sinclair@simecenergy.com.au; PlayfordUtilityBatteryProjec; Rex Pong; Ross Anderson; Burman, Brenton; Neldner, Simon (DPTI)
Subject: RE: DA Number: 660/V001/19

Hi Janine,

We have reviewed the comments provided by the Marc Hryciuk from DPTI – Transport Assessment and Policy Reform (DPTI Transport) and our response is provided below.

DPTI advised that they are generally supportive of the proposed development, however, have advised that the planning authority attach 3 conditions to any approval.

We understand that the 3 recommended conditions are likely to be included within the planning assessment recommendation provided to SCAP.

The applicant has concerns with proposed Condition 2 which relates to the requirement to upgrade the Augusta Highway/Port Paterson Road junction. In our opinion this condition is invalid and is for an improper planning purpose, due to the following:

- DPTI Transport are not a formal referral agency pursuant to the *Development Act 1993*
- The condition does not relate to the application and is outside the scope of the development (i.e. it relates to an existing public road intersection located approximately 3 km from the site)
- The condition appears to be imposed to resolve an existing design defect in DPTI's current road network (i.e. design of the existing right turn lane from the northerly direction)
- The condition is open ended and undefined in terms of required scope of works and cost.
- DPTI acknowledges that it is not possible to fully quantify the traffic impact at this point in time as there are several options being considered for bringing equipment and materials to site. As the full impacts are undefined the condition is not valid. It is noted that the TIS provided with the application considered a worst case scenario, as a result, other appropriate mitigation measures may be available to resolve DPTI's concerns, such as, the implementation of appropriate temporary traffic management practices during the construction period. It is noted that after the construction stage the operation of the facility will result in negligible traffic generation/impacts.
- The nature of the condition raises concerns in relation to fairness and equity given the proposed works will benefit existing property owners/occupiers that utilise the intersection, future developers/developments, particularly within the Industry Zone and wider community.

With regards to the above we consider it inappropriate and not required to include Condition 2 as an approval condition.

We note that the applicant has no objection to the inclusion of the other two DPTI Transport conditions which relate to the preparation of a CTMP (condition 1) and the requirement to reinstate infrastructure within the road reserve if damaged (condition 3). It is considered that the requirement for any modifications to road infrastructure to facilitate movements to and from the site can be assessed and addressed as part of the CTMP, which will be prepared in consultation with the Commissioner of Highways and the Port Augusta Council.

If you require any clarification in relation to the above please give me a call.

Regards

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INDUSTRY ZONE

Introduction

The objectives and principles of development control that follow apply in the Industry Zone shown on Maps PtAu/5, 8 to 11, 13 to 19, 22 to 25, 30 to 32, 37 and 38. They are additional to those expressed for the whole of the council area.

OBJECTIVES

Objective 1: A zone primarily accommodating a wide range of industrial, warehouse, storage and transport land uses.

Objective 2: Development that contributes to the desired character of the zone.

DESIRED CHARACTER

The Industry Zone will be an intensively developed, high quality, landscaped industrial area. The zone will accommodate a wide range of industrial, commercial and business activities including manufacturing, warehousing, transport and distribution. A portion of the zone north of Railway Terrace at Port Augusta East will be developed by SA Water for a waste water treatment plant. The zone will be protected from the intrusion of residential and other inappropriate uses which will reduce the land resource for industrial uses or create potential for land use conflicts. High impact industrial uses will be located well away from residential areas.

Development within the Industry Zone will achieve generous set-backs from roads and residential development in adjoining zones in order to minimise visual amenity and environmental impacts. The appearance of the zone will be improved by additional tree planting and landscaping which 'break-up' views to buildings and structures from adjoining roads. Where industrial development is proposed adjacent to a more sensitive use, vegetated buffers will be provided within individual development sites.

Development north of Eyre Highway in Port Augusta West will proceed in a coordinated manner once appropriate levels of essential infrastructure have been provided. In addition, development will ensure that any impact on the efficient operation of Eyre Highway is minimised while also reducing the potential for negative impacts on the Residential Zone to the south.

Industrial buildings will be designed to meet the needs of the intended use, however the mass and scale of the buildings will be located and designed to minimise the visual impact as viewed from public roads and surrounding properties.

Building mass will be well articulated, using smaller building modules, variation in the facades and varying roof form and pitch. Buildings materials and colours will reduce the apparent bulk of the buildings and will reflect the nature of the surrounding area, particularly for sites that are more publicly visible.

PRINCIPLES OF DEVELOPMENT CONTROL

Land Use

1 The following forms of development are envisaged in the zone:

Industry
Public infrastructure in the form of a waste water treatment plant
Transport distribution
Warehouse.

2 Development listed as non-complying is generally inappropriate and not acceptable unless it can be demonstrated that it does not undermine the objectives and principles of the Development Plan.

Form and Character

3 Development should not be undertaken unless it is consistent with the desired character for the zone.

4 Development in Port Augusta West should be in accordance with the Port Augusta West Structure Plan Map PtAu/1 (Overlay 1) Enlargement C and should:

(a) proceed in a coordinated manner once appropriate levels of essential infrastructure have been provided;

(b) ensure that future stages of development are able to be effectively and efficiently serviced by essential infrastructure;

(c) protect identified sites of Aboriginal Heritage significance;

(d) limit the number of additional access points to the Eyre Highway while also ensuring that any new intersections operate on a left-in/left-out basis only;

(e) create drainage lines and detention basins to manage stormwater flows both within and outside the zone;

(f) ensure that a minimum 100 metre separation distance is achieved to existing or future residential development to the south of Eyre Highway.

5 Development should be set back at least 8 metres from any road frontage, except where fronting a Primary or Secondary Arterial Road in which case development should be set back at least 20 metres.

6 In areas where a uniform street setback pattern has not been established, buildings should be set back in accordance with the following criteria (subject to adequate provision of car parking spaces and landscaping between buildings and the road):

(a) buildings up to a height of 6 metres should be sited at least 8 metres from the primary street alignment;

(b) buildings exceeding a height of 6 metres should be sited at least 10 metres from the primary street alignment;

(c) where an allotment has two street frontages, no building should be erected within 3 metres of the secondary street alignment.

7 Building facades facing land zoned for residential purposes should not contain openings or entrance ways that would result in the transmission of noise that would adversely affect the residential amenity.

8 Any plant or equipment with potential to cause an environmental nuisance (including a chimney stack or air-conditioning plant) should be sited as far as possible from adjoining non-industrially zoned allotments, and should be designed to minimise its effect on the amenity of the locality.

9 Development on land adjoining a residential zone should ensure that a 50 metre vegetated buffer is provided along the zone boundary.

10 Advertisements and advertising hoardings should not include any of the following:

(a) flashing or animated signs;

(b) bunting, streamers, flags, or wind vanes;

(c) roof-mounted advertisements projected above the roofline;

(d) parapet-mounted advertisements projecting above the top of the parapet.

Land Division

11 Land division should create allotments that:

(a) are of a size and shape suitable for the intended use;

(b) have an area of not less than 2000 square metres, unless intended for a specific purpose consistent with the zone provisions and for which a lesser site area requirement can be demonstrated;

(c) have a frontage to a public road of at least 25 metres.

PROCEDURAL MATTERS

Complying Development

12 Complying developments are prescribed in Schedule 4 of the *Development Regulations 2008*.

Non-complying Development

13 Development (including building work, a change in the use of land, or division of an allotment) for the following is non-complying:

Amusement machine centre
Community centre
Consulting room

Dwelling, except where the development is:

(a) ancillary to and in association with industrial development

(b) located on the same allotment

Educational Establishment, except where the development is:

(a) ancillary to and in association with industrial development

(b) located on the same allotment

Horticulture
Hospital
Hotel
Intensive animal keeping
Motel
Nursing home

Office, except where the development is:

(a) ancillary to and in association with industrial development

(b) located on the same allotment

Pre-school
Place of worship
Residential flat building
Shop or group of shops, except where the gross leasable area of the development is less than 80 square metres
Tourist accommodation

Public Notification

14 Categories of public notification are prescribed in Schedule 9 of the *Development Regulations 2008*.

Further, the following forms of development are designated:

Category 2

Dwelling ancillary to, and in association with, industrial development
Educational establishment ancillary to, and in association with, industrial development
Office ancillary to, and in association with, industrial development
Shop or group of shops with a gross leasable area of less than 80 square metres

Infrastructure Policy Area

OBJECTIVES

Objective 1: Primarily a policy area for the provision of infrastructure.

Objective 2: Infrastructure facilities and land required for infrastructure facilities preserved from the encroachment of incompatible land uses.

Objective 3: Development that contributes to the desired character of the policy area.

DESIRED CHARACTER

The policy area comprises the land that has been set aside specifically to accommodate new SA Water waste water treatment works required to service Port Augusta East and the surrounding areas.

Development will be designed and sited in a suitable location to minimise potential impacts and to be compatible with the surrounding locality.

PRINCIPLES OF DEVELOPMENT CONTROL

Land Use

1 The following forms of development are envisaged in the policy area:

Drainage system, including stormwater detention basin
Sewerage infrastructure
Waste water treatment plant.

2 Development should be of a high standard of appearance, and be designed and sited in a location to minimise potential impacts on the amenity of the locality.

3 Development should not be undertaken unless it is consistent with the desired character for the policy area.

Appendix C Development Plan Zoning Maps