Appendix G:

Stormwater Management Plan

Stormwater Management Plan

Cobden Battery Energy Storage System (BESS)

Cobden BESS Pty Ltd

Level 11, 88 Tribune Street, South Brisbane QLD 4101

Prepared by:

SLR Consulting Australia

SLR Project No.: 620.0413534.00001

14 May 2026

Revision: 3.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	13 February 2025	CD	NWB	NWB
2.0	20 March 2025	CD	NWB	NWB
2.1	06 May 2026	MS	NWB	NWB
3.0	14 May 2026	MS	NWB	NWB

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Cobden BESS Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Table of Contents

Tables

Figures

1.0 Introduction

SLR Consulting has been engaged by Cobden BESS Pty Ltd to develop a Stormwater Management Plan (SMP) associated with the proposed development of a Battery Energy Storage System (BESS) located at 89 Cobden-Port Cambell Road, Cobden, VIC 3266 (Lot 1 and Lot 2 of TP86359) (the Project). Details of the Subject Site and proposed development are provided in **Section 2.0.**

This assessment involves the analysis of the operational phase stormwater quality and quantity characteristics of the Subject Site and its catchment, including the quantification and mitigation of potential adverse impacts due to the Project.

This assessment has been undertaken in accordance with the following plans and guidelines:

- Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO, 1999) (per condition 23)
- EPA Urban stormwater management guidelines, Publication 1739.1, June 2021
- Victorian Planning Provisions
- Corangamite Shire Planning Scheme (2025)
- MUSIC Modelling Guidelines Version 3 (Water by Design, 2018)

As part of the water quality assessment, a concept “treatment train” has been developed, using the principles of Water Sensitive Urban Design (WSUD), with pollutant export modelling undertaken to assess the performance of the proposed design.

A stormwater quantity assessment has also been undertaken, involving the development of a hydrologic model of the site catchment and conceptual sizing of the detention basin.

1.1 Terminology

The areas of investigation and assessment discussed within this report for the Project include:

- *the Project* – the proposed Cobden BESS;
- *Subject Site* – consisting of Lot 2 LP34716 and Lot 2 PS817143;
- *Project Area* – the area as marked in **Figure 2** associated with the Project within the Subject Site. This consists of all compounds and equipment within the Project boundary fence including the BESS compound, Substation compound, O&M Buildings, Control Room, Switch Room and internal roads.

2.0 Site Characteristics

2.1 Existing Site

The Project, shown in **Figure 1,** is located at 89 Cobden-Port Cambell Road, Cobden, within the Shire of Corangamite, Victoria. The site is approximately 2.5 km south of Cobden town. The indicative infrastructure limits are approximately 2.4 ha, within a total developable area of 8.0 ha. Of this, 1.7 ha drains to the stormwater management system.

The Subject Site is cleared and undeveloped open paddocks. The land is primarily used for grazing, with the ground surface degraded by livestock. Cobden-Port Campbell Road forms the western boundary of the Subject Site, with the remaining boundaries being predominantly large rural grazing lots, similar in nature to the Subject Site.

The existing level at the Subject Site is approximately 134.2 to 136.8 mAHD. The river bed east of the Subject Site is at approximately 36m AHD, and the bed level of the nearest tributary is approximately 56 mAHD. The topography is relatively steep (10 %) between the Subject Site and the Curdies River tributary.

0 100 200 m

Coordinate System:	GDA2020 MGA zone 54
Scale:	1:18300 at A3
Project Number:	\Projects
Date:	24-Apr-2026
Drawn by:	MS

LEGEND

- Roads
- Watercourses
- 5m contours
- Subject Site
- BESS layout
- BESS Battery Area
- Stormwater Management System Catchment

ADVERTISED PLAN

COBDEN BESS
STORMWATER MANAGEMENT PLAN

PROJECT LOCATION

FIGURE 1

\\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.041534.00001 Cobden BESS - Phase 1\06 SLR Data\01 GIS\GIS\Cobden BESS_flooding.qgz

2.2 Proposed Development

2.2.1 Project Details

The Project, presented in **Figure 2,** consists of the Cobden Battery Energy Storage System (BESS) located at 89 Cobden-Port Cambell Road, Cobden, VIC 3266 (Lot 1 and Lot 2 of TP86359) (the Project).

The Project involves:

- A BESS with capacity of 75MW / approximately 300MWh at the point of connection, comprising battery units, inverters, transformers, substation and ancillary infrastructure.
- The BESS will be connected into the 66 kilovolt (kV) sub-transmission line which runs from Cobden Zone Substation to Camperdown Zone Substation in a line-in-line-out configuration. Powercor, as the network provider, will facilitate effective integration into the existing power grid; this application relates solely to activities occurring within the Subject Site.
- New driveway and crossover access from Cobden-Port Campbell Road.
- Associated ancillary infrastructure including operations & maintenance building/storage warehouse, security fencing, CCTV security system, landscaping, access and internal road, water tanks, temporary parking.
- Decommissioning of the BESS facilities at end of life (EOL).

Notes

Battery plant: Cobden BESS
Location: Victoria, Australia

Rated Power: 101.2 MW (75MW Grid Import/Export Capacity)
Battery container: 20ft Shipping Container
Storage inverter: 4600.0 kVA
Power conversion system: 4.6 MVA, 0.69/33.0kV
Number of battery containers: Up to 88
Number of inverters: 22
Number of power conversion systems: 22
Apparent power: 101.2 MVA
Power factor (storage inverter): 1.000

All infrastructure has at least 19m Asset Protection Zone (APZ) to the fence and vegetation screening will be external to the fence.

All dimensions are in meters unless otherwise stated.

Legend

- Battery Area
- Roads
- Fences
- O+M Buildings
- Substation area
- MV Switchroom
- Tanks
- Stormwater Management
- Screening 5m from fence, no planting within 1m of fence
- Proposed Sub-Transmission Line Route
- Proposed Access Route

REV	DESCRIPTION	BY	DATE
05	PRELIMINARY	SC	07-04-2026
04	PRELIMINARY	SC	25-03-2026
03	PRELIMINARY	SC	13-03-2026
02	PRELIMINARY	SC	27-01-2026
01	PRELIMINARY	SC	14-01-2026
00	PRELIMINARY	SC	24-12-2025

FOR INFORMATION ONLY

Australian Renewable Energy Services

PROJECT: Cobden BESS

DRAWING: GENERAL LAYOUT

SCALE:	SHEET:
1:1000	1 / 2
REVISION:	DATE:
05	07-04-2026

DIN A3

2.2.2 Site Stormwater Management Measures

Management of stormwater quality and quantity for the Project is proposed to incorporate a treatment train including:

- an OceanProtect JellyFish pollutant trap
- a stormwater basin incorporating bio-retention filter media in the base
- a swale downstream of the basin, discharging to the legal point of discharge.

The proposed basin has been sized to provide detention volume for runoff from the 1.7 ha of the Project area that drains to the stormwater management system. Stormwater from this area will be directed to the basin through site grading. The remaining Project area (0.7 ha out of the 2.4 ha infrastructure area) consists of permeable paddock, and it is unlikely to generate additional runoff. The design may be updated at later stages to incorporate a stormwater pit and pipe network.

The proposed conceptual basin design details are provided in **Table 1** which are conceptually sized only.

Table 1 Proposed Concept Basin Design Details

Parameter	Bioretention Basin
Total footprint (m^2)	550
Batter Slope	1 in 3
Detention Storage Volume (m^3)	300
Overflow Weir Width (m)	3.0
Overflow Weir Crest Stage (m)	1.55
Low flow pipe diameter (mm)	100
Low flow pipe invert stage (mm)	100
Peak Storage Depth 1% AEP event (m)	1.72
Filter Media Depth (mm)	0.5
Extended Detention Depth (mm)	1500

3.0 Stormwater Quality Assessment

3.1 Methodology

The stormwater quality treatment system proposed to mitigate the post-development pollutant loads has been developed in accordance with the: Urban Stormwater Best Practice Environmental Management (1999); EPA Urban stormwater management guidelines, Publication 1739.1 (2021); and to meet the requirements of the Corangamite Catchment Management Authority relating to water quality.

A stormwater quality analysis including pollutant export modelling using the MUSICX software has been undertaken to assess the performance of the proposed treatment train.

3.2 Stormwater Management Design Objectives

Stormwater quality quantitative objectives from the EPA Urban stormwater management guidelines, Publication 1739.1 (2021) have been adopted for the operation phase of the Project as detailed in **Section 3.3**. The objectives are consistent with the Urban Stormwater Best Practice Environmental Management (CSIRO, 1999).

3.3 MUSIC Modelling

A Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model (version MUSICX 1.30.0) has been prepared to assess the performance of the treatment measures and estimate post-development pollutant loads. The MUSIC model has been developed using a lumped catchment approach in accordance with the MUSIC Modelling Guidelines (Water by Design 2018). The treatment train performance has been assessed against the targets described in EPA Urban stormwater management guidelines, Publication 1739.1. These specify the pollutant removal targets of the key pollutants:

- 80% of total suspended solids (TSS)
- 45% of total phosphorous
- 45% of total nitrogen; and,
- 70% gross pollutants/litter.

3.3.1 Meteorological Data

The rainfall and evapotranspiration data adopted in the model is listed in **Table 2.** The rainfall data was taken from the BoM, Cobden (Post Office) weather station (090021), approximately 0.7 km from site. The evapotranspiration data was taken from Durdidwarrah Station (087021), approximately 110 km from the Subject Site.

Table 2 Meteorological Data

Parameter	Value
Model Time Step	6 minutes
Modelling Period	11-April-2011 to 07-April-2021
Mean Annual Rainfall	835.1 mm
Annual Evapotranspiration	985.5 mm

Six-minute rainfall data and daily evapotranspiration data from the Storm Updated, JCO application was used in the analysis. All available data was used over the 10 years, which is

representative of the site including wet and dry years and mean rainfall in accordance with the MUSIC Modelling Guidelines.

3.3.2 Catchment Breakdown

A lumped catchment approach, as described in the MUSIC Modelling Guidelines, has been adopted for the assessment. The modelled catchment area was mapped from **Figure 2** and it has been modelled as an independent catchment. Due to its location at a high elevation, the topography subsequently steepens towards the Curdies River. There is likely to be some sheet flow from the local catchment, but this will flow downstream towards the Curdies River and is not likely to affect the Project area significantly. Diversion drains incorporated into the project design, would prevent this sheet flow from entering the Project area.

The modelled catchment comprises the 1.7 ha that drains to the stormwater basin. It consists of impervious surfaces including batteries, internal roads and other infrastructure, and has been modelled as 95% impervious. The remaining Project area (0.7 ha) will either remain undisturbed or be landscaped as pervious area. The modelled catchment is detailed in **Table 3**.

Table 3 MUSIC Model - Catchment Breakdown

Catchment	Area (ha)	FI (%)
Stormwater Management System Catchment (as shown in **Figure 1**)	1.7	95

The model included an Urban Industrial source node to represent the catchment area, imperviousness and associated land use, as the most appropriate to reflect the proposed post-development use of the Subject Site.

The recommended rainfall-runoff parameters for Industrial land use were applied, as recommended in the MUSIC Modelling Guidelines. The adopted parameters are shown in **Table 4.**

Table 4 Source Node Rainfall-Runoff Parameters

Parameter	Adopted Value
Impervious Area – Rainfall Threshold (mm/day)	1
Pervious Area – Soil Storage Capacity (mm)	120
Pervious Area – Initial Storage (% of capacity)	25
Pervious Area – Field capacity (mm)	80
Pervious Area – Infiltration Capacity coefficient - a	200
Pervious Area – Infiltration Capacity coefficient - b	1
Groundwater Properties – Initial Depth (mm)	10
Groundwater Properties – Daily Recharge rate (%)	25
Groundwater Properties – Daily Baseflow Rate (%)	5
Groundwater Properties – Daily Deep Seepage Rate (%)	0

3.3.3 Proposed Treatment Train

The proposed treatment train, as outlined in **Section 2.2,** was incorporated into the MUSIC Model. The following treatment nodes were used:

- OceanProtect JellyFish Treatment Node
- Bio-retention Basin
- Swale

The MUSIC Model schematisation is illustrated in **Figure 3.**

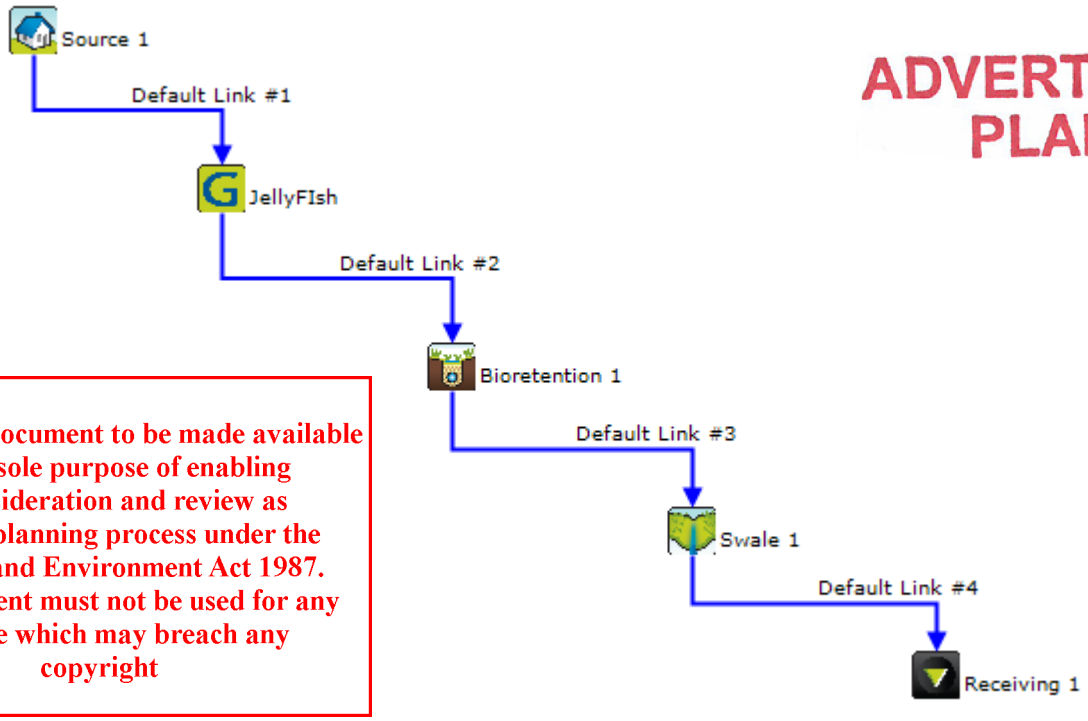

Figure 3 MUSIC Model schematisation

Conceptual design details of the proposed OceanProtect JellyFish treatment node, bio-retention basin and swale are shown in **Table 5**, **Table 6** and **Table 7**.

Table 5 Treatment Node Parameters - OceanProtect JellyFish Treatment Node

Parameter	OceanProtect JellyFish Treatment
Low flow bypass (m^3/s)	0
High flow bypass (m^3/s)	0.008

Table 6 MUSIC Treatment Node Parameters - Bio-retention Basins

Parameter	Bioretention Basin
Surface Area (m^2)	550

Parameter	Bioretention Basin
Filter Area (m^2)	100
Extended Detention Depth (m)	1.5
Filter Media Depth (m)	0.5
Saturated Hydraulic Conductivity (mm/h)	100
TN content of filter media (mg/kg)	800
OP content of filter media (mg/kg)	55
Overflow weir width (m)	3

Table 7 MUSIC Model Treatment Node Parameters – Swales

Parameter	Swale
Length (m)	100
Bed Slope (%)	2
Base Width (m)	1
Top Width (m)	5
Depth (m)	0.5
Vegetation Height (m)	0.25
Exfiltration Rate (mm/hr)	0

3.3.4 Results

The results of the MUSIC model taken from the receiving node are outlined in **Table 8.**

Table 8 Music Model Results

Pollutant	Sources	Residual Load	% Reduction Target	% Reduction	Objective met
Total Suspended Solids (kg/yr)	1618	121.1	80	92.52	Yes
Total Phosphorous (kg/yr)	2.585	1.123	45	56.54	Yes
Total Nitrogen (kg/yr)	19.35	9.423	45	51.31	Yes
Gross Pollutants (kg/yr)	368.1	0	70	100	Yes

The results of the modelling in **Table 8**, indicate that the proposed treatment trains has been conceptually sized to meet the pollutant removal targets in accordance with the stormwater quality performance objectives from the EPA Urban stormwater management guidelines, Publication 1739.1.

4.0 Stormwater Quantity Assessment

4.1 Methodology

A Stormwater Quantity assessment has been undertaken to investigate changes to the runoff volume and peak flow rate due to the development of the Subject Site resulting from an increase in impervious area, and to develop a strategy to provide mitigation of discharge rates to existing (pre-development) conditions.

A hydrologic model of the site has been developed using the Watercom DRAINS software (version 2024.11.9103.14755). The model has been used to calculate rainfall runoff characteristics of the catchment draining to the Stormwater Management System (as described in **Section 3.0**) for the pre-development and post-development conditions.

4.2 Hydrologic Modelling

4.2.1 Model Scenarios

Two model scenarios have been developed:

- **Pre-development** – This scenario represented the catchment in existing conditions prior to any development and was used to establish a baseline hydrologic regime
- **Post-development** – This scenario represented the catchment following the proposed development, including a proposed on-site detention basin.

Similar to the MUSIC modelling, the Stormwater Management System catchment area has been modelled as a contained catchment, given the Project area is located in a high topography with subsequent slope towards the Curdies River. To assess the impact of the development within the catchment boundary, changes in peak flows were modelled by applying variations in pervious and impervious surface areas.

4.2.2 Pre-Development Scenario

The pre-development catchment data are presented in **Table 9**.

Table 9 DRAINS Model – Pre-development scenario catchment data

Catchment area (ha)	Pervious Area (PA) (%)
1.7	95

4.2.2.1 Intensity-Frequency-Duration Data

Location specific catchment data including Areal Reduction Factors, storm losses, temporal patterns and pre-burst rainfall depths has been sourced from the ARR Data Hub. Baseline design rainfall intensity-frequency-duration (IFD) data has been sourced from the Bureau of Meteorology (location 38.344 S, 143.060 E), shown in **Table 10**.

Table 10 Design Rainfall Intensity-Frequency-Duration Data, rainfall depth (mm)

Duration (min)	Annual Exceedance Probability (AEP)						
	63.20%	50%	20%	10%	5%	2%	1%
5	3.82	4.33	6	7.21	8.45	10.2	11.5
10	5.6	6.34	8.83	10.7	12.6	15.3	17.6
15	6.77	7.66	10.7	12.9	15.2	18.6	21.4

Duration (min)	Annual Exceedance Probability (AEP)						
	63.20%	50%	20%	10%	5%	2%	1%
20	7.65	8.65	12	14.5	17.2	21	24.1
25	8.36	9.46	13.1	15.9	18.7	22.8	26.2
30	8.97	10.1	14.1	17	20	24.3	27.9
45	104	11.8	16.3	19.6	23	27.9	31.8
60	11.5	13	18	21.6	25.4	30.6	34.8
90	13.3	15	20.7	24.9	29.1	34.9	39.5
120	14.7	16.6	23	27.5	32.1	38.5	43.6
180	17	19.2	26.6	31.8	37.2	44.6	50.4
270	19.7	22.3	30.9	37	43.3	52	59.1
360	21.9	24.8	34.4	41.3	48.3	58.3	66.5

4.2.2.2 Losses

The Initial Loss (IL) – Continuing Loss (CL) has been utilised to assess the proposed stormwater management of the catchment and determine flows. Losses used in the hydrological model have been sourced from the ARR Data Hub (location 38.344 S, 143.060 E), as shown in **Table 11**.

Table 11 Global Storm Pervious Surface Losses

Initial Loss (mm)	Continuing Loss (mm/h)
23.0	4.6

4.2.2.3 Design Storm Events

The DRAINS model has been simulated for the 1% AEP event as the major storm and the 20% AEP event as the minor storm with the temporal patterns for storm durations ranging from 10 minutes to 6 hours. For each storm duration and AEP combination, the adopted temporal pattern is that which produced a peak flow closest to the mean of the range of peak flows produced by the ten temporal patterns. **Table 12** shows the DRAINS model results for 20% AEP Peak flows and1% AEP peak flow rates.

Table 12 DRAINS Model – Pre-development peak flow rates

Catchment Area (ha)	20% Peak Flow rates (m^3/s)	1% Peak Flow rates (m^3/s)
1.7	0.027	0.237

4.2.3 Post-Development Scenario

Following the establishment of the DRAINS model, a post-development model scenario has been created. The post-development model incorporates the proposed changes to the catchment due to the development of the site. The changes included increased impervious areas and proposed detention basins. The catchment data for the post-development scenario is shown in **Table 13**.

Table 13 Drains Model – Post-development scenario catchment data

Catchment area (ha)	Effective Impervious Area (%)	Pervious Area (%)
1.7	95	5

Increases in impervious areas generally result in the generation of stormwater runoff volume and increased peak flows. Without appropriate mitigation measures, the Project will result in an increase in stormwater runoff volume and peak discharge being generated by the catchment area.

The proposed basin has been conceptually sized to provide detention of stormwater runoff generated by the development with the preliminary basin details provided in **Table 1**.

4.3 Results

Peak design flow rates for the pre-development and post-development model scenarios estimated using the DRAINS Model are illustrated in **Table 14**.

Table 14 DRAINS Model Results – Pre-development vs Post-development

	Peak Flow rates (m^3/s)		
AEP Event	Pre	Post	Difference
1%	0.237	0.217	-0.020
20%	0.027	0.023	-0.004

The model results demonstrate that the peak discharge for the 20% AEP post-development conditions have been calculated to be lower than the pre-development condition peak discharge for the modelled design storm events. The 1% AEP post-development peak discharge has been calculated as not exceeding the pre-development 1% AEP peak discharge modelled design storm events.

The results of the modelling indicate that the Project is not anticipated to adversely impact flooding or drainage performance of downstream properties.

Peak depths in the basin, including the proposed detention depth of 0.3 metres are provided in **Table 15**.

Table 15 DRAINS Model results – Peak Basin Depths and Elevations

AEP Event	Depths (m)	Elevation (mAHD)
1%	1.72	135.39
20%	1.61	135.28

5.0 Conclusion

This Stormwater Management Plan was undertaken for Cobden BESS for the proposed BESS facility at 89 Cobden-Port Cambell Road, Cobden, Victoria.

A conceptual Stormwater Management Plan was developed for the Project area. As part of the assessment, stormwater quality and quantity conditions in relation to the Project were investigated.

The outcome of the water quality assessment showed the proposed stormwater management treatment train consisting of an OceanProtect JellyFish Generic treatment node, bioretention basin and swale drain will provide sufficient pollutant removal in accordance with the requirements of the Urban Stormwater Best Practice Environmental Management Guidelines (CSIRO, 1999) (per condition 23), EPA Urban stormwater management guidelines, Publication 1739.1, June 2021 and the Victorian Planning Provisions.

The outcomes of the stormwater quantity assessment illustrated that the Project will not adversely impact flooding or drainage performance of downstream properties.

Making Sustainability Happen