Our ref: M1932
QA: sj.ap

28 August 2023

Office of the Coordinator-General
Department of State Development
PO Box 15517
CITY EAST QLD 4002
Via: *sdainfo@coordintorgeneral.qld.gov.au*

Attention: David Stolz – Office of the Coordinator-General

Dear Sir/ Madam,

Re: Change to Development Permit for Material Change of Use (AP2022/017) – Warehouse (Bulk Storage) and Transport Depot on land described as Lots 15 to 17 on SP338023 and Lot 26 on SP338024 and located at 39, 77, 91 and 95 Penelope Road, Stuart

Milford Planning act on behalf of Sizer & Cogill Bulk & General Carriers Pty Ltd, in relation to SDA Development Approval AP2022/017 for Material Change of Use – Warehouse (Bulk Storage) over the abovementioned land.

The abovementioned Development Approval was issued by the Office of the Coordinator General on 19 April 2023 (refer **Attachment** 1). The purpose of the correspondence is to outline proposed changes to how stormwater quality is managed for the approved development and request the removal of the requirement to plant street trees.

Current Approval and Stormwater Quality Management Plan

Premise prepared a Stormwater Quality Management Plan to support the abovementioned Development Approval and this report is specifically referenced in Condition 1 of AP2022/017 as an approved report (refer **Attachment 2**).

The approved Stormwater Quality Management Plan (SQMP) prepared by Premise outlined that the approved development has been designed to incorporate a combination of BioBasins, Swales, SPEL Stormsacks, and SPEL Hydrosystems (or approved equivalents) to provide stormwater quality treatment which achieves the State Planning Policy (SPP) Stormwater Management Design Objectives. The subject site catchments are illustrated in **Figure 1**.

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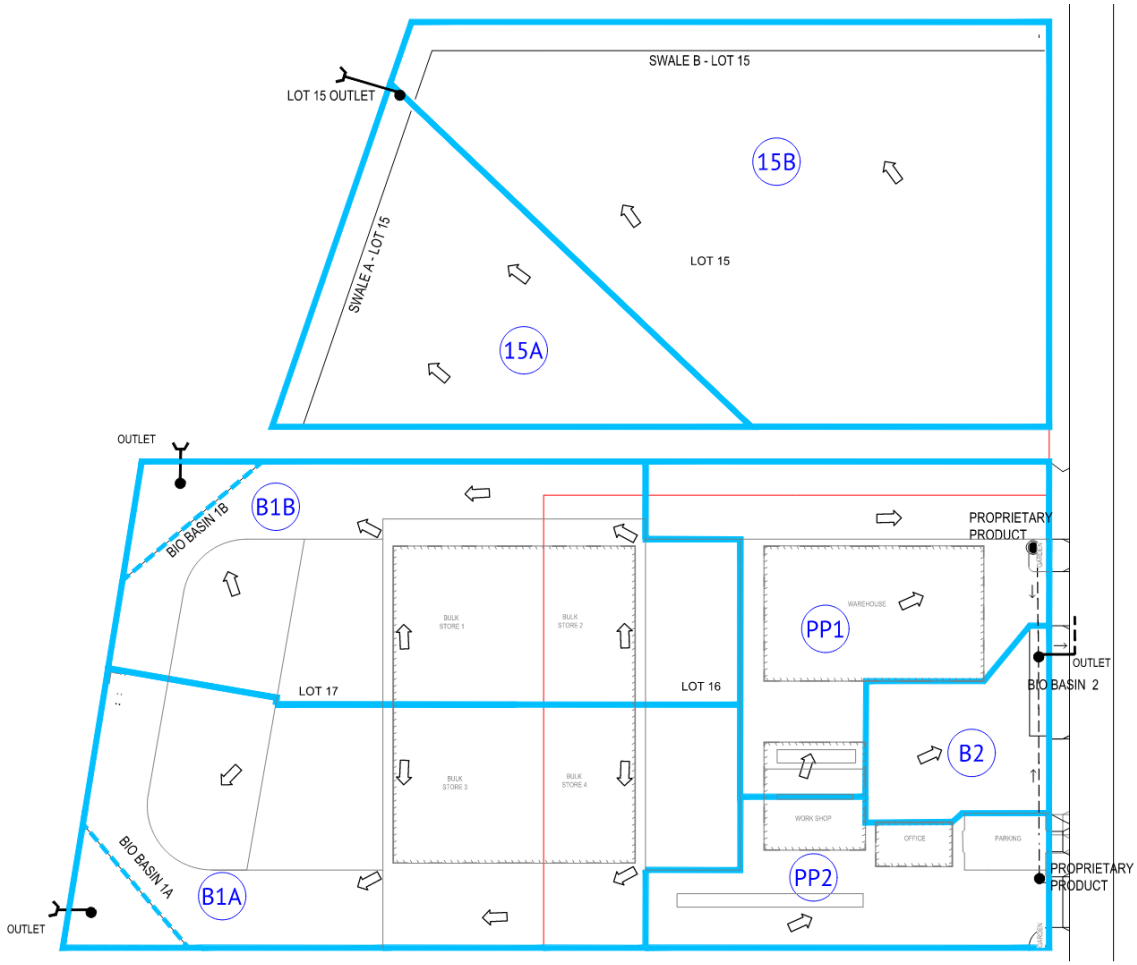

Figure 1 Proposed catchment of subject site (extract from Premise's SQMP)

The catchments for Lot 15 (catchments 15A and 15B) grade toward the north and west into swales, which leave the site via an outlet in the northwest and drain to an existing watercourse. The swales are pervious, whilst the remainder of the lot will be impervious. Therefore, the fraction impervious for these catchments has been calculated from these areas.

The catchments for Lot 16 and Lot 17 involve:

- Catchment B-1A takes half of the bulk storage centre roof run-off, half the silo storage centre, and half of the runoff from the roadway and manoeuvring areas. The catchment outlets into a Bioretention Basin 1A in the south-western corner of the site and is outletted into an existing drain;
- Catchment B-1B takes half of the bulk storage centre roof run-off, half the silo storage centre, and half of the roadway and manoeuvring areas runoff. The catchment outlets into a Bioretention Basin 1A in the north-western corner of the site and is outletted into an existing drain;
- Catchment PP1 includes the flow from the bitumen entrance road, the warehouse roof, part of the workshop roof, and part of the concrete surface around the warehouse. The flows for this catchment are ultimately directed to a tertiary treatment device (Proprietary Product SPEL Hydrosystem 2500 -14 cartridges- 56LPS or approved equivalent) after

most of the surface drainage is treated via primary treatment devices SPEL Stormsacks (or approved equivalent);

- Catchment PP2 includes the flow from the concrete egress road and surrounds, the office roof, the carparking area, and part of the workshop roof. The flows for this catchment are ultimately directed to a tertiary treatment device (Proprietary Product SPEL Hydrosystem 2500 -14 cartridges- 56LPS or approved equivalent) after a majority of the surface drainage is treated via primary treatment devices SPEL Stormsacks (or approved equivalent); and
- Catchment B2 includes some surface flow from the concrete area between the office, carpark, workshop, and warehouse. The flows are treated via a small bioretention basin. The outlet for the eastern side of lots 16 and 17 is via a pipe in this bio basin.

Revised Stormwater Quality Management Plan

Langtree Consulting completed a review of the stormwater management regime for the whole of the western precinct of Cleveland Bay Industrial Park and have also reviewed the recommendations and conclusions of the Premise SQMP for Lots 15, 16 and 17, subsequent to the CG issuing Development Approval AP2022/017. As a result of the findings of the abovementioned reviews completed by Langtree Consulting, a new SQMP has been prepared for Lots 15, 16 and 17 (refer **Appendix 3**). The review concluded that the bio basins within Lot 17 are not required and therefore have been deleted, refer to Figure 2 below.

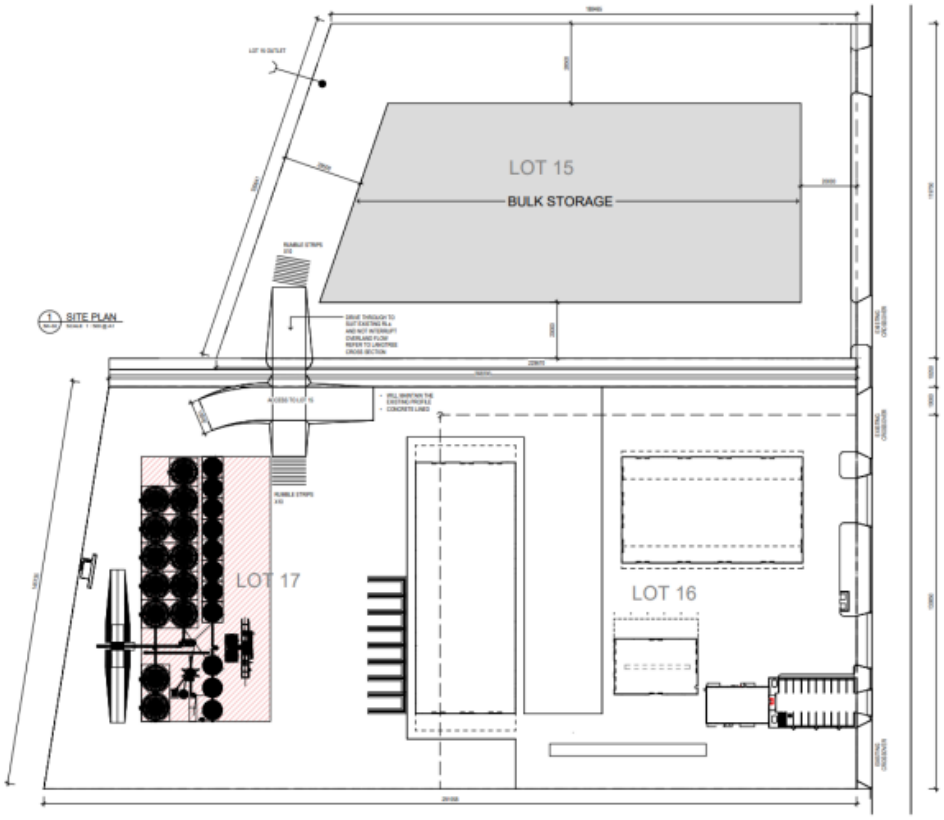

Figure 2 – Proposed Amended Stormwater Layout

The revised SQMP, outlines that the stormwater catchments will be treated by individual lot treatment systems, which will be constructed by landowners prior to discharging to existing and constructed naturally grassed open drains within the balance area (Lot 24). This area is shown in **Figure 3** in red. Roadway/easement areas that will be treated via the existing and constructed naturally grassed open drains is shown in blue. It is noted that stormwater from Lots 16 and 18 fall towards Penelope Road and have been assumed to be treated by individual lot system by the lot owners before entering individual field inlet pits which discharging into the positive stormwater network prior to release to the naturally grassed open drains in the balance area.

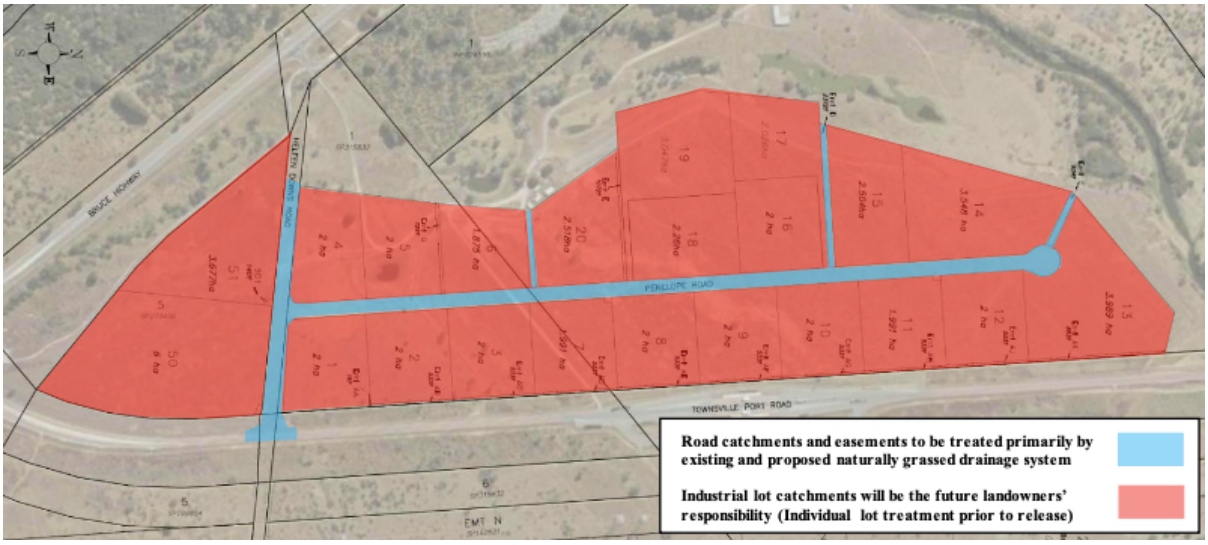

Figure 3 – Existing Stormwater Treatment Catchments

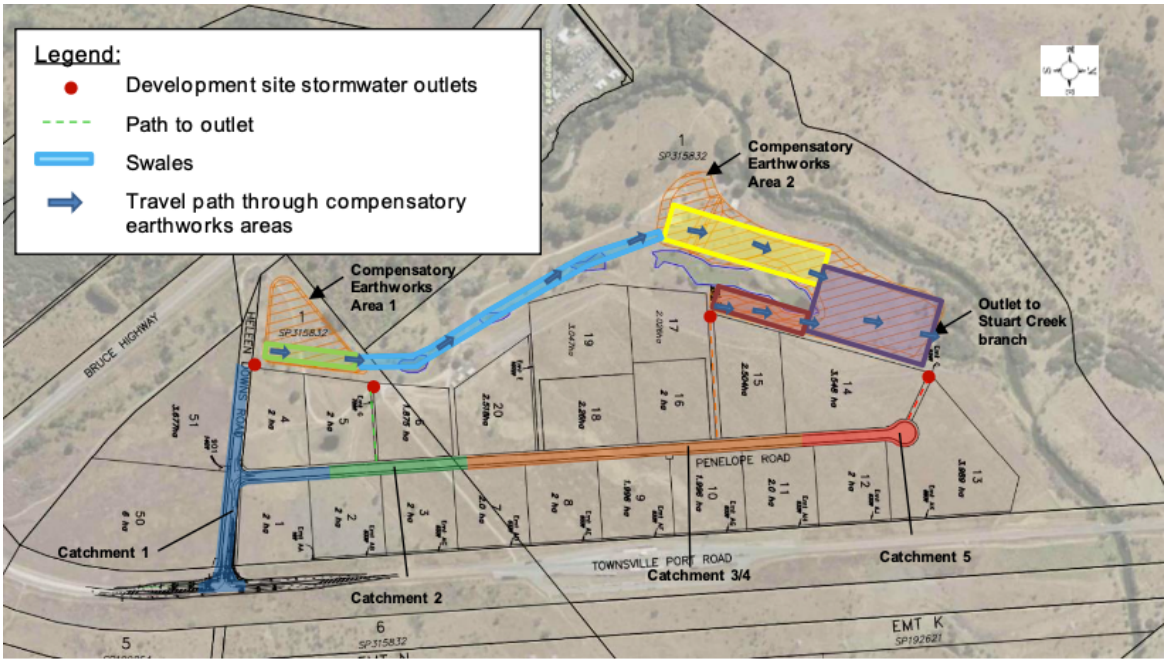

Figure 4 – Revised Modelled Drainage Plan for CBIP (Western Precinct)

Approved Lots 15, 16 and 17

With regards to Lots 15, 16 and 17, these lands have now been modelled in accordance with **Figure 5** below:

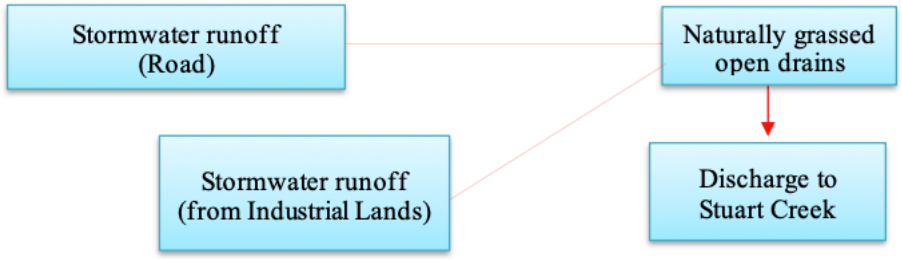

Figure 5: Lots 15 to 17 Stormwater Treatment Train

The objective of SQMP was to assess the best practice stormwater quality management measures across the development site and the entire Western Precinct. The subject site has been modelled as 90% impervious, to accommodate any future development of the subject site. This report has reviewed the pollutant parameters of the subject site and investigated the impact of the proposed Western Precinct development on downstream properties and receiving waters. Based on the assessment, the WQO's specified for TSS, TN, TP, GP can be achieved with the existing and proposed naturally grassed open drains. Based on the revised SQMP, the bio basins have been deleted.

Landscaping (Street Trees)

Further to discussions with the CG regarding the requirement to plant street trees, at no stage during the Development Approval for the reconfiguration of the Western Precinct were street trees mentioned or conditioned to be installed. At this stage of the development due to their never being a requirement for trees previously a corridor for street trees has not been allowed for. In addition, this development also has a pressure sewer main in the footpath.

Based on TCC standard drawing SD-005 street trees are nominated to be installed on the alignment the streetlights (i.e. 1.05 m form the kerb with 1.0 m separation to the nearest service). Please note that the pressure sewer location is only 500 mm from the streetlights. Hence you will run the risk of tree roots damaging the pressure sewer service. In addition, eventually the tree canopy will extend out into the road formation and driveways. This subdivision is designed to accommodate Type 2 road trains. Please note that the tree canopy will be continually damaged by passing Type 2 Road Trains. The trees will more than likely also effect the sightlines of these Type 2 Road trains entering and leaving the lots.

Also please note that no irrigation has been installed in the footpath and at this stage there is no room to do so, it seems unreasonable for the end users to be expected to maintain the street tree indefinitely.

Amended Plans

As a consequence of the changes to the stormwater quality management regime, the proposal plans have been amended (refer to **Attachment 4**).

Changes to Conditions

In view of the changes to the plans and the updated SQMP, Table 1 within Condition 1 needs to be amended as follows:

Title	Prepared By	Document No	Date
Site Survey	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-00 P11	17/05/2023
Site Plan	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-01 P14	20/04/2023
Elevation	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-02 P8	20/04/2023
Site Plan Lot 15	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-03 P9	17/05/2023
Site Staging	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-04 P9	17/05/2023
3D View	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-10 P12	17/05/2023
3D View	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-11 P12	17/05/2023
Plan Bulk Storage	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-20 P3	20/04/2023
Plan Warehouse	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-21 P3	20/04/2023
Plan Work Shop	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-22 P3	20/04/2023
Plan Silo Grain Handling	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-23 P5	20/04/2023
Roof Plan Bulk Storage	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-24 P2	20/04/2023
Roof Plan Warehouse	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-25 P2	20/04/2023
Roof Plan Workshop	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-26 P2	20/04/2023
Driveway Setout & Landscaping	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK30 P4	03/04/2023
Cleveland Bay Industrial Park Internal Vehicle Crossover Lots 15 & 17	Langtree Consulting	0966-SK-001	26/02/2023
~~Cleveland Bay Industrial Park~~ Sizer & Cogill	~~Premise~~ Langtree Consulting	~~CBI-0003/R01~~ 0966 R-NP0297	~~23/06/2022~~ 15/5/2023

CBIP Lots 15-17 Stormwater Quality Management Plan			

Condition 14 – Stormwater Quality

It is requested that the wording of Condition 14.1 be amended to reference the Langtree Consulting Stormwater Quality Management Plan.

Condition 14 – stormwater quality		**Timing**
14.1	Implement the stormwater quality management plan titled ~~"Cleveland Bay Industrial Park Lots 15-17 Stormwater Quality Management Plan" prepared by Premise dated 23/06/2022~~ Sizer and Cogill CBIP Lots 15,16 and 17 Stormwater Quality Management Plan Cleveland Bay Industrial Park prepared by Langtree Consulting and dated 16/6/2023 and referenced in Table 1 to condition1 of this approval.	*At all times*

Condition 17 – Landscaping

It is requested that Condition 17 of AP2022/017 be amended as follows:

Condition 17 – landscaping		**Timing**
17.1	Provide for street trees and landscaping in accordance with the plan titled "Driveway Setout & Landscaping", prepared by Sizer & Cogill Bulk & General Carriers Pty Ltd dated 27/03/2023 in Table 1 to Condition 1 of this approval. ~~*Note – Street trees (preferred species – Grevillea Baileyana) to be provided to the frontages of Lots 15 & 16. Street tree locations must not impact on vehicle movements.*~~	*Prior to commencement of the use and to be maintained*
17.2	Maintain landscaping and replace any failed or failing trees and shrubs.	*At all times*

Representations

We consider the proposed amendments to be appropriate, given:

- The change is required to be update the Condition 1 and 17 of AP2022/017.
- The change will not result in a substantially different development.
- The change does not alter the intent of the proposed Warehouse (Bulk Storage) and Transport Depot, it simply consolidates the stormwater management measures for the proposed development and seeks the removal of the requirement for planting street trees.
- The nature of the proposed change is minor.

Land Owner's Consent

The relevant land owner's consent for Lots 15, 16 and 17 on SP338023 and Lot 26 on SP 338024 is not attached, as we are of the view that the changes proposed can be accepted and assessed by the CG as a Minor Change to Development Approval AP2022/017.

Assessment Fee

In accordance with the Guideline to State Development Area Fees July 2022 the relevant assessment fee for a Minor Change to a Development Approval is 25 % of fee payable for an SDA application. Section 2.3 of the Guidance for State Development Area (SDA) Applications in Cleveland Bay Industrial Park (CBIP) (February 2022) details the applicable assessment fees within CBIP. In accordance with the fee waiver provided by the Coordinator-General on 22 December 2020 and valid until 22 December 2023, the following uses do not require a fee to be paid for the SDA application for Material Change of Use:

(a) freight terminal;
(b) infrastructure facility;
(c) medium impact industry;
(d) research and technology industry;
(e) transport depot;
(f) utility installation; and
(g) warehouse.

No fee was payable to the OCG for AP2022/017 as the uses proposed included warehouse and transport depot, as such there is no assessment fee payable for this Minor Change to Development Approval AP2022/017.

As per the *'Guidance for SDA applications in the Cleveland Bay Industrial Park - February 2022'* this development application is consistent with the fee waiver provided by the Coordinator-General on 22 December 2020. Particularly as the development application is for a Material Change of Use for a Warehouse and Transport Depot. Therefore, no fee has been paid upon lodgement of this application.

Proceeding

We look forward to receipt of a written notice from the OCG confirming the change application is deemed properly made, that it is eligible for the relevant fee waiver and that the proposed changes to SDA Development Approval AP2022/017 are accepted as a Minor Change.

If you have any questions regarding this correspondence, please do not hesitate to contact the undersigned on TEL: (07) 4724 0095.

Yours sincerely,

MILFORD PLANNING

Sarah Jones

SENIOR TOWN PLANNER

Encl: Attachment 1: Development Approval AP2022/017
Attachment 2: Original SQMP prepared by Premise
Attachment 3: Revised SQMP prepared by Langtree Consulting
Attachment 4: Revised proposal plans prepared by DM Group

Cc: David Stolz – Office of the Coordinator-General.

MILFORD PLANNING

Attachment 1

Queensland Government

Office of the
Coordinator-General

Our ref: OUT23/806

19 April 2023

Sizer & Cogill Bulk & General Carriers Pty Ltd
c/- Sarah Jones
Milford Planning
info@milfordplanning.com.au

Dear Ms Jones

AP2022/017 – SDA application for a material change of use for a warehouse (bulk storage) and transport depot in the Townsville State Development Area (SDA)

Reference is made to your SDA application for material change of use for a warehouse (bulk storage) and transport depot in the Townsville State Development Area (SDA) lodged with the Coordinator-General and deemed properly made on 7 September 2022.

In accordance with section 84E of the *State Development and Public Works Organisation Act 1971*, the Coordinator-General has approved your SDA application with conditions.

Please find enclosed the SDA approval for your reference.

If you require any further information, please contact Richard Alarcon, A/ Principal Project Officer, Office of the Coordinator-General, on 3452 7565 or richard.alarcon@coordinatorgeneral.qld.gov.au, who will be pleased to assist.

Yours sincerely

David Stolz
Assistant Coordinator-General
Planning and Services
(as delegate of the Coordinator-General)

Enc

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Brisbane Queensland 4000
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City East Queensland 4002
Telephone 13 QGOV (13 74 68)
Website www.statedevelopment.qld.gov.au
ABN 29 230 178 530

Decision notice

Application details:

Application type	SDA application for a material change of use for a warehouse (bulk storage) and transport depot
Reference #	AP2022/017
Proponent	Milford Planning on behalf of Sizer & Cogill Bulk & General Carriers Pty Ltd
Land subject of the SDA application	77 Penelope Road, Stuart Lot 15 on SP338023 Lot 16 on SP338023 Lot 17 on SP338023 Lot 26 on SP331994
State development area	Townsville State Development Area
Decision date	19 April 2023
Currency period	19 April 2027

Decision details:

In accordance with section 84E of the *State Development and Public Works Organisation Act 1971*, the Coordinator-General has decided to **approve with conditions** all of the above SDA application for a material change of use for a warehouse (bulk storage) and transport depot.

David Stolz
Assistant Coordinator-General
Planning and Services
(as delegate of the Coordinator-General)

SDA approval – conditions

Condition 1 – approved plans and documents		Timing
1.1	Carry out the approved development generally in accordance with the approved plans and documents as referenced in Table 1 (including any amendments marked in red), except insofar as modified by any of the conditions of this approval.	*To be maintained at all times*

Table 1 – Approved plans and documents

Title	Prepared By	Document No	Date
Site Survey	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-00	3/04/2023
Site Plan	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-01	19/01/2023
Elevation	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-02	19/01/2023
Site Plan Lot 15	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-03	3/04/2023
Site Staging	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-04	19/01/2023
3D View	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-10	19/01/2023
3D View	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-11	19/01/2023
Plan Bulk Storage	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-20	19/01/2023
Plan Warehouse	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-21	19/01/2023
Plan Work Shop	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-22	19/01/2023
Plan Silo Grain Handeling	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-23	19/01/2023
Roof Plan Bulk Storage	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-24	19/01/2023
Roof Plan Warehouse	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-25	19/01/2023
Roof Plan Workshop	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK-26	19/01/2023
Driveway Setout & Landscaping	Sizer & Cogill Bulk & General Carriers Pty Ltd	09-1777_SK30	27/03/2023
Cleveland Bay Industrial Park Internal Vehicle Crossover Lots 15 & 17	Langtree Consulting	0966-SK-001	26/02/2023
Cleveland Bay Industrial Park Lots 15-17 Stormwater Quality Management Plan	Premise	CBI-0003/R01	23/06/2022

Condition 2 – amalgamation of lots		**Timing**
2.1	Amalgamate Lot 16 and Lot 17 into a single parcel and register the survey plan in accordance with the *Land Title Act 1994* or relevant legislation as amended. Lot 16 and 17 are identified in plan titled "Site Survey", prepared by Sizer & Cogill Bulk & General Carriers Pty Ltd dated 19/01/2023 and referenced in Table 1 to condition 1 of this approval.	*Prior to commencement of the use*

Condition 3 – access easement		**Timing**
3.1	Register an access easement over Lot 26 in favour of Lots 15 and 17 as indicated on plan titled "Site Survey" prepared by Sizer & Cogill Bulk & General Carriers Pty Ltd dated 3/04/2023 and referenced in Table 1 to Condition 1 of this approval. The access easement must be signed by relevant parties of existing easement and must not conflict its purposes of drainage. *Note: The maintenance and management of the access remains the responsibility of the land owners of lot 15 and 17.*	*Prior to commencement of site works*
3.2	Prepare and implement an Access Easement Management Plan for the easement required in condition 3.1. The Access Easement Management Plan must be prepared in consultation with Townsville City Council and the Coordinator-General and approved by Townsville City Council.	*Prior to commencement site works*

Condition 4 – development on Lot 15		**Timing**
4.1	Lot 15 must operate as an outdoor storage area only; no buildings are to be constructed. *Note: Future built form associated with Lot 15 may require an SDA application or a request to change to an SDA application to be lodged to the Coordinator-General.*	*At all times*

Condition 5 – staged development		**Timing**
5.1	The development is to occur in accordance with the sequence of staging indicated in plan titled "Site Staging", prepared by Sizer & Cogill Bulk & General Carriers Pty Ltd dated 19/01/2023 and referenced in Table 1 to condition 1 of this approval. *Note: The stages may be undertaken concurrently.* *Unless explicitly stated, conditions relate to each stage of the development.*	*At all times*

Condition 6 – commencement of the development		**Timing**
6.1	Notify the Coordinator-General in writing of the date of commencement of the use of each stage.	*Within 30 days of commencement of*

	Note: Written notification must state SDA approval number AP2022/017 and be provided to: *Coordinator-General – sdainfo@coordinatorgeneral.qld.gov.au*	*the use of the relevant stage/s*

Condition 7 – 'as constructed' plans		**Timing**
7.1	For each stage of the development submit to the Coordinator-General, 'As constructed' plans certified by a Registered Professional Engineer of Queensland (RPEQ) or other independent suitably qualified person. The plans must show that the development has been constructed generally in accordance with the plans referenced in Table 1 of Condition 1. Plans must be submitted in electronic pdf.	*Prior to commencement of the use of each stage*

Condition 8 – inspection		**Timing**
8.1	Permit the Coordinator-General, or any person authorised by the Coordinator-General, to inspect any aspect of the development. *Note: Where practicable, at least forty-eight (48) hours notice will be provided.*	*At all times*

Condition 9 – complaints		**Timing**
9.1	Record all complaints received relating to the development in a register that includes, as a minimum: (a) date and time when complaint was received; (b) complainant's details including name and contact information; (c) reasons for the complaint; (d) investigations undertaken and conclusions formed; (e) actions taken to resolve this complaint, including the time taken to implement these actions; (f) include a notation in the register as to the satisfaction (or dissatisfaction) of the complainant with the outcome.	*At all times*
9.2	Prepare and provide a response to the complainant within 48 hours of receipt of the complaint.	*As indicated*
9.3	Provide an up to date copy of the register if requested by the Coordinator-General.	*As indicated*
9.4	In the event a complaint is received in relation to odour or air contamination, the developer/ operator must engage a suitably qualified consultant to undertake an assessment addressing odour and/or air quality emanating from the site for this use in accordance with the provisions of the *Environmental Protection Act 1994.* The assessment must be accompanied by a report, inclusive of supporting calculations and site investigations. The report must	*At all times*

	provide recommendations on method and location of odour attenuation measures. The developer/operator must provide a copy of the report to Townsville City Council and the Coordinator-General and undertake any works within 3-months of the notification of the complaint.	
9.5	In the event a complaint is received in relation to noise from the use, the developer/ operator must engage a suitably qualified consultant to undertake an assessment addressing noise emanating from the site for this use in accordance with the provisions of the *Environmental Protection Act 1994.* The assessment must be accompanied by a report, inclusive of supporting calculations and site investigations. The report must provide recommendations and location of noise mitigation measures. The developer/operator must provide a copy of the report to Townsville City Council and the Coordinator-General and implement the recommendations within 3 months of the notification of the complaint.	*At all times*

Condition 10 – construction management		**Timing**
10.1	Prepare a construction management plan that includes the following: (a) employee and visitor parking areas (if provided); (b) provision for loading and unloading materials including the location of any remote loading sites; (c) the storage location/s of materials, structures, plant and equipment on the construction site; (d) management of noise and dust generated from the site during and outside construction work hours; (e) a monitoring program to identify issues of non-compliance, actions for correcting any non-compliance and who is responsible for undertaking those actions; (f) a timetable and process for review of the construction management plan to assess its effectiveness and to implement amendments as required.	*Prior to the commencement of site works*
10.2	Undertake all works generally in accordance with the construction management plan which must be current and available on site at all times during the construction period.	*At all times during the site works phase*
10.3	Water to be used for dust mitigation is to be drawn from sources other than Townsville City Council's reticulated water supply should Level 3 or 4 water restrictions be in effect and/or imposed during the construction of the development.	*At all times during the site works phase*
10.4	Dust or debris must not enter the State-controlled road during the construction phase of development.	*As indicated*

Condition 11 – erosion and sediment control		Timing
11.1	Erosion and sediment control management must be installed and maintained in accordance with the Healthy waters code of the Townsville City Plan. The contingent design, implementation and maintenance of measures must be provided in accordance with SC6.4 Development manual planning scheme policy, specifically SC6.4.3.8.6 MUSIC modelling requirements of the Townsville City Plan.	*Prior to the commencement of site works and to be maintained during the site works phase*

Condition 12 – services and utilities		Timing
12.1	Obtain the necessary approvals for all required services and utilities (power, potable water, sewer, gas, wastewater, communications etc) for both construction and operation.	*Prior to commencement of the use*
12.2	The premises must connect to Townsville City Council's reticulated sewer system.	*Prior to commencement of the use*
12.3	The premises must connect to Townsville City Council's reticulated water system.	*Prior to commencement of the use*
12.4	Electricity and telecommunications must be provided to the premise in accordance with the Works code of the Townsville City Plan.	*Prior to commencement of the use*
12.5	Any required relocation and/or alteration to any public service or facility installation must be carried out at no cost to Townsville City Council.	*Prior to commencement of the use*

Condition 13 – stormwater drainage		Timing
13.1	The development is required to achieve no-worsening and no-actionable nuisance in terms of stormwater quantity and stormwater quality for the major and minor events as defined by the Townsville City Plan relevant to the time of any future building approval.	*At all times*
13.2	Drainage from the development works/building must not adversely impact upon adjacent properties. Ponding, concentration or redirection of stormwater must not occur on adjoining land.	*At all times*
13.3	Drainage works must be designed and constructed in accordance with the latest edition of the Queensland Urban Drainage Manual and Healthy waters code of the Townsville City Plan.	*Prior to commencement of site works and to be maintained*

13.4	Submit to the Coordinator-General and Townsville City Council, certification from a qualified and experienced RPEQ that stormwater drainage achieves the prescribed outcomes in accordance with the Healthy waters code of the Townsville City Plan. *Note: Certification must reference SDA approval number AP2022/017 and be provided to:* *Coordinator-General – sdainfo@coordinatorgeneral.qld.gov.au* *Townsville City Council – developmentassessment@townsville.qld.gov.au*	*Prior to commencement of the use*

Condition 14 – stormwater quality		**Timing**
14.1	Implement the stormwater quality management plan titled "Cleveland Bay Industrial Park Lots 15-17 Stormwater Quality Management Plan" prepared by Premise dated 23/06/2022 and referenced in Table 1 to condition 1 of this approval.	*At all times*
14.2	Submit to the Coordinator-General and Townsville City Council, certification from a qualified and experienced RPEQ that the implementation of stormwater quality management plan achieves the prescribed outcomes in accordance with the Works code and Healthy waters code of the Townsville City Plan. *Note: Certification must reference SDA approval number AP2022/017 and be provided to:* *Coordinator-General – sdainfo@coordinatorgeneral.qld.gov.au* *Townsville City Council – developmentassessment@townsville.qld.gov.au*	*Prior to commencement of the use*

Condition 15 – minimum floor levels		**Timing**
15.1	Floor levels must achieve the following flood immunities: a) floor levels of all non-habitable rooms are above the defined flood event level; b) floor levels of all habitable rooms are 300mm above the defined flood event level. *Note: documentation from a RPEQ is to be submitted to a Building Certifier identifying required minimum floor height of all habitable rooms to achieve storm tide/flood immunity prior to the issuing of a Development Permit for Building Works of each stage.*	*Prior to commencement of the use of each stage and to be maintained*

Condition 16 – vehicle access and parking		**Timing**
16.1	Unless otherwise agreed to in writing with Townsville City Council, all access driveways and crossovers must be constructed from the existing kerb and channel to the property boundary generally in accordance with the Transport impact, access and parking code of the Townsville City Plan.	*Prior to commencement of the use and to be maintained*
16.2	Design and construct vehicle access, parking, internal roadways and manoeuvring for vehicles on site in accordance with the	*Prior to commencement of the use*

	latest amendment of AS2890.1: 2004 Parking facilities: Part 1 and AS2890.2:2002: Part 2 and is to provide the following: (a) a minimum of 19 car spaces, including disabled parking must be provided on-site. (b) acceptance of vehicle loading of not less than Gross Vehicle Mass of 33 tonnes.	
16.3	All parking is to occur on site.	*At all times*

Condition 17 – landscaping		**Timing**
17.1	Provide for street trees and landscaping in accordance with the plan titled "Driveway Setout & Landscaping", prepared by Sizer & Cogill Bulk & General Carriers Pty Ltd dated 27/03/2023 in Table 1 to Condition 1 of this approval. *Note – Street trees (preferred species – Grevillea Baileyana) to be provided to the frontages of Lots 15 & 16. Street tree locations must not impact on vehicle movements.*	*Prior to commencement of the use and to be maintained*
17.2	Maintain landscaping and replace any failed or failing trees or shrubs.	*At all times*

Condition 18 – air contaminants		**Timing**
18.1	Materials that are capable of generating air contaminants are wholly contained and covered or enclosed in storage bins to avoid the generation of air contaminants.	*At all times*
18.2	External areas of Lot 16 and 17 are sealed (impervious) in accordance with the plan titled "Site Plan" prepared by Sizer & Cogill Bulk & General Carriers Pty Ltd dated 19/01/2023 in Table 1 to Condition 1 of this approval.	*Prior to commencement of the use of Stage 1a and to be maintained*
18.3	A 10m wide internal concrete or asphalt apron must be provided for the full length of the property boundary of Lot 15 with additional 10m wide rumble strips provided at all access driveway locations.	*Prior to commencement of the use of Stage 1b and to be maintained*

Condition 19 – waste management		**Timing**
19.1	Reuse, recycle or lawfully dispose of all waste (other than treated waste-water released to land) generated by the development.	*At all times*
19.2	Solid waste is to be stored on site in vermin-proof facilities until it is transferred to a licensed refuse facility.	*At all times*
19.3	If bulk refuse facilities are applicable, the bulk refuse facility must: (a) be a suitable enclosure with concrete slab floor, with dimensions which exceed the size of the nominated bin size by at least 300m at the rear and both sides and 600mm at the front (b) be within the curtilage of the premise in an accessible location to receive the service	*Prior to commencement of the use and to be maintained*

	(c) be graded and drained through an approved sediment/silt trap to legal sewer connection (d) be provided with a hose cock and hose in close proximity to the enclosure and (e) have a minimum overhead clearance of 6.5m for refuse collection. Access for collection is not impeded by any overhead obstructions such as trees, wires or other structure. This minimum height must be maintained at all times.	

Condition 20 – hazardous materials		**Timing**
20.1	All flammable and combustible liquids (including hazardous waste materials) must be contained within an on-site containment system, controlled in a manner that prevents environmental harm and must be maintained in accordance with the current edition of *AS1940—Storage and Handling of Flammable and Combustible Liquids*.	*At all times*
20.2	All containers must be secured to prevent movement during a flood event.	*At all times*

Condition 21 – external details		**Timing**
21.1	Construct and/or paint external details of buildings and structures to reduce visual impact and negate excessive glare in accordance with current best practice.	*Prior to commencement of use and to be maintained*
21.2	Legible property numbers must be erected at the premises and must be maintained. The site identification numbers should be of reflective material, maintained free from foliage and other obstructions, and be large enough to be read form the street.	*Prior to commencement of the use and to be maintained*

Condition 22 – storage		**Timing**
22.1	Goods, equipment and packaging material or machinery must not be stored or left exposed within the first 20m from any public road or thoroughfare.	*Prior to commencement of use and to be maintained*

Condition 23 – safety and crime prevention		**Timing**
23.1	Install adequate fencing and signage to warn the public of operations and safety hazards.	*Prior to commencement of the use and to be maintained*
23.2	Any solid wall or semi permeable fence is protected from graffiti through means of vertical landscaping or vandal resistant paint or artwork.	*Prior to commencement of the use and to be maintained*

Condition 24 – fire fighting		**Timing**
24.1	The development must be provided with an adequate and accessible supply of water for firefighting purposes.	*Prior to the commencement of the use and to be maintained*

Condition 25 – repair of damage		**Timing**
25.1	Repair any property fencing, roads, service infrastructure and reinstate existing signage and pavement markings that have been removed or damaged during any works carried out in association with the approved development.	*Prior to commencement of the use and to be maintained*

Condition 26 – lighting		**Timing**
26.1	Provide external lighting sufficient to provide safe ingress and egress for site users.	*Prior to the commencement of the use and to be maintained*
26.2	Outdoor lighting must be provided in accordance with *AS1158.1:2005 – Lighting for Roads and Public Spaces.*	*Prior to the commencement of the use and to be maintained*
26.3	Ensure outdoor lighting installed within the development minimises light spill in the adjacent properties and sensitive receptors in accordance with AS4282:1997 Control of obtrusive effects of outdoor lighting.	*At all times*

Advice

Currency period

This SDA approval is valid until the end of the currency period, four years after the date of approval, unless the approval states a different period. For the SDA approval to remain valid the proponent must have, before the end of the currency period:

- (if the development is reconfiguring a lot) provided the plan of subdivision to the Coordinator-General for approval in accordance with the relevant development scheme; or
- (for all other development) substantially started the development; or
- made an application to the Coordinator-General to extend the currency period.

Other approvals

This approval relates solely to the material change of use in the Townsville State Development Area. All other approvals and/or permits required under local, state and/or commonwealth legislation must be obtained prior to the commencement of the use.

Townsville City Council

Further Approvals Required

A Compliance Permit to carry out plumbing and drainage works prior to the commencement of sanitary drainage works.

A Roadworks permit for the construction of a driveway or access within the road reserve must be obtained.

For filling and excavation associated with this approval, an Operational works application must be submitted to Townsville City Council.

Building works

A Development Permit for Building Works to carry out building works prior to works commencing on site.

Prior to the issuing of a Development Permit for Building Works, submit to Townsville City Council, documentation signed by a RPEQ must be submitted to a Building Certifier identifying the required minimum floor height of all habitable rooms to achieve storm tide/flood immunity.

Infrastructure charges

Outstanding charges or expenses applied to the use, including infrastructure charges will be levied by Townsville City Council as part of a future development approval for building works as permissible under the *Planning Act 2016*.

Water restrictions

To manage Townsville's water resources, council regulates water restrictions on a permanent basis. All development undertaken in Townsville must be mindful of the current and projected level of water restrictions that may affect development activities such as landscaping establishment and/or soil erosion and sediment control.

Developers remain responsible for compliance with any water restrictions as directed by Townsville City Council.

During times of significant water shortage, Townsville City Council may refuse to grant developer exemptions from water restrictions for the purposes of landscaping works or soil erosion and sediment control activities.

In circumstances where exemptions to water restrictions are no longer issued by Townsville City Council, bonding of soft landscaping works will be permitted to enable the release of plans of survey and / or compliance certificates. In cases where the soft landscaping is a component of permanent soil erosion and sediment control (such as an open drain) the use of "bonded fibre matrix" type hydro-mulch products or other suitable soil erosion and sediment control methods can be carried out as alternatives to demonstrate compliance with water restrictions.

The responsibility for compliance with all relevant environmental protection requirements (in particular sediment and erosion control) remains with the developer.

Connection to services

A copy of the SDA approval and the approved water reticulation design must be submitted to Townsville City Council with the appropriate application form for connection to Townsville City Council's water supply. Townsville City Council will respond to the application with a quotation for the work and upon payment will schedule the works for connection.

A copy of the SDA approval and the approved sewer reticulation design must be submitted to council with the appropriate application form for connection to Townsville City Council's sewer supply. Townsville City Council will respond to the application with a quotation for the work upon payment will schedule the works for connection.

Signage

Plans of any signage to be associated with the use that is deemed to be assessable development in accordance with the Categories of development and assessment - Operational work, specifically Operational work being placing an advertising device on premises of the Townsville City Plan, must be submitted to council for assessment.

Signs must be designed in accordance with relevant codes of the Townsville City Plan. To maintain amenity for the adjoining properties, no illumination of the signage is to occur unless otherwise approved by council.

Construction

Storage of Materials and Machinery

All materials and machinery to be used during the construction period are to be wholly stored on the site, unless otherwise approved.

Building Work Noise

The hours of audible noise associated with construction and building work on site must be limited to between the hours of:

(a) 6.30 a.m. to 6.30 p.m. Monday to Saturday
(b) No work on Sundays or Public Holidays.

Liquid Trade Waste Approval/Agreement

The developer is advised that a Trade Waste Approval/Agreement may be required under the *Water Supply (Safety and Reliability) Act 2008*. This should be discussed with Townsville City Council's Planning Services team at an early stage of project development.

Contact Tradewaste@townsville.qld.gov.au or 13 48 10.

Asbestos

All asbestos being removed from the site must be transported and disposed in accordance with relevant legislation.

Flammable and Combustible Liquids

Flammable and combustible liquids are to be stored and handled in accordance with *AS1940—The Storage and Handling of Flammable and Combustible Liquids*.

Roadworks Approval

The developer is responsible for obtaining a Roadworks permit in accordance with Subordinate Local Law No. 1.15 (Carry out Works or Interfering with a Road or its Operation) 2011 for the installation of any hoardings, gantries or temporary road closures of the footpath or road prior to the commencement of works. The application must indicate the following:

(c) Completed Roadworks permit application form
(d) Prescribed fee
(e) Traffic Management Plan prepared by a suitable qualified traffic professional detailing the traffic management measures put in place to manage all Roadworks including pedestrians, cyclists and vehicles in accordance with the *Manual of Uniform Traffic Control Devices (Queensland) Part 3 – Works on Roads.*

If the works require closure of part of the road reserve, a temporary Road Closure Permit will be required. This permit allows for a section of road reserve to be closed for the purpose of works. The Queensland Police Service is the issuing authority for these permits. An application will need to be made to Townsville City Council for a letter of 'no objection' prior to applying to the Queensland Police Service for the permit. The Traffic Management Plan will need to be included with the application to Townsville City Council.

Environmentally Relevant Activities

Where the premises is intended to be used for carrying out an Environmentally Relevant Activity as defined by the Environmental Protection Regulation 2019, an application under *the Planning Act 2016* and the *Environmental Protection Act 1994* must be submitted to the relevant administering authority prior to the commencement of the use.

Environmental Management Register

If the business meets the threshold specified in Schedule 3 of the *Environmental Protection Act 1994* for a notifiable activity, it has a responsibility under section 371(1) of the *Environmental Protection Act 1994* to notify the administering authority (Department of Environment and Science) within 22 business days of the use commencing.

Cultural Heritage Duty of Care

Where items of archaeological importance are identified during construction of the project, the proponent must comply with its duty of care under the *Aboriginal Heritage Act 2003* and the Department of Environment and Heritage Protection (2014) *Guidelines: Archaeological investigations.* All work must cease and the relevant State agency must be notified. Work can resume only after State agency clearance is obtained.

MILFORD PLANNING

Attachment 2

Premise

SIZER & COGILL

CLEVELAND BAY INDUSTRIAL PARK LOTS 15-17

STORMWATER QUALITY MANAGEMENT PLAN

Report No: CBI-0003/R01
Rev: A
23 June 2022

DOCUMENT AUTHORISATION					
Revision	**Revision Date**	**Report Details**			
A	23/06/22	For Submission			
Prepared By		**Reviewed By**		**Authorised By**	
Katie De Lacey		Adam Pease		Adam Pease	

CONTENTS

APPENDICES

1. INTRODUCTION

Premise Australia Pty Ltd has been commissioned by Sizer & Cogill to prepare a Stormwater Quality Management Plan for the Cleveland Bay Industrial Park – Internal Subdivision Development (Part of Stage 4), serviced via Townsville Port Road/Ron McLean Drive, in Stuart. This report addresses the Stormwater Quality objectives of Lots 15, 16 and 17.

2. EXISTING SITE

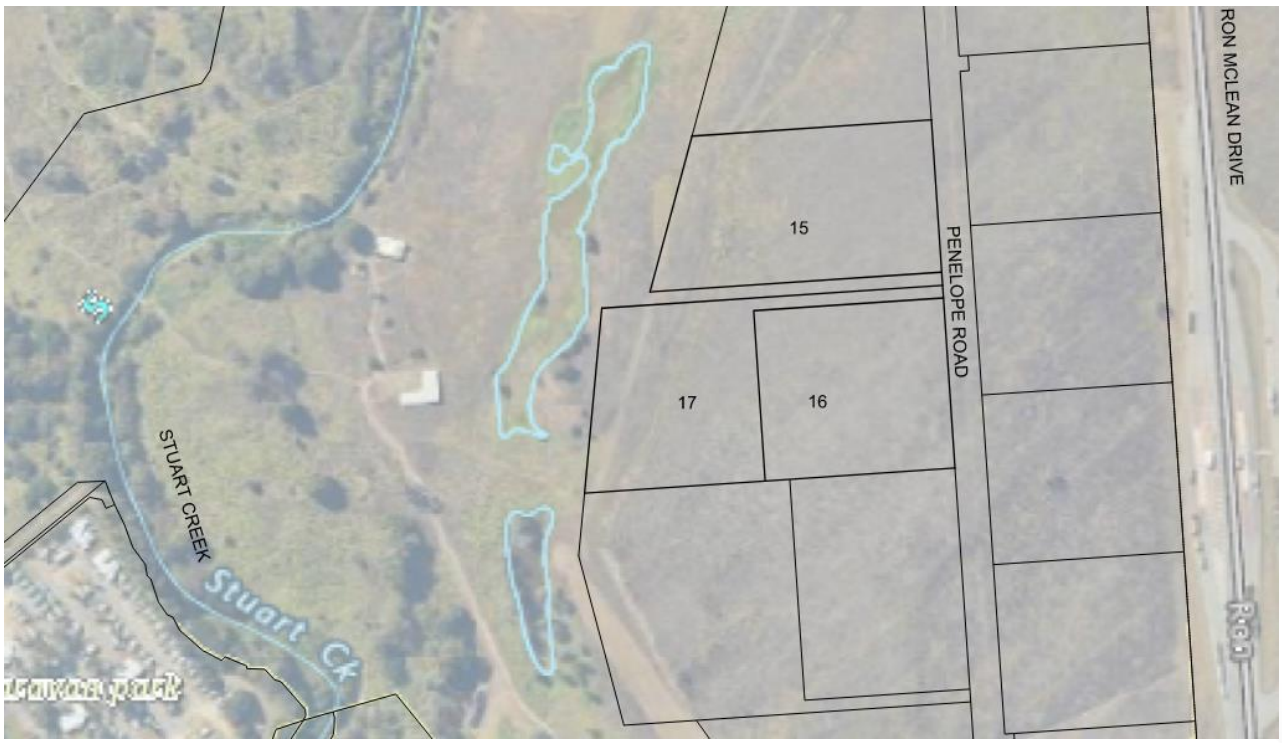
The subject site is currently vacant with bulk earthworks having been completed. The development site is zoned as Special Purpose by Townsville City Council. Running between boundaries of lot 15 and 17, is an open drain which is not part of this Stormwater Quality Analysis.

3. PROPOSED DEVELOPMENT

Cleveland Bay Industrial Park, Lots 15 to 17 will comprise of the following components:

- Lots 16 and 17: A Bulk Storage, a warehouse, a workshop, an office, secure parking, grain handling and sampling zones, and manoeuvring areas for oversized vehicles.
- Lot 15: Industrial site, treated as a generic Industrial Lot at this stage.

Figure 1 – Locality of Lots 15,16,17



4. STORMWATER DRAINAGE

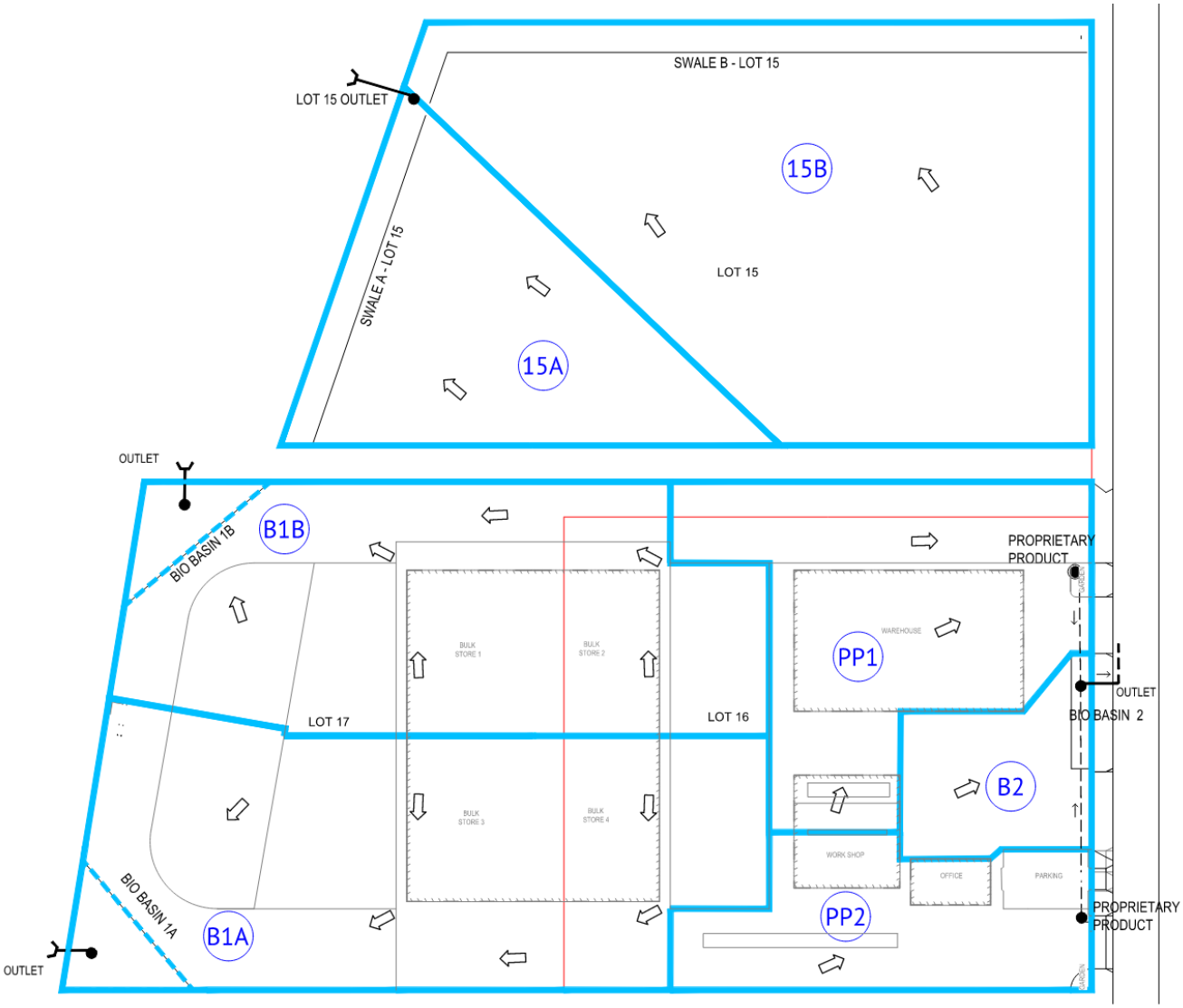
The proposed subject site catchments are shown in Figure 2.

The proposed catchments for Lot 15 (catchments 15A and 15B) grade toward the north and west into swales which leave the site via an outlet in the northwest and drain to an existing watercourse. The swales are pervious, and the rest of the lot impervious. Therefore, the fraction impervious for these catchments has been calculated from these areas.

The proposed catchments for Lot 16 and 17:

- Catchment B-1A takes half of the bulk storage centre roof run-off, half the silo storage centre, and half of the runoff from the roadway and manoeuvring areas. The catchment outlets into a Bioretention Basin 1A in the south-western corner of the site and is outletted into an existing drain.
- Catchment B-1B takes half of the bulk storage centre roof run-off, half the silo storage centre, and half of the roadway and manoeuvring areas runoff. The catchment outlets into a Bioretention Basin 1A in the north-western corner of the site and is outletted into an existing drain.
- Catchment PP1 includes the flow from the bitumen entrance road, the warehouse roof, part of the workshop roof, and part of the concrete surface around the warehouse. The flows for this catchment are ultimately directed to a tertiary treatment device (Proprietary Product SPEL Hydrosystem 2500 -14 cartridges- 56LPS or approved equivalent) after most of the surface drainage is treated via primary treatment devices SPEL Stormsacks (or approved equivalent).
- Catchment PP2 includes the flow from the concrete egress road and surrounds, the office roof, the carparking area, and part of the workshop roof. The flows for this catchment are ultimately directed to a tertiary treatment device (Proprietary Product SPEL Hydrosystem 2500 -14 cartridges- 56LPS or approved equivalent) after a majority of the surface drainage is treated via primary treatment devices SPEL Stormsacks (or approved equivalent).
- Catchment B2 includes some surface flow from the concrete area between the office, carpark, workshop, and warehouse. The flows are treated via a small bioretention basin. The outlet for the eastern side of lots 16 and 17 is via a pipe in this bio basin.

Figure 2 – Proposed catchments of subject site – Lots 15, 16, 17



5. STORMWATER QUALITY

5.1 Stormwater Quality Treatment (Construction Phase)

During the construction phase various pollutants are generated which can find their way into the stormwater runoff. These pollutants can affect the quality of the stormwater runoff and hence pollute both the site and the downstream receiving environment. Table 1 below outlines the major sources of pollutants.

Table 1 – Typical Construction Phase Pollutants

Construction Phase Pollutants
Litter from construction packaging, paper, food packaging, off cuts, etc.
Sediment from erosion of exposed soils and stockpiles.
Hydrocarbons - from fuel and oil spills, leaks from construction equipment.
Toxic Materials - cement slurry, solvents, cleaning agents, wash waters.
pH altering substances - cement slurry, wash waters.

Erosion and sediment control measures used during the construction phase of the development will be designed and installed in accordance with International Erosion Control Association (Australasia) - "Best Practice Erosion & Sediment Control – for building and construction sites" November 2008 as well as the TCC Development Guidelines for Erosion and Sediment Control.

5.2 State Planning Policy Compliance

The latest SPP (2017) Stormwater Management Design Objectives (SMDO's) have been adopted for the operational phases of the development and is detailed in Table 2 below.

Table 2 – Stormwater Quality Objective

Pollutant	Reductions in Mean Annual Load from unmitigated development (%)
Suspended Solids	80
Total Phosphorus	65
Total Nitrogen	40
Gross Pollutants	90

5.3 Stormwater Quality Modelling

Stormwater Pollutant modelling for the development has been generated using the modelling program 'Model for Urban Stormwater Improvement Conceptualisation' (MUSIC), version 6.3.0, adhering to the prescribed Water by Design MUSIC modelling guidelines Version 3.0, 2018 (WBDMG).

The following data was used as input for the MUSIC model:

- Long term rainfall data was obtained from the Townsville AERO pluviometer (gauge number 032040) at a six (6) minute data interval for a representative period from 1990-1999;
- Monthly aerial potential evapotranspiration data from the Townsville Aero pluviometer;
- The Values for typical Impervious Fractions used have been conservatively calculated from areas on the design plans, and/or adopted from Table 3.7 and are in line with TCC City Plan SC6.4.4.4 Attachment A – Design AEPs and fraction impervious for land use zones;
- Pollutant export parameters have been adopted from Table 3.8 and 3.9 in the Healthy Land and Water (2018) MUSIC Modelling Guidelines Version 3.0, 2018, for a land use type of Industrial.

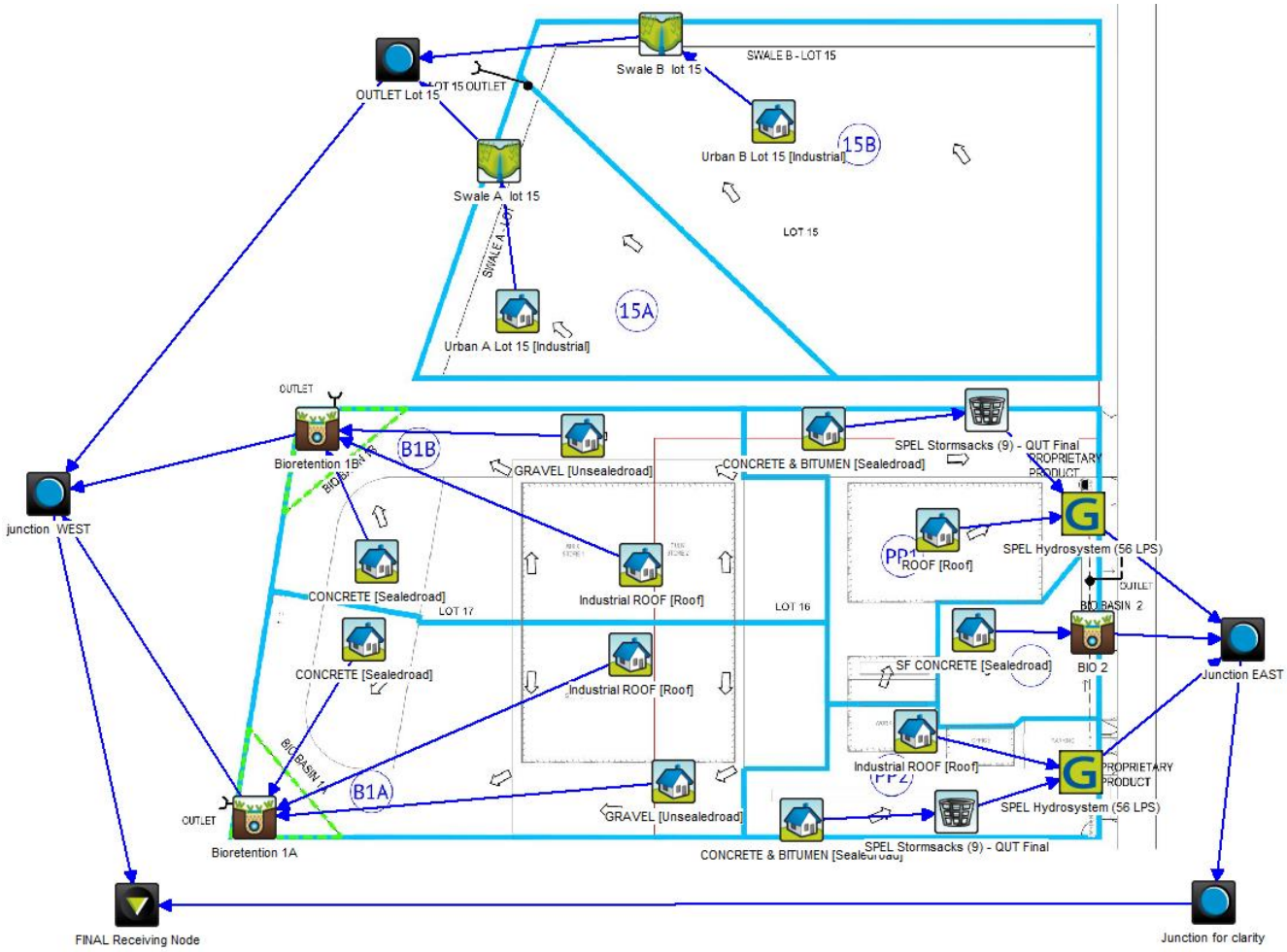
Details of Catchment assumptions can be seen in Table 3.

Table 3 – MUSIC Model Catchment Parameters

Catchment ID	Land Use	Node Type	Total Area (ha)	Fraction Impervious	TREATMENTS	
B 1A	Unsealed Road - Industrial	Urban	0.700	95%	BIO 1 A	
	Sealed Road - Industrial	Urban	0.255	100%		
	Roof - Industrial	Urban	0.336	100%		
B 1B	Unsealed Road - Industrial	Urban	0.588	95%	BIO 1 B	
	Sealed Road - Industrial	Urban	0.230	100%		
	Roof - Industrial	Urban	0.336	100%		
PP 1	Sealed Road - Industrial	Urban	0.46	100%	STORMSACKS	SPEL HYDROSYSTEM
	Roof - Industrial	Urban	0.31	100%		
PP 2	Sealed Road - Industrial	Urban	0.361	100%	STORMSACKS	SPEL HYDROSYSTEM
	Roof - Industrial	Urban	0.076	100%		
B 2	Sealed Road - Industrial	Urban	0.235	100%	BIO 2- GARDEN BED	
15 A	**Lumped** Catchment- Industrial	Urban	0.72	85%	Swale A lot 15	
15 B	**Lumped** Catchment- Industrial	Urban	1.78	90%	Swale B lot 15	

A snapshot of the MUSIC model setup can be seen below (Figure 3). See also Appendix B.

Figure 3 – MUSIC Model Layout



5.4 SPEL Hydrosystem and SPEL Stormsack

The SPEL Hydrosystem is a specialist stormwater filter using an up-flow process treatment suitable for heavy metal, TSS and nutrient reduction. The tertiary treatment occurs through processes of sedimentation, filtration, adsorption and precipitation. It is designed for installation within load bearing shafts and chambers of concrete or plastic construction. The parameters for the treatment system are provided in the Table 4.

SPEL Stormsack is an at-source gross pollutant trap designed for the capture of gross pollutants: sediment, litter, and oil and grease. The parameters for the treatment system are provided in the Table 4.

Table 4 – Treatment Device Parameters – SPEL Stormsacks and SPEL Hydrosystem 2500

Component	SPEL Stormsacks	SPEL Hydrosystem (56 LPS)
Low Flow By-pass (m3/s)	0	0
High Flow By-pass (m3/s)	0.099	0.05600
Total Suspended Solids (Inflow, outflow) 1 (mg/L)	0, 0	0, 0
Total Suspended Solids (Inflow, outflow) 2 (mg/L)	100.0, 39.0	100.0, 15.0
Total Phosphorus Inflow (mg/L)	100.0	100.0
Total Phosphorus Outflow (mg/L)	72.0	34.0
Total Nitrogen Inflow (mg/L)	100.0	100.0
Total Nitrogen Outflow (mg/L)	55.0	57.0
Gross Pollutants Inflow (kg/ML)	15.0	15.0
Gross Pollutants Outflow (kg/ML)	0	0

The Hydrosystem requires 250mm hydraulic head to provide effective treatment. The device is located offline to allow flows exceeding 56L/s to bypass the device.

5.5 Other Treatment Nodes

Overall treatment devices which form part of the overall treatment train are shown in Table 5 and Table 6 (below).

Table 5 – Treatment Device Parameters – Bioretention Basins

		BIO 1A	BIO 1 B	BIO 2 - GARDEN BED
Inlet Properties	Low Flow Bypass (m^3/s)	0	0	0
	High Flow Bypass (m^3/s)	100	100	100
Storage Properties	Extended Detention Depth (EDD) (m)	0.5	0.6	0.43
	Surface Area (m^2)	479	396	123
Filter And Media Properties	Filter Area (m^2)	429	339	64
	Unlined Filter Area Perimeter (m)	97.2	92	62.4
	Saturated Hydraulic conductivity (mm/hr)	200		
	Filter Depth (m)	0.6	0.6	0.6
	TN Content of Filter material (mg/kg)	800		
	Orthophosphate content of Filter media (mg/kg)	80		
Infiltration Properties	Exfiltration rate (mm/hr)	3.6		
All bio basins: unlined base, vegetated with effective nutrient removal plants, underdrain present				

Table 6 – Treatment Device Parameters – Swales

		Swale A lot 15	Swale B lot 15
Inlet Properties	Low Flow Bypass (m^3/s)	0	0
Storage Properties	Length (m)	100	195
	Bed Slope (%)	0.3	0.3
	Base width (m)	1	1
	Top Width (m)	8.5	8.5
	Depth (m)	0.75	0.75
	vegetation height (m)	0.1	0.1
	Exfiltration rate (mm/hr)	36	36

5.6 Treatment Train Effectiveness

Table 7 outlines the effectiveness of the overall MUSIC Model Treatment Train in achieving the set Stormwater Management Design Objectives (SMDO's) for pollutant reduction for the subject lots 15, 16 and 17.

Table 7 – Treatment Train Effectiveness – Final Receiving Node

Pollutant	Sources (kg/yr)	Residual Load (kg/yr)	Reduction (%)	Target Reduction (%)
Suspended Solids (TSS)	15600	1310	**91.6**	80
Total Phosphorus (TP)	29.2	10.1	**65.3**	65
Total Nitrogen (TN)	141	64.7	**54.2**	40
Gross Pollutants (GP)	1110	2.72	**99.8**	90

The overall site meets the Pollutant reduction objectives as shown in Table 7.

6. STORMWATER QUALITY MAINTENANCE

Prior to commencement of construction, an Erosion and Sediment Control Plan (ESCP) will be prepared and implemented to minimise the impacts on stormwater quality. The plan will address site and catchment specific erosion control measures, generally adhering to the following control measures.

6.1 Pre-Construction

Before construction the following measures will be established and maintained for any to be disturbed:

- Stockpile areas to be designated to minimise impacts on site runoff.
- Provision of shakedown pit for any entry/exit points to the site; and
- Toolbox talk to inform any regular site personnel

6.2 During Construction

- Construction related activities will be contained within the subject site where possible to minimise areas of disturbance
- Topsoil retention for site rehabilitation.
- Regular inspection of sediment control measures; and
- Dynamic response to any changing site conditions

6.3 Post-Construction

Following construction any disturbed areas will be stabilised through revegetation which is to be maintained until established.

7. CONCLUSION

The Stormwater Quality Improvement Device (SQID's) proposed for the development include BioBasins, Swales, SPEL Stormsacks, and SPEL Hydrosystems (or approved equivalents) to provide stormwater quality treatment.

The MUSIC modelling of the proposed treatment train demonstrates the SPP's Pollutant Load SMDO's are achieved. On this basis we recommend acceptance of the proposed treatment solution.

8. QUALIFICATIONS

Our analysis and overall approach have been specifically catered for the requirements of Sizer & Cogill and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Premise.

9. RPEQ CERTIFICATION

As Registered Professional Engineer of Queensland (RPEQ) for this project, on behalf of Premise Australia Pty Ltd, I certify that the modelling undertaken as part of this assessment has been undertaken in accordance with current engineering best practice as recommended in the State Planning Policy.

Name: **Adam Pease** RPEQ No: **22556** Date: **23rd June 2022**

Signature: 

APPENDIX A

STORMWATER QUALITY DEVICE PRODUCT SPECIFICATIONS

SPEL Stormsack

At Source Gross Pollutant Trap

The SPEL StormSack is specifically designed for the capture of gross pollutants: sediment, litter, and oil and grease. Ideally suited for storm drain retrofits, the SPEL StormSack's unique design allows maintenance to be performed using conventional vacuum suction equipment.

Benefits

- Can be modelled in MUSIC in conjunction with bio-retention
- Low cost gross pollutant capture
- Quick & easy installation
- Simple maintenance
- At source capture
- Adjusts to custom pit sizes

APPLICATIONS

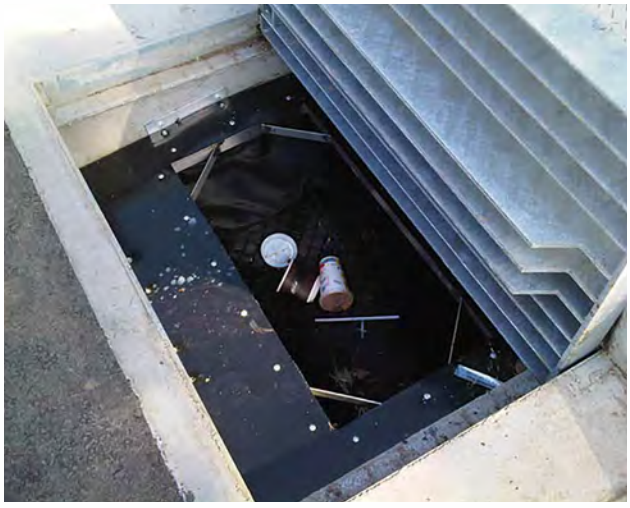
- Council Storm Drain Retrofits
- Commercial/Retail/Residential
- Litter Prone Urban Areas
- Scrap Metal/Solid Waste/Oil Storage/Etc
- Part of Treatment Train
- Construction Sediment/Erosion
- <200 micron capture

Tested Treatment Efficiencies*

Pollutant	Efficiency
Gross Pollutants (GP)	100%
Total Suspended Solids (TSS)	61%
Total Phosphorus (TP)	28%
Total Nitrogen (TN)	45%

*Contact Spel to confirm approved performance for the project LGA

Light duty frame



SPEL Stormsack

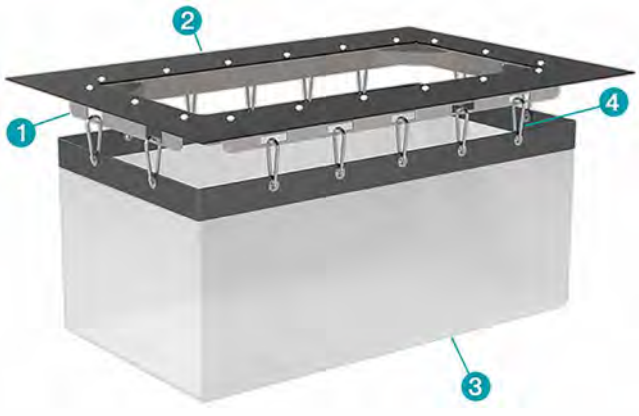
At Source Gross Pollutant Trap

SPEL StormSack filtration solutions are highly engineered water quality devices that are deployed directly in the stormwater system to capture contaminants close the surface for ease of maintenance. Easily retrofitted into new or existing structures, SPEL StormSack filtration technology is a decentralized approach to stormwater treatment that essentially repurposes traditional site infrastructure and customizes it to meet specific site water quality goals. In this way, it satisfies important objectives of today's LID (Low Impact Development) criteria.

From an operations perspective, catch basins with SPEL Stormsack filters are also easier and quicker to clean out because pollutants are trapped just under the grate.

Application	Regulatory Issue	Target Pollutants
Council Storm Drain Retrofits	At-source litter capture	Sediment, Litter, O&G
Commercial/Retail/Residential	Stormwater Compliance	Sediment, Litter, O&G
Litter Prone Urban Areas	Cost effective litter control	Litter ≥ 5 mm
Scrap Metal/Solid Waste/Oil Storage/Etc	Industrial Multi-Sector General Permit	Gross Pollutants, O&G
Part of Treatment Train	Council Stormwater Quality Improvement Targets	Sediment, Litter, O&G
Construction Sediment/Erosion	Sediment Control Plan	Sediment/Erosion Control

Features	
1.	1. Ultra-Durable Aluminium Frame • Available in 450x450mm, 600x600mm, 600x900mm and 900x900mm sizes • Custom pit arrangements upon request
2.	Black Poly Surround riveted to Frame • Can be cut to suit on site
3.	Reinforced Stormsack Bag • Bag has sewed eyelets • Square bottom design for even distribution
4.	Karabiners attach Bag to Frame for easy service & replacement
5.	5. Aluminium Support Angles & Fixings



Standard SPEL Stormsack to suit Pit Sizes
450x450mm
600x600mm
900x600mm
900x900mm

Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times

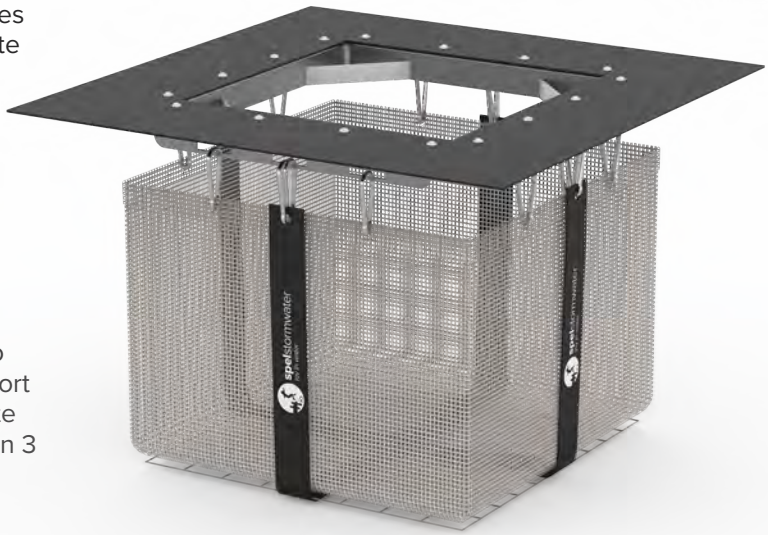
SPEL Stormsack

At Source Gross Pollutant Trap

Specifications & Details

General Description

This technology is a post developed stormwater treatment system. The SPEL StormSack provides effective filtration of solid pollutants and debris typical of urban runoff, while utilising the existing or new storm drain infrastructure. The StormSack is designed to rest on the flanges of conventional catch basin frames and is engineered for most hydraulic and cold climate conditions.



Installation And Maintenance

Installation procedures shall include removing the storm grate, cleaning the ledge of debris and solids, measuring catch basin clear opening and adjusting flanges to rest on grate support ledge. Install SPEL StormSack with splash guard under curb opening so the adjustable flanges are resting on the grate support ledge. Install corner filler pieces. Reinstall storm grate directly on support flanges rise shall be no more than 3 mm.

Maintenance: Typically the SPEL StormSack is serviceable from the street level, and therefore maintenance does not require confined space entry into the catch basin structure. The unit is designed to be maintained in place with a vacuum hose attached to a sweeper or a vactor truck. Use only SPEL replaceable parts.

Benefits

- Low cost gross pollutant capture
- Quick & easy installation
- Simple maintenance
- At source capture
- Adjusts to custom pit sizes

Field Performance

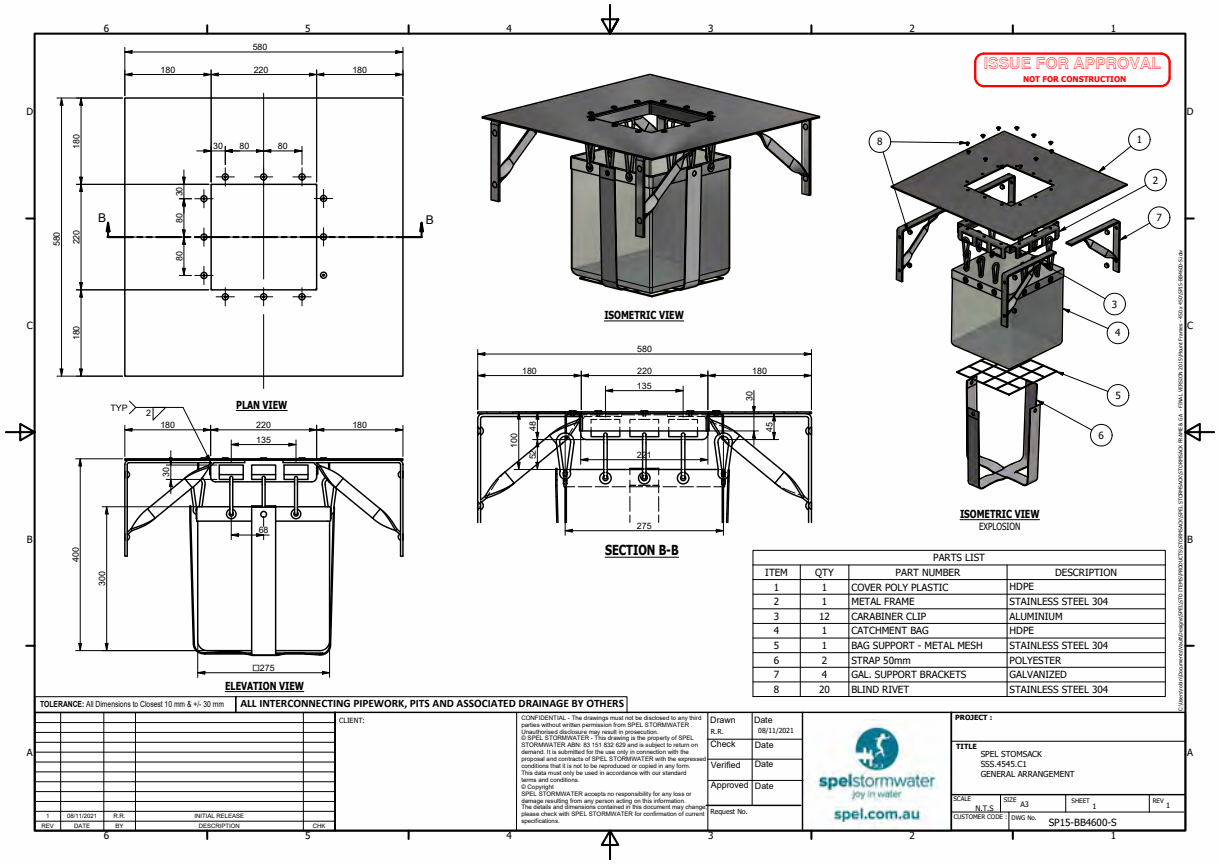
The SPEL Stormsack was introduced to the Australian market in 2012 and field testing is underway at several locations in South-east Queensland. Laboratory testing has shown capture of 99.99% of gross pollutants up to the bypass flow rate.* Further results will be provided as they become available.

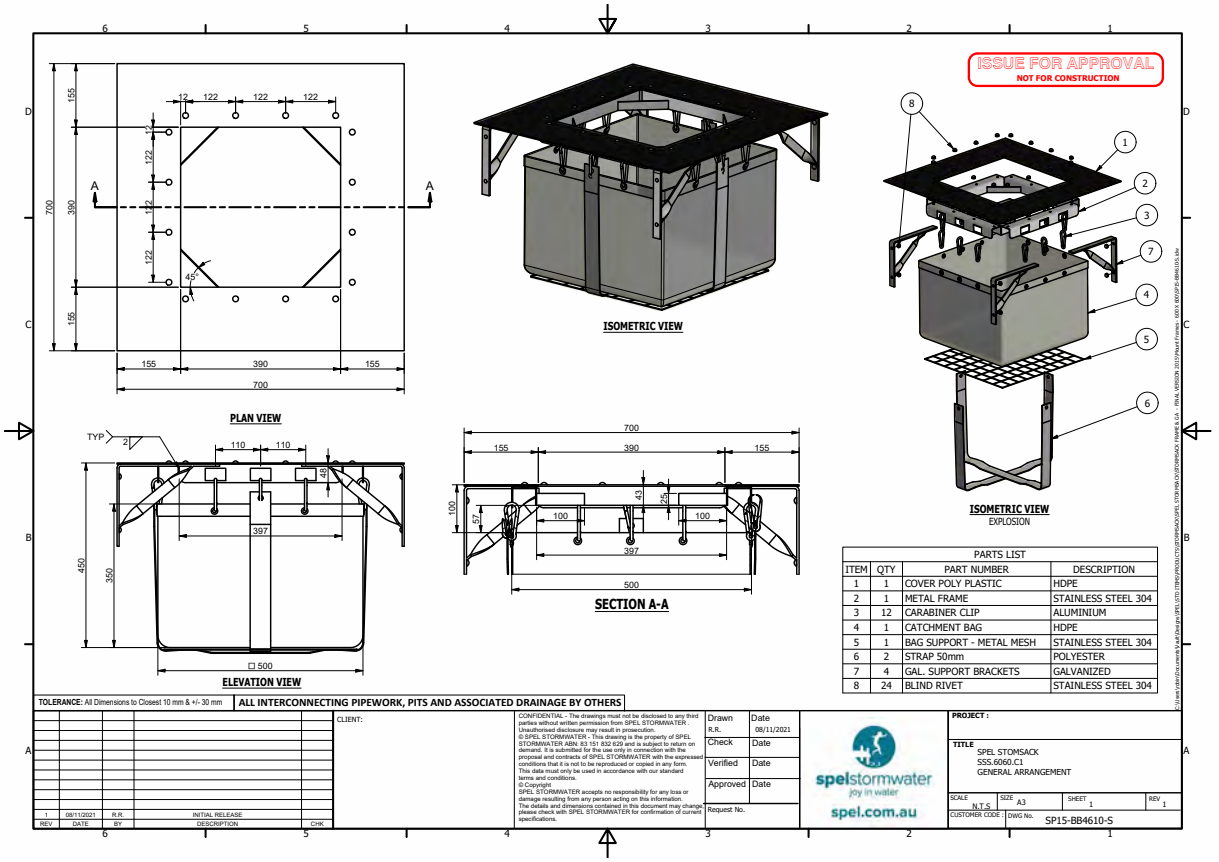
Recommended minimum clearance from bottom of SPEL StormSack to inside bottom of vault is 50 mm. Typical frame adjustability range of 127 mm in each direction.

SPEL Stormsack

At Source Gross Pollutant Trap

Technical Drawings

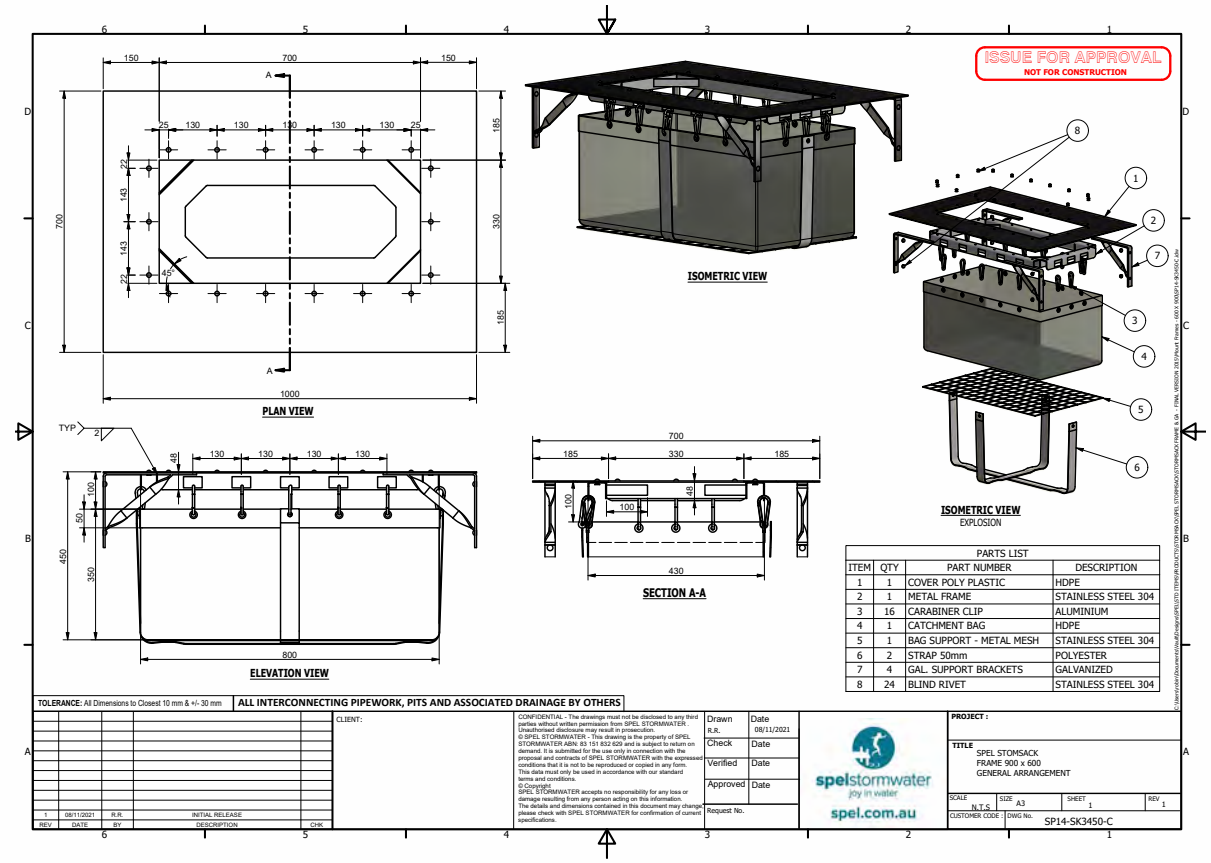


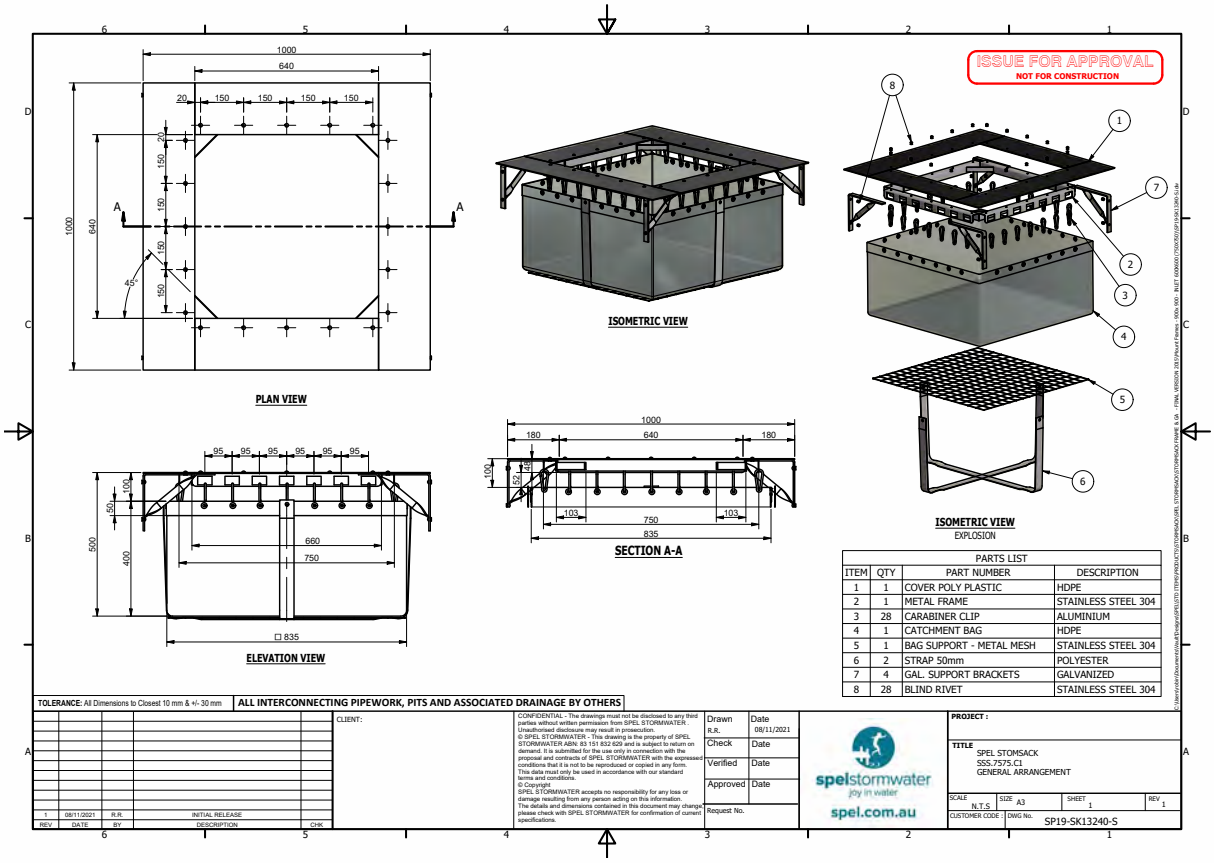


SPEL Stormsack

At Source Gross Pollutant Trap

Technical Drawings

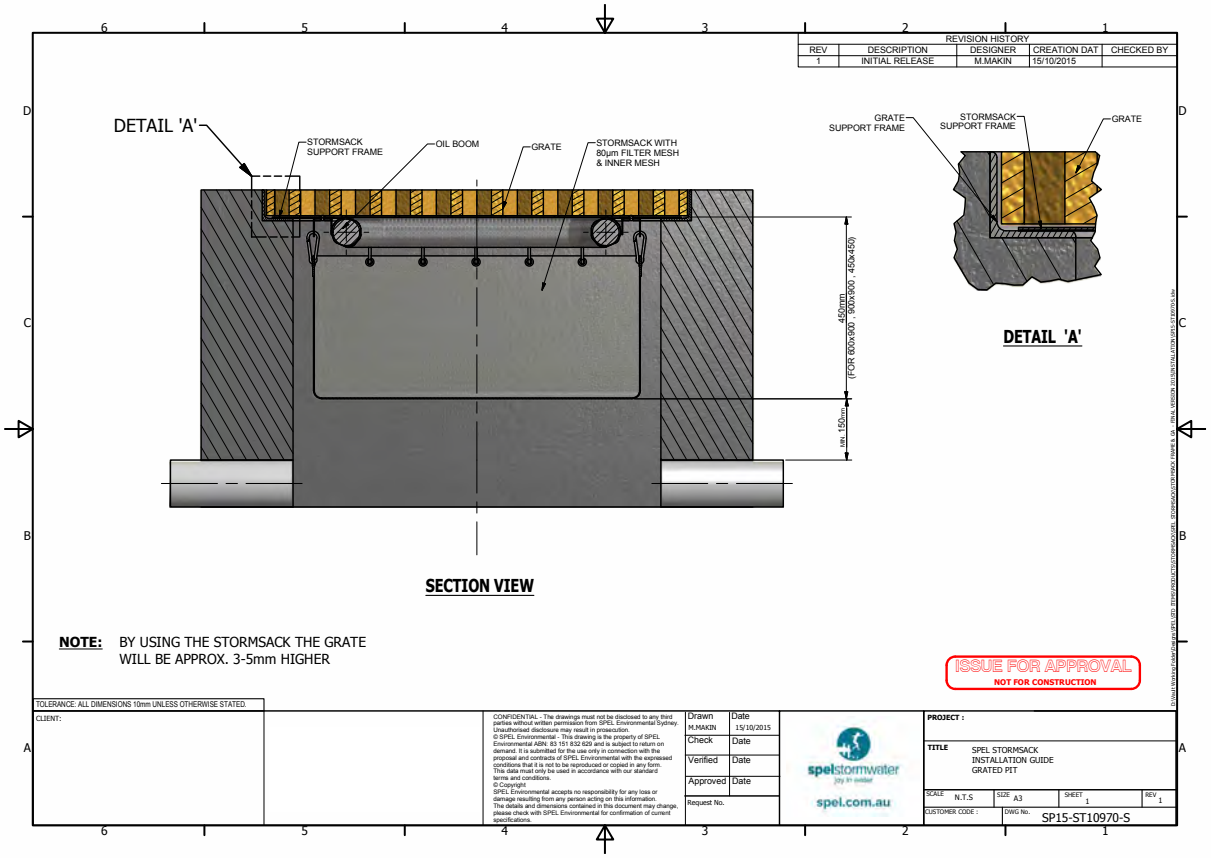


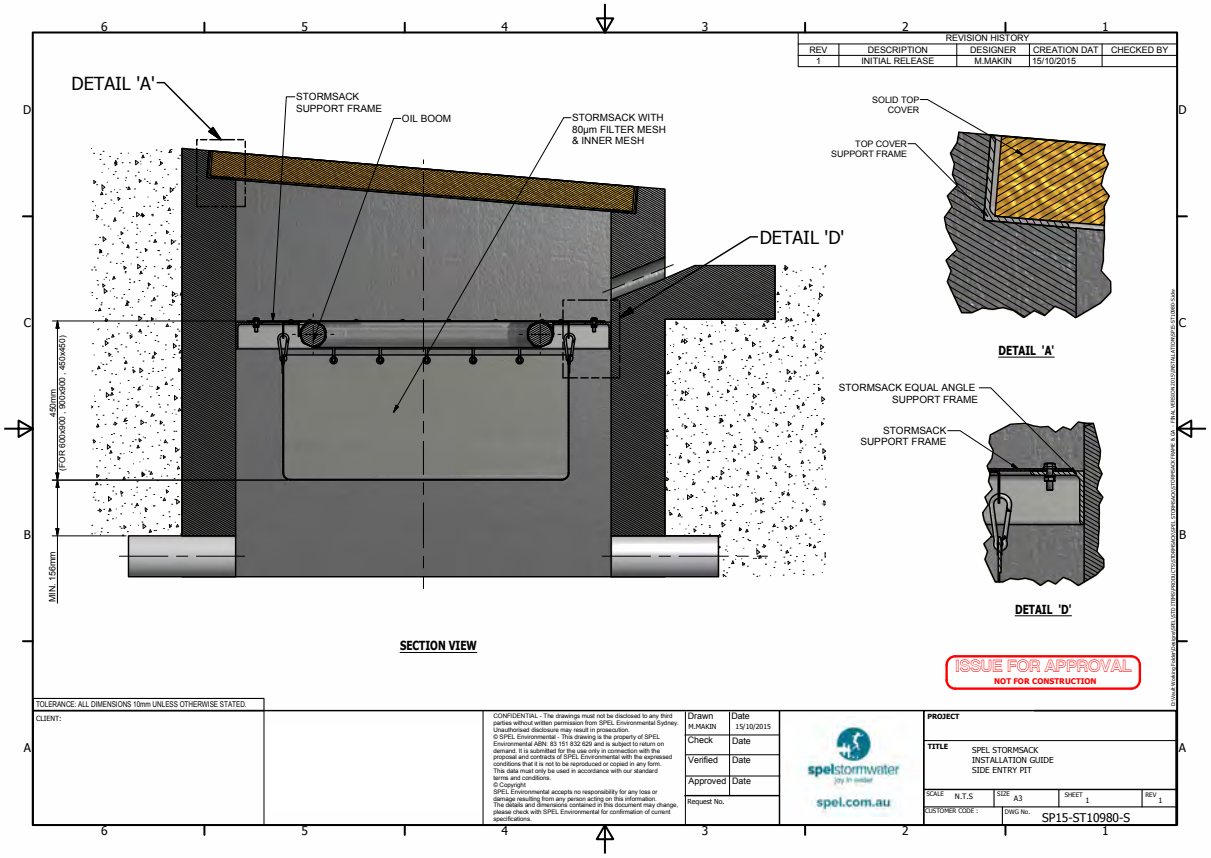


SPEL Stormsack

At Source Gross Pollutant Trap

Installation Details





SPEL Hydrosystem

Cartridge Filter For Tertiary Stormwater Treatment

SPEL Hydrosystem is a specialist stormwater filter, designed for installation within load bearing shafts and chambers of concrete or plastic construction. The pre-fitted plastic housing is safe and easy to fit on site.

The SPEL Hydrosystem uses an up-flow process. This means there is a minimal head drop between the inlet and the outlet. The stormwater is treated within the unit by the following processes: sedimentation, filtration, adsorption and precipitation. It is suitable for Heavy Metal, TSS and Nutrient reduction.

Tested Treatment Efficiencies*

Pollutant	Efficiency
Gross Pollutants (GP)	100%
Total Suspended Solids (TSS)	85%
Total Phosphorus (TP)	66%
Total Nitrogen (TN)	43%
Petroleum Hydrocarbon	82%

*Contact Spel to confirm approved performance for the project LGA

APPLICATIONS

- Car Parks & Shopping Centres
- Council Depots
- Industrial Estates
- Heavy Vehicle Maintenance
- Transport Depots & Loading Bays
- Tunnels
- Highways & Transport Corridors
- Recycling Yards
- Airport Aprons & Tarmacs

SPEL Hydrosystem

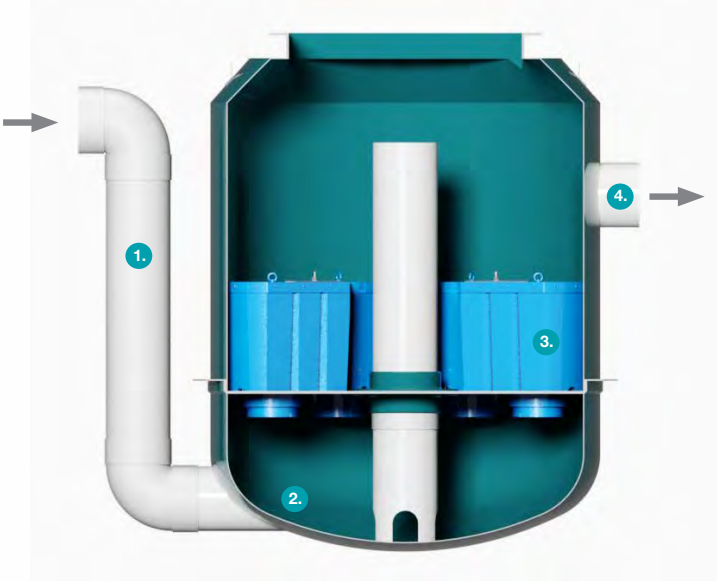
Cartridge Filter For Tertiary Stormwater Treatment

Specifications & Dimensions

Model	NO. CARTRIDGE	TFR	ID (m)	Height (m)	Inlet/ Outlet (mm)
400 SERIES					
SHS.400/1	1	2.5 LPS	1.13	1.5	100
SHS.400/2	2	5 LPS			
SHS.400/3	3	7.5 LPS			
1000 SERIES					
SHS.1000/4	4	12 LPS	1.20	2.60	225
1500 SERIES					
SHS.1500/4	4	16 LPS	1.50	2.00	225
SHS.1500/5	5	20 LPS			
SHS.1500/6	6	24 LPS			
1850 SERIES					
SHS.1850/7	7	28 LPS	1.85	2.00	225
2200 SERIES					
SHS.2200/7	7	28 LPS	2.20	2.50	225
SHS.2200/8	8	32 LPS			
SHS.2200/9	9	36 LPS			
2500 SERIES					
SHS.2500/10	10	40 LPS	2.50	2.70	300
SHS.2500/11	11	44 LPS			
SHS.2500/12	12	48 LPS			
SHS.2500/13	13	52 LPS			
SHS.2500/14	14	56 LPS			
SHS.2500/15	15	60 LPS			
SHS.2500/16	16	64 LPS			

Model	NO. CARTRIDGE	TFR	ID (m)	Height (m)	Inlet/ Outlet (mm)
3000 SERIES					
SHS.3000/17	17	68 LPS	3.00	2.85	300
SHS.3000/18	18	76 LPS			
SHS.3000/19	19	76 LPS			
SHS.3000/20	20	80 LPS			
SHS.3000/21	20	84 LPS			
3500 SERIES					
SHS.3500/22	22	88 LPS	3.50	2.95	375
SHS.3500/23	23	92 LPS			
SHS.3500/24	24	96 LPS			
SHS.3500/25	25	100 LPS			
SHS.3500/26	26	104 LPS			
SHS.3500/27	27	108 LPS			
SHS.3500/28	28	112 LPS			
SHS.3500/29	29	116 LPS			
SHS.3500/30	30	120 LPS			
SHS.3500/31	31	124 LPS			
4000 SERIES					
SHS.4000/32	32	128 LPS	4.00	3.25	375
SHS.4000/33	33	132 LPS			
SHS.4000/34	34	136 LPS			
SHS.4000/35	35	140 LPS			
SHS.4000/36	36	144 LPS			
SHS.4000/37	37	148 LPS			
SHS.4000/38	38	152 LPS			
SHS.4000/39	39	156 LPS			

Operating System



1. The Stormwater from the catchment enters the hydrosystem via PVC inlet pipe.
2. Heavy sediment is retained within the sump area.
3. Filter elements are located in the tank. With these filter elements, the fines are filtered in an upflow process and most of the dissolved pollutants are precipitated and adsorptively bound. The filter can be backflushed from above and can easily to be replaced in the event of it becoming fully contaminated.
4. The clean water is situated above the filter elements; flows out the outlet.

SPEL Hydrosystem

Cartridge Filter For Tertiary Stormwater Treatment

Project profiles

Sienna Estate Plumpton, VIC

Hydrosystem Samples

Marshall's Road, Altona North, VIC

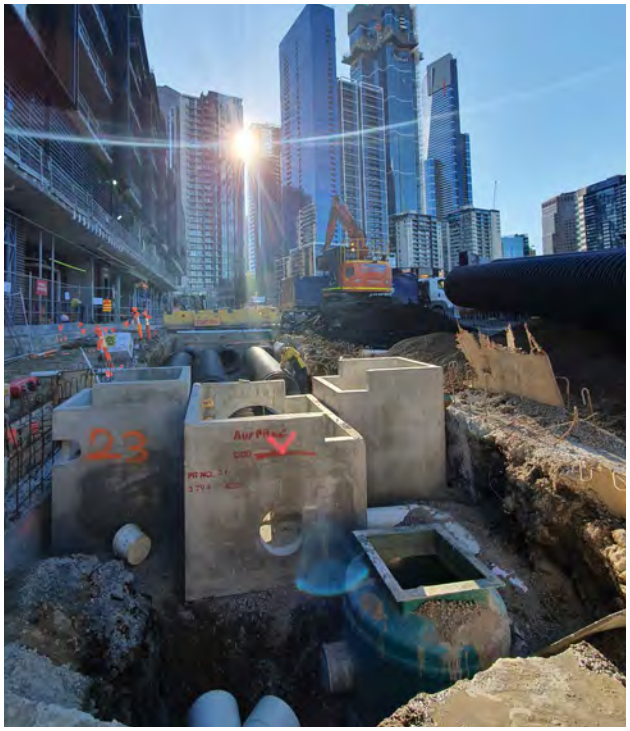
spelstormwater joy in water

SPEL Hydrosystem

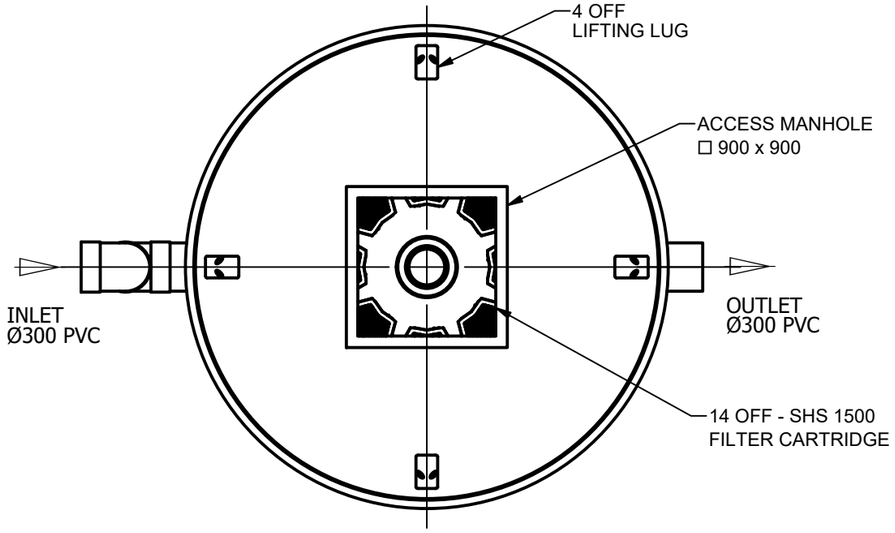
Cartridge Filter For Tertiary Stormwater Treatment

Project profiles

Melbourne Square Apartment Towers, VIC



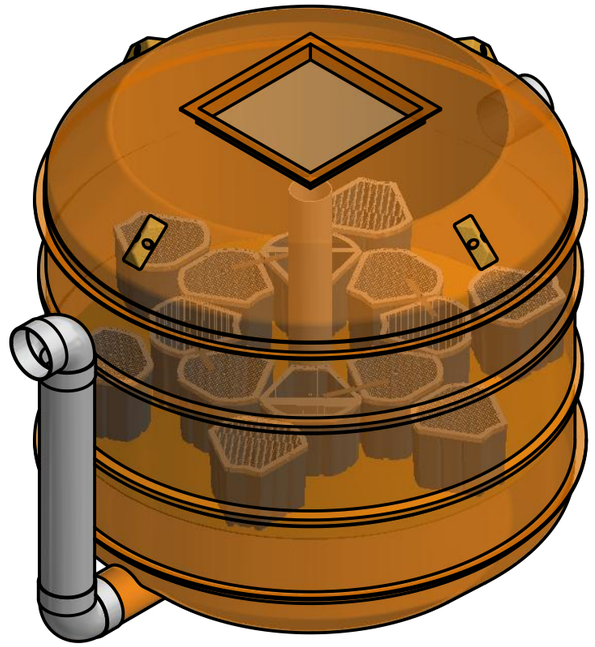
Wetherill Park, NSW



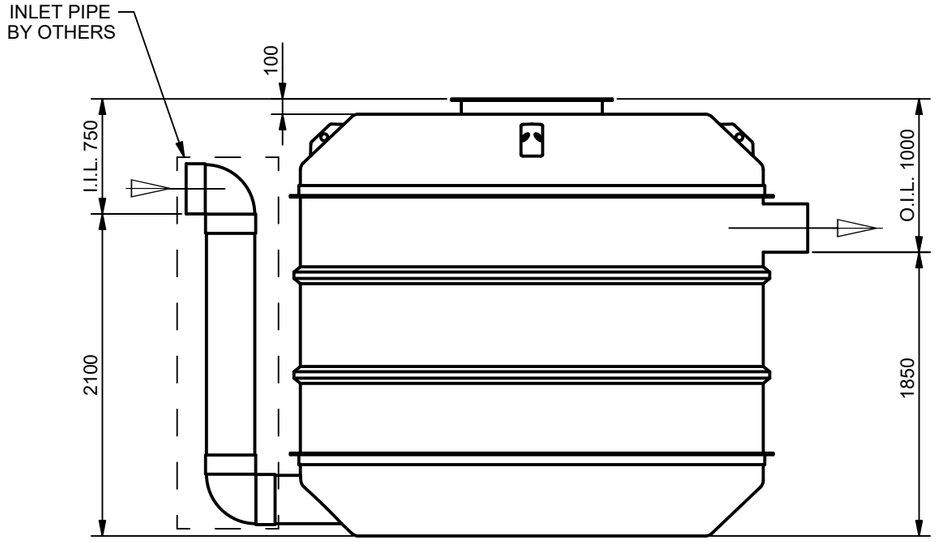
PLAN VIEW

ISSUE FOR APPROVAL
NOT FOR CONSTRUCTION

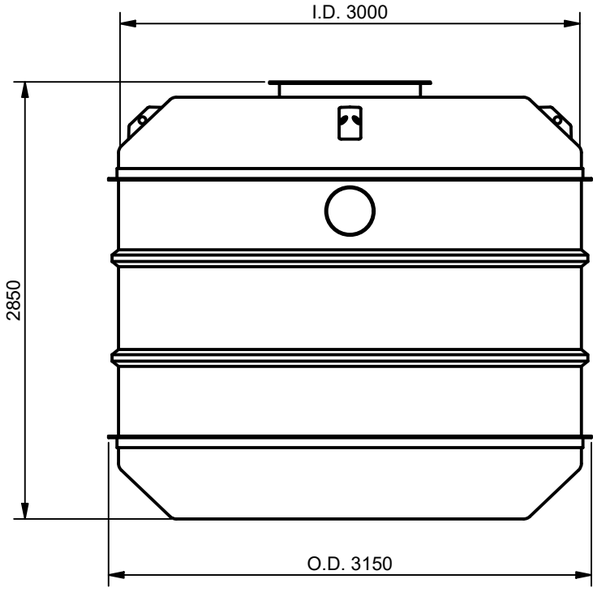
Site Level Confirmation		
Finished Surface Level (FSL)	RL:	
Access Cover Thickness		mm
Inlet Invert Level	RL:	
Outlet Invert Level	RL:	
Company:		
Name:		
Date:		



ISOMETRIC VIEW



ELEVATION VIEW



END VIEW
OUTLET

NOTE:
SYSTEM PIPEWORK MUST HAVE AT LEAST
250 MM OF FALL TO OPERATE CORRECTLY.

TOLERANCE: All Dimensions to Closest 10 mm & +/- 30 mm

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

REV	DATE	BY	DESCRIPTION	CHK
1	06/05/2022	R.R.	INITIAL RELEASE	

CLIENT:

Drawn	R.R.	Date 06/05/2022
Check		Date
Verified		Date
Approved		Date
Request No.	RN216842	

spelstormwater
joy in water
spel.com.au

PROJECT :

TITLE
SPEL HYDROSYSTEM 3000
SHS.300D-1500C-14.300.PVC
FRP TANK 3000 DIA.- 14 FILTER CARTRIDGES
GENERAL ARRANGEMENT

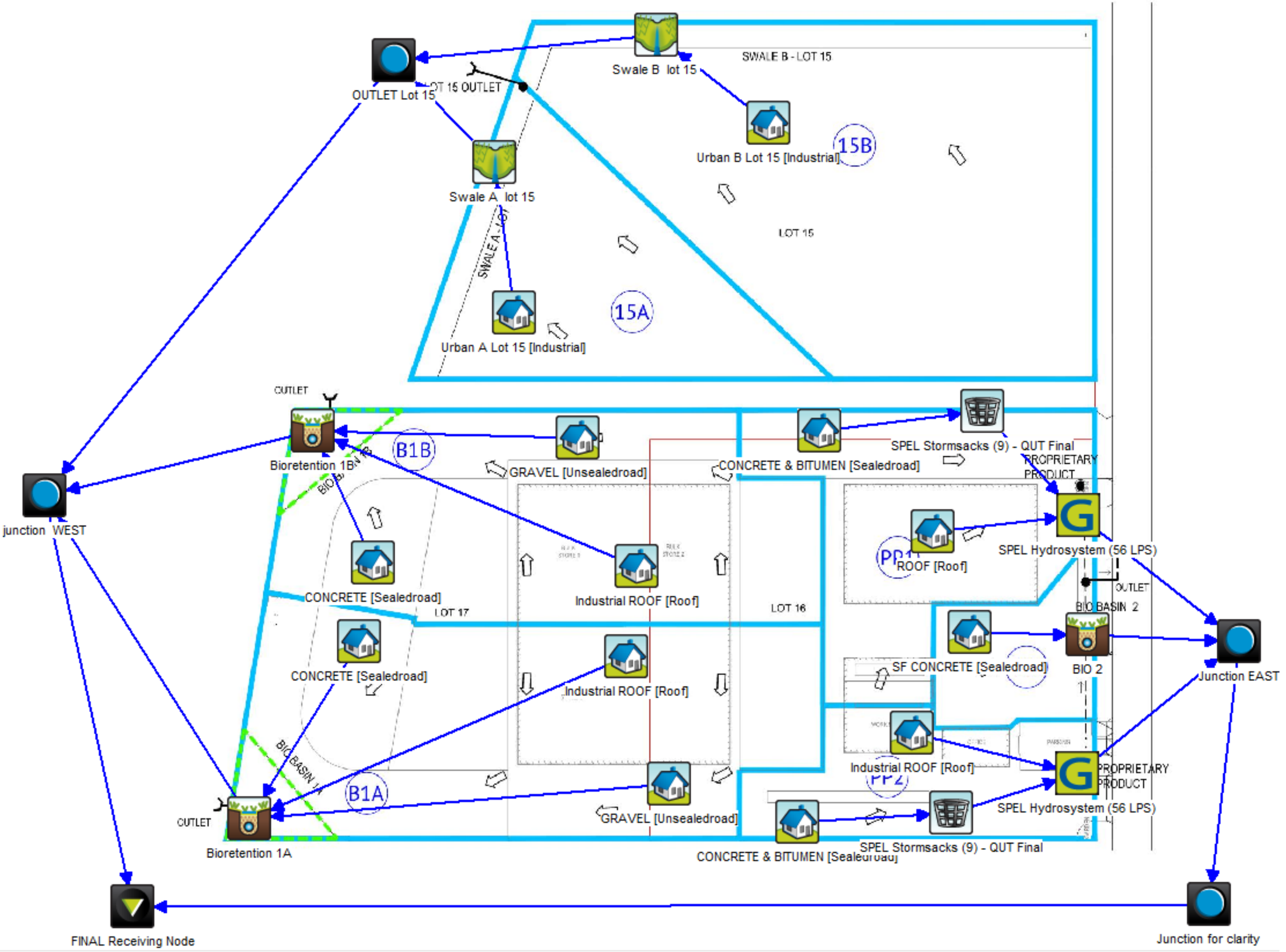
SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

CUSTOMER CODE :
DWG No. SP22-HY26910-S

C:\Users\robin\Documents\Vault\Designs\SPEL\PRODUCTS\HYDROSYSTEM\3000 SERIES\STANDARD\3000 - 14 FILTER\SP22-HY26910-S.idw

APPENDIX B

MUSIC MODEL LAYOUT


OUTLET Lot 15
LOT 15 OUTLET
Swale B lot 15
SWALE B - LOT 15
Urban B Lot 15 [Industrial]
15B
Swale A lot 15
SWALE A - LOT
LOT 15
15A
Urban A Lot 15 [Industrial]
OUTLET
Bioretention 1B
B1B
BIO BASIN 1B
GRAVEL [Unsealedroad]
CONCRETE & BITUMEN [Sealedroad]
SPEL Stormsacks (9) - QUT Final
PROPRIETARY PRODUCT
junction WEST
CONCRETE [Sealedroad]
LOT 17
Industrial ROOF [Roof]
LOT 16
ROOF [Roof]
SPEL Hydrosystem (56 LPS)
OUTLET
BIO BASIN 2
BIO 2
Junction EAST
SF CONCRETE [Sealedroad]
CONCRETE [Sealedroad]
Industrial ROOF [Roof]
PP2
PROPRIETARY PRODUCT
BIO BASIN 1A
B1A
OUTLET
GRAVEL [Unsealedroad]
SPEL Hydrosystem (56 LPS)
CONCRETE & BITUMEN [Sealedroad]
SPEL Stormsacks (9) - QUT Final
Bioretention 1A
FINAL Receiving Node
Junction for clarity

APPENDIX C

MUSIC MODEL INFORMATION

==========

DESCRIPTION

This section allows you to specify any information or notes for your project.

==========

VersionNumber	205
MeteorologicalTemplate	C:\Program Files (x86)\eWater\MUSIC 6 6.2.1.1576 HL\Met Data\Townsville 6 minutes (1990 - 1999).mlb
ConstituentAbbreviation	TSS
ConstituentName	Total Suspended Solids
Music Version	version 6.3

Townsville City Council - CBI-0003 Cleveland bay industrial park lots 15 - 17 SQMP. KD

BackgroundImage	C:\12dS\data\12dSynergy\CBI-0003 CBIP - West Side Lts 15-17_14086\11. Engineering - Civil\07. MUSIC\CBI-0003 background for MUSIC Model.jpg;True

==========

Node Types = UrbanSourceNode													
Zoning Surface Type	**Roof**	**Unsealed road**	**Sealed road**	**Sealed road**	**Industrial**	**Industrial**	**Roof**	**Unsealed road**	**Sealed road**	**Roof**	**Sealed road**	**Sealed road**	**Roof**
Node Name	**Industrial ROOF**	**GRAVEL**	**CONCRETE**	**CONCRETE**	**Urban A Lot 15**	**Urban B Lot 15**	**Industrial ROOF**	**GRAVEL**	**CONCRETE & BITUMEN**	**ROOF**	**SF CONCRETE**	**CONCRETE & BITUMEN**	**Industrial ROOF**
Node ID	**1**	**3**	**4**	**9**	**11**	**12**	**16**	**19**	**61**	**62**	**65**	**66**	**67**
General - Location	Industrial ROOF	GRAVEL	CONCRETE	CONCRETE	Urban A Lot 15	Urban B Lot 15	Industrial ROOF	GRAVEL	CONCRETE & BITUMEN	ROOF	SF CONCRETE	CONCRETE & BITUMEN	Industrial ROOF
Areas - Total Area (ha)	0.336	0.7	0.23	0.255	0.72	1.78	0.335	0.587	0.46	0.308	0.235	0.36	0.077
Areas - Impervious (%)	100	95	100	100	85	90	100	95	100	100	100	100	100
Areas - Pervious (%)	0	5	0	0	15	10	0	5	0	0	0	0	0
Rainfall-Runoff - Impervious Area - Rainfall Threshold	1	1	1	1	1	1	1	1	1	1	1	1	1
Rainfall-Runoff - Pervious Area - Soil Storage Capacity	200	200	200	200	200	200	200	200	200	200	200	200	200
Rainfall-Runoff - Pervious Area - Initial Storage (% of	30	30	30	30	30	30	30	30	30	30	30	30	30
Rainfall-Runoff - Pervious Area - Field Capacity (mm)	80	80	80	80	80	80	80	80	80	80	80	80	80
Rainfall-Runoff - Pervious Area - Infiltration Capacity Coefficient - a	200	200	200	200	200	200	200	200	200	200	200	200	200
Rainfall-Runoff - Pervious Area - Infiltration Capacity Exponent - b	1	1	1	1	1	1	1	1	1	1	1	1	1
Rainfall-Runoff - Groundwater Properties - Initial Depth	10	10	10	10	10	10	10	10	10	10	10	10	10
Rainfall-Runoff - Groundwater Properties - Daily Recharge Rate (%)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Rainfall-Runoff - Groundwater Properties - Daily Baseflow Rate (%)	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Rainfall-Runoff - Groundwater Properties - Daily Deep Seepage Rate (%)	2	2	2	2	2	2	2	2	2	2	2	2	2
Total Suspended Solids - Base Flow Concentration - Mean (log mg/L)	0	0.78	0.78	0.78	0.78	0.78	0	0.78	0.78	0	0.78	0.78	0
Total Suspended Solids - Base Flow Concentration - Std Dev (log mg/L)	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Total Suspended Solids - Base Flow Concentration - Estimation Method	Stochastically generated												
Total Suspended Solids - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Suspended Solids - Storm Flow Concentration - Mean (log mg/L)	1.3	2.43	2.43	2.43	1.92	1.92	1.3	2.43	2.43	1.3	2.43	2.43	1.3
Total Suspended Solids - Storm Flow Concentration - Std Dev (log mg/L)	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Total Suspended Solids - Storm Flow Concentration - Estimation Method	Stochastically generated												
Total Suspended Solids - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Phosphorus - Base Flow Concentration - Mean (log	0	-1.11	-1.11	-1.11	-1.11	-1.11	0	-1.11	-1.11	0	-1.11	-1.11	0
Total Phosphorus - Base Flow Concentration - Std Dev	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
Total Phosphorus - Base Flow Concentration - Estimation Method	Stochastically generated												
Total Phosphorus - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Phosphorus - Storm Flow Concentration - Mean	-0.89	-0.3	-0.3	-0.3	-0.59	-0.59	-0.89	-0.3	-0.3	-0.89	-0.3	-0.3	-0.89
Total Phosphorus - Storm Flow Concentration - Std Dev (log mg/L)	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Total Phosphorus - Storm Flow Concentration - Estimation Method	Stochastically generated												
Total Phosphorus - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Nitrogen - Base Flow Concentration - Mean (log	0	0.14	0.14	0.14	0.14	0.14	0	0.14	0.14	0	0.14	0.14	0
Total Nitrogen - Base Flow Concentration - Std Dev (log	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Nitrogen - Base Flow Concentration - Estimation Method	Stochastically generated												
Total Nitrogen - Base Flow Concentration - Serial Correlation (R squared)	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Nitrogen - Storm Flow Concentration - Mean (log	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total Nitrogen - Storm Flow Concentration - Std Dev (log	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Total Nitrogen - Storm Flow Concentration - Estimation Method	Stochastically generated												

Total Nitrogen - Storm Flow Concentration - Serial Correlation (R squared)	0	0	0	0	0	0	0	0	0	0	0	0	0
Import Flow Properties - Import Flow Enabled	1	1	1	1	1	1	1	1	1	1	1	1	1
Import Flow Properties - Import Flow File													
Import Flow Properties - Header lines	0	0	0	0	0	0	0	0	0	0	0	0	0
Import Flow Properties - Baseflow Column	0	0	0	0	0	0	0	0	0	0	0	0	0
Import Flow Properties - Impervious Stormflow Column	0	0	0	0	0	0	0	0	0	0	0	0	0
Import Flow Properties - Pervious Stormflow Column	0	0	0	0	0	0	0	0	0	0	0	0	0
Import Flow Properties - Unit						m3/s							
Import Flow Properties - Catchment Area for GP (ha)	1	1	1	1	1	1	1	1	1	1	1	1	1

Node Type = BioRetention NodeV4			
Node Name	**Bioretention 1A**	**Bioretention 1B**	**BIO 2**
Node ID	**7**	**32**	**64**
General - Location	Bioretention 1A	Bioretention 1B	BIO 2
General - Notes			
General - Fluxes			
General - Flux File Timestep (in seconds)	360	360	360
Inlet Properties - Low Flow By-pass (cubic metres per	0	0	0
Inlet Properties - High Flow By-pass (cubic metres per	100	100	100
Storage Properties - Extended Detention Depth (metres)	0.5	0.6	0.43
Storage Properties - Surface Area (square metres)	479	396	123
Filter and Media Properties - Filter Area (square metres)	429	339	64
Filter and Media Properties - Unlined Filter Media Perimeter (metres)	97.2	92	62.4
Filter and Media Properties - Saturated Hydraulic Conductivity (mm/hr)	200	200	200
Filter and Media Properties - Filter Depth (metres)	0.6	0.6	0.6
Filter and Media Properties - TN Content of Filter Media	800	800	800
Filter and Media Properties - Orthophosphate Content of Filter Media (mg/kg)	80	80	80
Infiltration Properties - Exfiltration Rate (mm/hr)	3.6	3.6	3.6
Lining Properties - Base Lined	no		
Vegetation Properties - Vegetation Properties	Vegetated with Effective Nutrient Removal		
Outlet Properties - Overflow Weir Width (metres)	20	20	1
Outlet Properties - Underdrain Present	0	0	0
Outlet Properties - Submerged Zone With Carbon	no		
Outlet Properties - Submerged Zone Depth (metres)	0.45	0.45	0.45
Advanced Properties - Total Suspended Solids - k (m/yr)	8000	8000	8000
Advanced Properties - Total Suspended Solids - C* (mg/L)	20	20	20

Advanced Properties - Total Phosphorus - k (m/yr)	6000	6000	6000
Advanced Properties - Total Phosphorus - C* (mg/L)	0.13	0.13	0.13
Advanced Properties - Total Nitrogen - k (m/yr)	500	500	500
Advanced Properties - Total Nitrogen - C* (mg/L)	1.4	1.4	1.4
Advanced Properties - Filter Media Soil Type		Loamy Sand	
Advanced Properties - Weir Coefficient	1.7	1.7	1.7
Advanced Properties - Pet Scaling Factor	2.1	2.1	2.1
Advanced Properties - Number of CSTR Cells	3	3	3
Advanced Properties - Porosity of Filter Media	0.35	0.35	0.35
Advanced Properties - Porosity of Submerged Zone	0.35	0.35	0.35
Advanced Properties - Horizontal Flow Coefficient	3	3	3

Node Type = SwaleNode		
Node Name	**Swale A lot 15**	**Swale B lot 15**
Node ID	**10**	**13**
General - Location	Swale A lot 15	Swale B lot 15
General - Notes	adopted exfiltration 36mm/hr as higher up in the soild profile we expect sandier/more porous material	
General - Fluxes		
General - Flux File Timestep (in seconds)	360	360
Inlet Properties - Low Flow By-pass (cubic metres per	0	0
Storage Properties - Length (metres)	100	195
Storage Properties - Bed Slope (%)	0.3	0.3
Storage Properties - Base Width (metres)	1	1
Storage Properties - Top Width (metres)	8.5	8.5
Storage Properties - Depth (metres)	0.75	0.75
Storage Properties - Vegetation Height (metres)	0.1	0.1
Storage Properties - Exfiltration Rate (mm/hr)	36	36
Advanced Properties - Number of CSTR Cells	10	10
Advanced Properties - Total Suspended Solids - k (m/yr)	8000	8000
Advanced Properties - Total Suspended Solids - C* (mg/L)	20	20
Advanced Properties - Total Suspended Solids - C**	14	14
Advanced Properties - Total Phosphorus - k (m/yr)	6000	6000
Advanced Properties - Total Phosphorus - C* (mg/L)	0.13	0.13
Advanced Properties - Total Phosphorus - C** (mg/L)	0.13	0.13
Advanced Properties - Total Nitrogen - k (m/yr)	500	500
Advanced Properties - Total Nitrogen - C* (mg/L)	1.4	1.4
Advanced Properties - Total Nitrogen - C** (mg/L)	1.4	1.4

Advanced Properties - Threshold Hydraulic Loading for C** (m/yr)	3500	3500		
Node Type = Junction Node				
Node Name	**OUTLET Lot 15**	**junction WEST**	**Junction EAST**	**Junction for clarity**
Node ID	**14**	**25**	**63**	**70**
General - Location	OUTLET Lot 15	junction WEST	Junction EAST	Junction for clarity
Node Type	ReceivingNode			
Node Name	FINAL Receiving Node			
==========				
==========				
Proprietary product nodes				
Node Type	**Generic Node**	**GPT Node**	**Generic Node**	**GPT Node**
Node Name	**SPEL Hydrosystem (56 LPS)**	**SPEL Stormsacks (9) - QUT Final**	**SPEL Hydrosystem (56 LPS)**	**SPEL Stormsacks (9) - QUT Final**
Node ID	**59**	**60**	**68**	**69**
	Adjust High Flow By-pass in increments of 4 l/s (0.004 cu.m/sec) starting from 12l/s (0.012cu.m/s) to achieve required treatment effectivenesss) .	see right * NOTE	Adjust High Flow By-pass in increments of 4 l/s (0.004 cu.m/sec) starting from 12l/s (0.012cu.m/s) to achieve required treatment effectiveness).	* SPEL Stormsack High Flow Bypass rates are determined on the size of the inlet pit. If using a 600mm x 600mm inlet pit use a high flow bypass of 11L/s. For a 900mm x 900mm inlet pit use a high flow bypass of 15L/s. ||||When using multiple SPEL Stormsacks<< High Flow By-pass rates will increase by the product of SPEL Stormsacks used.||||Concentration efficiencies have been obtain from test site data and are published in the MDPI Water Journal (August 2015 edition). This information will be updated as further data is obtain. ||||This treatment node contains the most up to date information and are subject to change. Please contact SPEL to verify latest data set on 1300 773 500.
Notes				
Fluxes				
Flux File Timestep (in seconds)	1	1	1	1
Lo-flow bypass rate (cum/sec)	0	0	0	0
High Flow By-pass (cubic metres per sec)	0.056	0.099	0.056	0.099
Flow Transfer Enabled	0	0	0	0
Flow Transfer Function - Input #1	0	0	0	0
Flow Transfer Function - Output #1	0	0	0	0
Flow Transfer Function - Input #2	10	10	10	10
Flow Transfer Function - Output #2	10	10	10	10

Flow Transfer Function - Input #3				
Flow Transfer Function - Output #3				
Flow Transfer Function - Input #4				
Flow Transfer Function - Output #4				
Flow Transfer Function - Input #5				
Flow Transfer Function - Output #5				
Flow Transfer Function - Input #6				
Flow Transfer Function - Output #6				
Flow Transfer Function - Input #7				
Flow Transfer Function - Output #7				
Flow Transfer Function - Input #8				
Flow Transfer Function - Output #8				
Flow Transfer Function - Input #9				
Flow Transfer Function - Output #9				
Flow Transfer Function - Input #10				
Flow Transfer Function - Output #10				
GP Transfer Enabled	0	0	0	0
GP Transfer Function - Input #1	0	0	0	0
GP Transfer Function - Output #1	0	0	0	0
GP Transfer Function - Input #2	15	15	15	15
GP Transfer Function - Output #2	0	0	0	0
GP Transfer Function - Input #3				
GP Transfer Function - Output #3				
GP Transfer Function - Input #4				
GP Transfer Function - Output #4				
GP Transfer Function - Input #5				
GP Transfer Function - Output #5				
GP Transfer Function - Input #6				
GP Transfer Function - Output #6				
GP Transfer Function - Input #7				
GP Transfer Function - Output #7				
GP Transfer Function - Input #8				
GP Transfer Function - Output #8				
GP Transfer Function - Input #9				
GP Transfer Function - Output #9				
GP Transfer Function - Input #10				
GP Transfer Function - Output #10				
TN Transfer Enabled	0	0	0	0
TN Transfer Function - Input #1	0	0	0	0
TN Transfer Function - Output #1	0	0	0	0
TN Transfer Function - Input #2	100	100	100	100
TN Transfer Function - Output #2	57	55	57	55
TN Transfer Function - Input #3				

TN Transfer Function - Output #3				
TN Transfer Function - Input #4				
TN Transfer Function - Output #4				
TN Transfer Function - Input #5				
TN Transfer Function - Output #5				
TN Transfer Function - Input #6				
TN Transfer Function - Output #6				
TN Transfer Function - Input #7				
TN Transfer Function - Output #7				
TN Transfer Function - Input #8				
TN Transfer Function - Output #8				
TN Transfer Function - Input #9				
TN Transfer Function - Output #9				
TN Transfer Function - Input #10				
TN Transfer Function - Output #10				
TP Transfer Enabled	0	0	0	0
TP Transfer Function - Input #1	0	0	0	0
TP Transfer Function - Output #1	0	0	0	0
TP Transfer Function - Input #2	100	100	100	100
TP Transfer Function - Output #2	34	72	34	72
TP Transfer Function - Input #3				
TP Transfer Function - Output #3				
TP Transfer Function - Input #4				
TP Transfer Function - Output #4				
TP Transfer Function - Input #5				
TP Transfer Function - Output #5				
TP Transfer Function - Input #6				
TP Transfer Function - Output #6				
TP Transfer Function - Input #7				
TP Transfer Function - Output #7				
TP Transfer Function - Input #8				
TP Transfer Function - Output #8				
TP Transfer Function - Input #9				
TP Transfer Function - Output #9				
TP Transfer Function - Input #10				
TP Transfer Function - Output #10				
TSS Transfer Enabled	0	0	0	0
TSS Transfer Function - Input #1	0	0	0	0
TSS Transfer Function - Output #1	0	0	0	0
TSS Transfer Function - Input #2	100	100	100	100
TSS Transfer Function - Output #2	15	39	15	39
TSS Transfer Function - Input #3				
TSS Transfer Function - Output #3				

TSS Transfer Function - Input #4
TSS Transfer Function - Output #4
TSS Transfer Function - Input #5
TSS Transfer Function - Output #5
TSS Transfer Function - Input #6
TSS Transfer Function - Output #6
TSS Transfer Function - Input #7
TSS Transfer Function - Output #7
TSS Transfer Function - Input #8
TSS Transfer Function - Output #8
TSS Transfer Function - Input #9
TSS Transfer Function - Output #9
TSS Transfer Function - Input #10
TSS Transfer Function - Output #10

TSS Flow-Efficiency Enabled		1	1	1	1
TSS Flow-Efficiency Values	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	
TN Flow-Efficiency Enabled		1	1	1	1
TN Flow-Efficiency Values	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	
TP Flow-Efficiency Enabled		1	1	1	1
TP Flow-Efficiency Values	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	
GP Flow-Efficiency Enabled		1	1	1	1
GP Flow-Efficiency Values	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	[0:1];[1:1]	

==========

end

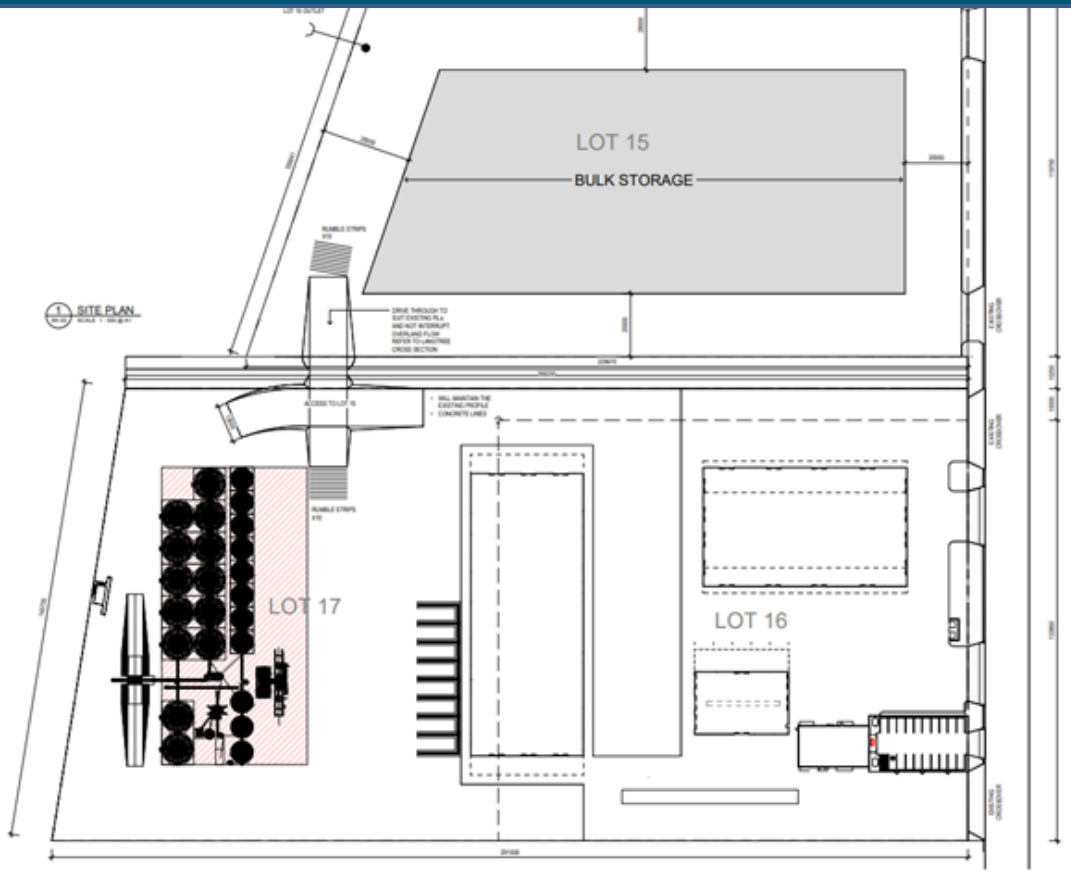
Premise

MILFORD PLANNING

Attachment 3

LANGTREE
CONSULTING ENGINEERS

SIZER & COGILL
CBIP LOTS 15, 16 AND 17



STORMWATER QUALITY MANAGEMENT PLAN

CLEVLAND INDUSTRIAL PARK

SIZER&COGILL
Bulk & General Carriers Pty Ltd

LANGTREE CONSULTING

Project No.: 0966

Reference No.: R-NP0297

Date: 16/06/2023

Controlled Copy No.: 1

Revisions: A

Revision Record:

Rev	Review Date	Description	Prepared	Checked	Approved
A	16/06/2023	Issued for Client Comment	Natalie Pham	Brett Langtree	Brett Langtree

TABLE OF CONTENTS

1.0 INTRODUCTION

This Stormwater Quality Management Plan (SQMP) has been prepared by Langtree Consulting on behalf of Sizer & Cogill for their development located on Lots 15, 16 and 17, Cleveland Bay Industrial Park development at the Townsville State Development Area (TSDA). Notwithstanding this please note that the entire Cleveland Bay Industrial Park Development Western Precinct (CBIP) has been re-assessed as part of this report to reflect the as built form of the development.

The Western Precinct is approximately 113.5ha and is shown red in **Figure 1**. The total area that has been approved for development is approximately 59.5ha as shown in **Figure 2**. This report addresses the proposed development of Lots 15, 16 and 17 on SP331994.

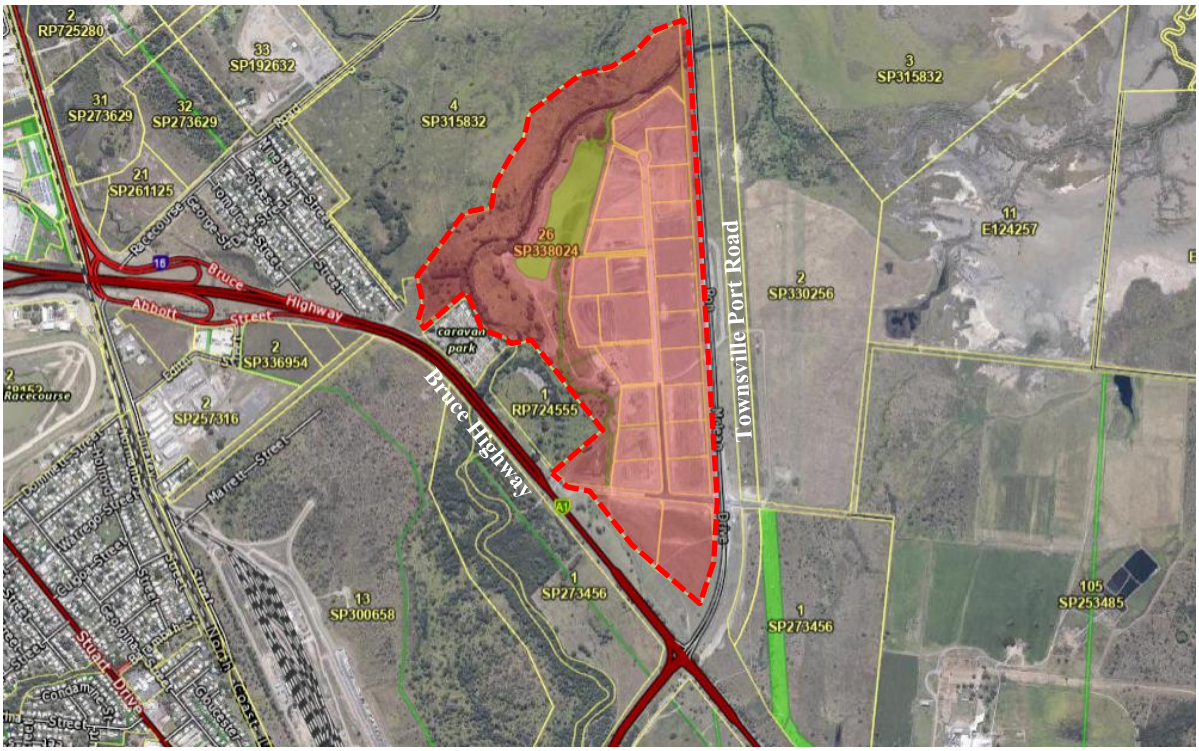


Figure 1. *Development Site Locality*

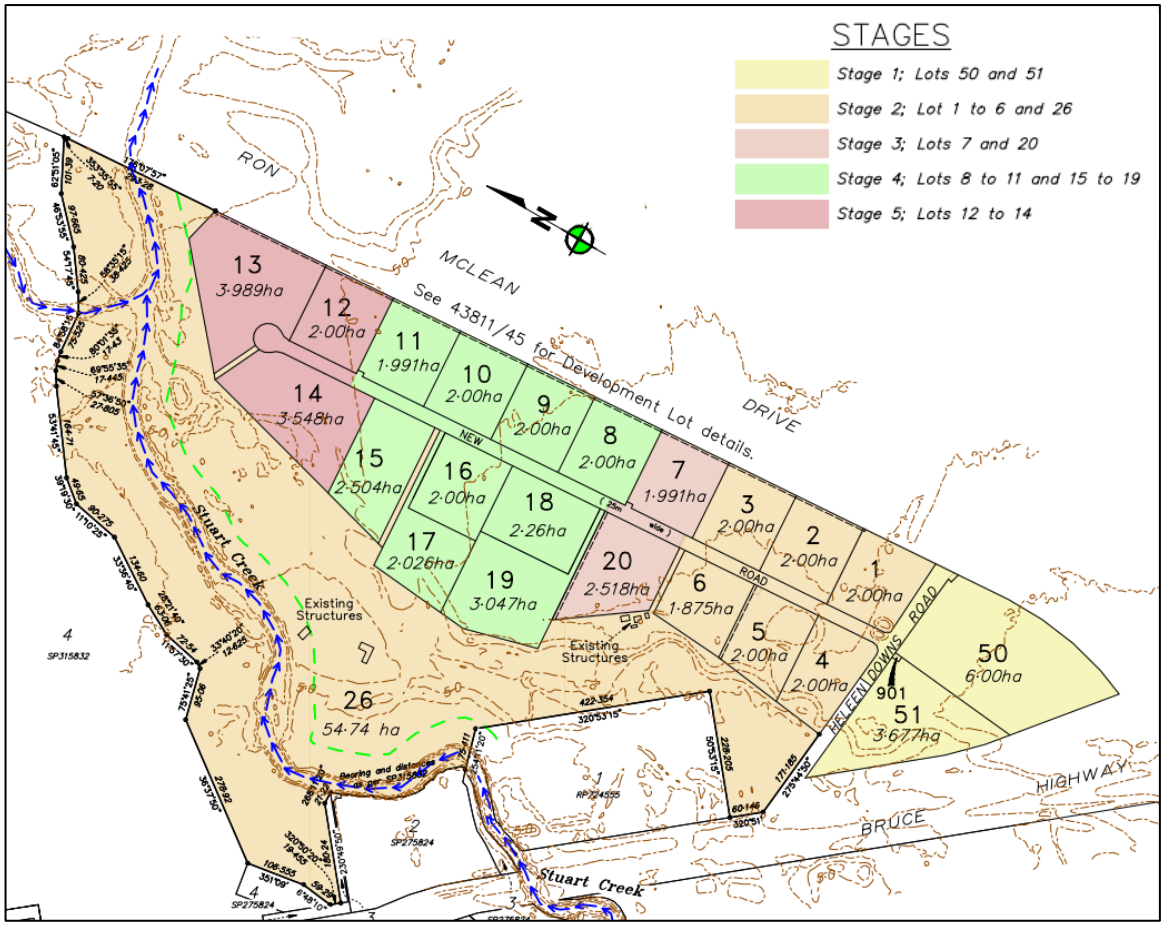


Figure 2. *Proposed Development Layout (Western Precinct)*

Please note that it is proposed that Lots 15, 16 and 17 at CBIP will be used for agricultural storage including grain storage, the storage for bulk bags, IBC'S (intermediate Bulk Containers) and other agricultural products, which are then distributed when required.

2.0 OBJECTIVE

The objective of this report is to assess the best practice stormwater quality management for CBIP Lots 15, 16 and 17 and ultimately across the entire development site to enable the Western Precinct to be developed with the permitted industrial uses and site coverage of 90%. In addition, it is intended to implement best practice stormwater quality management to ensure the health of the receiving waters of Stuart Creek, during the operational phase of the development (i.e. post-development).

The best practice stormwater quality management measure are to be designed to meet the requirements and principles outlined within:

- Healthy Water Code of Townsville City Council City Plan;
- Table B (Appendix 2) of the State Planning Policy July 2017 (SPP);
- WSUD Design Objectives for Urban Stormwater Management;
- Construction and Establishment Guidelines, Swales, Bioretention Systems and Wetlands;
- Concept Design Guidelines for Water Sensitive Urban Design;
- Standard Drawings for Water Sensitive Urban Design;
- Environmental Protection (Water) Policy 2009 (Townsville region); and
- Water Quality Guidelines for the Great Barrier Reef Marine Park (2010).

3.0 SITE SPECIFIC INFORMATION

3.1 WESTERN PRECINCT DETAILS

The CBIP Western Precinct consists of twenty-two (22) industrial allotments. The industrial allotments range from 1.875ha to 6.0ha. Refer to **Figure 2** above.

A breakdown of individual lot details and allotment size is summarised in **Table 1**.

Table 1: *Western Precinct Development Lots & Area*

Land use	Lot No.	Lot Area
Industrial Lot	Lot 50 on SP331993	6.0 ha
Industrial Lot	Lot 51 on SP331993	3.69 ha
Sewerage Pump Station	Lot 901 on SP331993	0.014 ha
Industrial Lot	Lot 1 on SP331994	2.0 ha
Industrial Lot	Lot 2 on SP331994	2.0 ha
Industrial Lot	Lot 3 on SP331994	2.0 ha
Industrial Lot	Lot 4 on SP331994	2.0 ha
Industrial Lot	Lot 5 on SP331994	1.979 ha
Industrial Lot	Lot 6 on SP331994	1.875 ha
Industrial Lot	Lot 7 on SP331994	1.991 ha
Industrial Lot	Lot 8 on SP331994	2.0 ha
Industrial Lot	Lot 9 on SP331994	2.0 ha
Industrial Lot	Lot 10 on SP331994	2.0 ha
Industrial Lot	Lot 11 on SP331994	1.991 ha
Industrial Lot	Lot 12 on SP331994	2.0 ha
Industrial Lot	Lot 13 on SP331994	3.989 ha
Industrial Lot	Lot 14 on SP331994	3.548 ha
Industrial Lot	Lot 15 on SP331994	3.548 ha
Industrial Lot	Lot 16 on SP331994	2.504 ha
Industrial Lot	Lot 17 on SP331994	2.0 ha
Industrial Lot	Lot 18 on SP331994	2.026 ha
Industrial Lot	Lot 19 on SP331994	2.26 ha
Industrial Lot	Lot 20 on SP331994	3.047 ha
Balance	-	57.041 ha
	Sub Total	113.5 ha
Industrial Lot	Lot 1 on RP724555	9.452 ha
	Total	113.5 ha

Note: * Easements burdening lots.

3.2 LOTS 15, 16 AND 17 ON SP338023

Lots 15, 16 and 17 on SP338023 are proposed to be amalgamated and developed as one lot and will be referred to as the subject site here on in. It is proposed that the subject site will be utilised as a bulk storage site. Refer to Figure 3 for proposed site layout plan.

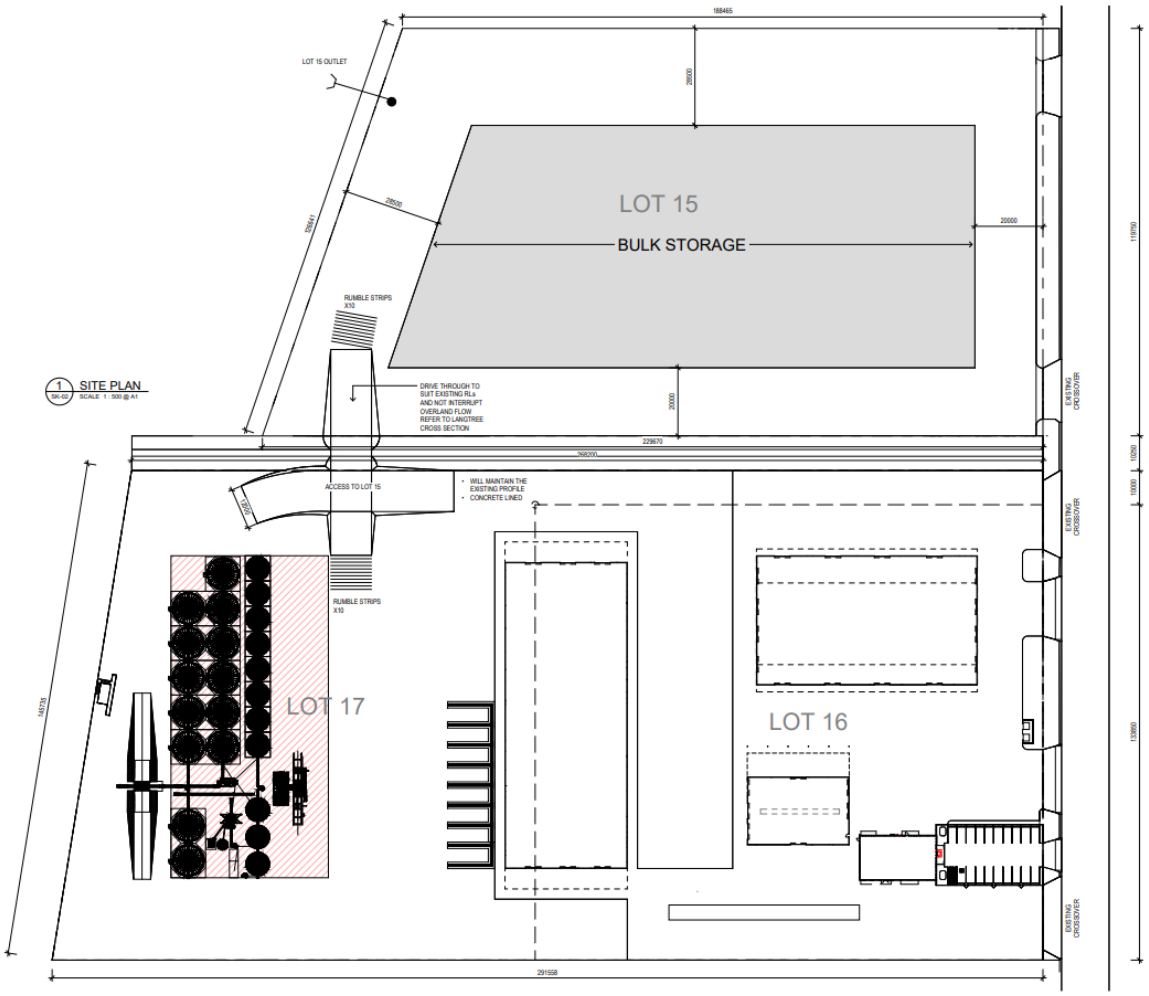


Figure 3. *Proposed Development Layout*

4.0 STORMWATER REGIME

4.1 PREVIOUS STORMWATER QUALITY REGIME

It has previously been anticipated that all the stormwater runoff from the CBIP industrial lots will be treated onsite and will be the responsibility of the future lot owner. Stormwater runoff from the roadways (i.e. Heleen Downs Road and Penelope Road), will be treated by existing and proposed naturally grassed open drains within the balance area. The entire drainage area is accessible for maintenance from Heleen Downs Road and Penelope Road.

The stormwater catchments which will be treated by individual lot treatment systems constructed by landowners prior to discharge to existing and constructed naturally grassed open drains within the balance area. This area is shown in **Figure 4** in RED. Roadway/easement areas that will be treated via the existing and constructed naturally grassed open drains is shown in BLUE. It is noted that stormwater from Lots 16 and 18 fall towards Penelope Road and have been assumed to be treated by individual lot system by the lot owners before entering individual field inlet pits which discharging into the positive stormwater network prior to release to the naturally grassed open drains in the balance area.

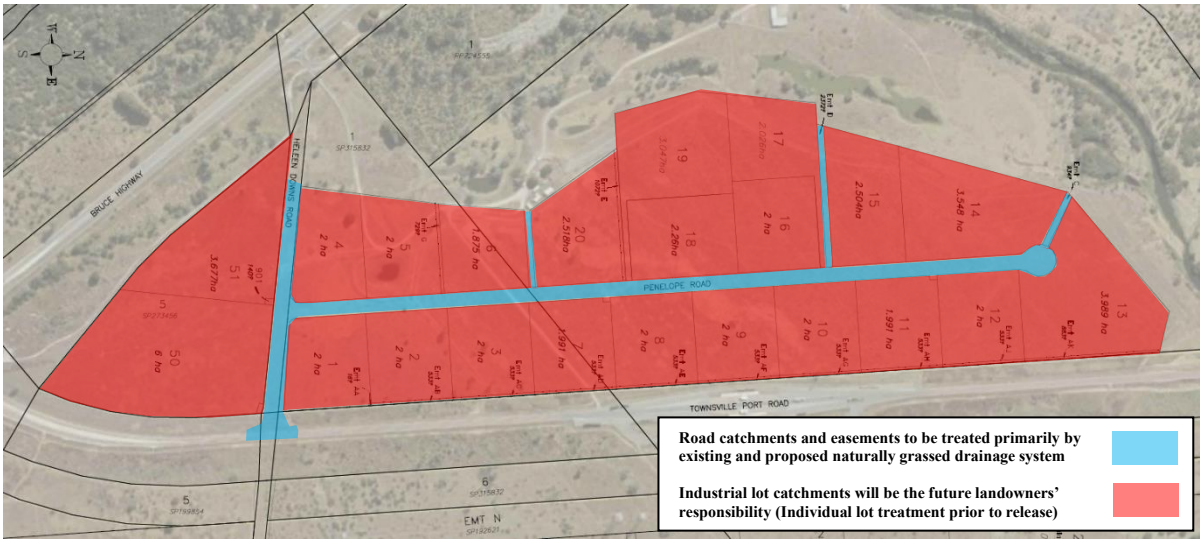


Figure 4. *Existing Lot Stormwater Treatment Catchments*

4.2 MUSIC MODELLING

Water quality modelling previously conducted for the now constructed (mitigated) scenario, using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software to demonstrate the TCC target reduction criteria. Stormwater treatment trains were developed and modelled for the sites to determine the effectiveness of the water quality measures in achieving the relevant water quality objectives.

Treatment areas for Lots and Roadways are as per the **Table 1** above.

The existing modelled stormwater treatment trains for each catchment within the Western Precinct can be represented as shown in **Figure 5**.

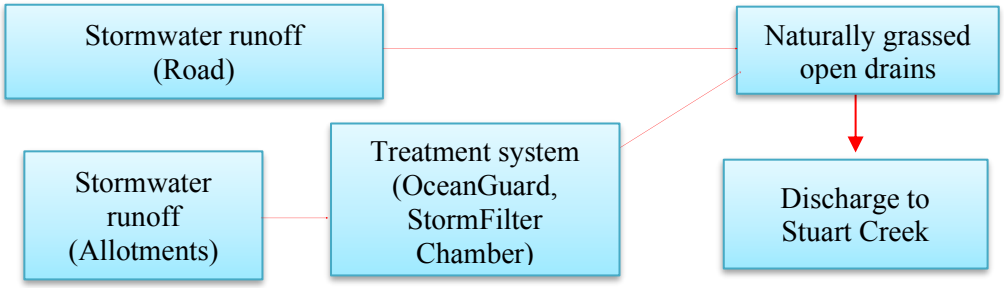


Figure 5. *Typical stormwater treatment train*

Please note the as built form of the CBIP development has been constructed with significantly wider swales and larger compensatory earthworks areas then was originally modelled. The constructed built form of the CBIP development is shown in Figure 6.

As a direct result, a review of the previous stormwater quality modelling with respect to the as built form of the CBIP has found that the existing model is very conservative and does not represent as built form of the CBIP development.

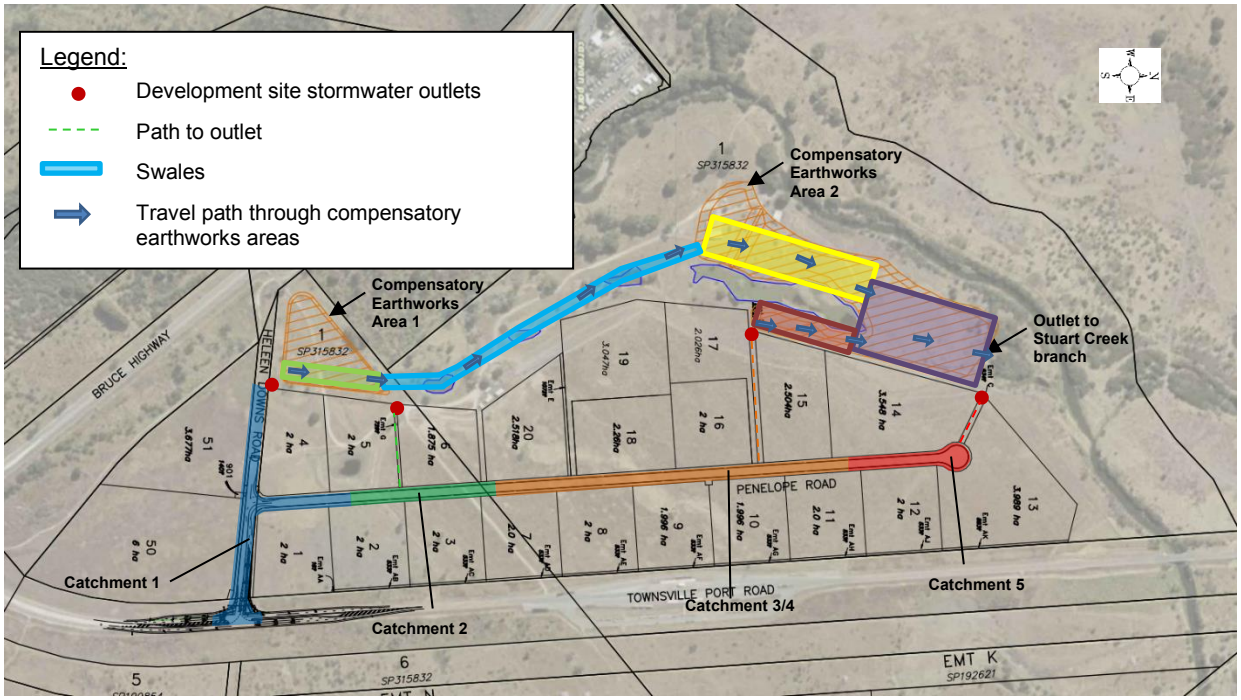


Figure 6. *Revised modelled drainage plan*

Hence, with regards to Lots 15, 16 and 17, these lands have now be modelled in accordance with below:

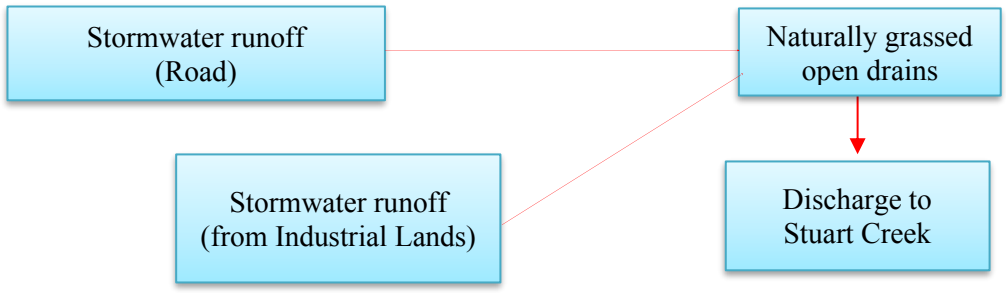


Figure 7. *CBIP Lots 15, 16 and 17 stormwater treatment train*

With respect to the subject site, it is noted that the fraction impervious for the proposed layout has been maintained at 90%, to accommodate any future development of the subject site.

Therefore the proposed stormwater treatment area of the CBIP Western Precinct is shown in **Figure 8**

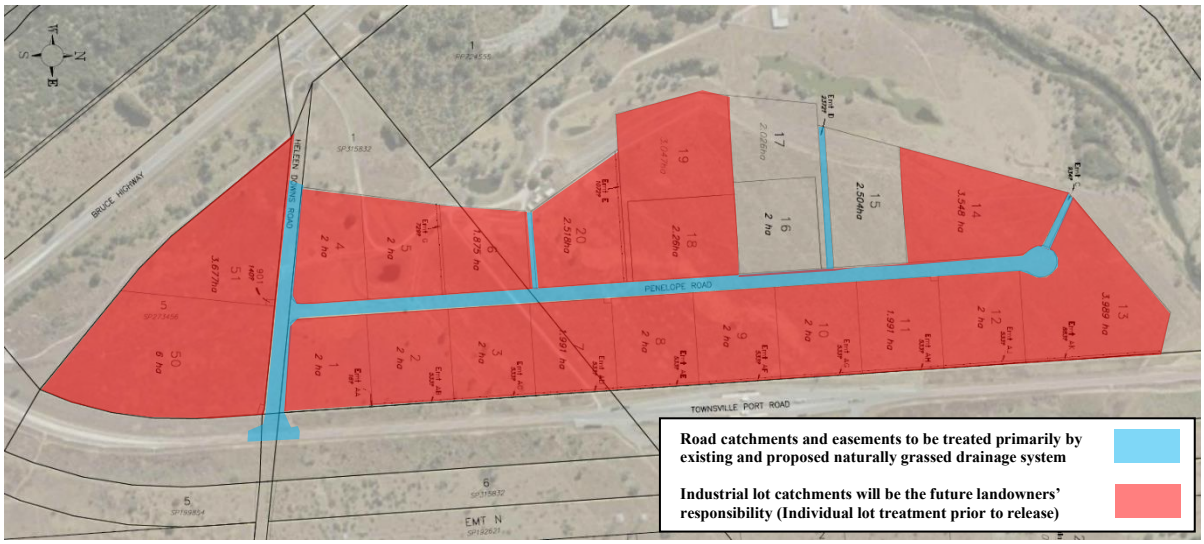


Figure 8. *Revised Stormwater Treatment Catchments*

The updated MUSIC Modelling Diagram is Shown in **Figure 9**.

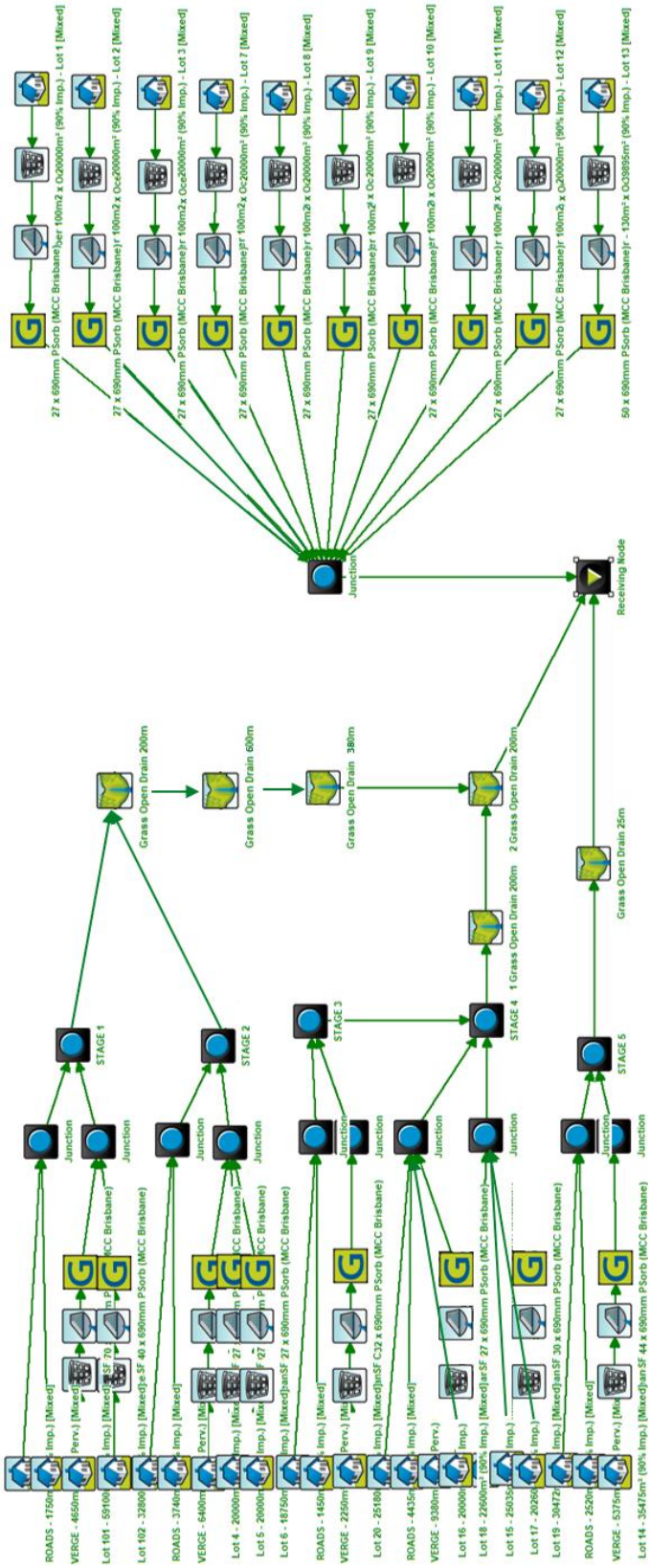


Figure 9. *Modified MUSIC Modelling Diagram*

5.0 STORMWATER QUALITY ASSESSMENT

5.1 POLLUTANTS OF CONCERN

The key pollutants generated by an urban industrial development during the operational (post-development) phase are listed in Urban Stormwater Quality Planning Guidelines 2010 by the Department of Environment and Resource Management (DERM) which generally included the following:

- Sediment
- Nutrients
- Oxygen-demanding substances
- pH (acidity)
- Micro-organisms
- Toxic organics
- Metals
- Gross pollutants (litter and debris)
- Oils and surfactants
- Increased water temperature

Considering that the proposed development involves transportation facilities, the general key pollutants of concern in runoff generated from this type of development include:

- Sediment
- Nutrients
- Gross pollutants
- Oils and surfactants

5.2 WATER QUALITY OBJECTIVES (WQO)

Townsville City Council (TCC) set the following design objectives for stormwater treatments set out by for Industrial Developments:

- ≥80% reduction in total suspended solids load
- ≥ 65% reduction in total phosphorus load
- ≥ 40% reduction on total nitrogen load
- ≥ 90% reduction in gross pollutant load.

The above design objectives are in accordance with *TCC City Plan – Schedule SC6.4.3.9.2, Section 2: Design Objectives for Stormwater Management.*

The rainfall, runoff and pollutant parameters adopted within the MUSIC Modell are detailed in Tables 2, 3 and 4.

Table 2: *Rainfall Parameters*

Input Parameter	Data Used in Modelling
Rainfall station	032040 TOWNSVILLE AERO
Time step	6 minutes
Modelling period	1970 – 1975
Mean annual rainfall (mm)	1152mm
Evapotranspiration	1734mm
Rainfall runoff parameters	Industrial (90% Impervious)
Pollutant export parameters	Industrial

Table 3: *Runoff Parameters*

Input Parameter	Data Used in Modelling
Land use	Industrial
Rainfall threshold (mm)	1.0
Soil storage capacity (mm)	18
Initial storage (% capacity)	10
Field capacity (mm)	80
Infiltration capacity coefficient (a)	243
Infiltration capacity coefficient (b)	0.6
Initial depth (mm)	50
Daily recharge rate (%)	0
Daily baseflow rate (%)	31
Daily deep seepage rate (%)	0

Table 4: *Pollutant Export Parameters for Industrial – Roads/Pavement*

Industrial	Total Suspended Solids (log mg/L)		Total Phosphorous (log mg/L)		Total Nitrogen (log mg/L)	
	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
Baseflow parameters	0.78	0.45	-1.11	0.48	0.14	0.20
Stormwater parameters	2.43	0.44	-0.30	0.36	0.25	0.32

The MUSIC pollutant load results for the development sites are summarised in Table 5.

Table 5: *MUSIC Modelling Results*

Parameters	TCC Target Reduction Criteria	MUSIC Results	Objective Achieved?
TSS	80%	89.29	Yes
TP	65%	65.29	Yes
TN	40%	41.7	Yes
GP	90%	100	Yes

Based on the MUSIC Modelling Results summarised in Table 5, the anticipated load-based pollutant outcomes for the western precinct including modifications to Lots 15, 16 and 17 on SP724555 as a completed development are better those identified in Section 5.2 of this report and thus, still meets the overall design objectives. As such, the stormwater leaving the completed development will not exceed allowable pollutant load levels prior discharging into Stuart Creek.

5.3 STORMWATER QUALITY OPERATIONS AND MAINTENANCE

The general water quality operations and maintenance of the site shall include but not limited to the following:

- No maintenance of any plant or equipment or refuelling equipment is to occur within 50m of an existing waterway;
- Waste materials are not to be dumped into any receiving waters or waterways;
- Observed litter or other materials surrounding waterways shall be removed from the water as soon as practicable;
- Plant refuelling or vehicle washing, or maintenance shall only take place where spillages will not discharge to waters or stormwater drains;
- All spillages shall be cleaned up as soon as practicable. Hosing down or releasing waste to stormwater drains or receiving waters will not be permitted;
- All turf strips and concrete drains shall be maintained at regular intervals or after significant rain events to ensure their function (i.e. removal of silt and debris);
- Any fuels, herbicides, oils, paints or chemicals shall not be stored in a manner that spillages may enter waters or be subject to stormwater runoff. All fuels, herbicides, oils, paints and other chemicals must be stored within a bunded area which will contain the volume of materials stored; and

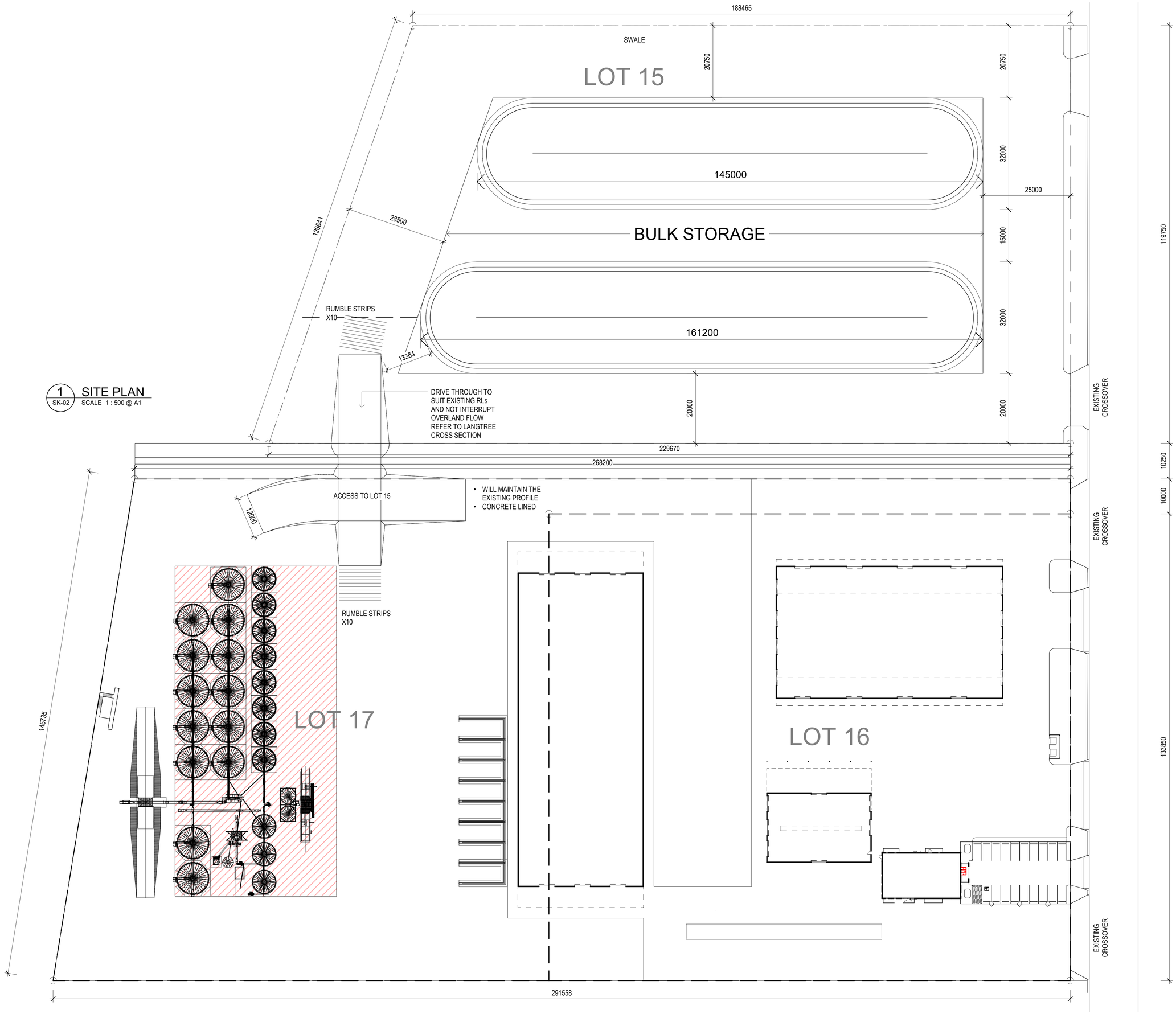
6.0 CONCLUSION

The objective of this report is to assess the best practice stormwater quality management measures across the development site and the entire Western Precinct. Please note the subject site has been modelled as 90% impervious, to accommodate any future development of the subject site.

This report has reviewed the pollutant parameters of the subject site and investigated the impact of the proposed Western Precinct development on downstream properties and receiving waters. Based on the assessment, the WQO's specified for TSS, TN, TP, GP can be achieved with the existing and proposed naturally grassed open drains.

MILFORD PLANNING

Attachment 4



1 SITE PLAN
SK-02 SCALE 1 : 500 @ A1

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	OPTION 2	16/05/22
2	LOT 15 - BULK STORAGE	05/04/22
3	GENERAL UPDATES	14/06/22
4	SITE UPDATES	20/06/22
5	GENERAL UPDATES	28/07/22
6	SILOS ADDED	20/12/22
7	GENERAL UPDATES	13/01/23
8	CARPARK AND DRIVEWAY ADJUSTED	18/01/23
9	GENERAL UPDATES	03/04/23
10	SITE REVISED	20/04/23
11	LOT 15 UPDATE	17/05/23

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN Author CHECKED Checker
DATE STAMP 17/05/2023 2:22:27 PM
SCALE 1 : 500 @ A1

-10m 0 5 10 15 20 25m
SCALE 1:500 @ A1, 1:1000 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
SITE SURVEY

DRAWING NO.
09-1777_ SK-00 P11

LEGEND

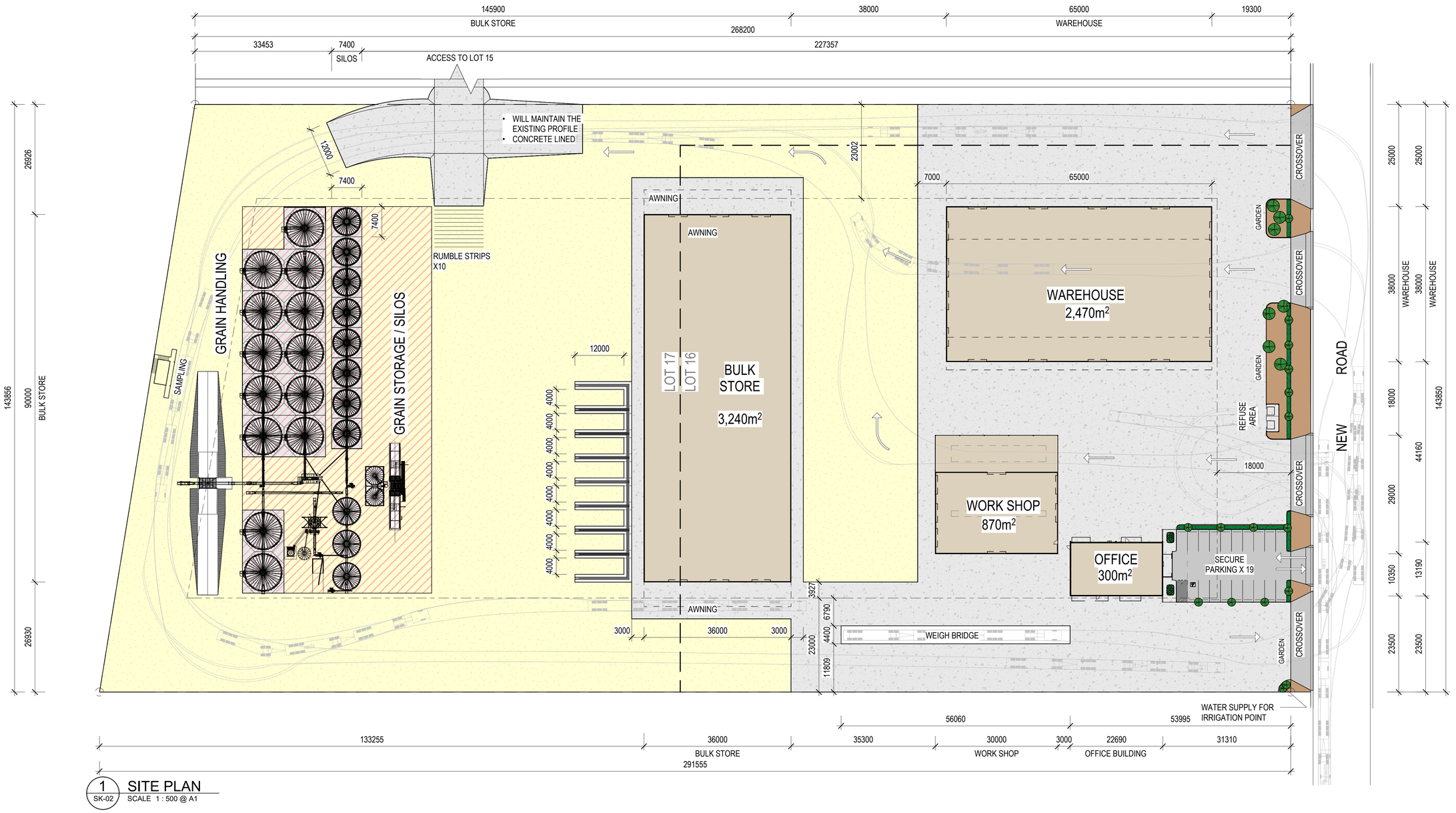
- BITUMEN
- BUILDING
- GRAVEL
- GRAIN STORAGE / SILOS
- GARDEN
- CONCRETE

SITE AREA	
NAME	AREA
BITUMEN	494 m²
BUILDING	6892 m²
CONCRETE	11706 m²
GRAIN STORAGE / SILOS	4368 m²
GRAVEL	16492 m²
LANDSCAPE	309 m²
	40260 m²

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	OPTION 2	14/01/22
2	OPTION 2	18/01/22
3	OPTION 2	21/01/22
4	OPTION 2	02/02/22
5	OPTION 2	04/02/22
6	OPTION 2	16/05/22
7	GENERAL UPDATES	09/05/22
8	GENERAL UPDATES	14/06/22
9	SITE UPDATES	20/06/22
10	SILOS ADDED	20/12/22
11	GENERAL UPDATES	13/01/23
12	CARPARK AND DRIVEWAY ADJUSTED	18/01/23
13	GENERAL UPDATES	03/04/23
14	SITE REVISED	20/04/23



1 SK-02 SITE PLAN
SCALE 1 : 500 @ A1

SIZER&COGILL
Bulk & General Carriers PTY LTD

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	CHECKED
DATE STAMP	20/04/2023 10:11:52 AM
SCALE	1 : 500 @ A1

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

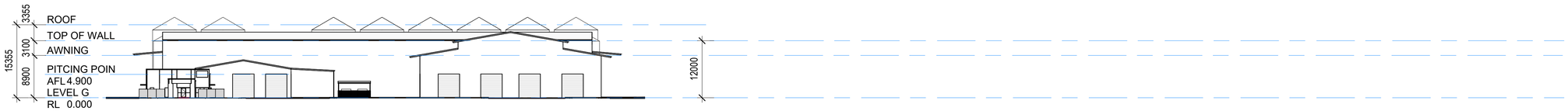
SHEET NAME
SITE PLAN

DRAWING NO.
09-1777_ SK-01 | P14

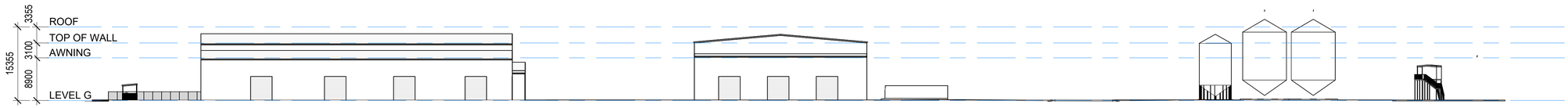
Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

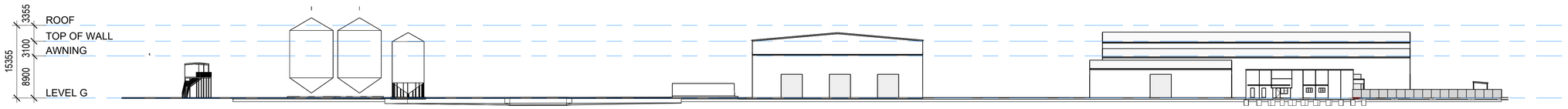
ISSUE	DESCRIPTION	DATE
1	OPTION 2	16/05/22
2	GENERAL UPDATES	14/06/22
3	SITE UPDATES	20/06/22
4	GENERAL UPDATES	28/07/22
5	SILOS ADDED	20/12/22
6	CARPARK AND DRIVEWAY ADJUSTED	18/01/23
7	GENERAL UPDATES	03/04/23
8	SITE REVISED	20/04/23



1 EAST ELEVATION
SCALE 1 : 500 @ A1



2 NORTH ELEVATION
SCALE 1 : 500 @ A1



3 SOUTH ELEVATION
SCALE 1 : 500 @ A1

4 WEST ELEVATION
SCALE 1 : 500 @ A1

SIZER & COGILL
Bulk & General Carriers Pty Ltd

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:11:56 AM		
SCALE	1 : 500 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
ELEVATION

DRAWING NO.
09-1777_ SK-02 | P8

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

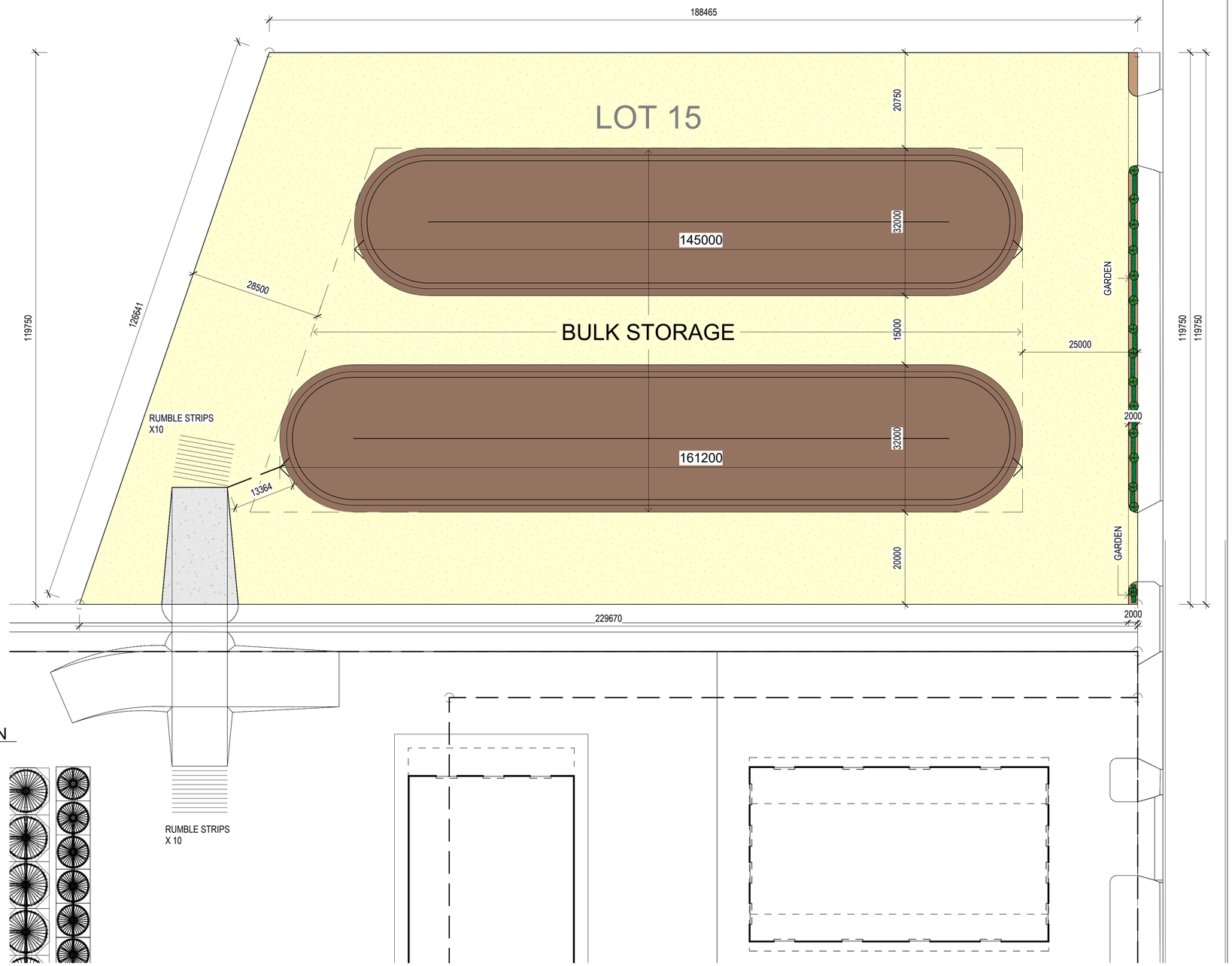
AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	LOT 15 - SURFACE TREATMENT	03/05/22
2	GENERAL UPDATES	14/06/22
3	SITE UPDATES	20/06/22
4	SILOS ADDED	20/12/22
5	GENERAL UPDATES	13/01/23
6	CARPARK AND DRIVEWAY ADJUSTED	18/01/23
7	GENERAL UPDATES	03/04/23
8	SITE REVISED	20/04/23
9	LOT 15 UPDATE	17/05/23

LEGEND

- GRAVEL
- CONCRETE
- GARDEN

SITE AREA	
NAME	AREA
GRAVEL	24497m²
CONCRETE	362m²
GARDEN	176m²



1 / SK-02 LOT 15 - SITE PLAN
SCALE 1 : 500 @ A1

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN Author CHECKED Checker
DATE STAMP 17/05/2023 2:22:29 PM
SCALE 1 : 500 @ A1

-10m 0 5 10 15 20 25m
SCALE 1:500 @ A1, 1:1000 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
SITE PLAN
LOT 15

DRAWING NO.
09-1777_ SK-03 | P9

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	SITE STAGING	15/06/22
2	SITE UPDATES	20/06/22
3	GENERAL UPDATES	28/07/22
4	SILOS ADDED	20/12/22
5	GENERAL UPDATES	13/01/23
6	CARPARK AND DRIVEWAY ADJUSTED	18/01/23
7	GENERAL UPDATES	03/04/23
8	SITE REVISED	20/04/23
9	LOT 15 UPDATE	17/05/23

1 SK-02 SITE PLAN
SCALE 1 : 500 @ A1

LOT 15
STAGE 1B

LOT 17

GRAIN HANDLING

STAGE 1A

GRAIN STORAGE / SILOS
STAGE 1A

BULK
STORE
STAGE 3

WAREHOUSE
STAGE 2

LOT 16

WORK SHOP
STAGE 1A

OFFICE
STAGE 1A

CARPARK
STAGE 1A

WEIGH BRIDGE
STAGE 1A

LEGEND

- STAGE 1A
- STAGE 1B
- STAGE 2
- STAGE 3
- SITE WORKS TO BE COMPLETED IN STAGE 1A
- SITE WORKS TO BE COMPLETED IN STAGE 1B

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Bulk & General Carriers Pty Ltd

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Bulk Storage

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Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

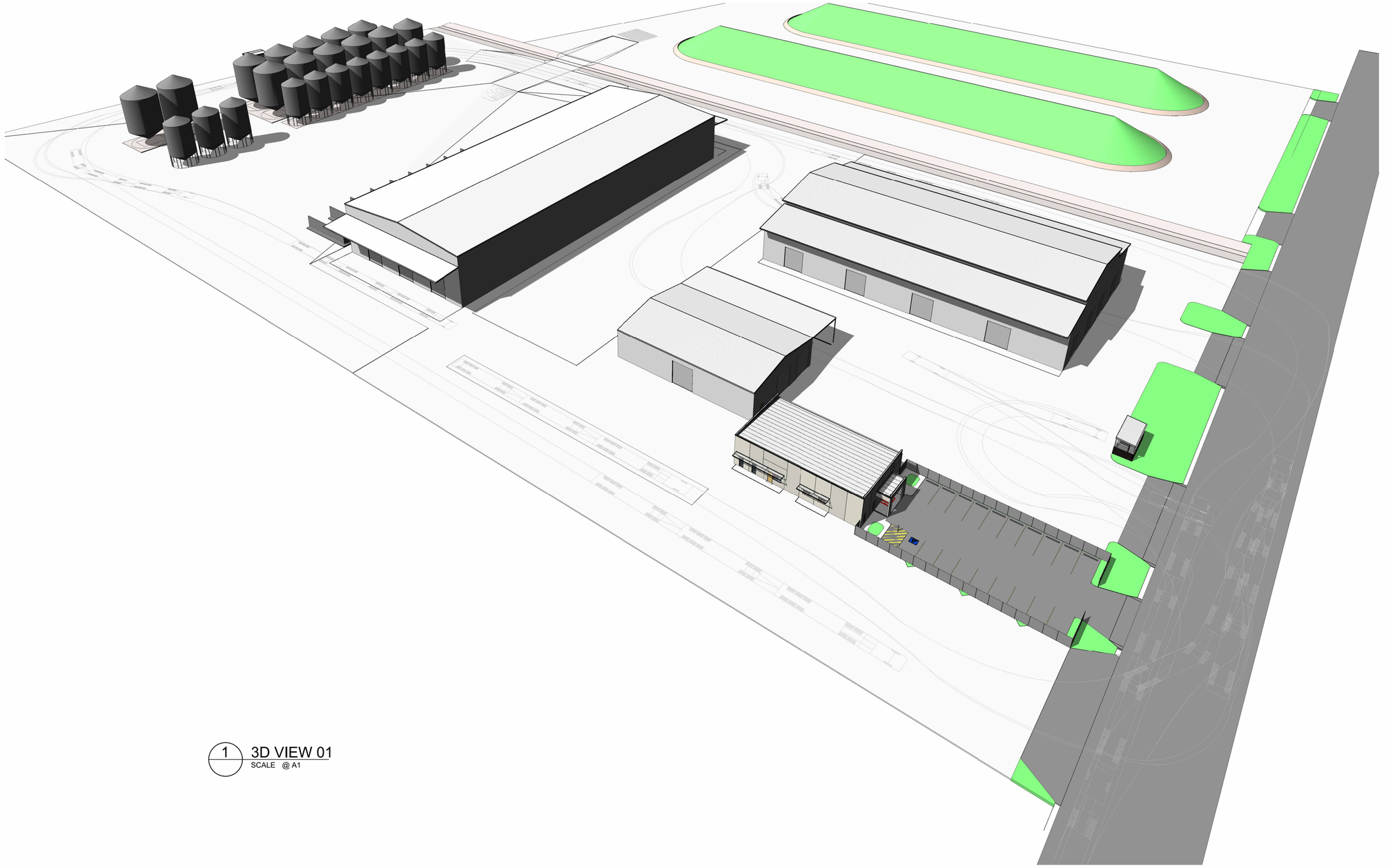
DRAWN	Author	CHECKED	Checker
DATE STAMP	17/05/2023 2:22:29 PM		
SCALE	1 : 500 @ A1		

-10m 0 5 10 15 20 25m
SCALE 1:500 @ A1, 1:1000 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
SITE STAGING

DRAWING NO.
09-1777_ SK-04 | P9



1 3D VIEW 01
SCALE @ A1

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	OPTION 2	14/01/22
2	OPTION 2	18/01/22
3	OPTION 2	21/01/22
4	OPTION 2	02/02/22
5	OPTION 2	04/02/22
6	GENERAL UPDATES	14/06/22
7	SITE UPDATES	20/06/22
8	GENERAL UPDATES	28/07/22
9	SILOS ADDED	20/12/22
10	GENERAL UPDATES	03/04/23
11	SITE REVISED	20/04/23
12	LOT 15 UPDATE	17/05/23

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NORTH

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Sizer & Cogill
Bulk Storage

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Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

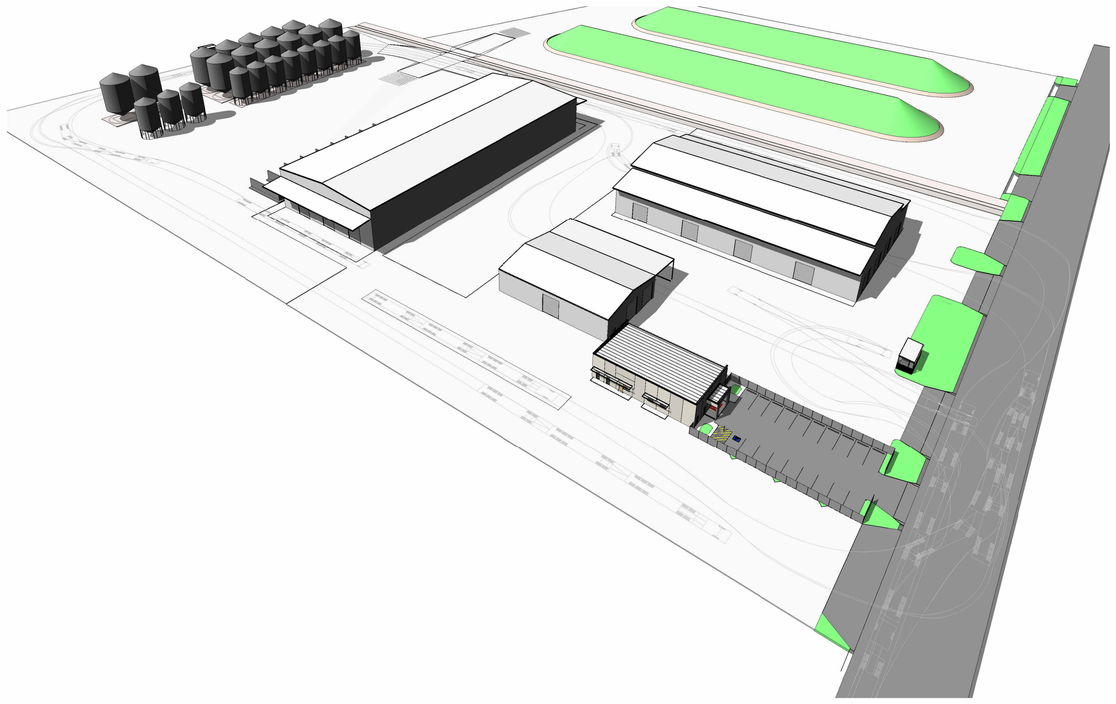
DRAWN Author CHECKED Checker
DATE STAMP 17/05/2023 2:22:34 PM
SCALE @ A1

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

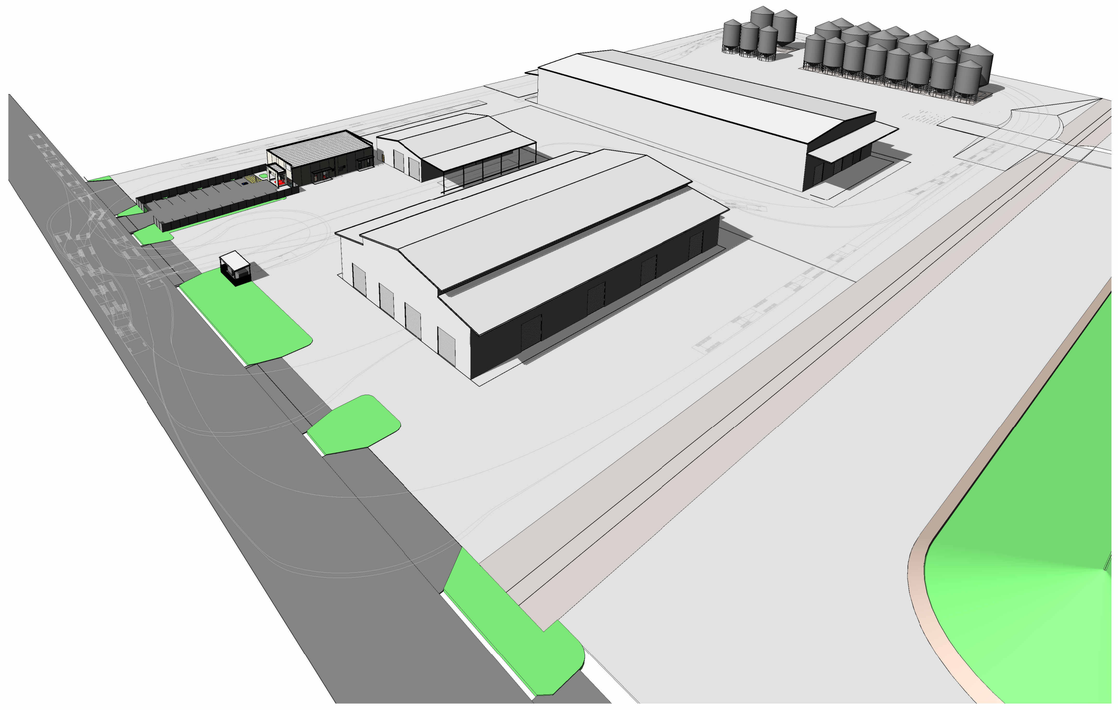
PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
3D VIEW

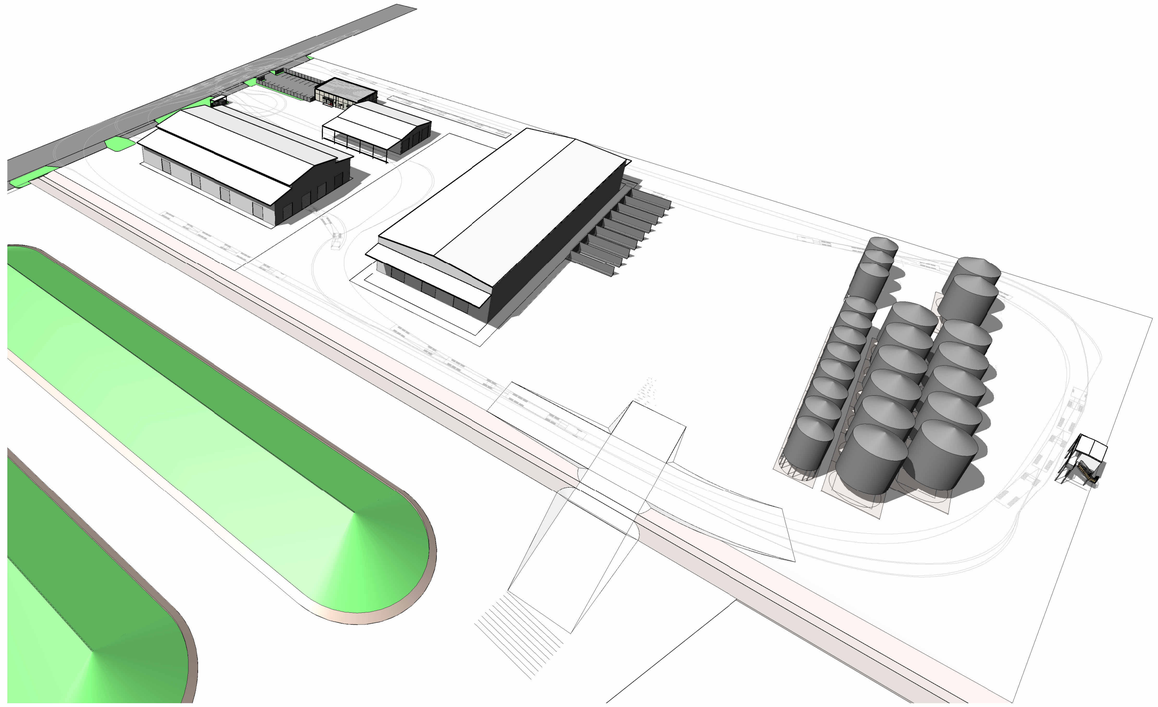
DRAWING NO.
09-1777_ SK-10 P12



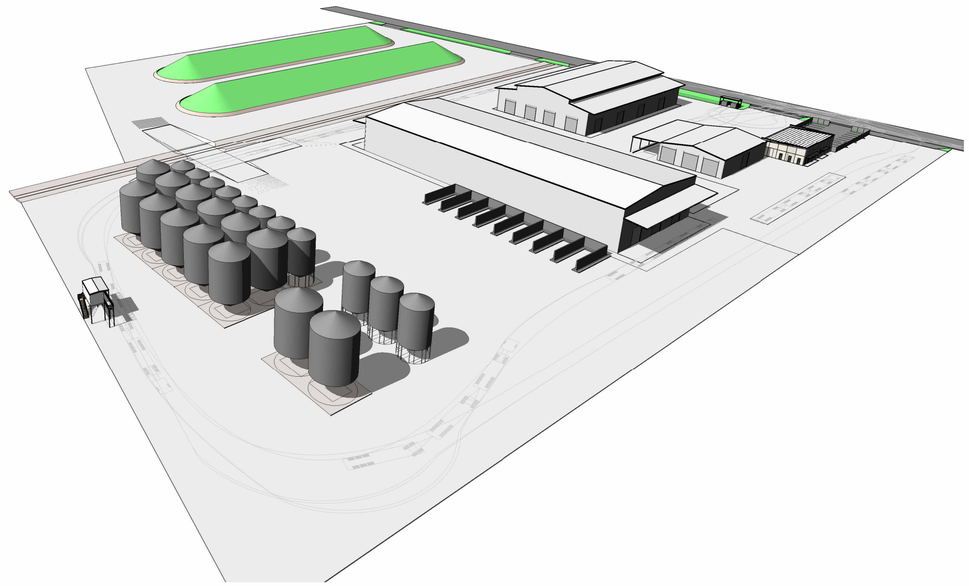
1 3D VIEW 01
SCALE @ A1



2 3D VIEW 02
SCALE @ A1



3 3D VIEW 03
SCALE @ A1



4 3D VIEW 04
SCALE @ A1

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	OPTION 2	14/01/22
2	OPTION 2	18/01/22
3	OPTION 2	21/01/22
4	OPTION 2	02/02/22
5	OPTION 2	04/02/22
6	GENERAL UPDATES	14/06/22
7	SITE UPDATES	20/06/22
8	GENERAL UPDATES	28/07/22
9	SILOS ADDED	20/12/22
10	GENERAL UPDATES	03/04/23
11	SITE REVISED	20/04/23
12	LOT 15 UPDATE	17/05/23

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Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN Author CHECKED Checker
DATE STAMP 17/05/2023 2:22:41 PM
SCALE @ A1

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

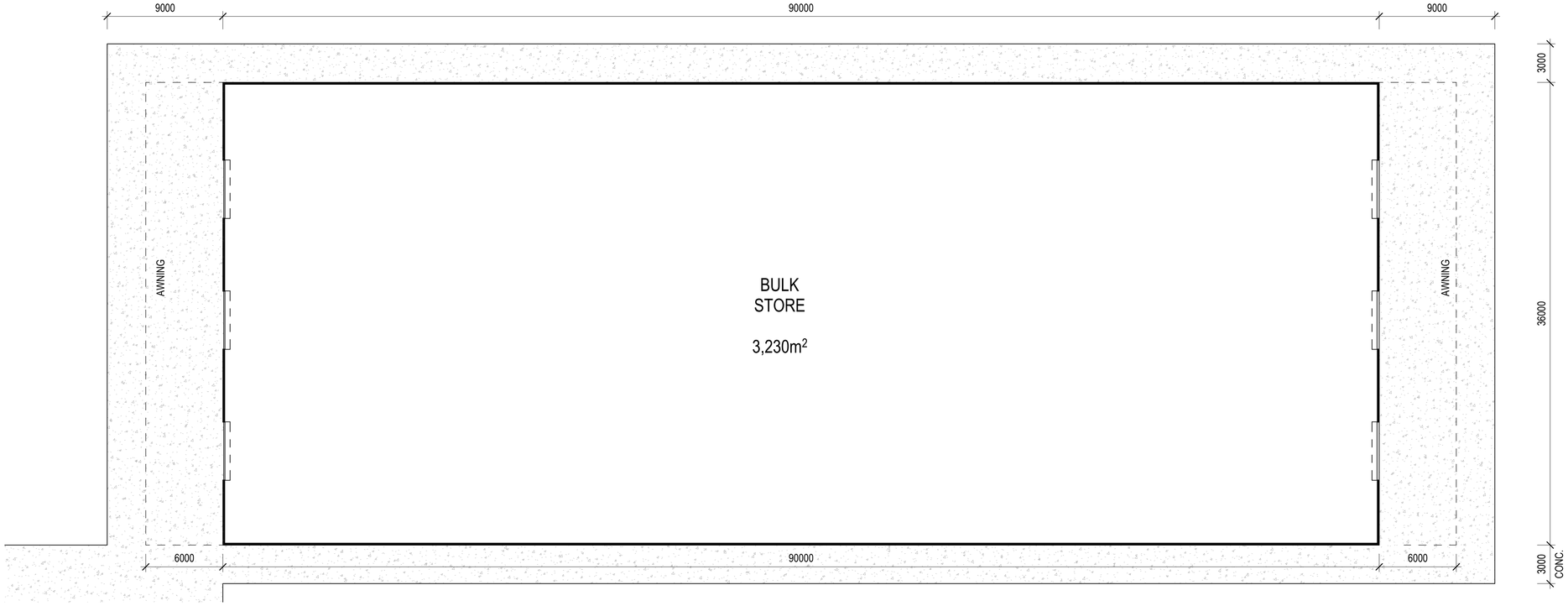
SHEET NAME
3D VIEW

DRAWING NO.
09-1777_ SK-11 P12

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	BUILDING BLOW UP'S	14/03/22
2	GENERAL UPDATES	14/06/22
3	SITE REVISED	20/04/23



1 / SK-02 PLAN - BULK STORAGE
SCALE 1 : 200 @ A1

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

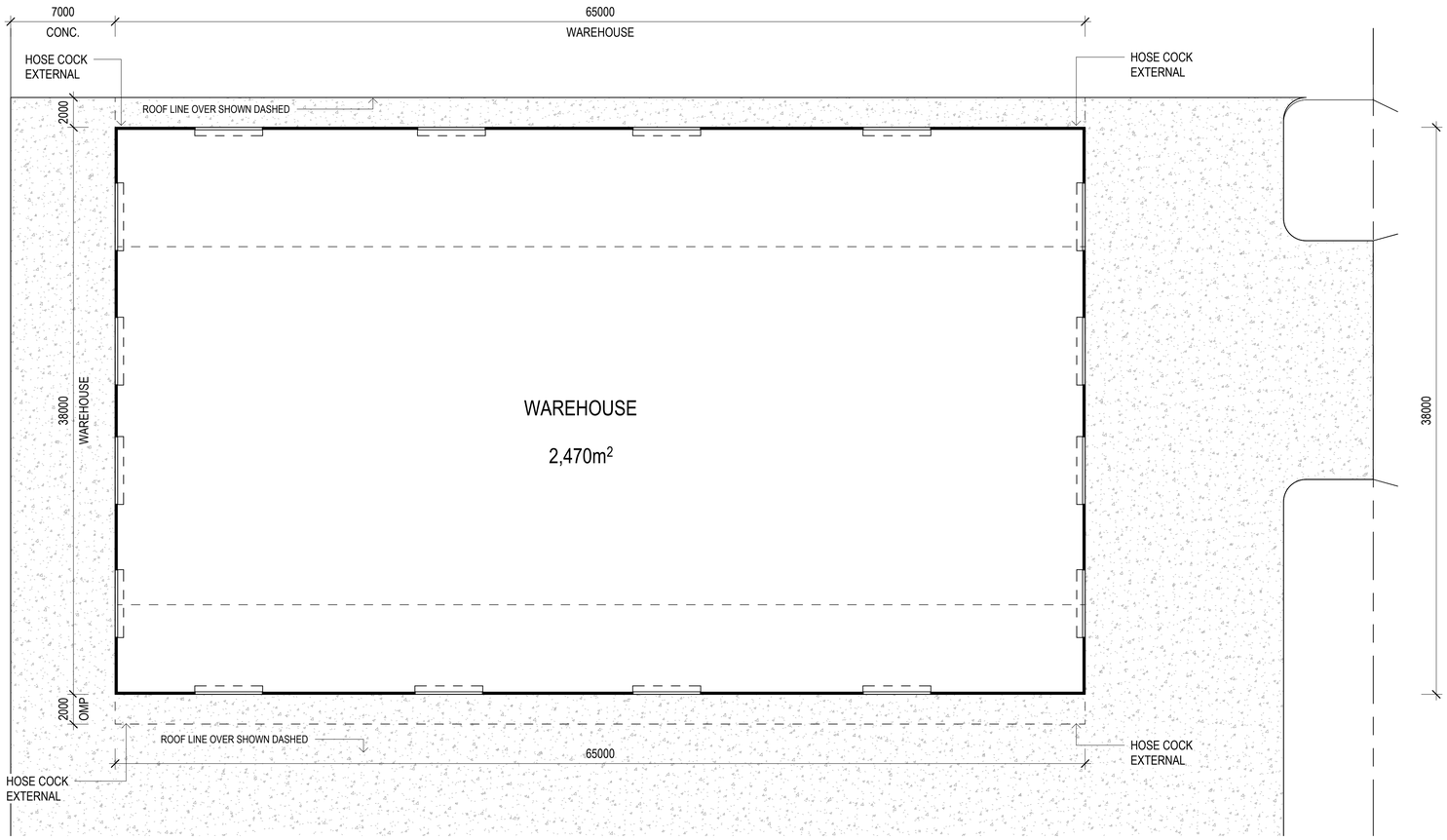
DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:12:48 AM		
SCALE	1 : 200 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
PLAN
BULK STORAGE

DRAWING NO.
09-1777_ SK-20 | P3



1 SK-02 PLAN - WAREHOUSE
SCALE 1 : 200 @ A1

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	BUILDING BLOW UP'S	14/03/22
2	GENERAL UPDATES	14/06/22
3	SITE REVISED	20/04/23

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN Author CHECKED Checker
DATE STAMP 20/04/2023 10:12:47 AM
SCALE 1 : 200 @ A1

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

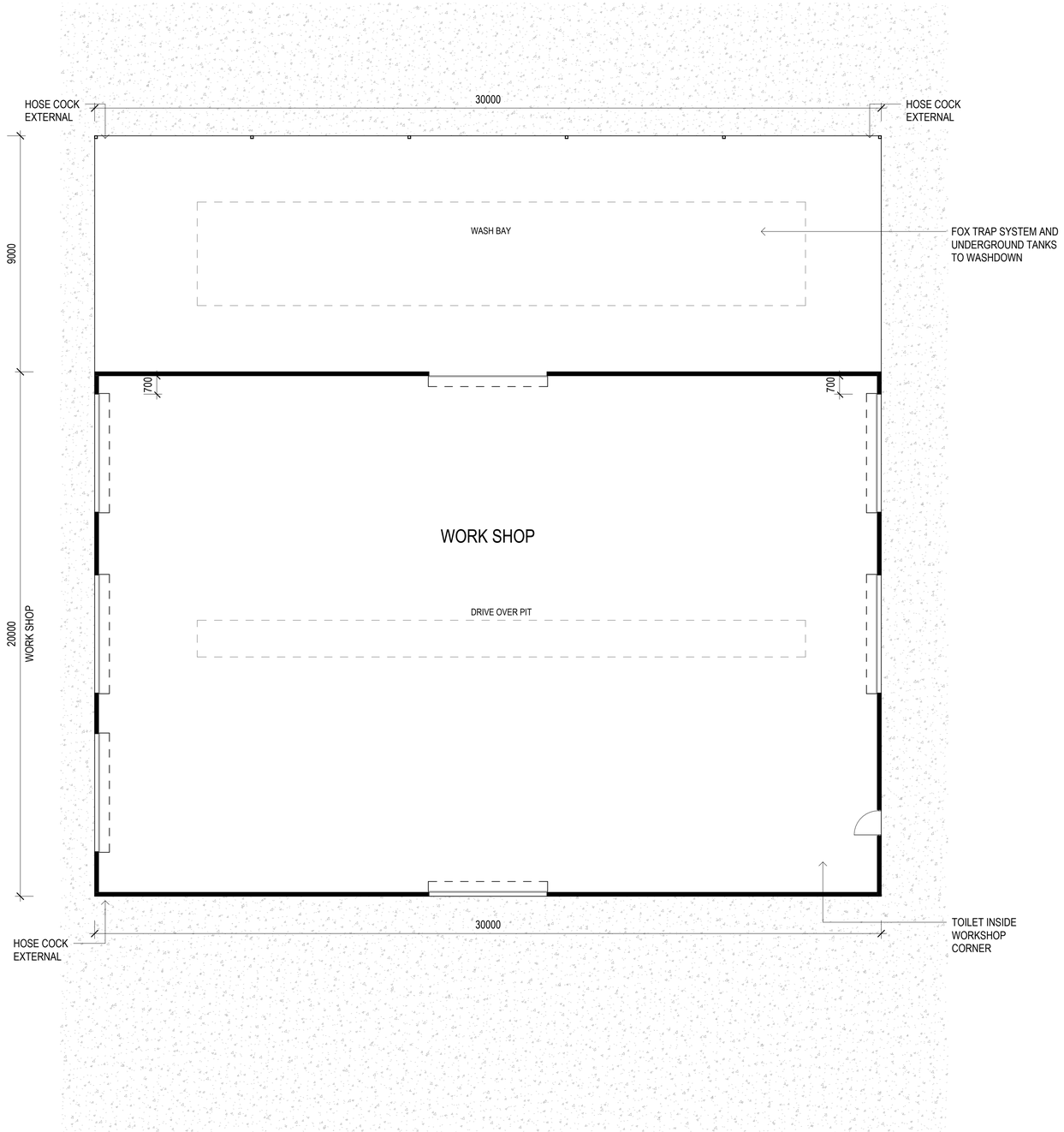
SHEET NAME
PLAN
WAREHOUSE

DRAWING NO.
09-1777_ SK-21 P3

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	BUILDING BLOW UP'S	14/03/22
2	GENERAL UPDATES	14/06/22
3	GENERAL UPDATES	28/07/22
4	SITE REVISED	20/04/23



1 SK-02 PLAN - WORK SHOP
SCALE 1 : 100 @ A1

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:12:48 AM		
SCALE	1 : 100 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

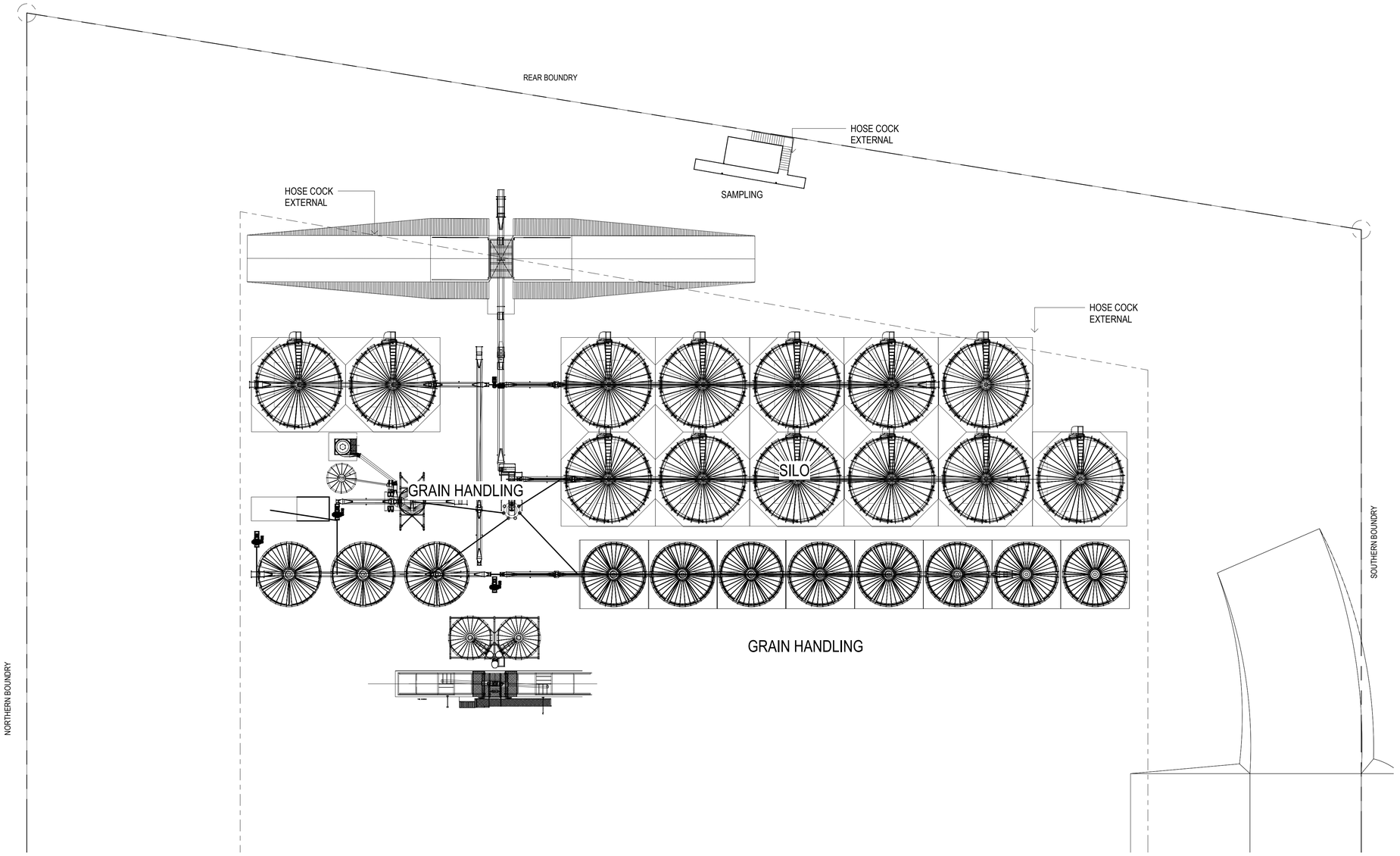
SHEET NAME
PLAN
WORK SHOP

DRAWING NO.
09-1777_ SK-22 P4

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	BUILDING BLOW UP'S	14/03/22
2	GENERAL UPDATES	14/06/22
3	SILOS ADDED	20/12/22
4	GENERAL UPDATES	03/04/23
5	SITE REVISED	20/04/23



1 SK-02 PLAN - SILO / GRAIN HANDLING
SCALE 1 : 250 @ A1

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:12:32 AM		
SCALE	1 : 250 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

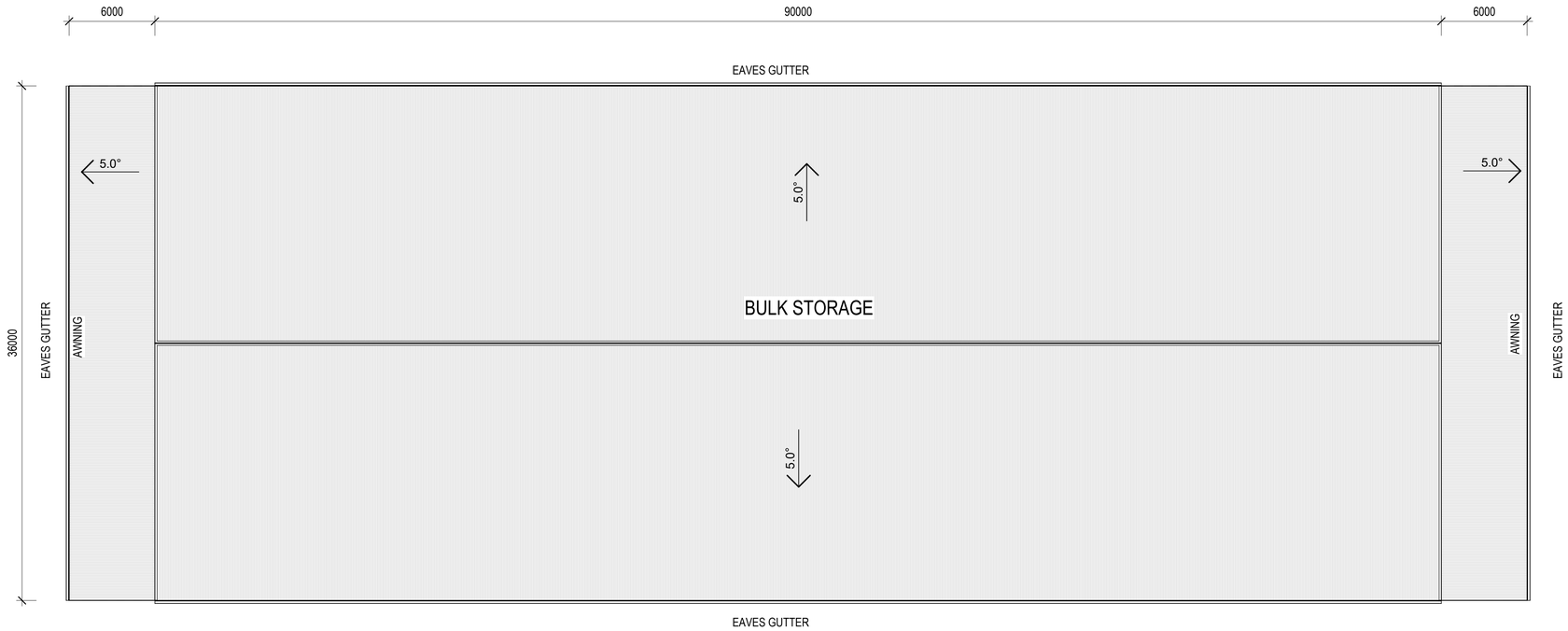
SHEET NAME
PLAN SILO
GRAIN HANDELING

DRAWING NO.
09-1777_ SK-23 | P5

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	ROOF PLANS	21/01/23
2	SITE REVISED	20/04/23



1 SK-02 BULK STORAGE - ROOF PLAN
SCALE 1 : 200 @ A1

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:17:52 AM		
SCALE	1 : 200 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

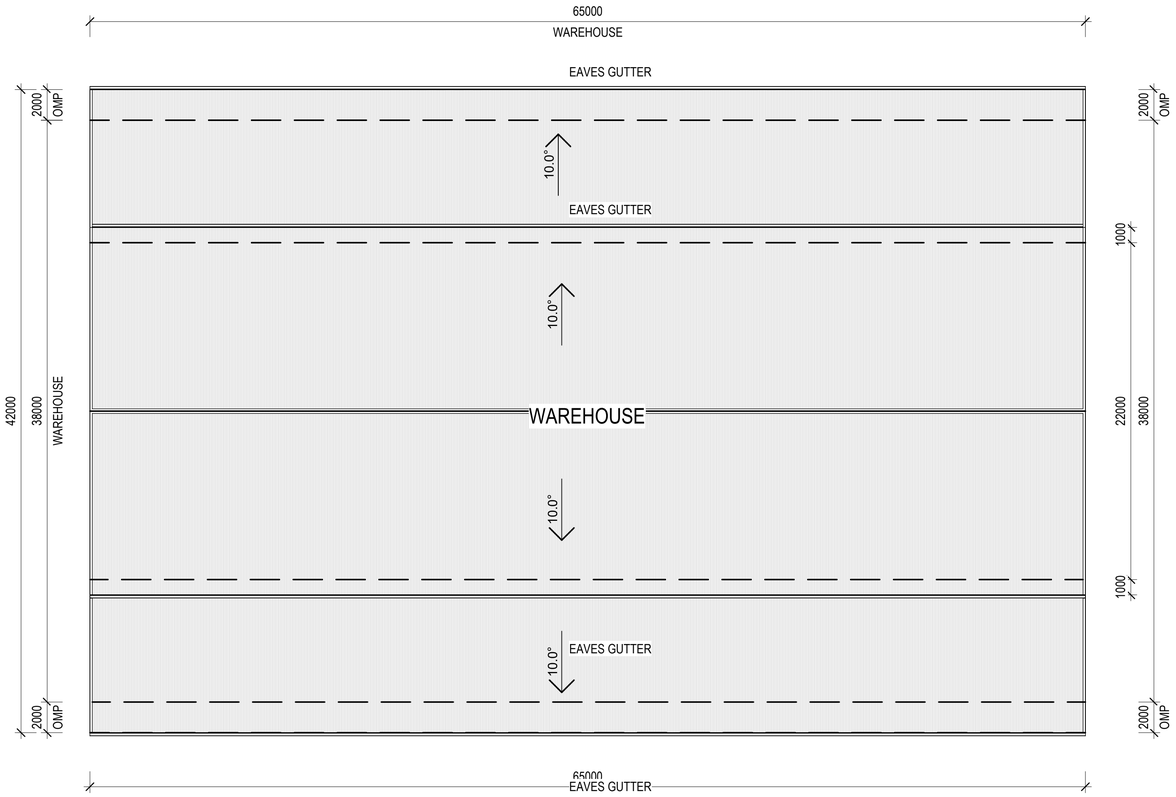
SHEET NAME
ROOF PLAN
BULK STORAGE

DRAWING NO.
09-1777_ SK-24 P2

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	ROOF PLANS	21/01/23
2	SITE REVISED	20/04/23



1 / SK-02 ROOF PLAN - WAREHOUSE
SCALE 1 : 200 @ A1

SIZER&COGILL
Bulk & General Carriers Pty Ltd

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PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:11:49 AM		
SCALE	1 : 200 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

PRELIMINARY
NOT FOR CONSTRUCTION

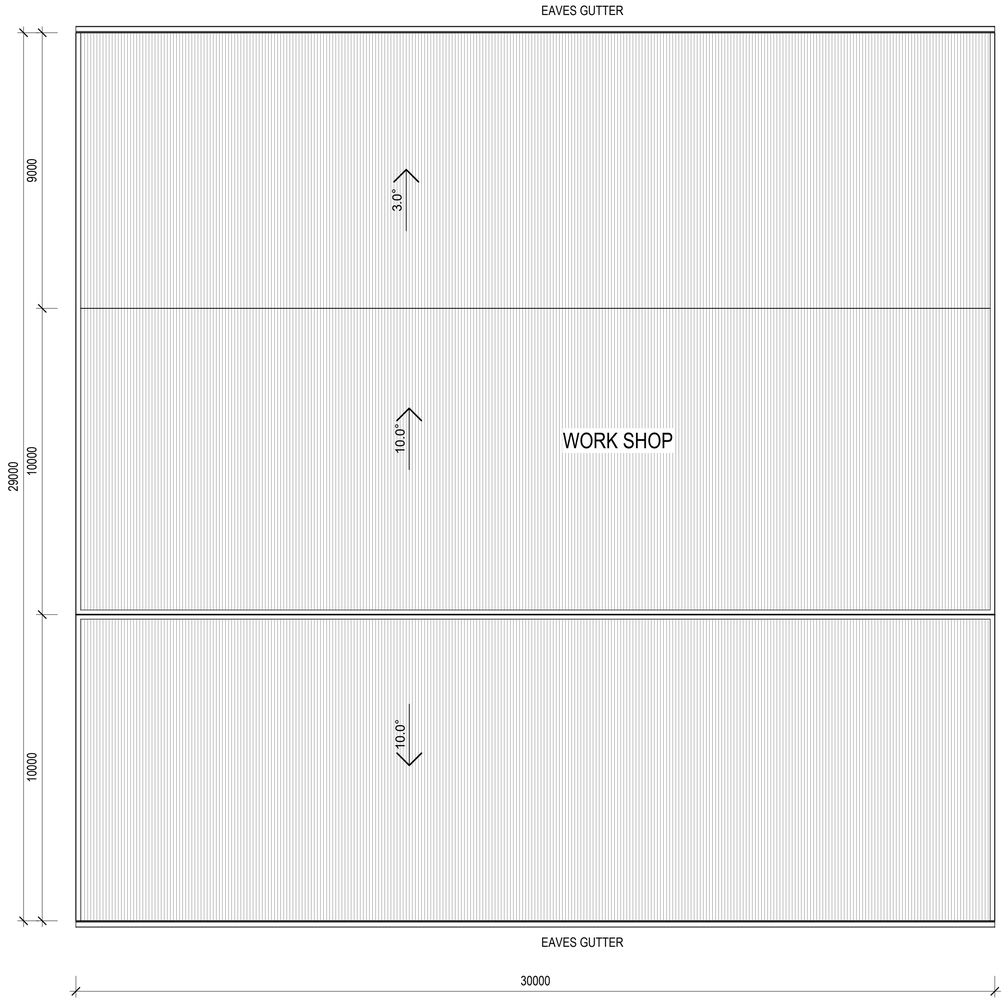
SHEET NAME
ROOF PLAN
WAREHOUSE

DRAWING NO.
09-1777_ SK-25 | P2

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	ROOF PLANS	21/01/23
2	SITE REVISED	20/04/23



1 / SK-02 ROOF PLAN - WORK SHOP
SCALE 1 : 100 @ A1

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

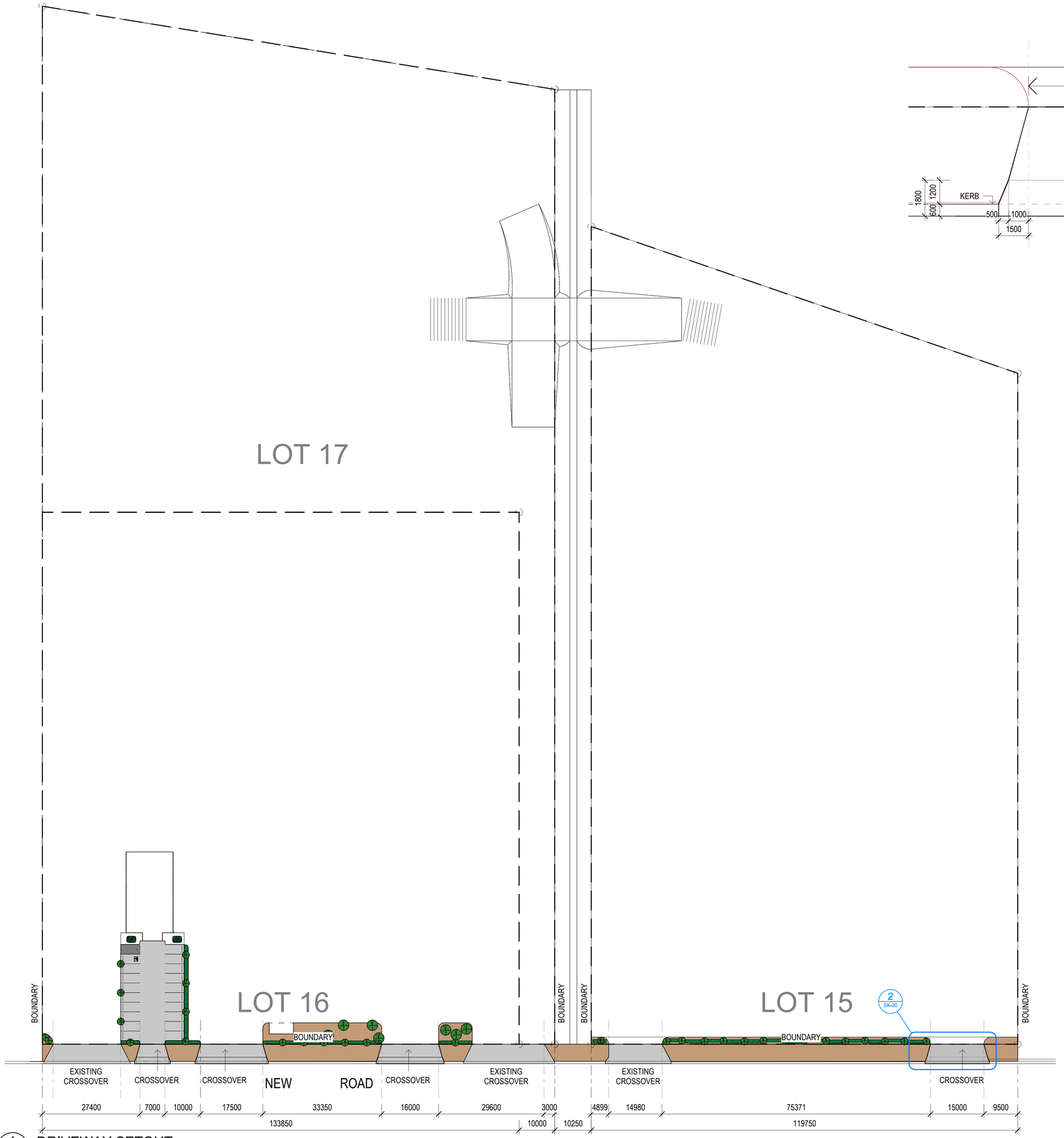
DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:11:49 AM		
SCALE	1 : 100 @ A1		

-1m 0 1 2 3 4 5 6m
SCALE 1:100 @ A1, 1:200 @ A3

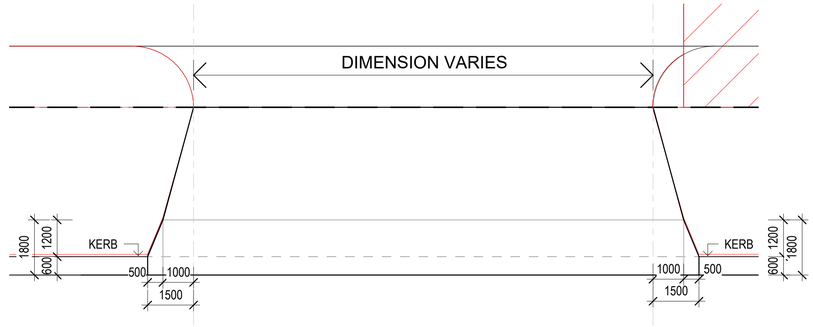
PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
ROOF PLAN
WORK SHOP

DRAWING NO.
09-1777_ SK-26 | P2



1 SK-02 DRIVEWAY SETOUT



2 SK-30 DRIVWAY SETOUT TYPICAL
SCALE 1 : 100 @ A1

Do not scale off drawings
Use only dimensions provided
Verify all dimensions on site

AMENDMENTS

ISSUE	DESCRIPTION	DATE
1	DRIVEWAY SETOUT	11/10/22
2	DRIVEWAY SETOUT	20/12/22
3	CARPARK AND DRIVEWAY ADJUSTED	18/01/23
4	GENERAL UPDATES	03/04/23

HARPULLIA HILLII
TULIPWOOD
WIDTH 3m
HEIGHT 10m

PURPLE GEM
BARLERIA OBTUSA
WIDTH .6m
HEIGHT .9~1.2m

DURANTA
DURANTA REPENS AND CULTIVARS
WIDTH .2~1m
HEIGHT .2~1.8m

BROWN GARDENIA
ATRACTOCARPUS FITZALANII
WIDTH 2~3m
HEIGHT 5m

BROWN SILKY OAK
GREVILLEA BAILEYANA
WIDTH 3~4m
HEIGHT 5~1m

PLANTING LEGEND

SIZER&COGILL
Bulk & General Carriers Pty Ltd

NORTH

PROJECT
Sizer & Cogill
Bulk Storage

CLIENT
Sizer & Cogill

LOCATION
Cape Cleveland
Industrial Park

DRAWN	Author	CHECKED	Checker
DATE STAMP	20/04/2023 10:12:34 AM		
SCALE	As indicated @ A1		

PRELIMINARY
NOT FOR CONSTRUCTION

SHEET NAME
DRIVEWAY SETOUT & LANDSCAPING

DRAWING NO.
09-1777_ SK-30 P4