OPW|18|0003

DA Form 1 – Development application details

Approved form (version 1.0 effective 3 July 2017) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development**, use this form (*DA Form 1*) **and** parts 4 to 6 of *DA Form 2 – Building work details.*

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008.* For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: *All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).*

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) *(individual or company full name)*	SPRINGMOUNT WASTE MANAGEMENT FACILITY
Contact name *(only applicable for companies)*	KEVIN DAVIES
Postal address *(P.O. Box or street address)*	P.O BOX 1320
Suburb	WALKAMIN
State	QLD.
Postcode	4872
Country	AUSTRALIA
Contact number	0400 490 493
Email address *(non-mandatory)*	KEVIN.DAVIES@REMONDIS.COM.AU
Mobile number *(non-mandatory)*	
Fax number *(non-mandatory)*	
Applicant's reference number(s) *(if applicable)*	

2) Owner's consent
2.1) Is written consent of the owner required for this development application?
☐ Yes – the written consent of the owner(s) is attached to this development application
☑ No – proceed to 3)

PART 2 – LOCATION DETAILS

3) Location of the premises *(complete 3.1) or 3.2), and 3.3) as applicable)*

***Note**: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see DA Forms Guide: Relevant plans.*

3.1) Street address and lot on plan

☑ Street address **AND** lot on plan *(all lots must be listed)*, ***or***

☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises *(appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon; all lots must be listed).*

	Unit No.	Street No.	Street Name and Type	Suburb
a)			SPRINGMOUNT RD	ARRIGA
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)
	4880	123	SP214842	MAREEBA
b)	Unit No.	Street No.	Street Name and Type	Suburb
	Postcode	Lot No.	Plan Type and Number *(e.g. RP, SP)*	Local Government Area(s)

3.2) Coordinates of premises *(appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)*

***Note**: Place each set of coordinates in a separate row. Only one set of coordinates is required for this part.*

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) *(if applicable)*
		☐ WGS84 ☐ GDA94 ☐ Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) *(if applicable)*
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

☐ Additional premises are relevant to this development application and their details have been attached in a schedule to this application

☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

☑ In or adjacent to a water body or watercourse or in or above an aquifer

Name of water body, watercourse or aquifer: MURPHY'S CK.

☐ On strategic port land under the *Transport Infrastructure Act 1994*

Lot on plan description of strategic port land:

Name of port authority for the lot:

☐ In a tidal area

Name of local government for the tidal area *(if applicable)*:

Name of port authority for tidal area *(if applicable)*:

☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*

Name of airport:

☐ Listed on the Environmental Management Register (EMR) under the *Environmental Protection Act 1994*

EMR site identification:

☐ Listed on the Contaminated Land Register (CLR) under the *Environmental Protection Act 1994*

CLR site identification:

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see DA Forms Guide.

☐ Yes – All easement locations, types and dimensions are included in plans submitted with this development application

☑ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? *(tick only one box)*

☐ Material change of use ☐ Reconfiguring a lot ☑ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

☑ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☑ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots)*:

EARTHWORKS – WATER STORAGE DAM

e) Relevant plans

***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms guide: Relevant plans.*

☑ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? *(tick only one box)*

☐ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

☐ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

☐ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal *(e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots)*

e) Relevant plans

***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.*

☐ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application

☐ Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?	
Material change of use	☐ Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	☐ Yes – complete division 2
Operational work	☑ Yes – complete division 3
Building work	☐ Yes – complete *DA Form 2 – Building work details*

Division 1 – Material change of use

***Note**: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.*

8.1) Describe the proposed material change of use			
Provide a general description of the proposed use	Provide the planning scheme definition *(include each definition in a new row)*	Number of dwelling units *(if applicable)*	Gross floor area (m^2) *(if applicable)*

8.2) Does the proposed use involve the use of existing buildings on the premises?
☐ Yes
☐ No

Division 2 – Reconfiguring a lot

***Note**: This division is only required to be completed if any part of the development application involves reconfiguring a lot.*

9.1) What is the total number of existing lots making up the premises?

9.2) What is the nature of the lot reconfiguration? *(tick all applicable boxes)*	
☐ Subdivision *(complete 10))*	☐ Dividing land into parts by agreement *(complete 11))*
☐ Boundary realignment *(complete 12))*	☐ Creating or changing an easement giving access to a lot from a construction road *(complete 13))*

10) Subdivision 10.1) For this development, how many lots are being created and what is the intended use of those lots:				
Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?	
☐ Yes – provide additional details below ☐ No	
How many stages will the works include?	
What stage(s) will this development application apply to?	

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?				
Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment

12.1) What are the current and proposed areas for each lot comprising the premises?

Current lot		Proposed lot	
Lot on plan description	Area (m^2)	Lot on plan description	Area (m^2)

12.2) What is the reason for the boundary realignment?

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? *(attach schedule if there are more than two easements)*

Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? *(e.g. pedestrian access)*	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work

***Note**: This division is only required to be completed if any part of the development application involves operational work.*

14.1) What is the nature of the operational work?

- ☐ Road work
- ☑ Drainage work
- ☐ Landscaping
- ☐ Stormwater
- ☐ Earthworks
- ☐ Signage
- ☐ Water infrastructure
- ☐ Sewage infrastructure
- ☐ Clearing vegetation
- ☐ Other – please specify:

14.2) Is the operational work necessary to facilitate the creation of new lots? *(e.g. subdivision)*

- ☐ Yes – specify number of new lots:
- ☑ No

14.3) What is the monetary value of the proposed operational work? *(include GST, materials and labour)*

$ 15,000.00

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

16) Has the local government agreed to apply a superseded planning scheme for this development application?

- ☐ Yes – a copy of the decision notice is attached to this development application
- ☐ Local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
- ☐ No

PART 5 – REFERRAL DETAILS

17) Do any aspects of the proposed development require referral for any referral requirements?

***Note**: A development application will require referral if prescribed by the* Planning Regulation 2017.

- ☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **chief executive of the Planning Regulation 2017:**

- ☐ Clearing native vegetation
- ☐ Contaminated land *(unexploded ordnance)*

☐ Environmentally relevant activities (ERA) *(only if the ERA have not been devolved to a local government)*
☐ Fisheries – aquaculture
☐ Fisheries – declared fish habitat area
☐ Fisheries – marine plants
☐ Fisheries – waterway barrier works
☐ Hazardous chemical facilities
☐ Queensland heritage place *(on or near a Queensland heritage place)*
☐ Infrastructure – designated premises
☐ Infrastructure – state transport infrastructure
☐ Infrastructure – state transport corridors and future state transport corridors
☐ Infrastructure – state-controlled transport tunnels and future state-controlled transport tunnels
☐ Infrastructure – state-controlled roads
☐ Land within Port of Brisbane's port limits
☐ SEQ development area
☐ SEQ regional landscape and rural production area or SEQ Rural living area – community activity
☐ SEQ regional landscape and rural production area or SEQ Rural living area – indoor recreation
☐ SEQ regional landscape and rural production area or SEQ Rural living area – residential development
☐ SEQ regional landscape and rural production area or SEQ Rural living area – urban activity
☐ Tidal works or works in a coastal management district
☐ Urban design
☐ Water-related development – taking or interfering with water
☐ Water-related development – removing quarry material *(from a watercourse or lake)*
☐ Water-related development – referable dams
☐ Water-related development – construction of new levees or modification of existing levees *(category 2 or 3 levees only)*
☐ Wetland protection area

Matters requiring referral to the **local government:**
☐ Airport land
☐ Environmentally relevant activities (ERA) *(only if the ERA have been devolved to local government)*
☐ Local heritage places

Matters requiring referral to the **chief executive of the distribution entity or transmission entity:**
☐ Electricity infrastructure

Matters requiring referral to:
- The **chief executive of the holder of the licence**, if not an individual
- The **holder of the licence**, if the holder of the licence is an individual

☐ Oil and gas infrastructure

Matters requiring referral to **the Brisbane City Council:**
☐ Brisbane core port land

Matters requiring referral to the **Minister under the Transport Infrastructure Act 1994:**
☐ Brisbane core port land
☐ Strategic port land

Matters requiring referral to the **relevant port operator:**
☐ Brisbane core port land (below high-water mark and within port limits)

Matters requiring referral to the **chief executive of the relevant port authority:**
☐ Land within limits of another port

Matters requiring referral to the **Gold Coast Waterways Authority:**
☐ Tidal works, or development in a coastal management district in Gold Coast waters

Matters requiring referral to the **Queensland Fire and Emergency Service:**
☐ Tidal works, or development in a coastal management district

18) Has any referral agency provided a referral response for this development application?

☐ Yes – referral response(s) received and listed below are attached to this development application
☐ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and the development application the subject of this form, or include details in a schedule to this development application *(if applicable)*.

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules

☐ I agree to receive an information request if determined necessary for this development application
☐ I do not agree to accept an information request for this development application

***Note**: By not agreeing to accept an information request I, the applicant, acknowledge:*

- *that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties*
- *Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.*

Further advice about information requests is contained in the DA Forms Guide.

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? *(e.g. a preliminary approval)*

☐ Yes – provide details below or include details in a schedule to this development application
☑ No

List of approval/development application references	Reference number	Date	Assessment manager
☐ Approval ☐ Development application			
☐ Approval ☐ Development application			

21) Has the portable long service leave levy been paid? *(only applicable to development applications involving building work or operational work)*

☐ Yes – the yellow local government/private certifier's copy of the receipted QLeave form is attached to this development application
☐ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
☑ Not applicable

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

☐ Yes – show cause or enforcement notice is attached
☑ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act 1994*?

☐ Yes – the required attachment (form EM941) for an application for an environmental authority accompanies this development application, and details are provided in the table below

☑ No

***Note**: Application for an environmental authority can be found by searching "EM941" at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.*

Proposed ERA number:		Proposed ERA threshold:	
Proposed ERA name:			

☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a **hazardous chemical facility**?

☐ Yes – *Form 69: Notification of a facility exceeding 10% of schedule 15 threshold* is attached to this development application

☑ No

***Note**: See www.justice.qld.gov.au for further information.*

Clearing native vegetation

23.3) Does this development application involve **clearing native vegetation** that requires written confirmation the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

☐ Yes – this development application is accompanied by written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)

☑ No

***Note**: See www.qld.gov.au for further information.*

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a **prescribed environmental matter** under the *Environmental Offsets Act 2014*?

☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter

☑ No

***Note**: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.*

Koala conservation

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work within an assessable development area under Schedule 10, Part 10 of the Planning Regulation 2017?

☐ Yes

☑ No

***Note**: See guidance materials at www.ehp.qld.gov.au for further information.*

Water resources

23.6) Does this development application involve **taking or interfering with artesian or sub artesian water, taking or interfering with water in a watercourse, lake or spring, taking overland flow water or waterway barrier works**?

☐ Yes – the relevant template is completed and attached to this development application

☑ No

***Note**: DA templates are available from www.dilgp.qld.gov.au.*

23.7) Does this application involve **taking or interfering with artesian or sub artesian water, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water** under the *Water Act 2000*?

☐ Yes – I acknowledge that a relevant water authorisation under the *Water Act 2000* may be required prior to

commencing development

☑ No

***Note**: Contact the Department of Natural Resources and Mines at www.dnrm.qld.gov.au for further information.*

Marine activities

23.8) Does this development application involve **aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?**

☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*

☑ No

***Note**: See guidance materials at www.daf.qld.gov.au for further information.*

Quarry materials from a watercourse or lake

23.9) Does this development application involve the **removal of quarry materials from a watercourse or lake** under the *Water Act 2000?*

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development

☑ No

***Note**: Contact the Department of Natural Resources and Mines at www.dnrm.qld.gov.au for further information.*

Quarry materials from land under tidal waters

23.10) Does this development application involve the **removal of quarry materials from land under tidal water** under the *Coastal Protection and Management Act 1995?*

☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development

☑ No

***Note**: Contact the Department of Environment and Heritage Protection at www.ehp.qld.gov.au for further information.*

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the Water Supply Act)?

☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the Water Supply Act is attached to this development application

☐ No

***Note**: See guidance materials at www.dews.qld.gov.au for further information.*

Tidal work or development within a coastal management district

23.12) Does this development application involve **tidal work or development in a coastal management district?**

☐ Yes – the following is included with this development application:

- ☐ Evidence the proposal meets the code for assessable development that is prescribed tidal work *(only required if application involves prescribed tidal work)*
- ☐ A certificate of title

☑ No

***Note**: See guidance materials at www.ehp.qld.gov.au for further information.*

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register?**

☐ Yes – details of the heritage place are provided in the table below

☑ No

***Note**: See guidance materials at www.ehp.qld.gov.au for information requirements regarding development of Queensland heritage places.*

Name of the heritage place:		Place ID:	

Brothels

23.14) Does this development application involve a **material change of use for a brothel?**

☐ Yes – this development application demonstrates how the proposal meets the code for a development application for a brothel under Schedule 3 of the *Prostitution Regulation 2014*

☑ No

Decision under section 62 of the *Transport Infrastructure Act 1994*

23.15) Does this development application involve new or changed access to a state-controlled road?

☐ Yes - this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)
☑ No

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist

I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17 ***Note**: See the Planning Regulation 2017 for referral requirements*	☐ Yes
If building work is associated with the proposed development, Parts 4 to 6 of *Form 2 – Building work details* have been completed and attached to this development application	☐ Yes ☑ Not applicable
Supporting information addressing any applicable assessment benchmarks is with development application ***Note**: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see DA Forms Guide: Planning Report Template.*	☐ Yes
Relevant plans of the development are attached to this development application ***Note**: Relevant plans are required to be submitted for all aspects of this development application. For further information, see DA Forms Guide: Relevant plans.*	☑ Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued *(see 21))*	☐ Yes ☑ Not applicable

25) Applicant declaration

☑ By making this development application, I declare that all information in this development application is true and correct

☑ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*

***Note**: It is unlawful to intentionally provide false or misleading information.*

Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application.
All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.
Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where:

- such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or
- required by other legislation (including the *Right to Information Act 2009*); or
- otherwise required by law.

This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002.*

PART 9 – FOR OFFICE USE ONLY

Date received: | | Reference number(s): | |

Notification of engagement of alternative assessment manager	
Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment *Note: For completion by assessment manager if applicable*	
Description of the work	
QLeave project number	
Amount paid ($)	
Date paid	
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	

The *Planning Act 2016,* the Planning Regulation 2017 and the DA Rules are administered by the Department of Infrastructure, Local Government and Planning. This form and all other required development application materials should be sent to the assessment manager.

12 February 2018

SPRINGMOUNT WASTE MANAGEMENT FACILITY

Revised Design of Sediment Basins

Submitted to:
Remondis Australia Pty Ltd
Springmount Waste Management Facility
Lot 123 Springmount Rd, Mareeba
Queensland 4880

REPORT

Report Number. 1781336-004-R-RevA
Distribution:
Kevin Davies

Golder Associates

Table of Contents

1.0 INTRODUCTION

Remondis Australia Pty Ltd (Remondis) has engaged Golder Associates Pty Ltd (Golder) to prepare design documents for stormwater management infrastructure upgrades at the Springmount Waste Management Facility (SWMF).

This report details the design method and assumptions for Task 3 – Existing Sediment Basin detailed design of basin improvements and concept design of an additional downgradient basin.

This report includes:

- Revision of the existing capacity of the sediment basin for Phase A and Phase B development of the landfill.
- Design of a high flow spillway for the existing sediment basin.
- Design of a second sediment basin (for Phase B) downgradient of the existing sediment basin, including low flow discharge and high flow spillway.

The existing sediment basin (termed Sediment Basin A in this report) to the north of the SWMF is used to manage drainage from the Phase A landfill. Murphy's Creek, an ephemeral watercourse, is located to the west of the landfill cells and is adjacent to Sediment Basin A. Landfill cells will be developed in a series of phases, with current expansion plans requiring this revision of the sediment basin capacity to manage water from the Phase A and Phase B landfill areas.

Sediment Basin A and the proposed location of Sediment Basin B is shown in Figure 1.

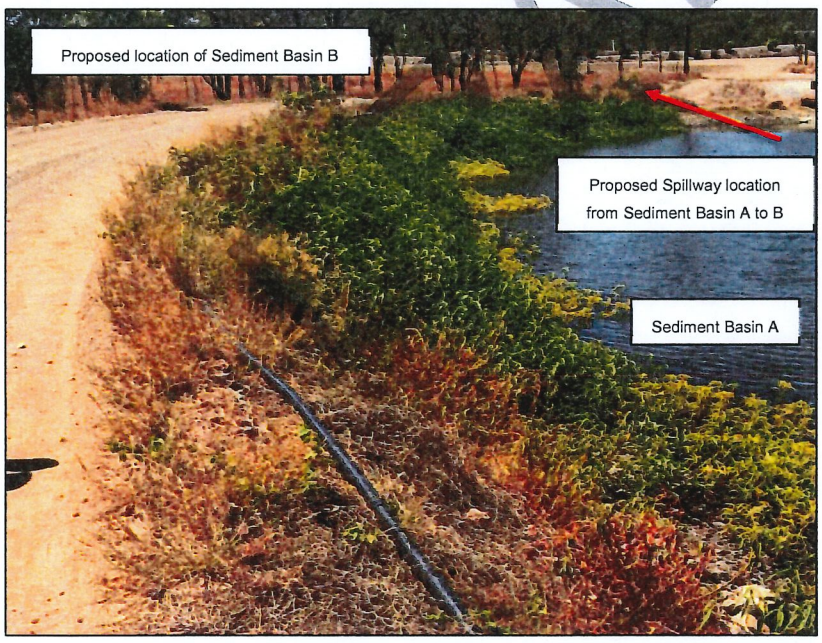

Figure 1: Proposed location of Sediment Basin B relative to Sediment Basin A

2.0 DESIGN CRITERIA

The basis of design for the SWMF landfill cells is prescribed by the Environmental Authority (EA) (BRID00026) and the Queensland Government guideline, *Stormwater and Environmentally Relevant Activities* (Department of Environment and Heritage Protection, 2014).

A summary of the adopted stormwater design criteria is provided in Table 1.

Table 1: Design criteria

Design criteria	Reference guideline
Retain runoff generated from a 1:10 Annual Exceedance Probability (AEP) 24 hour duration storm event.	Condition 3-WT7 of Environmental Authority (EA) (BRID00026)
Settling volume and sediment storage zone (equal to an additional 50% of settling volume) sized to treat runoff for the selected rainfall event (1:10 AEP as per the SWMF EA).	Stormwater and Environmentally Relevant Activities Guideline (DEHP 2014)
Design and armour the spillway to convey a minimum 1:50 year AEP event.	Stormwater and Environmentally Relevant Activities Guideline (DEHP 2014)
Operate the sediment basin such that the design capacity of the upper settling volume is available within 120 hours of most recent rainfall event.	Stormwater and Environmentally Relevant Activities Guideline (DEHP 2014)

3.0 DESIGN ASSESSMENT METHOD

The assessment calculates the capacity of the sediment basins by identifying the applicable catchment areas of the landfill cells in Phase A and Phase B. The maximum runoff from the cells is calculated based on the catchment areas, the applicable volumetric runoff coefficients and the rainfall depth of a 1:10 AEP 24 hour rainfall event. The volumetric runoff coefficients used in these calculations have been sourced from the Queensland Urban Drainage Manual (Department of Energy and Water Supply, 2013).

A model developed using xpstorm software (Innovyze, 2017) has been used to model the peak flows and to identify the required spillway widths. The xpstorm model uses the design slope of the final landfill cells and the rainfall losses to pervious areas to calculate the peak flow from a 1:50 AEP rainfall event. The peak flow is routed through the existing sediment basin and weir/spillway. This method is used to determine the required width and armouring of the dam spillway to safely convey the design flow and prevent overtopping or erosive scour in the design event.

3.1 Design storm events

The Bureau of Meteorology has compiled rainfall data into Intensity Frequency Duration (IFD) tables that provide the depth in millimetres (mm) and intensity of rainfall in mm per hour for design storms across a range of durations. The IFD table used in the capacity assessment for the location of the SWMF (Latitude 17.14 (S), Longitude 145.36(E)) is shown in APPENDIX A.

Temporal hyetographs define the distribution of rainfall during a storm; they differ according to the storm AEP and duration. Australian Rainfall and Runoff (ARR) has published hyetographs for locations across Australia on their online Data Hub (Geoscience Australia, 2017). This data hub also references the IFD values to determine the rainfall depth for each design storm. ARR refers to the SWMF site as Wet Tropics and Monsoonal North in determining the temporal patterns. These temporal patterns are used for determining peak flows for the spillway sizing.

3.2 Catchment areas

Stormwater runoff from Phase A and B landfill cells will be treated in the sediment basins. The catchments in Table 2 are based on the maximum landfill footprint of Phase B.

Table 2: Landfill cell catchment areas

Design Parameter	Phase A	Phase B	Combined
Catchment area (m^2)	77 100	46 000	123 100

Phase A and phase B Catchment areas are shown in Figure 2.

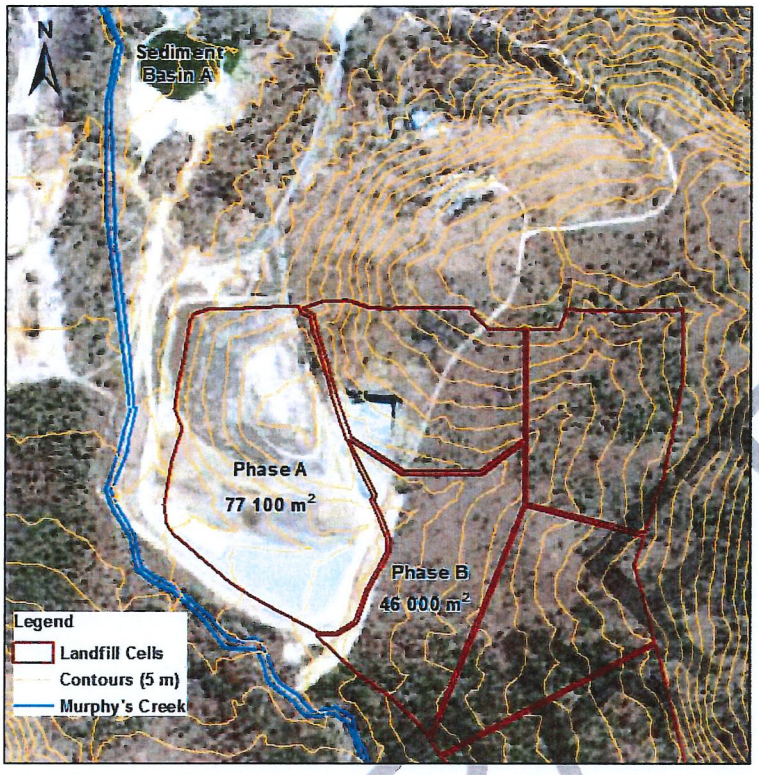

Figure 2: Site Layout of landfill cells and existing sediment basin

3.3 Rainfall losses/volumetric runoff coefficients

To calculate runoff from pervious surfaces it is assumed that a fraction of rainfall will infiltrate the soil and be held by the soil/vegetation. The volume of rainfall that becomes runoff, used to determine the total capacity of the sediment basins, is calculated by applying a volumetric runoff coefficient (provided in Table 3). The volumetric runoff coefficient for Phase A is assumed based on rehabilitated cells with a layer of topsoil above the clay capping. The volumetric runoff coefficient for Phase B is assumed based on a clay soil temporary cover material.

Table 3: Volumetric runoff coefficients

Design Parameter	Phase A	Phase B
Runoff coefficient	0.75 [a] (rehabilitated)	0.86 [b] (exposed capping)

[a] volumetric runoff coefficient extrapolated for 171.3 mm (rainfall depth) from QUDM (2013); Group C loamy clay soil.
[b] volumetric runoff coefficient extrapolated for 171.3 mm (rainfall depth) from QUDM (2013); Group D clay soil group.

For the peak flow and spillway modelling initial and continuing losses to infiltration are applied to the hydrologic model. These values are dependent on the soil type and rainfall depth for the corresponding design storm. The initial and continuing losses were adjusted to represent the landfill cell areas to assume conservative (higher) runoff values expected to be experienced from exposed/ newly rehabilitated surfaces.

The corresponding adopted initial and continuing losses for each phase are provided in Table 4.

Table 4: Initial and continuing rainfall losses

Rainfall losses to infiltration	ARR values (undisturbed catchment)	Adopted Phase A (rehabilitated)	Adopted Phase B (clay capping)
Initial loss (mm)	36	24	20
Continuing loss (mm/hr)	2.9	2.7	2

4.0 REVISED PRIMARY SEDIMENT BASIN CAPACITY

4.1 Existing capacity

The capacity of the existing Sediment Basin A is estimated to be 7920 m^3. This estimate is based on the site survey (*DREF - NS AERIAL SURVEY.dwg* (2016)) and dam wall survey (*WATER DAM-NEW WALL AREA.dwg* (2017)). This capacity assumes a dam wall height of 3 m (545 m AHD) and a freeboard of 0.5 m at the spillway (544.5 m AHD). No sediment accumulation has been included which may reduce this capacity.

Figure 3 shows the extent of the survey of the dam wall and elevation contours.

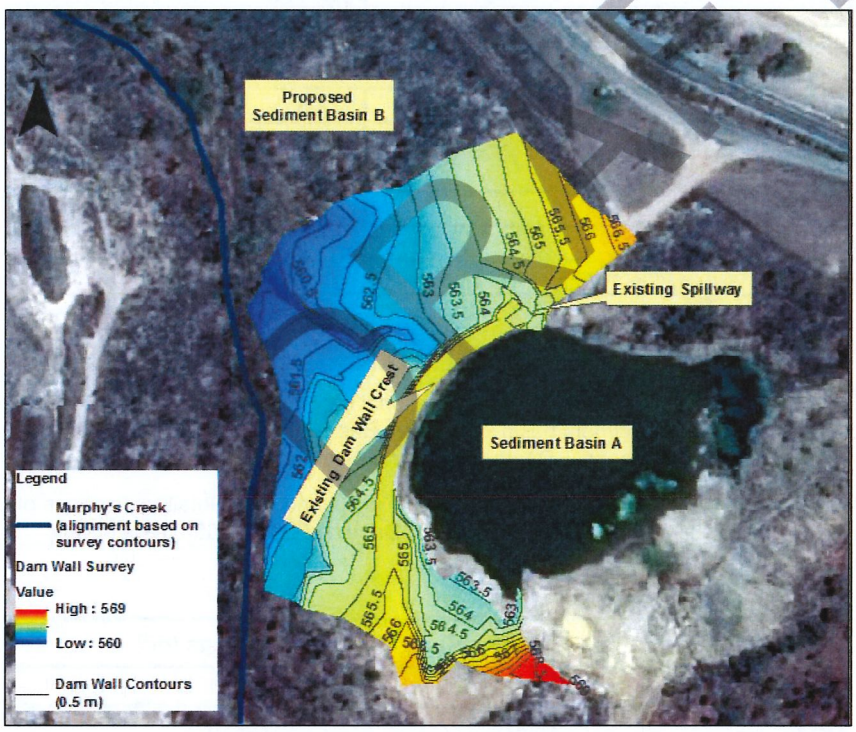

Figure 3: Survey of Sediment Basin A dam wall and spillway

4.2 Required capacity

The required combined sediment basin capacity comprises a settling volume and sediment storage zone. DEHP (2014) was adopted to size the settling zone using the following equation:

$$V_s = A \,.\, C_v \,.\, R$$

Where:

- V_s = settling volume (m^3)
- A = catchment area (m^2)
- C_v = volumetric runoff coefficient
- R = rainfall depth (mm) for the design 1:10 AEP 24 hour rainfall event (consistent with the SWMF's EA requirement)

Table 5 provides the calculation parameters and the required sediment basin capacity. DEHP (2014) recommends the sediment storage zone to be equal to 50% of the upper settling zone. The total sediment basin capacity required is equal to the settling basin capacity plus sediment storage zone capacity and is calculated to be 17 100 m^3.

Table 5: Sediment basin required capacity

Parameter	Value
Stage	Phase A (rehabilitated) + Phase B (active)
Total catchment area (m^2)	123 100
Runoff coefficient	0.75 Phase A 0.86 Phase B
Design rainfall (mm)	171.3
Settling zone (m^3)	16 700
Sediment storage zone (m^3)	8350
Total basin capacity (combined Basin A and B) (m^3)	25 050
Existing basin capacity (m^3)	7920
Additional basin capacity (m^3)	17 100

5.0 DESIGN OF ADDITIONAL SEDIMENT BASIN

An additional sediment basin (Sediment Basin B) of 17 100 m^3 operational capacity has been designed, located directly down-gradient of the existing sediment basin. Sediment Basin B has a total depth from embankment crest of 3.0 m and 0.8 m total freeboard. Depth-area-storage data is provided in Table 6.

An overview of the proposed sediment basin is shown in Drawing F001 in Appendix B. Detailed drawings of typical sections, the low flow outlet and spillway detail are providing in Drawing F001 – F004 respectively and the technical specification is provided in

Table 6: Sediment Basin B Depth-area-storage

Elevation (m RL)	Water Depth (m)	Area (m^2)	Storage (m^3)
564.8	3	11188	25084
564.3	2.5	9374	20216
564	2.2	9013	17452
563.8	2	8776	15673
563.3	1.5	8195	11437
562.8	1	7630	7476
562.3	0.5	7083	3804
561.8	0	6551	391

Sediment Basin B is designed with a low flow perforated riser pipe outlet. The perforated riser is a PVC pipe of diameter of 250 mm, embedded in a solid base located at the base of the sediment settling zone. The perforations extend from the top of the sediment storage zone to 300 mm below the spillway invert, that is a total of 1.5 m. The perforations have been sized with sufficient capacity to dewater the volume of the sediment settling zone within a duration of 120 hours (Department of Environment and Heritage Protection, 2014) according to the calculation method for multiple orifice flow. There are eight 50 mm perforations per row and rows of perforations are spaced at 150 mm vertical distance. The outlet riser pipe is surrounded by a vertical stand of 1m^3 rock-filled gabion baskets (rock of D_{50} 100 mm). The gabion baskets are externally covered by a geotextile (Bidim A24 or equivalent) to aid in filtration and minimise potential blockage of the perforations. An anti-seep collar is fitted to the riser pipe to prevent seepage along the outer surface of the pipe. Details of the perforated riser design are provided in Drawing F004 in APPENDIX B.

Sediment Basin A will spill to Sediment Basin B. Spillways for both Sediment Basin A and B have been modelled in xpstorm for the 1:50 AEP rainfall event (Innovyze, 2017). Based on the hydrology outlined in Section 3.0 the peak inflow to Sediment Basin A from the Phase A and B landfill cells for a 1:50 AEP rainfall event is 3.64 m^3/sec. This value occurs during the critical duration design storm event of 30 mins and represents the maximum of the 10 temporal patterns assessed. The resultant hydrograph is shown in APPENDIX C.

The existing spillway for Sediment Basin A has been resized to convey the 1:50 AEP rainfall event. The dam crest and spillway form part of the road network and as such the spillway is designed to be navigable/trafficable with 1:10 side slopes and a 1% grade at the crest of the spillway. An embedded layer of fines within the rip-rap will also assist in trafficability of the spillway.

The spillway was sized using the xpstorm hydraulic software. The input parameters and results are shown in Table 7. A 16 m spillway length was selected to achieve a freeboard of 0.3 m. The outflow hydrograph and the upstream water depth hydrographs are shown in APPENDIX C

The armouring for the spillway chute was modelled in the program Hydraulic Toolbox (U.S. Department of Transportation Federal Highway Administration, 2018). Riprap size of D_{50} 100 mm provides stable bed and banks during the design event.

Table 7: Sediment Basin A spillway design parameters and sizing

Peak outflow (m^3/s)	Depth of spillway flow (m)	Freeboard (m)	Width of spillway (m)	Slope of spillway chute (%)	Spillway protection
2.3	0.2	0.3	16.0	1	Rock D_{50} 100 mm

The inflow to Sediment Basin B routed in the basin and the required spillway has been modelled in series with Sediment Basin A. The resultant spillway length of 8 m achieves a freeboard of 0.3 m (refer to Table 8). Riprap size of D_{50} = 300 mm is stable during the design event.

Table 8: Additional sediment basin spillway design parameters and sizing

Peak outflow (m^3/s)	Depth of spillway flow (m)	Freeboard (m)	Width of spillway (m)	Slope of spillway chute (%)	Spillway protection
1.1	0.2	0.3	8.0	33.3	Rock D_{50} of 300 mm

6.0 IMPORTANT INFORMATION

Your attention is drawn to the document titled - "Important Information Relating to this Report", which is included in Appendix D of this report. The statements presented in that document are intended to inform a reader of the report about its proper use. There are important limitations as to who can use the report and how it can be used. It is important that a reader of the report understands and has realistic expectations about those matters. The Important Information document does not alter the obligations Golder Associates has under the contract between it and its client.

7.0 REFERENCES

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Report Signature Page

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APPENDIX A

Intensity Frequency Duration Data

APPENDIX A
Intensity Frequency Duration Data

Total rainfall depth (mm)

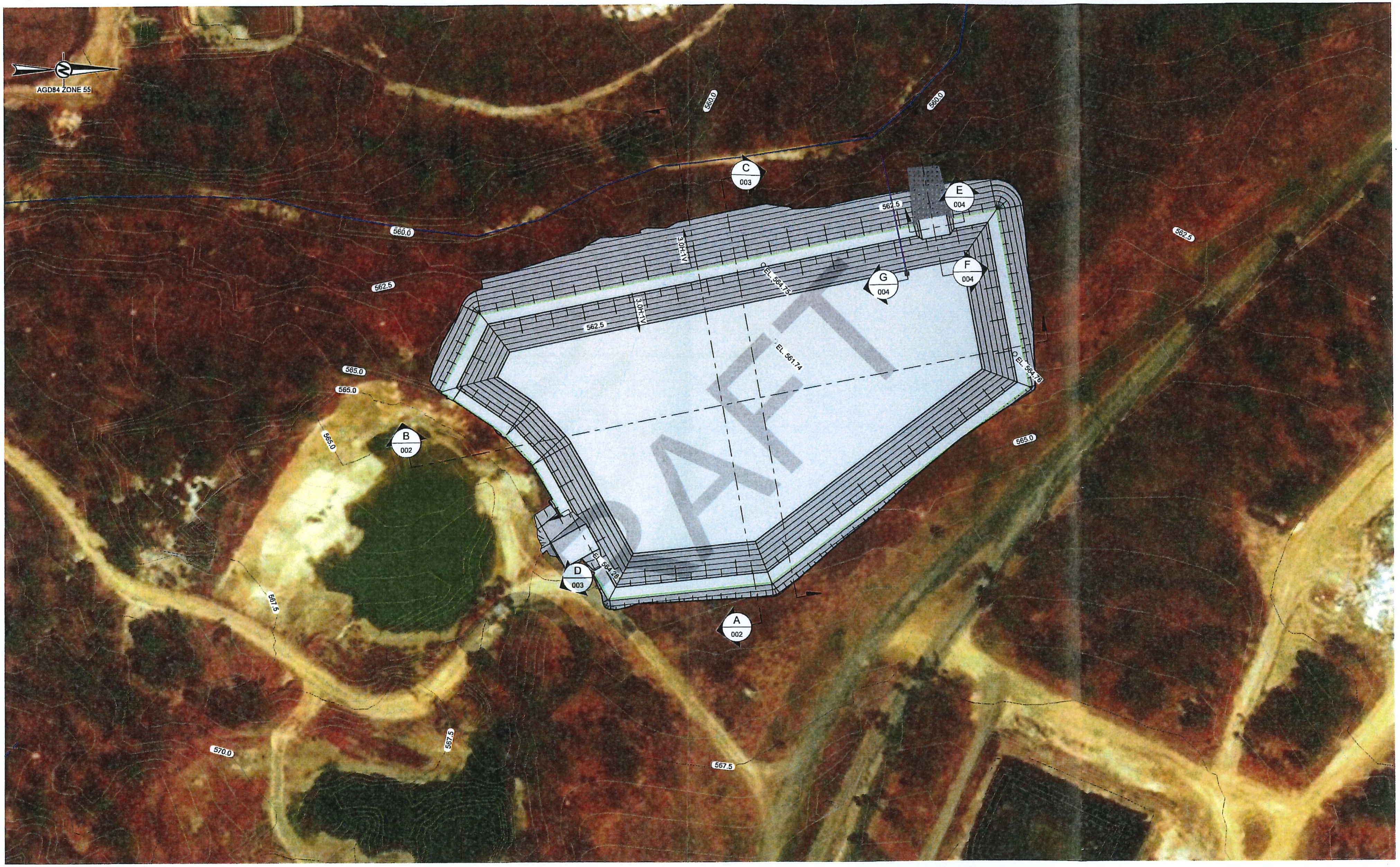
	EY	Annual Exceedance Probability (AEP)					
Duration	**1EY**	**50%**	**20%**	**10%**	**5%**	**2%**	**1%**
5 min	7.6	8.5	11.4	13.2	14.9	17	18.6
10 min	12.9	14.5	19.5	22.6	25.6	29.3	32.1
15 min	16.8	19	25.4	29.6	33.4	38.3	41.9
30 min	24.6	27.6	36.9	42.8	48.3	55.4	60.5
1 hour	32.9	36.9	48.9	56.7	64	73.2	80
2 hour	41.2	46.3	61.5	71.4	80.8	92.8	101.6
3 hour	46.3	52	69.6	81.1	92.2	106.4	116.9
6 hour	55.8	63.1	86	101.6	116.9	137.1	152.6
12 hour	67.8	77.3	108.3	130.4	153	184.2	209.3
24 hour	84.2	96.6	139.1	171.3	205.7	256	298.4
48 hour	106.4	122.5	179.8	225.7	276.6	354.6	423.4
72 hour	122.2	140.6	207.4	261.7	322.7	417.4	502.1
96 hour	134.3	154.5	227.7	287.1	353.9	457.4	549.8
120 hour	143.8	165.4	243.2	305.6	375.1	481.7	576
144 hour	151.4	174.3	255.4	319.2	389.3	495	587
168 hour	157.4	181.5	265.1	329.2	398.3	500.3	587.2

Rainfall intensity (mm/h)

	EY	Annual Exceedance Probability (AEP)					
Duration	**1EY**	**50%**	**20%**	**10%**	**5%**	**2%**	**1%**
5 min	91.2	102.0	136.8	158.4	178.8	204.0	223.2
10 min	77.4	87.0	117.0	135.6	153.6	175.8	192.6
15 min	67.2	76.0	101.6	118.4	133.6	153.2	167.6
30 min	49.2	55.2	73.8	85.6	96.6	110.8	121.0
1 hour	32.9	36.9	48.9	56.7	64.0	73.2	80.0
2 hour	20.6	23.2	30.8	35.7	40.4	46.4	50.8
3 hour	15.4	17.3	23.2	27.0	30.7	35.5	39.0
6 hour	9.3	10.5	14.3	16.9	19.5	22.9	25.4
12 hour	5.7	6.4	9.0	10.9	12.8	15.4	17.4
24 hour	3.5	4.0	5.8	7.1	8.6	10.7	12.4
48 hour	2.2	2.6	3.7	4.7	5.8	7.4	8.8
72 hour	1.7	2.0	2.9	3.6	4.5	5.8	7.0
96 hour	1.4	1.6	2.4	3.0	3.7	4.8	5.7
120 hour	1.2	1.4	2.0	2.5	3.1	4.0	4.8
144 hour	1.1	1.2	1.8	2.2	2.7	3.4	4.1
168 hour	0.9	1.1	1.6	2.0	2.4	3.0	3.5

APPENDIX B

Design Drawings



NOT FOR CONSTRUCTION

ISSUE FOR INFORMATION

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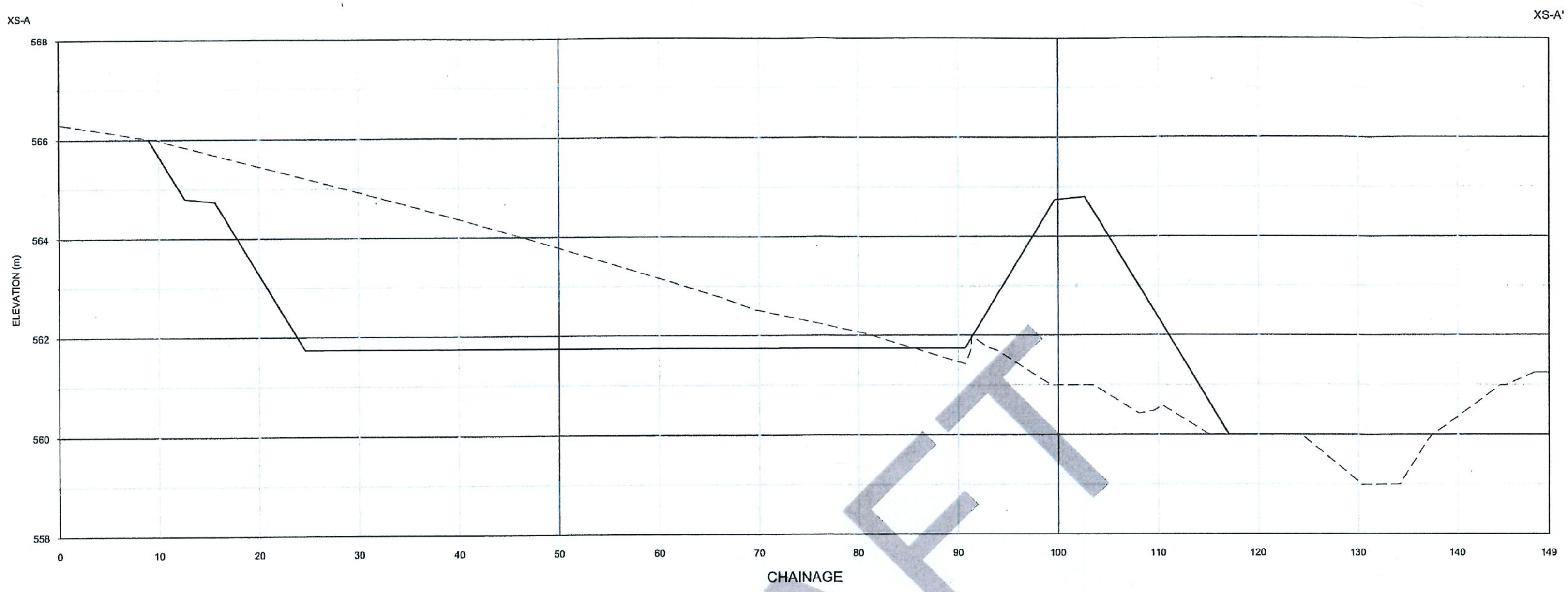
CONSULTANT GOLDER	YYYY-MM-DD	2018-02-12	TITLE WATER DAM PLAN	
	DESIGNED	MJH		
	PREPARED	BK/RF		
	REVIEWED	JB		
	APPROVED	JB	PROJECT NO. 1781336 / CONTROL 004 / REV. A	FIGURE 001



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VERT. SCALE 1:100 m
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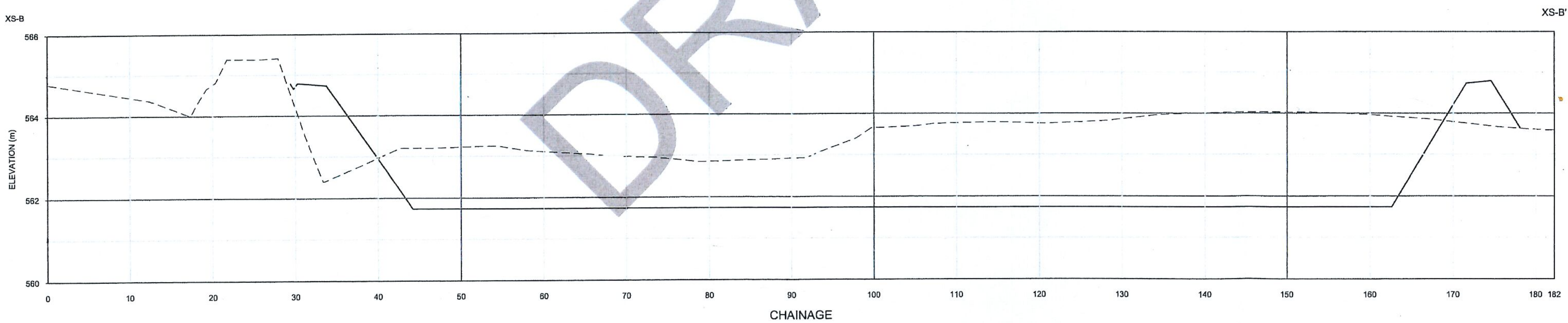

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B 001 TYPICAL SECTION - WATER DAM

NOT FOR CONSTRUCTION

ISSUE FOR INFORMATION

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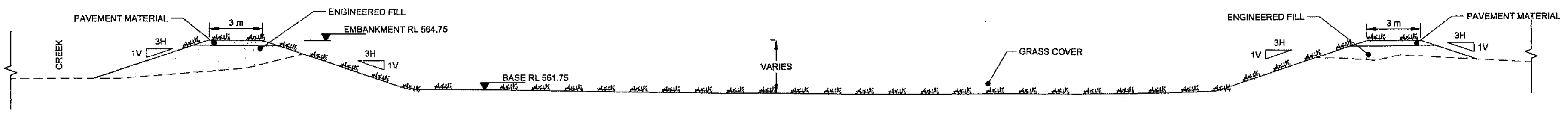
0 10 20
1:500 HORIZONTAL METRES

CLIENT SPRINGMOUNT WATE MANAGEMENT FACILITY JOINT VENTURE			PROJECT SWMF - STORMWATER MANAGEMENT UPGRADES	
CONSULTANT GOLDER	YYYY-MM-DD	2018-02-12	TITLE **WATER DAM SECTIONS**	
	DESIGNED	MJH		
	PREPARED	BK/RF		
	REVIEWED	JB	PROJECT NO. 1781336	CONTROL 004
	APPROVED	JB	REV. A	FIGURE 002



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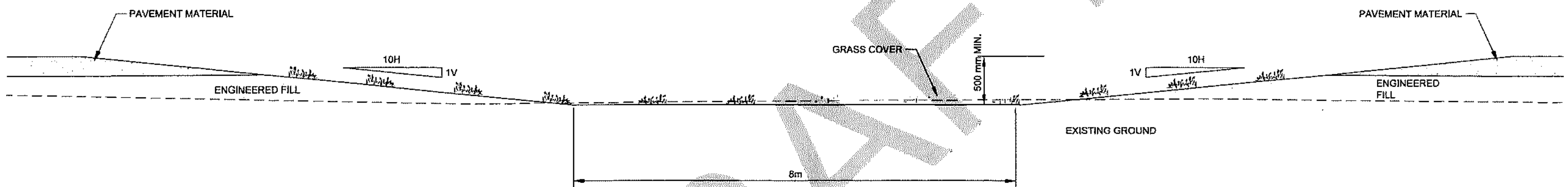

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1:50 METRES

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2018-02-12	FOR INFORMATION	MJH	BK/RF	JB	JB

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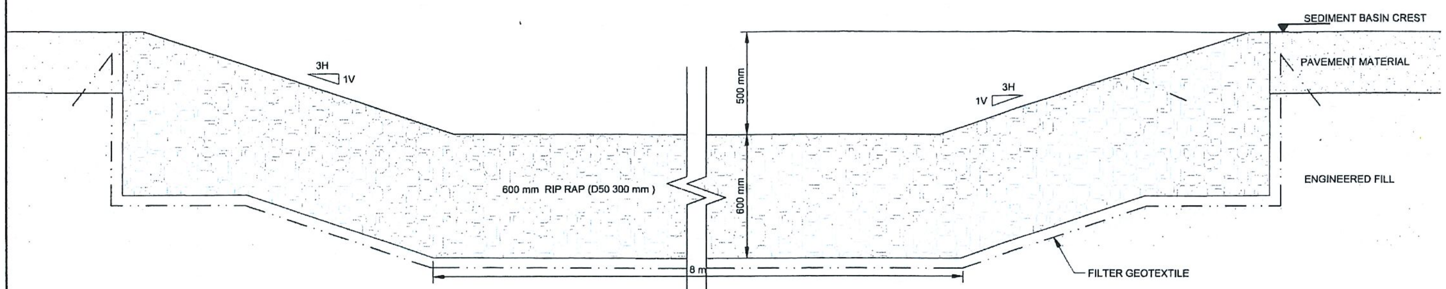
PROJECT
SWMF - STORMWATER MANAGEMENT UPGRADES

TITLE
TYPICAL SECTIONS AND DETAILS - SHEET 1 OF 2

PROJECT NO.	CONTROL	REV.	0 of 5?	FIGURE
1781336	004	A		003

NOTE(S)

1. A TOTAL OF ONE AND A HALF D50 100mm ROCK FILLED WIRE BASKETS (DIMENSIONS OF BASKET 1000 mm X 1000 mm X 1000 mm) WRAPPED WITH A24 FILTER GEOTEXTILE TO BE INSTALLED WITH PERFORATED HDPE PIPE.
2. PERFORATED HDPE PIPE TO BE SECURED WITH 8 HOLES OF 50 mm DIA. THROUGHOUT 1.5 m OF PIPE, AT 150 mm SPACING VERTICAL.



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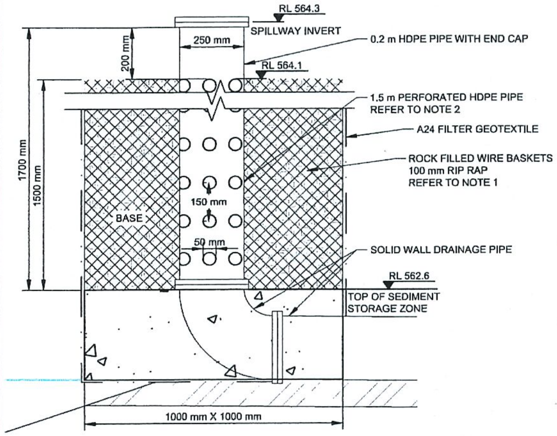

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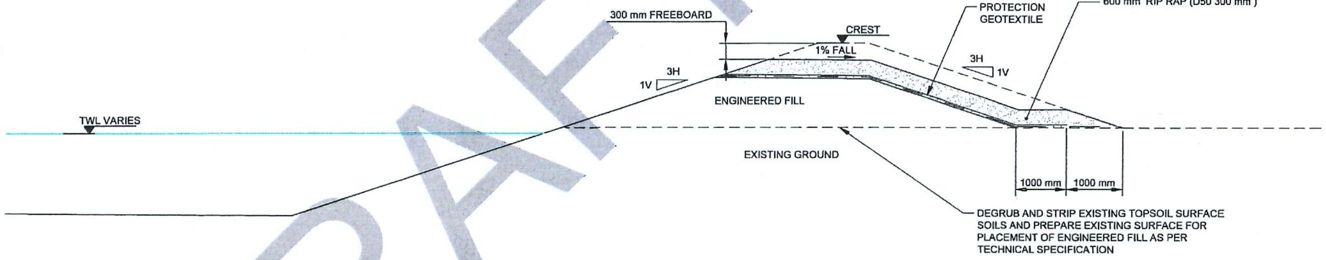

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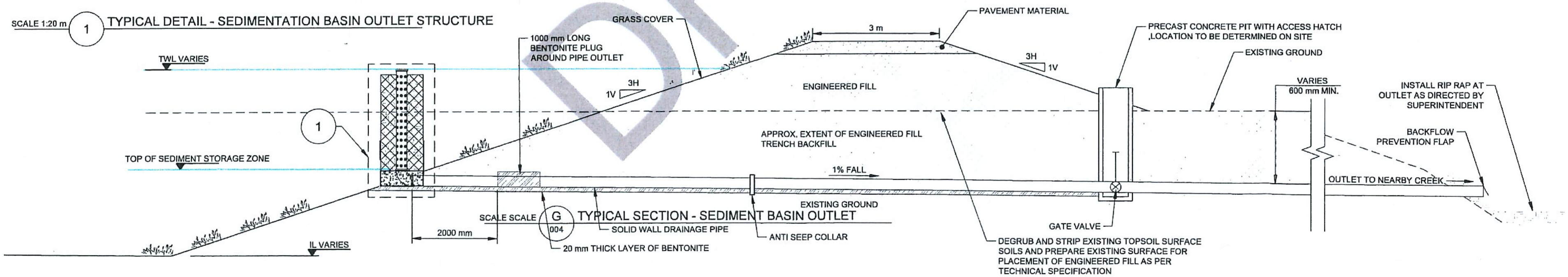

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REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2018-02-12	FOR INFORMATION	MJH	BK/RF	JB	JB

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PROJECT
SWMF - STORMWATER MANAGEMENT UPGRADES

TITLE
TYPICAL SECTIONS AND DETAILS - SHEET 2 OF 2

PROJECT NO.	CONTROL	REV.	0 of 5?	FIGURE
1781336	004	A		004