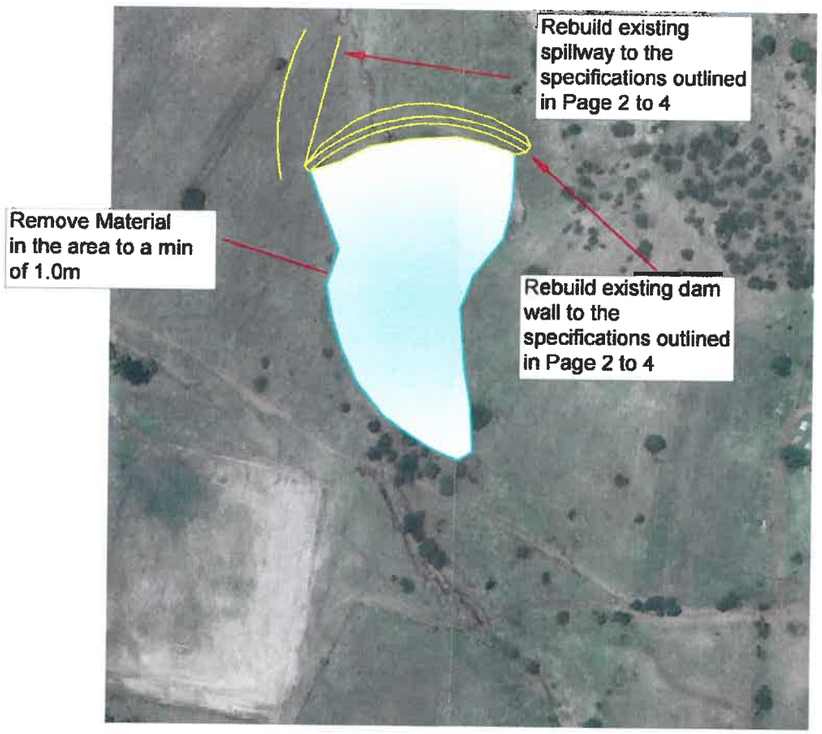
R/N/18/9/565

Dam Details

Crest width	= 3.0 m
Slope Waterside	= 1 : 3
Slope Downstream	= 1 : 3
Wall Length	= 100.5 m
Wall Depth	= 4.5 m
Water Level Depth	= 3.5 m
Freeboard	= 1.0 m
Wingwall Crest Width	= 3.0 m
Slopes	= 1 : 3
Wingwall height	= 1.0 m
Wingwall length	= 50 m
Key trech depth	= 3.0 m (min)
Bottom trench width	= 5.0 m
Top trench width	= 5.0 m
Length of key trench	= 94 m
Central Clay core slopes	= 2 : 1



Dam Estimates

Earth Volume = 7 360.823 m³

Storing Capacity = 8 360.823 m³

Ratio = 1 : 1.14

GPS CO-ORDINATE

S 28° 29' 42.91"
E 31° 55' 29.67"

Graphic Scale (A3)
25 0 12.5 25 50
1:1 000

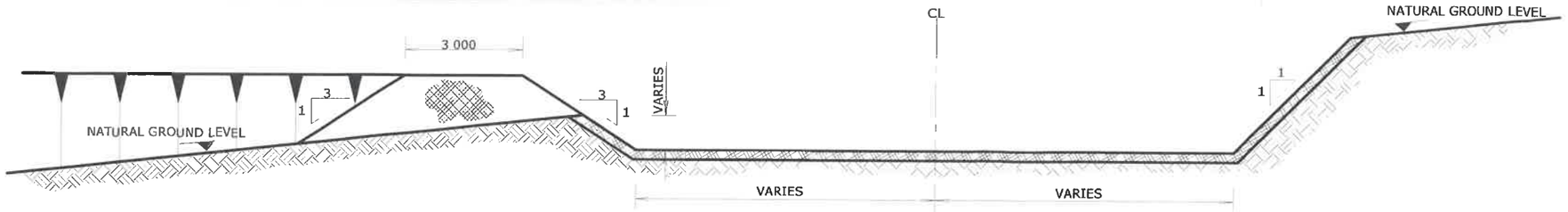
KZN DEPARTMENT OF AGRICULTURE & RURAL DEVELOPMENT

ENGINEERING SUPPORT SERVICES
CNR HEEREN & VAN RIEBEECK / PRIVATE BAG X 9423
VRYHEID / 3100 / PHONE : 034 - 982 2351
FAX : 034 981 5240

Survey : BC Mhlongo
Design : BC Mhlongo
Drawn by : BC Mhlongo
Date : 03 July 2018

DRAWING NUMBER:
SDvG/2018/07/DAM-MAT
SCALE (A3) - 1 : 2 500

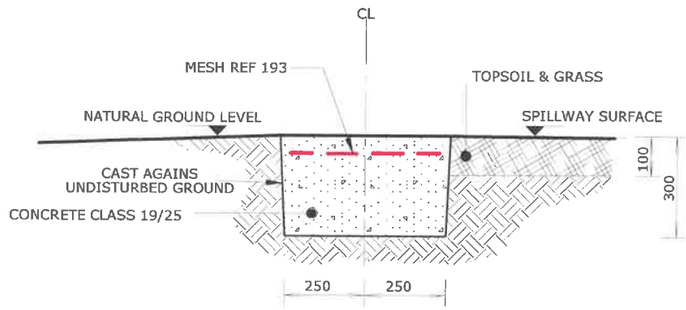
DRAWING 1 of 4
SOIL CONSERVATION STOCKWATERING DAM
MATHOLENI



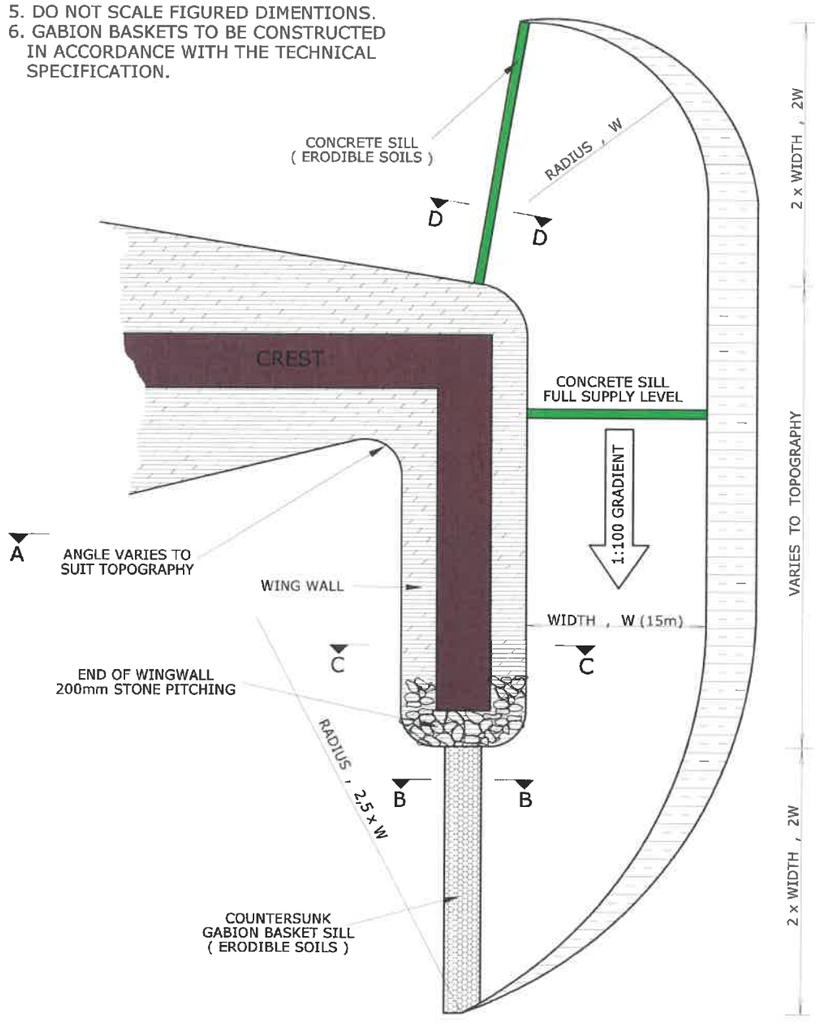
EMBANKMENT & SPILLWAY
SECTION A-A

NOTES :

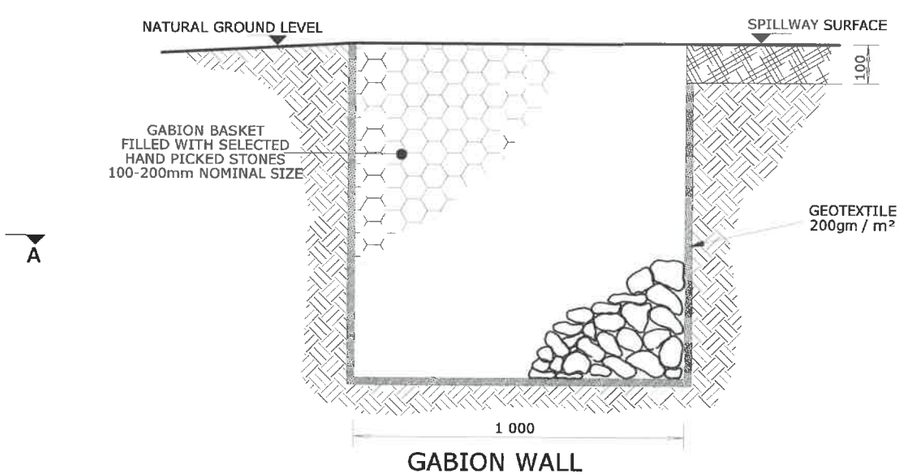
1. ALL REINFORCEMENT ON THIS DRAWING IS DETAILED IN ACCORDANCE WITH SABS 10400
2. COVER FOR REINFORCEMENT IS 40mm, UNLESS STATED OTHERWISE.
3. ALL DIMENTIONS IN MILLIMETER
4. ELEVATIONS IN METERS
5. DO NOT SCALE FIGURED DIMENTIONS.
6. GABION BASKETS TO BE CONSTRUCTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION.



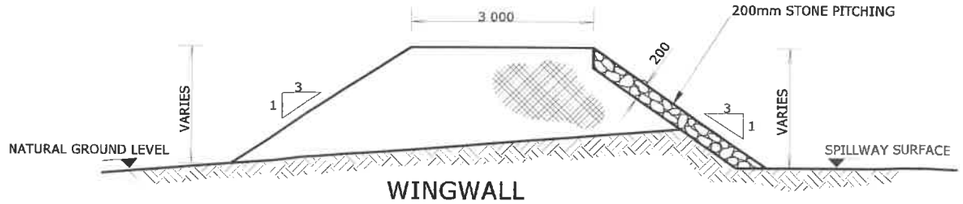
CONCRETE SILL
SECTION D-D



TYPICAL SPILLWAY ARRANGEMENT - PLAN



GABION WALL
SECTION B-B



WINGWALL
SECTION C-C

OTHER RELEVANT NOTES :-

Reference drawings

Page 4	Typical Wall Detail
Page 1	Layout / Siteplan
Page 2	Pipe plan

Amendment

No.	Date	Checked By	Description

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Surveyed	Drawn	Checked
BCM	BCM	SDvG

BC Mhlongo — Designed By :- — 03/07/2018 Date

T.K. Onkay — Engineers Approval :- — 03/07/2018 Date

Project

RE -SCOOPING STOCKWATERING DAM

Drawing description

ERODIBLE SOILS - Protection Works

Scale	Date
NTS	03/07/2018

Drawing number

SDvG /2018/07/DAM-MAT

SHEET 3 of 4

CONSTRUCTION NOTES :

Construction shall be in accordance with SABS 1200 DE

PREPARATION OF SITE :

The area to be occupied by the dam shall be cleared of boulders, trees, stumps, grass and topsoil. The latter should be stockpiled and used on the face of the dam to facilitate the establishment of suitable grass cover. Any layers of sand, organic or porous material shall be evcavated and removed from the construction area.

FOUNDATIONS :

The cut-off trench and base area shall be kept free of water during construction. Any porous, organic or loose material shall be carefully removed before approved material is placed and compacted. All rock surfaces in the foundation shall be excavated to sound rock and washed clean using air and water jets. Joints and cracks that are exposed shall be cleaned. Such joints and cracks shall then be filled with an approved grout. Grout shall be broomed and brushed across the top of the joint or crack to ensure that the contact with the fill material will be tight. Except in the case of small cracks, the brushing of slush grout to fill a crack is not acceptable.

EMBANKMENT :

Material with a high clay content shall be placed in the central zone of the embankment while material with a higher sand fraction shall be placed in the outer zones. All excavations for the earthfill must be below full supply level of the basin. Any embankment material shall be free of vegetation, boulders and top-soil. The entire embankment shall be constructed in layers not exceeding 300 mm (measured loose) and compacted by routing compaction equipment systematically over each layer. compacted to 95 % Mod AASHTO density. An allowance of 5 % in height shall be made for settlement. Small holes and depressions such as may occur in the abutments, core trench, or around outlet pipe shall be hand rammed to maximum compaction.

Rock fragments greater than two thirds of the layer thickness i.e. boulders (>200mm), must be removed to spoil.

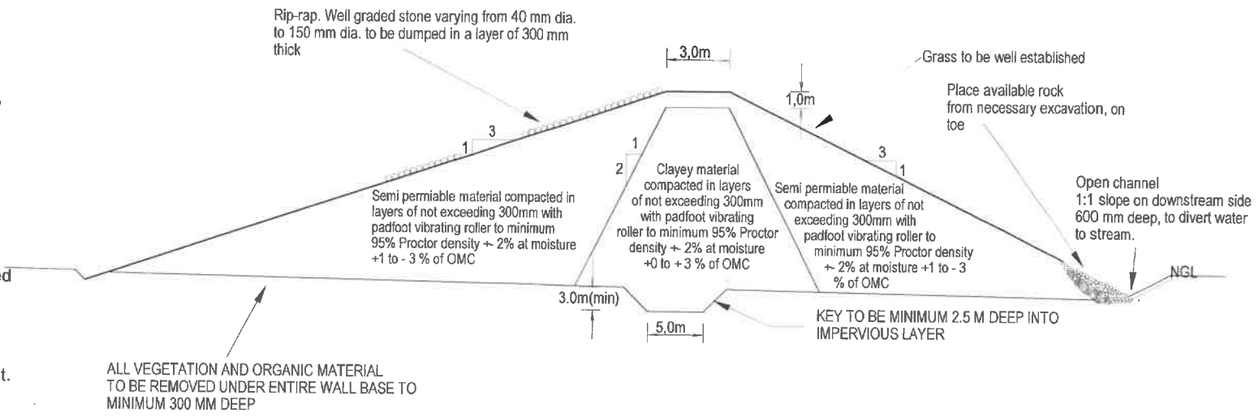
NOTE : Homogenous Embankment may be constructed provided material is approved by an Engineer.

SPILLWAY :

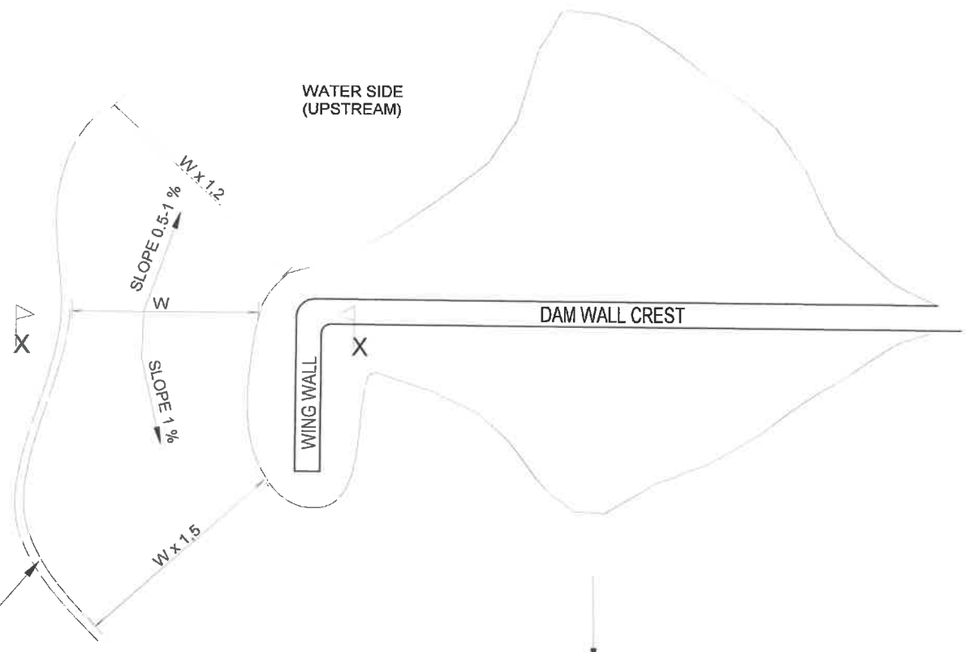
The spillway is to be excavated to the recommended minimum width. The total freeboard of the embankment is to be no less than the minimum recommended height above the spillway level. The spillway and the slope downstream of the spillway shall be cleared of obstructions such as trees, boulders, etc., and all depressions filled in an approved manner. The slope of the open cut flanking the spillway shall be sloped to a minimum slope of 1:2 or flatter. The face of the training wall must be carefully lined with stone to a depth of 250 mm.
The entire spillway and the slope downstream of the spillway shall be topsoiled and grassed. The topsoil shall be lightly compacted by wheeled vehicles or by tamping. The final thickness of topsoil after compaction shall be at least 75 mm.

GRASSING AND FINISHING :

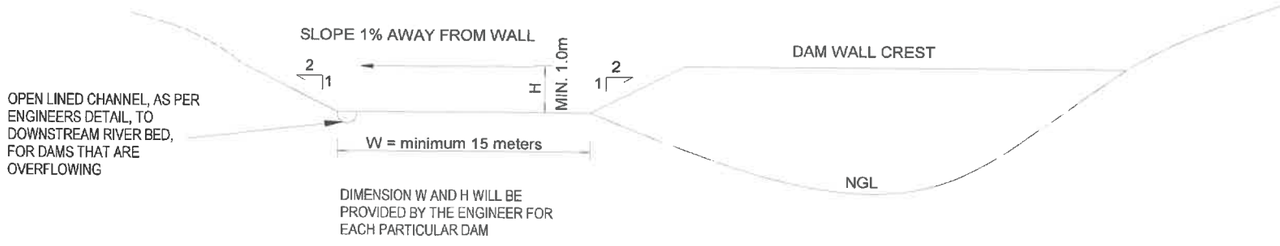
The entire exposed embankment surfaces shall be topsoiled and planted with an approved grass to be well fertilized until growth is firmly established.
The embankment crest shall be sloped slightly backwards towards the dam basin to aid with the drainage of rain water from the crest. Embankment and spillway area must be fenced off.



SECTION OF DAM WALL



PLAN VIEW



SECTION X - X

GEOTECHNICAL INFORMATION

It is recommended that site specific, detailed geotechnical verification be carried out by the contractor to determine that the geotechnical conditions for each site correlate with samples taken on site. This will have inherent cost savings as the optimum founding solution for each site can be determined without having to apply a one-size-fits-all design for the foundations.

Finally, the ground conditions described in this design refer specifically to those encountered at the test positions on the site. It is therefore possible that conditions at variance with those discussed above may be encountered elsewhere on the site. In this regard it is important that the Engineer carry out periodic inspections of the site during construction to ensure that any variation in the anticipated ground conditions can be assessed and revised recommendations made to avoid unnecessary delays and expense. Furthermore it is important that the construction phase of the project be treated as an augmentation of the geotechnical investigation

OTHER RELEVANT NOTES :-

Reference drawings	
Page 1	Layout / Siteplan
Page 3	Erodible Soils - Protection Works
Page 2	Pipe plan

Amendment				
No.	Date	Checked	By	Description

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Surveyed	Drawn	Checked
BCM	BCM	SDvG

BC Mhlongo — Designed By :- — 03/07/2018 Date

T.K. Onkay — Engineers Approval :- — 03/07/2018 Date

Project

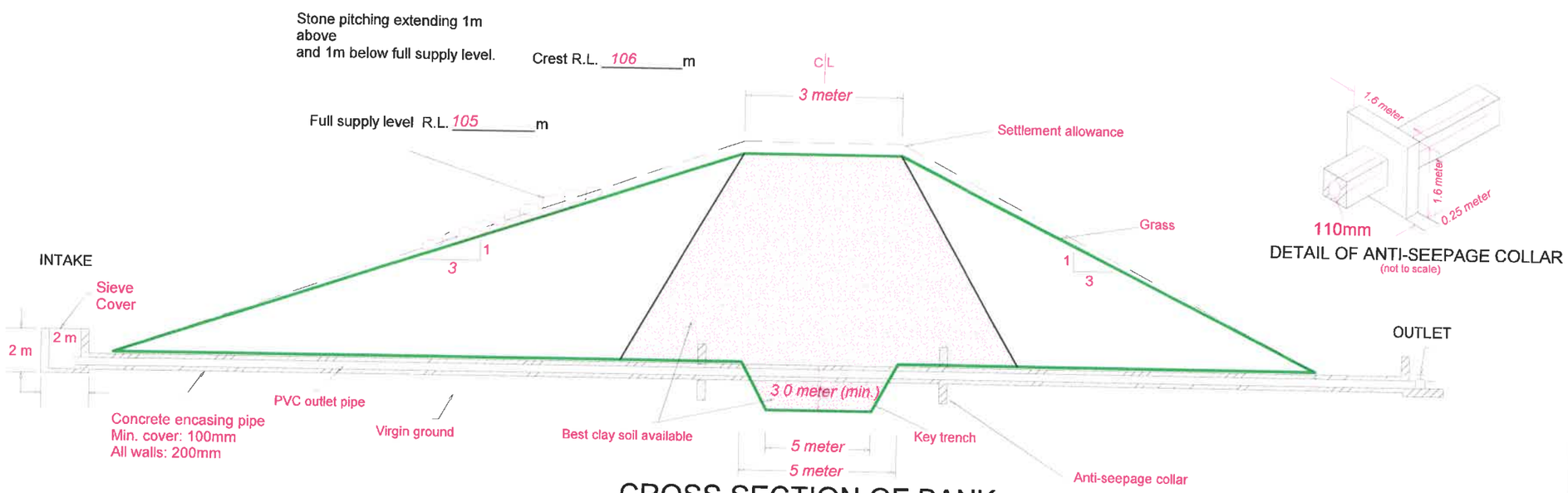
Drawing description

DAM WALL DETAIL

Scale	Date
NTS	03/07/2018

Drawing number
SDvG /2018/07/DAM-MAT

SHEET 4 of 4



CROSS SECTION OF BANK

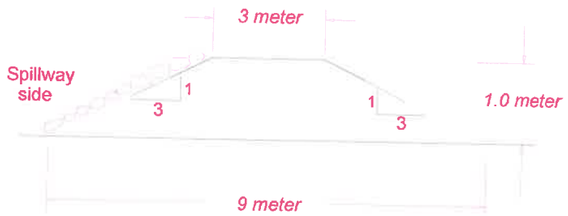
(not to scale)

DETAIL OF ANTI-SEEPAGE COLLAR

(not to scale)

NOTES:

1) All organic material and topsoil to be removed from base before construction commences. Stockpile and use for the 10% settlement allowance.
2) Soil must be moist to obtain maximum compaction.
3) Applicant must call for an intermediate inspection of the site when the:-
   * Key trench has been dug & before it is filled.
   * Bank is half completed.
   * Bank is completed, but before commencing with grassing & stone pitching.
4) The whole bank & spillway must be established to a good grass cover on completion. Use : Indigenous Couchgrass.
5) Establish common reed (Phragmites) in the stream bed at the dam inlet.
6) Concrete mix:- 1 Pocket cement : 110 liter sand : 125 liter stone (20mm stone).



CROSS SECTION OF WINGWALL

(not to scale)

OTHER RELEVANT NOTES :-

Reference drawings

Page 4	Wall Detail
Page 3	Erodible Soils - Protection Works
Page 1	Layout Plan

Amendment

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Surveyed	Drawn	Checked
BCM	BCM	SDvG

BC Mhlongo — Designed By :- — 03/07/2018 — Date

T.K. Onkay — Engineers Approval :- — 03/07/2018 — Date

Project

RE -SCOOPING STOCKWATERING DAM

Drawing description

PIPE LAYOUT PLAN

Scale	Date
NTS	03/07/2018

Drawing number: SDvG /2018/07/DAM-MAT

SHEET 2 of 4