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COROBRIK (PTY) LTD

MIDRAND OPERATIONS
STORM WATER MANAGEMENT PLAN

AUGUST 2024

MVD Kalahari

INSPIRING ENGINEERING INNOVATION

MVD Kalahari

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STORM WATER MANAGEMENT PLAN

AUGUST 2024

Compiled By : P.J. Oosthuizen
On behalf of : MVD Kalahari Consulting Engineers and Town Planners (Pty) Ltd

Date : August 2024
Client : Corobrik (Pty) Ltd, Midrand

MVD Kalahari

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LIST OF ABBREVIATIONS

ABBREVIATION OR ACRONYM	DEFINITION
BH	Borehole
DWS	Department of Water and Sanitation
EIA	Environmental impact assessment
GRAII	Groundwater resources assessment phase II
L/hr	Litre per hour
L/s	Litre per second
LC	Leach Concentration
LCT	Leach Concentration Threshold
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel etc)
m^3/a	Cubic Meters per Annum
mamsl	Metres above mean sea level
MAP	Mean annual rainfall
mbgl	Metres below ground level
mg/ℓ	milligrams per litre
mm/a	Millimetres per Annum
Mm^3/a	Million Cubic Meters per Annum
MODFLOW	Modular groundwater flow numerical model
NEMA	National Environmental Management
NGA	National groundwater archive
NWA	National Water Act
PCD	Pollution Control Dam
SWMP	Storm Water Management Plan
TCT	Total Concentration Threshold
TDS	Total Dissolved Solids
WR2012	Water Resources South Africa 2012

1. DETAILS

1.1. CLIENT

Corobrik Midrand

Tel.:011 857 1310

Midrand
Johannesburg
1820

Contact Person: Me. Martha Monoke
Mobile: 063 509 6098
Email: Martha.Monoke@corobrik.co.za

1.2. CONSULTANT

MVD Kalahari Consulting Engineers and Town Planners (Pty) Ltd

Tel.: 012 342 1710

Suite 1B Hatfield Bridge
213 Cnr Richard and Stanza Bopape Street
Hatfield, Pretoria
0083

Engineer: Petrus Oosthuizen
Mobile: 082 812 6086
E-mail: petrus@mvdkalahari.co.za

2. INTRODUCTION

2.1. PURPOSE OF THE STUDY

The purpose of this report is to develop a Storm Water Management Plan (SWMP) to assist Corobrik Midrand operation in managing storm water at the mentioned site to minimise environmental impact of the business and to improve sustainability. Although MVD's scope was the development of storm water management measures for the quarries this report will also provide some general storm water management measures for other operational areas as identified during the site visit to assist Corobrik in compliance efforts.

3. APPLICABLE LEGISLATION AND GUIDELINES

3.1. SOUTH AFRICAN LEGISLATIVE AND STANDARDS FRAMEWORKS

The methodology followed in the surface water assessment is largely prescribed by the legal requirements, as elaborated on in the best practice guidelines. In this regard the following Acts and guideline documents are of relevance:

- National Environmental Management Act (NEMA) (Act 107 of 1998) and relevant regulations
- National Water Act (NWA) (Act 36 of 1998) and relevant regulations
- DWS's Best Practice Guidelines: G1 for Storm Water Management (2006)

The main aim of the **NEMA** is to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment. Important sections of the **NWA** are highlighted below.

3.2. RELEVANT SECTIONS OF THE NATIONAL WATER ACT (ACT 36 OF 1998)

The following Sections of the **NWA** described below are regarded as important, but other sections may also be applicable in the proposed development:

Section 19 states that the person who owns, controls, uses or occupies land on which any activity or process is or was undertaken, or any other situation exists which causes, has caused or is likely to cause pollution of a water resource is responsible for taking all reasonable measures to prevent such pollution from occurring, continuing or recurring.

Section 21 broadly defines "water use" to include:

- Taking water from a water resource;
- Storing water;
- Impeding or diverting the flow of a water course;
- Engaging in a stream-flow reduction activity;
- Engaging in a controlled activity identified in s31(1) or declared under S38(1);
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- Disposing of waste in a manner that may detrimentally impact on a water resource;
- Disposing in any manner of water containing waste from or which has been heated in any industrial or power generation process;
- Altering the bed, banks, course or characteristics of a water course;

- Removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for human safety; and

- Using water for recreational purposes.

Section 22(1) regulates the use of water:

- Without a license:
  - If the water use is permissible under Schedule 1 of the Act.
  - It the water use is permissible as a continuation of an existing license use (S32- S35).
  - If the water use is permissible in terms of a General Authorization issued under S39.

- If the water use is authorized by a license under the NWA; or

- If the responsible authority dispensed with a license requirement in terms of S22(3).

Government Notices issued in terms of Section 39 of the NWA

These notices, published in terms of Section 39, contain General Authorizations which permit the use of water from a particular water source, by a particular category of persons, in a defined geographical area or a period of time and requires conformity with other relevant laws.

3.3. SCOPE OF THE STUDY

The scope of the study is to develop a Storm Water Management Plan for the Corobrik Midrand taking notice of the fact that the site potentially could have an impact on surface and groundwater quality and quantity.

The main objectives of this SWMP will be as follows:

- Protection of life and property from flood hazards,

- Protection of water resources from pollution from surface storm water runoff from the facility,

- Ensure continuous operation through different hydrological cycles,

- Protection of the natural environment with the emphasis on the watercourses and their ecosystems.

4. METHODOLOGY

- *On site assessment of surface water features and potential sources of contamination,*

- *Site layout of existing infrastructure,*

- *Proposed storm water control infrastructure designs, if required.*

4.1. PRINCIPLES THAT WERE CONSIDERED DURING THE DEVELOPMENT OF THE SWMP

Prevent the contamination of clean storm water runoff. It is a requirement that clean water originating from outside or within the potentially pollutant operations are to be separated and limited from entering areas which may contaminate or pollute the water.

Dirty storm water runoff to be safely transported by designed infrastructure e.g. channels to a containment system designed.

Waste water/dirty water must be contained and/or disposed or treated for re-use in an environmentally responsible manner. All storm water surface run-off within the catchment area of the storage facility has to be retained within that area.

The statutory requirements of the various regulatory authorities and stakeholders must be considered and incorporated e.g. National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).

5. SITE LOCATION

MVD Kalahari Consulting Engineers and Town Planners (Pty) Ltd (MVD) were instructed by Corobrik, to compile a storm water management plan for Corobrik for their Midrand Factory/Operation. The Corobrik Midrand Clay Mine and brick manufacturing factory in Midrand is situated in Olifantsfontein which is in the Gauteng Province of South Africa. The site is situated on Portions 111 and 113 of the Farm Olifantsfontein 402 JR, and Erf 1256 and Erf 1257 situate in the Township of Clayville Extension 14 JR, Province of Gauteng as shown in **Figure 1**. The site is seated on approximately 76.5 ha.

Figure 1: Location of Corobrik Midrand Site

6. BACKGROUND

The Corobrik Midrand Factory, comprising of an existing brick factory, is situated on Portion 113 of the Farm Olifantsfontein 402 JR, and Erf 1256 and Erf 1257 of the Township of Clayville Extension 14 JR. This is a relatively flat, sloping gently in a general north-westerly direction. The property is bounded by the Olifantsfontein – Irene Road to the east, Midrand Extension site to the immediate north, which in turn is adjacent to the Sun Lawns Agricultural Holdings property to the north, vacant land to the northwest, Johnson Tiles to the southwest and the Clayville Industrial area to the south. The northerly half of the property comprises quarry and clay stockpiling areas. A rehabilitated water-filled worked-out quarry is situated to the northwest corner of the property. The southerly half comprises the factory and brick stockpiling areas. The south-westerly corner of the property is covered in vegetation. A centrally situated worked-out quarry is currently being backfilled.

Figure 2 : Corobrik Midrand Layout

7. ENVIRONMENTAL DESCRIPTION

7.1. CLIMATE

In Midrand, the climatic conditions are categorized as mild and moderate. In Midrand, the quantity of rainfall during summers surpasses that of winters. According to Köppen and Geiger, this climate is classified as Cwb. The mean yearly temperature recorded in Midrand is 16.6 °C, as per the available data. Annually, approximately 678 mm of precipitation descends.

This location can be found in the southern region of the globe. The onset of summer commences towards the conclusion of January and culminates by December. The months that constitute this season are referred to as December, January, February and March. The optimal period to plan a visit would be during the months of January, February, November and December.

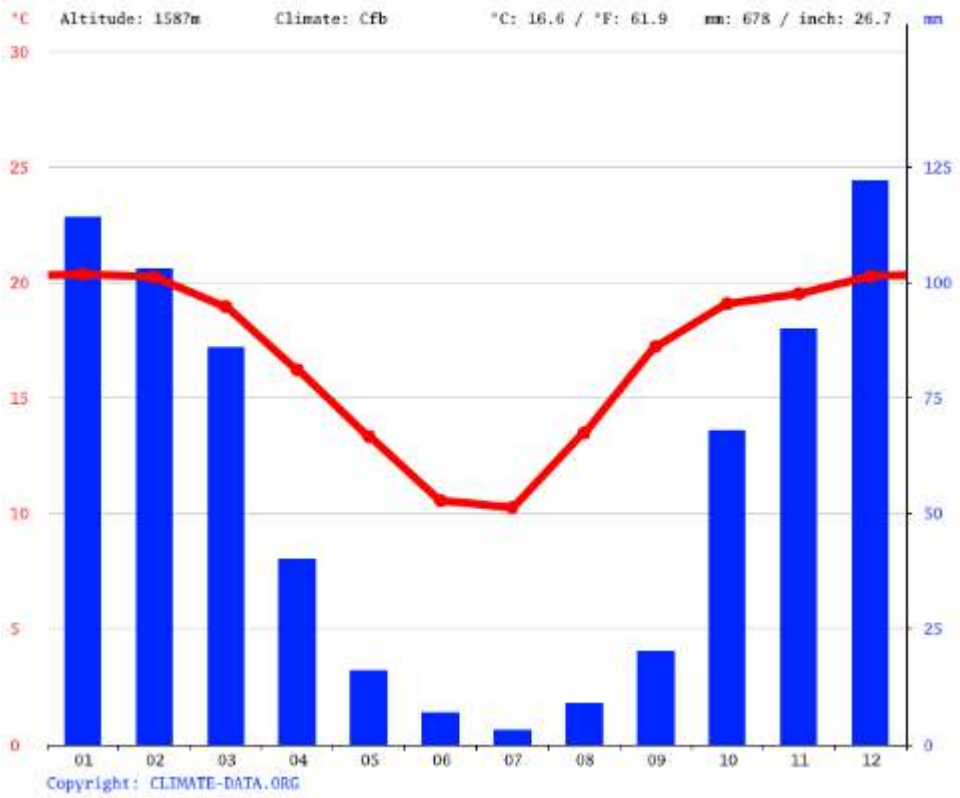

Figure 3: Climatic data (Rainfall and Temperature) from Midrand weather station (Climate-Data, 2017)

7.2. TOPOGRAPHY

Corobrik (Pty) Ltd Midrand is situated at an altitude that varies from approximately 1490 to 1500mamsl. The site is situated in a relatively flat area with the overall slope in a north westerly direction. Slope, or terrain, is used to describe the lie of the land. In most cases, sloping land is subject to higher rates of water runoff and soil erosion. The MAP for the area is 672 mm/year. The mine is located in quaternary catchment A21B. Any surface run-off would naturally drain towards the perennial Hennops River which flows from east to west, 4.5km north of the site. This river then flows into the Crocodile River which feeds into the Hartbeespoort Dam.

According to the site drawings, the stratigraphical data section shows that the area consists of various layers of clay which are layered over Chuniepoort Dolomite. All four members of the Malmani sub-groups are present. The stratigraphic succession, from the bottom upwards is; Oaktree, Monte Cristo, Lyttleton and Eccles formations. There are three smallish outliers of younger Karoo sediments in the area.

Figure 4 to **Figure 6** provides the illustration of the Elevation of the site.

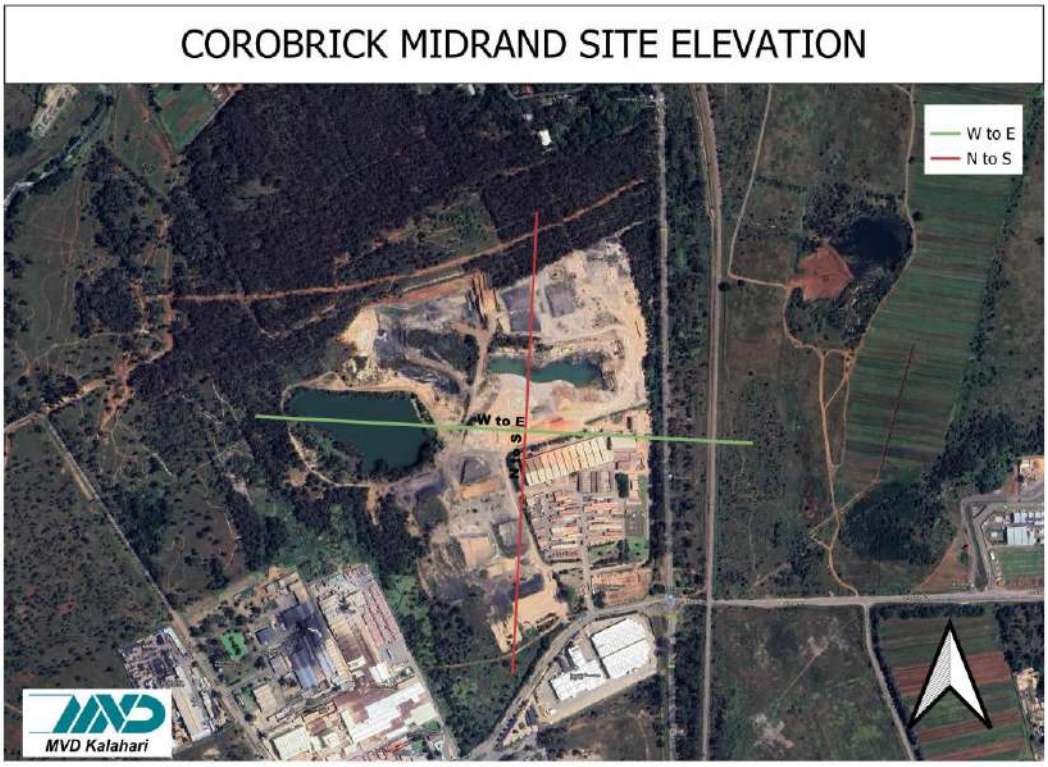

Figure 4: Elevation

Figure 5: North to South

Figure 6: West to East

7.3. VEGETATION

The following is extracted from the Report: Environmental Impact Assessment and Environmental Management Programme Midrand Extension Quarry, Corobrik, 2012.

The natural vegetation in the area consists of grassveld, which may be classified as bakenveld, a false grassveld ecosystem. The vegetation is heterogenous and occurs on variety of soils, including quartzite, shale, dolomite. Chert and granite

7.4. GEOLOGY AND SOIL

The site consists of various layers of clay which are layered over Chuniespoort dolomite.

7.5. SURFACE WATER

The following is extracted from the Report: Corobrik Midrand Factory Water Use License Application, Storm Water Management Plan, Nsovo Environmental Consulting, 2018.

7.5.1. WATER COURSES

There is no discernible natural watercourse or waterbodies on the property.

7.5.2. HYDROLOGY

Corobrik (Pty) Ltd Midrand is located in the quaternary catchment A21B as shown in **Figure 7**. According to the updated hydrology for South Africa (WR2012; (WRC, 2015)), A21B receives a mean annual precipitation (MAP) of 672 mm and has a mean annual run-off (MAR) of 7.7 million m3.

Figure 7: Hydrological Map

Clean and dirty water generating catchments, affected by the proposed project have been delineated and illustrated in the Storm Water Management Plan, attached as

Annexure A. Runoff from the catchment upstream of the site is considered to be clean, as indicated in **Figure 8**. All clean water within the site should be diverted around the dirty water areas, as per the GN 704, to ensure that clean water never enter dirty water areas. Earth berms are recommended to secure these dirty areas. **See Annexure B**.

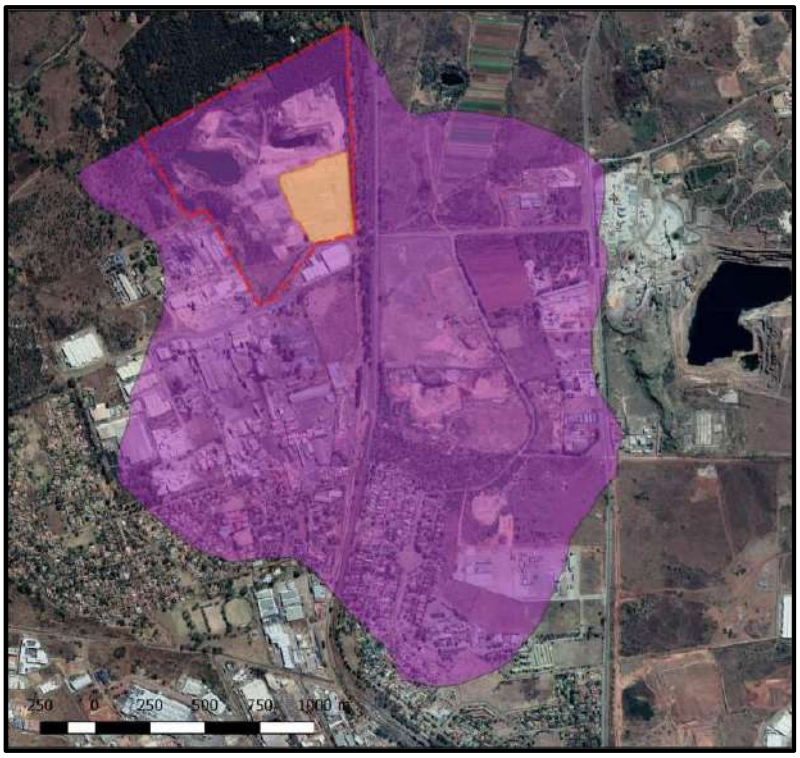

Figure 8 : Clean and Dirty Water Catchments (Surrounding area)

Existing storm water structures (concrete/earth channels) is illustrated in **Figure 9**.

Figure 9: Existing Storm Water Structures

8. IMPACT ASSESSMENT OF CLEAN AND DIRTY WATER AREAS

The impacts on surface water resulting from the operation, and mitigation measures required to mitigate the impacts, are described in this section of the report.

The impacts on surface water manifest as changes in the quantity and/or quality of water. The mitigation measures include the implementation of a Storm Water Management Plan (SWMP) as prescribed in DWS's Best Practice Guidelines. The guiding principle is the separation of clean and dirty storm water runoff, where the unaffected flow is routed to the receiving water body while the contaminated flows are contained for re-use and/or evaporation. If the contaminated flow volumes exceed the capacity that can be re-cycled or evaporated, treatment of the surplus outflow is required. Secondary effects are the impact caused by the SWMP, mainly by reducing (however slightly) runoff in the drainage system; the unavoidable disruption of natural drainage paths; and concentrating flows in some streams, leading to morphological changes accompanied by increased sediment loads (until a new equilibrium state is reached).

In terms of Corobrik Midrand, the following areas relevant for storm water management have been identified and is indicated in the following table, **Table1**.

Table 1: Impacts on Surface Water Identified	
Aspect/Area	**Risks Identified**
Old Quarries	• Siltation of surrounding water courses. • Deterioration of surface water quality as result of runoff from the quarries. • Possibility of increased erosion.
Brick Manufacturing Plant	• Runoff from the brick manufacturing plant could potentially carry hydrocarbons to surrounding water sources.
Workshop and Wash Bay	• Runoff from the workshop and wash bay could potentially carry hydrocarbons to surrounding water sources which holds a potential risk of pollution.
Process Coal Stockpile	• The coal stockpile poses a potential risk of impacting on surface and ground water quality.
Mine residue Stockpiles (Lignite, discard, softs)	• The mine residue stockpile poses a potential risk of impacting on surface and ground water quality.
ROM Stockpile	• The stockpiles have posed a minimal risk to the ground and surface water quality.
Roads	• The risk of pollution is mainly from mining vehicles that could leak hydrocarbons while using the roads. • Runoff from roads could also lead to increased erosion.

9. MITIGATION AND CORRECTIVE MEASURES REQUIRED TO PREVENT FURTHER CONTAMINATION

Mitigation measures (or safety precautions) that are required to be taken after implementation of the storm water control measures as discussed in this report to eliminate the risk on the natural and social environment of the concerned area must be implemented as follows:

Table 2: Aspects Requiring Mitigation Measures	
Aspect/Area	**Mitigation & Corrective measures**
Plant Area	• Currently there is existing storm water channels around the plant complex • Silt barriers must be installed downstream of the plant area. Waste Management: • Waste is to be separated into different key waste streams, • Waste is currently stored and disposed of according to the operational procedures for waste as compiled by Corobrik, • The operational area is kept clean and tidy. Hazardous Chemical Storage: • Grease, lubricants, paints, flammable liquids, and other combustible materials used should be placed and stored in a controlled manner and in an approved designated area.

Table 2: Aspects Requiring Mitigation Measures	
Aspect/Area	**Mitigation & Corrective measures**
	• Immediate and corrective action to be taken when any type of spillage occurs with the removal of the spillage.
Workshop and Wash Bay	• Oil/Water separator is required at the wash bay. The workshop is roofed and therefore will no dirty water be generated from this area. The separated water (wash bay) from the oil/water separator to be stored in a sump. Contaminated sludge from the oil water separator to be removed by licensed contractor. Proof of collection to be kept on file at the site. • The wash bay area to be shaped with reinforced concrete lined channels installed to allow water flow towards the oil water separator. Wash bay area to be covered by impermeable surface. • Oil/Water separator must be inspected regularly and maintained in good working order. Contaminated storm water collected within the system is to be collected by an approved Contractor and transported to a licensed/approved dumping site. <u>Waste Management:</u> • Waste is to be separated into different key waste streams, • Waste is stored and disposed of according to the operational procedures for waste compiled by Corobrik. The operational area is kept clean and tidy. <u>Hazardous Chemical Storage</u>: • Grease, lubricants, paints, flammable liquids, and other combustible materials used should be placed and stored in a controlled manner and in an approved designated area. • Immediate and corrective action to be taken when any type of spillage occurs with the removal of the spillage as specified in the EMP. • All diesel depots and chemical storage facilities should be within bunded areas constructed on a concrete or other impermeable surface, including a water containment system, to reduce the risk of pollution of downstream watercourses.
Plant/Machinery	• All mine vehicles should be inspected for leakages e.g., oil & diesel also for other maintenance issues on a weekly basis to reduce the risk of hydrocarbons entering the downstream watercourses. Drip-trays should be placed under all stationary vehicles if not located within a suitably bunded / containment area. • Plant vehicles must remain on designated haul roads. • All servicing and repairs must be conducted within the designated workshop area with impermeable surface e.g. reinforced concrete slab. • Refuelling must only be done at the designated refuelling area. • Spill kits must be available at the refuelling area.
Old Quarries	• Earth berms to be constructed along perimeter of each of the quarries as indicated, see **Annexure B**. Design layout and specifications of a typical earth berm and ramp for access is also indicated on the drawings.

Table 2: Aspects Requiring Mitigation Measures	
Aspect/Area	**Mitigation & Corrective measures**
	• Alien invasive species must be managed in and around the quarries. • The berms will also ensure the diversion of clean water around the quarries. • Berms around quarries should be inspected monthly for signs of erosion especially after a heavy rain spell. • Rehabilitated areas should be revegetated as soon as possible. • Continue with surface and groundwater quality monitoring at the at the current monitoring locations and frequency; and The operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.
Mine residue Stockpiles (Lignite, discard, softs)	• Earth berms to be constructed along perimeter of each of the stockpiles as indicated, see **Annexure A**. Design layout and specifications of a typical earth berm and ramp for access is also indicated on the drawings attached to **Annexure B**. • Alien invasive species must be managed in and around the Stockpiles. • The berms will also ensure the diversion of clean water around the Stockpiles. • Berms around stockpiles should be inspected monthly for signs of erosion especially after a heavy rain spell. • Rehabilitated areas should be revegetated as soon as possible. • Continue with surface and groundwater quality monitoring at the at the current monitoring locations and frequency; and The operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements.
Process Coal Stockpile	• The coal stockpile must be placed on an impermeable surface. It is proposed that a reinforced concrete slab is used for the coal stockpile. Proposed design for the concrete surface is included in **Annexure C**. • Dust fallout monitoring must be conducted throughout the life of operation of Corobrik Midrand. • Reduce, control, and manage the height of material drops (e.g., RoM Stockpile loading), and • Process Coal stockpiling and transportation to be done using road tipper trucks and to be covered with tarpaulin covers. • Trucks should not be overloaded to minimise the risk of coal spillages. • Continue with water quality monitoring at the current monitoring locations and frequency, and • The operation and maintenance of water management facilities must be in accordance with GN R 704 capacity requirements. • Ensure that the stockpile is constructed within the planned disturbed areas. • Operate, manage and maintain the stockpile in line with the design plans, as-built plans and operating and maintenance manual.
Roads	• Existing access and haulage routes should be utilised as far as reasonably possible.

Table 2: Aspects Requiring Mitigation Measures	
Aspect/Area	**Mitigation & Corrective measures**
	• Haul roads should be constructed with the shortest distance from the quarry to the plant. • Utilised roadways should be inspected on a weekly basis for erosion and degradation. Areas of erosion or degradation identified should be maintained as described in the EMP. • Dust suppression should be applied to all gravel access, maintenance, and haulage routes daily. Stockpiles higher than 3 m should also be subject to measures that reduce the risk of materials entering the surrounding environment via aeolian and fluvial processes. • Records of the inspections must be kept on site. • All potential hydrocarbon spillages and leaks must be cleaned up immediately and the soils remediated. • Spillage control kits will be readily available on site to contain the mobilisation of contaminants and clean up spills. • All vehicles and machinery to be serviced in a hard park area or at an off-site location. • Storage of hydrocarbons and explosives must be managed according to the Hazardous Substances Act, 1973 (Act No. 15 of 1973). • Hydrocarbons and explosives storage facilities must be in a hard park bunded facility, and • Vehicles with leaks must have drip trays in place.
Sewage	• The internal sewer network is connected to the municipal sewer system.

10. OVERALL STORM WATER MANAGEMENT STRATEGY

The focus of storm water management should be to separate clean and dirty storm water and to mitigate the impact of the operation on surface water. Potential Impacts of the operation on surface water has been identified in **Table 1** and proposed mitigation measures has been recommended in **Table 2.**

10.1. STORM WATER STRUCTURES

To ensure effective management of storm water the following structures will be implemented on the site:

10.1.1. QUARRY BERMS

Earth berms to be constructed as indicated in **Annexure B** along perimeter of each quarry. Ramps to be constructed at every entrance to the quarries to ensure no surface run-off towards the quarry. As the clay mining progresses and water management infrastructure get damaged, then should it immediately be rectified to comply to the designed specifications.

10.1.2. MINE RESIDUE STOCKPILE BERMS

Earth berms to be constructed as indicated in **Annexure A & B** along perimeter of each stockpile. Ramps to be constructed at every entrance to the stockpiles to ensure no surface run-off towards the stockpiles. As the clay mining progresses and water management infrastructure get damaged, then should it immediately be rectified to comply to the designed specifications.

10.1.3. PROCESS COAL STOCKPILE

It is recommended to construct a reinforced concrete slab with sump at the coal storage facility to ensure that a coal stockpile is secured on an impermeable surface. It is also recommended to keep the coal storage area and loading area within the roofed structure where coal is stored under roof to minimize contamination. The roofed area can also be extended to ensure full coverage of stockpile and loading area. The typical design for the concrete slab is attached as **Annexure C.** The final dimensions of the slab size to be confirmed with Corobrik. Coal stockpiles can be stored in duplicating the proposed reinforced concrete cell.

By implementing the recommended mitigation measures it is anticipated that the negative impacts can be mitigated.

10.1.4. STOCKPILES CONTAINING LIGNITE

An earth berm to be constructed to enclose these areas, thus preventing storm water flow from surrounding areas to enter the lignite stockpile areas.

11. ADDITIONAL PROPOSED STUDIES

It is proposed that the following is conducted to ensure informed environmental decision making and assist in determining the effectiveness of the stormwater management plan:

- Geohydrological Assessment
- Waste Classification of mine residue stockpiles (Lignite, discard, softs).
- Water Balance
- Determine the thickness and permeability of the in-situ clay formation below the areas where the lignite is encountered.

The above would also assist in the eventual closure and rehabilitation of the quarries. Making the correct informed decision now can save on closure cost in the future.

12. MONITORING AND AUDITING

12.1. WATER QUALITY MONITORING

Corobrik currently conducts surface and groundwater quality monitoring at the Midrand Operation.

It is advised that surface water quality monitoring programme must be compiled in accordance with an approved water use license. It is proposed that water quality monitoring include the following surface monitoring locations:

- The old quarries
- Existing channels along the plant
- Water exiting oil water separator

- Water exiting silt barriers (during storm event)

Corobrik should also compile a groundwater monitoring programme. Groundwater monitoring programme should include at least 1 borehole upstream and 2 boreholes downstream of the operation. The groundwater flow direction will be established during the geohydrological study. If any sudden deterioration in water quality is identified, then should an investigation be done immediately to determine the cause.

12.2. VISUAL INSPECTIONS

Corobrik should conduct weekly inspections of the storm water infrastructure. This includes roads and berms to ensure that the infrastructure is functioning in a proper manner. Should any of the storm water infrastructure require repair and maintenance this must be conducted immediately, and record of repairs must be kept.

12.3. AUDITING

In order to determine the effectiveness of the implementation of the storm water management measures included in this plan; it is recommended that a site inspection is to be conducted after implementation of the proposed mitigation measures by a qualified engineer. This inspection will aim to:

- Verify the implementation of storm water measures as prescribed in this document.
- Provide quality control function during the construction of storm water control measures.
- Advise on any improvements or changes required on storm water management measures.
- Auditing of Infrastructure by the Engineer should be as follows:
  - Quality assurance inspection will be conducted monthly during the construction phase until all storm water structures have been implemented.
  - Inspections will be annually.

13. CONCLUSION

In conclusion, the following:

- Storm water management aspects of the Corobrik Midrand Operation has been identified and proposed mitigation measures proposed.

14. RECOMMENDATION

In terms of storm water management, the following recommendations are made:

- Implementation of mitigation measures as prescribed in paragraph 9.
- Ensure that any required water use activities be license in accordance with the National Water Act 36 of 1998.
- Ensure that any conditions in any authorisation is compiled too.

- All monitoring of ground and surface water be conducted as prescribed in Section 7.

- The appointment of a suitable and qualified engineer to conduct an audit on storm water management after all measures has been implemented.

- Conduct additional studies as prescribed in Section 11.

15. SCHEDULE OF REFERENCES

- Site Visit,

- Google Earth maps,

- MVD Kalahari database,

- Corobrik Midrand Factory Water Use License Application, Storm Water Management Plan, Nsovo Environmental Consulting, 2018.

16. DOCUMENT LIMITATIONS

This Document has been provided by MVD subject to the following limitations:

- This Document has been prepared for the particular purpose outlined in MVD's proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.

- The scope and the period of MVD's Services are as described in MVD's proposal and are subject to restrictions and limitations. MVD did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by MVD in regard to it.

- Conditions may exist which were undetectable given the limited nature of the enquiry MVD was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.

- In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. MVD's opinions are based upon information that existed at the time of the production of the Document. It is understood that the Services provided allowed MVD to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

- Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

- Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by MVD for incomplete or inaccurate data supplied by others.

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17. DECLARATION OF INTEREST

It is hereby declared that MVD Kalahari Consulting Engineers and Town Planners (Pty) Ltd acts as an Independent Consultant to Corobrik (Pty) Ltd and that no person who holds an interest in MVD Kalahari:

- is employed by Corobrik (Pty) Ltd, or serves as a director or partner or was previously employed by Corobrik (Pty) Ltd

- is in the process to receive a business courtesy or received a business courtesy by Corobrik (Pty) Ltd

- is a close family member of a Director or Partner or Employee of Corobrik (Pty) Ltd

_____

PJ OOSTHUIZEN (DIRECTOR)
MVD KALAHARI
Consulting Engineers and Town Planners
Level 1 B-BBEE Contributor
//8238-QR/SWMP

ANNEXURE A: STORM WATER MANAGEMENT PLAN

NOTE/NOTA :

NO DIMENSIONS ARE TO BE SCALED OFF
ANY DRAWINGS. ALL DIMENSIONS ARE TO BE RATIFIED ON SITE PRIOR TO ANY CONSTRUCTION.

GEEN AFMETINGS MAG VAN TEKENINGE GESKAAL WORD NIE. ALLE AFMETINGS MOET OP TERREIN NAGEGAAN WORD VOOR KONSTRUKSIE.

A BEFORE CONTRACT COMMENCES. VOOR KONTRAK IN AANVANG NEEM.
A1 AFTER CONTRACT HAS COMMENCED. NA KONTRAK IN AANVANG GENEEM HET.

NO. NR.	DATE DATUM	AMENDMENTS WYSIGINGS
.	.	.

MVD Kalahari
Consulting Engineers and Town Planning/Raadgewende Ingenieurs en Stadsbeplanning.

Du Toitspanweg 186 / Du Toitspan Road
Posbus / P.O. Box 580, Kimberley 8300
Tel: (053) 831 1889/90

E-Mail admin@mvdkalahari.co.za
www.mvdgroup.org
Level 1 B-BBEE Contributor

CESA Consulting Engineers South Africa

DESIGN ONTWERP	B. Bensley ECSA: 201370308		
DRAWN GETEKEN	P.D. Wessels		
CHECKED NAGEGAAN	P. Oosthuizen		
CLIENT KLIENT	COROBRIK		
SCALE SKAAL	N/S	DATE DATUM	August 2024

CLIENT/KLIENT

COROBRIK - MIDRAND

DRAWING DESCRIPTION/TEKENING BESKRYWING

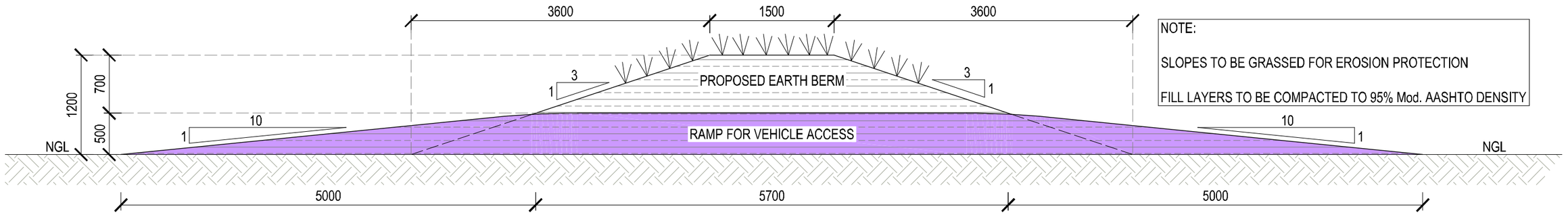
STORMWATER MANAGEMENT PLAN (SWMP)

PROJECT/PROJEK

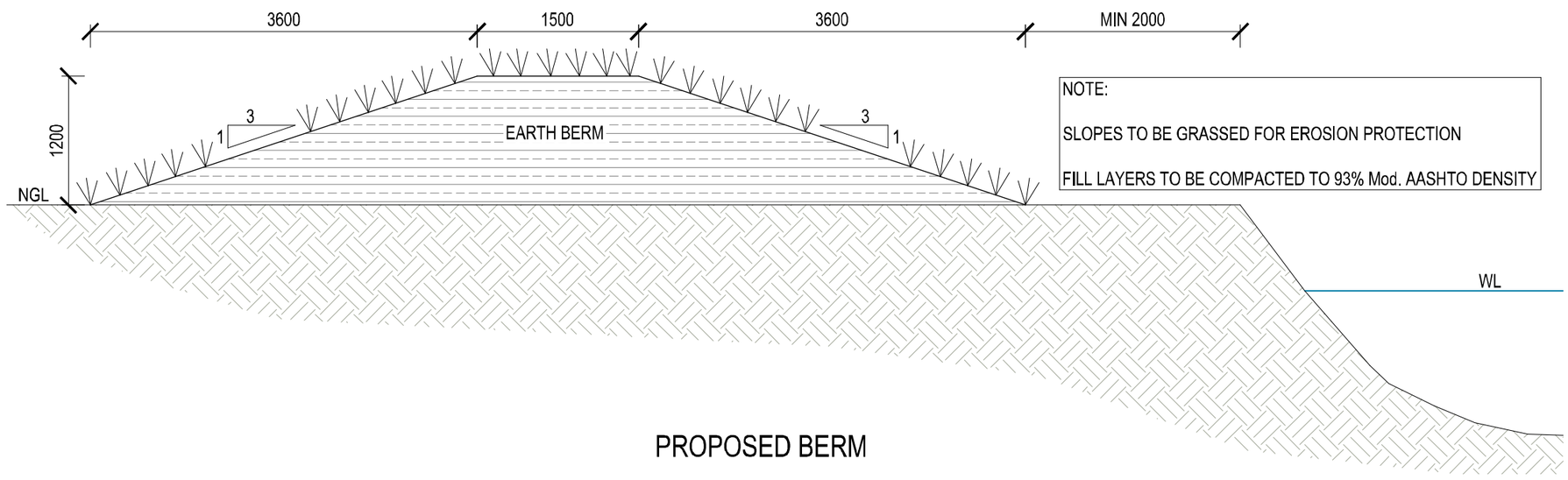
COROBRIK, MIDRAND SWMP

PAPER SIZE/PAPIER GROOTTE	DRAWING NO./TEKENING NR.	REV No.
A3	ANNEXURE A	--

ANNEXURE B: EARTH BERM DETAILS AND RAMP DETAILS



PROPOSED VEHICLE RAMP WITH BERM



PROPOSED BERM

NOTE/NOTA :

NO DIMENSIONS ARE TO BE SCALED OFF
ANY DRAWINGS. ALL DIMENSIONS ARE TO BE RATIFIED ON SITE PRIOR TO ANY
CONSTRUCTION.

GEEN AFMETINGS MAG VAN TEKENINGE
GESKAAL WORD NIE. ALLE AFMETINGS MOET OP TERREIN NAGEGAAN WORD VOOR KONSTRUKSIE.

A BEFORE CONTRACT COMMENCES. VOOR KONTRAK IN AANVANG NEEM.
A1 AFTER CONTRACT HAS COMMENCED. NA KONTRAK IN AANVANG GENEEM HET.

NO. NR.	DATE DATUM	AMENDMENTS WYSIGINGS
.	.	.

MVD Kalahari
Consulting Engineers and Town Planning/Raadgewende Ingenieurs en Stadsbeplanning.
Du Toitspanweg 186 / Du Toitspan Road
Posbus / P.O. Box 680, Kimberley 8300
Tel: (053) 831 1889/90
E-Mail admin@mvdkalahari.co.za
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CLIENT KLIENT	COROBRIK		
SCALE SKAAL	N/S	DATE DATUM	August 2024

CLIENT/KLIENT

COROBRIK - MIDRAND

DRAWING DESCRIPTION/TEKENING BESKRYWING

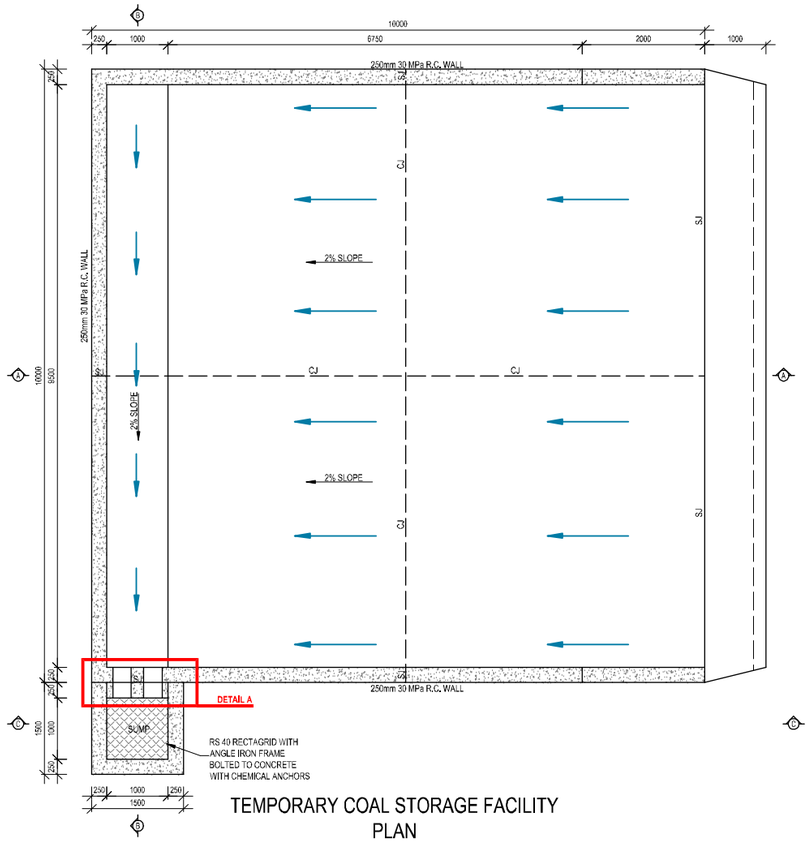
EARTH BERM DETAILS

PROJECT/PROJEK

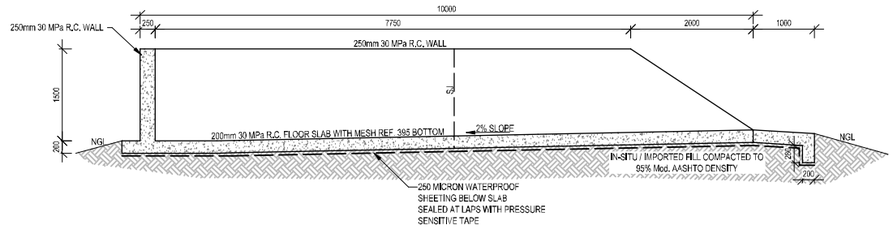
COROBRIK, MIDRAND
SWMP

PAPER SIZE/PAPIER GROOTTE	DRAWING NO./TEKENING NR.	REV No.
A3	ANNEXURE B	--

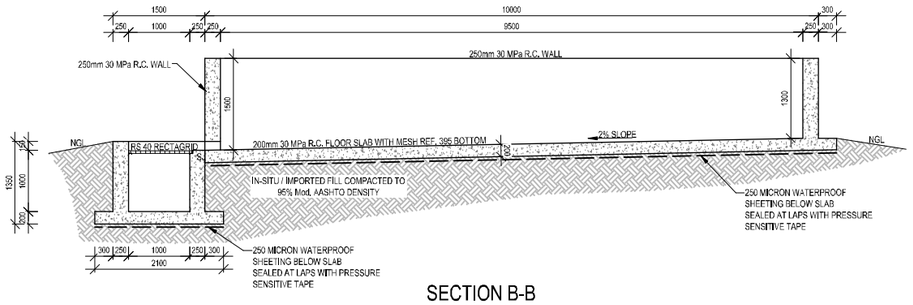
ANNEXURE C: COAL STOCKPILE AREA – CONCRETE SLAB WITH SUMP



TEMPORARY COAL STORAGE FACILITY
PLAN
SCALE: 1:100



SECTION A-A
SCALE: 1:100



SECTION B-B
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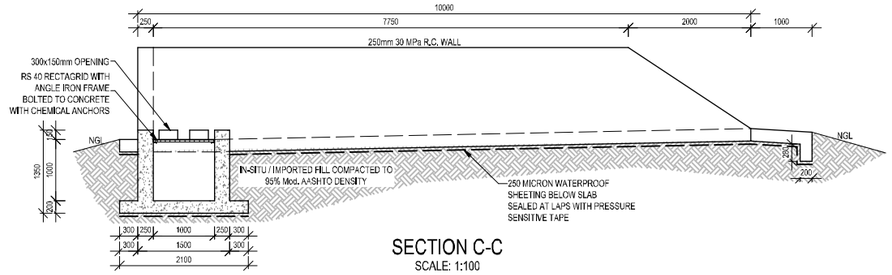
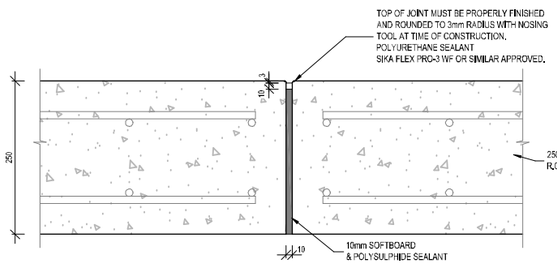
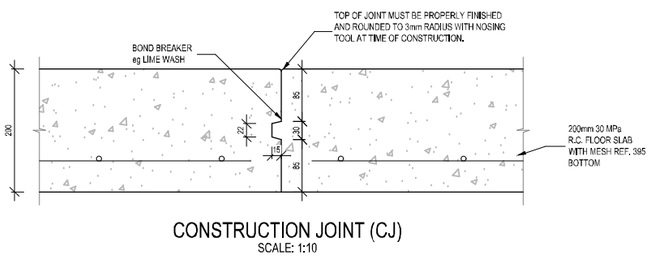


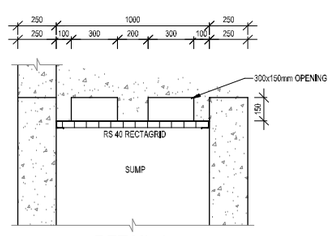
SECTION C-C
SCALE: 1:100



SOFTBOARD JOINT (SJ)
SCALE: 1:10



CONSTRUCTION JOINT (CJ)
SCALE: 1:10



DETAIL A
SCALE: 1:40

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NO. NR.	DATE DATUM	AMENDMENTS WYSIGINGS
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SCALE SKAAL	N/S	DATE DATUM	August 2024

CLIENT/KLIENT
COROBRIK - MIDRAND

DRAWING DESCRIPTION/TEKENING BESKRYWING
REINFORCED CONCRETE SLAB FOR COAL STORAGE

PROJECT/PROJEK
COROBRIK, MIDRAND
SWMP

PAPER SIZE/PAPIER GROOTTE	DRAWING NO./TEKENING NR.	REV No.
A3	ANNEXURE C	--