



**CIVIL
CONCEPTS**

Consulting Civil and Structural Engineers

KOSMOSDAL X102

**WATER USE LICENSE APPLICATION
RIETSPRUIT CULVERT BRIDGE**

MAY 2026

C3530/WULA/001 Rev 2



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1 INTRODUCTION

1.1 PROJECT BACKGROUND

Civil Concepts were appointed by Samrand Developments (Pty) Ltd as the Consulting Engineers for a proposed development, situated on the proposed Kosmosdal Extensions 93 to 95, 97 to 100, 102 and 103 townships. The townships forms part of a larger precinct development.

The precinct is situated;

- North of Rietspruit Road,
- East of Blue Hills X32
- South of Olievenhoutbosch 389-JR Portions 68 to 74, and
- West of Rooihuiskraal Road

Refer to the locality Plan included in **Annexure A**.

This report will address the required civil Engineering design information in support of the Water Use License Application (WULA) for current and future phases of the proposed development.

1.2 CONTACT DETAILS

Developer

Samrand Development (Pty) Ltd
Reg No 1994/000475/07
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Cleveland
2022

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Bruma
2198

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Consulting Engineer

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Reg. No : 95/12428/07
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Menlo Park
0102

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0081

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The responsible person is: Mr JP Welman (20180172)

Environmental Consultant

Water Use Licence Associates (Pty) Ltd

Physical Address:
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Oriol
2007

Tel: 011 616 7893
Mail: nelanie@sasenvgroup.co.za

The responsible person is: Ms. Nelanie Cloete

1.3 DESCRIPTION OF GENERAL DRAINAGE AND EXISTING WATERCOURS

1.3.1 Rietspruit

The watercourse is a perennial watercourse with a medium flow and can be classified as a minor stream with an irregular section. The Rietspruit's channel is moderately defined, with some parts having steep banks and other sections having a gentle slope. The spruit overbanks are irregular, with some low and high points.

An existing dam is located along the watercourse within the study area. In addition, a historic dam showing a wall failure is also present, currently the watercourse is flowing through the breach in the dam wall.

Rietspruit is located on the eastern side of the proposed Kosmosdal X103 township, flowing in a northern direction, passing Rossway Quarry to the east of the Rietstruit and crossing under the N14.

Vegetation in and around the stream channel consists of open fields with mainly long, veld grass.

1.4 PURPOSE OF PROJECT DESCRIPTION AND METHOD STATEMENT

The Department of Water and Sanitation (DWS) requires a method statement for all proposed civil Engineering works within water sensitive areas for the dispensing of the water use license application in terms of Section 22(3) of the Water Act. 'Due to the ecological importance and sensitivity of all natural water courses and their flood plains, it is essential that minimal damage is incurred through construction activities. It is therefore essential that construction activities are undertaken in such a manner that minimal impact results on the water resource.

The purpose of this project description and method statement is to guide construction activities in water sensitive areas to achieve this objective, to set environmental standards and to minimize the risk of damaging and impairing natural ecosystems and environmental quality. This method statement should become part of the tender specifications to ensure that provision is made and incorporated at the start of construction activities. The Contractor is to comply with the standards set out in the Method Statement.

1.5 STATUS OF APPLICATION

This report details the civil engineering design portion of the requirements for the submission of an amendment to the existing Water Use Licence to the Department of Water and Sanitation (DWS). The application seeks to amend the first approved water use "The construction of a bridge and associated culvert crossing over a watercourse."

The application is to be submitted by Water Use Licence Associates (Pty) Ltd who are the environmental consultants on the project.

- Licence Number 07/A21B/CI/2088815
- File Number 27/2/1/A221/44/3

The main reason for amendment of the application is to amend the type of bridge structure over the Rietspruit, and hence enable DWS to issue a revised licence.

1.6 BRIEF DESCRIPTION OF WORKS

Part of the civil infrastructure required to service the proposed development is located within the 1:100 flood line and/or within 500 m from an existing watercourse, crosses perpendicular over a water course or storage of water. The works in the area include the installation of the following:

- Stormwater Culvert bridge
- Road crossing
- Service crossings

All of the aforementioned will be discussed in detail in the following chapters of this report.

1.7 SUMMARY OF PROPOSED CIVIL INFRASTRUCTURE

The tables below summaries of the proposed infrastructure that encroaches into the 1:100 floodline or is within 100 m from an existing watercourse. Refer to the layout attached as **Annexure C**.

Crossing Positions

Item	Description	Start			End		
		Latitude			Longitude		
1	Culvert Bridge	25°	55`	45.8"	28°	7`	2.6"
2	Road Crossing	25°	55`	46.0"	28°	7`	5.7"
3	Services crossing	25°	55`	46.0"	28°	7`	5.7"

1.8 WATER USES AND QUATERNARY CATCHMENT

Amendment of the existing water use license is made for water uses -

- (c & i) Impeding or diverting the flow of water in a watercourse, altering the bed, banks, course or characteristics of a watercourse – Culvert bridge and road construction

The quaternary drainage catchment is A21B

2 DESCRIPTION OF EACH TYPE OF WORK

2.1 CULVERT BRIDGES

2.1.1 PROJECT DESCRIPTION

As part of the precinct development a road crossing of the existing wetland and floodlines are required. In order to complete the road crossings the flood run-off needs to be accommodated. The preferred solution is construction of a precast box culvert bridge.

The components of the activities include for:

- Temporary deviation of water course;
- Preparation of embankment footprints and bedding for culvert construction and other hydraulic structures;
- Excavation and shaping of up- and downstream areas at transitions,
- Construction of Precast Rectangular Portal Frame Culverts,
- Imported filling;
- Embankment protection;
- Erosion control and protection;
- Rehabilitation and reinstatement to original state, and
- A temporary crossing will be needed for transportation and traffic to cross the natural water course.

The preferred culvert bridge is provided below:

Type	Size
Stormwater Culvert Bridge	10 / 3.0 x 2.4m Box Culverts

As alternative to the box culvert bridge, a pipe culvert bridge was considered.

The components of the activities include for:

- Temporary deviation of water course;
- Preparation of embankment footprints and bedding for culvert construction and other hydraulic structures;
- Construction of Precast Circular Culverts,
- Imported filling;
- Embankment protection;
- Erosion control and protection;
- Rehabilitation and reinstatement to original state, and
- A temporary crossing will be needed for transportation and traffic to cross the natural water course.

The alternative culvert bridge details is provided below.

Note that the footprint of the alternative culvert (Pipe Culverts) is twice that of the preferred culvert (Box Culverts). Additionally, it must be noted that the circular culvert bridge will have higher flow velocities and a higher chance of erosion and sedimentation.

Type	Size
Stormwater Culvert Bridge	34 / 1500 mm dia Pipe Culverts

2.1.2 METHOD STATEMENT

The natural water courses are non - perennial water course with a medium flow volume, thus temporary deviation thereof will be required during construction to allow a workable construction area and prevent unnecessary environmental damage to the surrounding area. As far as possible all work will be done during the dry season to facilitate water management.

Temporary deviation at the bridge will entail:

- Construction of a structure diverting the flow to the far side of the water course using sandbags;
- The water will be diverted, to allow a workable area on the near side;
- The process will then be reversed to complete the eastern side of the stream;
- A silt trap will be constructed downstream of the construction area to prevent siltation downstream.
- No excavation will be done on the diverting channel but this will be formed using sandbags or other geo-fabric or material, and
- All temporary construction materials will be removed from site once construction is completed, the site backfilled, top soiled and grassed including non-degradable fabric such as MatMacR or similar.

According to geotechnical information available in-situ conditions are poor and it is not advisable to use in-situ conditions as is for construction purposes. Foundation preparation therefore entails:

- Clearing and grubbing of topsoil and vegetation to a depth of 150mm, for a width of 50m, over a length of approximately 100m. The total affected area will be approximately 5 000m²;
- Topsoil will be conserved for use during rehabilitation and on embankment slopes;
- Excavation of the footing by means of a backhoe excavator, and spoiling material to designated spoil site. Footing width plus 500mm for working space;
- Excavation of transitions for in- and outlet structures;
- Trench bottom will be compacted to 90% MDD before construction of rockfill layer;
- Rockfill layer of imported dump rock to be construction to a minimum thickness of 600mm in accordance with SABS 1200 D;
- Construction of bedding material compacted to 90% MDD, bedding and blanket material will be imported, and
- Final layer stability to be approved by engineer to ensure no displacement of material if loaded.

Construction includes for installation of rectangular culverts or pipe culverts, and will be done after deviation of the water course. It will entail the following:

- Construction and casting of a 300mm thick concrete invert slab, Class 30/19 MPa concrete, on a 50mm concrete blinding layer. Including all construction, saw cut and other jointing;
- Installation of Precast Rectangular Portal Frame Culverts or Circular Pipe Culverts;
- Sealing of joints with bituminous product or similar approved;
- Culverts to be backfilled with soil cement mixture on sides as indicated in detailed drawings;
- Layer works will continue for road building purposes;
- Culverts will be Class 75S or 100D, complying with the requirements of SABS 986:1994;
- Construction of inlet and outlet structures from reinforced concrete, with gabion Reno mattresses downstream. Including all construction, saw cut and other jointing;
- Trimming and shaping of transition section including bank stabilisation with geotextiles or rip-rap as required;
- Construction done according to City of Tshwane Metropolitan Municipality specifications and SABS 1200.

Refer to Drawing C3530-WUL-001 for more details.

2.1.3 REHABILITATION AND EROSION CONTROL

Culverts will function under inlet control to protect the upstream side of the bridge. At the downstream side of the bridge a reinforced concrete outlet structure will be constructed with an additional area of protection consisting of Reno mattresses. The outlet of the bridge will discharge into an existing earthfill dam and hence downstream hydraulic properties will be controlled by the dam discharge height.

Construction will entail excavation of the footing, rockfill or compaction of in-situ material to 90% MDD, casting of concrete invert slabs with Class 30/19 MPa concrete.

Downstream of the boulder structure the stream will daylight to natural water course level.

After completion of construction as specified above the site will be reinstated in accordance with the EMP. All disturbed areas will be rehabilitated and construction material removed from site.

2.2 ROAD CROSSING –RIETSPRUIT ROAD

2.2.1 PROJECT DESCRIPTION

As part of the development a road crossing of existing wetlands and floodlines are required. In order to complete the road crossing the flood run-off needs to be accommodated. The road crossings tie in with the culvert bridge construction listed under section 2.1 above and will consist of a fill embankment with the relevant layerworks.

The bridge crossing will be constructed according to City of Tshwane Metropolitan Municipality specifications including all kerbs, danger and warning signs and balustrades. For more information on the roadway to be constructed refer to Drawing C3530-WUL-001

2.2.2 METHOD STATEMENT

After confirmation of rock fill layer stability and construction of the culverts, the remainder of the embankment filling will be constructed by imported fill material, minimum G8, compacted to 90% MDD. In accordance with SABS 1200 D specifications.

The final bulk earthworks will suffice for the planned road construction to be done afterwards. Embankment side slope protection will entail:

- Sides to be sloped at 1:2 to 1:3 side slopes;
- Top soiled with material from site stockpile and/or commercial sources;
- Hydroseeded to environmental consultant specifications, and
- Additional erosion control will also be implemented as required in the form of non-degradable erosion protection on side slopes or Armourflex blocks;

After completion of the bulk earthworks and construction of the culvert bridge a new roadway will be constructed over the earth embankment.

Construction of layer works will be done as follows:

- 30mm Continuously graded Medium grade Asphalt;
- 150mm Imported graded Crusted stone Base (G1) – Compacted to 88% Apparent Density;
- 150mm Imported Sub-base (G6) stabilised with 3% cement to C4 – Compacted to 95% MDD;
- 150mm Selected upper Sub-grade (G7) – Compacted to 95% MDD;
- 150mm Selected lower Sub-grade (G7) – Compacted to 93% MDD;
- 300mm Rockfill, process and compact as and when required to 90% MDD;
- 150mm In-situ Roadbed or fill (G8) – Rip and Recompacted to 90% MDD.

2.2.3 REHABILITATION AND EROSION CONTROL

After completion of construction as specified above the site will be reinstated in accordance with the EMP. All disturbed areas will be rehabilitated and construction material removed from site.

2.3 SERVICE CROSSINGS

2.3.1 PROJECT DESCRIPTION

As part of the development, various municipal services will be required to cross over the Rietspruit. The proposed road and culvert bridge crossing will act as bridge for these services with services installed inside the earthfill of the bridge.

The services will not affect the Rietspruit floodlines or wetland due to the installation height being above water level.

2.3.2 METHOD STATEMENT

Proposed services (water pipes, data, sleeves and electrical) will be constructed.

The components of the activities include for:

- The services and any chambers will be constructed outside the 1:100 year flood line and the wetland delineation boundary, except at crossings as specified.
- Services will be backfilled with in situ material compacted to 90% MDD.
- Strip clearing will be done as part of the roadworks where construction activity will take place. At the construction stage, topsoil to a depth of 150mm will be removed and stockpiled at the designated areas and reinstated after the pipeline is installed.
- Construction will take place over the dry season, except if special circumstances dictate otherwise.
- Excavation of trenches will be done with a backhoe excavator and material will be stockpiled at designated areas where it does not impact the flow of the watercourse.
- Bedding and blanket material will be imported from commercial sources.
- Backfill material will be from trench excavations which has been temporarily stockpiled. Excess material (spoil) will be carted off site to a designated spoil site.
- Special filling and blanket will be required in clayey area to absorb any movement due to clay conditions. In addition concrete thrust blocks will be provided at all bends or fittings to avoid any movement of pipes as required.
- After completion of construction, the site will be reinstated in accordance with the EMP. All disturbed areas will be rehabilitated and construction material removed from site.
- All work will be according to City of Tshwane Metropolitan Municipal Standards.

The services will be laid after construction of the road embankments and installation of Culvert Bridge.

All services will be laid in the road shoulder and pass over the watercourse to not affect flow.

2.3.3 REHABILITATION AND EROSION CONTROL

After completion of construction as specified above the site will be reinstated in accordance with the EMP. All disturbed areas will be rehabilitated and construction material removed from site. Additional erosion control will also be implemented as required in the form of non-degradable erosion protection. Refer to drawing C3530-WUL-001 for more information on erosion control, rehabilitation and backfilling details.

3 CONCLUSION

As the project entail various different water uses we hope this report suffice to address the requirements from an engineering perspective.

A handwritten signature in black ink, appearing to read 'J.P. Welman'.

J.P. WELMAN
CIVIL CONCEPTS (PTY) LTD

LIST OF ANNEXURES

- A LOCALITY PLAN**
- B EXISTING WATER USE LICENCE**
- C DETAIL DRAWINGS**

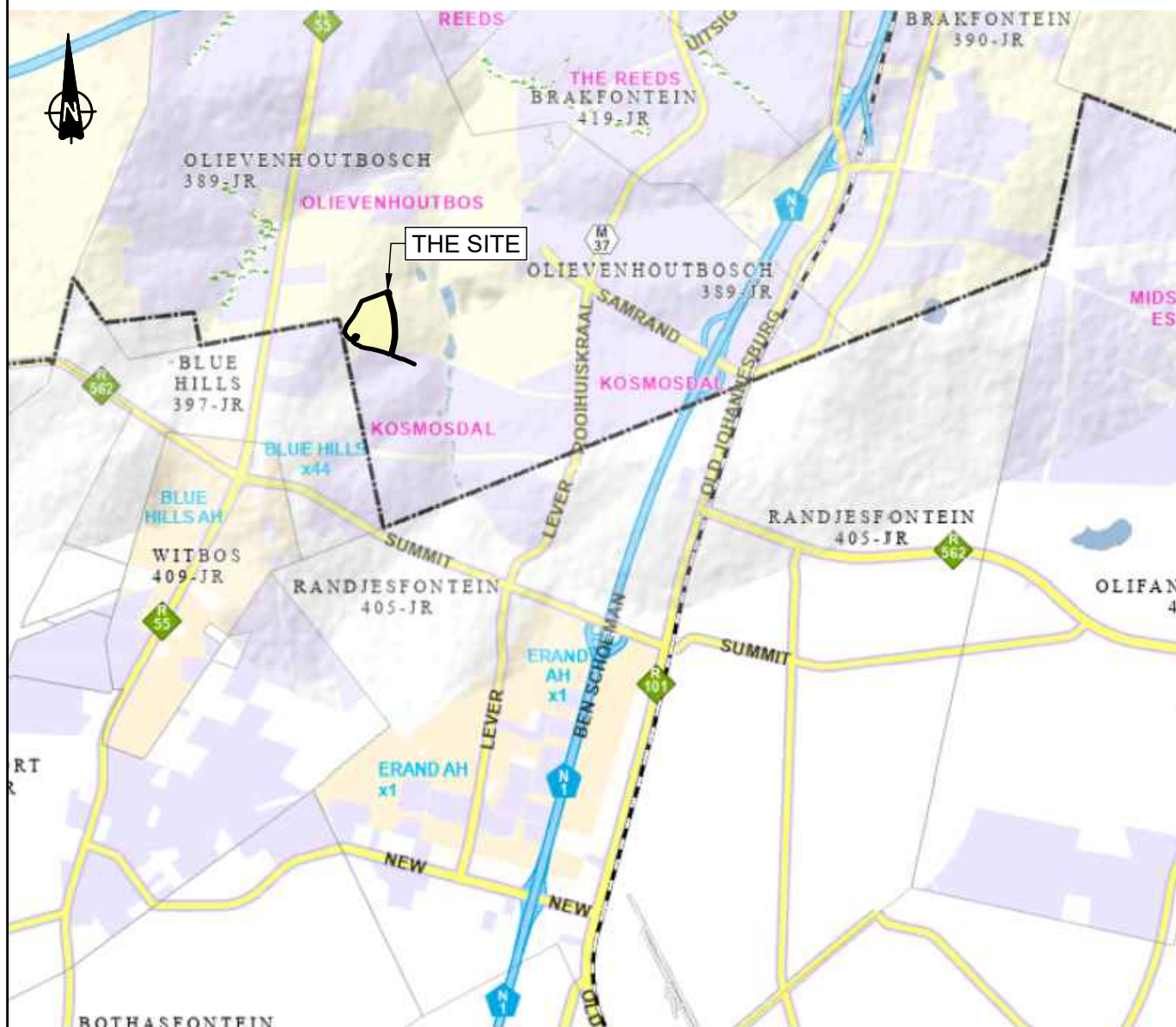


KOSMOSDAL X102

CIVIL SERVICES INFORMATION IN SUPPORT OF WUL AMENDMENT

ANNEXURE

ANNEXURE A



LOCALITY PLAN OF KOSMOSDAL EXT.102

RIETSPRUIT



KOSMOSDAL X102

CIVIL SERVICES INFORMATION IN SUPPORT OF WUL AMENDMENT

ANNEXURE

ANNEXURE B



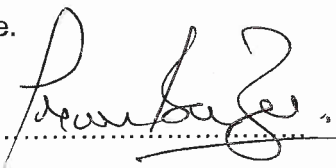
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Private Bag X313, Pretoria, 0001, Sedibeng Building, 185 Francis Baard Street, Pretoria,
Tel: (012) 336-7500 Fax: (012) 323-4472 / (012) 326-2715

LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) (THE ACT)

I, **Trevor Balzer**, in my capacity as Deputy Director-General: Special Projects in the Department of Water and Sanitation and acting under authority of the powers sub delegated to me by the Acting Director- General of Water and Sanitation, hereby authorize the following water uses in respect of this licence.

SIGNED: 

DATE: 17/01/2019

**LICENCE NO. 07/A21B/CI/27088815
FILE NO. 27/2/1/A221/44/3**

1. **Licensee** **Samrand Development(Pty) Ltd**
Postal Address P.O Box 40037
CLEVELAND
2022

2. Water Uses

- 2.1 Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse, subject to the conditions set out in Appendices I and II.
- 2.2 Section 21(i) of the Act: Altering the bed, banks course or characteristics of a watercourse, subject to the conditions set out in Appendices I and II.

3. Property in respect of which this licence is issued

- 3.1 Remaining Extent of Portion 2 of the Farm Olievenhoutbosch 389

4. Registered owner of the property

- 4.1 Samrand Development (Pty) Ltd

B 08075



5. Licence and Review Period

- 5.1 This licence is valid for a period of twenty (20) years from the date of issuance and may be reviewed at intervals of not more than five (5) years after issuance.

6. Definitions

"Any terms, words and expressions as defined in the National Water Act, 1998 (Act 36 of 1998) must bear the same meaning when used in this licence".

"Minister" means the Minister of Water and Sanitation.

"Department" means the Department of Water and Sanitation.

"Responsible Authority" means Department of Water and Sanitation or Catchment Management Agency.

"Regional Head" means the Head of North West Region, Department of Water and Sanitation, Private Bag X05, Mmabatho, 2738.

7. Description of activity

This licence authorises Samrand Development (Pty) Ltd for water use activities involving the construction and operation of residential and industrial buildings development to be known as Kosmosdal Ext 92 and its associated roadways. The development also includes the construction of a bridge and associated culvert crossing over a watercourse; the construction and installation of a sewer pipeline underneath a watercourse and associated 1:100 year floodline; the extension of an existing culvert and tarred roadway crossing a watercourse. These activities will take place within the Limpopo Water Management Area.

APPENDIX I

General conditions for the licence

1. This licence is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998).
2. The responsibility for complying with the provisions of the licence is vested in the Licensee and not any other person or body.
3. The Licensee must immediately inform the Regional Head of any change of name, address, premises and/or legal status.
4. If the property in respect of which this licence is issued is subdivided or consolidated, the Licensee must provide full details of all changes in respect of the property to the Regional Head within 60 days of the said change taking place.
5. If a Water User Association is established in the area to manage the resource, membership of the Licensee to the Association is compulsory. Rules, regulations and water management stipulation of such association must be adhered to.
6. The Licensee must be responsible for any water use charges and/or levies imposed by a Responsible Authority.
7. While effect must be given to the Reserve as determined in terms of the Act, where a lower confidence determination of the Reserve has been used in issuance of this licence, the licence conditions may be amended should a higher confidence reserve be conducted.
8. The licence must not be construed as exempting the Licensee from compliance with the provisions of any other applicable Act, Ordinance, Regulation or By-law.
9. The licence and amendment of this licence are also subject to all the applicable procedural requirements and other provisions of the Act, as amended from time to time.
10. The Licensee must conduct an annual internal audit on compliance with the conditions of this licence. A report on the audit must be submitted to the Regional Head within one month of the finalisation of the audit.
11. The Licensee must appoint an independent external auditor to conduct an annual audit on compliance with the conditions of this licence. The first audit must be conducted within 3 (three) months of issuance date of this licence and a report on the audit must be submitted to the Regional Head within one month of finalisation of the report.
12. If the water use described in this licence is not exercised within 3 years of the date of the licence, the authorization will be withdrawn. Upon commencement of the water use, the Licensee must inform the Regional Head in writing.
13. Notices prohibiting unauthorized persons from entering water use premises must be displayed.
14. The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of amongst other things:
 - 14.1 Inundation of flood;
 - 14.2 Any *force majeure* event; and
 - 14.3 Siltation of the river or dam basin.

APPENDIX II

Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse;
Section 21(i) of the Act: Altering the bed, banks, course or characteristic of a watercourse

1. GENERAL

- 1.1 This licence authorises Samrand Development (Pty) Ltd to commence with water use activities involving the construction and operation of residential and industrial buildings development to be known as Kosmosdal Ext 92 and its associated roadways and infrastructures. These activities will take place within the Limpopo Water Management Area. These activities are authorised in terms of sections 21 (c) and (i) of the National Water Act, 1998 (Act 36 of 1998).

Table 1: Summary of Water Use Activities applied for

Purpose of Water activity	Property Name	Watercourse	Co-ordinates	
			Start	End
Section 21 c & i				
The construction of a bridge and associated culvert crossing over a watercourse.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 1 (Associated with the Rietspruit)	25°55'44.6"S 28° 7'0.6"E	25°55'45.7"S 28° 07'03.3"E
The construction and installation of a 160mm high density polyethylene pipe (HDPE) sewer pipeline 1m underneath a watercourse and associated 1:100 year floodline.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 2 (Associated with the tributary of Rietspruit)	25°55'32.5"S 28°7'36.2"E	25°55'20.7"S 28° 7'34.5"E
The installation of one manhole in the HDPE pipe within the 1:100 year floodline of a watercourse.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 2	25°55'18.4"S 28°07'34.0"E	25°55'18.4"S 28°07'34.0"E
The lifting of one existing manhole in a 500 mm diameter sewer pipe within the	Farm Olievenhoutbosch 389 Portion 2 (remaining	Wetland 2	25°55'18.1"S 28°07'35.2"E	25°55'18.1"S 28°07'35.2"E

Purpose of Water activity	Property Name	Watercourse	Co-ordinates		
			Start	End	
Section 21 c & i					
1:100 year floodline of a watercourse.	extent)				
The extension of the uPVC pipeline beyond the 1:100 year floodline on the western bank of a watercourse (Wetland 2) in order to service the proposed development and within 500m radius of two watercourses.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 1 and 2	25°55'20.7"S 28° 7'34.5"E	25°55'32.7"S 28° 7'36.5"E	28°
The installation of five sewer manholes (MH 1.1 to 1.5) associated with the sewer pipeline described in activity 2d.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 2	MH 1.1: 25°55'32.5"S 28°7'36.2"E MH 1.2: 25°55'29.8"S 28°7'35.8"E MH 1.3: 25°55'27.0S 28°7'35.4"E MH1.4: 25°55'24.2"S 28°7'35.1"E MH1.5: 25°55'21.4"S 28°07'34.7"E	MH 1.1: 25°55'32.5"S 28°7'36.2"E MH 1.2: 25°55'29.8"S 28°7'35.8"E MH 1.3: 25°55'27.0S 28°7'35.4"E MH1.4: 25°55'24.2"S 28°7'35.1"E MH1.5: 25°55'21.4"S 28°07'34.7"E	
The extension of an existing culvert and tarred roadway crossing a watercourse.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 2	25°55'26.1"S 28° 7'53.6"E	25°55'24.8"S 28° 7'54.0"E	
The installation of four 160mm diameter electrical	Farm Olievenhoutbosch 389 Portion 2	Wetland 2	25°55'22.2"S 28° 7'54.7"E	25°55'28.8"S 28° 7'53.7"E	

Purpose of Water activity	Property Name	Watercourse	Co-ordinates	
			Start	End
Section 21 c & i				
sleeves and cables 1m below a watercourse, in lateral alignment with activity 3. The drilling points would be located outside of the 1:100 year floodline of the watercourse, but within 500m radius.	(remaining extent)			
The construction and operation of residential and industrial buildings and associated roadways within 500m of two watercourses, including the roadways connecting to the proposed bridge and culvert extension.	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 1 and 2	25° 55' 40.4"S 28° 06' 22.5"E 25° 55' 30.0"S 28° 06' 20.0"E	25° 55' 17.2"S 28° 06' 58.9"E 25° 55' 30.6"S 28° 07' 02.7"E
The installation of potable water and sewer pipelines within 500m radius of two watercourses, but outside the 1:100 year floodline, to service the proposed residential and industrial buildings	Farm Olievenhoutbosch 389 Portion 2 (remaining extent)	Wetland 1 and 2	25° 55' 40.4"S 28° 06' 22.5"E 25° 55' 30.0"S 28° 06' 20.0"E	25° 55' 17.2"S 28° 06' 58.9"E 25° 55' 30.6"S 28° 07' 02.7"E



- 1.2 The Licensee must carry out and complete all the activities listed under condition 1.1 according to the following:
- 1.2.1 Reports submitted to the Department or the Regional Head, specifically:
- 1.2.1.1 Water Use Licence Application for Samrand Development (Pty) Ltd for the proposed Kosmosdal X92 mixed land Use Township located in Centurion compiled by Scientific Aquatic Services dated August 2017.
 - 1.2.1.2 Ecological Assessments (Floral and Faunal) prepared by Nail Sustainability Solutions dated April 2015.
 - 1.2.1.3 Wetland Assessments prepared by Scientific Aquatic Services and Terra Soil Science dated 23 October 2014.
 - 1.2.1.4 Wetland Rehabilitation and Management Plan prepared by Terra Soil Science dated 17 April 2015.
 - 1.2.1.5 Environmental Management Plan prepared by NSS Environmental and development consultants for Kosmosdal Ext 92 Mixed Use Township dated January 2016.
 - 1.2.1.6 Geotechnical Report prepared by Crossman, Pape & Associates dated April 2013.
 - 1.2.1.7 Method Statements and Design Drawings for the proposed bridge over the Rietspruit, the proposed sewerline. And the culvert structure associated with the tributary of the Rietspruit prepared by Civil Concepts consulting engineers (Pty) Ltd dated February 2016.
 - 1.2.1.8 Stormwater Master Plan, including a layout of the stormwater structures and the design of the outlet prepared by Civil Concepts dated February 2016.
- 1.3 The conditions of the authorisation must be brought to the attention of all persons (employees, sub-consultants, contractors etc.) associated with the undertaking of these activities and the Licensee must take such measures that are necessary to bind such persons to the conditions of this licence.
- 1.4 A copy of the water use licence and reports set out in condition 1.2 must be on site at all times during construction.
- 1.5 A suitably qualified person/s, appointed by the Licensee, and approved in writing by the Regional Head must be responsible for ensuring that the activities are undertaken in compliance with the specifications as set out in reports submitted to the Department or the Regional Head and the conditions of this licence.
- 1.6 If the Licensee is not the end user/beneficiary of the water use related infrastructure and will not be responsible for long term maintenance and management of the infrastructure, the Licensee must provide a programme for hand over to the successor-in-title including a brief management /maintenance plan and the agreement for infrastructure along with allocation of responsibilities, within three (3) months of the date of issuing of this licence.

2. FURTHER STUDIES AND INFORMATION REQUIREMENTS

- 2.1 No fundamental alterations of the work method statements, site plan/s and drawings are allowed, unless a modification is requested and granted by the Regional Head in writing.
- 2.2 The Licensee must prepare a rehabilitation plan to mitigate the impacts of watercourse(s).



- 2.3 Follow up bio-monitoring and water quality assessment must be conducted after replacement of the sewer pipeline.
- 2.4 No site activities must occur beyond the proposed site location of the erosion and sedimentation controls and marked limits of disturbance.

3. PROTECTIVE MEASURES

3.1 Storm Water Management

- 3.1.1 Stormwater management practices must be constructed, operated and maintained in a sustainable manner throughout the project and for the water use activities set out in condition 1.1 and must include but not limited to the following:
 - 3.1.1.1 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that stormwater does not lead to bank instability and excessive levels of silt entering the watercourse/s;
 - 3.1.1.2 Stormwater must be diverted from construction works and roads must be managed in such a manner as to disperse runoff and to prevent the concentration of stormwater flow;
 - 3.1.1.3 The velocity of stormwater discharges must be attenuated and the banks of the watercourses protected.

3.2 Structures, Construction Plant and Materials

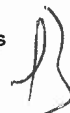
- 3.2.1 The height, width and length of structures must be limited to the minimum dimension necessary to accomplish the intended function.
- 3.2.2 Necessary erosion prevention measure must be employed to ensure the sustainability of all structures.
- 3.2.3 Structures must not be damaged by floods exceeding the magnitude of floods occurring on average once in every 100 years.
- 3.2.4 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.
- 3.2.5 Structures must be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas - debris must be removed and damages must be repaired and reinforced immediately.
- 3.2.6 During the construction and operation phase erosion and siltation measures should be implemented.
- 3.2.7 The construction camp, plant and material stockpiles must be located outside the extent of the watercourse/s and must be removed within a period of one (1) month after completion of construction phase.
- 3.2.8 Energy dissipaters must be installed in the stormwater infrastructure to reduce velocity thereof.
- 3.2.9 Litter, sediments and oil traps must be installed in the stormwater management infrastructure.
- 3.2.10 Environmental Management Plan (EMP) must be implemented and adhered to.



- 3.2.11 The Licensee must take the necessary measures to counter the buoyancy effect on the portion of the pipeline that is within the 1:100 year floodlines.
- 3.2.12 Should excavation be done for the portion of the pipeline that runs along the watercourse and the 1:100 year floodlines, Reno mattresses must be installed at such after backfilling the trench.
- 3.2.13 The Licensee to realign the sewer line to ensure the pipelines is kept outside the 1:100 year floodlines as much as possible.
- 3.2.14 Where the placing of the pipeline cannot be practically avoided, the manholes within the floodlines must be sealed and their access openings positioned above 1:100 year flood level.

3.3 Instream and riparian habitat

- 3.3.1 Activities must start up-stream and proceed to a downstream direction, so that the recovery processes can start immediately, without further disturbance from upstream works.
- 3.3.2 Operation and storage of equipment within the riparian habitat must only take place within the approved limits of disturbance indicated in the approved site plans and work method statements.
- 3.3.3 Diversions must be protected from soil erosion and sedimentation and turbidity in the streams.
- 3.3.4 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated on the site plans, may not be removed from the area.
- 3.3.5 The vegetation of the surrounding catchment should also be managed to prevent erosion and siltation of the watercourse.
- 3.3.6 Alien and invasive vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be eradicated or controlled in an environmentally sustainable manner.
- 3.3.7 Existing vegetation composition must be maintained or improved by maintaining the natural variability in flow fluctuations.
- 3.3.8 The indiscriminate use of machinery within the instream and riparian habitat may lead to compaction of soils and vegetation and must therefore be strictly controlled.
- 3.3.9 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.
- 3.3.10 Stockpiling of removed soil and sand must be stored outside of the 1:100 flood line or riparian habitat, whichever is greater, to prevent being washed into the river and must be covered to prevent wind and rain erosion.
- 3.3.11 Potential leakages into the watercourses must be avoided by installing leak detection system, flow meters and encasing the pipeline with concrete or advanced material where the proposed pipeline will be crossing watercourses.
- 3.3.12 Adequate bank stabilisation measures must be implemented.
- 3.3.13 Present Ecological Category (PEC) must be maintained or improved.



3.4 Hydraulic and hydrology

- 3.4.1 The water use must not result in a potential, measurable or cumulative detrimental change in the quality, velocity, pattern, timing, water level and assurance of flow in a watercourse.
- 3.4.2 The activities must be conducted in a manner that does not negatively affect catchment yield, hydrology and hydraulics. The Licensee must ensure that the overall magnitude and frequency of flow in the watercourse/s does not decrease, other than for natural evaporative losses and authorised attenuation volumes.
- 3.4.3 Where flow in watercourse is permanent, the trench must be staged across part of the channel to maintain flows. Flows must not be stopped unless essential, if necessary to stop flows it must be for a minimal time only.

3.5 Water Quality

- 3.5.1 In-stream water quality must be analysed on a two-weekly basis during construction otherwise monthly at monitoring points both upstream and downstream of the activities for the following variables as set out in Table 2.

Table 2: Water quality parameters for sampling

Variable	Limit
Temperature (°C)	<10% variation
pH	6.0 – 8.5
Electrical conductivity (EC) (mS/m)	<75
Suspended solids (SS) (mg/l)	<25
Dissolved oxygen (mg/l)	6-7
Turbidity (NTU)	10

- 3.5.2 Monitoring must continue for Three (3) year after the cessation of the activities listed in condition 1.1 of Appendix II.
- 3.5.3 Turbidity, sedimentation and chemical changes to the composition of water must be limited and monitored both upstream and downstream of the development.
- 3.5.4 Activities that lead to elevated levels of turbidity of any watercourse must be prevented, reduced, or otherwise remediated.
- 3.5.5 Construction, operation and maintenance activities must be scheduled to take place during dry seasons when flows are lowest where reasonably possible. If this is not possible and if management measures have not been provided for in the reports submitted to the Regional Head, the Licensee must submit such to the Regional Head for a written approval before these activities commence. Natural in stream hydrology is to be used to determine which months constitute the low flow months.
- 3.5.6 Pollution of and disposal/spillage of any material into the watercourse must be prevented, reduced, or otherwise remediated through proper operation, maintenance and effective protective measures.
- 3.5.7 Vehicles and other machinery must be serviced well above the 1:100 year flood-line or outer edge of the riparian habitat whichever is the greatest. Oils and other potential pollutants must be disposed off at an appropriate licensed site, with the necessary agreement from the owner of such a site.



- 3.5.8 Any hazardous substances must be handled according to the relevant legislation relating to transport, storage and use of the substance.
- 3.5.9 All reagent storage tanks and reaction units must be supplied with a banded area built to the capacity of the facility and provided with sumps and pumps to return the spilled material back into the system. The system must be maintained in a state of good repair and standby pumps must be provided.

3.6 Biota

- 3.6.1 The Licensee must take all reasonable steps to allow movement of aquatic species, including migratory species.
- 3.6.2 All reasonable steps must be taken not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.
- 3.6.3 The current level of diversity of biotopes and communities of animals, plants and micro organisms must be maintained.

4. REHABILITATION AND MANAGEMENT

- 4.1 The rehabilitation and monitoring plan must be implemented.
- 4.2 A habitat assessment study must be undertaken annually for three years to ensure that rehabilitation is stable, failing which remedial action must be taken to rectify impacts.
- 4.3 The Licensee must embark on a systematic long-term rehabilitation programme to restore the watercourse/s to environmentally acceptable and sustainable conditions after completion of the activities, which must include, but not be limited to the rehabilitation of disturbed and degraded riparian areas to restore and upgrade the riparian habitat integrity to sustain a bio-diverse riparian ecosystem.
- 4.4 Trench is to be open for minimal length of time and Top soil must be stripped and redistributed.
- 4.5 The Regional Head will sign a release from indicating that rehabilitation was done satisfactorily.
- 4.6 All disturbed areas must be re-vegetated with indigenous plants in consultation with an indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are in restoring the biodiversity.
- 4.7 Rehabilitation must be done in such a way that there will be no preferential water flow paths after completion of the proposed activities and indigenous vegetation must be used for rehabilitation.

5. MONITORING AND REPORTING

- 5.1 The Regional Head must be notified in writing one week prior to commencement of the licensed activity (ies) and again upon completion of the activity (ies).
- 5.2 A comprehensive and appropriate environmental (including bio-monitoring) assessment and monitoring programme to determine the impact, change, deterioration and improvement of the aquatic system associated with the activities listed under condition 1.1 of Appendix II as well



as compliance to these water use licence conditions must be developed and submitted to the Regional Head for a written approval within six months of the commencement of the activity and must subsequently be implemented as directed.

- 5.3 An Environmental Control Officer must be appointed and he/she will be responsible for monitoring of the affected areas.
- 5.4 A monthly monitoring report must be submitted to the Regional Head until otherwise agreed in writing with the Regional Head.
- 5.5 A qualified environmental management specialist must be retained by the Licensee who must give effect to various licence conditions and to ensure compliance thereof pertaining to all activities of impeding and/or diverting flow of watercourses as well as alternations to watercourses on the property as set out in condition 1.1 of Appendix II.
- 5.6 The Licensee must conduct an annual internal audit on compliance with the conditions of this licence. A report on the audit must be submitted to the Regional Head within one month of the finalisation of the audit. A qualified independent auditor must undertake this audit.
- 5.7 The audit reports must include but are not limited to:
 - 5.7.1 Reporting in respect of the monitoring programme referred to in condition 4.2 of Appendix II;
 - 5.7.2 A record of implementation of all mitigation measures and implementation of the watercourse rehabilitation and management plan including a record of corrective actions.
- 5.8 The applicant must apply in writing to the Regional Head for alternative monitoring and reporting arrangements for which written approval must be provided.

6. OTHER WATER USERS

- 6.1 The Licensee must attempt to prevent adverse effect on other water users. All complaints must be investigated by a suitable qualified person and if investigations prove that the Licensee has impaired the rights of other water users, the Licensee must initiate suitable compensative measures.

7. POLLUTION PREVENTION, INCIDENTS AND MALFUNCTIONS

- 7.1 Pollution incidents must be dealt with in accordance with Section 19 and 20 of the Act.
- 7.2 Any incident that may cause pollution of any water resource must immediately be reported to the Regional Head, during the construction, operation and decommissioning phases of the activities.
- 7.3 If surface and/or groundwater pollution has occurred or may possibly occur, the Licensee must conduct, and/or appoint specialists to conduct the necessary investigations and implement additional monitoring, pollution prevention and remediation measures to the satisfaction of the Regional Head.
- 7.4 The Licensee must keep all records relating to the compliance or non-compliance with the conditions of this licence in good order. Such records must be made available to the Regional Head within 14 (fourteen) days of receipt of a written request by the Department for such records.

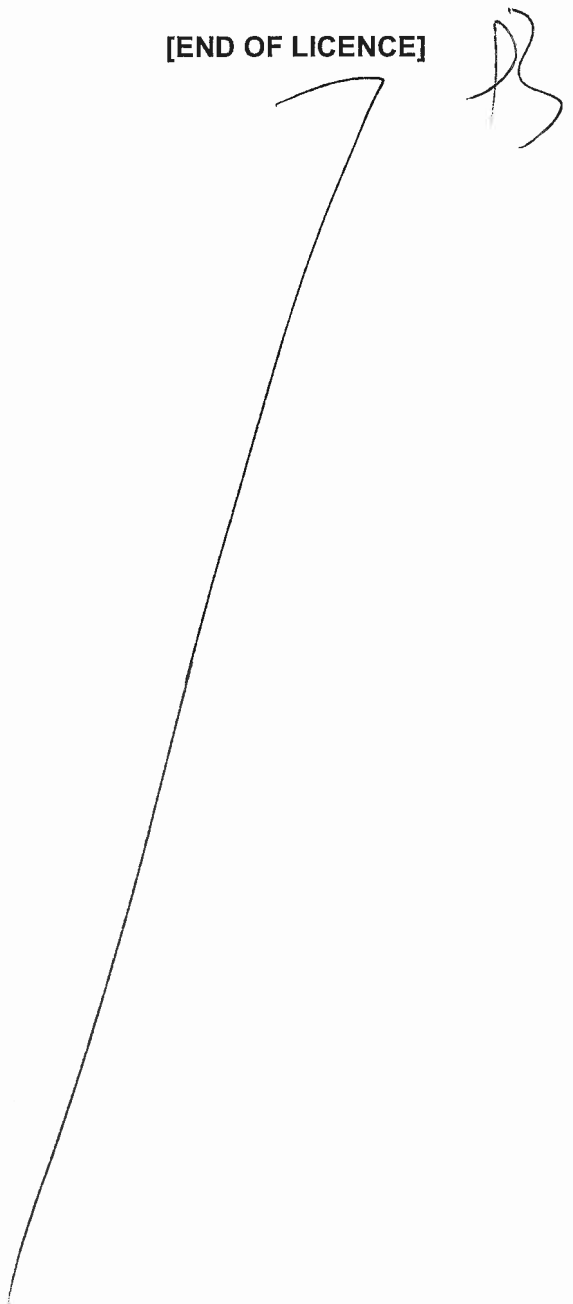


- 7.5 The Licensee must keep an incident report and complaints register, which must be made available to any external auditors and the Department.

8. BUDGETARY PROVISIONS

- 8.1 The Licensee must ensure that there is a sufficient budget to complete and maintain the water use and for successful implementation of the rehabilitation programme as set out in this licence.
- 8.2 The Regional Head may at any stage of the process request proof of budgetary provisions for rehabilitation and closure of project.

[END OF LICENCE]





KOSMOSDAL X102

CIVIL SERVICES INFORMATION IN SUPPORT OF WUL AMENDMENT

ANNEXURE

ANNEXURE C

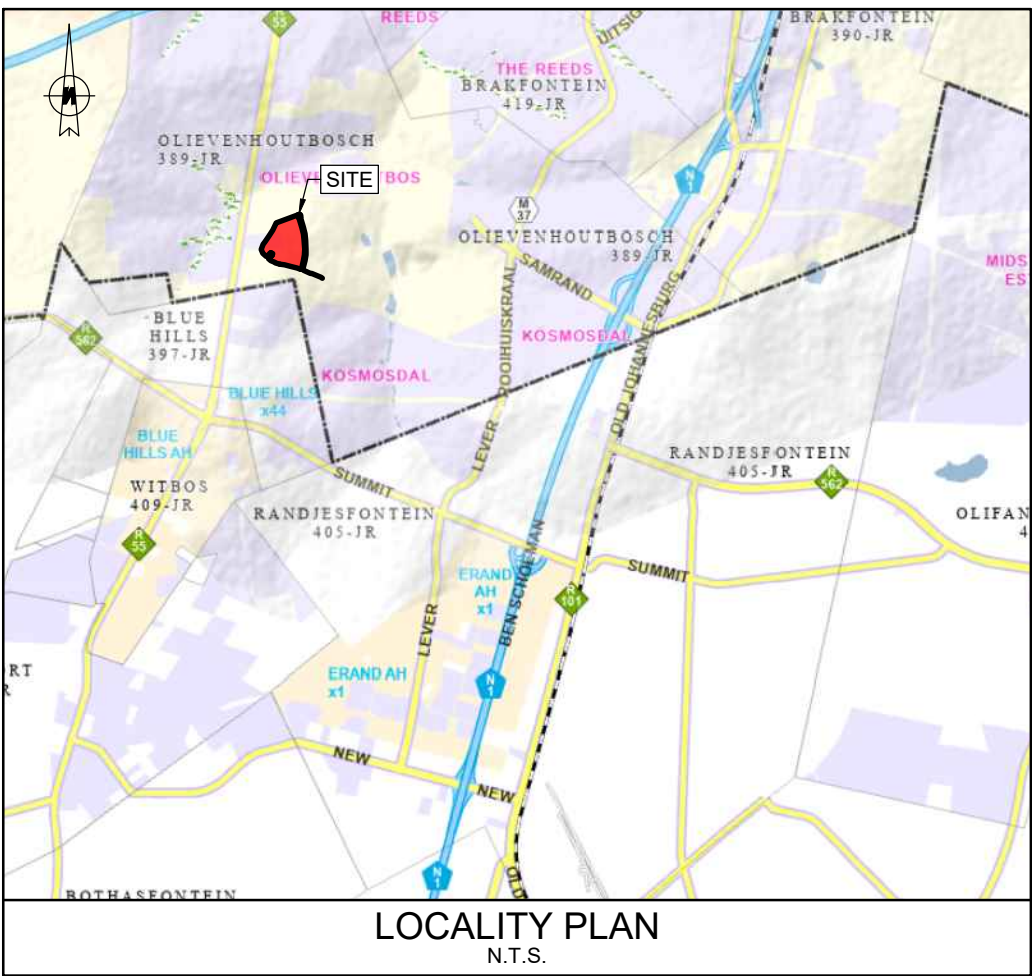
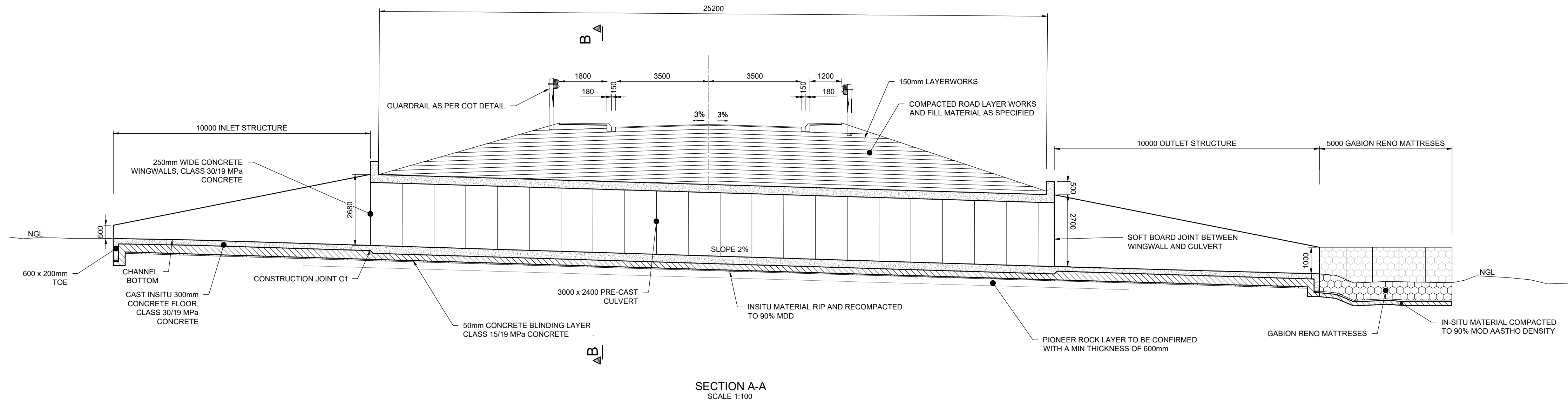
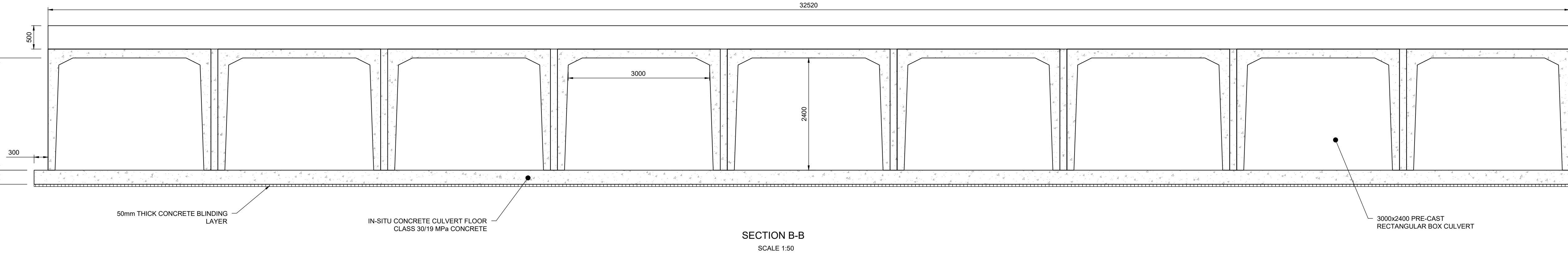


PHOTO 1
TYPICAL BOULDER CHANNEL +/- 1.5 YEARS
AFTER CONSTRUCTION COMPLETED
N.T.S



HYDRAULIC DATA:	
•	DESIGN RECURRENT PERIOD:1:50
•	DESIGN FLOOD:247.50 m³/s
•	AVAILABLE HEADWATER (Hw): 4.5m
•	CULVERT DESIGN: 10' 3000 BY 2400
•	DESIGN FLOW PER OPENING:24.7 m³/s
•	CONTROL:INLET
•	OUTLET FLOW DEPTH:1.85m
•	OUTLET VELOCITY:5m/s
•	OUTLET FROUDE NO:1.24m
•	OUTLET JUMP DEPTH:2.18m
•	FREE BOARD:1.4m

- ### NOTES AND SPECIFICATIONS
- #### GENERAL
1. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005, (UNLESS ANOTHER SPECIFICATION IS SPECIFIED IN THE CONTRACT).
 2. ALL DIMENSIONS ARE IN METERS, (UNLESS OTHERWISE SPECIFIED)
 3. DO NOT SCALE FROM THESE DRAWINGS.
 4. ALL DIMENSIONS MUST BE VERIFIED ON SITE.
 5. ALL THE SERVICES ARE SCHEMATIC AND MUST BE EXPOSED TO DETERMINE THEIR POSITION BEFORE CONSTRUCTION CAN COMMENCE.
 6. SERVICES INSIDE THE WORK AREA TO BE IDENTIFIED AND THE SERVICE OWNERS CONTACTED, AS PER THE PROJECT SPECIFICATIONS.
 7. THE LATEST STANDARD DRAWINGS OF COT ARE APPLICABLE TO THE WORKS.
 8. TRAFFIC CONTROL MUST COMPLY WITH THE REQUIREMENTS OF THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL, (THIRD EDITION).
 9. ALL KERBS, TRANSITION SECTIONS AND PEDESTRIAN RAMP ACCORDING TO COT DETAIL DRAWINGS AND PRECAST SECTIONS SHALL CONFORM TO SANS 927.
 10. ALL PRECAST TACTILE BLOCKS SHALL CONFORM TO SANS 784.
 11. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
 12. CONSTRUCTION TOLERANCES SHALL BE AS SPECIFIED IN SABS 1200 LE.
 13. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.

AMENDMENTS					
NR.	DATE	APPROVED	DESCRIPTION	PAR.	
A	18-02-2026	-	ISSUED FOR APPROVAL	-	-

DESIGNED		DRAWN	
J.P. WELMAN	DATE: 12-02-2026	E. HOLDER	
SIGNATURE			
DESIGN CHECKED BY		INFRASTRUCTURE TECHNICAL INFORMATION	
J.P. WELMAN		MANAGEMENT	
SIGNATURE			

PROJECT STATUS			
☒ CONCEPT DRAWING	☐ TENDER DRAWING	☐ APPROVED FOR CONSTRUCTION DRAWING	☐ AS BUILT DRAWING
PROJECT ENGINEER (CONSULTANT)			
J.P. WELMAN	20180172	12-02-2026	
INITIALS AND SURNAME	SIGNATURE AND P.I. No.	DATE	
PROJECT ENGINEER (CITY OF TSHWANE)			
INITIALS AND SURNAME	SIGNATURE AND P.I. No.	DATE	
STRUCTURAL ENGINEER (CITY OF TSHWANE)			
INITIALS AND SURNAME	SIGNATURE AND P.I. No.	DATE	
OFFICIAL REPRESENTATIVE (CITY OF TSHWANE)			
INITIALS AND SURNAME	SIGNATURE AND P.I. No.	DATE	

CIVIL CONCEPTS
Consulting Civil and Structural Engineers

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CITY OF TSHWANE
ROADS AND TRANSPORT DEPARTMENT

GROUP HEAD
Mr Letlankane P. (Phoko)
P.O. BOX 1409
PRETORIA
0001

CITY OF TSHWANE
PRETORIA

DIVISIONAL HEAD
Mr Thagale M.K.P. (Mavem)
P.O. BOX 1409
PRETORIA
0001

DRAWING APPROVED BY DIVISIONAL HEAD
Mr Thagale M.K.P. (Mavem)

SIGNATURE: DATE:

LOCATION OF PROJECT:

KOSMOSDAL EXT 102

DESCRIPTION OF PROJECT

**KOSMOSDAL EXT 102
CULVERT SECTION DETAILS**

WAY/LEAVE NUMBER

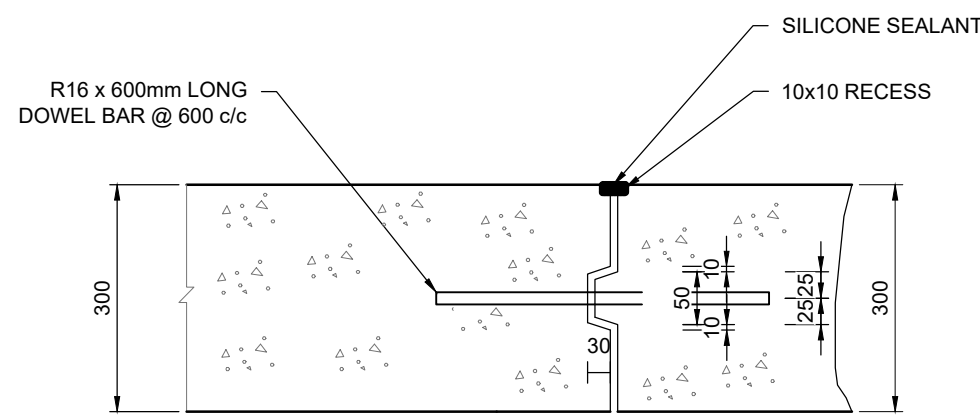
CONTRACT No.: C3530 PROJECT No.: C3530

DATE: JUNE 2025 SCALE: AS SHOWN ORIGINAL PAPER SIZE: A1

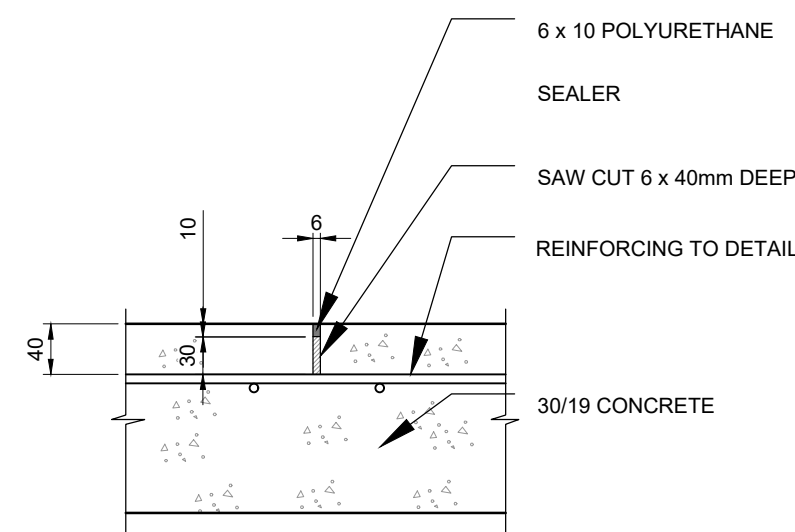
DRAWING NO. C3530-WUL-001 SHEET NO. 1 OF 1 REVISION



PHOTO 1
TYPICAL BOULDER CHANNEL +/- 1.5 YEARS
AFTER CONSTRUCTION COMPLETED
N.T.S



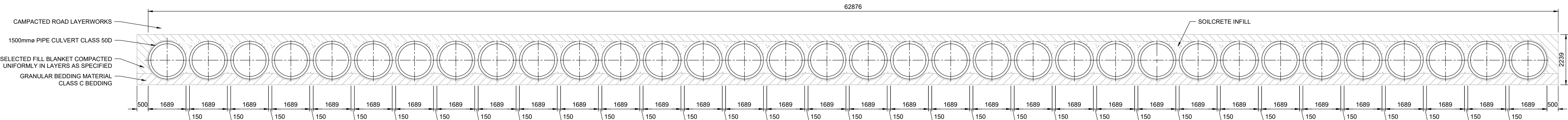
CONSTRUCTION JOINT DETAIL (C1)
N.T.S



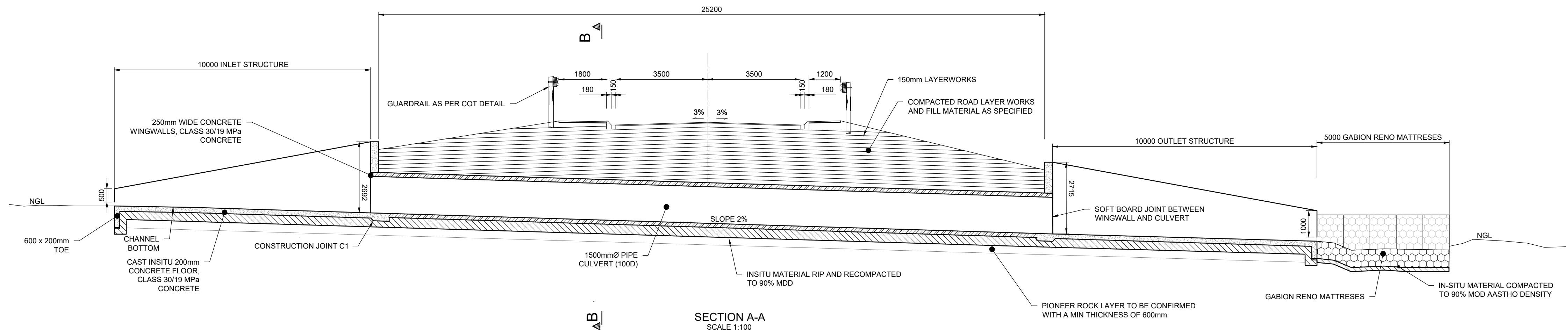
SAW JOINT DETAIL
N.T.S

- HYDRAULIC DATA:**
- DESIGN RECURRENCE PERIOD:1.50
 - DESIGN FLOW:247.50 m³/s
 - AVAILABLE HEADWATER (Hw): 4.5m
 - CULVERT DESIGN: 34/1500mmØ PC
 - DESIGN FLOW PER OPENING:7.3 m³/s
 - CONTROL:INLET
 - OUTLET FLOW DEPTH:0.9m
 - OUTLET VELOCITY:7m/s
 - OUTLET FROUDE NO:2.63m
 - OUTLET JUMP DEPTH:2.87m
 - FREE BOARD:1.4m

1. ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS, THIRD EDITION 2005, (UNLESS ANOTHER SPECIFICATION IS SPECIFIED IN THE CONTRACT DOCUMENTS).
2. THE DIMENSIONS ARE IN METERS (UNLESS OTHERWISE SPECIFIED)
3. DO NOT SCALE FROM THESE DRAWINGS.
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7. THE LATEST STANDARD CODES ARE TO BE APPLICABLE TO THE WORKS.
8. TRAFFIC CONTROL MUST COMPLY WITH THE REQUIREMENTS OF THE SOUTH AFRICAN ROAD TRAFFIC SIGNS MANUAL (THIRD EDITION).
9.
 - a. DURING CONSTRUCTION THE CONTRACTOR SHALL PREPARE TRAFFIC ACCOMMODATION DETAILS TO SUIT HIS WORKING METHODS TO BE AGREED WITH THE ENGINEER.
10. ALL KERBS, TRANSVERSE SECTIONS AND PEDESTRIAN RAMP ACCORDING TO C&T DETAIL DRAWINGS AND PRECAST SECTIONS SHALL CONFORM TO SANS 927.
11. ALL PRECAST TAPPING BLOCKS SHALL CONFORM TO SANS 784.
- 11.1. ALL MATERIAL AND WORKMANSHIP MUST COMPLY WITH THE REQUIREMENTS OF THE LATEST RELEVANT SABS REQUIREMENTS.
12. CONSTRUCTION TOLERANCES SHALL BE AS SPECIFIED IN SABS 1200 IE.
13. FINAL POSITION OF SERVICES TO BE DETERMINED ON SITE.



SECTION B-B
SCALE 1:100



SECTION A-A
SCALE 1:100

AMENDMENTS				
NR	DATE	APPROVED	DESCRIPTION	PAR
A	04-03-2020	-	ISSUED FOR APPROVAL	-

DESIGNED	DRAWN
J.P. WELMAN	E. HOLDER
SIGNATURE: _____ DATE: 04-03-2026	
DESIGN CHECKED BY	INFRASTRUCTURE TECHNICAL INFORMATION MANAGEMENT
J.P. WELMAN	
SIGNATURE: _____ DATE: 04-03-2026	SIGNATURE: _____ DATE: _____

 CONSULT DRAWING	 TENDER DRAWING	 APPROVED FOR CONSTRUCTION DRAWING	 AS BUILT DRAWING
PROJECT ENGINEER (CONSULTANT)			
J.P. WELMAN	20180172	04-03-2026	
INITIALS AND SURNAME	SIGNATURE AND No. _____		DATE
PROJECT ENGINEER (CITY OF TSHWANE)			
INITIALS AND SURNAME	SIGNATURE AND No. _____		DATE
STRUCTURAL ENGINEER (CITY OF TSHWANE)			
INITIALS AND SURNAME	SIGNATURE AND No. _____		DATE
OFFICIAL REPRESENTATIVE (CITY OF TSHWANE):			
INITIALS AND SURNAME	SIGNATURE AND No. _____		DATE



GROUP HEAD Mr Letltonkane P. (Pheko)	 CITY OF TSHWANE SERVING EACH OTHER	DIVISIONAL HEAD Mr Thigale M.K.P. (Mavern)
P.O. BOX 1409		P.O. BOX 1409
PRETORIA		PRETORIA
0001		0001

DRAWING APPROVED BY DIVISIONAL HEAD
Mr Tilhagale M.K.P. (Mavem)

SIGNATURE: _____ DATE: _____

LOCATION OF PROJECT:

LOCATION OF PROJECT:

KOSMOSDAL EXT 102

DESCRIPTION OF PROJECT

KOSMOSDAL EXT 102
PIPE CULVERT
SECTION DETAILS

WAYLEAVE NUMBER

CONTRACT No. : C3530		PROJECT No. : C3530	
DATE : JUNE 2025	SCALE : AS SHOWN	ORIGINAL PAPER SIZE : A1	
DRAWING NO. C3530-WUL-002		SHEET NO. 1 OF 1	 REVISION