

Appendix E: Public Participation

Appendix E1: Advert and
Site Notice Placement
Proof



Figure 1: Somerset East 407, Portion 1



Figure 4: Somerset Kruis, Rivier Outspan 250, Portion 1



Figure 2: Along the R335 Road



Figure 5: Somerset East, Kruis Rivier 248, Portion 0



Figure 3: Somerset East, Fonteins Plaats 246, Portion 0

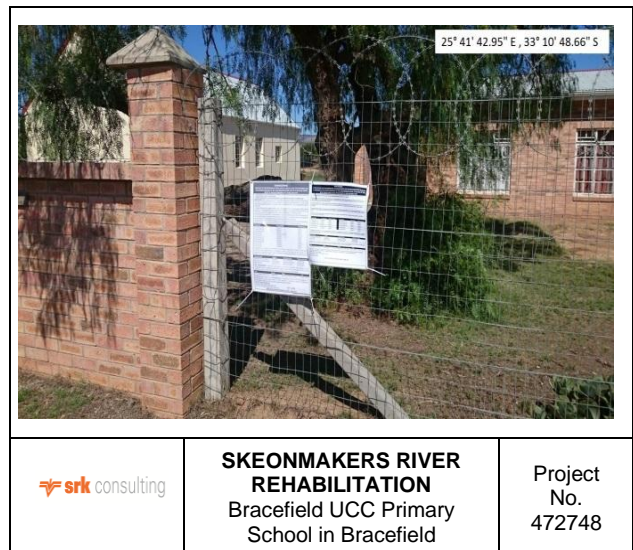


Figure 6: Bracefield UCC Primary School in Bracefield

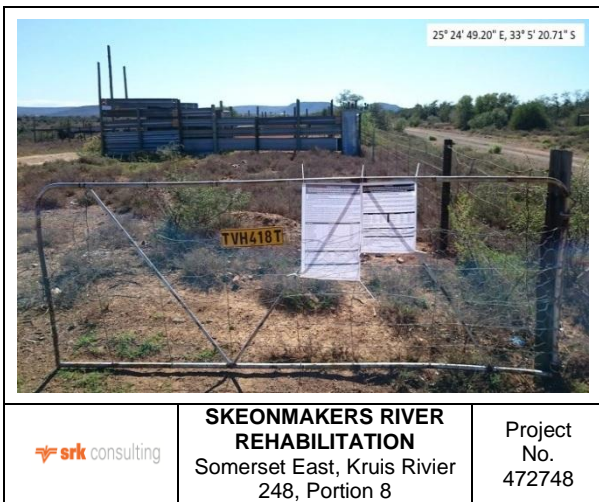


Figure 7: Somerset East, Kruis Rivier 248, Portion 8



Figure 10: Somerset East, Bouwers Fontein 240, Portion 0

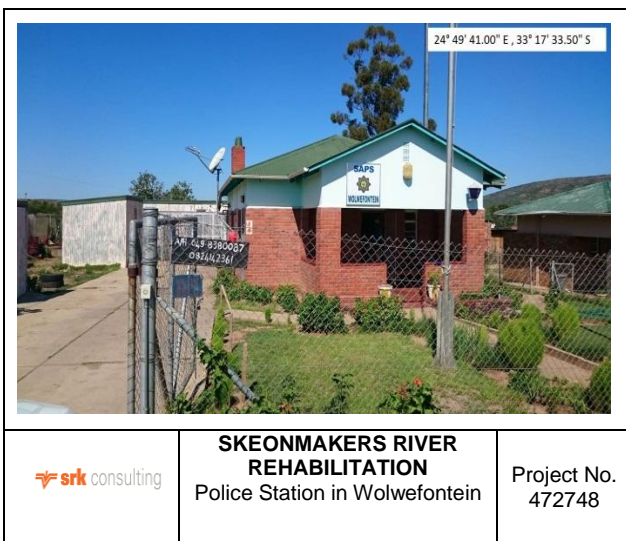


Figure 8: Police Station in Wolwefontein



Figure 11: Somerset East, Fonteins Plaats 246, Portion 4



Figure 9: Somerset East, Geelhoutboom 247, Portion 0



Figure 12: Somerset East, Kruis Rivier 248, Portion 9



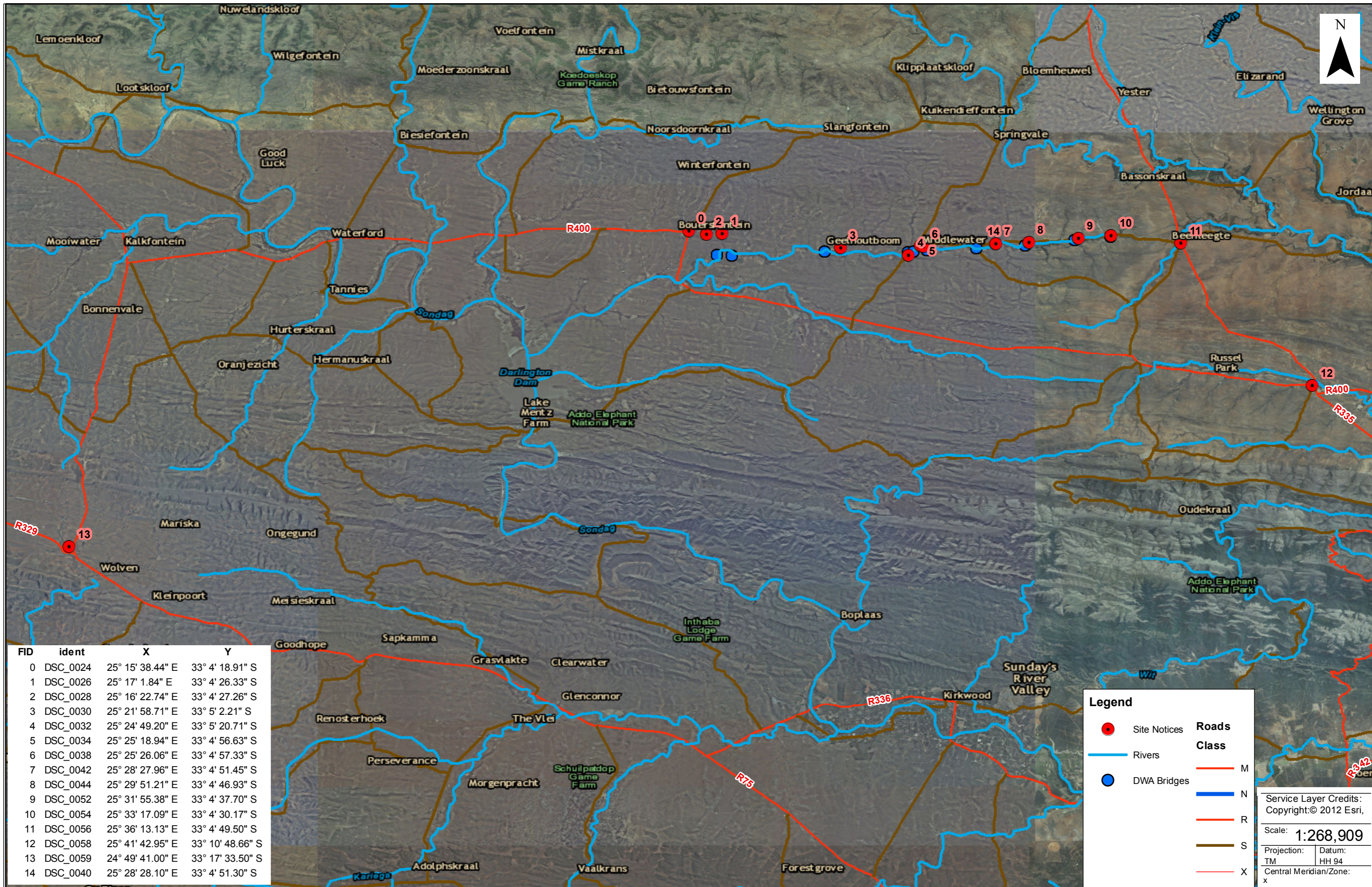
Figure 13: Somerset Kruis Rivier Outspan 250, Portion 2

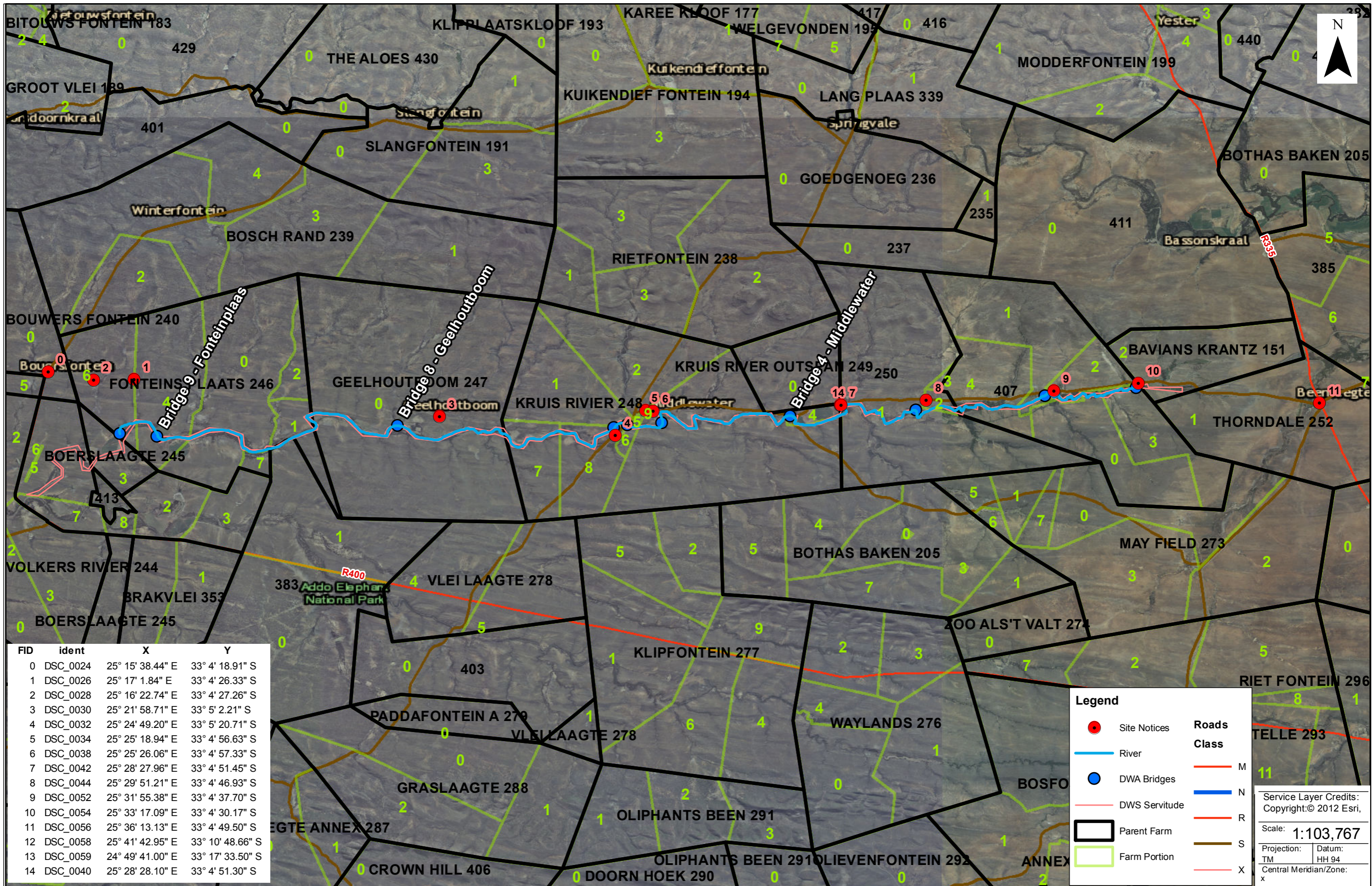


Figure 15: Somerset East, Kruis Rivier 248, Portion 5



Figure 14: Somerset East 407, Portion 4





NOTIFICATION

APPLICATION FOR ENVIRONMENTAL AUTHORISATION FOR THE RESTORATIONS AND/OR UPGRADING OF TEN RIVER CROSSINGS ON THE SKOENMAKERS RIVER, SITUATED IN THE BLUE CRANE ROUTE LOCAL MUNICIPALITY IN THE EASTERN CAPE

- ❖ INVITATION TO OPEN HOUSE AND REQUEST FOR STAKEHOLDER TO REGISTER AS AN INTERESTED AND AFFECTED PARTY
- ❖ THE AVAILABILITY OF THE DRAFT BASIC ASSESSMENT REPORT (DBAR) FOR COMMENT

DESCRIPTION: SRK Consulting was appointed by BVI Consulting Engineers on behalf of the Department of Water and Sanitation (DWS) as the independent Environmental Assessment Practitioner to undertake the necessary Environmental Authorisation processes, and associated stakeholder engagement for the proposed project.

An application for EA in terms of the NEMA to be submitted to the National Department of Environmental Affairs and a Water Use Licence Application (WULA), in terms of the National Water Act (Act 36 of 1998) (NWA), to be submitted to DWS, for all the river crossings, will be undertaken.

Skoenmakers River has been a conveyance system and spillway to Darlington Dam since 1981. The river channel has deteriorated over years, resulting in; erosion of the river embankment, excessive siltation, causing damage to infrastructure such as road crossings and water extraction weirs

This project entails restoring and/or upgrading the crossings. The bridges are located within DWS servitude and farm portions on which the work will be done is shown below;

Palmietfontein 407 Portion 3 - Bridge 1;
Palmietfontein 407 Portion 1- Bridge 2;
Palmietfontein 250 Portion 1 - Bridge 3;
Kruis Rivier 248 Portion 5 and 6 - Bridge 6;
Kruis Rivier 248 Portion 8 Bridge - 7;
Geelhoutboom 247 Portion 0 Bridge - 8;
Fonteins Plaats 246 Portion 4 Bridges - 9;
Fonteins Plaats 246 Portion 6 Bridges - 10;
Kruis Rivier 248 Portion 4 Bridge 4; and
Kruis Rivier 248 Portion 9 Bridge 5.

The **DBAR** will be available for a commenting period of 40 days from 7 April 2015 to 19 May 2015. Stakeholders are encouraged to comment on the content of the report and to raise issues and concerns that will be addressed in the Final Basic Assessment Report (FBAR). The DBAR can be obtained at the following public places;

Public Places	Locality	Contact Person	Telephone number
Bracefield Recreation Hall	Bracefield	Mr Andile Nshudu	082 329 4526
Police Station in Wolwefontein	Kommadagga	Inspector AO Duisel	049 838 0087
SRK Website	www.srk.co.za	Ms Donn� Chetty	012 361 9821

OPEN-HOUSE: Stakeholders are invited to the open house where information about the proposed project will be presented on posters where they will have the opportunity to meet with the Project team. Details of the open house are provided below.

Place	Date	Venue	Time
Kommadagga, Somerset East	15 April 2015	Bracefield Recreation Hall	9:00 – 14:00

Stakeholders are requested to register as Interested and Affected Parties (I&APs), submit comments by means of e-mail, fax or postage. Alternatively, stakeholders are welcome to submit telephonic comments by contacting SRK's public participation office.

Donne Chetty or Fiona Evans

Postal Address: PO Box 35290, Menlo Park 0102

Tel: +27(0)12 361 9821

Fax: +27(0) 12 361 9912

DUE DATE FOR REGISTRATION AS I&APs: 19 May 2015

'SANTA GAMKA'

Marlo Minnaar na die planke

Marlo Minnaar het Eben Venter se roman Santa Gamka vir die verhoog verwerk en hy bied dit op die KKNK as eenpersoonstuk aan. Mariana Malan vind meer uit oor die produksie.



Marlo Minnaar Foto: JACO BOUWER

Ek dink die rede waarom ek so groot aanklank gevind het by die storie in Santa Gamka was juis omdat ek ook van die Karoo af kom en baie van die hoofkarakter Lucky Marais se eienskappe in myself kon sien... sy gewaagdheid, sy meegevoel teenoor ander, skerp tong... en ook dat ek my met baie van die karakters in die boek kon verenselwig.

So vertel Marlo Minnaar oor sy rol in en sy verwerking van Eben Venter se roman Santa Gamka. Dis die verhaal van 'n rentboy wat sy lewe in oënskyn neem. Die eenpersoonstuk is eersdaags op die verhoog op die Absa KKNK. Hierdie soort kruisbestuiving tussen feesste, meen hy, is wonderlik. Dit bied uit automaties meer geleentheid vir produksies om te speel en te groei en maak dit ook toeganklik vir mense wat dit andersins nie kon sien nie.

Sy kennismaking met Venter se roman was een van daardie toeval-ligheede wat soms oor 'n mens se pad kom. "Ek het eendag heel per toeval by 'n boekwinkel in Kaapstad ingestap en op hierdie roman van Venter afgekom. "Eers was ek aangetrokke tot die omslag, maar dis eers toe ek die agterskrif gelees het dat ek getref is

deur die storie van hierdie bruin seun van die Karoo en sy ietwat opgewonde reis deur die lewe as 'n born-free in die nuwe Suid-Afrika. "Ek het die boek in iets soos drie dae klaar gelees en daarna geen keuse gehad as om Eben op te spoor met die doel om dit op die planke te realiseer nie." In gesprekke met Venter het dié vir hom gesê dat baie lesers ná die tyd vir hom gesê het dat hy die "lyf-

Om manalleen op die verhoog te staan en dan die verhaal wat hy geskep het, te vertel, is nog 'n uitdaging hoewel hy al verskeie kere 'n eenpersoonstuk gedoen het. "Daar is maar altyd daardie angste in jou agterkop dat jy jou woorde sal vergeet, of mense dit vervelig sal vind of geïrriteerd raak met jou stem, of sal sit en snork in die middel van 'n vertoning - ja, dit het al gebeur."

Die veelbekroonde Jaco Bouwer is sy regisseur en volgens Minnaar sal hy hom altyd dankbaar wees. Hy beskou Bouwer as geniaal. Gereelde feesgangers sal Minnaar se eerste solostuk, ... Af, onthou waarvoor hy in 2012 vir 'n Slurpie benoem is, asook vir die omstrede Die kortstondige raklewe van Anastasia W, waarvan Marthinus Basson die regisseur was.

Hy meen kunstefeesste bied 'n wonderlike geleentheid vir jong kunstenaars om in 'n veilige atmosfeer hul kreatiwiteit te laat blom. "Ek wens net dat hulle finansieel meer kansse wou wat om meer in jong teatermakers te belê sodat produksies langer speelvakke kan geniet om dit sodoende die moeite werd te maak vir vryskutakteurs."

Minnaar is nog nie lank akteur nie, maar was nog geen oomblik spyt oor die beroep wat hy gekies het nie. "As 'n plaasenaar daar uit die Karoo het ek die road less travelled gekies en soms kan dit sy tol eis, maar ek glo as jy passie het vir wat jy doen en liefde het daarvoor hoef jy nie 'n dag in jou lewe te werk nie. Santa Gamka word van Saterdag 29 April by die KKNK op Oudsthoorn opgevoer.



Kenny Rogers

Kenny Rogers kom

Kenny Rogers gaan Suid-Afrika in Junie besoek. Volgens 'n persverklaring sal dit sy laaste toer hierheen wees en het daarom die gepaste naam - Farewell South Africa Tour. Hy tree op 15 en 16 Junie in die Big Top-arena in Johannesburg op en sal op 18 Junie in die Grand-arena in die Grand-West-casino in Kaapstad te sien wees. Saam met hom tree die plaaslike countrylegendes Lance James, Barbara Ray, Clive Bruce en Tommy Dell op. Rogers het in sy loopbaan meer as 120 miljoen albums verkoop en meer 20 van sy liedjies het bo-aan treffersparades gestaan. Onder hul te tel "The Gambler" en "Islands In The Stream."

Advertisement for SK GREAT MOMENTS AT THEIR GREATEST featuring a list of movies and TV shows like 'The Bridge', 'Home', and 'The Divergent Series' with showtimes and prices.

Large advertisement for OLX (www.olx.co.za) with the headline 'Geklassifiseerd DIE BURGER' and contact information.

WERK advertisement with contact details for VERKOOPSPERSONE.

FAMILIE-KENNISGEWINGS advertisement for STERFGEVALLE, mentioning BARNARD ANTOINETTE.

Advertisement for DOVES Uitenhage, featuring Irene Dyasi and contact information.

Advertisement for Jeanette Kleynveld, a real estate agent.

Advertisement for Red 'n Lewe! Suid Afrikaanse Nasionale Bloeddiens.

PERSOONLIKE DIENSTE advertisement for LENINGS.

GATVOL VIR SKULD? advertisement for ZITA'S OFFICE.

BRIDGING CASH advertisement for PENSION/PACKAGE payout.

OP SOEK NA advertisement.

ALL BUYERS & SELLERS advertisement for HERBIE.

VAN VUUREN RP (FIENA) advertisement.

TE KOOP advertisement for GESOEK OM TE KOOP.

BIG BUCKS advertisement for a swap shop.

VAKANSIE & REIS advertisement.

AKKOMMODASIE advertisement for JEFFREYSBAAI.

PEARSON PARK RESORT advertisement for Sondagsrivier.

VOERTUIE advertisement for SLEEPWAENS.

VOERTUIE GESOEK OM TE KOOP advertisement.

SKOON BAKKIES & MOTORS advertisement.

ANIMAL WELFARE SOCIETY advertisement with contact details.

REGSKENNISGEWINGS & TENDERS advertisement for HOFBEVELE.

KENNISGEWING OUERREGTE advertisement for CATHERINE BRADLEY.

Advertisement for DONWOOK NAM.

Advertisement for JACOB BRADLEY NAM.

BOEDELKENNISGEWINGS advertisement for BOEDELS.

G.P. VAN RHYN, MINNAAR & KIE advertisement.

Advertisement for KENNISGEWING OUIERREGTE.

KENNISGEWING advertisement for AANSOEK VIR OMGEWINGSMAGTING.

Advertisement for DIE DBAR sal vir 'n tydperk van kommentaar.

Table with columns: Plaasnaam, Plaasgedeelte, Brugtoegang.

Table with columns: Openbare plek, Ligging, Kontakpersoon, Telefoonnommer.

Table with columns: Plek, Datum, Waar, Tyd.

Large advertisement for 'Koop jou gunsteling-koerant en tydskrif nou as 'n pakket vir net R22,00 elke Maandag en Dinsdag' featuring 'HUISgenoot + DIE BURGER = SLEGS R22'.

KENNISGEWING

AANSOEK VIR OMGEWINGSMAGTIGING VIR DIE HERSTEL EN/OF OPGRADERING VAN TIEN RIVIEROORGANGE OP DIE SKOENMAKERSRIVIER, GELEË IN DIE BLUE CRANE ROUTE PLAASLIKE MUNISIPALITEIT IN DIE OOS-KAAP

* UITNODIGING NA OPE VERGADERING EN VERSOEK VIR INSETHOUERS OM AS 'N BELANGSTELLEDE EN GEAFFEKTEERDE PARTY TE REGISTREER

* DIE BESKIKBAARHEID VAN DIE KONSEP BASIESE EVALUASIEVERSLAG (DBAR) VIR KOMMENTAAR

BESKRYWING: SRK Consulting is deur BVI Consulting Engineers aangestel namens die Departement van Water en Sanitasie (DWS) as die onafhanklike Omgewingsevaluasiepraktisyn om die nodige Omgewingsmagtigingsprosesse en verwante insethoudersbetrokkenheid vir die voorgestelde projek te onderneem.

'n Basiese Evaluasie (BA) kragtens NEMA, wat by die Departement van Omgewingsake (DEA) ingedien sal word, en 'n Watergebruikslisensie-aansoek (WULA) kragtens die Nasionale Waterwet (Wet 36 van 1998) (NWA), wat by DWS ingedien moet word vir al die rivieroorloope, sal onderneem word.

Skoenmakersrivier is sedert 1981 'n vervoerstelsel en oorloop na Darlington-dam. Die rivierkanaal het oor die jare agteruitgegaan, en gelei tot die erosie van die rivieroewer en oormatige toeslikking, wat skade aan die infrastruktuur soos padoorgange en wateronttrekking-dwarswalle aangerig het.

Hierdie projek behels die herstel en/of opgradering van die oorgange. Die brûe is binne die DWS-serwituut geleë en die gedeeltes van plase waarop die werk gedoen sal word, word hieronder aangedui

Plaasnaam	Plaasgedeelte	Brugoorgang
Palmietfontein 407	Gedeelte 3	Brug 1
Palmietfontein 407	Gedeelte 1	Brug 2
Palmietfontein 250	Gedeelte 1	Brug 3
Kruisrivier 248	Gedeelte 5 en 6	Brug 6
Kruisrivier 248	Gedeelte 8	Brug 7
Geelhoutboom 247	Gedeelte 0	Brug 8
Fonteinsplaats 246	Gedeelte 4	Brug 9
Fonteinsplaats 246	Gedeelte 6	Brug 10
Kruisrivier 248	Gedeelte 4	Brug 4
Kruisrivier 248	Gedeelte 9	Brug 5

Die DBAR sal vir 'n tydperk van kommentaar van 40 dae van 7 April 2015 tot 19 Mei 2015 ter insae lê. Insethouders word aangemoedig om kommentaar te lewer op die inhoud van die verslag, en om vraagstukke en besware te opper vir die Finale Basiese Evaluasieverlag (FBAR). Die DBAR kan by die volgende openbare plekke verkry word:

Openbare plek	Ligging	Kontakpersoon	Telefoonnummer
Bracefield Ontspanningsaal	Bracefield	Mnr. Andile Nshudu	082 329 4526
Polisiekantoor op Wolwefontein	Kommadagga	Inspekteur AO Duisel	049 838 0087
SRK webtuiste	www.srk.co.za	Me. Donne Chetty	012 361 9821

OPE VERGADERING: Insethouders word genooi na die ope vergadering waar inligting oor die voorgestelde projek op plakkaat aangebied sal word en waar hulle die geleentheid sal kry om die projekspan te ontmoet. Besonderhede van die ope vergadering word hieronder verskaf.

Plek	Datum	Waar	Tyd
Kommadagga, Somerset-Oos	15 April 2015	Bracefield Ontspanningsaal	09:00 - 14:00

Insethouders word versoek om as Belangstellige en Geaffekteerde Partye (I&APs) te registreer, en kommentaar d.m.v. e-pos, faks of pos in te dien. Andersins is insethouders welkom om telefoniese kommentaar in te dien deur SRK se openbare deelnamekantoor te skakel

Donne Chetty of Fiona Evans

Posadres: Posbus 35290, Menlopark 0102

Tel. +27(0)12 361 9821 | Faks +27(0)12 361 9912

 **srk consulting**

SPERDATUM VIR REGISTRASIE AS I&APS: 19 Mei 2015



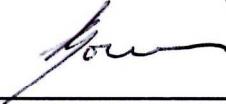
X1PXB965-310315-OS-eb/kl/srk

Appendix E2: Proof of Stakeholder Notification

472748 Skoenmaker's Rehabilitation



First Name	Last Name	Company	Bridge Number	Farm Portion and Farm Portion Info	Contact Information	
BERNARDUS BEYERS	GREYLING	GREYLING BERNARDUS BEYERS	BRIDGE 10	FONTEINS PLAATS 246 PORTION 6	Tell No.:	— Geen
					Fax No.:	— Geen
					Cell No.:	0720711564
					E-Mail:	frida@fridugreyling@vodanet.co.za
					Signature:	
Greet Willem	Greet	W D E S GREEF FAMILY TRUST	BRIDGE 9	FONTEINS PLAATS 246 PORTION 4	Tell No.:	0875501057
					Fax No.:	Geen
					Cell No.:	0823941712
					E-Mail:	wdgreet@jabonny.co.za
					Signature:	
Francios	Nel	GEELHOUTBOOM TRUST	BRIDGE 8	GEELHOUTBOOM 247 PORTION 0	Tell No.:	042-2432871
					Fax No.:	Geen
					Cell No.:	0724594059
					E-Mail:	finell@r63.co.za
					Signature:	

First Name	Last Name	Company	Bridge Number	Farm Portion and Farm Portion Info	Contact Information	
ON opsplooiing leiers in China		INQO PROP PTY LTD Gerhard de Lange	BRIDGE 7	KRUIS RIVIER 248 PORTION 8 Dien aan outbond nie sy bou nie. leaser ook nie op boedkappe nie.	Tell No.:	—
					Fax No.:	—
					Cell No.:	0764777224
					E-Mail:	?
					Signature:	
RAOUL RIAAN	BOSCH	BOSCH RAOUL RIAAN Lins in Kerkwood	BRIDGE 6	KRUIS RIVIER 248 PORTION 5	Tell No.:	Green
					Fax No.:	Green
					Cell No.:	0836507363
					E-Mail:	Green
					Signature:	
BERNARDUS BEYERS	GREYLING	GREYLING BERNARDUS BEYERS	BRIDGE 6	KRUIS RIVIER 248 PORTION 6	Tell No.:	Green
					Fax No.:	Green
					Cell No.:	0720711564
					E-Mail:	fridagreyling@odanmail.co.za
					Signature:	
Rocco	Grouws	REPUBLIC OF SOUTH AFRICA S. Grouws familie Trust	BRIDGE 5	KRUIS RIVIER 248 PORTION 9	Tell No.:	0875501056
					Fax No.:	—
					Cell No.:	0824011545
					E-Mail:	roccogrouws@yahoo.com
					Signature:	
Rocco	Grouws	R S A S. Grouws familie Trust	BRIDGE 4	KRUIS RIVIER 248 PORTION 4	Tell No.:	0875501056
					Fax No.:	—
					Cell No.:	0824011545

First Name	Last Name	Company	Bridge Number	Farm Portion and Farm Portion Info	Contact Information
					E-Mail: roccogouws@yahoo.com Signature: <i>[Signature]</i>
Chris	Greeff	CHRIS GREEFF FAMILY TRUST	BRIDGE 3	Farm 250 PORTION 1	Tell No.: 042-2351545 Fax No.: Green Cell No.: 0768467115 E-Mail: chrisgreeff@bosberg.co.za Signature: <i>[Signature]</i>
Carel	von Grend.	NOT AVAILABLE	BRIDGE 2	C. van Gert Farm 407 PORTION 1	Tell No.: 0875560958 Fax No.: Green Cell No.: 0791932993 E-Mail: vangen d@jabuana.co.za Signature: <i>[Signature]</i>
Raubean	Crouse	NOT AVAILABLE Raubean Crouse	BRIDGE 1	Woon in E Farm 407 PORTION 3 at head nie selfoon	Tell No.: Fax No.: Cell No.: 0844911964 E-Mail: onbekend Signature:



21 November 2014
472748

Attention: Mr Rocco Grouws

Dear Mr Gouws

ENVIRONMENTAL AUTHORISATION NOTIFICATION FOR THE REMEDIATION AND REHABILITATION OF THE SKOENMAKERS RIVER - TEN (10) RIVER CROSSINGS, KIRKWOOD, SOMERSET EAST JANSENVILLE, EASTERN CAPE

Agreement between Mr Rocco Gouws and SRK Consulting (SA) (SRK)

1. Project Background

The Skoenmakers River is situated in the Blue Crane Route Local Municipality in the Eastern Cape. It receives water from an upstream dam via a gravity tunnel and discharges into the Darlington dam. The river has been a conveyance system and spillway to Darlington dam since 1981. The raw water is used by farmers, en route to the dam downstream for agricultural purposes. The river channel has deteriorated over years, resulting in:

- Erosion of the river embankment;
- Excessive siltation causing unnatural islands to form within the river bed;
- Blockage of water extraction Weirs and pump stations;
- Excessive invasive vegetation causing blockage of the water course; and
- Damage to infrastructure such as road crossings, water extraction weirs and equipment to regulate flood water.

There are 10 River crossings that have been damaged and this project entails restoring and/or upgrading the crossings. The current application is for:

River crossing 3, located along the DWS servitude, is going to be upgraded by removing existing structures and replacing them with portal culverts adequately sized to accommodate the hydraulic capacity, both current and future.

2. Stakeholder Engagement Process

SRK Consulting (SA) (SRK) has been appointed by BVI Consulting Engineers to conduct the necessary environmental processes as well as the public participation processes for the proposed projects.

Partners AH Bracken, MJ Braune, JM Brown, CD Dalglish, JR Dixon, DM Dulhe, BM Engelsman, R Gardiner, GC Howell, WC Joughin, DA Kilian, PR Labrum, B Liber, DJ Mahlangu, RRW McNeill, HAC Meintjes, JA Middleton, MJ Morris, WA Naismith, GP Nel, VS Reddy, PN Rosewarne, PE Schmidt, PJ Shepherd, MJ Sim, VM Simposya, AA Smithen, HFJ Theart, KM Uderstadt, DJ Venter, ML Wertz, MD Wanless, A Wood

Directors AJ Barrett, JR Dixon, PR Labrum, DJ Mahlangu, VS Reddy, PE Schmidt, PJ Shepherd

Associate Partners R Armstrong, L Coetser, M Hinsch, JA Lake, V Maharaj, SA McDonald, RD O'Brien, M Ristic, JJ Stabbert, AT van Zyl, D Visser

Consultants AC Burger, BSC(Hons); JAC Cowan, PrSciNat, BSc(Hons); JH de Beer, PrSci Nat, MSc; T Harl, MA, TTHD, GA Jones, PrEng, PhD, TR Stacey, PrEng, DSc, OKH Steffen, PrEng, PhD, PJ Terbrugge, PrSciNat, MSc; DW Warwick, PrSciNat, BSc(Hons)

SRK Consulting (South Africa) (Pty) Ltd

Reg No 1995.012890.07

African Offices:

Cape Town + 27 (0) 21 659 3060
Durban + 27 (0) 31 279 1200
East London + 27 (0) 43 748 6292
Johannesburg + 27 (0) 11 441 1111
Kimberley + 27 (0) 53 861 5798
Pietermaritzburg + 27 (0) 33 347 5069
Port Elizabeth + 27 (0) 41 509 4800
Pretoria + 27 (0) 12 361 9821
Rustenburg + 27 (0) 14 594 1280
Accra + 23 (3) 24 485 0928
Harare + 263 (4) 49 6182
Lubumbashi + 243 (0) 81 999 9775

Group Offices:

Africa
Asia
Australia
Europe
North America
South America

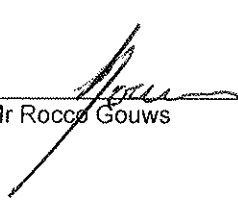


There are various guidelines which need to be taken into account during the public participation process, as one of which includes informing all land owners of the proposed activity (GN R. 543 Item 54(2)(b) (i) (ii)). SRK Consulting has requested deviation from this section of the public participation process of the regulation, due to poor or no communication mediums (post, telecommunication and email and limited cell phone reception).

3. Acknowledgement of Expectations

SRK Consulting would like to request you to distribute announcement letters on behalf of SRK Consulting to all landowners and to request each land owner to notify all land occupiers on their property to of the proposed project.

In signing below, will the agreement be understood and accepted that Mr Rocco Gouws would be acting on behalf of SRK in carrying out communication between stakeholders and SRK Stakeholder Engagement Department.

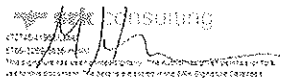

Mr Rocco Gouws


Date

Yours faithfully,

SRK Consulting (South Africa) (Pty) Ltd

SRK Consulting - Certified Electronic Signature


SRK Consulting (South Africa) (Pty) Ltd
177544199 (Pty) Ltd
177544199 (Pty) Ltd
This document is an electronic signature. The authenticity of the content of this document is guaranteed by the SRK Signature Center.

Manda Hinsch *BSc. Hons, Pr. Sci Nat, FWISA*
Associate Partner/Principal Scientist



WORLDWIDE EXPRESS

0860 DPEINT
Cape Town
Durban

Tel: 021 386-5070
Tel: 031 569-6566

Johannesburg
Port Elizabeth
East London

Tel: 011 573-3000
Tel: 041 581-5105
Tel: 043 722-3170

SOUTH AFRICA

1 ACCOUNT NUMBER
311450

SHIPPER DETAILS

M4 Couriers

P.2

SHIPPER

PHONE

SENDER'S NAME

4 SENDER'S AUTHORISATION AND SIGNATURE

DA
NGEROUS GOODS ARE NOT ALLOWED
I HEREBY DECLARE THAT THIS CONSIGNMENT DOES NOT CONTAIN DANGEROUS GOODS AND THE SENDER AGREES TO BE BOUND BY THE STANDARD CONDITIONS OF CARRIAGE. A COPY OF WHICH WILL BE MADE AVAILABLE ON REQUEST.

SENDER'S SIGNATURE

DATE

TIME

8 / 12 / 14

AM / PM

RECEIVED FOR DPE WORLDWIDE BY

DATE

TIME

8 / 12 / 14

AM / PM

1 CUSTOMER REFERENCE

ELS 304100307615



2 CONSIGNEE DETAILS

SRK - Consulting
Mentyn Kloofs office Park
Block A 291 Serde Ave
Faene Glen. P.O Box 35290
Mentlo Park
COUNTRY ATN -> Kocco Groves
PHONE 012-211 9521 box 808940

CONSIGNEE

3 SERVICE TYPE (x)

IMPORTANT

NO SERVICE MARKED DEFAULTS TO EXPRESS SERVICE. ATTACH ORIGINAL & THREE COPIES OF COMMERCIAL INVOICES WITH THE NON-DOCUMENT PACKAGES FOR CUSTOMS PURPOSES.

- DOMESTIC OVERNIGHT
- INTL COURIER
- PRIORITY DELIVERY
- INTL AIR FREIGHT
- DOMESTIC SAME DAY
- INTL IMPORTS
- DOMESTIC AIR FREIGHT
- RE MAIL
- ROAD FREIGHT
- REMOTE DELIVERY

5 DESCRIPTION OF CONTENTS

NO. OF PIECES

WEIGHT KG

1

1

DIMENSION + SPECIAL INSTRUCTIONS

DECLARED VALUE FOR CUSTOMS

CUSTOMS DUTIES/TAXES PAYABLE BY CONSIGNEE

R

INSURANCE REQUIRED

Yes

No

PROOF OF DELIVERY (POD)

RECEIVER'S SIGNATURE

DATE

8 / 12 / 14

TIME

AM / PM

PRINT NAME (CAPITAL LETTERS VERY IMPORTANT)

CHARGES

WEIGHT CHARGE

OTHER

VAT

TOTAL



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA · 0001 · Environment House · 473 Steve Biko Road · Arcadia · PRETORIA
Tel (+ 27 12) 399 9372

Reference: 14/12/16/3/3/1/1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370

Enquiries: Ms Nyiko Nkosi

Tel: (012) 399 9392; (012) 320 7539 **E-mail:** nkosi@environment.gov.za

Ms Manda Hinsch
SRK Consulting
P.O.Box 35290
MENLOPARK
0102

Tel: 012 361 9821
Email: hinm@srk.co.za

Dear Ms Hinsch

APPLICATION FOR DEVIATION FROM THE PUBLIC PARTICIPATION PROCESS: PROPOSED REMEDIATION OR RECONSTRUCTION OF TEN (10) BRIDGES ALONG SKOENMAKERS RIVER, BLUE CRANE ROUTE LOCAL MUNICIPALITY IN THE EASTERN CAPE

The abovementioned application and letter dated 5 December 2014 requesting to deviate from the public participation process (PPP), the acknowledgement letter from this Department dated 06 January 2015 and additional information received via email on 02 February 2015 refer.

The purpose of this letter is to provide a response to your request to deviate from the public participation process as per Regulation 54 (5) of the 2010 Environmental Impact Assessment (EIA) Regulations, as stated in the acknowledgement letter dated 6 January 2015.

Based on the information provided by you, the proposed project entails the structural upgrade and repair of 10 river crossings along the Skoenmakers River in the Eastern Cape Province. Ten separate application forms have been lodged with the Department and they were allocated the following Department of Environmental Affairs EIA reference numbers:

- 14/12/16/3/3/1/1361- Rehabilitation of River crossing 1;
- 14/12/16/3/3/1/1362- Rehabilitation of River crossing 2;
- 14/12/16/3/3/1/1363- Rehabilitation of River crossing 3;
- 14/12/16/3/3/1/1364- Rehabilitation of River crossing 4;
- 14/12/16/3/3/1/1365- Rehabilitation of River crossing 5;
- 14/12/16/3/3/1/1366- Rehabilitation of River crossing 6;
- 14/12/16/3/3/1/1367- Rehabilitation of River crossing 7;
- 14/12/16/3/3/1/1368- Rehabilitation of River crossing 8;
- 14/12/16/3/3/1/1369- Rehabilitation of River crossing 9; and
- 14/12/16/3/3/1/1370- Rehabilitation of River crossing 10.

As a result, the Department of Water and Sanitation (DW&S) is requesting deviation in terms of Regulation 54 (5) of GN R543 of the EIA Regulations 2010, to conduct a single public participation process for the above mentioned 10 application forms. In addition, 10 separate Basic Assessment reports will be prepared and submitted to the Department.

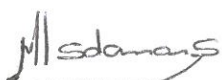
The Department has evaluated the submitted documents and based on the information provided, the Department hereby approves your request to conduct a single public participation process for all the submitted 10 application forms for the proposed project as indicated on your letter dated 02 February 2015, provided that the following is adhered to:

- The PPP followed, must comply with the requirements of Regulation 54 of GN R.543 of 18 June 2010;
- All documents to be published and distributed during the public participation process to interested and affected parties must make record of all 10 proposed river crossing upgrades;
- As much as a combined PPP will be followed where there are site specific comments raised these must be recorded and captured in the relevant project documents in relation to that specific site; and
- Comments from all relevant stakeholders and/ or commenting authorities must be submitted to the Department with the Final Basic Assessment Report (BAR).

In addition to the above, the Department notes that you have appointed Mr Rocco Gouws (farmer and landowner in the community) to distribute notification letters on behalf of SRK Consulting to adjacent land owners, as it is difficult for you to reach owners and occupiers due to poor or no communication mediums (post, telecommunication and email and limited cell phone reception) in the area. However, proof of consultation as per Regulation 54 (2) (b) (i) to (viii) must be submitted to the Department with the final BAR. Further to this Regulation 21(2) (a) of the EIA Regulations, 2010 places the responsibility of undertaking the public participation process on the appointed Environmental Assessment Practitioner (EAP) therefore should there be any issues that arise with regards to the notification of landowners, occupiers of land, adjacent landowners or adjacent occupiers of land the EAP will be held accountable and must address such issues accordingly. Any non-compliance with the requirements of Regulation 54 (2) (b) (i) to (viii) by Mr. Gouws will be considered a non-compliance by the applicant and the EAP appointed to manage the application process.

This Department reserves the right to revise or withdraw this letter or to request further information from you should new information on this matter become available.

Yours faithfully



Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs
Letter signed by: Ms Milicent Solomons
Designation: Director: Integrated Environmental Authorisations
Date: 26/02/2015.

CC:	Mr Dewald Coetzee	Department of Water and Sanitation	Tel: 041 508 9700	Email: coetzeeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Tel: 043 605 7051	Email: Gerry.pienaar@dedea.gov.za



30 January 2015
472748

Ms Nyiko Nkosi
Dept. of Environmental Affairs
Environment House
473 Steve Biko,
Arcadia, Pretoria,
0083

Attention: Ms Nyiko Nkosi

Dear Ms Nkosi

URGENT REQUEST FOR ADDITIONAL INFORMATION FOR PROPOSED UPGRADE OF SKOENMAKERS RIVER CROSSINGS

In reference to your email received 29 January 2015, regarding the request by SRK Consulting (Pty) Ltd (SRK) to provide detailed information of the deviation on how we are going to conduct a single Public Participation Process (PPP) as per the requirement of chapter 54 of GN R.543 of 2010, as well as details on the distances of the river crossings, we would like to provide the following information. The following applications references refer.

Crossings	Reference no
1	14/2/16/3/3/1/1361
2	14/2/16/3/3/1/1362
3	14/2/16/3/3/1/1363
4	14/2/16/3/3/1/1364
5	14/2/16/3/3/1/1365
6	14/2/16/3/3/1/1366
7	14/2/16/3/3/1/1367
8	14/2/16/3/3/1/1368
9	14/2/16/3/3/1/1369
10	14/2/16/3/3/1/1370

1. Deviation from Public Participation

SRK Consulting (Pty) Ltd (SRK) would like to conduct a SINGLE combined public participation process for the remediation and or reconstruction of ten (10) bridges along the Skoenmakers River. A total of ten (10) Basic Assessments will be submitted as agreed with DEA (competent authority). There is an existing

Partners AH Bracken, MJ Braune, JM Brown, CD Dalglish, JR Dixon, DM Duthé, BM Engelsman, R Gardiner, GC Howell, WC Joughin, DA Kilian, PR Labrum, B Liber, DJ Mahlangu, RRW McNeill, HAC Meintjes, JA Middleton, MJ Morris, WA Naismith, GP Nel, VS Reddy, M Ristic, PN Rosewarne, PE Schmidt, PJ Shepherd, MJ Sim, VM Simposya, AA Smithen, HFJ Theart, KM Uderstadt, AT van Zyl, DJ Venter, ML Wertz, MD Wanless, A Wood

Directors AJ Barrett, JR Dixon, PR Labrum, V Maharaj, DJ Mahlangu, VS Reddy, PE Schmidt, PJ Shepherd

Associate Partners R Armstrong, N Brien, L Coetser, M Hirsch, AH Kirsten, Dr LH Kirsten, S Kisten, JA Lake, V Maharaj, SA McDonald, RD O'Brien, T Shepherd, JJ Slabbert, D Visser

Consultants AC Burger, *BSc(Hons)*; JAC Cowan, *PrSciNat, BSc(Hons)*; JH de Beer, *PrSci Nat, MSc*; T Hart, *MA, TTHD*; GA Jones, *PrEng, PhD*; TR Stacey, *PrEng, DSc*; OKH Steffen, *PrEng, PhD*; PJ Terbrugge, *PrSciNat, MSc*; DW Warwick, *PrSciNat, BSc(Hons)*

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Pietermaritzburg + 27 (0) 33 347 5069
Port Elizabeth + 27 (0) 41 509 4800
Pretoria + 27 (0) 12 361 9821
Rustenburg + 27 (0) 14 594 1280
Accra + 23 (3) 24 485 0928
Harare + 263 (4) 49 6182
Lubumbashi + 243 (0) 81 999 9775

Group Offices:

Africa
Asia
Australia
Europe
North America
South America



servitude which spans from “Bridge 1 – Palmietfontein” to “Bridge10 – Fontein Plaats with rights owned by DWS.

SRK would also like to apply for deviation, from the public participation process applied for in terms of Regulation 54(5) of GN R. 543. Details of the request for deviation include in Table 1-1.

Table 1-1: Public Participation Regulations Table.

REGULATION NUMBER	REGULATION	REASON FOR DEVIATION	DEVIATION
GN R. 543 Item 54(2)(b) (i) (ii) (iii):	The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by giving written notice to— (i) the owner or person in control of the land and of any alternative land where the activity is to be undertaken if the applicant is not the owner or person in control of the land; (ii) the occupiers of the site where the activity is to be undertaken and of any alternative site where the activity is to be undertaken; (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken.	It will be difficult to reach owners and occupiers due to poor or no communication mediums (post, telecommunication and email and limited cell phone reception) in the area.	There is an existing servitude which spans from “Bridge 1 – Palmietfontein” to “Bridge10 – V with rights owned by DWS. SRK Consulting is in agreement with Mr Rocco Gouws (farmer and landowner in the community) to distribute notification letters on behalf of SRK Consulting to adjacent land owners. Each farmer will be responsible to notify all adjacent land occupiers A letter of agreement has been signed with Mr. Gouws and can be found in Appendix E2. Adjacent landowners have signed a register in receipt for the notification (please see Annexure E3). Notification letters will be sent to landowners upon availability of the Draft BAR and will also include an invitation and details of the public open day.

2. Distances between river crossings

Detailed information regarding the distance between rivers crossing 1 until river crossing 10 in provided in Table 1-2.

Table 1-2: Distance between rivers crossing 1 until river crossing 10.

DESCRIPTION	TAG	FEAT TYPE	LENGTH
Bridge 1-2	Skoenmakersrivier	Non-Perennial Center Line	3.0km

Bridge 2-3	Skoenmakersrivier	Non-Perennial Center Line	4.0km
Bridge 3-4	Skoenmakersrivier	Non-Perennial Center Line	4.5km
Bridge 4-5	Skoenmakersrivier	Non-Perennial Center Line	4.7km
Bridge 5-6	Skoenmakersrivier	Non-Perennial Center Line	1.0km
Bridge 6-7	Skoenmakersrivier	Non-Perennial Center Line	0.47km
Bridge 7-8	Skoenmakersrivier	Non-Perennial Center Line	6.8km
Bridge 8-9	Skoenmakersrivier	Non-Perennial Center Line	7.8km
Bridge 9-10	Skoenmakersrivier	Non-Perennial Center Line	1.4km
TOTAL			33.7km

Yours faithfully,

SRK Consulting (South Africa) (Pty) Ltd

SRK Consulting - Certified Electronic Signature

 **srk consulting**
4721 452/422/22 Center
2293-7802/1239-H-NM
This signature has been printed digitally. The Author has given their permission for its use for this document. The details are stored in the SRK Signature Database

Manda Hinsch Pr. Sci Nat
Associate Partner/Principal Scientist

Appendix E3: Comments And Response Report

**FINAL BASIC ASSESSMENT REPORTS FOR THE UPGRADE OF TEN RIVER CROSSINGS SITUATED ALONG THE SKOENMAKERS RIVER, EASTERN CAPE
COMMENTS AND RESPONSES REPORT**

COMMENTS, ISSUES AND SUGGESTIONS RAISED	COMMENTATER	ORGANISATION/ COMMUNITY	DATE	SOURCE	RESPONSE
GENERAL CONCERNS					
How long will it take to build the Coffe dams?	Mr Rocco Gouws	Willem Greeff W D E S Greef Family Trust Boerlaagte 245 (Bridge 11) Portion 7	15 April 2015	Public Open House	The dam will take approximately two to three months to build.
Please try to arrange for it to be built during winter					Yes, we also see this as the best time taking into consideration the rainfall patterns in the area.
Will the height of the Bridges more or less remain the same?					We tried to keep the height the same there are some of the bridges that are slightly higher.
If the Bridges remain the same height, it is wider?					Yes, it is wider.
How wide will the servitudes be?	Mr Bernardus Beyers	Fonteins Plaats 246 (Bridge 10) Portion 6			It will be approximately 80meters wide.
How far outside the servitude lines is DWS (Department of Water Affairs) planning to do this work					It has not been confirmed how far outside of the servitude lines where the river would be, since it still has to be discussed and that will be done about it.
A major problem is that we believe that the servitudes lines have been washed away. DWS will have to ensure that new servitudes applied for.					(Presented on a map) Both 100 year and 50year flood line studies were done for each affected landowner. If we look at where the river runs currently; we are able to see that there are very few places where the river falls outside of the servitude lines. This is at approximately six places where it falls outside of the servitude.
There is a major problem on the river banks. It will not be long before the wall is completely destroyed. If one looks at the current river banks, it will not be long before outside of the servitude. As a result of the river having changed its course over the past few years, since the then DWS implemented the transfer scheme, water has been flooding my lands rendering the area mushy. I originally had 60 Ha of which I now can only use 40 Ha. The flooded land lies beyond the servitude originally negotiated with my Dad. This is resulting in a devaluation of my property. My concern is not with the construction of the bridges but about my land use. There is a reduction in value of land/property therefore DWS need to make the servitudes bigger or rehabilitate the affected portions for me to use that portion of land.					The additional water which flows beyond the servitude is additional run-off and is not the result of the transfer scheme. This would have flooded your property in any case during major rains.
The bridge blocked the water, causing the soil is waterlogged under the masses of water. This causes the river is affected further and soil from being washed away.					It will be reported to DWS. They will have to be notified, although this does not impact on the bridge.

Appendix E4: Proof of Authority Notification



environmental affairs

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REPUBLIC OF SOUTH AFRICA

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Tel (+ 27 12) 399 9372

DEA Reference: 14/12/16/3/3/1/1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369 and 1370

Enquiries: Mr Herman Alberts

Tel: 012 399 9371 **E-mail:** HAlberts@environment.gov.za

Ms Donn  Chetty
SRK Consulting (South Africa) (Pty) Ltd
PO Box 35290
MENLO PARK
0102

Tel: 012 361 9821
E-Mail: pretoria@srk.co.za

PER MAIL / E-MAIL

Dear Ms Chetty

ACKNOWLEDGEMENT OF RECEIPT OF DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED UPGRADE OF TEN RIVER CROSSINGS SITUATED ALONG THE SKOENMAKERS RIVERS, EASTERN CAPE PROVINCE

The Department confirms having received the draft Basic Assessment Reports dated 30 March 2015 for the above-mentioned projects on 08 April 2015.

You are hereby reminded that the activity may not commence prior to an Environmental Authorisation being granted by the Department.

Yours sincerely

Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs
Letter signed by: Mr Herman Alberts
Designation: Environmental Officer: Integrated Environmental Authorisations
Date: 22 | 04 | 2015



environmental affairs

Department:
Environmental Affairs
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DEA Reference: 14/12/16/3/3/1/1361

Enquiries: Ms Mmatlala Rabothata

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Manda Hinsch
SRK Consulting
PO Box 35290
MENLOPARK
0102

Fax: 012 361 9912
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Email: hinm@srk.co.za

PER FACSIMILE / MAIL

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (BASIC ASSESSMENT PROCESS) FOR THE PROPOSED STRUCTURAL UPGRADE AND REPAIR OF 10 RIVER CROSSINGS ALONG THE SKOENMAKERS RIVER – REHABILITATION OF RIVER CROSSING 1 WITHIN BLUE CRANE ROUTE LOCAL MUNICIPALITY IN EASTERN CAPE PROVINCE

The Department confirms having received the application form with motivation for exclusion from fee payment, project map, project schedule, Declaration of Applicant and Declaration of EAP for environmental authorisation for the abovementioned project submitted by you on 5 December 2014. You have submitted these documents to comply with the Environmental Impact Assessment Regulations, 2010. The application is accepted.

Please note that the Department will respond to the request for deviation to conduct a single combined public participation process for the remediation and or reconstruction of 10 bridges along the Skoenmakers River in due course.

In addition, please consider the following during compilation of reports for this application for environmental authorisation:

- Please be advised that in terms of the EIA Regulations and NEMA the investigation of alternatives is mandatory. Alternatives must therefore be identified, investigated to determine if they are feasible and reasonable. It is also mandatory to investigate and assess the option of not proceeding with the proposed activity (the "no-go" option).
- A detailed and complete EMPr must be submitted with the BAR. This EMPr must not provide recommendations but must indicate actual remediation activities which will be binding on the applicant. Without this EMPr the documents will be regarded as not meeting the requirements and will be returned to the applicant for correction.
- The applicant/EAP is required to inform this Department in writing upon submission of any draft report, of the contact details of the relevant State Departments (that administer laws relating to a matter affecting the environment) to whom copies of the draft report were

submitted for comment. Upon receipt of this confirmation, this Department will in accordance with Section 24O(2) & (3) of the National Environmental Management Act, 1998 (Act 107 of 1998) inform the relevant State Departments of the commencement date of the 40 day commenting period, or 60 days in the case of the Department of Water Affairs for waste management activities which also require a licence in terms of the National Water Act, 1998 (Act 36 of 1998).

- Should it be necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999), please submit the necessary application to SAHRA or the relevant provincial heritage agency and submit proof thereof with the Basic Assessment Report. The relevant heritage agency should also be involved during the public participation process and have the opportunity to comment on all the reports to be submitted to this Department.

You are requested to submit two (2) electronic copies (the main report must be separated from the Appendices (each appendix saved separately) (CD/DVD) and two (2) hard copies of both the Draft and Final Report to the Department. The hard copies must be double-sided printed; and must be ring binded.

The EAP must, in order to give effect to regulation 56 (2), before submitting the Basic Assessment Report to the Department give registered interested and affected parties access to, and an opportunity to comment on the report in writing.

In terms of regulation 67 of the EIA Regulations, 2010 this application will lapse if the applicant (or the EAP on behalf of the applicant) fails to comply with a requirement in terms of the Regulations for a period of six months after having submitted the application, unless the reasons for failure have been communicated to and accepted by this Department.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours sincerely


Mr Ishaam Abader

**Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement
Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

CC:	Mr Dewald Coetzee	Department of Water & Sanitation (DWS)	Fax: 041 586 0379	Email: CoetzeeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedia.gov.za
	Mr Thabiso Klaas	Blue Crane Route Local Municipality	Fax: 042 243 0633	Email: mmanager@bcm.gov.za



environmental affairs

Department:
Environmental Affairs
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DEA Reference: 14/12/16/3/3/1/1362

Enquiries: Ms Mmatlala Rabothata

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PER FACSIMILE / MAIL

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (BASIC ASSESSMENT PROCESS) FOR THE PROPOSED STRUCTURAL UPGRADE AND REPAIR OF 10 RIVER CROSSINGS ALONG THE SKOENMAKERS RIVER – REHABILITATION OF RIVER CROSSING 2 WITHIN BLUE CRANE ROUTE LOCAL MUNICIPALITY IN EASTERN CAPE PROVINCE

The Department confirms having received the application form with motivation for exclusion from fee payment, project map, project schedule, Declaration of Applicant and Declaration of EAP for environmental authorisation for the abovementioned project submitted by you on 5 December 2014. You have submitted these documents to comply with the Environmental Impact Assessment Regulations, 2010. The application is accepted.

Please note that the Department will respond to the request for deviation to conduct a single combined public participation process for the remediation and or reconstruction of 10 bridges along the Skoenmakers River in due course.

In addition, please consider the following during compilation of reports for this application for environmental authorisation:

- Please be advised that in terms of the EIA Regulations and NEMA the investigation of alternatives is mandatory. Alternatives must therefore be identified, investigated to determine if they are feasible and reasonable. It is also mandatory to investigate and assess the option of not proceeding with the proposed activity (the "no-go" option).
- A detailed and complete EMPr must be submitted with the BAR. This EMPr must not provide recommendations but must indicate actual remediation activities which will be binding on the applicant. Without this EMPr the documents will be regarded as not meeting the requirements and will be returned to the applicant for correction.
- The applicant/EAP is required to inform this Department in writing upon submission of any draft report, of the contact details of the relevant State Departments (that administer laws relating to a matter affecting the environment) to whom copies of the draft report were

submitted for comment. Upon receipt of this confirmation, this Department will in accordance with Section 24O(2) & (3) of the National Environmental Management Act, 1998 (Act 107 of 1998) inform the relevant State Departments of the commencement date of the 40 day commenting period, or 60 days in the case of the Department of Water Affairs for waste management activities which also require a licence in terms of the National Water Act, 1998 (Act 36 of 1998).

- Should it be necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999), please submit the necessary application to SAHRA or the relevant provincial heritage agency and submit proof thereof with the Basic Assessment Report. The relevant heritage agency should also be involved during the public participation process and have the opportunity to comment on all the reports to be submitted to this Department.

You are requested to submit two (2) electronic copies (the main report must be separated from the Appendices (each appendix saved separately) (CD/DVD) and two (2) hard copies of both the Draft and Final Report to the Department. The hard copies must be double-sided printed; and must be ring binded.

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You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours sincerely


Mr Ishaam Abader

Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement

Department of Environmental Affairs:

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

CC:	Mr Dewald Coetsee	Department of Water & Sanitation (DWS)	Fax: 041 586 0379	Email: CoetseeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedia.gov.za
	Mr Thabiso Klaas	Blue Crane Route Local Municipality	Fax: 042 243 0633	Email: mmanager@bcm.gov.za



environmental affairs

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Fax: 012 361 9912
Tel: 012 361 9821
Email: hinm@srk.co.za

PER FACSIMILE / MAIL

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (BASIC ASSESSMENT PROCESS) FOR THE PROPOSED STRUCTURAL UPGRADE AND REPAIR OF 10 RIVER CROSSINGS ALONG THE SKOENMAKERS RIVER – REHABILITATION OF RIVER CROSSING 3 WITHIN BLUE CRANE ROUTE LOCAL MUNICIPALITY IN EASTERN CAPE PROVINCE

The Department confirms having received the application form with motivation for exclusion from fee payment, project map, project schedule, Declaration of Applicant and Declaration of EAP for environmental authorisation for the abovementioned project submitted by you on 5 December 2014. You have submitted these documents to comply with the Environmental Impact Assessment Regulations, 2010. The application is accepted.

Please note that the Department will respond to the request for deviation to conduct a single combined public participation process for the remediation and or reconstruction of 10 bridges along the Skoenmakers River in due course.

In addition, please consider the following during compilation of reports for this application for environmental authorisation:

- Please be advised that in terms of the EIA Regulations and NEMA the investigation of alternatives is mandatory. Alternatives must therefore be identified, investigated to determine if they are feasible and reasonable. It is also mandatory to investigate and assess the option of not proceeding with the proposed activity (the "no-go" option).
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submitted for comment. Upon receipt of this confirmation, this Department will in accordance with Section 24O(2) & (3) of the National Environmental Management Act, 1998 (Act 107 of 1998) inform the relevant State Departments of the commencement date of the 40 day commenting period, or 60 days in the case of the Department of Water Affairs for waste management activities which also require a licence in terms of the National Water Act, 1998 (Act 36 of 1998).

- Should it be necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999), please submit the necessary application to SAHRA or the relevant provincial heritage agency and submit proof thereof with the Basic Assessment Report. The relevant heritage agency should also be involved during the public participation process and have the opportunity to comment on all the reports to be submitted to this Department.

You are requested to submit two (2) electronic copies (the main report must be separated from the Appendices (each appendix saved separately) (CD/DVD) and two (2) hard copies of both the Draft and Final Report to the Department. The hard copies must be double-sided printed; and must be ring binded.

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You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours sincerely



Mr Ishaam Abader

**Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement
Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

CC:	Mr Dewald Coetzee	Department of Water & Sanitation (DWS)	Fax: 041 586 0379	Email: CoetzeeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedea.gov.za
	Mr Thabiso Klaas	Blue Crane Route Local Municipality	Fax: 042 243 0633	Email: mmanager@bcm.gov.za



environmental affairs

Department:
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DEA Reference: 14/12/16/3/3/1/1364

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PER FACSIMILE / MAIL

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (BASIC ASSESSMENT PROCESS) FOR THE PROPOSED STRUCTURAL UPGRADE AND REPAIR OF 10 RIVER CROSSINGS ALONG THE SKOENMAKERS RIVER – REHABILITATION OF RIVER CROSSING 4 WITHIN BLUE CRANE ROUTE LOCAL MUNICIPALITY IN EASTERN CAPE PROVINCE

The Department confirms having received the application form with motivation for exclusion from fee payment, project map, project schedule, Declaration of Applicant and Declaration of EAP for environmental authorisation for the abovementioned project submitted by you on 5 December 2014. You have submitted these documents to comply with the Environmental Impact Assessment Regulations, 2010. The application is accepted.

Please note that the Department will respond to the request for deviation to conduct a single combined public participation process for the remediation and or reconstruction of 10 bridges along the Skoenmakers River in due course.

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 Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

CC:	Mr Dewald Coetzee	Department of Water & Sanitation (DWS)	Fax: 041 586 0379	Email: CoetseeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedea.gov.za
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DEA Reference: 14/12/16/3/3/1/1365

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PER FACSIMILE / MAIL

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Mr Ishaam Abader

**Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement
Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

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	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedea.gov.za
	Mr Thabiso Klaas	Blue Crane Route Local Municipality	Fax: 042 243 0633	Email: mmanager@bcm.gov.za



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DEA Reference: 14/12/16/3/3/1/1366

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PER FACSIMILE / MAIL

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**Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement
 Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

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	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedia.gov.za
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environmental affairs

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DEA Reference: 14/12/16/3/3/1/1367

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PO Box 35290
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PER FACSIMILE / MAIL

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**Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement
 Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

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DEA Reference: 14/12/16/3/3/1/1368

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Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

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DEA Reference: 14/12/16/3/3/1/1369

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Department of Environmental Affairs:

Letter signed by: Ms Mmatlala Rabothata

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Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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DEA Reference: 14/12/16/3/3/1/1370

Enquiries: Ms Mmatlala Rabothata

Tel: 012 399 9372 E-mail: mrabothata@environment.gov.za

Manda Hinsch
SRK Consulting
PO Box 35290
MENLOPARK
0102

Fax: 012 361 9912
Tel: 012 361 9821
Email: hinm@srk.co.za

PER FACSIMILE / MAIL

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (BASIC ASSESSMENT PROCESS) FOR THE PROPOSED STRUCTURAL UPGRADE AND REPAIR OF 10 RIVER CROSSINGS ALONG THE SKOENMAKERS RIVER – REHABILITATION OF RIVER CROSSING 10 WITHIN BLUE CRANE ROUTE LOCAL MUNICIPALITY IN EASTERN CAPE PROVINCE

The Department confirms having received the application form with motivation for exclusion from fee payment, project map, project schedule, Declaration of Applicant and Declaration of EAP for environmental authorisation for the abovementioned project submitted by you on 5 December 2014. You have submitted these documents to comply with the Environmental Impact Assessment Regulations, 2010. The application is accepted.

Please note that the Department will respond to the request for deviation to conduct a single combined public participation process for the remediation and or reconstruction of 10 bridges along the Skoenmakers River in due course.

In addition, please consider the following during compilation of reports for this application for environmental authorisation:

- Please be advised that in terms of the EIA Regulations and NEMA the investigation of alternatives is mandatory. Alternatives must therefore be identified, investigated to determine if they are feasible and reasonable. It is also mandatory to investigate and assess the option of not proceeding with the proposed activity (the "no-go" option).
- A detailed and complete EMPr must be submitted with the BAR. This EMPr must not provide recommendations but must indicate actual remediation activities which will be binding on the applicant. Without this EMPr the documents will be regarded as not meeting the requirements and will be returned to the applicant for correction.
- The applicant/EAP is required to inform this Department in writing upon submission of any draft report, of the contact details of the relevant State Departments (that administer laws relating to a matter affecting the environment) to whom copies of the draft report were

submitted for comment. Upon receipt of this confirmation, this Department will in accordance with Section 24O(2) & (3) of the National Environmental Management Act, 1998 (Act 107 of 1998) inform the relevant State Departments of the commencement date of the 40 day commenting period, or 60 days in the case of the Department of Water Affairs for waste management activities which also require a licence in terms of the National Water Act, 1998 (Act 36 of 1998).

- Should it be necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999), please submit the necessary application to SAHRA or the relevant provincial heritage agency and submit proof thereof with the Basic Assessment Report. The relevant heritage agency should also be involved during the public participation process and have the opportunity to comment on all the reports to be submitted to this Department.

You are requested to submit two (2) electronic copies (the main report must be separated from the Appendices (each appendix saved separately) (CD/DVD) and two (2) hard copies of both the Draft and Final Report to the Department. The hard copies must be double-sided printed; and must be ring binded.

The EAP must, in order to give effect to regulation 56 (2), before submitting the Basic Assessment Report to the Department give registered interested and affected parties access to, and an opportunity to comment on the report in writing.

In terms of regulation 67 of the EIA Regulations, 2010 this application will lapse if the applicant (or the EAP on behalf of the applicant) fails to comply with a requirement in terms of the Regulations for a period of six months after having submitted the application, unless the reasons for failure have been communicated to and accepted by this Department.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.

Yours sincerely


Mr Ishaam Abader

**Deputy Director-General: Legal, Authorisations, Compliance, and Enforcement
Department of Environmental Affairs:**

Letter signed by: Ms Mmatlala Rabothata

Designation: Environmental Officer: Integrated Environmental Authorisations

Date: 06/01/2015

CC:	Mr Dewald Coetzee	Department of Water & Sanitation (DWS)	Fax: 041 586 0379	Email: CoetzeeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Fax: 043 605 7300	Email: Gerry.pienaar@dedea.gov.za
	Mr Thabiso Klaas	Blue Crane Route Local Municipality	Fax: 042 243 0633	Email: mmanager@bcm.gov.za

Appendix E5: I&AP Register

I&AP REGISTER - 472748 SKOENMAKERS REHAB		
NAME & SURNAME	COMPANY	POSITION/FARM PORTION
AFFECTED LAND OWNER		
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Volkers Rivier 244 (Bridge 12) Portion 3
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Volkers Rivier 244 (Bridge 11) Portion 7
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Fonteins Plaats 246 (Bridge 10) Portion 6
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Fonteins Plaats 246 (Bridge 9) Portion 4
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Geelhoutboom 247 (Bridge 8) Portion 0
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Kruis Rivier 248 (Bridge 7) Portion 8
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Kruis Rivier 248 (Bridge 6) Portion 5
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Kruis Rivier 248 (Bridge 6) Portion 6
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Kruis Rivier 248 (Bridge 5) Portion 9
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Kruis Rivier 248 (Bridge 4) Portion 4
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Palmietfontein 250 (Bridge 3) Portion 1
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Palmietfontein 407 (Bridge 2) Portion 1
Dewald Coetzee	Department Of Water & Sanitation (DWS)	Palmietfontein 407 (Bridge 1) Portion 3
ADJACENT LANDOWNERS		
Nomvuselelo Songelwa	South African National Parks	Volkers Rivier 244 (Bridge 12) Portion 3
Willem Greeff	W D E S Greef Family Trust	Volkers Rivier 244 (Bridge 11) Portion 7
Greyling Bernardus Beyers	Greyling Bernardus Beyers	Fonteins Plaats 246 (Bridge 10) Portion 6
Willem Greeff	W D E S Greef Family Trust	Fonteins Plaats 246 (Bridge 9) Portion 4
Francios Nell	Geelhoutboom Trust	Geelhoutboom 247 (Bridge 8) Portion 0
Gerhard Delange	Inqo Prop Pty Ltd	Kruis Rivier 248 (Bridge 7) Portion 8
Bosch Raoul Riaan	Bosch Raoul Riaan	Kruis Rivier 248 (Bridge 6) Portion 5
Greyling Bernardus Beyers	Greyling Bernardus Beyers	Kruis Rivier 248 (Bridge 6) Portion 6
Rocco Gouws	S Gouws Baniki Trust	Kruis Rivier 248 (Bridge 5) Portion 9
Rocco Gouws	S Gouws Baniki Trust	Kruis Rivier 248 (Bridge 4) Portion 4
Chris Greeff	Chris Greef Family Trust	Palmietfontein 250 (Bridge 3) Portion 1
Carel Van Gend		Palmietfontein 407 (Bridge 2) Portion 1
Rauben Grouse		Palmietfontein 407 (Bridge 1) Portion 3
Willem Greeff	W D E S Greef Family Trust	Boerlaagte 245 (Bridge 11) Portion 7
Rocco Gouws	S. Gouws Family Trust	Populierplaas 248
Rocco Gouws	S. Gouws Family Trust	Middelwater 248
COMPETENT AUTHORITIES		
Ishaam Abader	Department of Environmental Affairs	Deputy Director-General Legal Authorisations and Compliance Inspectorate
COMMENTING AUTHORITIES		
Ms P Makhanya	Department Of Water & Sanitation (DWS) - Eastern Cape	Chief Director: Eastern Cape
M. Jonas	Department of Economic Development and Environmental Affairs	MEC

I&AP REGISTER - 472748 SKOENMAKERS REHAB		
NAME & SURNAME	COMPANY	POSITION/FARM PORTION
PROVINCIAL GOVERNMENT		
Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism (DEDEAT)	Environmental Impact Management – Senior Manager
LOCAL MUNICIPALITY		
Mr Thabiso Klaas	Blue Crane Route Local Municipality	Municipal Manager
DISTRICT MUNICIPALITY		
Cr Khunjuzwa Eunice Kekana	Cacadu District Municipality	Executive Major/Municipal Head
T Pillay	Cacadu District Municipality	Municipal Manager
WARD COUNCILLOR		
Ms Z Funiselo	Ward 6	Ward Councillor
OTHER ORGANS OF STATE / PARASTATALS		
	Addo Elephant National Park	
MEDIA		
Amilia Kloppers	Herald	Representative
Jeanette Kleynveld	Die Burger	Representative
BUSINESS AND COMMERCE		
C Delange	Kuzuko Lodge	Manager
Henry Flats	Henry's Flats Aerodrome	Representative
	Bedrofontein Darlington Lake Lodge	
PUBLIC PLACES		
Henry Greff	Bracefield UCC Primary School	Landowner
Yoandie	Kronenhoff Guesthouse	Administrator
AO Duisel	Wolwefontein Police Station	Inspetor
NON GOVERNMENTAL ORGANISATION		
Dr Howard Hendricks	WESSA (the Wildlife and Environment Society of South Africa)	Director: Conservation
Dr Mark Brown	The Nature's Valley Trust	Program Director
Evan kritzinger	Farmers Association	Chairperson
Andrew Muir	Wilderness Foundation	Executive Director of the Wilderness Foundation
OTHER I & APS		
Andile Nshudu	IGR	Representative
Leane Rosley	Ward 2	Ward Councillor
PROJECT TEAM		
Dewald Coetzee	Department of Water & Sanitation (DWS)	Director: Southern Operations - National Water Resource Infrastructure Branch

Appendix E6: Correspondence



30 January 2015
472748

Ms Nyiko Nkosi
Dept. of Environmental Affairs
Environment House
473 Steve Biko,
Arcadia, Pretoria,
0083

Attention: Ms Nyiko Nkosi

Dear Ms Nkosi

URGENT REQUEST FOR ADDITIONAL INFORMATION FOR PROPOSED UPGRADE OF SKOENMAKERS RIVER CROSSINGS

In reference to your email received 29 January 2015, regarding the request by SRK Consulting (Pty) Ltd (SRK) to provide detailed information of the deviation on how we are going to conduct a single Public Participation Process (PPP) as per the requirement of chapter 54 of GN R.543 of 2010, as well as details on the distances of the river crossings, we would like to provide the following information. The following applications references refer.

Crossings	Reference no
1	14/2/16/3/3/1/1361
2	14/2/16/3/3/1/1362
3	14/2/16/3/3/1/1363
4	14/2/16/3/3/1/1364
5	14/2/16/3/3/1/1365
6	14/2/16/3/3/1/1366
7	14/2/16/3/3/1/1367
8	14/2/16/3/3/1/1368
9	14/2/16/3/3/1/1369
10	14/2/16/3/3/1/1370

1. Deviation from Public Participation

SRK Consulting (Pty) Ltd (SRK) would like to conduct a SINGLE combined public participation process for the remediation and or reconstruction of ten (10) bridges along the Skoemakers River. A total of ten (10) Basic Assessments will be submitted as agreed with DEA (competent authority). There is an existing

Partners AH Bracken, MJ Braune, JM Brown, CD Dalglish, JR Dixon, DM Duthé, BM Engelsman, R Gardiner, GC Howell, WC Joughin, DA Kilian, PR Labrum, B Liber, DJ Mahlangu, RRW McNeill, HAC Meintjes, JA Middleton, MJ Morris, WA Naismith, GP Nel, VS Reddy, M Ristic, PN Rosewarne, PE Schmidt, PJ Shepherd, MJ Sim, VM Simposya, AA Smithen, HFJ Theart, KM Uderstadt, AT van Zyl, DJ Venter, ML Wertz, MD Wanless, A Wood

Directors AJ Barrett, JR Dixon, PR Labrum, V Maharaj, DJ Mahlangu, VS Reddy, PE Schmidt, PJ Shepherd

Associate Partners R Armstrong, N Brien, L Coetser, M Hirsch, AH Kirsten, Dr LH Kirsten, S Kisten, JA Lake, V Maharaj, SA McDonald, RD O'Brien, T Shepherd, JJ Slabbert, D Visser

Consultants AC Burger, *BSc(Hons)*; JAC Cowan, *PrSciNat, BSc(Hons)*; JH de Beer, *PrSci Nat, MSc*; T Hart, *MA, TTHD*; GA Jones, *PrEng, PhD*; TR Stacey, *PrEng, DSc*; OKH Steffen, *PrEng, PhD*; PJ Terbrugge, *PrSciNat, MSc*; DW Warwick, *PrSciNat, BSc(Hons)*

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Pietmaritzburg + 27 (0) 33 347 5069
Port Elizabeth + 27 (0) 41 509 4800
Pretoria + 27 (0) 12 361 9821
Rustenburg + 27 (0) 14 594 1280
Accra + 23 (3) 24 485 0928
Harare + 263 (4) 49 6182
Lubumbashi + 243 (0) 81 999 9775

Group Offices:

Africa
Asia
Australia
Europe
North America
South America



servitude which spans from “Bridge 1 – Palmietfontein” to “Bridge10 – Fontein Plaats with rights owned by DWS.

SRK would also like to apply for deviation, from the public participation process applied for in terms of Regulation 54(5) of GN R. 543. Details of the request for deviation include in Table 1-1.

Table 1-1: Public Participation Regulations Table.

REGULATION NUMBER	REGULATION	REASON FOR DEVIATION	DEVIATION
GN R. 543 Item 54(2)(b) (i) (ii) (iii):	The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by giving written notice to— (i) the owner or person in control of the land and of any alternative land where the activity is to be undertaken if the applicant is not the owner or person in control of the land; (ii) the occupiers of the site where the activity is to be undertaken and of any alternative site where the activity is to be undertaken; (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken.	It will be difficult to reach owners and occupiers due to poor or no communication mediums (post, telecommunication and email and limited cell phone reception) in the area.	There is an existing servitude which spans from “Bridge 1 – Palmietfontein” to “Bridge10 – V with rights owned by DWS. SRK Consulting is in agreement with Mr Rocco Gouws (farmer and landowner in the community) to distribute notification letters on behalf of SRK Consulting to adjacent land owners. Each farmer will be responsible to notify all adjacent land occupiers A letter of agreement has been signed with Mr. Gouws and can be found in Appendix E2. Adjacent landowners have signed a register in receipt for the notification (please see Annexure E3). Notification letters will be sent to landowners upon availability of the Draft BAR and will also include an invitation and details of the public open day.

2. Distances between river crossings

Detailed information regarding the distance between rivers crossing 1 until river crossing 10 in provided in Table 1-2.

Table 1-2: Distance between rivers crossing 1 until river crossing 10.

DESCRIPTION	TAG	FEAT TYPE	LENGTH
Bridge 1-2	Skoenmakersrivier	Non-Perennial Center Line	3.0km

Bridge 2-3	Skoenmakersrivier	Non-Perennial Center Line	4.0km
Bridge 3-4	Skoenmakersrivier	Non-Perennial Center Line	4.5km
Bridge 4-5	Skoenmakersrivier	Non-Perennial Center Line	4.7km
Bridge 5-6	Skoenmakersrivier	Non-Perennial Center Line	1.0km
Bridge 6-7	Skoenmakersrivier	Non-Perennial Center Line	0.47km
Bridge 7-8	Skoenmakersrivier	Non-Perennial Center Line	6.8km
Bridge 8-9	Skoenmakersrivier	Non-Perennial Center Line	7.8km
Bridge 9-10	Skoenmakersrivier	Non-Perennial Center Line	1.4km
TOTAL			33.7km

Yours faithfully,

SRK Consulting (South Africa) (Pty) Ltd

SRK Consulting - Certified Electronic Signature

 **srk consulting**
4721 452/422/22 Center
2293-7802/1239-H-NM
This signature has been printed digitally. The Author has given their permission for its use for this document. The details are stored in the SRK Signature Database

Manda Hinsch Pr. Sci Nat
Associate Partner/Principal Scientist



OFFICE OF THE REGIONAL LAND CLAIMS COMMISSIONER: EASTERN CAPE

13TH Floor, Caxton House, Terminus Street, East London P.O. BOX 1375, East London, 5200

Tel: (043) 700 6000 | Fax: (043) 743 3687

Enquiries: N. Pindani

Your Ref:

Attention: Vusi Masango

Tel: 012 361 9821

Fax: 012 361 9912

Dear Sir

Your letter has a reference.

PROPERTIES:

- 1. Palmietfontein 407, Portion 3- Blue Crane Route Local Municipality.**
- 2. Palmietfontein 407, Portion 1 – Blue Crane Route local Municipality.**
- 3. Palmietfontein 250, Portion 1 – Blue Crane Route Local Municipality.**
- 4. Kruis River 248, Portion 5 and 6 – Blue Crane Route Local Municipality.**
- 5. Kruis River 248, Portion 8 – Blue Crane Route Local Municipality.**
- 6. Geelhoutboom 247 Portion 0 – Blue Crane Route Local Municipality.**
- 7. Fonteins Plaats 246 Portion 4 – Blue Crane Route Local Municipality.**
- 8. Fonteins Plaats 246 Portion 6 – Blue Crane Route Local Municipality.**
- 9. Kruis Rivier 248 Portion 4 – Blue Crane Route Local Municipality.**
- 10. Kruis Rivier 248 Portion 9 – Blue Crane Route Local Municipality.**

This serves to confirm that there are no land claims registered on the abovementioned properties.

It must also be pointed out that some claims have been received for unspecified land and until such claims have been field visited it is not known to which portions of land it applies. Therefore the fact that a claim has not been registered specifically on the abovementioned properties at this stage does not preclude the fact that it might be included in the unspecified claims mentioned above.

Furthermore with the opening of the lodgment of the new claims, it might not be ruled out that a claim might be lodged against the property.

While reasonable care has been taken in ensuring the accuracy in the compilation of this information, the office of the Commissioner cannot be held accountable for any claims that may be brought as a result of legal actions based on the information thus given.

Please feel free to contact us for any clarification that may be required.

Yours faithfully



MR Z. PITYI

CHIEF DIRECTOR: REGIONAL LAND CLAIMS COMMISSIONER
EASTERN CAPE

DATE: 02-06-2015



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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Tel (+ 27 12) 399 9372

Reference: 14/12/16/3/3/1/1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370

Enquiries: Ms Nyiko Nkosi

Tel: (012) 399 9392; (012) 320 7539 **E-mail:** nkosi@environment.gov.za

Ms Manda Hinsch
SRK Consulting
P.O.Box 35290
MENLOPARK
0102

Tel: 012 361 9821
Email: hinm@srk.co.za

Dear Ms Hinsch

APPLICATION FOR DEVIATION FROM THE PUBLIC PARTICIPATION PROCESS: PROPOSED REMEDIATION OR RECONSTRUCTION OF TEN (10) BRIDGES ALONG SKOENMAKERS RIVER, BLUE CRANE ROUTE LOCAL MUNICIPALITY IN THE EASTERN CAPE

The abovementioned application and letter dated 5 December 2014 requesting to deviate from the public participation process (PPP), the acknowledgement letter from this Department dated 06 January 2015 and additional information received via email on 02 February 2015 refer.

The purpose of this letter is to provide a response to your request to deviate from the public participation process as per Regulation 54 (5) of the 2010 Environmental Impact Assessment (EIA) Regulations, as stated in the acknowledgement letter dated 6 January 2015.

Based on the information provided by you, the proposed project entails the structural upgrade and repair of 10 river crossings along the Skoenmakers River in the Eastern Cape Province. Ten separate application forms have been lodged with the Department and they were allocated the following Department of Environmental Affairs EIA reference numbers:

- 14/12/16/3/3/1/1361- Rehabilitation of River crossing 1;
- 14/12/16/3/3/1/1362- Rehabilitation of River crossing 2;
- 14/12/16/3/3/1/1363- Rehabilitation of River crossing 3;
- 14/12/16/3/3/1/1364- Rehabilitation of River crossing 4;
- 14/12/16/3/3/1/1365- Rehabilitation of River crossing 5;
- 14/12/16/3/3/1/1366- Rehabilitation of River crossing 6;
- 14/12/16/3/3/1/1367- Rehabilitation of River crossing 7;
- 14/12/16/3/3/1/1368- Rehabilitation of River crossing 8;
- 14/12/16/3/3/1/1369- Rehabilitation of River crossing 9; and
- 14/12/16/3/3/1/1370- Rehabilitation of River crossing 10.

As a result, the Department of Water and Sanitation (DW&S) is requesting deviation in terms of Regulation 54 (5) of GN R543 of the EIA Regulations 2010, to conduct a single public participation process for the above mentioned 10 application forms. In addition, 10 separate Basic Assessment reports will be prepared and submitted to the Department.

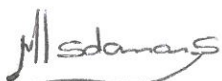
The Department has evaluated the submitted documents and based on the information provided, the Department hereby approves your request to conduct a single public participation process for all the submitted 10 application forms for the proposed project as indicated on your letter dated 02 February 2015, provided that the following is adhered to:

- The PPP followed, must comply with the requirements of Regulation 54 of GN R.543 of 18 June 2010;
- All documents to be published and distributed during the public participation process to interested and affected parties must make record of all 10 proposed river crossing upgrades;
- As much as a combined PPP will be followed where there are site specific comments raised these must be recorded and captured in the relevant project documents in relation to that specific site; and
- Comments from all relevant stakeholders and/ or commenting authorities must be submitted to the Department with the Final Basic Assessment Report (BAR).

In addition to the above, the Department notes that you have appointed Mr Rocco Gouws (farmer and landowner in the community) to distribute notification letters on behalf of SRK Consulting to adjacent land owners, as it is difficult for you to reach owners and occupiers due to poor or no communication mediums (post, telecommunication and email and limited cell phone reception) in the area. However, proof of consultation as per Regulation 54 (2) (b) (i) to (viii) must be submitted to the Department with the final BAR. Further to this Regulation 21(2) (a) of the EIA Regulations, 2010 places the responsibility of undertaking the public participation process on the appointed Environmental Assessment Practitioner (EAP) therefore should there be any issues that arise with regards to the notification of landowners, occupiers of land, adjacent landowners or adjacent occupiers of land the EAP will be held accountable and must address such issues accordingly. Any non-compliance with the requirements of Regulation 54 (2) (b) (i) to (viii) by Mr. Gouws will be considered a non-compliance by the applicant and the EAP appointed to manage the application process.

This Department reserves the right to revise or withdraw this letter or to request further information from you should new information on this matter become available.

Yours faithfully



Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs
Letter signed by: Ms Milicent Solomons
Designation: Director: Integrated Environmental Authorisations
Date: 26/02/2015.

CC:	Mr Dewald Coetzee	Department of Water and Sanitation	Tel: 041 508 9700	Email: coetzeeD@dws.gov.za
	Mr Gerry Pienaar	Eastern Cape Department of Economic Development and Environmental Affairs and Tourism	Tel: 043 605 7051	Email: Gerry.pienaar@dedea.gov.za

Appendix F: Impact Assessment

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO	2	1	2	1	2	15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is potential for noise disturbance around crossing 1. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablation facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management															

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO							
Air quality																	
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO							
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO							
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO							

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO	2	1	2	1	2	15	L No Management Required
						The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.		On-going	ECO								
						Strict controls and environmental education should be employed for all the construction workers that are working within the water course.		Prior to the commencement of construction	ECO								
						Construction should preferably take place during the dry season.		March-August	Project management								
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
						No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.		On - going	ECO								
						No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.		When applicable	ECO								
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	1	1	10	L No Management Required	There is no potential for noise disturbance around crossing 2. No mitigation required.	{-}	{-}	2	2	1	1	1	10	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWP/PHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWP/PHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management							

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management	
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO								
Air quality																		
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required	
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO								
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO								
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO								

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO	2	1	2	1	2	15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	1	1	1	1	8	L No Management Required	There are no noise sensitive areas located close to crossing 3. No mitigation required.	{-}	{-}	2	1	1	1	1	8	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management															

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management	
	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO															
Air quality																		
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required	
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO								
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO								
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO								

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO						15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO	2	1	2	1	2		
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO						24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO	3	2	1	3	1		
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is potential for noise disturbance around crossing 5. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWP/PHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWP/PHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management															

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO							
Air quality																	
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO							
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO							
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO							

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO						15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO	2	1	2	1	2		
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO						24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO	3	2	1	3	1		
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is potential for noise disturbance around crossing 5. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablation facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management															

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO							
Air quality																	
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO							
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO							
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO							

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO						15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO	2	1	2	1	2		
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO						24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO	3	2	1	3	1		
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is potential for noise disturbance around crossing 5. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management							

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management	
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO								
Air quality																		
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required	
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO								
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO								
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO								

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO	2	1	2	1	2	15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is potential for noise disturbance around crossing 5. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablation facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management							

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO							
Air quality																	
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO							
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO							
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO							

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
								The bridge must be maintained regularly.	Annually	ECO							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO	2	1	2	1	2	15	L No Management Required
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO							
								Construction should preferably take place during the dry season.	March-August	Project management							
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is no potential for noise disturbance around crossing 9. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWP/PHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWP/PHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management															

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management	
	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO															
Air quality																		
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required	
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO								
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO								
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO								

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Sediment may build up behind the new structures.	3	1	2	2	2	24	L No Management Required	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor	3	1	1	1	1	10	L No Management Required
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On - going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
Waste management																	
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	3	2	1	2	1	18	L No Management Required	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO	3	2	1	1	1	12	L No Management Required
								All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO							
								No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO							
								No waste is to be buried or burned on site.	On-going	ECO							
								Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO							
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	3	2	2	1	2	21	L No Management Required	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	2	2	1	1	14	L No Management Required
								All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO							
Biodiversity																	
Disturbance of fauna during site maintenance activities	3	1	2	1	1	12	L No Management Required	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO	3	1	2	1	1	12	L No Management Required

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION						RECOMMENDED MITIGATION MEASURES			ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology	Management and mitigation measures	Timeframe	Responsibility	Consequence			Likelihood (Probability)		Significance (Degree to which impact may cause irreplaceable loss of resources)	SRK Methodology
	Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact						Severity	Spatial	Duration	Frequency: Activity	Frequency: Impact		
Surface water																	
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	2	1	2	1	2	15	L No Management Required	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO	2	1	2	1	2	15	L No Management Required
						The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.		On-going	ECO								
						Strict controls and environmental education should be employed for all the construction workers that are working within the water course.		Prior to the commencement of construction	ECO								
						Construction should preferably take place during the dry season.		March-August	Project management								
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	3	2	1	3	2	30	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
						No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.		On - going	ECO								
						No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.		When applicable	ECO								
Noise																	
Construction activities resulting in noise disturbance in the surrounding area	2	2	1	2	2	20	L No Management Required	There is potential for noise disturbance around crossing 5. Any noise disturbance will be temporary. No mitigation required.	{-}	{-}	2	2	1	2	2	20	L No Management Required
Waste management																	
								All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO							

Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the surrounding environment.	4	2	2	3	3	48	MH Maintain Current Management	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis. Weighbills of the delivery at the landfill site must be kept on file.	Weekly during construction	ECO	4	2	2	2	1	24	L No Management Required
	All construction materials should be stored in designated areas.	On-going	ECO														
	No dumping of construction waste of excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO														
	No waste is to be buried or burned on site.	On-going	ECO														
	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablation facility.	On-going	Contractor/ECO														
	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO														
Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site. Waybills for all such disposals are to be kept by for review by the ECO.	On-going	ECO															
Heritage																	
Impact on unidentified heritage artefacts.	3	1	1	2	2	20	L No Management Required	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWP/PHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWP/PHRA has granted permission to do so.	On-going	ECO	3	1	1	2	2	20	L No Management Required
Soil and Land Use																	
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	3	2	2	2	2	28	ML Maintain Current Management	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO	3	1	2	2	1	18	L No Management Required
								All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO							
Biodiversity																	
								No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO							

Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	3	2	1	2	3	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	2	1	2	2	24	L No Management Required
Disturbance of fauna during site clearance and construction activities	3	1	2	3	2	30	ML Maintain Current Management	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO	3	1	2	2	2	24	L No Management Required
								No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO							
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	3	2	1	3	3	36	ML Maintain Current Management	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO	3	2	1	3	1	24	L No Management Required
								No refueling of vehicles or machinery will be allowed on the construction site. All refueling will be done in the site camp or another designated area off site.	On-going	ECO							
								No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO							
								The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO							
								The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO							
								Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO							
								Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management							

Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	3	3	3	3	2	45	MH Maintain Current Management	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO	3	3	3	3	1	36	ML Maintain Current Management	
								An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO								
Air quality																		
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	3	2	2	3	2	35	ML Maintain Current Management	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO	3	2	2	2	1	21	L No Management Required	
								High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO								
								Designated areas must be allocated for informal fires by construction or project personnel.	When Applicable	ECO								
								Vehicles and machinery are to be kept in good working order and meet the manufacturers specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO								

Appendix G: EMP

Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 1

DEA Reference Numbers: 14/12/16/3/3/1/1361

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

River Crossing 1

DEA Reference Number: 14/12/16/3/3/1/1361

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SRK Project Number 462748

June 2015

Compiled by:

Fiona Evans
Environmental Scientist

Peer Reviewed by:

Matt Braune
Partner

Authors:

Fiona Evans; Manda Hinsch

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEDEA	Department of Economic Development and Environmental Affairs
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river, led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 1, located on portion 3 of the farm Palmietfontien 407 (within the Department of Water and Sanitation servitude), along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures. These will ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration river crossing 1. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

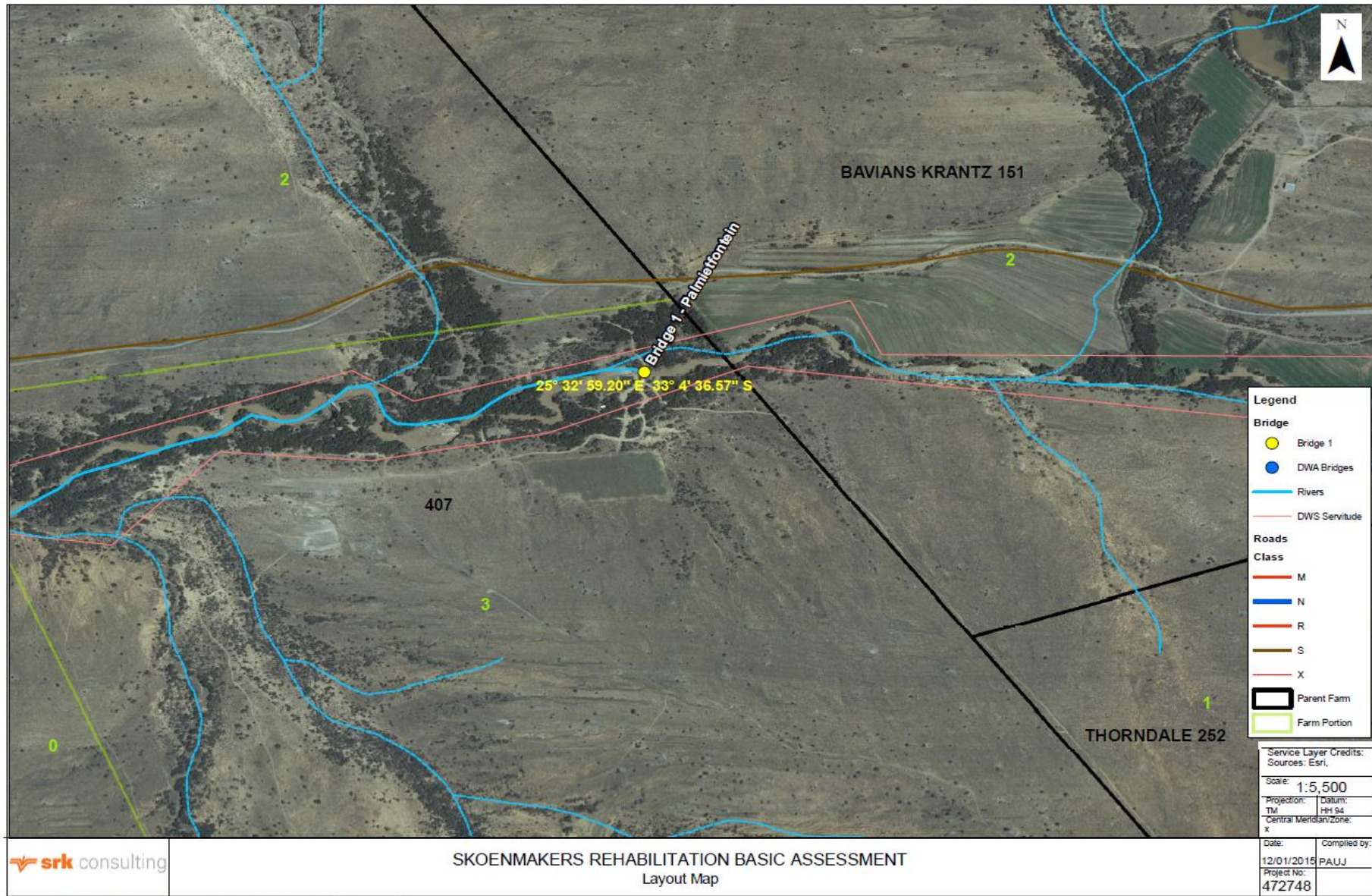


Figure 1-1 Bridge Crossing 1

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
Tel number	011 361 9821
Email address	hinm@srk.co.za
Postal Address	PO Box 35290, Menlo Park, 0102

1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

The project team collectively possesses the core competence required to prepare the EMPr for the proposed project. .

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of

the river crossing. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. This stage of the proposed bridge upgrade has already been completed. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be

appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There is potential for noise disturbance around crossing 1. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPR.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

Prepared by

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Environmental scientist

Reviewed by

Matt Braune Pr. Eng

Partner

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 2

DEA Reference Numbers: 14/12/16/3/3/1/1362

Report Prepared for

Department of Water and Sanitation



Report Number 472748



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June 2015

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Department of Water and Sanitation

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SRK Project Number 462748

June 2015

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Environmental Scientist

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act , Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river, led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 2, located on portion 1 of the farm Palmietfontien 407 (within the Department of Water and Sanitation servitude), along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures. These will ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration river crossing 2. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

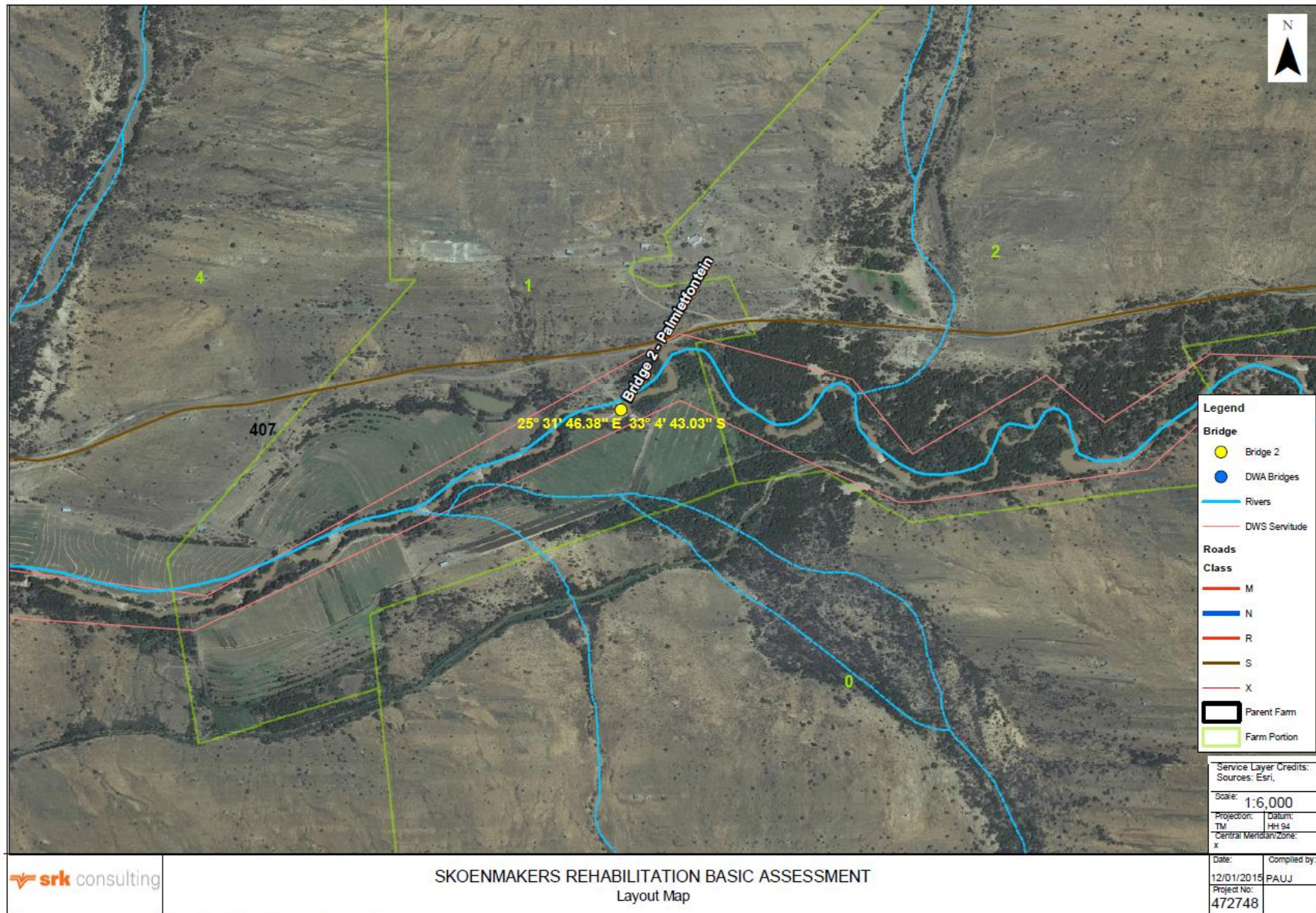


Figure 1-1 Bridge Crossing 2

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
Tel number	011 361 9821
Email address	hinm@srk.co.za
Postal Address	PO Box 35290, Menlo Park, 0102

1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced.. This stage of the proposed bridge upgrade has already been completed. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and

operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There is potential for noise disturbance around crossing 2. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

Prepared by

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 3

DEA Reference Numbers: 14/12/16/3/3/1/1363

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

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June 2015

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 3, located on portion 1 of the farm Palmietfontien 250 (within the Department of Water and Sanitation servitude), along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures to ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration of Department of Water and Sanitation (DWS) river crossing 3 along the Skoenmakers River in the Eastern Cape. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

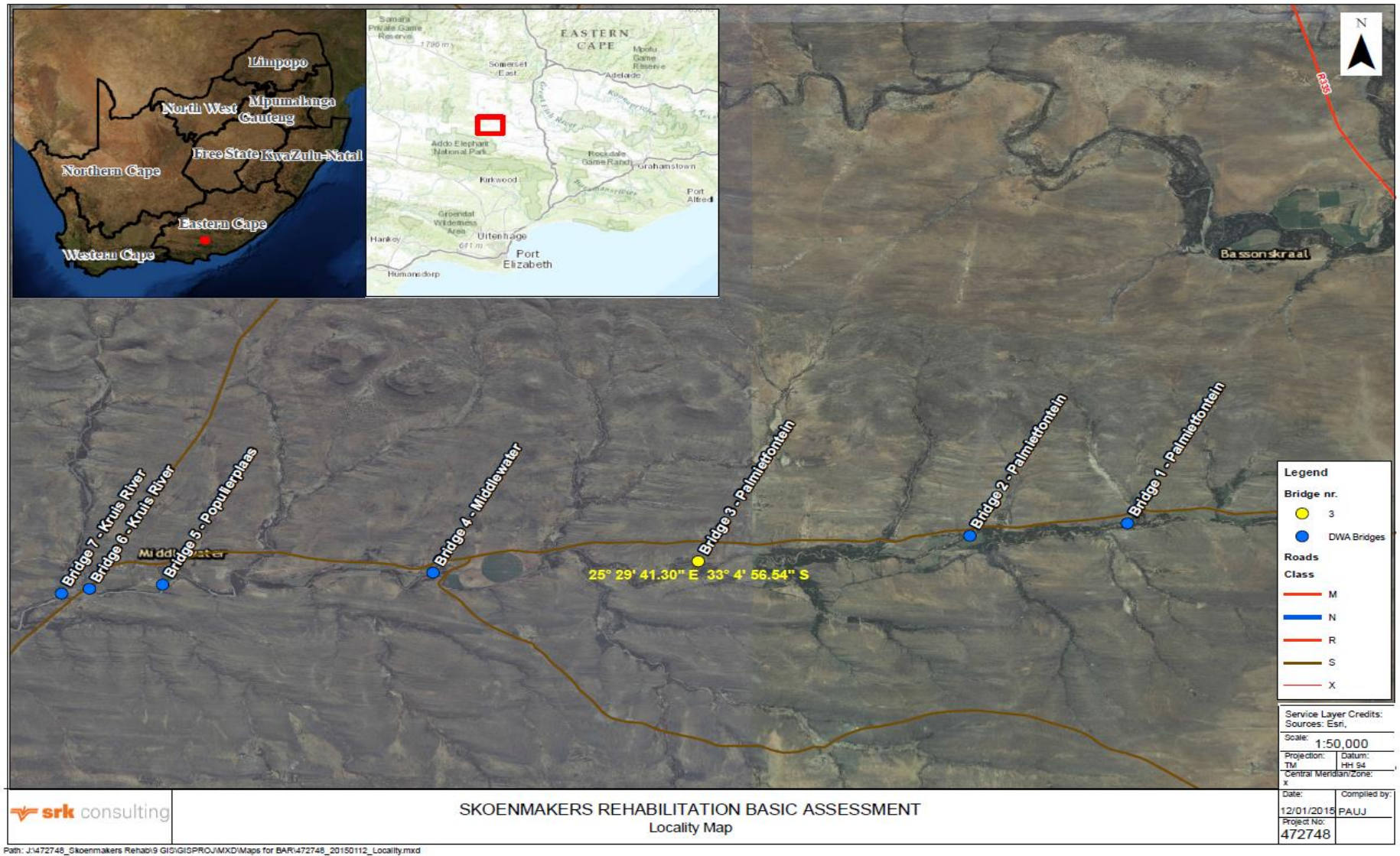


Figure 1-1 Bridge Crossing 3

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
Tel number	011 361 9821
Email address	hinm@srk.co.za
Postal Address	PO Box 35290, Menlo Park, 0102

1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and

operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There are no noise sensitive areas located close to crossing 3. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

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Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 4

DEA Reference Numbers: 14/12/16/3/3/1/1364

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

River Crossing 4

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Department of Water and Sanitation

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June 2014

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 4, located on portion 4 of the farm Kruis River 248, along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures to ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration of Department of Water and Sanitation (DWS) river crossing 4 along the Skoenmakers River in the Eastern Cape. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

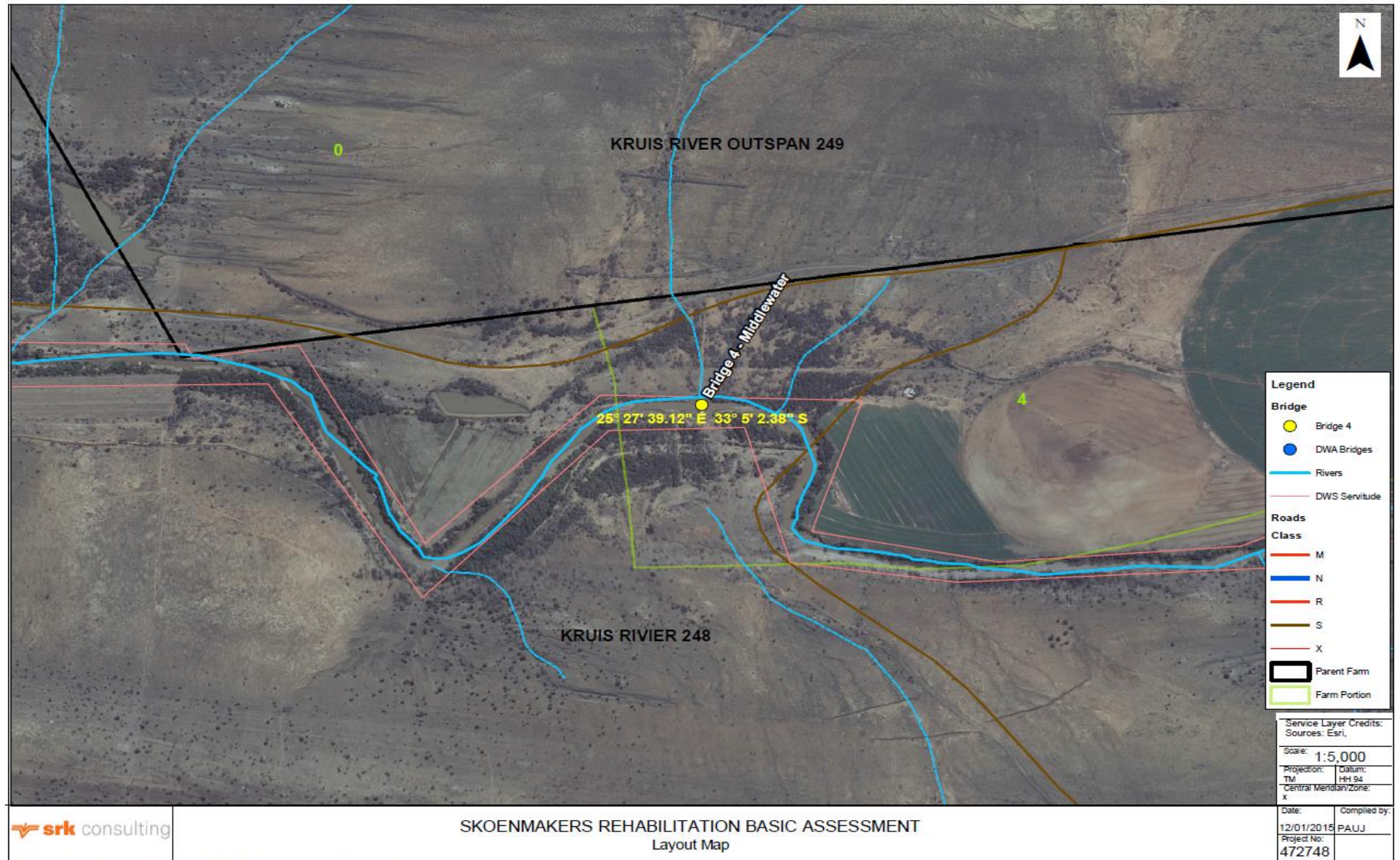


Figure 1-1 Bridge Crossing 4

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
Tel number	011 361 9821
Email address	hinm@srk.co.za
Postal Address	PO Box 35290, Menlo Park, 0102

1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Crossing 4 will be expanded on with 2 additional culverts and the reinstatement of

the washed away embankment including approach slabs. Please refer to the method statement attached in appendix B for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be

appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There are no noise sensitive areas located close to crossing 4. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

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Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 5

DEA Reference Numbers: 14/12/16/3/3/1/1365

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

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EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river, led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 5, located on portion 4 of the farm Kruis Rivier 248, along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures. These will ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration river crossing 5. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.



Figure 1-1 Bridge Crossing 5

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
Tel number	011 361 9821
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1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians..

2 Description of the proposed activity

2.1 Construction of the River Crossing

The construction of crossing 5 will be limited to approach slabs and maintenance only. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There is potential for noise disturbance around crossing 5. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

Prepared by

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Partner

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 6

DEA Reference Numbers: 14/12/16/3/3/1/1366

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

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Department of Water and Sanitation

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June 2015

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river, led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 6, located on portion 5 and 6 of the farm Kruis River 248 along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures. These will ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration river crossing 6. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.



Figure 1-1 Bridge Crossing 6

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Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
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Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the causeway. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

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- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

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In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There is potential for noise disturbance around crossing 6. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO
Biodiversity				

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

Prepared by

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 7

DEA Reference Numbers: 14/12/16/3/3/1/1367

Report Prepared for

Department of Water and Sanitation



Report Number 472372



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

River Crossing 7

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 7, located on portion 8 of the farm Kruis Rivier 248, along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures to ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration of Department of Water and Sanitation (DWS) river crossing 7 along the Skoenmakers River in the Eastern Cape. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

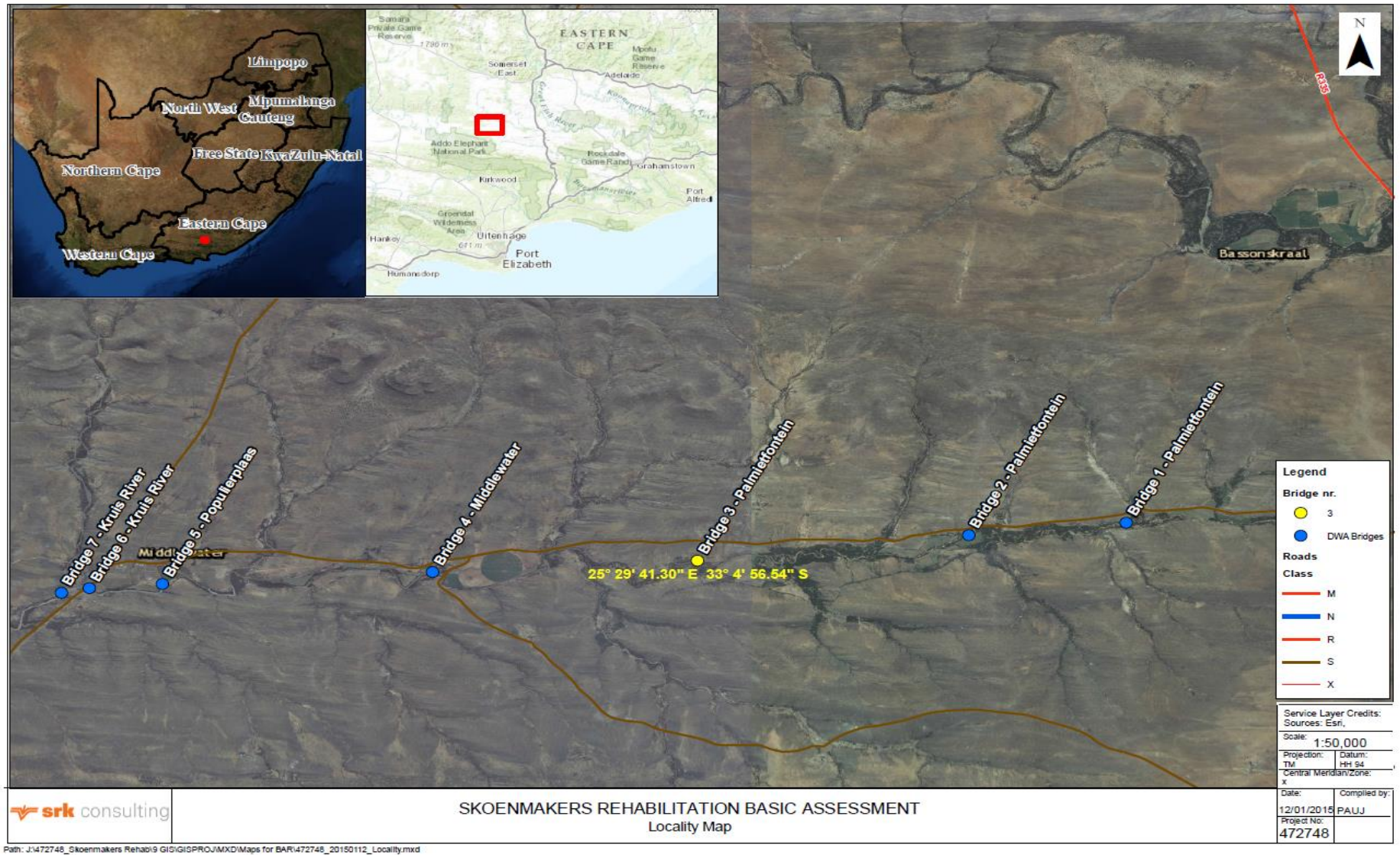


Figure 1-1 Bridge Crossing 7

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
Tel number	011 361 9821
Email address	hinm@srk.co.za
Postal Address	PO Box 35290, Menlo Park, 0102

1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and

operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There are no noise sensitive areas located close to crossing 7. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

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Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 8

DEA Reference Numbers: 14/12/16/3/3/1/1368

Report Prepared for

Department of Water and Sanitation



Report Number 472372



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

River Crossing 8

DEA Reference Number: 14/12/16/3/3/1/1368

Department of Water and Sanitation

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SRK Project Number 472748

June 2015

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river, led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 8, located on portion 0 of the farm Geelhoutboom 247 along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures. These will ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration river crossing 8. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

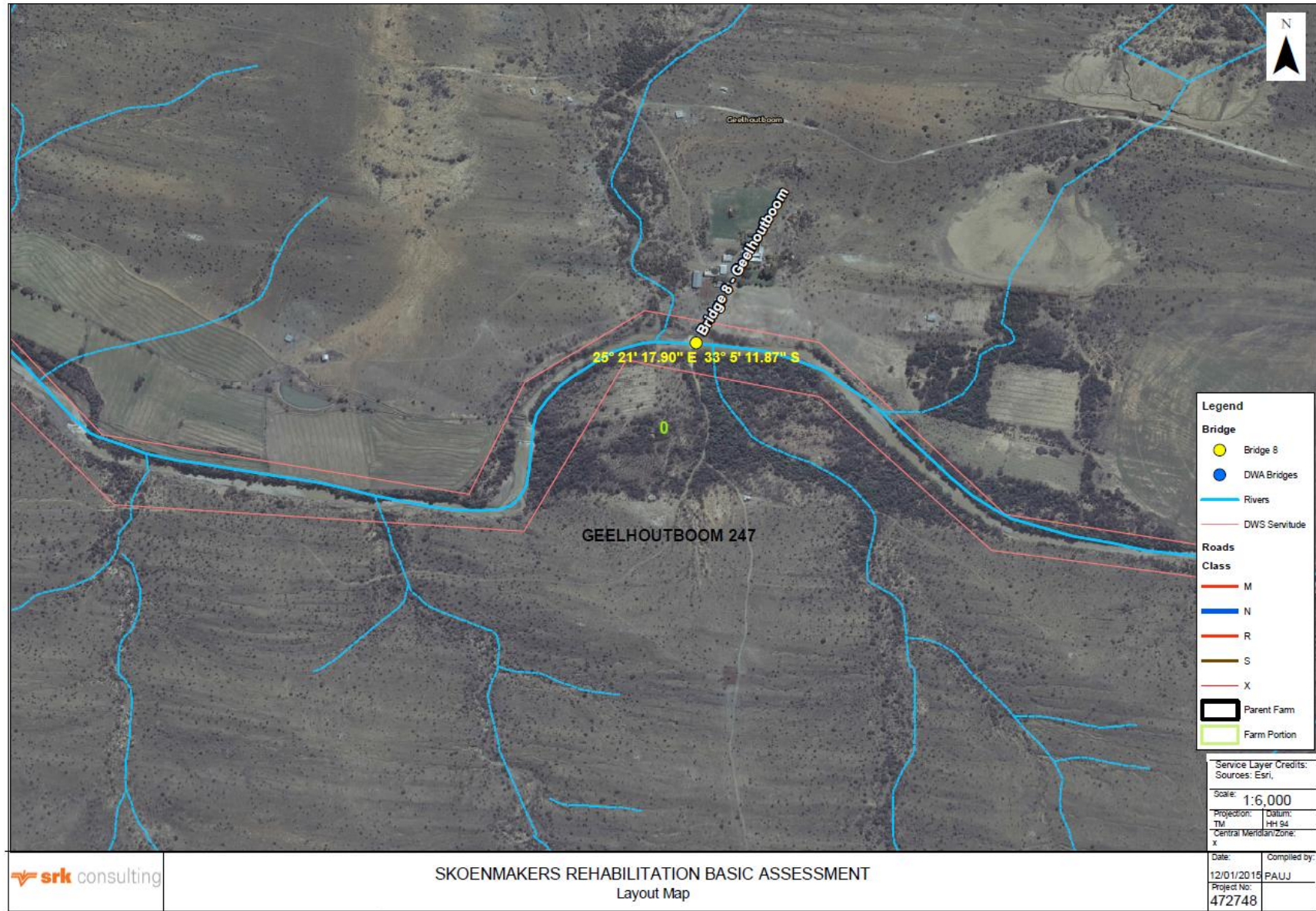


Figure 1-1 Bridge Crossing 8

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
Company	SRK Consulting (SA) (Pty) Ltd
Qualifications	BSc (Hons), Water Utilisation, University of Pretoria, 1993
Professional Registration	Pr Sci Nat 400164/09
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1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Please refer to the method statement attached in appendix B for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and

operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There is potential for noise disturbance around crossing 8. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

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Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 9

DEA Reference Numbers: 14/12/16/3/3/1/1369

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

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List of Abbreviations

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environment Control Officer
EMPr	Environmental Management Programme
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, Act 107 of 1998

1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 9, located on portion 4 of the farm Fontein Plaats 246, along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures to ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration of Department of Water and Sanitation (DWS) river crossing 9 along the Skoenmakers River in the Eastern Cape. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

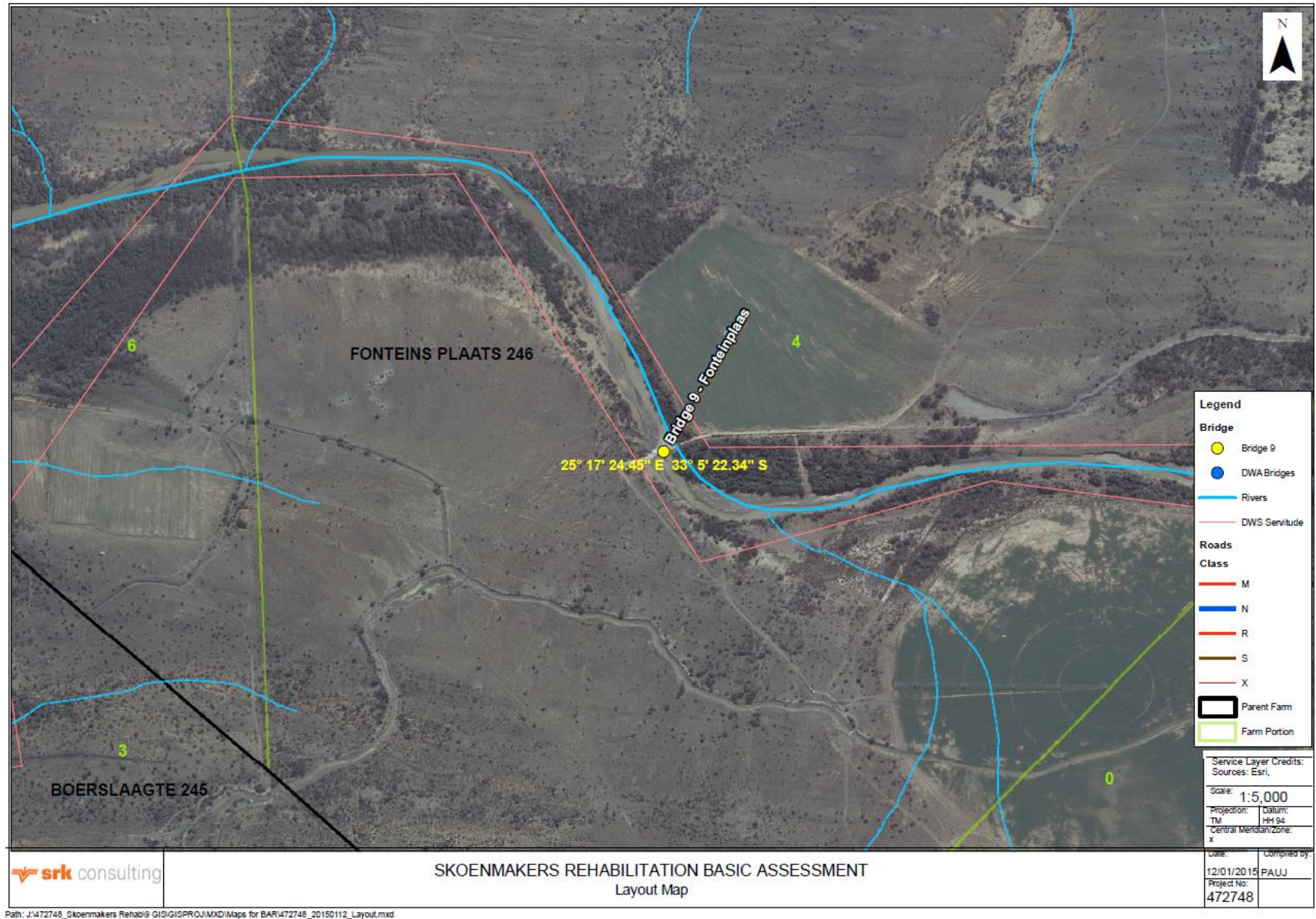


Figure 1-1 Bridge Crossing 9

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

Environmental Assessment Practitioner	Manda Hinsch
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1.1.2 Expertise of EAP

This EMPr was prepared by Fiona Evans under technical guidance of Manda Hinsch, and reviewed by Matt Braune.

Fiona Evans is an Environmental Consultant with SRK. She has Honours in Ecology, Environment and Conservation obtained from the University of the Witwatersrand, and has two years of project experience in environmental management. Fiona has both personally prepared and given input to various EMPr's. Manda Hinsch is an Associate Partner and Principal Environmental Scientist with SRK and has 34 years of experience in water quality management, waste management, project management and water and environmental legislation. Manda is a fellow member of the Professional Natural Scientists South Africa and FWISA. Matt Braune is a Partner and civil engineer. Matt has over 34 years of experience in the field of water engineering. His expertise include numerous surface water and urban storm water management projects, hydraulic studies regarding the design of flood and erosion control measures and co-ordination of multi-disciplinary project teams of engineers, geologists, environmental scientists and technicians.

2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996).
- The NEMA, (Act No. 107 of 1998) and Regulation 543.
- The NEM:WA (Act No. 59 of 2008) and Regulation 718.
- National Environmental Management: Air Quality Act (Act No. 39 of 2004).
- National Environmental Management: Biodiversity Act (Act No. 10 of 2008).
- The Environmental Conservation Act (Act No. 73 of 1989).
- The Hazardous Substances Act (Act No. 15 of 1973).
- The National Water Act (Act No. 36 of 1998).
- The National Heritage Resources Act (Act No. 25 of 1999).
- The Health Act (Act No. 61 of 2003).
- Occupational Health and Safety Act (Act No. 85 of 1993).

4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and

operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There are no noise sensitive areas located close to crossing 9. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan

On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Environmental Management Programme for the Upgrade of Ten River Crossings situated along the Skoenmakers River, Eastern Cape

River Crossing 10

DEA Reference Numbers: 14/12/16/3/3/1/1370

Report Prepared for

Department of Water and Sanitation



Report Number 472748



Report Prepared by

 **srk** consulting

June 2015

Environmental Management Programme for the Upgrade of Ten River Crossings Situated along the Skoenmakers River, Eastern Cape

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I&APs	Interested and Affected Parties
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1 Introduction

The Skoenmakers River (located in the semi-arid Karoo region of the Eastern Cape) is being used as a transfer route for water transferred by the Orange-Fish-Sundays River Interbasin Transfer Scheme. Development of the Orange-Fish-Sundays River Interbasin Transfer Scheme in the 1970s to early 1980s made access for farmers to their lands hazardous/inaccessible. To overcome inaccessibility to Middlewater and farmlands, 10 River crossings were constructed.

The change in the hydrological regime of this once ephemeral stream to a much bigger perennial river, led to dramatic changes to both the physical structure and riparian vegetation structure of the river system. This continual change has led to the deterioration of the 10 river crossings. River crossing 10, located on portion 6 of the farm Fontein Plaats 246 along the Skoenmakers River is one of ten river crossings that have been damaged that require restoration and/or upgrading (Figure 1-1).

The purpose of the Environmental Management Programme (EMPr) is to provide the mitigation and management measures. These will ensure that social and environmental impacts, risks and liabilities identified during the Environmental Impact Assessment (EIA) process are effectively managed during the construction and operations of the proposed upgrade and restoration river crossing 10. This proposed upgrade will improve the flow regime along the Skoenmakers River and provide safer and better access to the surrounding agricultural community.

The EMPr specifies the mitigation and management measures to which the applicant is committed, should the Environmental Authorisation (EA) be granted, and shows how the applicant will mobilise organisational capacity and resources to implement these measures. The EMPr also shows how management measures aimed at mitigation and enhancement will be scheduled.

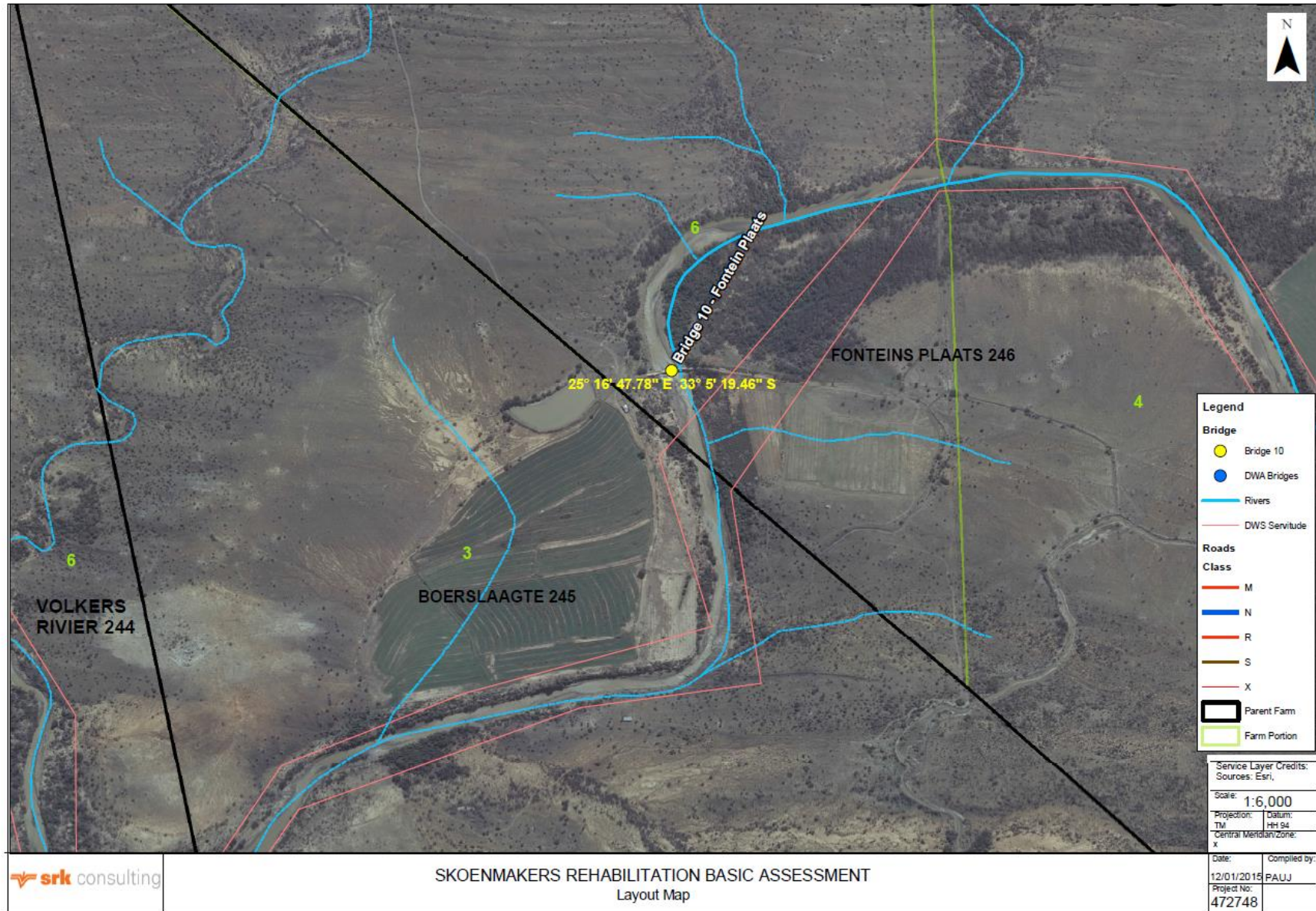


Figure 1-1 Bridge Crossing 10

1.1 Environmental Assessment Practitioner (EAP)

1.1.1 Details of the EAP

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2 Description of the proposed activity

2.1 Construction of the River Crossing

Different design approaches were considered in the process of providing a hydrological sound and practical solution to the existing river crossing. Construction of the crossing is able to take place during the annual shut-down maintenance period of the transfer scheme, during which time the transfer flow will not take place. This is usually over a period of one month in June and July. The construction programme will however stretch over a longer period and the Construction Methodology thus plays a big part in determining the nature and extent of construction that is to take place.

The most viable option is to do construction in 2 phases where berms divert the water through half of the existing structure there by allowing construction of the alternative section. Subsequently water will be diverted back through the new section thus allowing the construction completion of the rest of the river crossing. Please refer to the method statement attached in Appendix A for more information.

2.2 Operational phase

During the operational phase an alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).

3 Legislation guidelines

The environmental component of the project will comply with the requirements of inter alia, the following Legislation, and the Regulations promulgated thereunder:

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4 Motivation for the proposed project

The upgrade of the bridges will ensure that the river crossing is safe for all users and improve the ecological state of the Skoenmakers River.

The existing river crossing has been affected by erosion of river banks, siltation and blockages. The restoration and upgrade of the river crossing is a necessary environmental option in order to remediate these environmental problems affecting the existing structure. The upgrade and restoration of the river crossing will improve road accessibility to local farmers for the transportation of agricultural goods and well as provide a safe crossing for livestock. The proposed upgrade will be beneficial for the water course as well as the community members that make use of the river crossing.

5 Environmental management programme

The Environmental Management Programme (EMPr) is a requirement of GN R. 543(22) and complies with the requirements of GN R. 543(33). The EMPr contains mitigation and management measures suggested to ameliorate the impacts associated with the proposed activities.

The EMPr is divided into two phases; construction and operation. Planning and design has not been included as part of the EMPr. Planning and design does not apply to this project as existing structures are being replaced. Further, due to the permanent nature of the river crossings, no impacts or mitigation measures for a closure and rehabilitation phase has been assessed. Should the need arise; the EMPr shall be amended to accommodate the need for rehabilitation and closure.

5.1 The Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed by the applicant to oversee all environmental aspects relating to the proposed river crossing upgrade. The ECO should be appointed to assess environmental compliance to the EMPr during the construction and operational phases. Two different ECO's maybe appointed for the various phases .i.e. construction and

operational phases. The ECO will be responsible for providing feedback on emergent environmental problems associated with the proposed upgrade. In addition the ECO will be responsible for;

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management; and
- Undertaking weekly compliance monitoring during construction.

5.2 Environmental objectives

In order to ascertain the relevant level of mitigation and management measures required to ameliorate the impacts associated with proposed river crossing upgrade, the objectives of the EMPr need to be identified. Below is a summary of the environmental objectives that will be addressed in the EMPr.

- **Surface Water**
 - Limit the contamination of surface water.
- **Noise**
 - Minimise noise disturbance.
- **Waste Management**
 - To ensure that general and hazardous waste is handled correctly.
- **Heritage**
 - Minimise impacts on any cultural or heritage artefacts.
- **Soil and Land Use:**
 - Minimise contamination of soil.
- **Biodiversity**
 - Minimise the disturbance of ecologically sensitive areas.
 - Prevent the spread and establishment of alien vegetation.
- **Air Quality**
 - Minimise deterioration in air quality.

5.3 Construction Phase

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Manager and Environmental Control Officer. Please refer to Table 5-1 for the proposed mitigation measures.

Table 5-1: Proposed mitigation measures for the construction phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Construction activities within the river and on the river banks will loosen sedimentary material resulting in an increase in the current sediment load.	1.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	2.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	3.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	Prior to the commencement of construction	ECO
	4.	Construction should preferably take place during the dry season.	March-August	Project management
Spillages from the plant and equipment that will be used during construction activities could result in pollution of the water by hydrocarbons.	5.	Plastic trays and liners must be used to prevent spillages of hazardous substances such as oil or diesel into the water body.	On-going	ECO
	6.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	7.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Noise				
Construction activities resulting in noise disturbance in the surrounding area	8.	There is potential for noise disturbance around crossing 10. Any potential noise disturbance will be temporary. No mitigation required.	{-}	{-}
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during the construction phase may have negative impacts on the	9.	All waste produced during the construction should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Weekly during construction	ECO
	10.	The waste must be stockpiled in a designated area within the site camp and transported to the Municipal Landfill Site on a regular basis.	Weekly during construction	ECO
	11.	All construction materials should be stored in designated areas.	On-going	ECO
	12.	No dumping of construction waste or excess construction materials will be allowed in the bush surrounding the construction site.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
surrounding environment.	13.	No waste is to be buried or burned on site.	On-going	ECO
	14.	Chemical toilets are to be maintained in a clean state on a regular basis and must be moved to ensure that they adequately service the work areas. The contractor is to ensure that the surrounding bush is not being used as an ablution facility.	On-going	Contractor/ECO
	15.	Appropriate disposal facilities, such as litter bins, must be provided within the construction camp.	On-going	ECO
	16.	Bins and/or skips must be emptied regularly and waste must be disposed of at a registered landfill site.	On-going	ECO
Heritage				
Impact on unidentified heritage artefacts.	17.	If any artefacts of archaeological or cultural interest are found, including graves, then the area will be marked and all activities in that vicinity will cease with immediate effect. SAHRA and the North West Provincial Heritage Resources Authority (NWPHRA)/the Provincial Heritage Resources Authority - Gauteng (PHRA-G) will be notified of the finding and operations at that specific site will only continue after the relevant NWPHRA has granted permission to do so.	On-going	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the construction activities may lead to erosion of the river banks.	18.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	19.	All work must take place within the construction footprint area and the construction area must be rehabilitated once the construction process has been completed.	After construction	ECO
Biodiversity				
Construction activities could result in the disturbance of the vegetation specifically on the banks of the water course.	20.	No vehicles or plant should be parked within the river course when not actively working on the construction.	On-going	ECO
	21.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
Disturbance of fauna during site clearance and construction activities	22.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	On-going	ECO
	23.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Construction activities and spillages will negatively impact on aquatic biota present in the Skoenmakers River.	24.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	25.	No refuelling of vehicles or machinery will be allowed on the construction site. All refuelling will be done in the site camp or another designated area off site.	On - going	ECO
	26.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
	27.	The construction footprint must not extend further than is necessary, preferably not more than 30m up and downstream of the positioning of the bridge structure.	On-going	ECO
	28.	The amount of heavy machinery and equipment needed to work within the river course should be limited. Only the equipment that is absolutely necessary should be allowed in the river course.	On-going	ECO
	29.	Construction should preferably take place during the dry season.	Prior to the commencement of construction	ECO
	30.	Strict controls and environmental education should be employed for all the construction workers that are working within the water course.	March-August	Project management
Disturbance of the river bank vegetation could lead to the spread of invasive alien vegetation.	31.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site clearance	ECO
	32.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken monthly during the construction phase and yearly during the operational phase.	Prior to the commencement of construction	ECO
Air quality				
Air pollution from vehicle emissions and fires as well as dust from vehicle movements and stock piles may have a negative impact on air quality.	33.	Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust. A speed limit of 30 km/h must be adhered to on the construction site.	On-going	ECO
	34.	High winds may pick up dust from the stockpiles. Screening of stockpiles may be required by utilising wooden supports and shade cloth.	When applicable	ECO
	35.	Fires by construction or project personnel are strictly prohibited.	When Applicable	ECO
	36.	Vehicles and machinery are to be kept in good working order and meet the manufacturer's specifications. Should excessive emissions be observed, the contractor is to have the equipment seen to within 24 hours.	On-going	Contractor/ECO

5.4 Operational phase

This section of the EMPr provides management principles for the operational phase of the project. Environmental actions, procedures and responsibilities as required from the DWS during the operational phase are specified. Table 5-2 provides the management measures to be implemented during the Operational phase of the general domestic waste disposal facility.

Table 5-2: Proposed mitigation measures for the operational phase

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Surface water				
Sediment may build up behind the new structures.	1.	The design of the structure makes provision for limiting sediment build up.	Prior to construction	Contractor
	2.	The bridge must be maintained regularly.	Annually	ECO
Spillages from the plant and equipment that will be used during maintenance activities could result in pollution of the water by hydrocarbons.	3.	Plastic trays and liners must be used to prevent cement and spillages of other hazardous substances such as oil or diesel into the water body.	On-going	ECO
	4.	No refuelling of vehicles or machinery will be allowed on the maintenance site. All refuelling will be done in a designated area off site.	On - going	ECO
	5.	No large scale mixing of cement will take place on site. Where possible Ready Mix cement should be used for the cast <i>in-situ</i> structures. Any mixing of cement must take place on top of an impermeable surface.	When applicable	ECO
Waste management				
Contamination of the area with general waste (litter, construction material etc.) and hazardous waste (Oils, hydrocarbon etc.) produced during maintenance activities may have negative impacts on the surrounding environment.	6.	Portable toilet facilities must be provided for maintenance workers and serviced and maintained as and when necessary by a registered waste disposal company.	When applicable during maintenance	ECO
	7.	All waste produced during maintenance should be removed as soon as possible and disposed of at a Municipal Landfill Site.	Upon completion of site maintenance	ECO
	8.	No dumping of waste and excess construction materials generated during maintenance will be allowed in the bush surrounding the maintenance site.	During maintenance	ECO
	9.	No waste is to be buried or burned on site.	On-going	ECO
	10.	Appropriate disposal facilities, such as litter bins, must be provided during maintenance activities.	During Maintenance	ECO
Soil and Land Use				
Indirect Impact: Disturbance of vegetation on the river banks due to the maintenance activities may lead to erosion of the river banks.	11.	No parking of vehicles or equipment should take place off the access road or designated parking areas.	On-going	ECO
	12.	All work must take place within the maintenance footprint area must be rehabilitated once the maintenance has been completed.	Upon completion of site maintenance	ECO

POTENTIAL ENVIRONMENTAL IMPACT (NATURE OF THE IMPACT)	No.	RECOMMENDED MITIGATION MEASURES		
		Management and mitigation measures	Timeframe	Responsibility
Biodiversity				
Disturbance of fauna during site maintenance activities	13.	The protection of threatened or protected species (TOPS) must be carried out in accordance to NEMBA (Act 10 of 2004) Chapter 4, Part 2. This will include any amendments or changes to regulations and guidelines pertaining to the protection of TOPS.	During Maintenance	ECO
	14.	No trapping or hunting of fauna should be allowed on site during any phase of the project.	On-going	ECO
The disturbance of the area surrounding the upgraded river crossing could lead to the spread of invasive alien vegetation. Particularly after flood events.	15.	No vegetation is to be removed outside of the demarcated zones. This will prevent disturbance of natural vegetation and the establishment of alien and invader vegetation species specified by GNR 507 and 508 or any amendments to the legislation.	During site maintenance	ECO
	16.	An alien eradication and management program must be developed. Eradication and monitoring must be undertaken at the start of the wet season (August) and the end of the wet season (May) as well as after major flooding events (when the 1:100 flood level is reached).	Prior to the completion of construction	ECO

5.5 Emergency procedures

Emergency procedures for the management of construction site during all phases of operation must be in line with the relevant Health and Safety policies of the Department of Water and Sanitation.

5.6 Organisation structure

The daily management of the construction site will be the responsibility of the Contractor. The Project Manager will also have to appoint an Environmental Control Officer (ECO) who will be responsible for the correct implementation of the conditions of the Environmental Authorisation and the mitigation and management measures contained in the approved EMPr.

5.7 Monitoring, reporting and auditing

An alien eradication and management monitoring program will have to be compiled and implemented during construction and operation:

Site inspections must be conducted on a weekly basis during construction and annually during operation to ensure continued compliance with the conditions of the environmental authorisation and the measures contained in the approved EMPr.

5.8 Environmental awareness plan


On-site training must be provided for all contractors and personnel working on. No personnel may be allowed onto site without having been instructed on the requirements of the approved EMPr and the Environmental Authorization conditions.

The training must deal specifically with triggers that would require the implementation of mitigation measures contained in the EMPr. These include, but are not limited to:

- Identification of TOPS listed species, both fauna and flora
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas.

Prepared by

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Fiona Evans

Environmental scientist

Reviewed by

Matt Braune Pr. Eng

Partner

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All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

Appendix H: Details of EAP and expertise

Manda Hinsch

Principle Scientist / Associate Partner



Profession Water Scientist
Education BSc (Hons), Water Utilisation, University of Pretoria, 1993
 BSc, Biochemistry & Chemistry, University of Johannesburg (former RAU), 1981
Registrations/Affiliations Pr Sci Nat (South Africa), 400164/09
 Member, FWISA

Specialisation

Water quality management, water allocation, waste management, project management, water and environmental legislation, policy development; policy implementation, environmental authorisations, water resource management

Expertise

Manda Hinsch has been involved in the water sector field for the past 31 years. Her expertise includes:

- thorough and in depth understanding of the South African water legislation; National Water Act (1998) associated with links to the Water Act of 1956;
- water reform strategies and reallocation. development of policies for implementing water allocation reform (WAR) in South Africa with associated pilot implementation;
- implementation of WAR in selected catchments the implementation of validation,
- development of awareness material for the implementation of Water Allocation Reform;
- evaluation of impacts and management through the issuing of Water Use Authorisations and the management of hazardous and solid waste for industrial, mining water and waste water systems;
- implementation and policy development in water and related fields particular focus on water quality management and management of water quality in urban and informal areas;
- waste management strategies for the then Pretoria Council and project management;
- institutional development in the water sector- establishment of Catchment Management Agency in the Crocodile West Water Management Area and diffuse source pollution;
- member of various steering Committees, e.g Development of Classification System, 2010 Water Quality Standards etc. And basic environmental assessments;
- extensive experience in the environmental and water legislation both in policy development and implementation and environmental (hydrology and water quality) investigation for nuclear sites;
- surface water specialist studies including monitoring protocols and plans;
- annual water monitoring studies and small towns water reconciliation studies;
- steering and guiding of research projects in the water field through the Water Research Commission;
- extensive international experience gained in water management from study tours to Europe, the USA and China on the management of Water quality and related fields;
- development and implementation of policy and strategy on pollution from urban areas.

Employment

Jan 2008 - present	SRK Consulting (Pty) Ltd, Water Scientist, Pretoria
Aug 1993 – Dec 2007	Department Of Water Affairs, Deputy Director: Water Quality Management, Pretoria
1991 - 1993	Bergman & Partners Inc. Consulting Engineers, Senior Consultant< Johannesburg
1988 - 1991	Waste Tech, Hazardous Waste Consultant, Germiston
1983 - 1988	Council For Mineral Technology, (Mintek), Research Assistant, Johannesburg
1981 - 1983	UCOR, Technical Officer, Pellindaba

Publications

Selected publications and contribution to professional reports, and study tours

Languages

English – read, write, speak (Excellent)
 Afrikaans – read, write, speak (Excellent)
 German – read, write, speak (Fair)

Manda Hinsch

Principle Scientist / Associate Partner

Publications

1. Presented paper at the AMCOW meeting in Ethiopia in preparation for the UN Sustainable Development Meeting in New York 2004
2. Presented a paper at the United Nations Habitat meeting in Weihai in preparation for the African Ministers Committee of Water (AMCOW) meeting in Ethiopia in December 2003
3. Hinsch, M. and Quibell G Managing the water quality effects of Settlements, Department of Water Affairs and Forestry
4. R.G. M. Heath; Hinsch M, and Pulles. Unique implication of policies and solutions to diffuse pollution management in a developing country – South Africa
5. NATO Meeting in Canada regarding the rehabilitation of contaminated land by Industries.
6. Various papers were read at local conferences on topics relating to Catchment Management, Water Quality Management and remediation of contaminated land
7. Harmonising land use management with catchment management.
8. The Bigger Picture: Managing water quality impacts in an urban context

Manda Hirsch

Principle Scientist / Associate Partner

Key Experience: Integrated water- and environmental management

Location: South Africa, Gauteng
 Project duration & year: Apr 2013 – Mar 2014
 Client: African Exploration Mining & Finance Corp
 Name of Project: Vlak Ph3
 Project Description: Vlakfontein Phase 3 EMP
 Job Title and Duties: Principal Scientist
 Value of Project: R2 000 000.00

Location: South Africa
 Project duration & year: Mar 2013 – Mar 2014
 Client: Optimum Coal Services (Pty) Ltd
 Name of Project: Iwula Kwagga
 Project Description: Environmental Authorisation & Iwula Kwagga
 Job Title and Duties: Principal Scientist
 Value of Project: R1 800 000.00

Location: South Africa, North-West
 Project duration & year: Sep 2013 – Nov 2013
 Client: Bafokeng Rasimone Platinum Mine JV
 Name of Project: Styldrift 2013 Audit
 Project Description: Styldrift 2013 WUL & EMP Audit
 Job Title and Duties: Principal Scientist
 Value of Project: R1 000 000.00

Location: South Africa, Gauteng
 Project duration & year: Sep 2013 – Nov 2013
 Client: City of Tshwane Metropolitan Municipality
 Name of Project: Tshwane ERM
 Project Description: Tshwane ERM Services
 Job Title and Duties: Principal Scientist
 Value of Project: R1 000 000.00

Location: DRC
 Project duration & year: Jun 2013 – Nov 2013
 Client: Nyumba Akiba S.A.R.L
 Name of Project: Nyumba Water
 Project Description: Nyumba Ahiba Water
 Job Title and Duties: Principal Scientist
 Value of Project: R1 000 000.00

Location: Phalaborwa
 Project duration & year: Ongoing , 2011
 Client: Foskor Mining Division
 Name of Project: Water Use Licence Audit and IWWMP Update
 Project Description: Water Use licence audit on the mine in terms of compliance with all licensing conditions. Updating of the IWWMP
 Job Title and Duties: Project Auditor
 Value of Project: R300K

Manda Hinsch

Principle Scientist / Associate Partner

Key Experience: **Integrated water- and environmental management**

Location: Thyspunt, Bantamsklip and Duynefontein
 Project duration & year: 2009 - 2011
 Client: Eskom Holdings Soc Limited
 Name of Project: EIA for the Nuclear 1 Project (Hydrology)
 Project Description: The Environmental Impact Assessment (EIA) relates to the construction and operation of a Conventional Nuclear Power Station and associated infrastructure in the Eastern or Western Cape areas. The Sites, which will be investigated during this EIA, have been identified based on previous site investigations undertaken since the 1980s. The Environmental Impact Report (EIR) comprises the baseline information and an impact assessment for the following Sites: Duynefontein; Bantamsklip; and Thyspunt.
 Job Title and Duties: Responsible for the water quality component and impact assessment
 Value of Project: R1500K

Location: Nkomati and Mputo Basins
 Project duration & year: 22 months, 2009- 2011
 Client: PRIMA, TPTC
 Name of Project: Progressive Realisation of the IncuMaputo Agreement, Development of a Disaster management Plan for the catchments
 Project Description: Development of a water disaster management plan for the two catchments. The objective of the assignment was to prepare sets of comprehensive disaster preparedness, implementation and management plans, protocols and decision support systems for each of the identified basins to mitigate the possible effects of floods, droughts and major pollution accidents.
 Job Title and Duties: Leading Consultant in the team for the Water Quality Component
 Value of Project: R5 800K

Location: Mogalakwena Municipality
 Project duration & year: 18 months, Jan 2008 – July 2009
 Client: Mogalakwena Municipality
 Name of Project: Environmental Authorisation for the pipeline for bulk water supply.
 Project Description: Obtaining an environmental authorisation for the bulk water supply pipeline from Flag Bosheillo dam to the municipality from the relevant authority. Specialist studies for the project included biodiversity and aquatic evaluations which were performed by specialists in this field
 Job Title and Duties: Project Manager and technical advisor
 Value of Project: R600K

Appendix I: Specialist declaration of interest



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

PROJECT TITLE

Basic assessment for the upgrade of 10 river crossings along the Skoenmakers River in the Eastern Cape
--

Specialist:	SCIENTIFIC AQUATIC SERVICES CC		
Contact person:	STEPHEN VAN STADEN		
Postal address:	P O BOX 751779, GARDENVIEW		
Postal code:	2047	Cell:	083 415 2356
Telephone:	011 616 7893	Fax:	086 724 3132
E-mail:	stephen@sasenvironmental.co.za		
Professional affiliation(s) (if any)	PRI.SCI. NAT. REG NO: 400134/05		

Project Consultant:	SRK Consulting (Pty) Ltd		
Contact person:	Manda Hinsch		
Postal address:	291 Sprite Avenue, Faerie Glen		
Postal code:	0081	Cell:	0828089938
Telephone:	0123619821	Fax:	
E-mail:	hinm@srk.co.za		

4.2 The specialist appointed in terms of the Regulations_

I, **STEPHEN VAN STADEN**, declare that –

General declaration:

I act as the independent specialist in this application

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

SCIENTIFIC AQUATIC SERVICES CC

Name of company (if applicable):

30 MARCH 2015

Date: