APPENDIX D1

BACKGROUND INFORMATION DOCUMENT

(ENGLISH AND AFRIKAANS)

BACKGROUND INFORMATION DOCUMENT

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

May 2016

PROPOSED MOKOLO CROCODILE (WEST) WATER AUGMENTATION PROJECT PHASE 2

Water Transfer Infrastructure & Bulk Power Supply

Project Team:	Proponent	Implementing Agent	Engineering Team	EIA
	water & sanitation, Department: Water and Sanitation, REPUBLIC OF SOUTH AFRICA	TCTA – A new word for water	Mokolo Crocodile Consultants	NEMAI CONSULTING

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2. Background & Introduction
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1. PURPOSE OF THIS DOCUMENT

The purpose of this **Background Information Document** (BID) is as follows:

1. It serves to provide an overview of the proposed Mokolo Crocodile (West) Water Augmentation Project Phase 2 (MCWAP-2);
2. It provides an outline of the Environmental Impact Assessment (EIA) process that will be undertaken for the project; and
3. It grants the opportunity to be registered as an Interested and Affected Party (I&AP) and allows for comments to be made on the proposed project (refer to the attached Reply Form).

The broad purpose of the EIA is (1) to identify and evaluate potential impacts, (2) to recommend measures to avoid or reduce negative impacts and (3) to enhance positive impacts.

2. BACKGROUND & INTRODUCTION

Major developments are planned for the Waterberg coalfields that are located in the Lephalale area, Limpopo Province. These developments include inter alia the new Medupi Power Station, development of possible further power stations, extension of the Grootegeluk mining operations and further coal mines, possible petrochemical industries, possible exploitation of gas, and accelerated growth in the population in the area with associated settlement and urban development.

As a direct result of the aforementioned developments, the demand for water in the Lephalale area will significantly increase over the next 20 years. Due to the limited availability of water in the area, the Department of Water and Sanitation (DWS) conducted a feasibility study of the Mokolo Crocodile (West) Water Augmentation Project (MCWAP) to establish how the future water demands could be met. The phases of the proposed project include:

- **MCWAP Phase 1** (MCWAP-1): Augment the supply from Mokolo Dam to supply in the growing water use requirement for the interim period until a transfer pipeline from the Crocodile River West can be implemented. The solution must over the long term optimally utilise the full yield from Mokolo Dam and will be operated as a system together with MCWAP-2 when the latter is completed. Phase 1 is operational since June 2015; and
- **MCWAP-2**: Transfer water from the Crocodile River (West) to the Steenbokpan and Lephalale areas. Phase 2 is the focus of this document.

MCWAP-2 consists of the following components:

1. **Water Transfer Infrastructure** (topic of this BID) - transfer of water from the Crocodile River to Lephalale;
2. **Bulk Power Supply** (topic of this BID);
3. **Borrow Pits -** sourcing of construction material; and
4. **River Management System** - manage abstractions from, and the river flow in, the Crocodile River (West) between Hartbeespoort Dam and Vlieëpoort Weir as well as the Moretele River from Klipvoor Dam to the confluence with the Crocodile River (West), and also the required flow past Vlieëpoort.

3. WATER TRANSFER INFRASTRUCTURE

3.1 PROJECT LOCATION

The project area is situated in the Limpopo Province and Waterberg District Municipality (DM). The pipeline routes traverse the Thabazimbi Local Municipality (LM) and Lephalale LM. Refer to **Figure 1**.

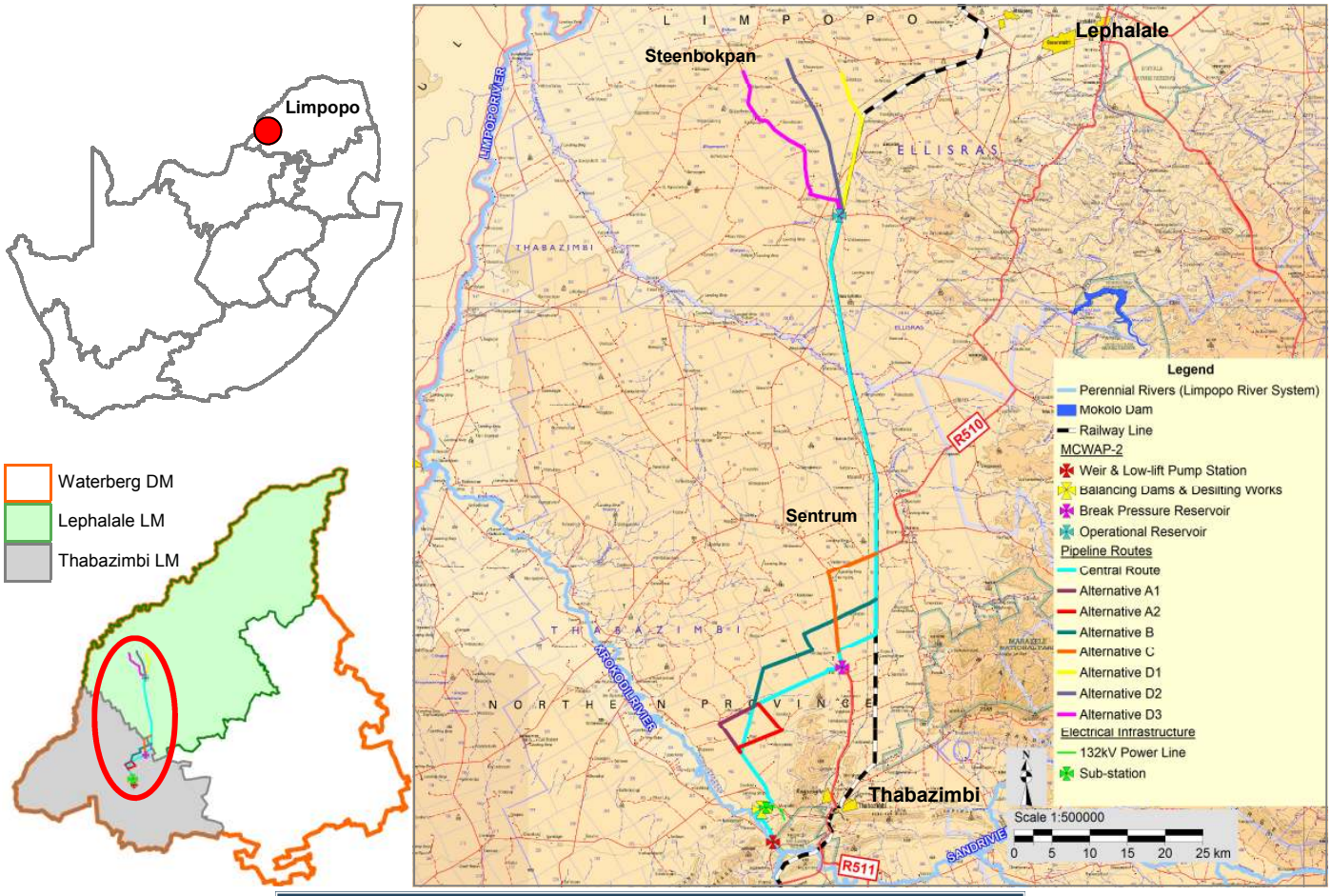


Figure 1: ***Locality map of project area***

Note: *Detailed maps with cadastral boundaries are available on request and will be included in EIA documentation*

3.2 PROJECT INFRASTRUCTURE

The Water Transfer Infrastructure includes the following:

- Vlieëpoort abstraction weir and pump station;
- Low lift rising main;
- Balancing dams and desilting works;
- High-lift pump station;
- High-lift rising main;
- Break pressure reservoir;
- Gravity pipeline;
- Operational reservoir; and
- Electrical infrastructure.

Note: *Information pertaining to the sizing of the infrastructure should be regarded as approximate, and may change during further investigations and detail design.*

3.2.1 Vlieëpoort Abstraction Weir and Pump Station

The weir, as shown in **Figure 2**, constitutes a gravity mass concrete structure. The lowest part of weir would be about 4 m - 6 m high above the river bed level The weir is not designed for storage and it is assumed that it will silt up due to its low height and should be scoured clear during most large flood events.

The low-lift pump station building will be in concrete and will be about 25 m high (above river bed level). The structure will be approximately 70 m long parallel to the right river bank, and will extend approximately 25 m into the right bank.

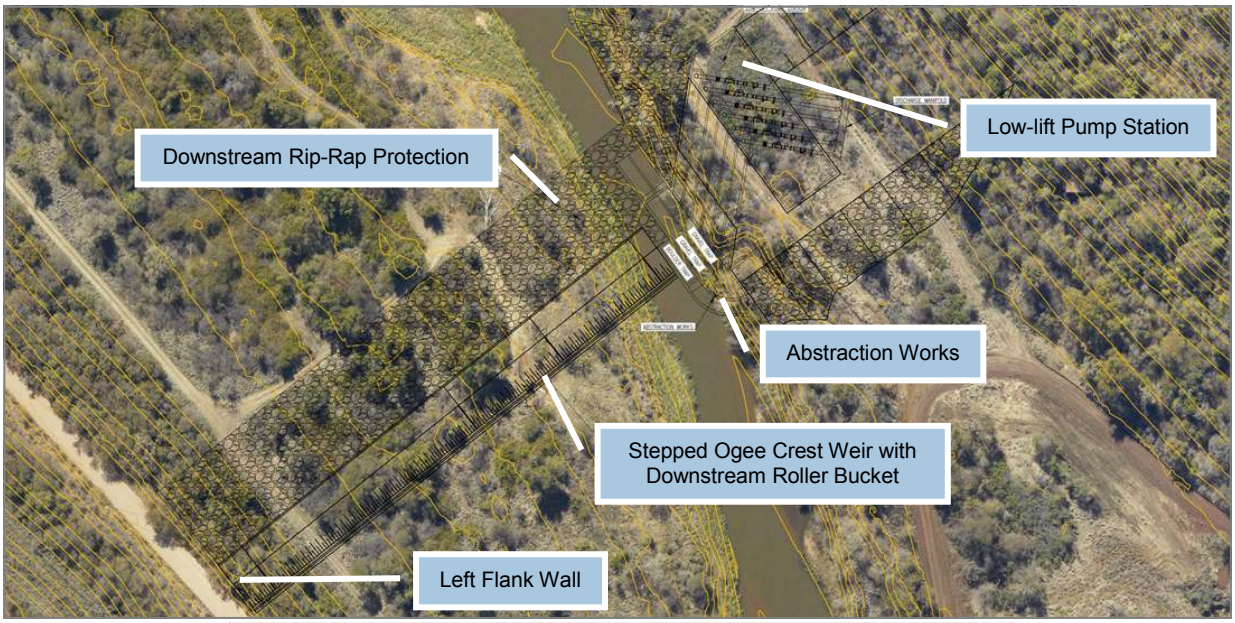


Figure 2: ***Vlieëpoort abstraction weir and pump station***

3.2.2 Balancing Dams, Desilting Works and High-lift Pump Station

The desilting works (**Figure 3**) with flushing facility will be located adjacent to the balancing reservoir within the earthfill embankment. The desilting works will consist of at least eight 120 m long concrete channels, typically 2.5 m wide with a depth varying from 4.0 m to 5.5 m and will protrude about 1 – 2 m above the top of the balancing reservoir embankment.

The Balancing Reservoir (**Figure 3**) will be in the form of an artificial dam formed by shallow excavation and surrounding earthfill embankments. The footprint area of the reservoir including the desilting works is expected to be approximately 620 m x 440 m. The reservoir will be divided into 5 compartments, each with top dimensions of approximately 400 m x 100 m. The depth varies from 13.0 m at the inlet side to 10.5 m at the outlet side.

The High-lift Pump Station (**Figure 3**) will be located adjacent to the Balancing Reservoir and occupy a footprint area of approximately 120 m x 300 m. The pump station will be a reinforced concrete, masonry and steel frame structure. Other structures located within the pump station area will include a guardhouse, electrical building, various reinforced concrete valve chambers, stores and maintenance facilities. The area perimeter will be secured by security fencing.

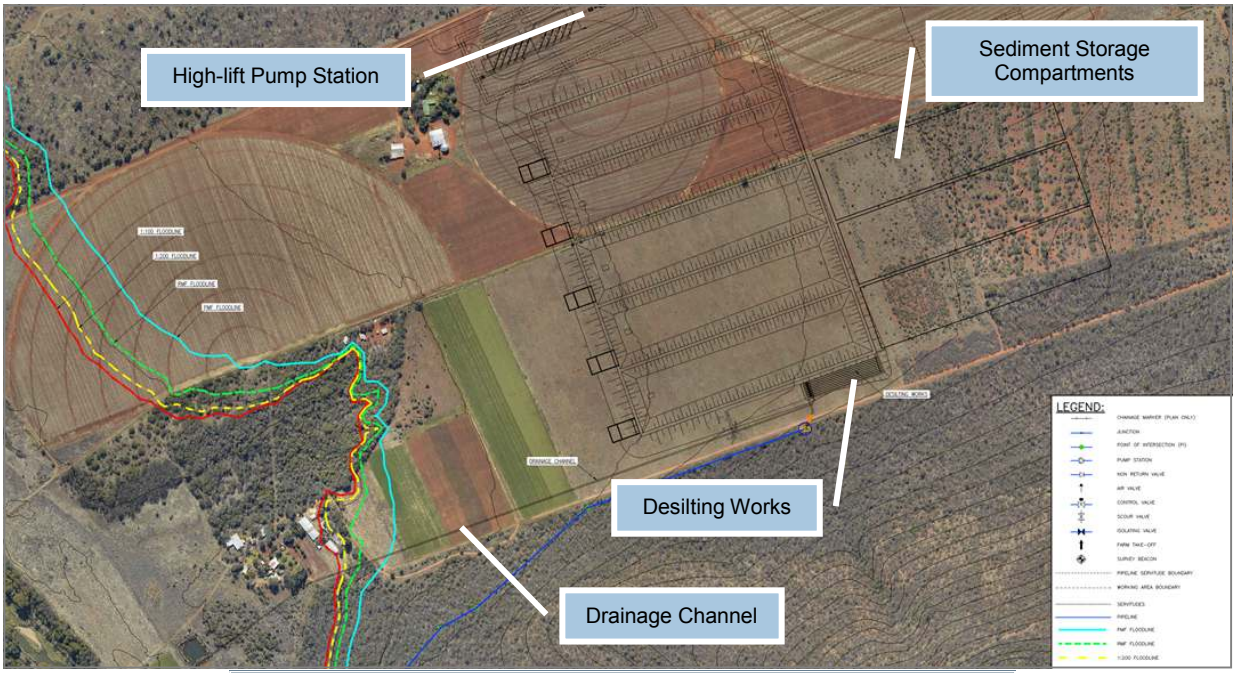


Figure 3: ***Balancing dams and desilting works***

3.2.3 ***Pipeline***

The proposed pipeline route commences from the Vlieëpoort Mountains, at the weir site in the Crocodile River, in the south-western point of the project area. From there it runs in a predominantly northern direction along existing roads, farm boundaries and a railway line, until it reaches its destination in Steenbokpan. The pipeline specifications are provided in **Table 1**.

Table 1: *Pipeline Specifications*

Pipe diameter	Up to 2400 mm
Pipe material	Steel pipes with welded joints.
Installation	• Underground, with a minimum cover above the pipe of 1.0m. • Access/valve chambers will be located at approximately 500 m intervals along the route. It will be concrete structures protruding slightly above natural ground level.
Servitude Width	Typically 40 m during construction (temporary) and 20 m permanent (see **Figure 4**).
Servitude Conditions	• Permanent access to the pipeline servitude will be required after construction. • Pipeline markers (concrete posts) will be installed at changes in direction and at regular intervals along the route. • Farming activities (stock and crop farming) can continue within the servitude area after rehabilitation (between 1 and 2 years after construction), taking cognisance of the need for permanent access to the pipeline servitude.

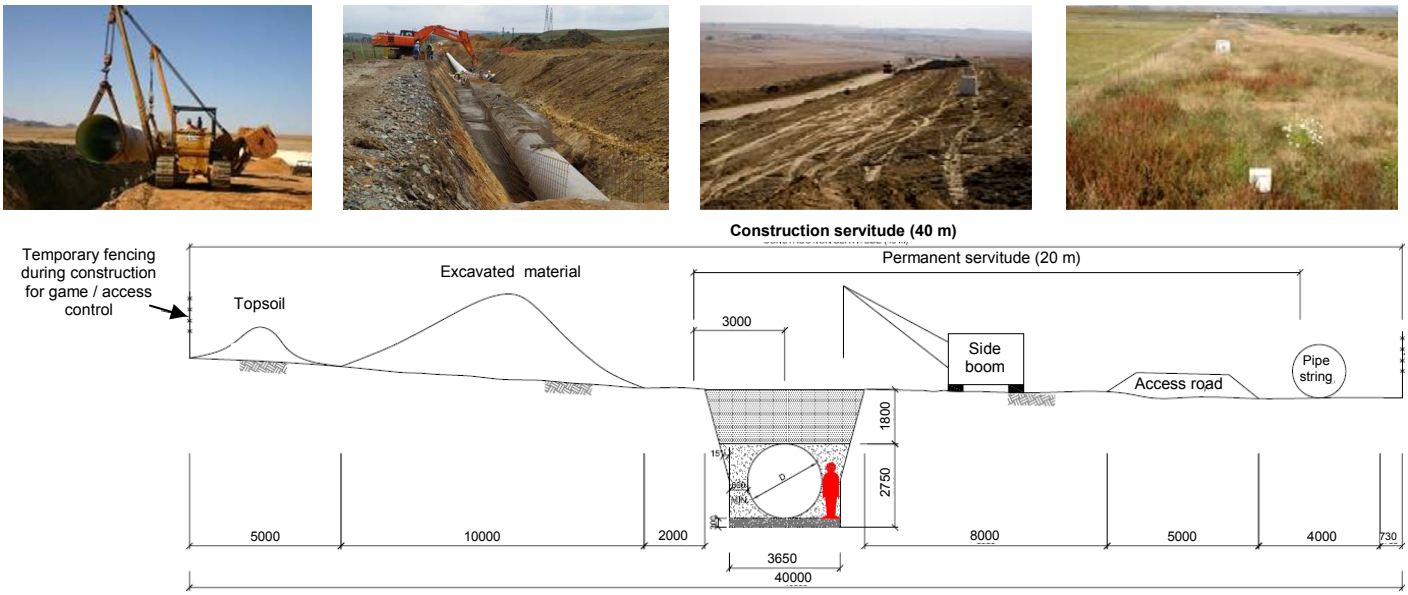


Figure 4: ***Typical construction servitude***

The pipeline will potentially cross underneath the Matlabas River, through a grouted annulus installed by pipe jacking. If geotechnically not possible a pipe bridge will need to be constructed across the river.

3.2.4 ***Reservoirs***

The pipeline route from the Vlieëpoort High-lift pump station crosses over high ground. The elevation in this area is such that a Break Pressure Reservoir (**Figure 6**) can be located to enable gravity flow onwards to the Operational Reservoir (**Figure 5**).

The Reservoirs will generally be in the form of an artificial dam formed by shallow excavation and surrounding earth-fill embankments. The final depth and size of the reservoirs will be determine by the site topography (cut and fill balance) with the aim of minimising surface area to reduce evaporation and maximum flow through to prevent stagnation of the water.

Reservoirs will have to be lined with an appropriate waterproof lining system (HDPE or similar material) and suitable sub-surface drainage must be provided. Reservoirs will be compartmentalised to allow for normal operation, maintenance and cleaning, as well as the mitigating requirements relating to water quality that may be required

The scheme will supply water into Terminal Reservoirs located on the sites of the end consumers. These reservoirs and the infrastructure from the off-takes on the main pipelines are excluded from the scope of MCWAP-2.

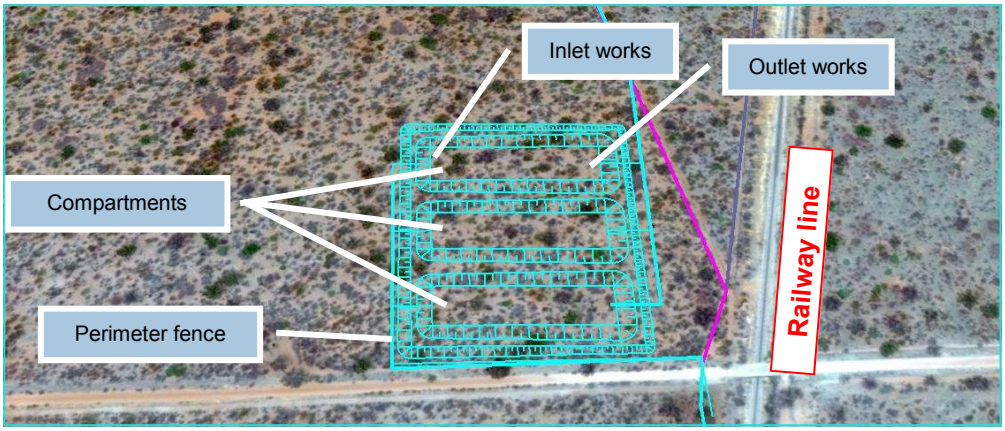


Figure 6: ***Operational Reservoir***

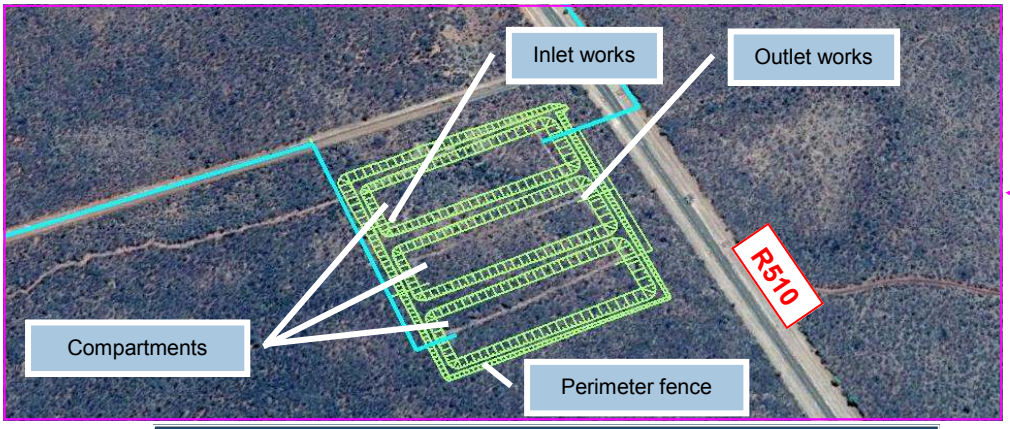


Figure 5: ***Break Pressure Reservoir***

4. BULK POWER SUPPLY

Bulk power supply to the site will consist of the following infrastructure (see **Figure 7**):

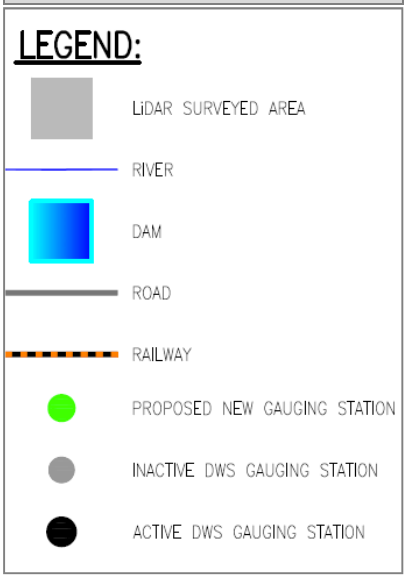
- **Power lines** - Two 132kV Kingbird lines (approximately 4km) from the newly-built Thabatshipi – Thabazimbi Combined 132kV line. The servitude requirements per line will be 31 m (15.5 m from the centre line).
- **Substation** - The substation will be equipped with 2x20MVA 132/11kV transformers, thus maintaining a 20MVA firm capacity at all times. The substation footprint area will be 100 m x 100m.

Figure 7: ***Bulk Power Supply***

5. RIVER MANAGEMENT SYSTEM

The water requirements between the four upstream dams (i.e. Hartbeespoort, Roodekopjes, Klipvoor and Vaalkop) and Vlieëpoort, the flows required past Vlieëpoort and the other factors that will affect the flow in the river at Vlieëpoort such as rainfall, evaporation from the river water surface, evapo-transpiration from the riverine vegetation, tributary and diffuse inflows and diffuse seepage outflows from the river will need to be considered as part of the overall River Management System. The components of the River Management System are shown below.

- 4 Existing dams.
- Possible new river outlet at Hartbeespoort Dam or revised operating procedures.
- Possible new river outlet at Roodekopjes Dam or revised operating procedures.
- 13 Existing river gauging stations.
- 4 new river gauging stations.
- Smart metering of direct abstraction.
- Smart metering of indirect abstraction (boreholes).
- Conveyance capacity in Croc (West) river channel.
- Data communication network.
- Integrated operational centre.



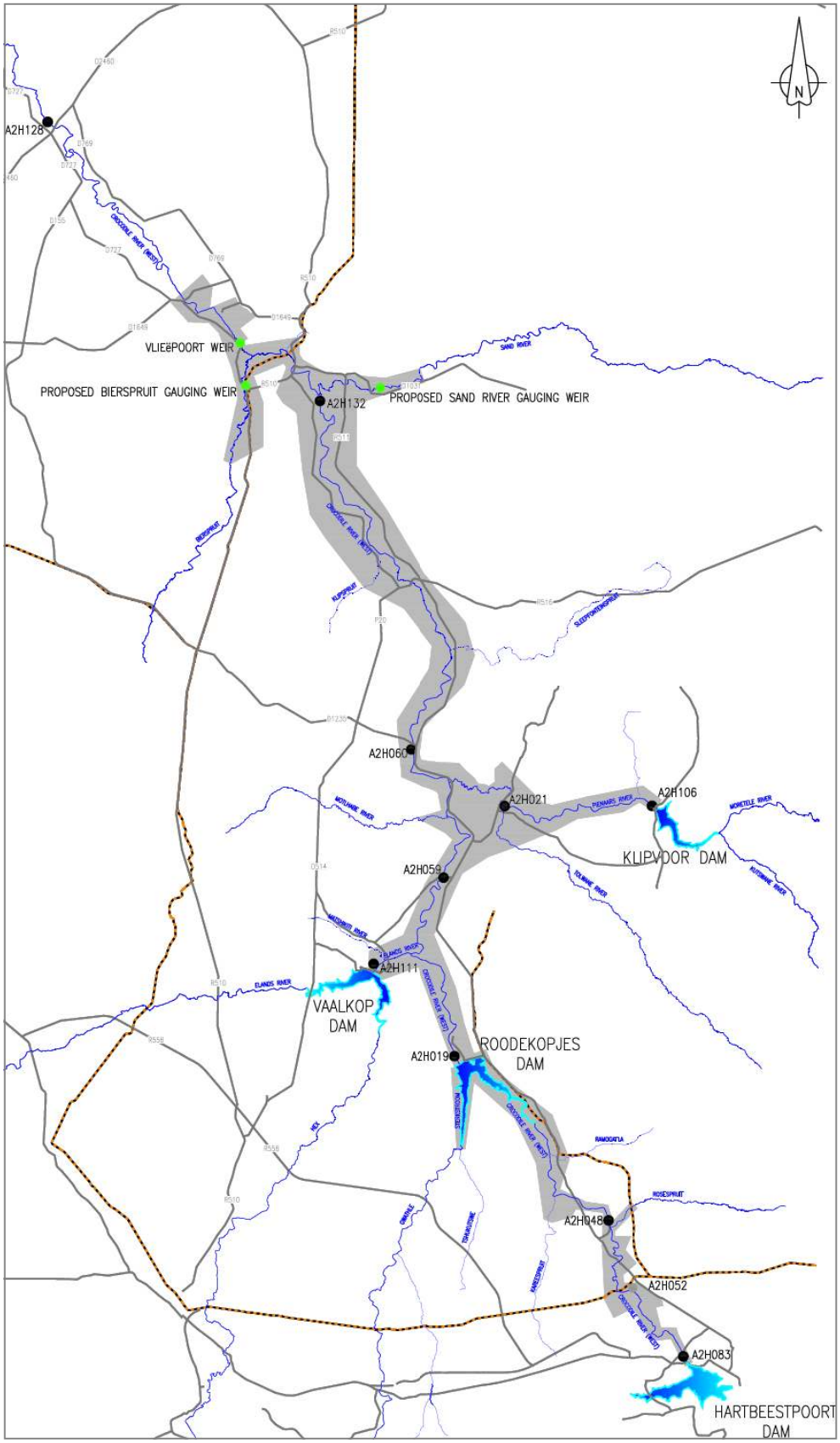


Figure 8: ***River Management System***

6. ENVIRONMENTAL ASSESSMENT

6.1 ENVIRONMENTAL LEGAL FRAMEWORK

The key pieces of legislation and the associated environmental assessments for MCWAP-2 are listed in **Table 2**. A comprehensive legal framework will be included in the Scoping and EIA Reports, which will also include legislation related to specific environmental features (e.g. heritage and cultural resources, protected fauna and flora species, etc.).

***Table 2:** Environmental legislation and associated assessments for MCWAP-2*

	MCWAP-2 Component	NEMA[1]	MPRDA[2]	NWA[3]
1	**Water Transfer Infrastructure**	Scoping & EIA	-	Water Use Authorisation Process
2	**Bulk Power Supply**	Basic Assessment	-	
3	**Borrow Pits**	Scoping & EIA		
4	**River Management System**	Multiple Applications	-	

1 - National Environmental Management Act (No. 107 of 1998)
2 - Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
3 - National Water Act (No. 36 of 1998)

Nemai Consulting was appointed by DWS to act as the Environmental Assessment Practitioner (EAP) to undertake the requisite EIA process for the project, in accordance with GN No. R. 982 of 4 December 2014. In terms of NEMA, the lead decision-making authority for the environmental assessment is the Department of Environmental Affairs (DEA) as the project proponent (DWS) is a national department.

The intention is to undertake the EIA for MCWAP-2 under a Combined Application, where separate applications with linked reference numbers will be submitted for those components listed in **Table 2**. The sections to follow deal specifically with the environmental assessments for the Water Transfer Infrastructure and Bulk Power Supply.

6.2 WATER TRANSFER INFRASTRUCTURE

6.2.1 Previous Environmental Assessments

The MCWAP Environmental Module was originally initiated at the end of 2008 under the EIA Regulations of 2006 and included MCWAP-1 (Environmental Authorisation issued on 03 December 2010), MCWAP-2 (EIA application withdrawn following Scoping phase due to water demands) and MCWAP De-bottlenecking (Environmental Authorisation issued on 24 February 2010).

6.2.2 EIA Triggers

The proposed Water Transfer Infrastructure trigger certain activities listed in Government Notice (GN) No. R. 983, R. 984 and R. 985 of 4 December 2014 (listed in **Table 3**), which require environmental authorisation in terms of the EIA Regulations of 2014 that were promulgated in terms of NEMA.

***Table 3:** Possible listed activities triggered by the Water Transfer Infrastructure*

Listing Notices	Activities Triggered
1 (GN No. R. 983)	*9; 11; 12; 13; 14; 19; 24; 27; 28; 30; 45; 47; 48; 49; 56; 63; 66; 67*
2 (GN No. R. 984)	*11; 15; 16;*
3 (GN No. R. 985)	*2(a)(iii); 4(a)(ii); 10(e); 12(a); 14(a)(ii);15(b); 18(a)(ii); 23(a)(ii); 26*

Note: The list of activities will be refined as the EIA process unfolds (as necessary).

6.2.3 EIA Process

Based on the listed activities triggered by the Water Transfer Infrastructure, the requite process to be conducted is a Scoping and EIA process (outlined in **Figure 9**) which will be executed in accordance with GN No. R. 982 of 4 December 2014.

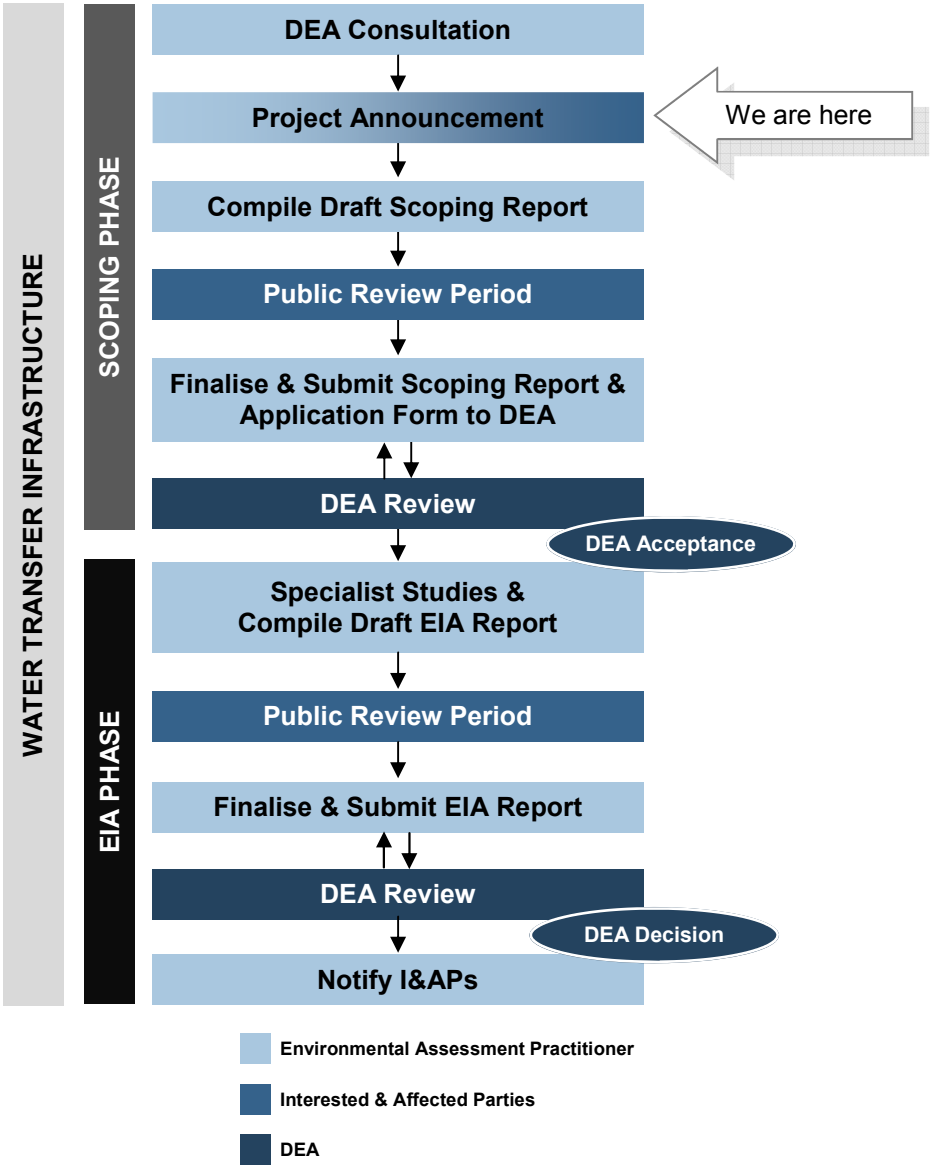


Figure 9: *Overview of Scoping and EIA process*

6.3 BULK POWER SUPPLY

6.3.1 EIA Triggers

The proposed Bulk Power Supply project triggers certain activities listed in GN No. R. 983 and R. 985 of 4 December 2014 (listed in **Table 4**), which require environmental authorisation in terms of the EIA Regulations of 2014 that were promulgated in terms of NEMA.

Table 4: *Possible listed activities triggered by the Bulk Power Supply*

Listing Notices	Activities Triggered
1 (GN No. R. 983)	*11; 12; 14; 19; 24; 27; 28; 30; 48; 49; 56; 67*
3 (GN No. R. 985)	*4(a)(ii); 10(e); 12(a); 14(a)(ii); 18(a)(ii); 23(a)(ii); 26*

A full explanation of the listed activities will be included in the Basic Assessment Report and can also be provided upon request. The list of activities will be refined as the EIA process unfolds (as necessary).

6.3.2 EIA Process

Based on the types of activities triggered by the Bulk Power Supply, the requite process to be conducted is a Basic Assessment (outlined in **Figure 10**) which will be executed in accordance with GN No. R. 982 of 4 December 2014.

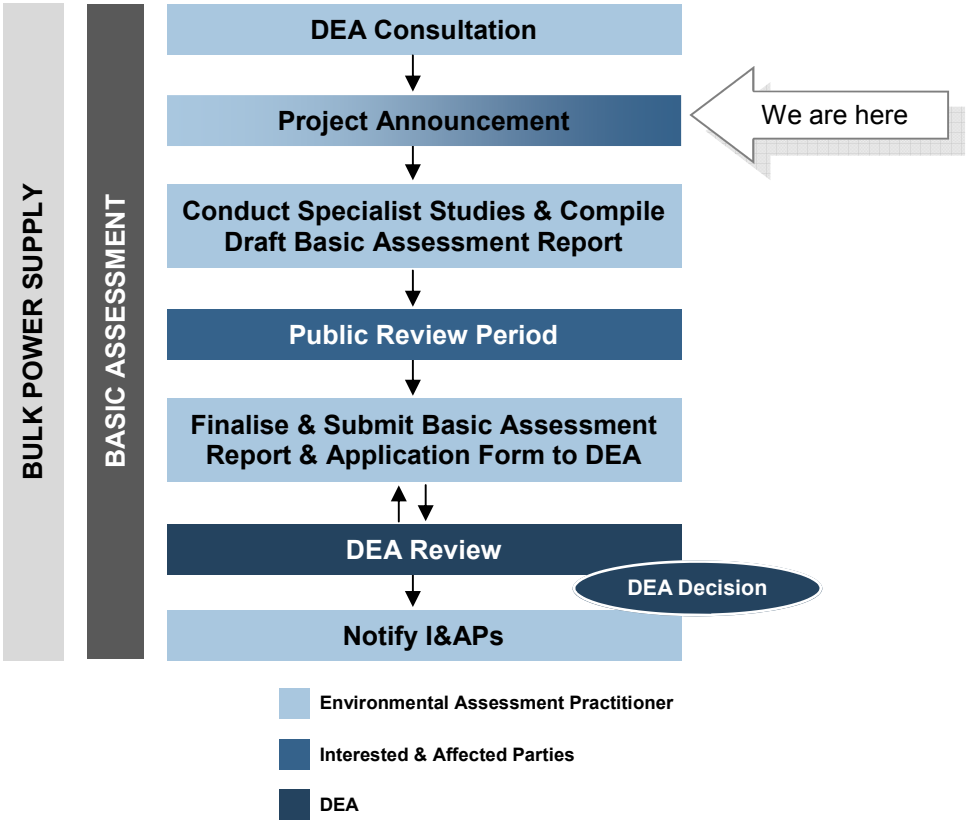


Figure 10: Overview of Basic Assessment process

6.4 SPECIALIST STUDIES

The nature and extent of the specialist studies to be conducted for the purposes of the EIA will be determined during the Scoping Phase (Water Transfer Infrastructure) and initiation of the Basic Assessment (Bulk Power Supply). At this stage, the following environmental specialist studies have been identified:

- Terrestrial Ecological Impact Assessment;
- Heritage Impact Assessment;
- Aquatic and Riverine Impact Assessment;
- Agricultural Impact Assessment;
- Socio-Economic Impact Assessment; and
- Wetland Assessment and Delineation.

The findings of the specialist studies conducted as part of the previous EIA will also be taken into consideration, which include a Visual Impact Assessment and Noise Study. Additional studies may be identified as the EIA process unfolds. Various technical studies will also be undertaken.

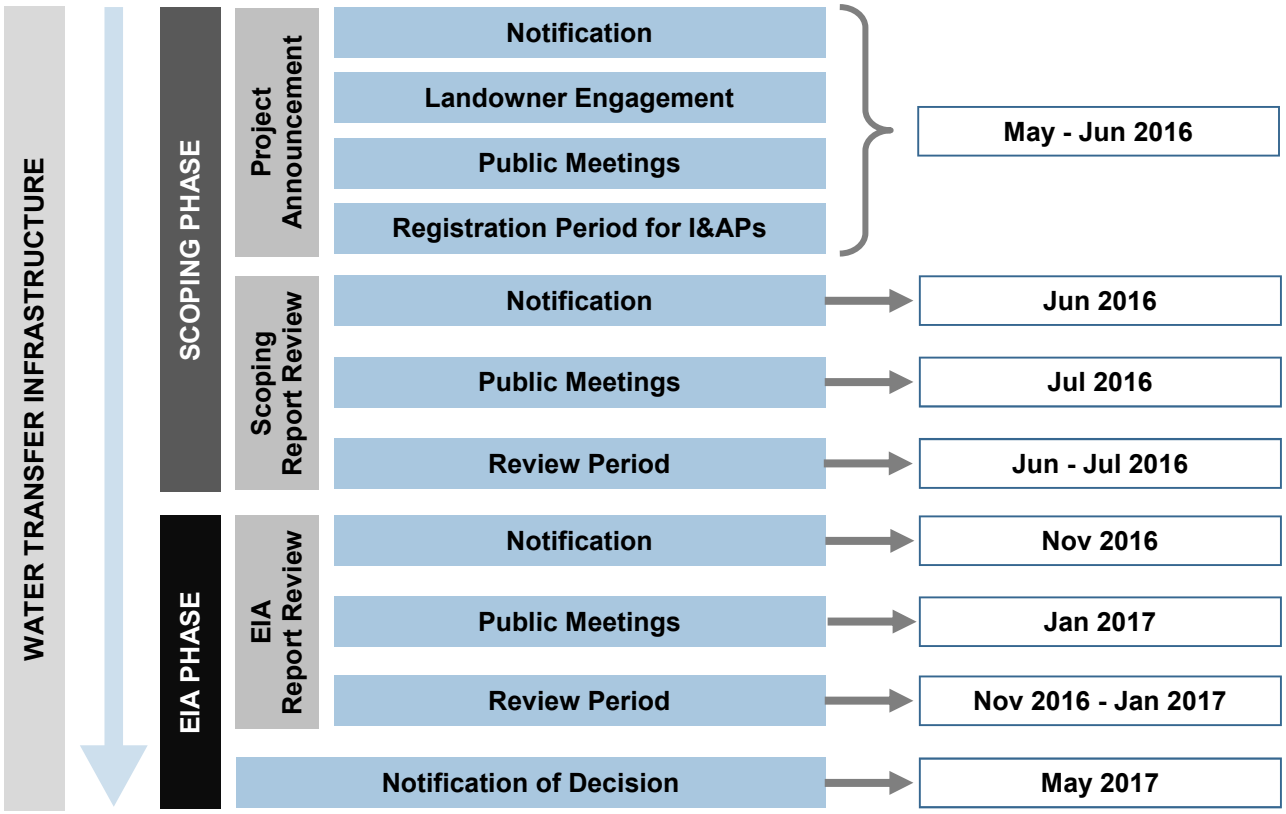
6.5 PUBLIC PARTICIPATION

6.5.1 Overview of Public Participation Process

The Public Participation Process for the Water Transfer Infrastructure (Scoping and EIA process) and Bulk Power Supply (Basic Assessment process) are outlined in **Figure 11** and **Figure 12**, respectively.

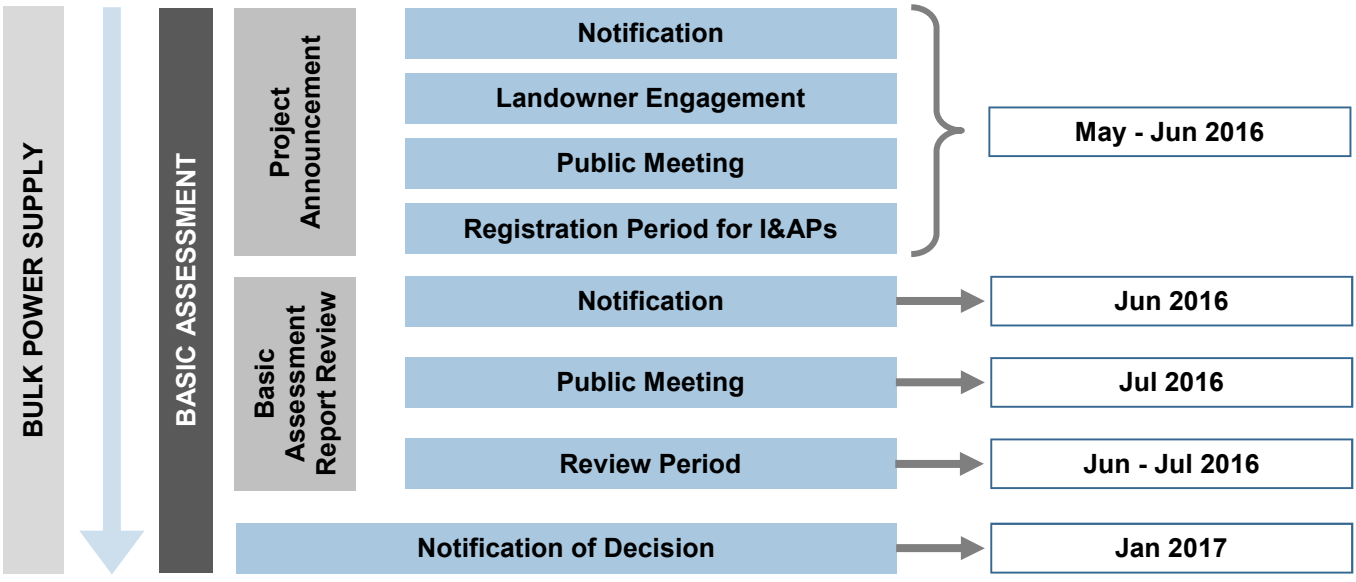
6.5.2 Registration as an I&AP

To register as an I&AP and to raise any comments or concerns, please complete the attached Reply Form and return to Nemai Consulting by **25 June 2016**.



Note: *Dates may change during the course of the EIA*

Figure 11: *Outline of Public Participation Process - Scoping & EIA*



Note: *Dates may change during the course of the EIA*

Figure 12: *Outline of Public Participation Process - Basic Assessment*

6.5.3 *Public Meetings*

The public meetings listed in **Table 5** have been scheduled, where the aims of these meetings include the following:

- To explain the project;
- To provide an overview of the EIA process;
- To provide a platform for project-related discussions; and
- To obtain input from I&APs into the Scoping Phase (Water Transfer Infrastructure) and Basic Assessment (Bulk Power Supply).

Table 5: *Details of public meetings - EIA Announcement Phase*

Project Components	Water Transfer Infrastructure & Bulk Power Supply	Water Transfer Infrastructure	Water Transfer Infrastructure
Date	**25 May 2016**	**26 May 2016**	**26 May 2016**
Area	Thabazimbi	Lephalale	Steenbokpan
Time	09h00 – 13h00	08h30 – 12h30	14h00 - 18h00
Venue	Kumba Bioscope Hall	Mogol Conference Hall	Thusong Community Centre

Please let us know if you require directions to the above venues.

Targeted meetings may also be held with landowners, authorities, stakeholders and I&APs during the course of the EIA (as required), which will be arranged separately.

7. CONTACT DETAILS

For any queries pertaining to the project, please contact the Environmental Assessment Practitioner below:

NEMAI CONSULTING

Contact Person: *Donavan Henning*
Tel: *(011) 781 1730*
Fax: *(011) 781 1731*
Email: *donavanh@nemai.co.za*
Postal Address: *PO Box 1673, Sunninghill, 2157*

For further information , please visit the **Project Website:**
https://www.dwa.gov.za/projects/mcwap/

AGTERGRONDINLIGTINGSDOKUMENT

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Mei 2016

VOORGESTELDE MOKOLO EN KROKODIL (WES) WATERAANVULLINGSPROJEK FASE 2

WATEROORDRAGSKEMA EN GROOTMAAT-KRAGVOORSIENING

Projekspan:	Projekvoorsteller	Implementeringsagent	Tegniese Span	Omgewingsbepaling
	water & sanitation, Department: Water and Sanitation, REPUBLIC OF SOUTH AFRICA	TCTA – A new word for water	Mokolo Crocodile Consultants	NEMAI CONSULTING

INHOUD

1. Doel van hierdie dokument
2. Agtergrond en inleiding
3. Wateroordraginfrastruktuur
4. Grootmaat-kragvoorsiening
5. Rivierbedryfstelsel
6. Omgewingsbepaling
7. Kontakbesonderhede

1. DOEL VAN HIERDIE DOKUMENT

Die doel van hierdie Aagtergrondinligtingsdokument (AID) is as volg:

1. Dit dien as 'n oorsig van die voorgenome Mokolo en Krokodil (Wes) Water-aanvullingsprojek Fase 2 (MKWAP-2).
2. Dit bied 'n uiteensetting van die omgewingsimpakbepalingsproses wat vir die projek onderneem sal word.
3. Dit bied die geleentheid om as 'n Belanghebbende en Geaffekteerde Party (B&GP) te registreer en maak voorsiening vir kommentaar oor die voorgenome projek (verwys na die aangehegte Terugvoeringsvorm).

Die breë doel van die omgewingsimpakbepaling (OIB) is om (1) potensiële impakte te identifiseer en te evalueer, (2) maatreëls aan te beveel om negatiewe impakte te vermy of te verminder en (3) positiewe impakte te verhoog.

2. AGTERGROND EN INLEIDING

Groot ontwikkelings word beplan vir die Waterberg-steenkoolvelde in die Lephalale-gebied, Limpopo-provinsie. Hierdie ontwikkelings sluit onder andere in die nuwe Medupi-kragstasie, oprigting van moontlike verdere kragstasies, uitbreiding van die Grootegeluk-steenkoolmyn asook verdere steenkoolmyne, moontlike petrochemiese industrieë, moontlike ontginning van gas, asook 'n toename in die mensebevolking in die gebied met gepaardgaande nedersetting en stedelike ontwikkeling.

As gevolg van die bogenoemde ontwikkelings sal daar 'n beduidende toename wees in die aanvraag na water in die Lephalale-gebied oor die volgende 20 jaar. Weens die beperkte beskikbaarheid van water in die gebied het die Departement van Water en Sanitasie (DWS) 'n uitvoerbaarheidstudie van die Mokolo en Krokodil (Wes) Wateraanvullingsprojek (MKWAP) uitgevoer om opsies vir die voorsiening in die waterbehoeftes te ondersoek. Die fases van die voorgestelde projek sluit die volgende in:

- MKWAP Fase 1 (MKWAP-1): Parallelle pyplyn ter aanvulling vanaf Mokolodam om in die groeiende waterbehoeftes te voorsien vir die interimtydperk totdat die oordragpyplyne vanaf die Krokodilrivier (Wes) geïmplementeer kan word. Hierdie fase moet die opbrengs van die Mokolodam ten volle op lang termyn benut en sal tesame met die voorgestelde MKWAP-2 as 'n stelsel bedryf word nadat laasgenoemde afgehandel is. Fase 1 word reeds vanaf Junie 2015 bedryf.
- MKWAP Fase 2 (MKWAP-2): Oordragskema vanaf die Krokodilrivier (Wes) na die Steenbokpan- en Lephalale-gebied. Fase 2 is die fokus van hierdie dokument.

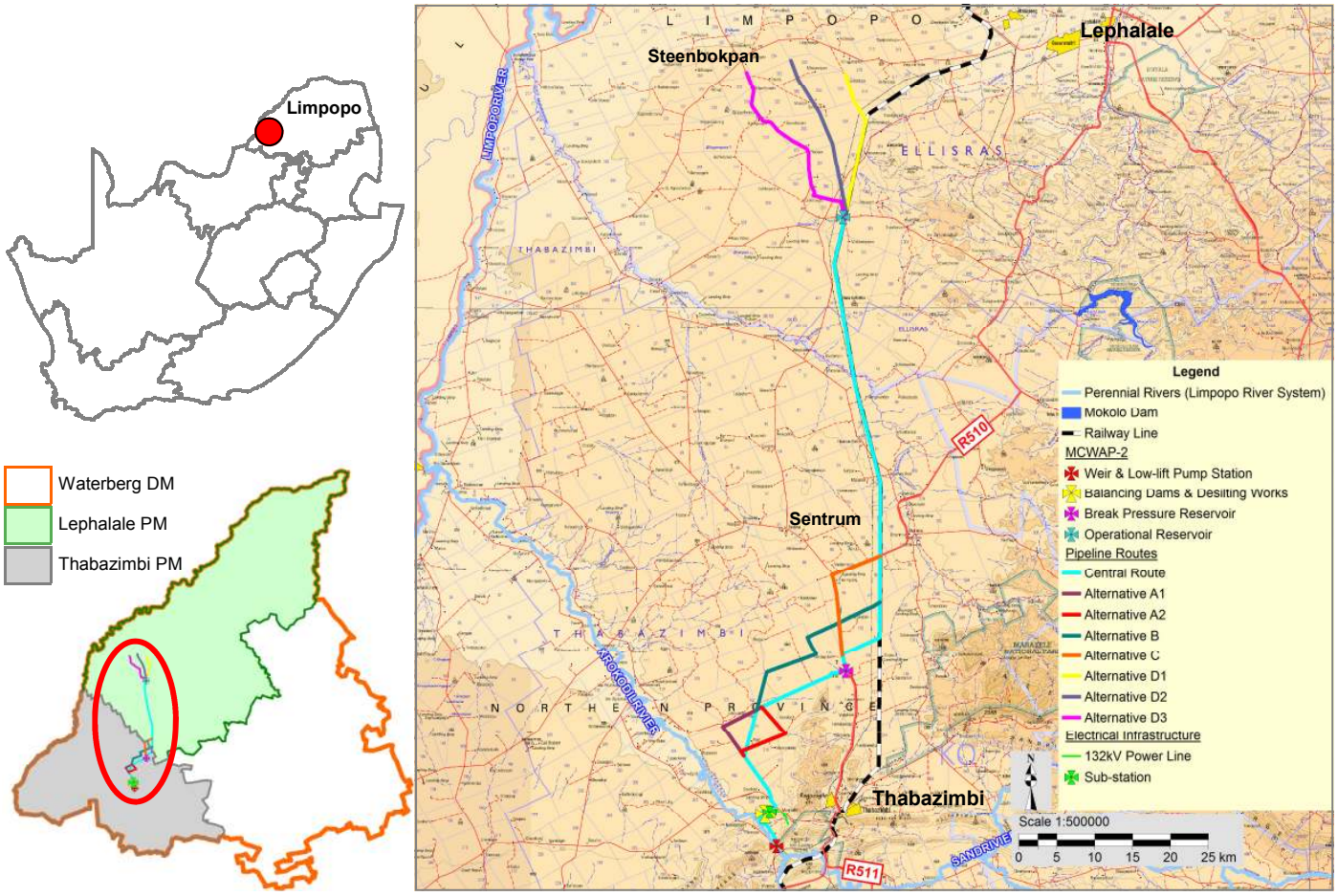
MKWAP-2 bestaan uit die volgende komponente:

1. Wateroordraginfrastruktuur (hoofonderwerp van hierdie AID), wat die oordrag van water van die Krokodilrivier na Lephalale behels;
2. Grootmaat-kragvoorsiening (hoofonderwerp van hierdie AID);
3. Leengroewe;
4. Rivierbedryfstelsel om ontrekkings vanaf, asook die riviervloei in, die Krokodilrivier (Wes) tussen Hartbeespoortdam en die stuwal by Vlieëpoort sowel as die Moretelerivier vanaf Klipvoordam tot by die samevloei met die Krokodilrivier (Wes), asook die vereiste vloei verby Vlieëpoort te bestuur.

3. WATEROORDRAGINFRASTRUKTUUR

3.1 PROJEKLIGGING

Die projekgebied is geleë in die Limpopo-provinsie en Waterbergdistriksmunisipaliteit (DM). Die pyplynroete oorkruis die Thabazimbi Plaaslike Munisipaliteit (PM) en die Lephalale PM. Verwys na **Figuur 1**.



Figuur 1: Projekligging

LW: *Gedetailleerde karate is beskikbaar met versoek.*

3.2 PROJEKINFRASTRUKTUUR

Die infrastruktuur wat met die Wateroordraginfrastruktuur verband hou, sluit die volgende in:

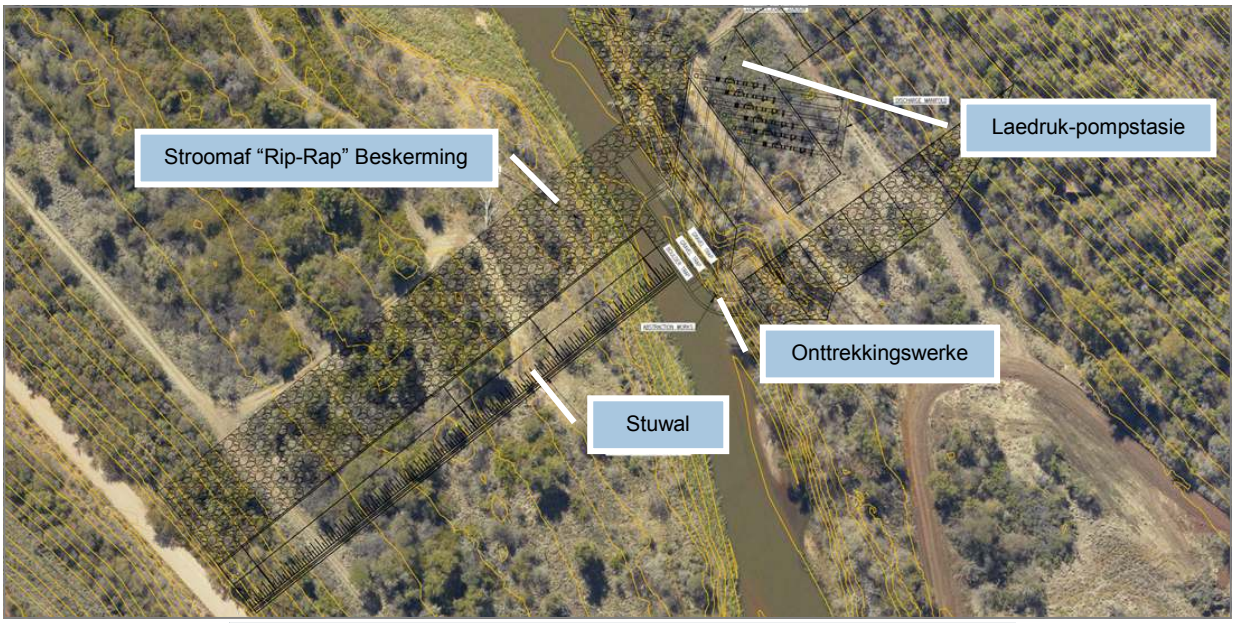
- Onttrekkingstuwal en pompstasie by Vlieëpoort;
- Laedruk-styghoofleiding;
- Balanseerdamme en ontslikkingswerke;
- Hoëdruk-pompstasie;
- Hoëdruk-styghoofleiding;
- Drukbreekreservoir;
- Gravitasiepyplyn;
- Operasionele bergingsdam; en
- Elektriese infrastruktuur.

LW: *Inligting rakende die omvang van die infrastruktuur moet as benaderd beskou word, en kan moontlik met verdere ondersoeke en detailontwerp verander.*

3.2.1 Onttrekkingstuwal en Pompstasie by Vlieëpoort

Die stuwal, soos in **Figuur 2** getoon, behels 'n gravitasiemassa-betonstruktuur. Die laagste deel van die stuwal sal ongeveer 4 tot 6 m hoog bo die rivierbeddingvlak wees. Die stuwal is nie vir berging ontwerp nie, en daar word aanvaar dat dit sal toeslik weens die lae hoogte daarvan, en moet dus tydens die meeste groot oorstromingsgebeure skoongeskuur word.

Die laedruk-pompstasiegebou sal van beton wees en sal ongeveer 25 m hoog wees (bo rivierbeddingvlak). Die struktuur sal ongeveer 70 m lank wees parallel aan die regterrivieroewer, en sal ongeveer 25 m tot in die regteroewer strek.



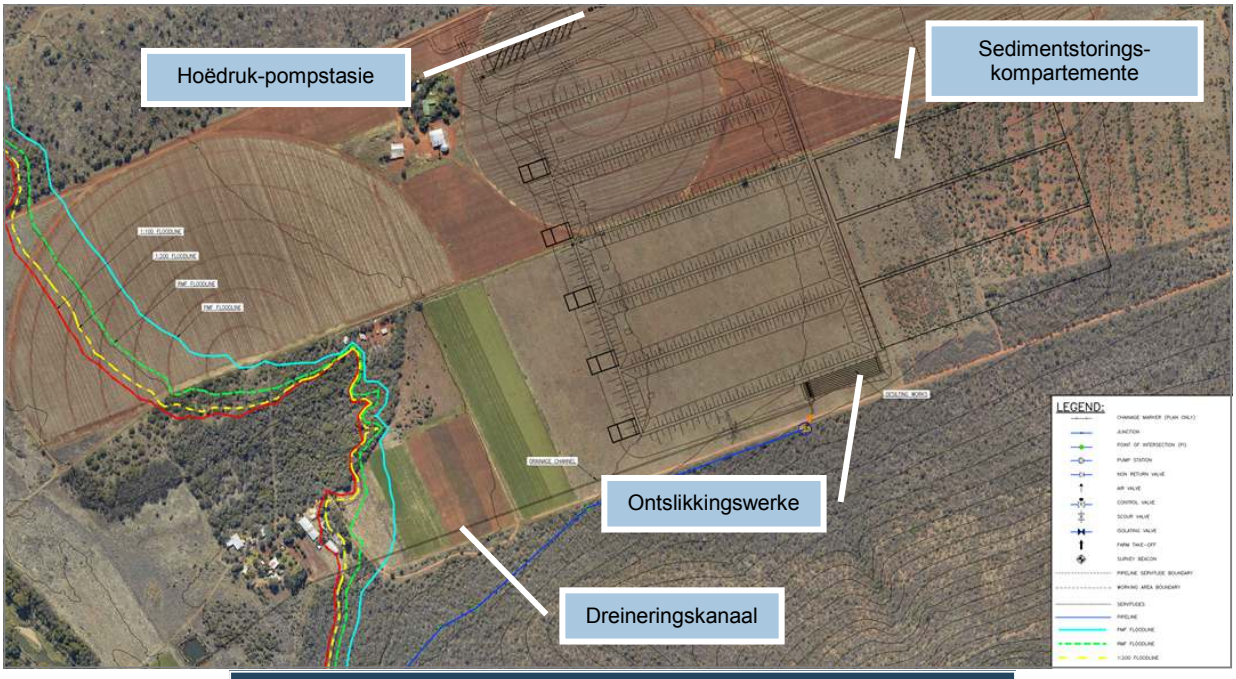
Figuur 2: ***Onttrekkingstuwal en pompstasie by Vlieëpoort***

3.2.2 Balanseerdamme, Ontslikkingswerke en Hoëdruk-pompstasie

Die ontslikkingswerke (**Figuur 3**) met spoelfasiliteit sal langs die balanseerreservoir in die grondvullingswal geleë wees. Die ontslikkingswerke sal bestaan uit ten minste agt 120 m lange betonkanale, tipies 2.5 m breed met 'n diepte wat van 4.0 m tot 5.5 m wissel, en sal ongeveer 1 tot 2 m bo die bopunt van die balanseerreservoirwal uitsteek.

Die balanseerreservoir (**Figuur 3**) sal in die vorm van 'n kunsmatige dam wees wat deur vlak uitgrawing en omliggende grondvullingswalle gevorm is. Die reservoir, insluitende die ontslikkingswerke, sal na verwagting ongeveer 620 m x 440 m wees. Die reservoir sal in vyf kompartemente verdeel word, elk met bovlakafmetings van ongeveer 400 m x 100 m. Die diepte wissel van 13.0 m by die toevoerkant tot 10.5 m by die afvoerkant.

Die hoëdruk-pompstasie (**Figuur 3**) sal langs die balanseerreservoir geleë wees en beslaan 'n voetspooroppervlakte van ongeveer 120 m x 300 m. Die pompstasie sal 'n struktuur van gewapende beton, messelwerk en staalrame wees. Ander strukture wat in die pompstasiegebied geleë sal wees, sluit in 'n waghuis, elektriese gebou, verskeie betonklepkamers, pakhuise en instandhoudingsfasiliteite. Die buitegrense van die gebied sal met sekuriteitsomheining beveilig word.



Figuur 3: ***Balanseerdamme en ontslikkingswerke***

3.2.3 *Pyplyn*

Die voorgenome pyplynroete begin by die Vlieëpoortberge, aan die stuwalkant van die Krokodilrivier, in die suidwestelike punt van die projekgebied. Van daar af loop dit hoofsaaklik noordwaarts langs bestaande paaie, plaasgrense en 'n spoorlyn langs, totdat dit die bestemming in Steenbokpan bereik. Die pyplynspesifikasies word in **Tabel 1** gegee.

Tabel 1: *Pyplynspesifikasies*

Pypdeursnit	Tot 2400 mm.
Pypmateriaal	Staalpype met sweislaste.
Installering	• Ondergronds, met 'n minimumdekking bo die pyp van 1.0 m. • Toegangs-/klepkamers sal met intervalle van ongeveer 500 m langs die roete af geleë wees. Dit sal betonstrukture wees wat effens bo die natuurlike grondvlak uitsteek.
Serwituutbreedte	Tipies 40 m tydens bouwerk (tydelik) en 20 m permanent (sien **Figuur 4**).
Serwituutvoor-waardes	• Permanente toegang tot die pyplynserwituut sal ná bouwerk vereis word. • Pyplynmerkers (betonpale) sal by rigtingveranderings en met gereelde intervalle op die roete geïnstalleer word. • Landbou-aktiwiteite (vee- en saaiboerdery) kan in die serwituutgebied voortgesit word ná rehabilitasie (tussen 1 en 2 jaar ná die bouwerk), met inagname van die noodsaaklikheid van permanente toegang tot die pyplynserwituut.




Figuur 4: ***Tipiese konstruksieserwituut***

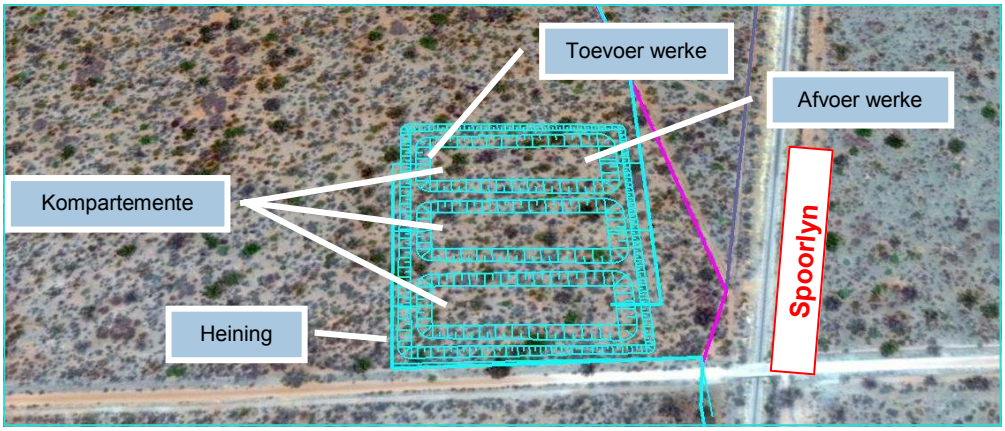
Die pyplyn sal moontlik onder die Matlabasrivier kruis, deur 'n dig gepleisterde annulus wat met pypdomkrag geïnstalleer is. As dit geotegnies nie moontlik is nie, moet 'n pypbrug oor die rivier gebou word.

3.2.4 *Reservoirs*

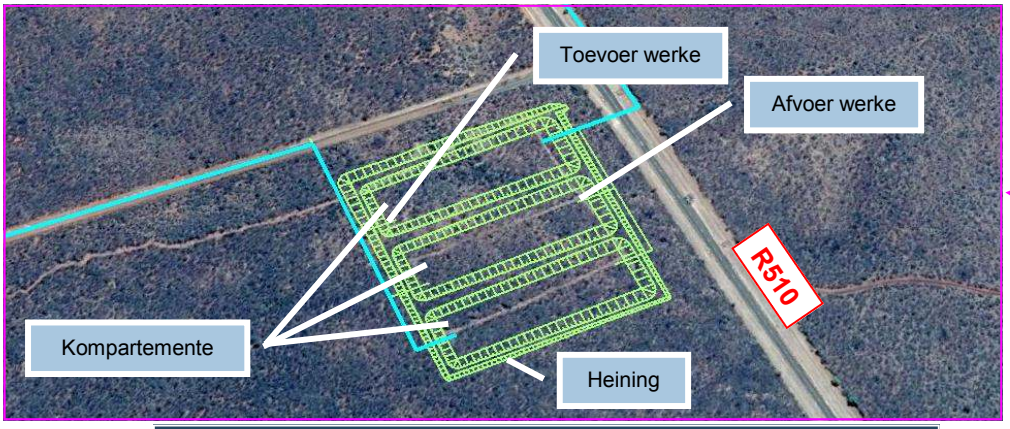
Die pyplynroete van die Vlieëpoort-hoëdruk-pompstasie kruis oor hoë grond. Die hoogte van hierdie gebied is sodanig dat 'n drukbreekreservoir (**Figuur 6**) aangebring kan word om graviteitsvloei na die operasionele reservoir (**Figuur 5**) moontlik te maak.

Die reservoirs sal in die algemeen in die vorm van 'n kunsmatige dam wees wat deur lae uitgrawing en omliggende grondvullingswalle gevorm word. Die finale diepte en grootte van die reservoirs sal deur die terreintopografie (sny-en -vul-balans) bepaal word, met die doel om oppervlakte te minimaliseer ten einde verdamping en maksimumdeurvloei te verlaag om stagnasie van die water te verhoed.

Reservoirs sal met 'n geskikte waterdigtingsvoerstelsel (HDPE of soortgelyke materiaal) gevoer moet word, en geskikte ondergrondse dreinering moet verskaf word. Reservoirs sal gekompartementaliseer word om voorsiening te maak vir normale werking, instandhouding en skoonmaak, asook die versagtingsvereistes verbonde aan watergehalte wat moontlik vereis kan word.



Figuur 6: ***Operasionele bergingsdam***



Figuur 5: ***Drukbreekreservoir***

4. GROOTMAAT-KRAGVOORSIENING

Grootmaat-kragvoorsiening na die terrein sal uit die volgende infrastruktuur bestaan (sien **Figuur 7**):

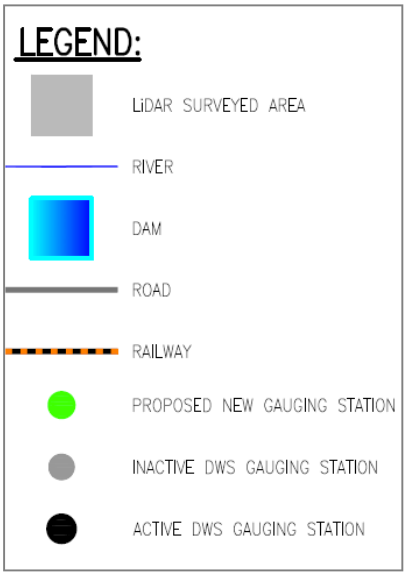
- **Kraglyne** – Twee 132 kV-Kingbird-lyne (ongeveer 4 km) vanaf die nuut geboude Thabatshipi – Thabazimbi Gekombineerde 132 kV-lyn. Die serwituutvereistes per lyn sal 31 m wees (15.5 m vanaf die middelste lyn).
- **Substasie** – Die substasie sal toegerus wees met 2 x 20 MVA 132/11 kV-transformators, en sal dus 'n stabiele kapasiteit van 20 MVA te alle tye kan handhaaf. Die substasievoetspoor sal 100 m x 100 m wees.

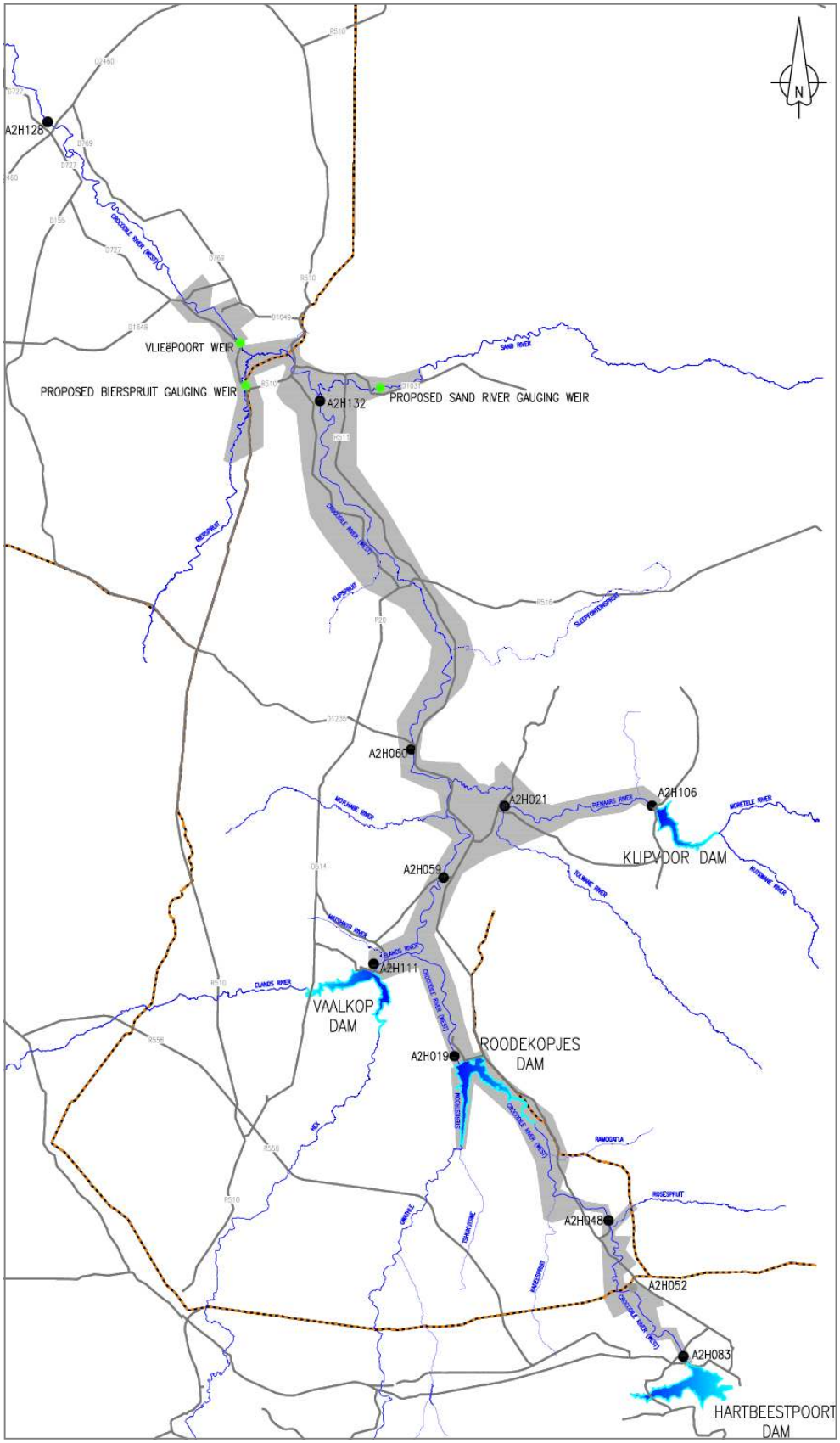
Figuur 7: ***Grootmaat-kragvoorsiening***

5. RIVIERBEDRYFSTELSEL

Die watervereistes tussen die vier stroomop-damme (nl. Hartbeespoort, Roodekopjes, Klipvoor en Vaalkop) en Vlieëpoort, die vloei wat verby Vlieëpoort vereis word en die ander faktore wat die vloei in die rivier by Vlieëpoort sal beïnvloed, soos reënval, verdamping vanaf die rivierwateroppervlak, evapotranspirasie van die rivierplantegroei, syrivier- en verspreide invloei en verspreide sypelwateruitvloei van die rivier, sal in ag geneem moet word as deel van die algehele rivierbedryfstelsel. Die komponente van die stelsel word hier onder getoon.

- Vier bestaande damme;
- Moontlike nuwe rivierafvoer by Hartbeespoortdam of hersiene bedryfsprosedures;
- Moontlike nuwe rivierafvoer by Roodekopjesdam of hersiene bedryfsprosedures;
- Dertien bestaande rivi-ermeetstasies;
- Vier nuwe riviermeetstasies;
- Slim meting van direkte onttrekking;
- Slim meting van indirekte onttrekking (boorgate);
- Vervoerkapasiteit in rivierka-naal van Krokodil (Wes);
- Datakommunikasienetwerk;
- Geïntegreerde bedryfsentrum.





Figuur 8: ***Rivierbedryfstelsel***

6. OMGEWINGSBEPALING

6.1 OMGEWINGSREGSRAAMWERK

Die vernaamste wetgewing en verbandhoudende omgewingsbepalings vir MKWAP-2 word in **Tabel 2** gelys. 'n Omvattende regsraamwerk sal by die Omvangsbepalings-verslag en OIB-verslag ingesluit word, wat ook wetgewing sal insluit verbonde aan spesifieke omgewingsaspekte (bv. erfenis- en kulturele hulpbronne, beskermde fauna- en flora-spesies, ens.).

***Tabel 2:** Omgewingswetgewing en verbandhoudende assesserings vir MKWAP-2*

	MKWAP-2 Komponent	NWOB[1]	WMPHO[2]	NWW[3]
1	**Wateroordraginfrastruktuur**	Omvangsbepaling en OIB	-	Watergebruikmag-tigingsproses
2	**Grootmaat-kragvoorsiening**	Basiese Bepaling	-	
3	**Leengroewe**	Omvangsbepaling en OIB		
4	**Rivierbedryfstelsel**	Veelvoudige aansoeke	-	

1 - Nasionale Wet op Omgewingsbestuur (Wet 107 van 1998)
2 - Wet op Minerale- en Petroleumhulpbronontwikkeling (Wet 28 van 2002)
3 - Nasionale Waterwet (Wet 36 van 1998)

Nemai Consulting is deur die DWS aangestel om as die omgewingsbepalingspraktisyn op te tree om die OIB-proses vir die projek te onderneem, wat ingevolge Staatskennisgewing (SK) nr. R. 982 van 4 Desember 2014 uitgevoer sal word. Ingevolge die NWOB is die besluitnemende gesag vir die omgewingsbepaling die Departement van Omgewingsake (DOS), aangesien die projekvoorsteller (DWS) 'n nasionale departement is.

Die bedoeling is om die OIB vir MKWAP-2 onder 'n gekombineerde aansoek te onderneem, waar afsonderlike aansoeke met verwante verwysingsnommers ingedien sal word vir die komponente wat in **Tabel 2** gelys is. Die volgende afdelings handel spesifiek oor die omgewingsbepalings vir die Wateroordraginfrastruktuur en Grootmaat-kragvoorsiening .

6.2 WATEROORDRAGINFRASTRUKTUUR

6.2.1 Vorige Omgewingsbepalings

Die MKWAP-omgewingsmodule is aanvanklik van stapel gestuur aan die einde van 2008 ingevolge die OIB-regulasies van 2006 en het MKWAP-1 (omgewingsmagtiging uitgereik op 3 Desember 2010), MKWAP-2 (OIB-aansoek onttrek ná omvangsbepalingsfase weens wateraanvraag) en MKWAP Verwydering van Bottelnek (omgewingsmagtiging uitgereik op 24 Februarie 2010) ingesluit.

6.2.2 Gelyste Aktiwiteite

Die voorgenome Wateroordraginfrastruktuur lei tot sekere aktiwiteite gelys in SK nr. R. 983, R. 984 en R. 985 van 4 Desember 2014 (in **Tabel 3** gelys), wat omgewingsmagtiging ingevolge die OIB-regulasies van 2014, wat ingevolge die NWOB gepromulgeer is, noodsaak.

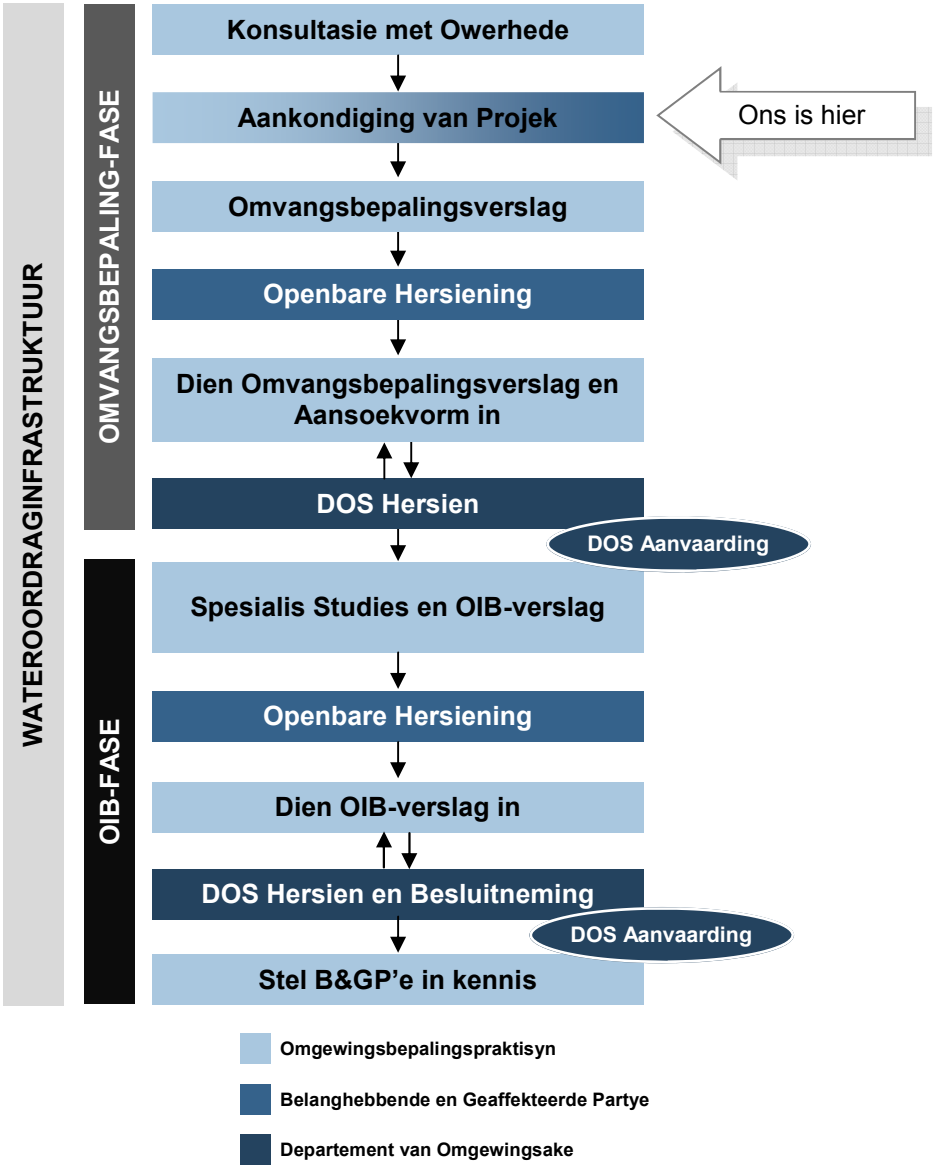
***Tabel 3:** Moontlike gelyste aktiwiteite - Wateroordraginfrastruktuur*

Kennisgewings	Aktiwiteite genoodsaak
1 (SK nr. R. 983)	*9; 11; 12; 13; 14; 19; 24; 27; 28; 30; 45; 47; 48; 49; 56; 63; 66; 67*
2 (SK nr. R. 984)	*11; 15; 16;*
3 (SK nr. R. 985)	*2(a)(iii); 4(a)(ii); 10(e); 12(a); 14(a)(ii);15(b); 18(a)(ii); 23(a)(ii); 26*

LW: Die lys aktiwiteite sal verfyn word namate die OIB-proses ontwikkel (soos nodig).

6.2.3 OIB-proses

Op grond van die gelyste aktiwiteite wat deur die Wateroordraginfrastruktuur genoodsaak word, sal 'n Omvangsbepaling en OIB-proses uitgevoer word (in **Figuur 9** uiteengesit).



Figuur 9: *Oorsig van Omvangsbepaling en OIB-proses*

6.3 GROOTMAAT-KRAGVOORSIENING

6.3.1 Gelyste Aktiwiteite

Die voorgenome Grootmaat-kragvoorsiening lei tot sekere aktiwiteite gelys in SK nr. R. 983 en R. 985 van 4 Desember 2014 (in **Tabel 4** gelys), wat omgewingsmagtiging ingevolge die OIB-regulasies van 2014, wat ingevolge die NWOB gepromulgeer is, noodsaak.

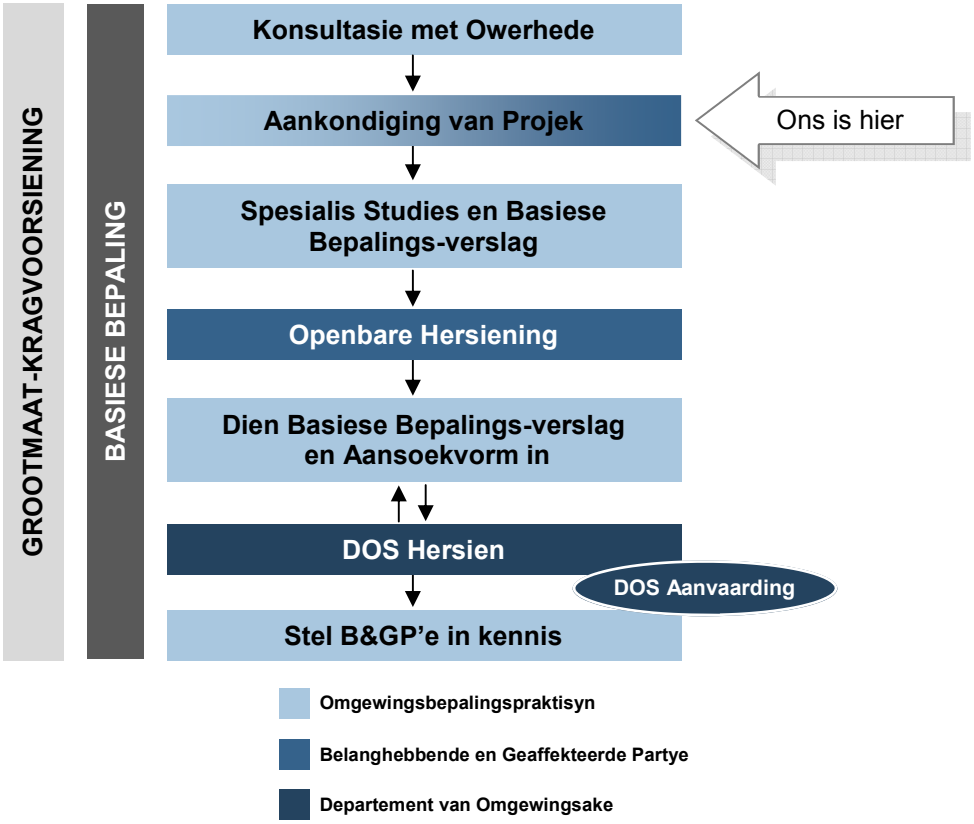
Tabel 4: *Moontlike gelyste aktiwiteite - Grootmaat-kragvoorsiening*

Kennisgewings	Aktiwiteite genoodsaak
1 (SK nr. R. 983)	*11; 12; 14; 19; 24; 27; 28; 30; 48; 49; 56; 67*
3 (SK nr. R. 985)	*4(a)(ii); 10(e); 12(a); 14(a)(ii); 18(a)(ii); 23(a)(ii); 26*

LW: Die lys aktiwiteite sal verfyn word namate die Basiese Bapalings-proses ontwikkel (soos nodig).

6.3.2 OIB-proses

Op grond van die gelyste aktiwiteite wat deur die Grootmaat-kragvoorsiening genoodsaak word, sal 'n Basiese Bepaling uitgevoer word (in **Figuur 10** uiteengesit).



Figuur 10: Oorsig van Basiese Bapalings-proses

6.4 SPESIALISSTUDIES

Die aard en omvang van die spesialisstudies wat vir die doel van die OIB uitgevoer sal word, sal tydens die Omvangsbepalingsfase (Wateroordraginfrastruktuur) en aanvang van die Basiese Bepaling (Grootmaat-kragvoorsiening) bepaal word. Op hierdie stadium is die volgende omgewingspesialisstudies geïdentifiseer:

- Aard- ekologiese impakassessering;
- Erfenisimpakassessering;
- Water- en rivierimpakassessering;
- Landbou-impakassessering;
- Sosio-ekonomiese impakassessering; and
- Moeraslandassessering en -afbeelding.

Die bevindinge van die spesialisstudies wat as deel van die vorige OIB uitgevoer is, sal in berekening gebring word, wat insluit 'n visuele impakassessering en geraasstudie. Bykomende studies kan moontlik geïdentifiseer word namate die OIB-proses ontwikkel. Verskeie tegniese studies sal ook onderneem word.

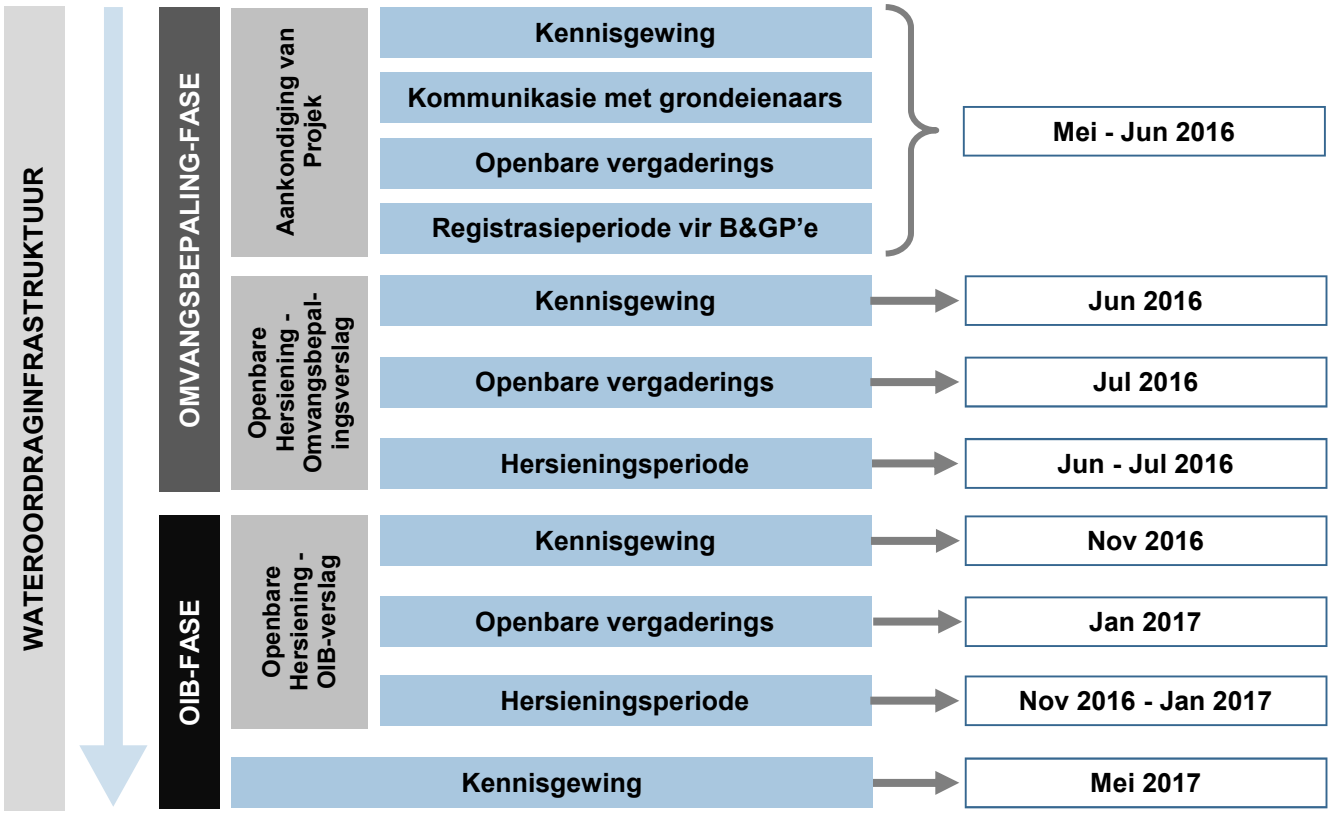
6.5 OPENBAREDEELNAME

6.5.1 Oorsig van Openbaredeelname-proses

Figuur 10 en **Figuur 11** gee 'n uiteensetting van die openbaredeelname-proses wat as deel van die Wateroordragin-frastruktuur (Omvangsbepaling en OIB) en Grootmaat-kragvoorsiening (Basiese Bepaling) uitgevoer sal word.

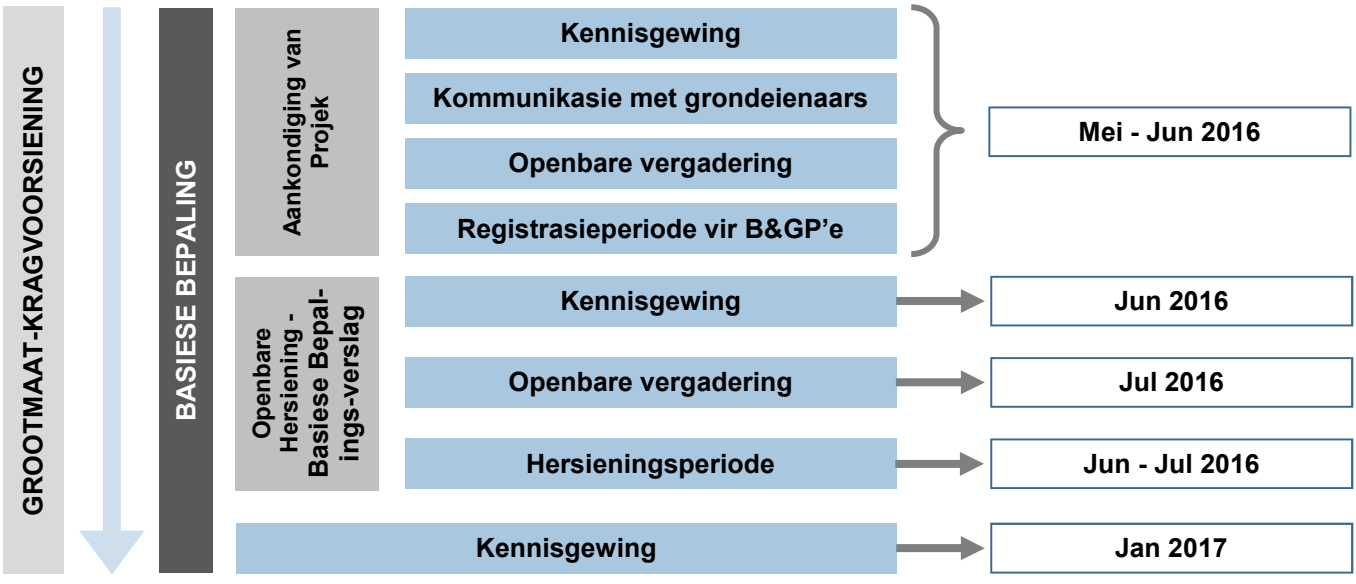
6.5.2 Registrasie as 'n B&GP

Voltooi asseblief die meegaande Terugvoeringsvorm en stuur dit teen 24 Junie 2016 terug na Nemai Consulting om as 'n B&GP te registreer en enige kommentaar of bekommernisse te opper.



LW: *Datums kan verander tydens OIB-proses*

Figuur 11: *Oorsig van Openbaredeelname-proses - Omvangsbepaling en OIB*



LW: *Datums kan verander tydens OIB-proses*

Figuur 12: *Oorsig van Openbaredeelname-proses - Basiese Bepaling*

6.5.3 *Openbare Vergaderings*

Die openbare vergaderings wat in **Tabel 5** gelys is, is geskeduleer, en die doelwitte van hierdie vergaderings sluit die volgende in:

- Om die projek te verduidelik;
- Om 'n oorsig van die OIB-proses te gee;
- Om 'n platform vir projekverwante besprekings te bied; en
- Om insette van B&GP'e vir die Omvangsbepalingsfase (Wateroordraginfrastruktuur) en Basiese Bepaling (Grootmaat-kragvoorsiening) te verkry.

Tabel 5: *Besonderhede van openbare vergaderings - OIB Aankondigings-fase*

Projek Komponente	Wateroordragskema en Grootmaat-Kragvoorsiening	Wateroordragskema	Wateroordragskema
Datum	25 Mei 2016	26 Mei 2016	26 Mei 2016
Area	Thabazimbi	Lephalale	Steenbokpan
Tyd	09h00 – 13h00	08h30 – 12h30	14h00 – 18h00
Lokaal	Kumba Bioskoopsaal	Mogol Konferensiesaal	Thusong Gemeenskapsentrum

Laat weet ons asseblief as u padaanwysings vir die bogenoemde lokale benodig.

Toegespitste vergaderings kan ook met grondeienaars, owerhede en B&GP'e met verloop van die OIB gehou word (soos nodig), wat afsonderlik gereël sal word.

7. KONTAKBESONDERHEDE

Vir enige navrae betreffende die projek, kontak asseblief die onderstaande omgewingsbepalingspraktisyn:

NEMAI CONSULTING

Kontakpersoon: *Donavan Henning*
Tel: *(011) 781 1730*
Faks: *(011) 781 1731*
Epos: *donavanh@nemai.co.za*
Posadres: *Posbus 1673, Sunninghill, 2157*

Besoek asseblief die projekwebwerf vir verdere inligting:
https://www.dwa.gov.za/projects/mcwap/