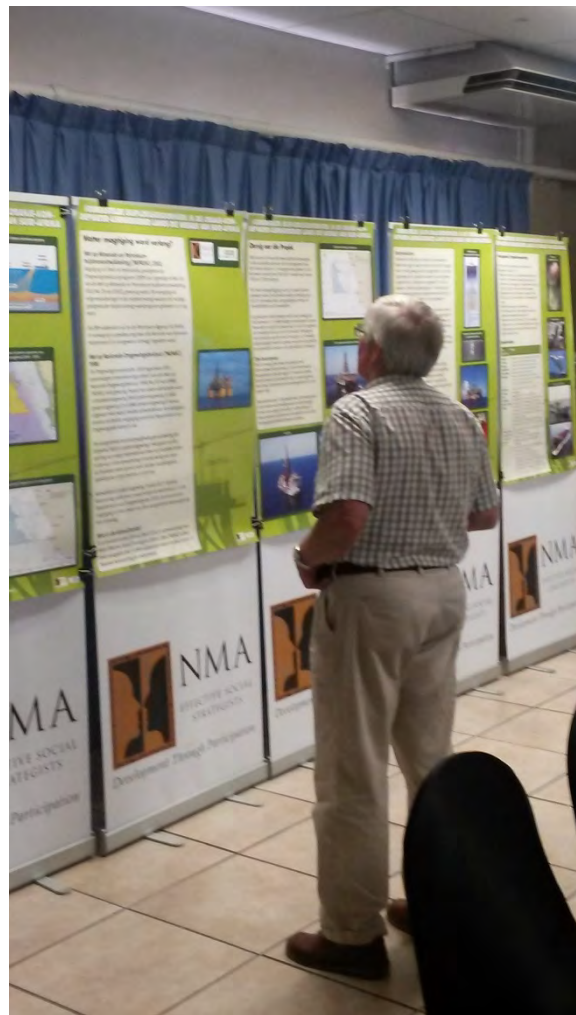
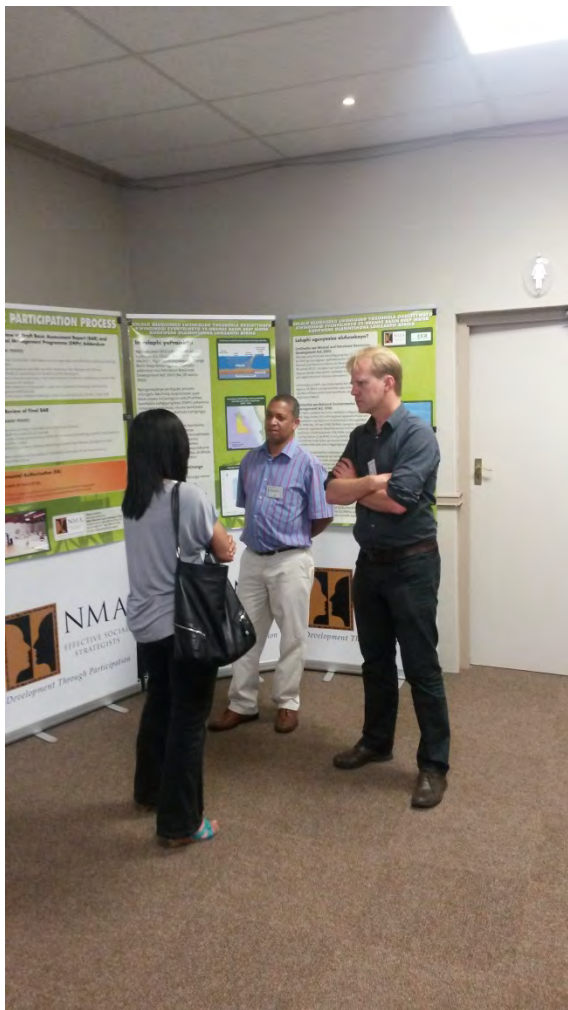


Photographs from the Cape Town Public Open Day (11 November 2013)



Photographs from the Saldanha Bay Public Open Day (12 November 2013)



# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## Project Background

In February 2012 Shell South Africa Upstream B.V. (Shell) obtained an exploration right for the Orange Basin Deep Water Licence Area in terms of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002).

As part of the process of applying for the exploration right, an Environmental Management Programme (EMPr) was compiled and approved for the undertaking of seismic surveys and exploration drilling within the licence area.

Shell undertook a 3D seismic survey in an 8 000 km<sup>2</sup> portion of the licence area, which was completed in February 2013. Based on analysis of the seismic data, Shell proposes to drill one or possibly two exploration wells.

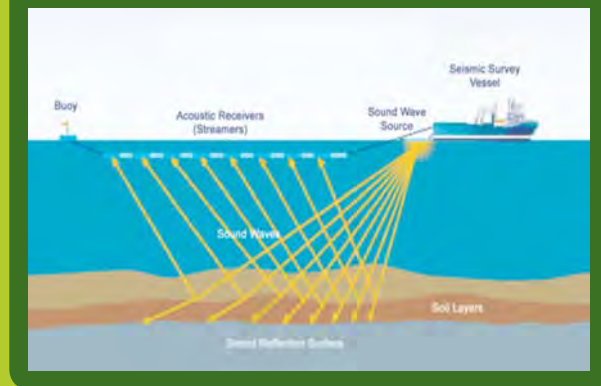
## Orange Basin Deep Water Licence Area

Licence area is approximately 37 290 km<sup>2</sup> in extent.

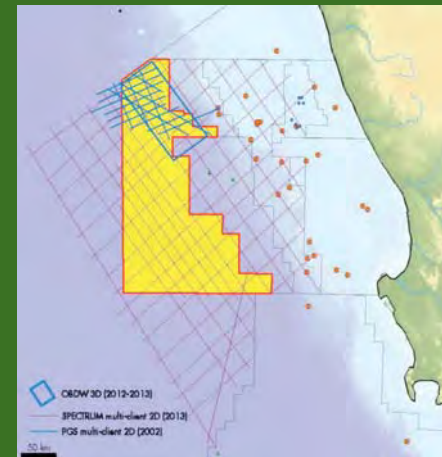
The eastern border of the licence area is located between approximately 150 km and 300 km off the West Coast roughly between Saldanha Bay (33°S) and Kleinsee (30°S).

Water depths range from 500 m to 3 500 m.

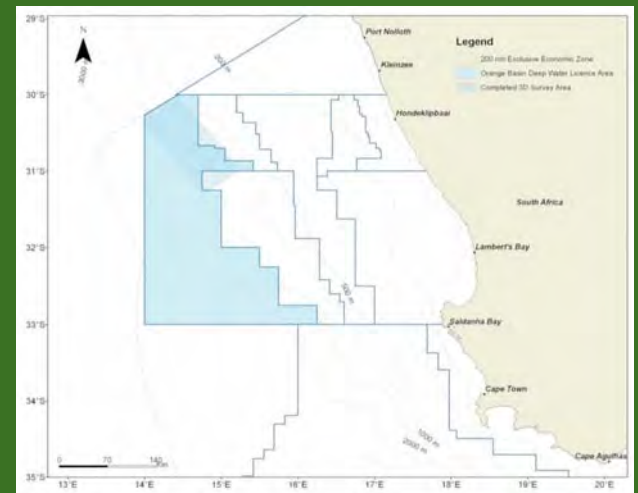
Depiction of a typical seismic survey



Historic seismic surveys over licence area (2003 – 2013)



Orange Basin Deep Water Licence Area



# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## What authorisation is required?

### Mineral and Petroleum Resources Development Act, 2002:

Shell's existing approved Environmental Management Programme (EMPr) will be amended in terms of Section 102 of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002). The amendment will take account of any changes in the project scope on which the current approved exploration right work programme is based.

The EMPr Addendum will be submitted to the Petroleum Agency SA (PASA) for consideration and approval by the Minister of Mineral Resources (or the delegated authority).

### National Environmental Management Act, 1998:

The Environmental Impact Assessment (EIA) Regulations 2010 promulgated in terms of Chapter 5 of the National Environmental Management Act, 1998 (No. 107 of 1998) (NEMA), as amended, provide for the control of certain activities that are listed in Government Notices (GN) R544 (Listing Notice 1), R545 (Listing Notice 2) and R546 (Listing Notice 3). These activities are prohibited until written authorisation is obtained from the Department of Environmental Affairs.

The proposed drilling operation triggers Activity 18(ii) in Listing Notice 1, which relates to the "*depositing of any material of more than 5m<sup>3</sup> into the sea*" or "*the removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5m<sup>3</sup> from the sea*".

Activities in Listing Notice 1 require that a Basic Assessment process is undertaken in order for the competent authority, the Department of Environmental Affairs, to consider the application for authorisation to carry out the proposed operation.

### Who are the Consultants?

CCA Environmental (Pty) Ltd, in association with NMA Effective Social Strategists (Pty) Ltd, has been appointed by Shell to compile an EMPr Addendum and to undertake a Basic Assessment process.



# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## Project Overview

Shell is proposing to drill one or possibly two wells in the northern portion of the licence area. At this stage an area of interest has been defined for the drilling, which is 900 km<sup>2</sup> in extent with water depths ranging between 1 500 m and 2 100 m.

The final well location will be based on a number of factors, including further analysis of the 3D seismic data, the geological target and seafloor location obstacles.

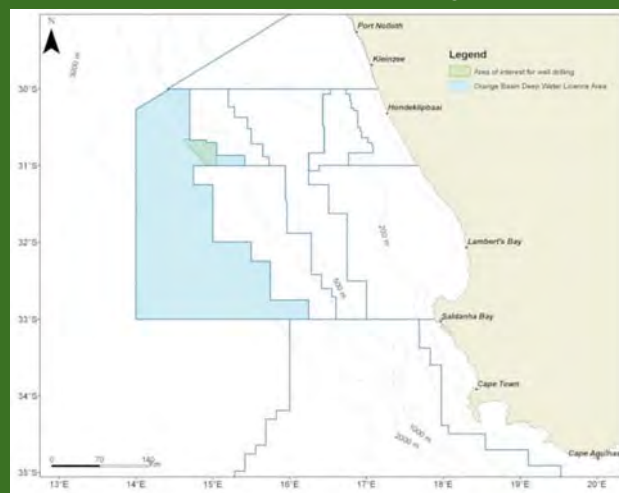
For operational reasons, drilling is expected to take place in a future summer window period between November to April and would take in the order of three months to complete. Depending on the success of the first well, a second well may be drilled to establish the quantity and potential flow rate of the resource.

### Drilling unit options:

Shell is currently considering two alternative drilling units, either a semi-submersible drilling vessel (rig) or a drill-ship. Both options would be held in position by dynamic positioning thrusters (no anchoring).

Drilling units have a hoisting system to raise and lower the drill pipe and tools needed to drill the well, a Blow-out Preventer (BOP) and pumping system to circulate fluids in and out of the well while drilling.

Area of interest for well drilling



Semi-submersible drilling vessel (rig)



# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## Drilling procedure:

Sediments just below the seafloor are often very soft and loose, and to keep the well from caving in and to carry the weight of the wellhead a large diameter conductor pipe is jetted / drilled and cemented into place up to a depth of approximately 75 m. Below the conductor pipe, a smaller pipe or surface casing is drilled and cemented into place up to a depth of approximately 1 000 m.

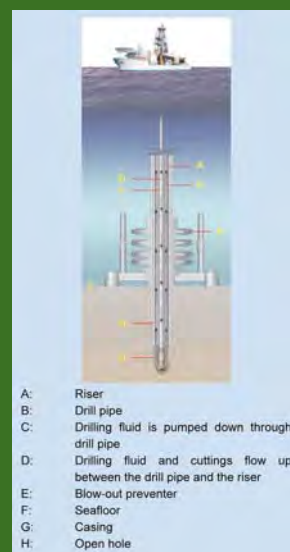
During these two initial drilling stages, a water-based mud (WBM) is used to maintain well pressure, cool and lubricate the drill bit and lift rock cuttings from the hole. The WBM is pumped down through the inside of the drill pipe, through holes in the drill bit, and back to the seafloor through the space between the drill string and the walls of the hole, where it is discharged with the rock cuttings.

Following the initial drilling stage, a blow-out preventer (BOP) and marine riser are run and installed on the wellhead. The riser connects the well to the drilling unit and allows the drilling fluid and rock cuttings to be continually circulated back to the drilling unit.

Drilling continues by lowering the drill string, with a smaller bit, through the riser into the surface casing and rotating the drill string and bit. This stage of drilling would be undertaken using a synthetic-based mud (SBM). Drill cuttings are separated from the drilling fluid by solids control equipment before the mud is re-circulated. The cuttings are treated to reduce their oil content to less than 6.9% of dry cuttings weight and discharged overboard. As with the initial drilling stage, casing strings are run and cemented in place with increasing depth.

When the targeted zone is reached (2 700 m and 3 000 m below the seafloor) the well is logged and tested.

Circulation of drilling fluid and mud



Lowering of the drill string and bit to the seafloor



# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## Well completion and abandonment:

Based on the results of the drilling, logging and possible testing of the well, a decision would be made as to whether to suspend or abandon the well.

### (a) Suspended well (commercially viable):

- Well bore is plugged (cement) and tested for integrity.
- BOP is removed.
- Wellhead (3 to 4 m high) would remain on the seafloor.
- A corrosion cap is placed over the wellhead to facilitate re-entry.

### (b) Abandoned well:

- Well bore is plugged (cement) and tested for integrity.
- BOP is removed.
- Wellhead (3 to 4 m high) would either remain on or be removed from the seafloor.

## Sea- and land-based support:

The logistics shore base would be located in either Cape Town or Saldanha Bay. This shore base would provide for the storage of materials and equipment that would be transported from/to the drilling unit by sea. The shore base would also be used for bunkering vessels.

It is proposed to transport personnel to the drilling unit by helicopter from Kleinsee. Fixed-wing flights would be used between Kleinsee and Cape Town.

Drill string and wellhead guide base



Sea- and land-based support



## Glossary

<b>Abandoned well</b>	A well which is officially plugged and abandoned.
<b>Annulus</b>	The space between the casing and the wall of the borehole.
<b>Appraisal well</b>	A well drilled to determine the physical extent, reserves and likely production rate of a field.
<b>Bit</b>	The cutting or boring element used in well drilling.
<b>Blow-out</b>	An uncontrolled flow of oil or gas occurring when formation pressure exceeds the pressure applied to it by the column of drilling fluid.
<b>Blow-out preventers</b>	High pressure wellhead valves designed to shut off the uncontrolled flow of hydrocarbons
<b>Borehole</b>	The hole as drilled by the drill bit.
<b>Casing</b>	Steel pipe cemented in the well to seal off formation fluids or keep the hole from caving in.
<b>Cement casing</b>	To fill the annulus between the casing and hole with cement to support the casing and prevent fluid migration between permeable zones.
<b>Conductor pipe</b>	A conductor pipe is a large diameter pipe that is set into the ground to provide the initial stable structural foundation for the well.
<b>Cuttings</b>	The fragments of rock dislodged by the bit and brought to the surface in the drilling mud.

<b>Drill string</b>	The column, or string, of drill pipe. Often loosely applied to both the drill pipe and drill collars.
<b>Drilling unit</b>	Drilling unit that is not permanently fixed to the seabed, e.g. a drill-ship or a semi-submersible drilling vessel.
<b>Drilling fluid / mud</b>	A mixture of clays, chemicals and water pumped down the drill pipe to lubricate and cool the drilling bit and to flush out the cuttings, as well as to strengthen the sides of the hole. Two main categories of drilling fluids are water-based muds (WBM) and synthetic-based muds (SBM).
<b>Exploration well</b>	A well drilled in an unproven area in order to verify the presence or absence of a hydrocarbon reservoir.
<b>Riser</b>	A pipe between a seabed blow-out preventer and a drilling unit.
<b>Rotary drilling</b>	A drilling method in which the hole is drilled by a rotating bit to which a downward force is applied.
<b>Suspended well</b>	A well that has been capped off temporarily.
<b>Well log</b>	A record of geological formation penetrated during drilling, including technical details of the operation.
<b>Wellbore</b>	A borehole – the hole drilled by the bit.
<b>Wellhead</b>	The equipment installed at the surface of the well bore.

# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## Impact Assessment Focus Area

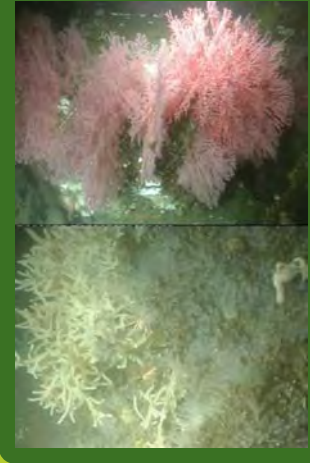
The key focus areas that have been identified, and will be addressed, include:

- Disposal of cuttings which could smother and have biochemical effects on benthic organisms.
- Temporary loss of access to fishing grounds due to exclusion zone around the drilling operation.
- Abandoned or suspended wellheads on the sea bottom may potentially snag deep trawl nets.
- Potential interference with marine traffic.
- Waste and waste water discharge to sea, which could have localised pollution effects.
- Potential hydrocarbon spills (i.e. small accidental spills from normal operations to large spills from unplanned failure events such as well blow-outs).

## Specialist Studies

Studies (and specialist)	Scope
<b>Cuttings and Oil Spill Modelling (Prestedge Retief Dresner Wijnberg (PRDW): Stephen Luger)</b>	<ul style="list-style-type: none"> <li>• Model the transport, dispersion and bottom deposition of drill cuttings discharged during drilling operations;</li> <li>• Model the trajectory and fate of oil due to a small operational spill on the water surface at the drill vessel; and</li> <li>• Model the trajectory and fate of oil due to a large blow-out spill at the well head on the seafloor.</li> </ul>
<b>Marine Faunal Assessment (Pisces Environmental Services: Dr Andrea Pulfrich)</b>	<ul style="list-style-type: none"> <li>• Describe the local marine fauna in and around the Licence Area;</li> <li>• Determine the primary risks to the marine and coastal environment in the unlikely event of an accidental leak or spill during well drilling;</li> <li>• Identify, describe and assess the significance of potential impacts of the proposed well drilling on the local marine fauna (including the benthic and pelagic environments);</li> <li>• Identify practicable mitigation measures to reduce any negative impacts on marine fauna.</li> </ul>
<b>Fisheries Assessment (CapFish SA: Dave Japp &amp; Sarah Wilkinson)</b>	<ul style="list-style-type: none"> <li>• Describe the fishing activities expected in and around the Licence Area;</li> <li>• Undertake a spatial and temporal assessment of expected fishing effort in the proposed drilling area.</li> <li>• Assess the risk of impact of the drilling area on the different fishing sectors;</li> <li>• Assess the impact of the proposed safety zones around the drilling vessel on the fishing activities in terms of estimated catch and due to the loss of fishing grounds; and</li> <li>• Identify practicable mitigation measures to reduce any negative impacts on the fishing industry.</li> </ul>

Benthic communities



Marine mammals



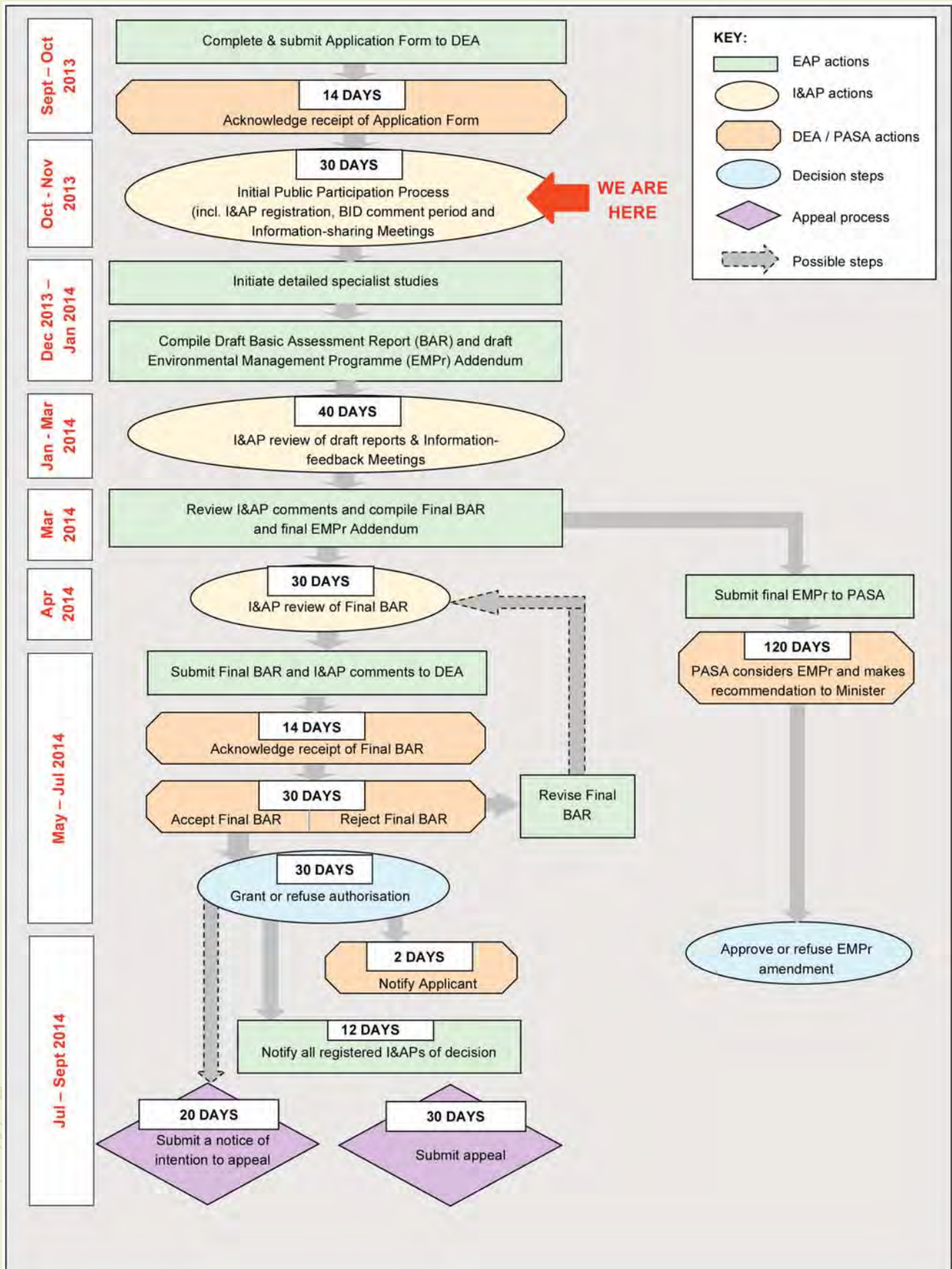
Fishing and marine traffic





# PROPOSED EXPLORATION DRILLING IN THE ORANGE BASIN DEEP WATER LICENCE AREA OFF THE WEST COAST OF SOUTH AFRICA

## Impact Assessment Process



# PUBLIC PARTICIPATION PROCESS

## Objectives of the Public Participation Process

- Identify issues and concerns of key stakeholders and interested and affected parties (I&APs) so that they can be addressed in the impact assessment and provide opportunity for suggestions to enhance potential benefits and prevent or mitigate potential impacts;
- Provide a reasonable opportunity for I&APs to comment on the application;
- Promote transparency about the proposed project.

## Stage 1: Initial Public Consultation

(30-DAY COMMENT PERIOD: 31 OCTOBER TO 2 DECEMBER 2013)

- **IDENTIFY KEY STAKEHOLDERS AND I&APs**
- **DEVELOP BACKGROUND INFORMATION DOCUMENT (BID)**
  - **BID** in English, Afrikaans and isiXhosa
  - Send to I&APs on database and to libraries and municipal offices in Saldanha, Vredenburg, Lamberts Bay, Kleinsee, Springbok and Port Nolloth
- **DISPLAY SITE NOTICES**
  - Posters at libraries/municipal offices in Saldanha, Vredenburg, Lamberts Bay, Springbok, Kleinsee and Port Nolloth
- **ADVERTISE PROJECT**
  - Adverts placed in *Cape Times*, *Sunday Times*, *Rapport*, *Die Burger*, *Ons Kontrei* and *Weslander* between 27 and 31 October 2013.
- **CONVENE PUBLIC OPEN DAYS / PUBLIC MEETINGS**

In the first round, open days and information-sharing meetings will be held in **CAPE TOWN** and **SALDANHA** to provide an overview of the proposed project and allow I&APs the opportunity to raise any issues or concerns. A meeting is also being held with the **NORTHERN CAPE PROVINCIAL COASTAL COMMITTEE**.

**30-Day Comment Period Commenced:  
Thursday 31 October to Monday 2 December 2013**



# PUBLIC PARTICIPATION PROCESS

## Stage 2: Review of Draft Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) Addendum

### (40-DAY COMMENT PERIOD)

- Advertise availability of draft BAR / EMPr Addendum and open days and information-feedback meetings in same newspapers
- Translate executive summary to draft BAR and EMPr Addendum into Afrikaans and isiXhosa
- Send letter to all I&APs on availability of Draft BAR and EMPr Addendum
- Posters and copies of executive summary to be made available in Saldanha, Vredenburg, Lamberts Bay, Kleinsee, Springbok and Port Nolloth
- Draft BAR and EMPr Addendum to be placed in Cape Town, Saldanha, Vredenburg, Lamberts Bay, Kleinsee, Springbok and Port Nolloth
- Open days and information-feedback meetings in Cape Town and Saldanha (17 Feb – 3 Mar 2014)

## Stage 3: Review of Final BAR

### (30-DAY COMMENT PERIOD)

- Translate executive summary to final BAR into Afrikaans and isiXhosa
- Letter to all I&APs on availability of Final BAR
- Posters and copies of executive summary distributed in Saldanha, Vredenburg, Lamberts Bay, Saldanha, Springbok and Port Nolloth
- Final BAR placed in Cape Town, Saldanha, Vredenburg, Lamberts Bay, Kleinsee, Springbok and Port Nolloth
- Collate written submissions from I&APs on Final BAR for submission to the Department of Environmental Affairs (DEA)

## Environmental Authorisation (EA)

### WITHIN 12 DAYS OF ISSUE OF EA:

- Advertise EA and appeal procedure in local, provincial and national newspapers
- Written notification to I&APs of availability of Environmental Authorisation



**NMA**  
EFFECTIVE SOCIAL  
STRATEGISTS

*Development Through Participation*

#### Please contact:

Mfowabo Maphosa

**NMA Effective Social Strategists (Pty) Ltd**

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# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Agtergrond tot projek

In Februarie 2012 het Shell 'n eksplorasiereg ontvang vir die Oranjekom-diepwater-lisensiegebied kragtens die Wet op Minerale en Petroleum-hulpbronne, 2002 (No. 28 van 2002) ('MPRDA').

As deel van die aansoekproses om die eksplorasiereg, is 'n Omgewingsbestuursprogram (OBPr) vir seismiese opnames en eksplorasieboorwerk binne die lisensiegebied saamgestel.

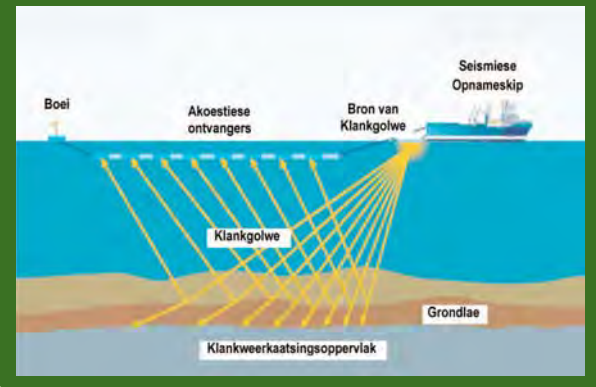
Shell het 'n 3D- seismiese opname in 'n 8 000 km<sup>2</sup> gedeelte van die lisensiegebied onderneem, wat op 22 Februarie 2013 afgehandel is. Gebaseer op die ontleding van die seismiese data, wil Shell een of moontlik twee eksplorasieboorgate onderneem.

## Oranjekom-diepwater-lisensiegebied

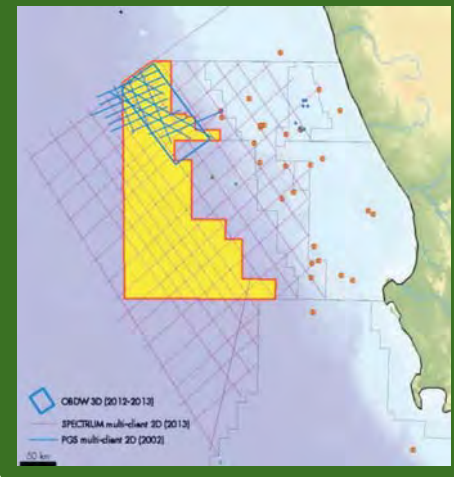
Lisensiegebied is ongeveer 37 290 km<sup>2</sup> groot.

Die oostelike grens van die lisensiegebied lê ongeveer 150 tot 300 km vanaf die Weskus min of meer tussen Saldanhabaai (33°S) en Kleinsee (30°S) in water wat tussen 500 en 3500 m diep is.

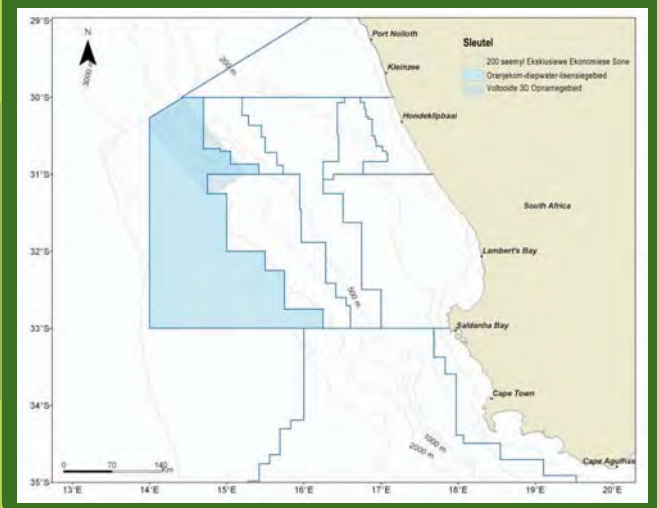
Uitbeelding van 'n tipiese seismiese opname



Historiese seismiese opnames van lisensiegebied (2003 – 2013)



Oranjekom-diepwater-lisensiegebied



# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Watter magtiging word verlang?

### Wet op Minerale en Petroleum-hulpbronontwikkeling ('MPRDA'), 2002:

Magtiging vir Shell se bestaande, goedgekeurde Omgewingsbestuursprogram (OBPr) sal ingevolge Artikel 102 van die Wet op Minerale en Petroleum-hulpbronontwikkeling, 2002 (No. 28 van 2002), gewysig word. Die wysiging sal enige veranderinge in die projekomvang waarop die huidige, goedgekeurde eksplorasiereg-werkprogram gebaseer is, in ag neem.

Die OBPr-addendum sal by die Petroleum Agency SA (PASA) vir oorweging en goedkeuring deur die Minister van Minerale Hulpbronne (of sy aangewese volmag) ingedien word.

### Wet op Nasionale Omgewingsbestuur ('NEMA'), 1998:

Die Omgewingsimpakstudie- (OIS) regulasies 2010, gepromulgeer ooreenkomstig artikel 5 van die Wet op Nasionale Omgewingsbestuur, 1998 (No. 107 van 1998) ('NEMA'), soos gewysig, bepaal hoe sekere aktiwiteite soos in Staatskennisgewing R544 (Lyskennisgewing 1), R545 (Lyskennisgewing 2) en R546 (Lyskennisgewing 3) vervat, uitgevoer moet word. Hierdie aktiwiteite kan nie voortgaan alvorens skriftelike magtiging vanaf die Departement van Omgewingsake verkry is nie.

Die voorgestelde boorbedrywighede gee aanleiding tot Aktiwiteit 18(ii) in Lyskennisgewing 1, wat gaan oor die storting van enige materiaal van meer as 5 kubieke meter in die see, of die verwydering of verskuiwing van meer as 5 kubieke meter grond, sand, skulpe, skulpklipgruis, spoelklippies of gesteentes uit die see.

Aktiwiteite in Lyskennisgewing 1 vereis dat 'n Basiese Assessering onderneem word sodat die owerheid, d.i. is die Departement van Omgewingsake (DOS), die aansoek om magtiging vir die uitvoer van die voorgestelde bedrywighede kan oorweeg.

### Wie is die konsultante?

CCA Environmental (Edms.) Bpk. (CCA), in samewerking met NMA Effective Social Strategists (Edms.) Bpk. (NMA), is deur Shell aangestel om 'n OBPr-addendum saam te stel, en om 'n Basiese Assessering te onderneem.



# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Oorsig oor die Projek

Shell wil een of moontlik twee eksplorasiëboorgate in die noordelike deel van die lisensiegebied boor. Op hierdie stadium is 'n voorgename gebied vir die boorwerk omskryf van 900 km<sup>2</sup> in water wat tussen 1 500 en 2 100 m diep is.

Die finale boorgatligging sal op 'n aantal faktore gebaseer word, insluitende verdere ontleding van die 3D- seismiese data, die geologiese teiken en struikelblokke op die seabodem.

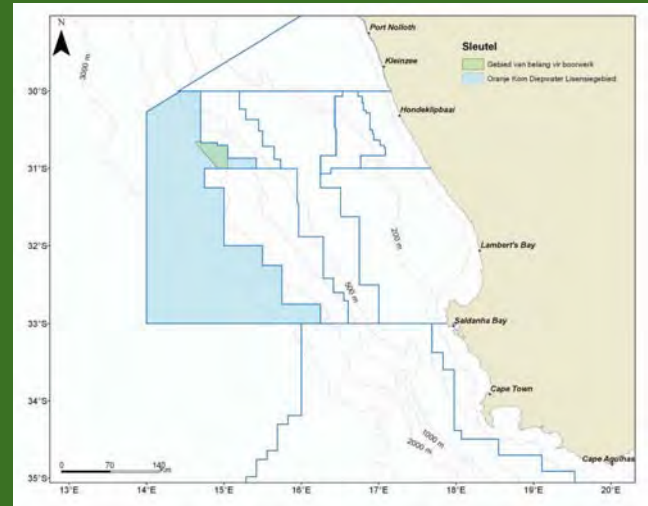
As gevolg van bedryfsredes, word daar verwag dat die boorwerk in 'n toekomstige somertydperk (tussen November en April) sal plaasvind, en dat dit ongeveer drie maande sal duur om af te handel. Afhangend van die sukses van die eerste boorgat, sal 'n tweede eksplorasiëgat moontlik geboor word om die gehalte en potensiele vloeikoers van die hulpbron te bepaal.

### Tipe booropsies:

Shell oorweeg tans twee booropsies met alternatiewe booreenhede, 'n semi-onderwaterboorplaatvorm (boortoring) of 'n boorskop. Beide opsies vereis dat die boortoring in posisie gehou word deur dinamiese posisioneringstoters (en nie ankers nie).

Booreenhede het 'n hystoestel wat die boorpyl en instrumente wat benodig word om die boorgat te boor kan ophang en laat sak, 'n uitbarsting- of lekvoorkomer en pomp wat vloeistof in en uit die boorgat gedurende boorwerk sirkuleer.

Gebied van belang vir boorwerk



Semi-onderwaterboorplaatvorm (boortoring)



Boorskop



Boorskop



# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Boorprosedures:

Sedimente of afsettings net onder die seabodem is dikwels baie sag en slap, en om te keer dat die boorgat inval en om die gewig van die boorgatkop te dra, word 'n geleierpyp met 'n groot deursnee in posisie geboor en gesement op 'n diepte van ongeveer 75 m in die seabodem. Onder die geleierpyp sal 'n kleiner pyp of oppervlakvoering geboor en gesement word tot op 'n diepte van nagenoeg 1 000 m in die seabodem.

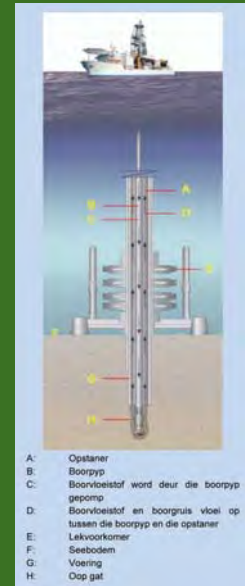
Gedurende hierdie twee aanvanklike boorfases word watergebaseerde modder gebruik om boorgatdruk te handhaaf, om die boorpunt af te koel en te smeer, en om rotsgruis uit die gat te voer. Die watergebaseerde modder spuit deur openinge aan die kant van die boorpunt in die gat af deur die hol boorpunt, en terug na die seabodem deur die spasie tussen die boordraad en die wand van die gat, waar dit saam met die rotsgruis weggedoen word.

Na die aanvanklike boorfase word 'n uitbarstingvoorkomer en marine-opstaner op die boorgatkop geplaas en geïnstalleer. Die opstaner verbind die boorgat aan die booreenheid en sorg dat die boorvloeistof en boorgruis aanhoudend terug na die booreenheid gesirkuleer word.

Boorwerk vervolg deur die boordraad te laat sak, met 'n kleiner boorpunt, deur die opstaner in die oppervlakvoering waar die boordraad en boorpunt roteer. Hierdie fase van die boorwerk word met die gebruik van sinteties-gebaseerde modder uitgevoer. Boorgruis word van die boorvloeistof geskei om soliede stukke te verwyder voordat die modder hersirkuleer word. Die boorgruis word behandel om die olie-inhoud daarvan na minder as 6.9% van die droë boorgruisgewig te verminder en oorboord gestort. Soos die geval was by die aanvanklike boorfase, word stukke voering in posisie geplaas en gesement soos daar dieper geboor word.

Wanneer die teikensone bereik is (2 700 m en 3 000 m onder die seabodem), word die diepte aangeteken en getoets.

Sirkulering van boorvloeistof en modder



Boordraad en boorput word tot op seabodem laat sak



# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Afhandeling en prysgee van die boorgat:

Gebaseer op die resultate van die boorwerk, dataopnames en moontlike toetsing van die boorgat, sal daar besluit word of die boorgat permanent prysgegee word en of werk daar tydelik opgeskort word.

(a) Opskorting van bedrywighede by boorgat wat kommersieel lewensvatbaar is:

- Sementproppe word binne-in boorgat geplaas en getoets vir integriteit.
- Die uitbarstingvoorkomer word verwyder.
- Die boorgatkop (3 tot 4 m hoog) sal op die seabodem agterbly.
- 'n Korrosiekop word oor die boorkop geplaas om hertoegang te fasiliteer.

(b) Boorgate wat prysgegee word:

- Sementproppe word binne-in boorgat geplaas en getoets vir integriteit.
- Die uitbarstingvoorkomer word verwyder.
- Die boorgatkop (3 tot 4 m hoog) sal verwyder word of op die seabodem agterbly.

## See- en landgebaseerde ondersteuning:

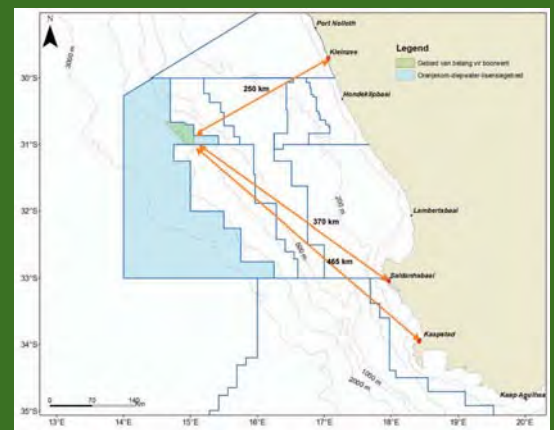
Die logistieke kusbasis sal óf in Kaapstad óf in Saldanhabaai geleë wees. Hierdie kusbasis sal voorsiening maak vir die berging van materiale en toerusting wat per see van en na die booreenheid vervoer moet word. Die kusbasis sal ook vir die bunkerskepe gebruik word.

Die voorstel is dat personeel per helikopter vanaf Kleinsee na die booreenheid vervoer word. Vastevlerkvliegtuie sal vir vlugte tussen Kleinsee en Kaapstad gebruik word.

Leibasis van boordraad en boorkop



See- en landgebaseerde ondersteuning:



## Woordelys:

<b>Annulus</b>	Die spasie tussen die voering en die wand van die boorgat.
<b>Boordraad</b>	Die kolom, of draad, of boorpyl. Baie maal lossereg aan beide kante van die boorpyl en boorperke vasgemaak.
<b>Booreenheid</b>	Booreenhede wat nie permanent aan die seabodem geheg is nie, met ander woorde, 'n boorskop of 'n semi-onderwaterboorplatform.
<b>Boorgat</b>	Die holte wat deur die boorpunt geboor word.
<b>Boorgatgop</b>	Die toerusting wat op die oppervlak van die boorgat geïnstalleer is.
<b>Boorgatopnames</b>	Aantekeninge oor geologiese formasies wat deur boorwerk binnegedring word, insluitende tegniese besonderhede oor die werkzaamheid.
<b>Boorgat wat opgeskort word</b>	'n Boorgat waar werkzaamhede tydelik gestaak word.
<b>Boorgat wat prysgegee word</b>	'n Boorgat wat amptelik verseël en prysgegee is.
<b>Boorgruis</b>	Stukkies rots wat deur die boorpunt losgewikkel en in die boormodder na die oppervlak gebring word.
<b>Boorpunt</b>	Die instrument wat tydens boorwerk vir sny- en booraksie gebruik word.
<b>Boorvloeistof / boormodder</b>	'n Mengsel van klei, chemiese stowwe en water wat deur die boorpyl gepomp word om die boorpunte te smeer en te laat afkoel, en om die boorgruis uit te spuit, sowel as om die kante van die gat mee te verstewig.
<b>Eksplorasioboorgat</b>	Twee hoofkategorieë van boorvloeistof is die watergebaseerde modder en sinteties-gebaseerde modder.
	'n Boorgat wat geboor word in 'n gebied wat nog nie as geskik bewys is

**Geleierpyl**

**Opstனர்**

**Rotasioboorkop**

**Sementvoering**

**Uitbarsting / lek**

**Uitbarstingvoorkomers**

**Voering**

**Waarderingsboorgat**

ten einde die teenwoordigheid of afwesigheid van 'n koolwaterstofreservoir te bevestig.

'n Geleierpyl is 'n pyl met 'n groot deursnee wat in die grond geplaas word om aanvanklik stabiele strukturele fondasie vir die boorgat te verskaf.

Die pyl tussen 'n seabodemlek- of uitbarstingsvoorkomer en 'n booreenheid.

'n Boormetode waarvolgens die gat met behulp van 'n rotasioboorkop geboor word en waarop afwaartse druk toegepas word.

Om die annulus tussen die voering en die gat met sement te vul om die voering te ondersteun en beweging van vloeistof tussen deurlatende sones te voorkom.

Die onbeheerde vloei van olie of gas wat plaasvind wanneer formasiedruk meer is as die druk van die boorvloeistofkolom.

Hoëdrukboorkopkleppe ontwerp om die onbeheerde vloei van koolwaterstowwe te stuit.

'n Staal pyl wat met sement in die boorgat geplaas word om enige rotsformasievloeistof weg te keer en te voorkom dat die gat insak.

'n Boorgat wat geboor word om die fisiese omvang, reserwes en moontlike produksievlak van 'n terrein te bepaal.





# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Fokusgebied: Impakassessering

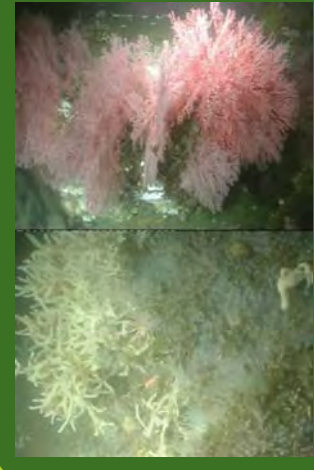
Die vernaamste fokusgebiede wat geïdentifiseer is en aangespreek sal word, sluit in:

- Wegdoen van boorgruis wat seabodemorganismes kan versmoor en 'n biochemiese uitwerking daarop kan hê.
- Tydelike verlies van toegang tot visvanggebiede as gevolg van die uitsluitingsone rondom boorbedrywighede.
- Boorgatkoppe wat op die seabodem prysgegee of wat tydelik opsy gesit is, kan moontlik aan diepseevangnet vashaak.
- Potensiële versteuring van marinevervoer.
- Afval en afvalwater wat in die see gestort word, wat gelokaliseerde besoedelingsimpak kan hê.
- Potensiële koolwaterstofstortings (d.i. klein, toevallige stortings as deel van die normale bedrywighede, tot groot stortings as gevolg van onbeplande mislukkings soos 'n boorgatuitbarsting of -lek).

## Spesialisstudies

Studies (en spesialisstudies)	Omvang
<b>Boorgruis- en oliestorting-modellering (Prestedge Retief Dresner Wijnberg; Stephen Luger)</b>	<ul style="list-style-type: none"> <li>• Modelleer die vervoer, verspreiding en bodemstorting van boorgruis gedurende boorwerkzaamhede;</li> <li>• Modelleer die oliestortingsbaan en lot van olie as gevolg van 'n klein operasionele storting op die wateroppervlak by die boorvaartuig; en</li> <li>• Modelleer die oliestortingsbaan en lot van olie as gevolg van 'n groot storting as gevolg van uitbarsting of lek by die boorgatkop op die seabodem.</li> </ul>
<b>Marine Fauna-assessering (Pisces Environmental Services; Dr Andrea Pulfrich)</b>	<ul style="list-style-type: none"> <li>• Beskryf die plaaslike marine fauna in en om die lisensiegebied;</li> <li>• Bepaal die primêre risiko's vir die marine en kusomgewing tydens die onwaarskynlike voorval van 'n toevallige lekkasie of storting gedurende boorwerk;</li> <li>• Identifiseer, beskryf en assesser die beduidendheid van potensiële impakte van die voorgestelde boorwerk op die plaaslike marine fauna (insluitende seabodemlewe en diepseeomgewings);</li> <li>• Identifiseer praktiese versagtingsmaatreëls om enige negatiewe impakte op die marine fauna te verminder.</li> </ul>
<b>Visseryassessering (CapFish SA; Dave Japp &amp; Sarah Wilkinson)</b>	<ul style="list-style-type: none"> <li>• Beskryf visvangaktiwiteite wat na verwagting in en om die lisensiegebied voorkom;</li> <li>• Onderneem 'n tyd- en ruimtelike assessering van verwagte visvangpogings in die voorgestelde boorgebied;</li> <li>• Assesseer die impakrisiko van die boorwerkgebied op die verskillende visvangsektore;</li> <li>• Assesseer die impak van die voorgestelde veiligheidszones rondom die boorvaartuig op visvangaktiwiteite ten opsigte van die geraamde vangs en as gevolg van die verlies van visvanggebiede; en</li> <li>• Identifiseer praktiese versagtingsmaatreëls om enige negatiewe impakte op die visserybedryf te verminder.</li> </ul>

Bentiese of seabodemorganismes



Marine soogdiere

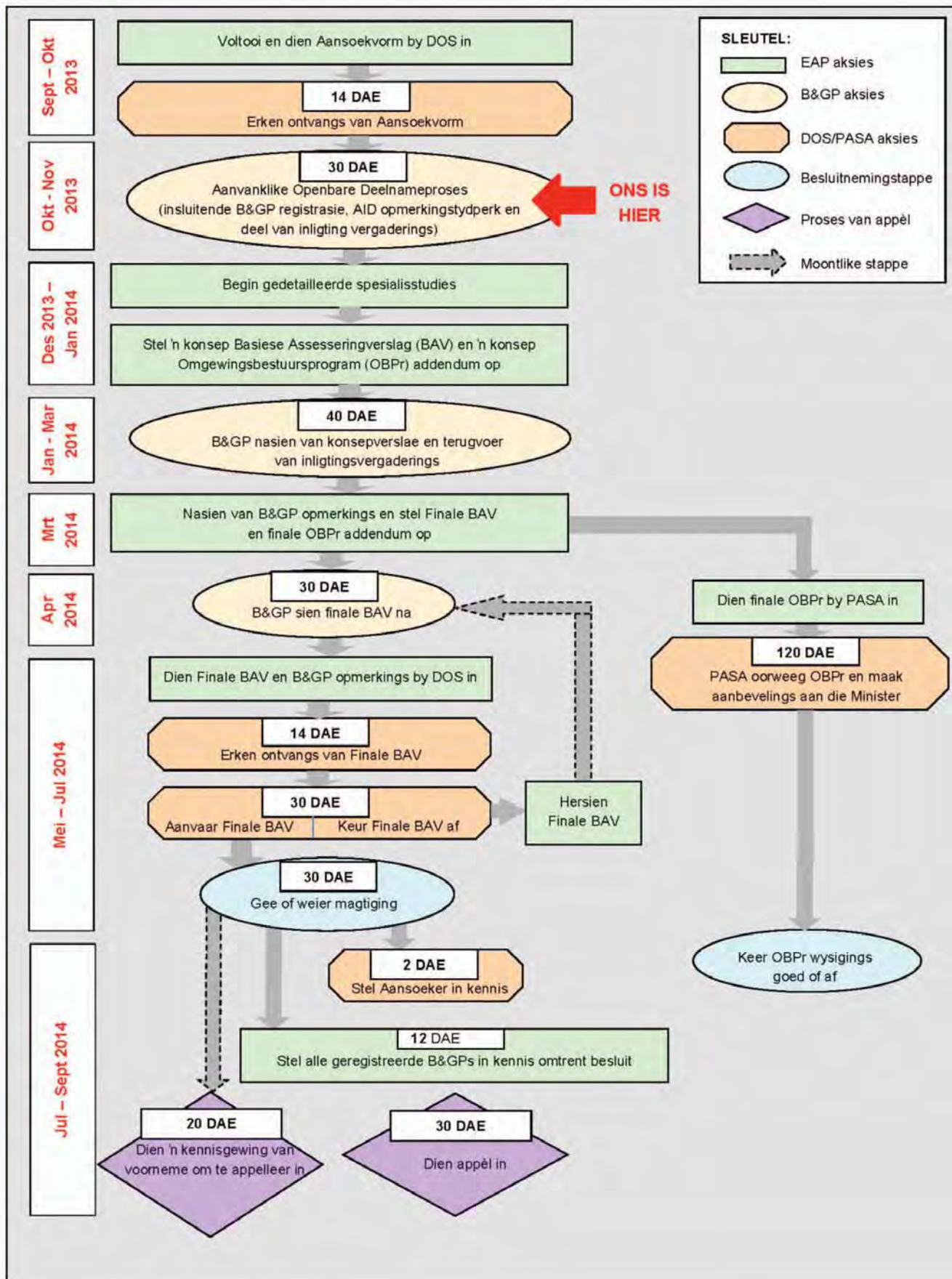


Visvang- en marine verkeer



# VOORGESTELDE EKSPLORASIEBOORWERK IN DIE ORANJE-KOM-DIEPWATER-LISENSIEGEBIED LANGS DIE WESKUS VAN SUID-AFRIKA

## Impakassesseringsproses



# OPENBARE DEELNAMEPROSES

## Doelwitte van die Openbare Deelnameproses

- Om kwessies en kwellinge van die vernaamste belanghebbers en geïnteresseerde en geaffekteerde partye (B&GP's) te identifiseer sodat dit in die impakassessering aangespreek kan word, om geleentheid vir voorstelle te bied om potensiële voordele/impakte te verhoog/versag;
- Om 'n redelike geleentheid aan B&GP's te bied om kommentaar op die aansoek te lewer;
- Om deursigtigheid oor die voorgenome projek te bevorder.

## Fase 1: Aanvanklike Openbare Oorlegpleging

(30-DAE-KOMMENTAARTYDPERK: 31 OKTOBER TOT 2 DESEMBER 2013)

- **IDENTIFISEER VERNAAMSTE BELANGHEBBERS, GEÏNTERESSEERDE EN GEAFFEKTEERDE PARTYE**
- **ONTWIKKEL DIE AGTERGRONDINLICHTINGS-DOKUMENT (AID)**
  - **AID** in Engels, Afrikaans en Xhosa
  - Stuur aan B&GP's op die databasis en aan biblioteke en munisipale kantore in Saldanha, Vredenburg, Lambertsbaai, Kleinsee, Springbok en Port Nolloth
- **STEL TERREINKENNISGEWINGS TEN TOON**
  - Plakkate by biblioteke/munisipale kantore in Saldanha, Vredenburg, Lambertsbaai, Kleinsee, Springbok en Port Nolloth
- **ADVERTEER DIE PROJEK**
  - Plaas advertensies in *Cape Times*, *Sunday Times*, *Rapport*, *Die Burger*, *Ons Kontrei* en *Weslander* tussen 27 en 31 Oktober 2013.
- **ROEP OPENBARE OPE-DAE/OPENBARE VERGADERINGS SAAM**

In die eerste rondte sal ope dae en inligtingsvergaderings in **KAAPSTAD** en **SALDANHA** gehou word om 'n oorsig oor die voorgestelde projek te verskaf en om B&GP's die geleentheid te gee om enige kwessies of kwelpunte te opper. 'n Vergadering word ook beoog met die **NOORDKAAPSE PROVINSIALE KUSKOMITEE**.

**30-dae-kommentartydperk begin:**  
Donderdag 31 Oktober tot Maandag 2 Desember 2013



# OPENBARE DEELNAMEPROSES

## Fase 2: Oorsig oor Konsep- Basiese Asseseringsverslag (BAV) en Omgewingsbestuursprogram (OBPr)-addendum

(40-DAE-KOMMENTAARTYDPERK)

- Adverteer beskikbaarheid van Konsep-BAV / OBPr-addendum en ope dae en inligting-terugvoervergaderings in dieselfde koerante
- Vertaal beknopte oorsig tot Konsep-BAV- en OBPr-addendum in Afrikaans en Xhosa
- Stuur brief aan alle B&GP's oor beskikbaarheid van Konsep-BAV- en OBPr-addendum
- Plakkate en afskrifte van die beknopte oorsig moet beskikbaar gestel word in Saldanha, Vredenburg, Lambertsbaai, Kleinsee, Springbok en Port Nolloth
- Konsep-BAV- en OBPr-addendum verskyn in Kaapstad, Saldanha, Vredenburg, Lambertsbaai, Kleinsee, Springbok en Port Nolloth
- Ope dae en inligting-terugvoervergaderings in Kaapstad en Saldanha (**17 Feb – 3 Mrt 2014**)

## Fase 3: Oorsig oor die Finale BAV

(30-DAE-KOMMENTAARTYDPERK)

- Vertaal beknopte oorsig tot Finale BAV in Afrikaans en Xhosa
- Brief aan alle B&GP's oor beskikbaarheid van Finale BAV
- Plakkate en afskrifte van beknopte oorsig word versprei in Saldanha, Vredenburg, Lambertsbaai, Saldanha, Springbok en Port Nolloth
- Finale BAV verskyn Kaapstad, Saldanha, Vredenburg, Lambertsbaai, Kleinsee, Springbok en Port Nolloth
- Maak geskrewe voorleggings van B&GP's oor Finale BAV bymekaar vir voorlegging aan die Departement van Omgewingsake (DOS)

## Omgewingsmagtiging (OM)

**BINNE 12 DAE NA UITREIKING VAN OM:**

- Adverteer OM en appèlprosedure in plaaslike, provinsiale en nasionale koerante
- Skriftelike kennisgewings aan B&GP's oor beskikbaarheid van Omgewingsmagtiging



**NMA**  
EFFECTIVE SOCIAL  
STRATEGISTS

*Development Through Participation*

**Kontak asseblief:**

Mfowabo Maphosa

**NMA Effective Social Strategists (Edms.) Bpk**

POSBUS 32097, BRAAMFONTEIN 2017

Tel: 011 447 9737 • Faks: 086 601 0381

E-pos: mfowabom@nma.org.za

# UHLULO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## Imvelaphi yeProjekthi

NgoFebruwari 2012 uShell South Africa Upstream B.V. (Shell) ufumene ilungelo lokuhlola iNgingqi eVunyiweyo ye-Orange Basin Deep Water ngokwemimiselo yeMineral and Petroleum Resources Development Act, 2002 (No. 28 wama-2002).

Njengenxalenye yenkqubo yesicelo selungelo lokuhlola, kuqulunqwe yaye kwavunywa isiCwangciso sokuPhathwa kweNdalo esiNgqongileyo (EMPr) yokwenza iimvavanyo zokuhlola ubume bomhlaba elwandle nokubhola ukuhlola kwingingqi evunyiweyo.

UShell uqalise uhlolo lobume bomhlaba elwandle olungu-3D kwinxalenye engama-8 000 km<sup>2</sup> yengingqi evunyiweyo, hlolo olo lugqitywe ngomhla wama-22 kaFebruwari 2013. Ngokusekelwe kuhlalutyo lolwazi oluqokelelweyo lobume bomhlaba elwandle, uShell uceba ukubhola umthombo omnye okanye emibini.

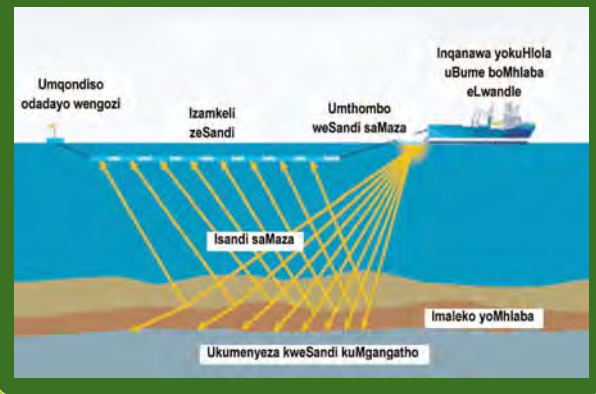
## INgingqi eVunyiweyo yeOrange Basin Deep Water

Ummandla ovunyiweyo umalunga nama-37 290 km<sup>2</sup> ubukhulu.

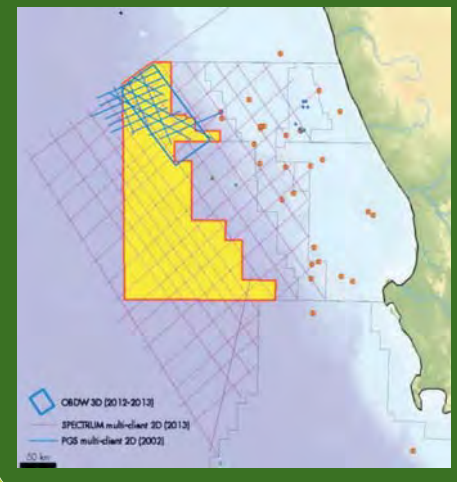
Umda osempuma wommandla ovunyiweyo ubekeke phakathi kwe-150 km nama-300 km ukusuka kuNxweme oluseNtshona phakathi kwe-Saldanha Bay (33°S) ne-Kleinsee (30°S).

Ubunzulu bamanzi bukumgama osuka kuma-500 m ukuya kuma-3 500 m.

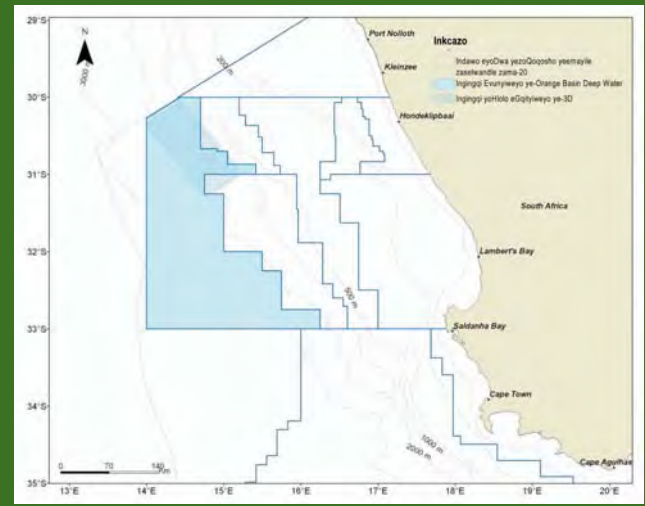
Umfanekiso wohlobo lohlobo lobume bomhlaba elwandle



Iimvavanyo ezibalulekileyo zobume bomhlaba elwandle kumndla ovunyiweyo (2003 – 2013)



INgingqi eVunyiweyo yeOrange Basin Deep Water



# UHLOLO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## Loluphi ugunyaziso olufunekayo?

### Umthetho we-Mineral and Petroleum Resources Development Act, 2002:

INKqubo yokuPhathwa kokusiNgqongileyo (EMPr) ekhoyo ka-Shell iya kulungiswa ngokweCandelo 102 lomthetho we-Mineral and Petroleum Resources Development Act, 2002 (No. 28 wama-2002). Ulungiso luya kuthathela ingqalelo naziphi iinguqu zomda weprojekthi esekelwe kuwo imvume yangoku yelungelo lokuhlola inkqubo yomsebenzi.

IsiHlomelo se-EMPr siya kuthunyelwa kwi-Petroleum Agency SA (PASA) ukuqwalaselwa nokunikwa imvume nguMphathiswa wobuTyebi beziMbiwa (okanye igunyabantu eligunyazisiweyo).

### Umthetho we-National Environmental Management Act, 1998:

ImiThetho yoHlolo lweFuthe kwiNdalo esiNgqongileyo (EIA) Regulations 2010 ebhengezwe ngokweSahluko sesi-5 somthetho we-National Environmental Management Act, 1998 (No. 107 we-1998) (NEMA), njengoko ulungisiwe, ibonelela ngolawulo lweentshukumo ezithile ezidweliswe kwiZaziso zikaRhulumente (GN) R544 (Listing Notice 1), R545 (Listing Notice 2) ne-R546 (Listing Notice 3). Ezi ntshukumo zithintelwe kude kube ugunyaziso olubhaliweyo lufunyenwe kwiSebe leMicimbi yokusiNgqongileyo.

Umsebenzi wokubhola ocetywayo uqalisa iNtshukumo (Activity) 18(ii) kwisaziso se-Listing Notice 1, enxulumene “*nokubeka naziphi izinto ezingaphezulu kwe-5m<sup>3</sup> elwandle*” okanye “*ukususwa okanye ukushenxiswa komhlaba, kwentlabathi, kwesanti, koonokrwece, kohlalutye loonokrwece, kohlalutye okanye amatye angaphezulu kwe-5 m<sup>3</sup> elwandle*”.

IiNtshukumo kwi-Listing Notice 1 zifuna ukuba kwenziwe inkqubo yoVavanyo lwesiSeko ukuze igunyabantu elifanelekileyo, iSebe leMicimbi yokusiNgqongileyo, liqwalasele isicelo sogunyaziso lokuqhuba umsebenzi ocetywayo.

### Ngoobani abacebisi?

U-CCA Environmental (Pty) Ltd (CCA), ebambisene noNMA Effective Social Strategists (Pty) Ltd (NMA), uqeshwe nguShell ukuba enze isiHlomelo se-EMPr nokwenza inkqubo yoVavanyo lweSiseko.



# UHLOLO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## Inkcazelo-jikelele yeProjekthi

UShell undulula ukubhola umthombo omnye okanye mhlawumbi emibini kwinxalenye yasemantla yengingqi evunyelweyo. Kwesi sigaba ingingqi yomdla ichongelwe ukubhola, engama-900 km<sup>2</sup> ubukhulu namanzi obunzulu bomgama ophakathi kwe-1 500 m nama-2 100 m.

Indawo yomthombo wokugqibela iya kusekelwa kwimiba eliqela, equka uhlahutyo olongezelelweyo lwedata ye-3D yobume bomhlaba elwandle, izithintelo zendawo yejoloji ekujoliswe kuyo nomgangatho wolwandle.

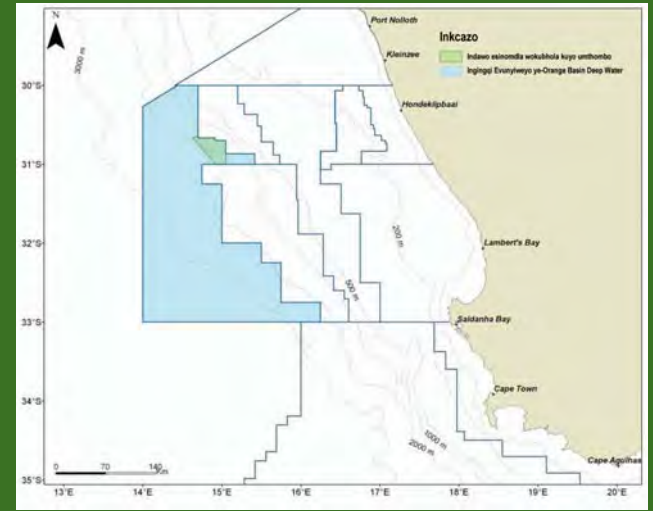
Ngezizathu zokusebenza, kulindelwe ukuba ukubhola kwenzeke kwixesha lehlobo elizayo phakathi koNovemba noEpreli yaye kuya kuthatha ithuba leenyanga ezintathu ukuba kugqitywe. Ngokuxhomekeke kwimpumelelo yomthombo wokuqala, umthombo wesibini ungabholwa ukumisela ubungakanani neqondo lokuqukuqeka elinokuba khona lecebo.

### Amandla okunyula iyunithi yokubhola:

Ngokuqhubekayo uShell unakana iyunithi ezimbini ezitshintshanayo zokubhola, nokuba yinqanawa yokubhola ephantse izike (rig) okanye inqanawa yokubhola. Zombini iindlela zonyulo zingazinziswa ngokubekwa kwezixhobo zokuntywilisa eziluncedo (kungekho ankile).

Ukanti iyunithi zokubhola zinenkqubo yokuphakamisa nokuthoba umbhobho wokubhola kunye nezixhobo ezifunekayo zokubhola umthombo, isiThinteli soGqabukho-Dubulo (Blow-out Preventer) (BOP) nenkqubo yokumpompa ukujikelezisa amalwelo xeshikweni kubholwa.

Ingingqi yomdla wokubhola umthombo



Inqanawa wokubhola entywiliselwe kancinci



Inqanawa yokubhola



Inqanawa yokubhola



# UHLOLO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## Inkqubo yokubhola:

Izibhidi ezingaphantsi nje komgangatho wolwandle zidla ngokuthamba kakhulu nokukhululeka, ngako ukuthintela umthombo ukudilekela ngaphakathi nokuthwala ubunzima bentloko yomthombo umbhobho omkhulu okhokelayo oicala lesangqa uyafakwa / ubholelwe uze ugalelwe isamente yokuwubamba kubunzulu obumalunga nama-75 m. ngaphantsi kombhobho okhokelayo, umbhobho omncinci okanye iqokobhe lomgangatho liyabholelwa lize ligalelwe ngesamente ukulugcina lise ndaweni ukuya kubunzulu obumalunga ne-1 000 m.

Ngethuba lezi zigaba zokuqala zokubhola, amanzi asekelwe kudaka (WBM) ayasetyenziswa ukugcina uxinzelelo lomthombo, lupholile yaye kuthanjiswe intloko yebhola nokukhupha amasuntswana amatye emngxunyeni. I-WBM ipontshelwa ezantsi ngomphakathi wombhobho webhola, ukuphuma kwimingxuma yentloko yebhola, yaye ziphindele kumgangatho wolwandle ngezithuba eziphakathi komtya webhola neendonga zomgxuma, apho zikhutshwa kunye namasuntswana amatye.

Ukulandela isigaba sokuqala sokubhola, kusetyenziswa isithinteli sogqabhuko-dubulo (BOP) yaye kufakwa isiphakamisi solwandle kuze kufakwe intloko yomthombo. Isiphakamisi sidibanisa umthombo kwiyunithi yebhola yaye sivumela ulwelo lokubhola namasuntswana amatye ukujikeleziswa ngokuqhubekayo ukuphinda kwiyunithi yokubhola.

Ukubhola kuyaqhubeka ngokuthoba umtya wokubhola, ngentloko yokubhola encinane, ukuphuma kwisiphakamisi ukuya kumgangatho weqokobhe nokujikelezisa umtya webhola nentloko. Esi sigaba sokubhola singenziwa ngokusebenzisa udaka olusekelwe kwimveliso (SBM). Amasuntswana okubhola ayahlukaniswa kulwelo lokubhola ngesixhobo sokulawula iziqina phambi kokuba udaka lujikeleziswe kwakhona. Amasuntswana ayalungiswa ukunciphisa iziqukatho zawo ze-oli ukuba ngaphantsi kwe-6.9% yobunzima bamasuntswana omileyo aze alahlelwe ngaphandle. Ngokufanayo nakwisigaba sokuqala sokubhola, imitya yeqokobhe iyasetyenziswa ize igalelwe isamente ukuyigcina endaweni ngobunzulu obongezelelweyo.

Xa indawo okujoliswe kuyo ifikelelwa (ama-2 700 m nama-3 000 m ngaphantsi komgangatho wolwandle umthombo uyagcwaliswa uze uvavanywe.

Ukujikeleza kolwelo lokubhola nodaka



- A: I-riser
- B: Umbhobho wokubhola
- C: Ulwelo lokubhola ngombhobho wokubhola
- D: Ulwelo lokubhola ziphuphuma wokubhola ne-riser
- E: Isithinteli sogqabhuko-dubulo
- F: Intlele yolwandle
- G: Isigqabhuko
- H: Umngxuma ovelakileyo

Ukwehlisa umtya webhola nentloko ukuya kumgangatho wolwandle





# UHLULO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## Ukugqitywa nokuyekelelwa komthombo:

Ngokusekelwe kwiziphumo zokubhola, ukugcwalisa nokuvavanya okunokwenzeka komthombo, kungathathwa isigqibo nokuba kumiswe okanye kuyekwe umthombo.

(a) Umthombo omisiweyo (unokusebenza ngokwezorhwebo):

- Umgxuma womthombo uyavingcwa (ngesamente) yaye uvavanywe ngenjongo yokungqina intembeko.
- Iyasuswa i-BOP.
- Intloko yomthombo (ubude be-3 ukuya kwisi-4 m) iya kushiyeke kumgangatho wolwandle.
- Isiciko sokuthintela ukudleka sibekwa phezu kwentloko yomthombo ukulungiselela ukusetyenziswa kwakhona.

(b) Umthombo oyekiweyo:

- Umgxuma womthombo uyavingcwa (ngesamente) yaye uvavanywe ngenjongo yokungqina intembeko.
- Iyasuswa i-BOP.
- Intloko yomthombo (ubude be-3 ukuya kwisi-4 m) iya kushiyeke kumgangatho wolwandle.

## Inkxaso esekelwe kulwandle nomhlaba:

Ulungiselelo lwenkxaso yesitishi/ isikhululo esiselunxwemeni lungamiswa nokuba kuseKapa okanye e-Saldanha Bay. Esi sitishi esiselunxwemeni singabonelela ngolondolozo lwezinto nezixhobo ezinokuthuthwa ukusuka/ nokuya kwiyunithi eselwandle yokubhola. Isitishi esiselunxwemeni singasetyenziswa kananjalo ukumisa iinqanawa. Kundululwa ukuba amagosa athuthwe ngehlikhopta ukuya kwiyunithi yokubhola ukusuka e-Kleinzee. Iinkqubo zophapho ezisisigxina zingasetyenziswa phakathi kwe-Kleinzee neKapa.

Umtya webhola nesikhokelo sesiseko sentloko yomthombo



Inkxaso esekelwe kulwandle nomhlaba



## Iglosari:

Umthombo oyekiweyo	Umthombo ovalwe ngokusesikweni waza wayekwa.
I-annulus	Isithuba esiphakathi kwemibhobho nodonga lomngxuma wesitsala-manzi.
Umthombo wokuqinisekisa	Umthombo othi ubholwe ukuze kubonwe ubungakanani, ubuninzi kunye nokuba inganemveliso ngezanga elinjani na intsimi.
Ibhola	Intsinjana okanye isixhobo sokubhola esisetyenziswa xa kubholwa umthombo.
Ugqabhuko-dubulo	Ukumpompoza okungalawulekiyo kwe-oyile okanye igesi okuthi kwenzeka xa uxinzelelo lokutsawula kwayo luba ngaphezulu koxinzelelo olufakwa kuyo ngentsika yolwelo lokubhola.
Izithinteli zogqabhuko-dubulo	Izivalo zoxinzelelo oluphezulu zentloko yomthombo ezenzelwe ukuthintela ukumpompoza okungalawulekiyo kweehayidrokharbhon.
Umngxuma wesitsala-manzi	Umngxuma owombiwa ngebhola.
Isigqubuthelo	Umbhobho wentsimbi owogqunywe ngesamente emthonjeni ukuze kuvalwe ulwelo okanye kuthintelwe umngxuma ungadiliki.
Ukugquma ngesamente	Ukuvala isithuba esiphakathi kwesigqubuthelo kunye nomngxuma ngesamente ukuxhasa isigqubuthelo nokuthintela ulwelo lungadluleli kwiindawo ezikufutshane.
Umbhobho wokuhambisa	Umbhobho wokuhambisa ngumbhobho obanzi othi ufakwe emhlabeni ukuze kwenziwe isiseko esizinzileyo sokuqala sokwakhelwa komthombo.
Iingceba	Amatye amancinci aqhekezwa yibhola nathi aphume ngaphandle nodaka olunyuka xa kubholwa.

Umtya wokubhola	Intsika, okanye umtya, wombhobho wokubhola. Lidla ngokusetyenziswa kumbhobho wokubhola okanye iintsika zokubhola.
Iyunithi yokubhola	Iyunithi yokubhola ayincamatheliswa ngokusisigxina entseleni yolwandle, umz. inqanawa yokubhola okanye isikhitshana sokubhola esitshoniswa ngokuyinxenye emanzini.
Ulwelo/ udaka lokubhola	Umxube wodongwe, imichiza namanzi ahanjiswa ngombhobho wokubhola ukuze kuthanjiswe yaye kupholiswe imsimbi yokubhola nokukhupha iingceba zamatye, kunye nokuqinisa umngxuma emacaleni. Iindidi ezimbini eziphambili zolwelo lokubhola ludaka olwenziwe ngamanzi (WBM) kunye nodaka olwenziwe ngokuxutywa kwemichiza ethile (SBM).
Umthombo wokungqawa	Umthombo obholwa endaweni engazange ibholwe ukuze kuqinisekise ubukho okanye ukungabikho kwemichiza yehayidrokharbhon.
Iriser	Umbhobho ophakathi kwesixhobo sokuthintela ugqabhuko-dubulo esisentseleni yolwandle kunye neyunithi yokubhola.
Irotary drilling	Indlela yokubhola umngxuma ngebhola ejikeleziswayo ngelixa icinezelelwa phantsi ngamandla.
Umthombo omisiweyo	Umthombo ovaliweyo okwethutyana.
Incwadi yomthombo	Irekhodi yolwazi lobume bomhlaba ekudlulwe kuwo ngethuba kubholwa, kuqkwa iinkcukacha zobuchwepheshe zomsebenzi.
Iimbobo yomthombo	Umngxuma wesitsala-manzi – umngxuma obholwe ngentsimbi yokubhola.
Intloko yomthombo	Isixhobo esifakwa kumphezulu wendawo ekumbiwe kuyo umthombo.



# UHLULO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## IiNkalo ekuJoliswe kuzo kuVavanyo lweFuthe

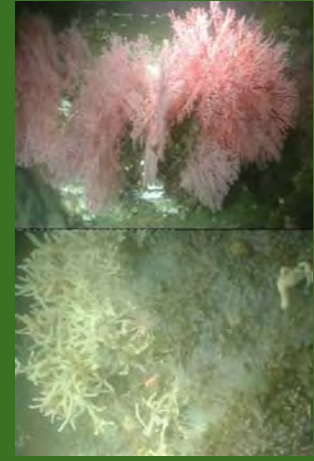
Iinkalo ezingundoqo ekujoliswe kuzo ezichongiweyo, neziya kuthathelwa ingqalelo, ziquka:

- Ukulahlwa kweengceba ezinokufuthanisela yaye zibe neziphumo zemichiza yempilo kwiziphili ze-benthic.
- Ilahleko yethutyana yokufikelela kwiindawo zokuloba ngenxa yendawo ebekelwa bucala engqonge umsebenzi wokubhola.
- Iintloko zemithombo eyekiweyo okanye emisiweyo kumgangatho wolwandle zinokuba ziziphazamiso kwiminatha yezikhithshana zokuloba kumanzi anzulu.
- Uphazamiseko olunokwenzeka kwizithuthi zaselwandle.
- Ukulahlwa kwenkunkuma namanzi amdaka elwandle, okunokuba nesiphumo songcoliseko kwingingqi.
- Ukuchitheka okunokwenzeka kwe-hydrocarbon (oko kukuthi. Iingozi ezincinci zokuchitheka kwimisebenzi yesiqhelo ukuya kukuphalala okukhulu okudalwa ziziganeko ezingacetywanga zokusilela ezifana nogqabhuko-dubulo).

## Uphononongo lweNgcali

Uphononongo (nengcali)	Umda
<b>Umzekelo Weengceba Nokuchitheka Kwe-oyile (Prestedge Retief Dresner Wijnberg (PRDW): Stephen Luger)</b>	<ul style="list-style-type: none"> <li>• Yenza umzekelo wokuthuthwa, ukuchithwa nokulahlwa emazantsi kweengceba zezinto eziqhekekayo xa kubholwa;</li> <li>• Yenza umzekelo obonisa ukuhamba kwe-oyile nento eyenzekayo kuyo ngenxa yokuchitheka kwayo emanzini angaphezulu kwinqanawa yokubhola;</li> <li>• Yenza umzekelo obonisa ukuhamba kwe-oyile nento eyenzekayo kuyo ngenxa yogqabhuko-dubulo olukhulu olunokwenzeka kwintloko yomthombo entseleni yolwandle.</li> </ul>
<b>Uhlolo lwezilwanyana zaselwandle (IPisces Environmental Services: uGqr Andrea Pulfrich)</b>	<ul style="list-style-type: none"> <li>• Chaza izilwanyana zaselwandle ezihlala kule ndawo ijikeleze iNgingqi Evunyiweyo;</li> <li>• Qinisekisa ngeengozi eziyintloko kokungqongileyo kwaselwandle naselunxwemeni ukuba kungenzeka kubekho izinto ezivuzayo okanye zichitheke ngengozi ngethuba kubholwa umthombo;</li> <li>• Chonga, chaza ze uhlole ubukhulu befuthe elinokubangelwa kukubholwa komthombo okucetywayo kwizilwanyana zaselwandle kule ndawo (kuquka okungqongileyo enzulwini nakumphezulu wolwandle;</li> <li>• Chonga amanyathelo asebenzayo okunciphisa naliphi na ifuthe elibi kwizilwanyana zaselwandle.</li> </ul>
<b>Uhlolo lokuLoba (nguCapFish SA: Dave Japp &amp; Sarah Wilkinson)</b>	<ul style="list-style-type: none"> <li>• Chaza imisebenzi yokuloba elindelekileyo kwiNgingqi Evunyiweyo nakwiindawo ezijikelezileyo;</li> <li>• Yenza uhlolo kwiindawo ezithile nolwethutyana kumzamo wokuloba okulindelekileyo kwiindawo ekucetywa ukubhola kuyo.</li> <li>• Hlola ingozi yefuthe lendawo ekuza kubholwa kuyo kumacandelo ahlukeneyo okuloba;</li> <li>• Hlola ifuthe kwiindawo ezikhuselweyo ezicetyisiweyo ezijikeleze isikhophe sokubhola kwimisebenzi yokuloba ngokweentlanzi ekuqikelelwa ukuba zingabanjiswa nangena yokulahlekelwa ziindawo zokuloba; kunye</li> <li>• Nokuchonga iindlela ezisebenzayo zokunciphisa naliphi na ifuthe elibi elinokubakho kwishishini lokuloba.</li> </ul>

Iziphili zeBenthic



Iimamali zaselwandle

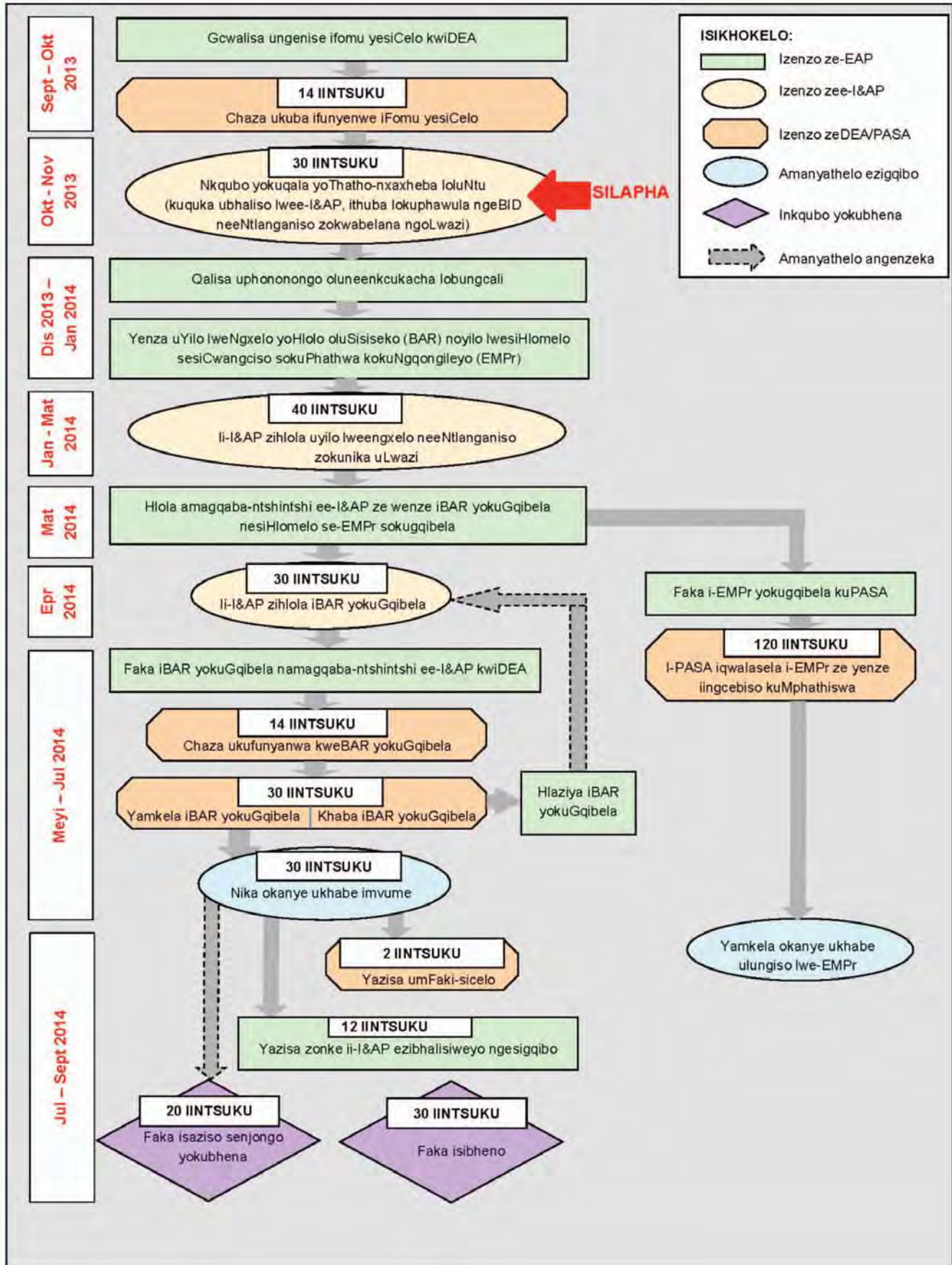


Ukuloba nezihambandlela zaselwandle



# UHLULO OLUSISISEKO LWENKQUBO YOKUBHOLA OKUCETYWAYO KWINGINGQI EVUNYELWEYO YE-ORANGE BASIN DEEP WATER KUNXWEME OLUSENTSHONA LOMZANTSI AFRIKA

## Inkqubo yokuVavanya iFuthe



# INKQUBO YOKUTHATHA INXAXHEBA KOLUNTU

## linjongo zeNkqubo yokuThatha iNxaxheba koLuntu

- Ukuchonga imiba neenkxalabo zabathathi-nxaxheba abangundoqo kunye namaqela anomdla nachaphazelekayo (ii-I&AP) ukuze kuthethwane nabo kuvavanyo lwefuthe nokubonelela ngethuba lezimvo ukuphakamisa iinzuzo ezinokubakhona nokuthintela okanye ukuthethelela iimpembelelo ezinokubakhona;
- Ukubonelela ngethuba elamkelekileyo kumaQela anoMdla naChaphazelekayo (ii-I&AP) ukuveza izimvo malunga nesicelo;
- Ukukhuthaza ukwenziwa kwezinto elubala malunga neprojekthi ecetywayo.

## Isigaba soku-1: Uthetha-thethwano lokuQala loLuntu

(IXESHA LEZIMVO LEENTSUKU EZINGAMA-30: UMHLA WAMA-31 OKTHOBHA UKUYA KOWE-2 DISEMBA 2013)

- **UKUCHONGA ABATHATHI-NXAXHEBA ABANGUNDOQO NEE-I&AP**
- **UKUPHUHLISA UXWEBHU LOLWAZI LWEMVELAPHI (BID)**
  - **I-BID** ngeEnglish, iAfrikaans nesiXhosa
  - Ukuthumela kwii-I&AP ezikwi-database nakwiilayibrari neeofisi zikamasipala e-Saldanha, Vredenburg, Lamberts Bay, Kleinzee, Springbok nase-Port Nolloth
- **IZAZISO ZOKUBONISA ISIZA**
  - Iiphowusta kwiilayibrari/ iiofisi zikamasipala e-Saldanha, Vredenburg, Lamberts Bay, Springbok, Kleinzee nase-Port Nolloth
- **UKWAZISA IPROJEKTHI**
  - Izaziso zifakwe kwi-Cape Times, Sunday Times, Rapport, Die Burger, Ons Kontrei ne-Weslander phakathi komhla wama-27 nowama-31 Okthobha 2013.
- **UKUBIZA IINTSUKU EZIVULELE ULUNTU / IINTLANGANISO ZOLUNTU**

Kumjikelo wokuqala, iintsuku ezivulekile neentlanganiso zokwabelana ngolwazi ziya kubanjelwa eKAPA naseSALDANHA ukunikela ngenkcazelo-jikelele yeprojekthi ecetywayo nokunika ii-I&AP ithuba lokuphakamisa nayiphi imiba okanye iinkxalabo. Kananjalo intlanganiso ihlalelwe neKOMITI YONXWEME LWEPHONDO LWENTSHONA KAPA (NORTHERN CAPE PROVINCIAL COASTAL COMMITTEE).

**Ixesha leziMvo leentsuku ezingama-30 liqalise:**  
NgoLwesine 31 Okthobha ukuya kuMvulo 2 Disemba 2013



# INKQUBO YOKUTHATHA INXAXHEBA KOLUNTU

## Isigaba sesi-2: Inkcazelo-jikelele yoYilo lweNgxelo yeSiseko yoVavanyo (BAR) nesiHlomelo seNkqubo yoLawulo lokusiNgqongileyo (EMPr)

(IXESHA LEZIMVO LEENTSUKU EZINGAMA-40)

- Ukwazisa ngokufumaneka koyilo lwe-BAR / nesiHlomelo se-EMPr neentsuku ezivulekile kunye neentlanganiso zengxelo ngolwazi kumaphephandaba afanayo
- Ukuguqula isishwankathelo sesigqeba soyilo lwe-BAR nesiHlomelo se-EMPr ukuya kwi-Afrikaans nesiXhosa
- Incwadi ithunyelwa kuzo zonke ii-I&AP ngokufumaneka koYilo lwe-BAR nesiHlomelo se-EMPr
- Iphowusta neekopi zesishwankathelo sesigqeba ziya kufumaneka e-Saldanha, Vredenburg, Lamberts Bay, Kleinzee, Springbok nase-Port Nolloth
- Uyilo lwe-BAR nesiHlomelo se-EMPr ziya kubekwa eKapa, Saldanha, Vredenburg, Lamberts Bay, Kleinzee, Springbok nase-Port Nolloth
- Iintsuku ezivulekile neentlanganiso zengxelo yolwazi eKapa nase-Saldanha (17 Feb – 3 Mar 2014)

## Isigaba sesi-3: Uhlaziyo lwe-BAR yokuGqibela

(IXESHA LEZIMVO LEENTSUKU EZINGAMA-30)

- Guqula isishwankathelo sesigqeba se-BAR yokugqibela ukuya kwi-Afrikaans nesiXhosa
- Incwadi eya kuzo zonke ii-I&AP ngokufumaneka kwe-BAR yokuGqibela
- Iphowusta neekopi zesishwankathelo sesigqeba zisasazwa e-Saldanha, Vredenburg, Lamberts Bay, Saldanha, Springbok nase-Port Nolloth
- I-BAR yokuGqibela ibekwa eKapa, Saldanha, Vredenburg, Lamberts Bay, Kleinzee, Springbok nase-Port Nolloth
- Ukuhlanganisa izimvo ezibhaliweyo eziveliswe zii-I&AP malunga ne-BAR yokuGqibela ukuze zithunyelwe kwiSebe leMicimbi yokusiNgqongileyo (DEA)

## UGunyaziso lokusiNgqongileyo (EA)

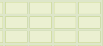
KWITHUBA LEENTSUKU EZI-12 ZOKUKHUTSHWA KWE-EA:

- Ukwazisa i-EA nenkqubo yokubhena kumaphephandaba engingqi, awephondo nawesizwe
- Isaziso esibhaliweyo esiya kwii-I&AP sokufumaneka koGunyaziso lokusiNgqongileyo



**NMA**  
EFFECTIVE SOCIAL  
STRATEGISTS

Development Through Participation

Nceda uqhagamshelane no-: 

Mfowabo Maphosa

**NMA Effective Social Strategists (Pty) Ltd**

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