

# Strategic Environmental Assessment for Shale Gas Development in South Africa

Process Custodians Group (PCG) Meeting #3 on 3 May 2016  
Project Executive Committee (PEC) Meeting #3 on 4 May 2016

CSIR Pretoria – Demo Room

# Process Custodians Group (PCG) Mandate

**The PCG verifies that the scientific assessment process is credible, legitimate and salient in that:**

1. The has been followed within the guidelines set out in the SEA process document;
2. The author teams have the necessary expertise and show balance;
3. The assessment covers the material issues;
4. The identified expert reviewers are independent, qualified and balanced; and
5. The review comments received from expert and stakeholder reviewers have been adequately addressed and documented.



# Project Executive Committee (PEC) Mandate

**The PEC is a project management structure mandated to:**

1. Ensure that the project remains on scope, timelines and budget
2. Check that strategic and policy level questions are addressed sufficiently
3. Evaluate feedback from the Process Custodians Group (PCG)
4. Coordination and conduit of information e.g. through Provincial forums

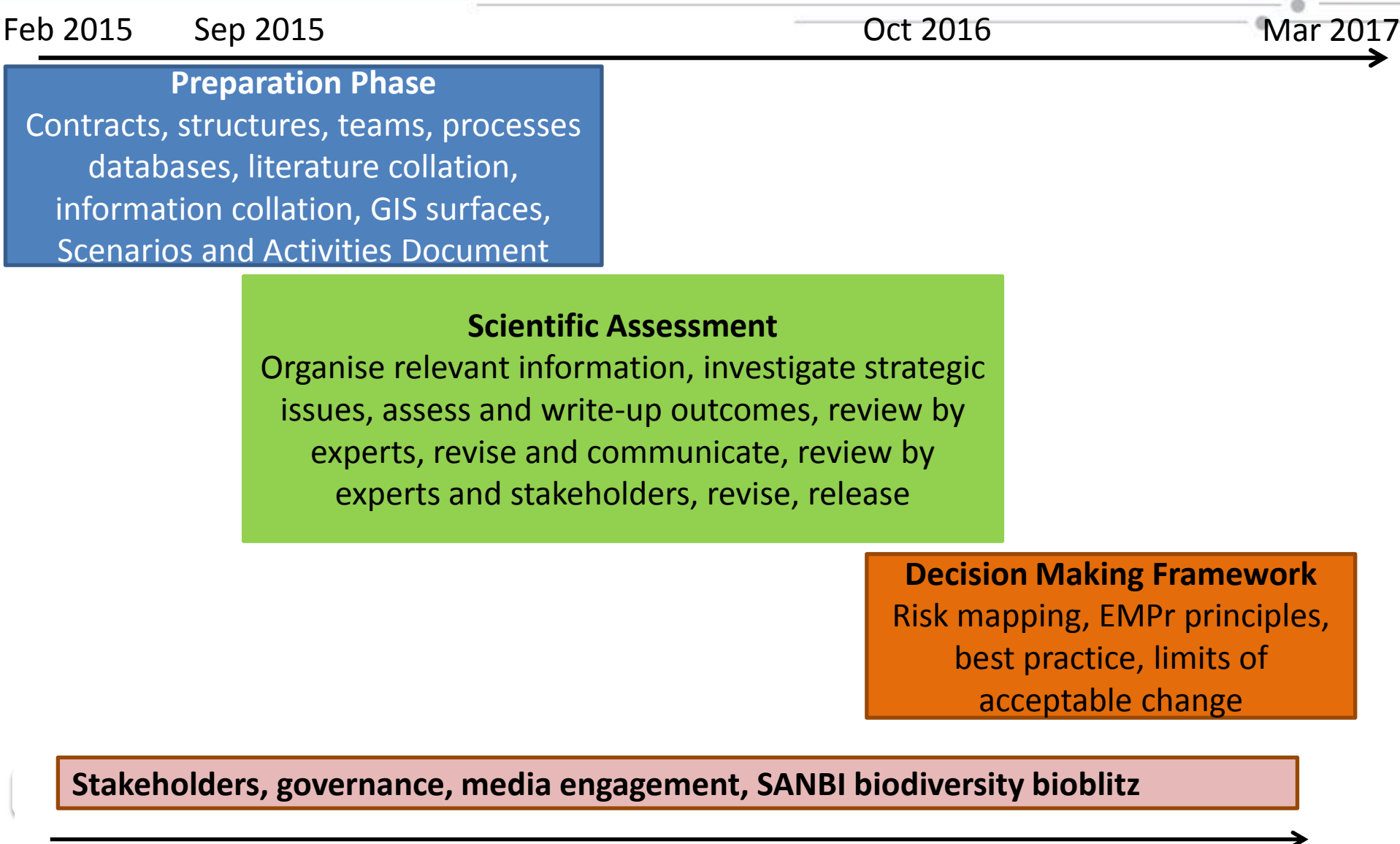


# Purpose of the Meeting: PCG & PEC #3

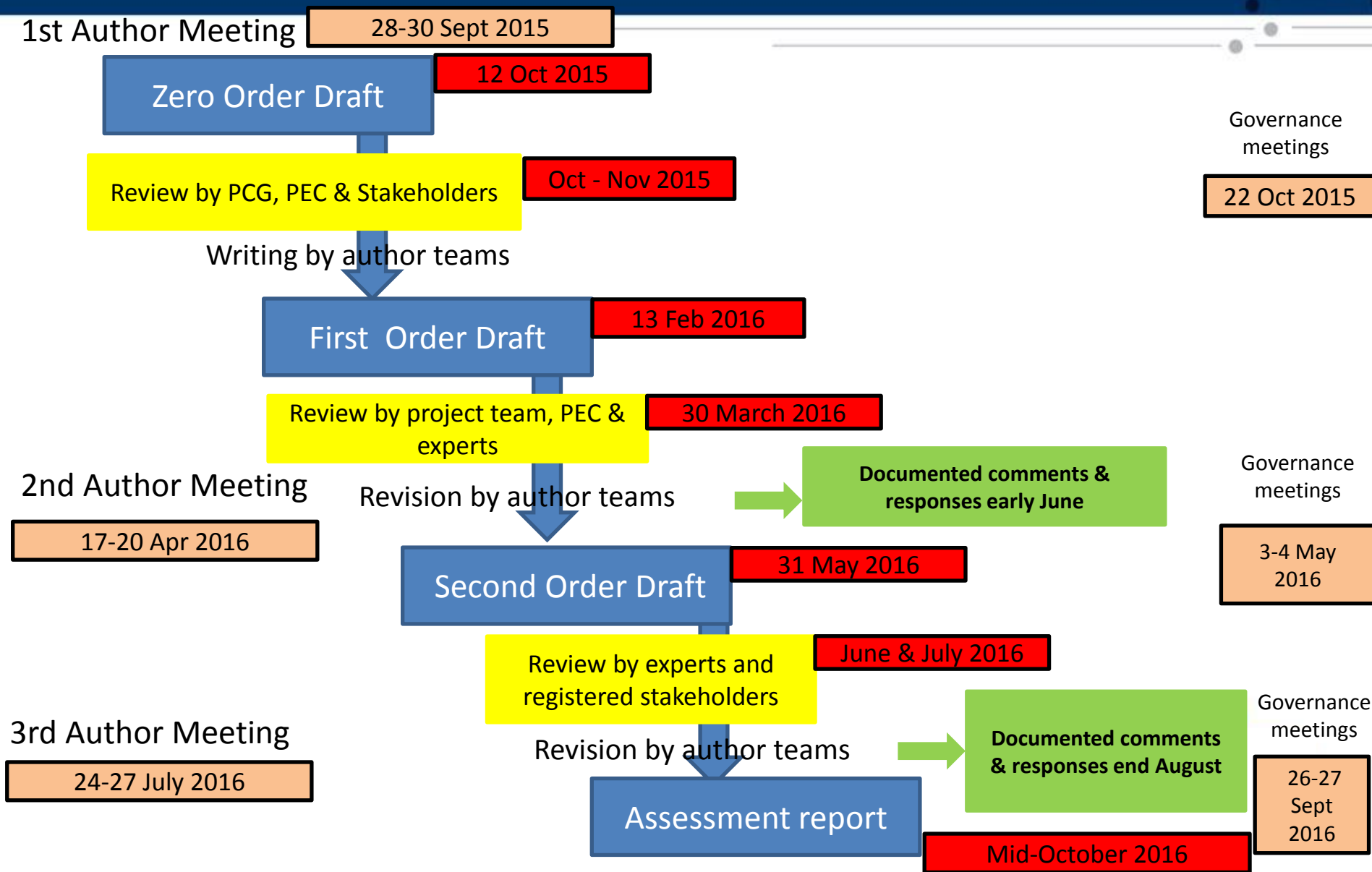
1. Welcome and introductions
2. Adoption of previous meeting notes
3. Progress on the SEA
  - a) Outreach feedback and programme
  - b) Scenarios and Activities Second Order Draft
  - c) Peer Review Process for First Order Draft
4. Preliminary feedback on First Order Drafts
5. Key dates going forward
6. Other matters and next meeting



# Timeline of entire SEA



# Scientific Assessment (Phase 2) timing



# Strategic Environmental Assessment for Shale Gas Development in South Africa

Feedback on outreach program



# SEA Progress - Feedback on Nov 2015 Outreach

- ~ 450 stakeholders registered on the database receiving project updates, presentations, documents for comment
- Zero Order Draft published for comment 12 Oct 2015
- 1<sup>st</sup> round of public outreach (Round 1a):
  - 09 -13 Nov 2015
  - Graaff Reinet, Beaufort West and Victoria West public briefings
  - Cape Town full day workshop for Registered Stakeholders
- Common concerns: involvement of municipalities and wards prior to and at meetings, governance / policing of regulations, the 17 strategic issues



NOTIFICATION OF PUBLIC BRIEFINGS FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR SHALE GAS DEVELOPMENT IN SOUTH AFRICA			
<p>The Department of Environmental Affairs has appointed a project team, consisting of the Council for Scientific and Industrial Research, the South African National Biodiversity Institute and the Council for Geoscience, to undertake a Strategic Environmental Assessment for shale gas development. As part of the process, 3 public briefing sessions and 1 registered stakeholder workshop have been arranged in the study area.</p>			
KENNISGEWING VAN PUBLIEKE UITREIKING VIR DIE STRATEGIESE OMGEWINGS-STUDIE VIR SKALIEGASONTWIKKELING IN SUID AFRIKA			
<p>Die Departement van Omgewingsake het 'n projekspan, bestaande uit die Wetenskap en Nywerheids Navorsingsraad, die Staat Adiklanan Nasionale Biodiversiteit Instituut en die Raad vir Geowetenskap, aangestel om 'n Strategiese Omgewings-Ondersoek vir skaliegasontwikkeling af te lê. As deel van die proses is daar 3 publieke uitreikings en 1 werkswinkel vir geregistreerde belangstakehouders wat in die studiegebied geskeduleer.</p>			
ISAZISO NGAMASUNTSHWANA EENDABA KU-WONKEWONKE NGOVAVANYO OLUCWANGCHISWEYO LWENVELO' NGOPUNYANISO LWE SHALE GAS EMZANTSI AFRIKA			
<p>Abacandisis becwilwile bonyula Council ye Scientific ne Industrial Research, South African National Biodiversity Institute kanye ne Council ye Geoscience okuba baphike uhlelo luvavanyo olucwangukanyo lwemvelo ngokufanele lwe Shale Gas. Mahenge nokuthekele, kuzobakhokelele amaqembu amabuthu emibuthweni ecomawulelwano kanye ne adibano enye yababuthulekele ngokubhekiseleka ababuthulekele emibuthweni emawulo.</p>			
Province	Town	Venue	Date and Time
1. Eastern Cape	Graaff-Reinet	Mossakhe Community Hall	09 November 2015, 14:00 - 19:00
2. Northern Cape	Victoria West	Victoria West Town Hall	10 November 2015, 14:00 - 19:00
3. Western Cape	Beaufort West	Rustdene Community Hall, de Vries Street	11 November 2015, 14:00 - 19:00
(Registered Stakeholder workshop)	Cape Town	Soko Museum	13 November 2015, 10:30 - 15:00
<p>Website: <a href="http://change4sa.com/en/sea/">http://change4sa.com/en/sea/</a>   Email: <a href="mailto:sea@change4sa.com">sea@change4sa.com</a>   Tel: 021 888 2482   Fax: 021 888 3883</p>			





# Key learning for Outreach going forward

What is the learning from the Graaff Reinet and Beaufort West meetings?

- **Experience:** Our communication path to provincial structures and then Municipalities was not an effective option in all provinces
- **Learning:** Provide letters from national DEA Minister to Municipal Managers to facilitate a constructive response and participation
- Additional notice provided via sms and local newspapers
- Normal notice provided via registered stakeholders, radio, social media, governance groups, SALGA

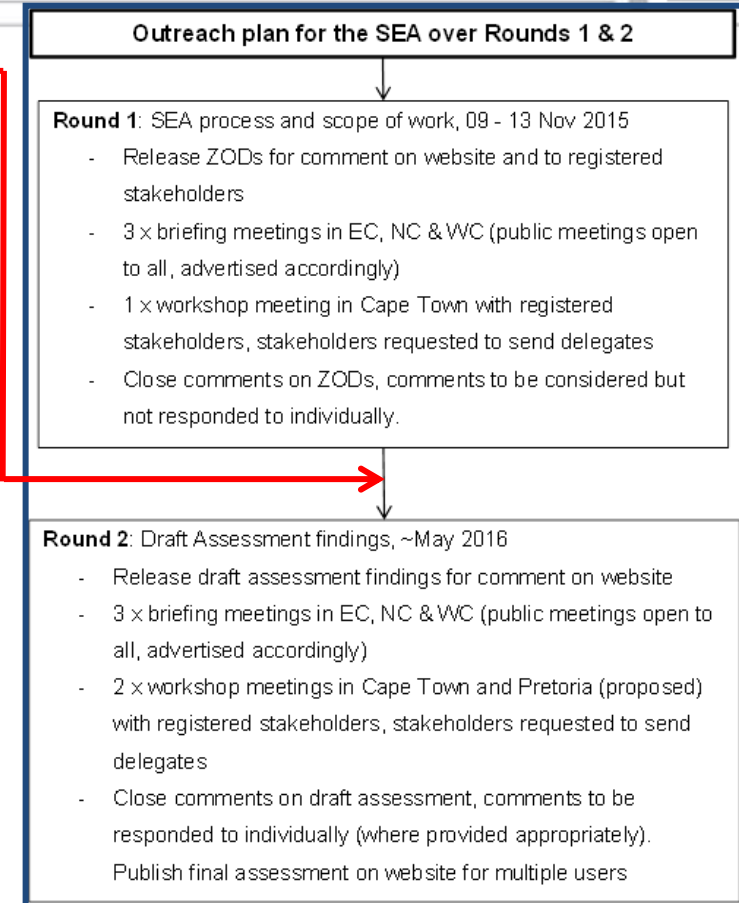


NOTIFICATION OF PUBLIC BRIEFINGS FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT FOR SHALE GAS DEVELOPMENT IN SOUTH AFRICA			
The Department of Environmental Affairs has appointed a project team, consisting of the Council for Scientific and Industrial Research, the South African National Biodiversity Institute and the Council for Geoscience, to undertake a Strategic Environmental Assessment for shale gas development. As part of the process, 3 public briefings sessions and 1 registered stakeholder workshop have been arranged in the study area.			
KENNIGGEWING VAN PUBLIEKE UITREIKING VIR DIE STRATEGIESE OMGEWINGS-STUDEE VIR SKALIEGASONTWIKKELING IN SUID AFRIKA			
Die Departement van Omgewingsake het 'n projekspan, bestaande uit die Raad vir Wetenskap en Nywerheid, die Staat Adikaroor Nasionale Biodiversiteit Instituut en die Raad vir Geowetenskap, aangestel om 'n Strategiese Omgewings-Ondersoek vir skaliegasontwikkeling af te lê. As deel van die proses is daar 3 publieke uitreikings sessies en 1 werkswinkel vir geregistreerde belangstakeparties wat in die studiegebied gaan plaasvind.			
ISAZISO NGAMASUNTSHWANA EENDABA KU-WONKEWONKE NGOVAVANYO OLUCWANGCHIRWEYO LWENVELO' NGOPUNYANISO LWE SHALE GAS EMZANTSI AFRIKA			
Abacandiso becwilwileyo bonyula Council ye Scientific and Industrial Research, South African National Biodiversity Institute kanye ne Council ye Geoscience okuba baphoke ubhale lwavanyo olucwangchirweyo lwemvelo ngolwaziyo lwe Shale Gas. Malunga nokuthelekisa, kuzobakho amanyanisa anabafu eemlinganis ezomawawo kanye ne adibano enye yababakheyo ngokuchaphazela akabapho endaweni yomawawo.			
Province	Town	Venue	Date and Time
1. Eastern Cape	Graaff-Reinet	Mossakhe Community Hall	09 November 2015, 14:00 - 19:00
2. Northern Cape	Victoria West	Victoria West Town Hall	10 November 2015, 14:00 - 19:00
3. Western Cape	Beaufort West	Randstone Community Hall, de Vries Street	11 November 2015, 16:00 - 19:00
Western Cape (Registered Stakeholder workshop)	Cape Town	Soko Museum	13 November 2015, 10:30 - 15:00
Website: <a href="http://change4sa.co.za/">http://change4sa.co.za/</a>   Email: <a href="mailto:seashalegas@saes.co.za">seashalegas@saes.co.za</a>   Tel: 021 888 2482   Fax: 021 888 8883			



# Future public outreach

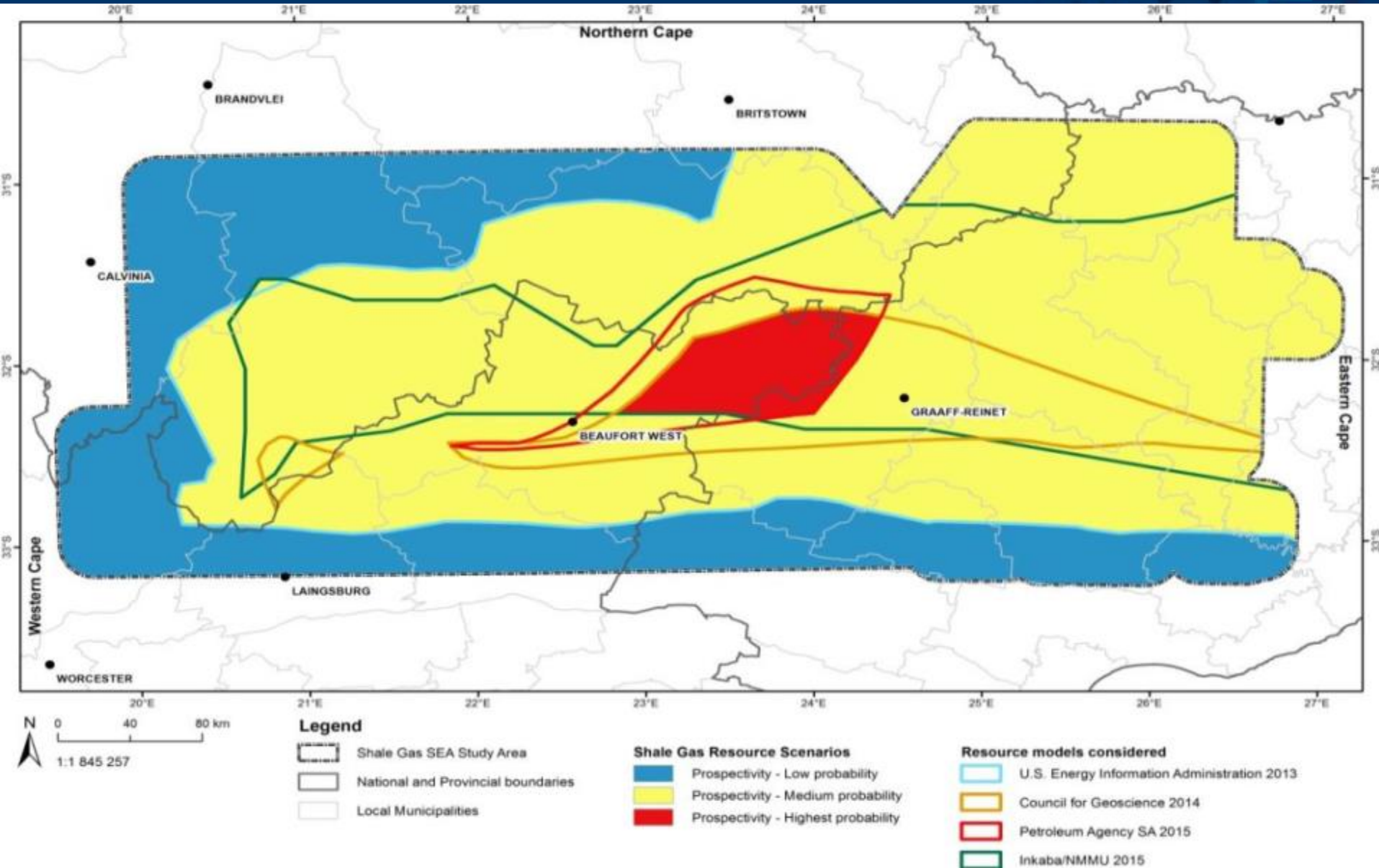
- **Additional round of public meetings (Round 1b)**
  - 16 and 17 May 2016
  - Graaff Reinett & Beaufort West
- **Ministerial letters sent to Municipalities**
- **Pre-meeting with Municipalities**
- **SOD's released for public comment mid-June 2016**
  - 4 weeks comment period
- **Round 2 public briefings**
  - Planned for week of 18-22 July 2016
  - Graaff-Reinet (EC), Beaufort West (WC) and Victoria West (NC) public meetings
  - Cape Town workshop
  - PEC workshop



# Strategic Environmental Assessment for Shale Gas Development in South Africa

## Feedback on Scenarios and Activities


# Resource probability



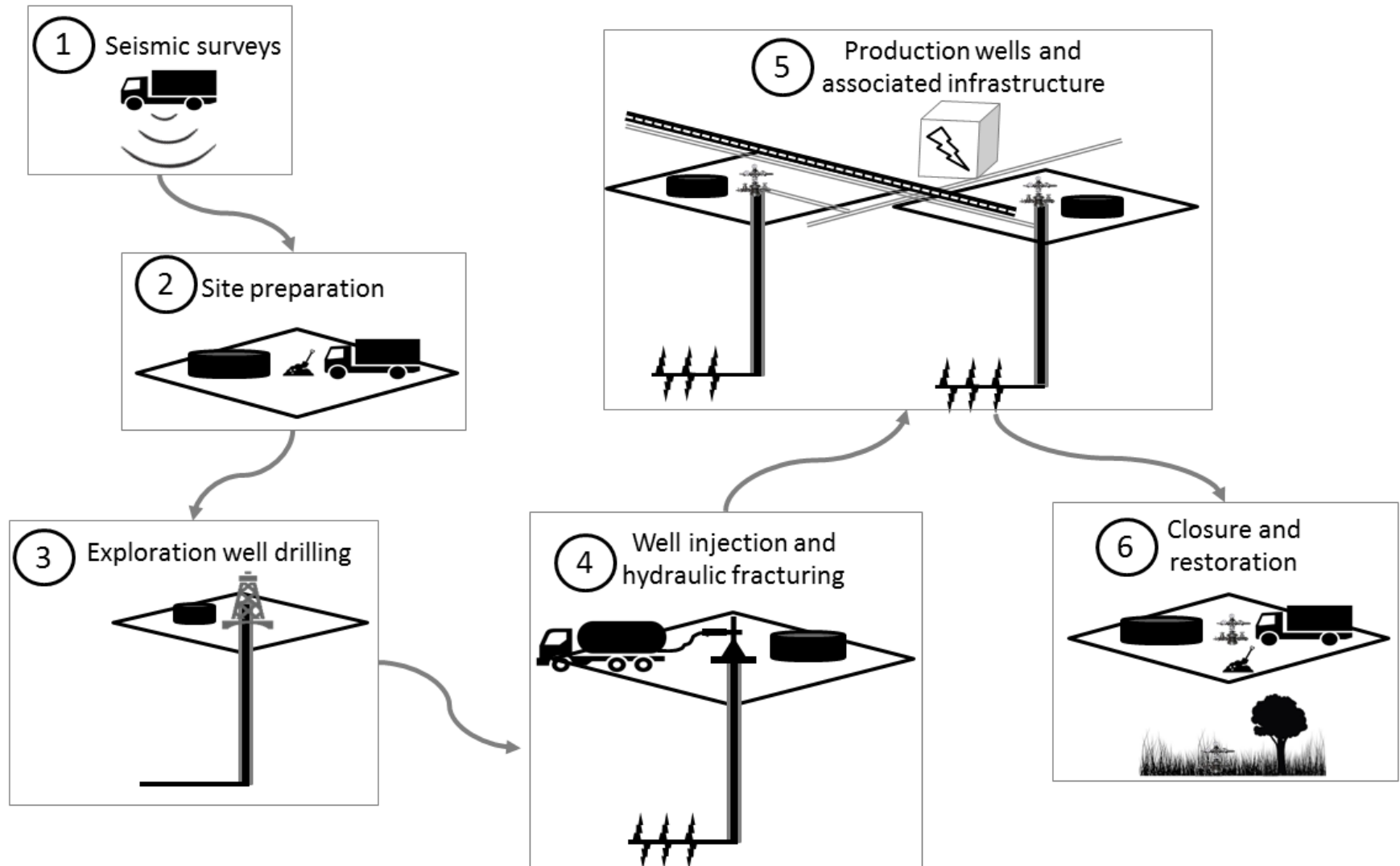




## Legend

-  Notional 30 km x 30 km area
-  Shale Gas SEA Study Area

# Scenarios and Activities: The full lifecycle quantified





# Strategic Environmental Assessment for Shale Gas Development in South Africa

Peer review process of FODs

## Contents

Summary for Policymakers.....	2
Preface.....	2
Scenarios and Activities of Shale Gas Development in the Karoo.....	3
Effects on National Energy Planning and Energy Security.....	5
Air Quality and the Emission of Greenhouse Gases.....	7
Tremors and Earthquakes.....	10
Water Resources, both on the Surface and Underground.....	13
Impacts on Human Health.....	17
Biodiversity & Ecological Impacts: Landscape Processes, Ecosystems and Species.....	20
Impacts on National and Local Economic Performance.....	23
Electromagnetic Interference with Radioastronomy.....	27
Noise Generated by Shale Gas-related Activities.....	29
Impact on Sense of Place Values.....	31
Impacts on Waste Planning and Management.....	34
Impacts on Land, Infrastructure and Settlement Development.....	37
Impacts on Agriculture.....	40
Impact on Cultural Heritage.....	44
Impacts on Tourism in the Karoo.....	47
Impact on Visual Aesthetics.....	50
Impact on Social Fabric.....	53

# Peer Review Process

FODs received  
from author  
teams

FODs sent for DTP  
formatting

Formatted FODs  
sent to Peer  
Reviewers for  
comment

Comments  
received from  
Peer Reviewers

Comments were  
consolidated into  
one document  
per chapter

Consolidated  
comments sent to  
author teams for  
response.

- Peer Reviewers were identified from:
  - scientific publications
  - nominations from stakeholders, the PCG, PEC and authors
- Minimum of 2 Peer Reviewers per chapter
- Up to 6 Peer Reviewers for more complex chapters e.g. Water Resources, AQ&GHG
- 71 Peer Reviewers responded, Ave = 4 per Chapter
- 43 International and 24 South African Peer Reviewers
  - USA, Australia, The Netherlands, France, Canada, UK and Japan
- FODs sent with Letter of instruction, ZOD of the full SEA, FOD of Scenarios & Activities Chapter and Comment template form
- ~ 3 weeks for commenting
- Additional material (e.g. papers/ reports) were indicated on the comment spreadsheets

# Peer Review Process

- PCG and Project team to check manner of authors responses
  - Have all comments been responded to adequately?
  - Have comments been incorporated in SODs where applicable?
- Comments and the author responses open for public review.
- Authors are required to provide a response to every comment that has been made by the Peer Reviewers. Examples of responses:

Peer reviewer name	Page range	Line/s	Table/Fig/Plate	Peer Reviewer Comment	Responses to Peer Review comments by Authors
Reviewer x	4	12		Gavins and Komers 2006 - Not in lit cited	This reference was added
Reviewer x	4	12		Other indirect effects are edge-related effects associated with fragmentation and habitat loss. Edge related changes might include an increase in nest predation or change in community structure as human associated species become more common. Review literature on habitat fragmentation in grassland and arid environments.	Literature on fragmentation and habitat loss reviewed, section on these potential impacts added
Reviewer x	4	22-31		Yes- Agree - This is an important point. References to back this up would be useful.	The following references were added to support this statement: Jones et al. (2017); Smith (2005)
Reviewer x	18	35		This statement is not correct, see Broadly (2017)	This statement is widely supported by Jones & Smith (2016), Ryans (2015), McGee (2007), and was therefore left as is. However, the opinion of Broadly (2017) was noted.

# Strategic Environmental Assessment for Shale Gas Development in South Africa

Preliminary feedback on First Order Drafts

# Chapter - Structure

## Topic – eg. Tremors and Earthquakes

### 1.) Executive Summary

### 2.) Introduction and Scope

- 2.1) What is meant by this topic?*
- 2.2) Overview of International Experience*
- 2.3) Special Features of the Karoo Environment*
- 2.4) Relevant Legislation, Regulation and Practice*

### 3.) Key potential Impacts and their Mitigation

### 4.) Risk Assessment

- 4.1) How the Risks (and Opportunities where appropriate) are measured*
- 4.2) Limits of Acceptable Change*
- 4.3) Risk Assessment*

### 5.) Best Practice Guidelines and Monitoring Requirements

- 5.1) Planning*
- 5.2) Construction*
- 5.3) Operations*
- 5.4) De-Commissioning*
- 5.5) Monitoring and Evaluation*

### 6.) Topic on which information is inadequate for decision-making

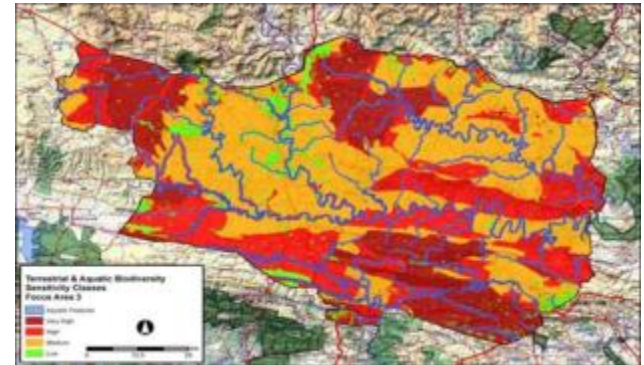
### 7.) References





# Risk Assessment: Step by step

1. Define the nature of the impact
2. Map substantially different receiving environments
3. Define and list mitigation technologies, rules, institutions
4. Define consequence levels (slight, moderate...extreme)
  - a) What proxy indicators can you use?
  - b) What established norms/standards exist
  - c) Link to levels of acceptable change.
5. For each impact type
  - a) For each scenario
    - 1.) For each unique area
      1. Estimate likelihood over entire scenario, at area scale
      2. Estimate consequence level
      3. From 1 x 2 the risk level emerges: test it against your instincts and experience
    - 2.) Repeat 5.1.1 with mitigation as specified in 3
6. Project team will use the tabulated outputs of (5), with the map in (2) to create a risk surface for each impact type
7. Project team will create a composite risk map using the maximum rule applied to the with mitigation surfaces, and another risk map without mitigation.



# Key dates going forward

- Second Order Drafts (SODs) and responses to peer review - 31 May 2016
- Release of SOD for stakeholder comment, mid-June
- 4 weeks public comment (mid-June to mid-July)
- Collate all public/stakeholder comments and send to specialists, mid-July
- Public outreach planned for week of 18-22 July → additional comments
- Specialist workshop (AM#3) on 25-27 July at Goudini
- Final draft Scientific Assessment by 22 August
- PCG and PEC meetings #4 on 26 & 27 Sept 2016 to present final draft
- Phase 2: Scientific Assessment (final outputs), mid-October 2016
- Phase 3: Decision-Making Framework (draft outputs), Dec 2016
- Phase 3: Decision-Making Framework (final outputs), Feb 2017





environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA



water & sanitation

Department:  
Water and Sanitation  
REPUBLIC OF SOUTH AFRICA



science  
& technology

Department:  
Science and Technology  
REPUBLIC OF SOUTH AFRICA



mineral resources

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA



energy

Department:  
Energy  
REPUBLIC OF SOUTH AFRICA

Thank you

<http://seasgd.csir.co.za/>



**SANBI**  
Biodiversity for Life



Council for Geoscience