



**Royal
HaskoningDHV**
Enhancing Society Together

**INTEGRATED ENVIRONMENTAL AUTHORISATION FOR THE
PROPOSED CSP PLANTS BASED ON CENTRAL RECEIVER AND
PARABOLIC TROUGH TECHNOLOGIES IN GROBLERSHOOP,
NORTHERN CAPE**

PUBLIC MEETING – !KHEIS LOCAL MUNICIPALITY

12h00-14h00

29 MARCH 2016

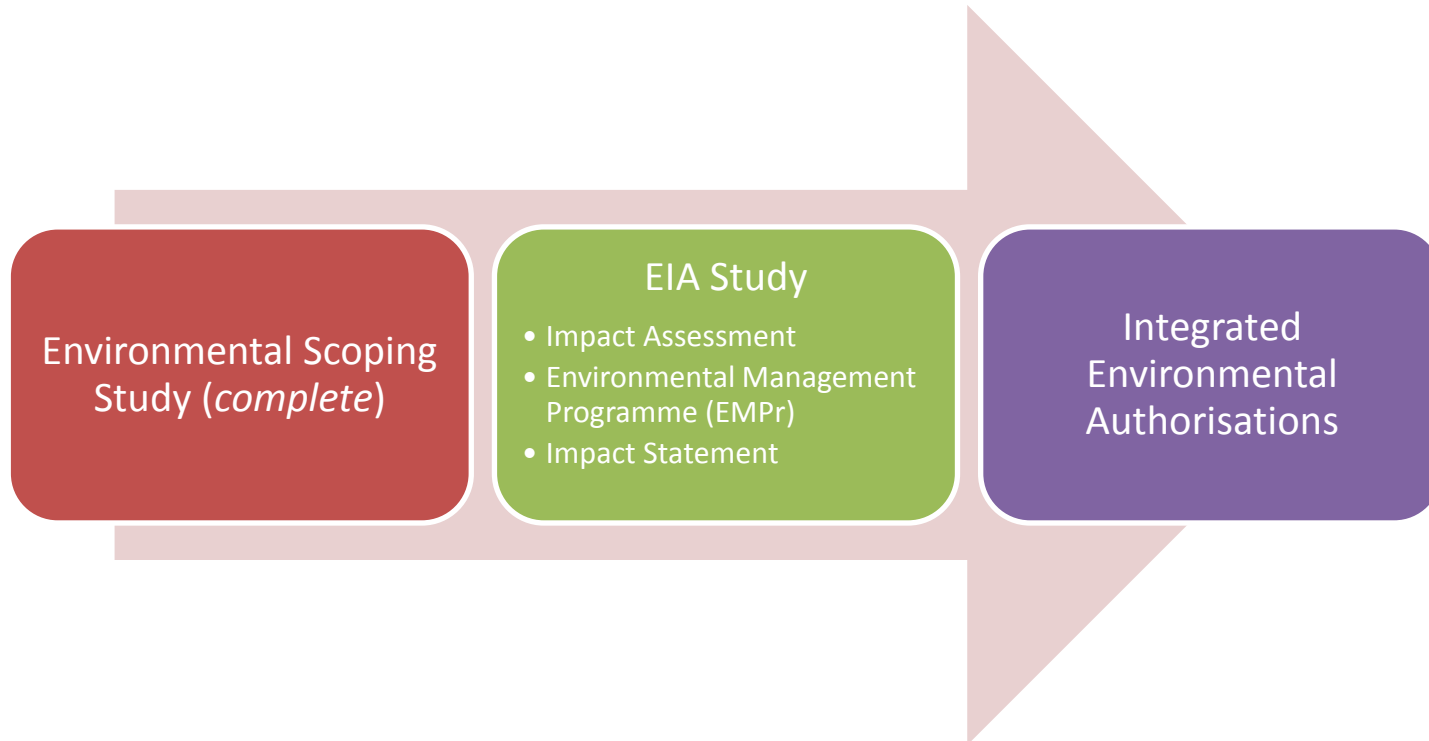
Agenda

- Welcome & Introduction
- Meeting Objectives
- EIA Process
- Project Need & Desirability
- Alternatives
- Summary of Key Specialist Findings
- Impact Statement & Recommendations
- Public Participation
- Way Forward
- Discussion
- Closure

Meeting Objectives

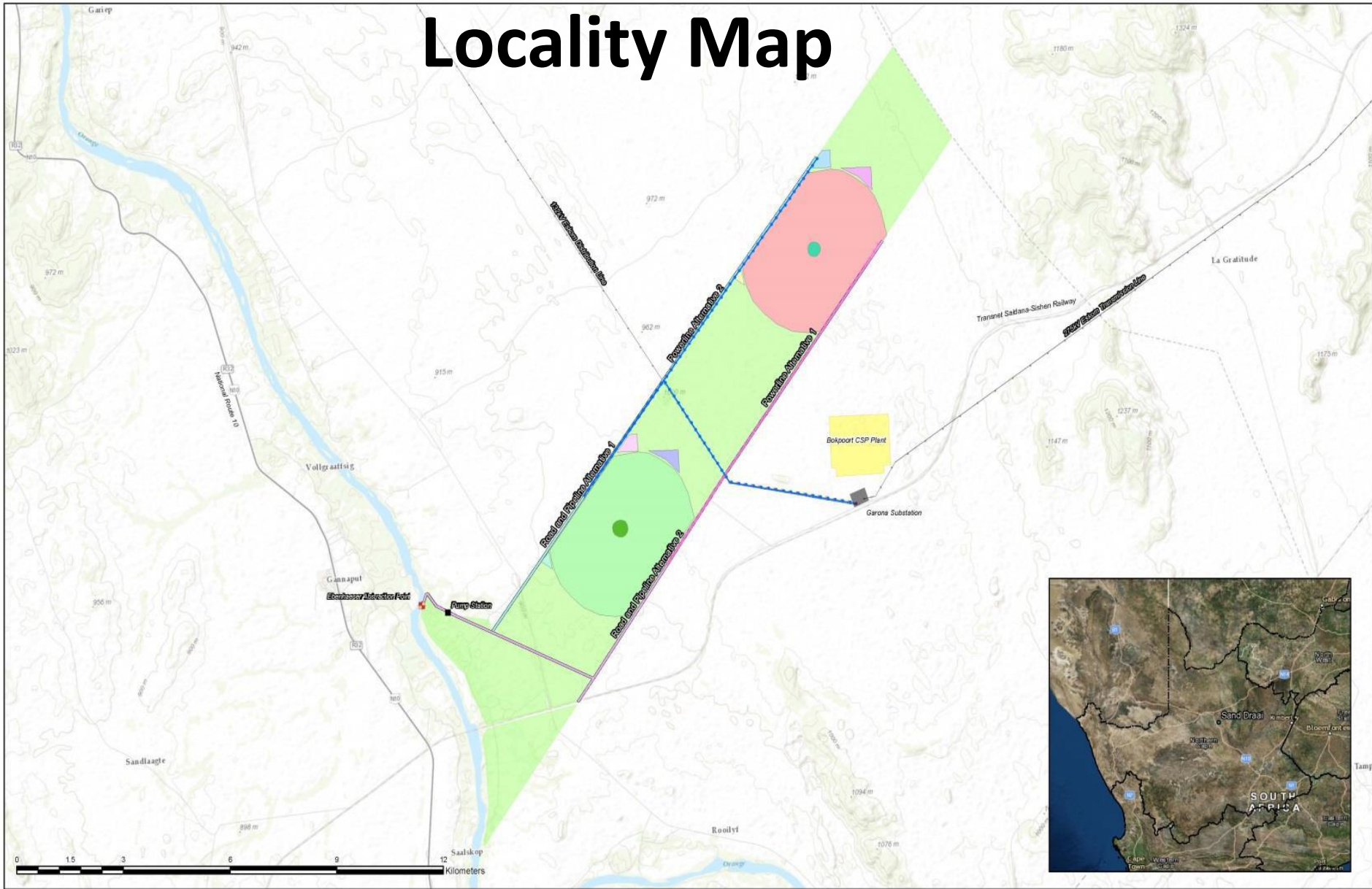
- Provide Interested & Affected Parties (I&APs) with information regarding the proposed projects
- Provide an overview of the Environmental Impact Assessment (EIA) and Public Participation (PP) processes
- Provide an opportunity for I&APs to seek clarity and provide input into the projects
- To record comments raised and include them in the EIA Reports (EIARs)
- Interaction with the project team

EIA Process Followed to Date



Licences/Approval	Competent Authority
Integrated Environmental Authorisations (IEA) – two separate applications: <ul style="list-style-type: none"> • Central Receiver: 14/12/16/3/3/3/204 • Parabolic Trough: 14/12/16/3/3/3/205 	Dept of Environmental Affairs (DEA)

Locality Map



Sand Draai Central Receiver Technology

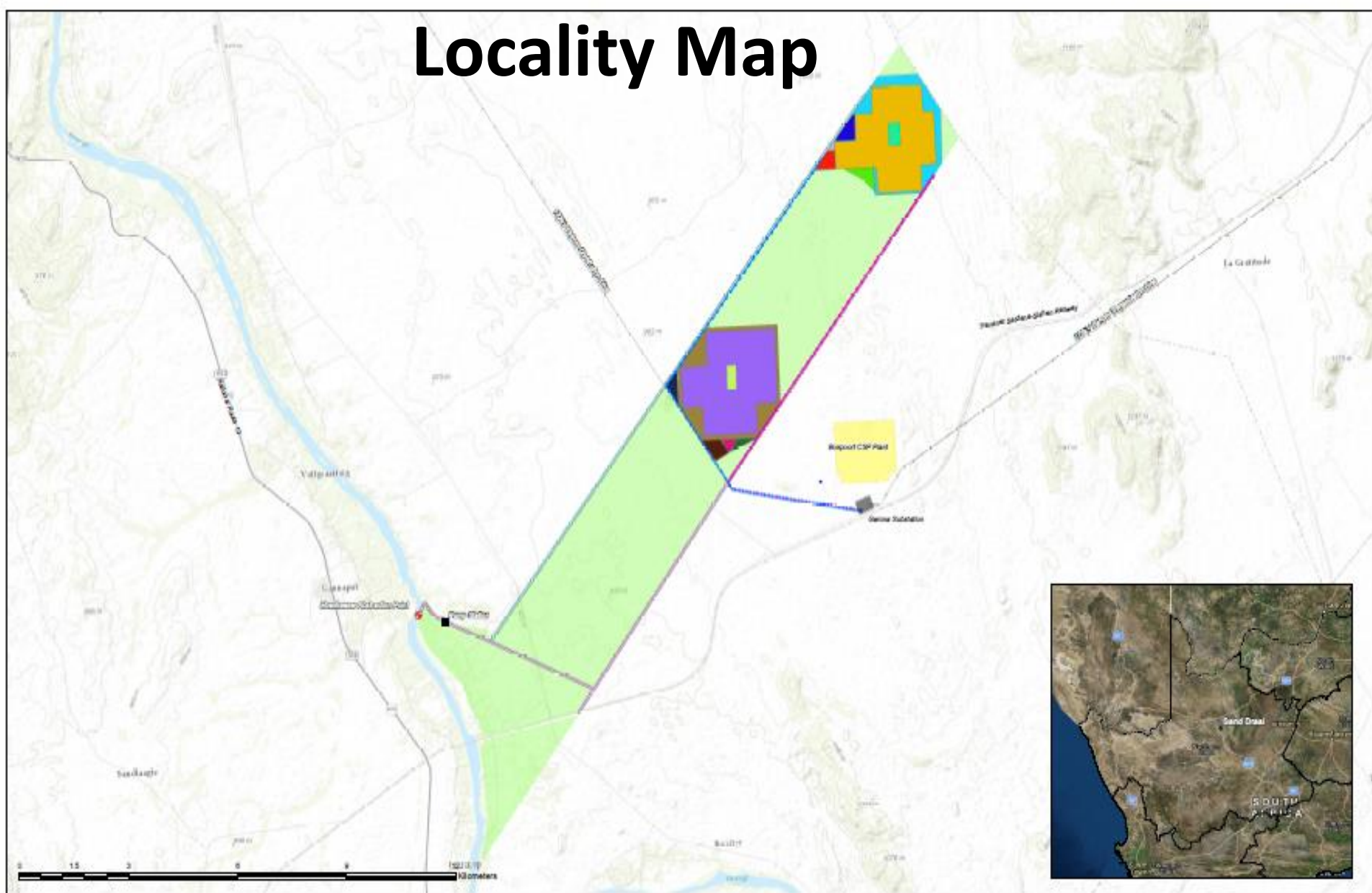
Legend	
Abstraction point	Road and Pipeline Alternatives
Pump Station	Road and Pipeline Alternative 1
Garona Substation	Road and Pipeline Alternative 2
Bokpoort CSP Plant	CSP Alternatives
Powerline Alternatives	Alternative 1 - Power Block Area
Powerline Alternative 1	Alternative 2 - Power Block Area
Powerline Alternative 2	Alternative 1 - Administration Buildings
Alternative 1 - Construction Camp	Alternative 2 - Laydown & Assembly Plant Area
Alternative 1 - Laydown & Assembly Plant Area	Alternative 2 - Solar Field
Alternative 1 - Solar Field	

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 Enhancing Society Together
 Created for:
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Projection:
 WGS1984_UTM 35 S
 Sheet No. CSP_LM01
 Scale: 1:66 477

Central Receiver Locality Map
 Drawn By: L. Jansen
 Checked by: J. Blignaut
 Date: 08 March 2016

Locality Map



Sand Draai Parabolic Trough Technology

Legend	
Abandonment point	Alternative 1 - Administration Buildings
Pump Station	Alternative 2 - Administration Buildings
Access Road	Alternative 1 - Construction Camp
Sewage Substation	Alternative 2 - Construction Camp
Support CSP Plant	Alternative 1 - Evaporation Ponds
Alternative 1 - Layout + Assembly Plant Area	Alternative 2 - Evaporation Ponds
Alternative 1 - Solar Field	Alternative 2 - Solar Field
Alternative 1 - Solar Field	Alternative 1 - Parabolic Trough Site Alternative 1
Alternative 2 - Solar Field	Alternative 2 - Parabolic Trough Site Alternative 2
Alternative 1 - Solar Field	Alternative 1 - Power Block Site Alternative 1
Alternative 2 - Solar Field	Alternative 2 - Power Block Site Alternative 2

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 Royal Harington Group
 Created for:
 SOLAFRICA

Projection:
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 Sheet No.: PT_LM01
 Scale: 1:65 000

Parabolic Trough Locality Map
 Drawn By: L. Jensen
 Checked by: J. Sigwalt
 Date: 08 March 2018

Project Need & Desirability

- Project is part of the Renewable Energy Independent Power Producers Programme (REIPPPP)
- Contribution to SIP 9: Electricity generation to support socio-economic development
- Diversification of electricity production fuel sources, improved efficiency in electricity production, a decrease in the quantity of fossil fuel burned, a decrease in greenhouse gas (GHG) emissions and a decrease in a number of other aerial pollutant emissions

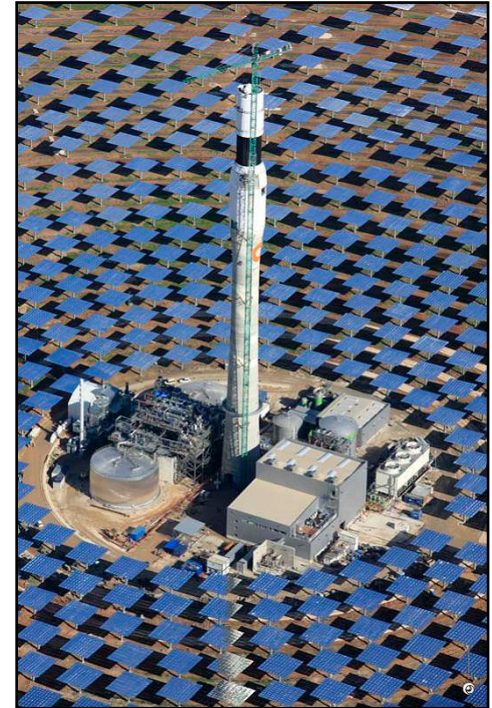
Site Alternatives

Central Receiver Technology – Farm Sand Draai 391

- CSP Site Alternative 1 (North-Eastern)
- CSP Site Alternative 2 (Southern)

Key components:

- a tower (maximum 250 m)
- a heliostat (solar) field
- a power block
- a thermal storage system
- ancillary infrastructure



(power line, water pipeline, road, (evaporation ponds; access roads; power line; water pipeline linked to water abstraction system; raw water storage (regulation) ponds; administration building; construction camp and laydown areas)

Site Alternatives

Parabolic Trough Technology - Farm Sand Draai 391

- Parabolic Trough Site Alternative 1 (North-Eastern)
- Parabolic Trough Site Alternative 2 (Southern)

Key components:

- solar collector field
- power block
- heat transfer fluid system
- ancillary infrastructure (power line, water pipeline, road, (evaporation ponds; access roads; power line; water pipeline linked to water abstraction system; raw water storage (regulation) ponds; administration building; construction camp and laydown areas



Linear Infrastructure Alternatives

Two 200 meter corridors along the northern and southern farm boundary accommodating 3 linear infrastructures:

- ***Access Roads***

 - Road Alternative 1 (Northern Boundary)

 - Road Alternative 2 (Southern Boundary)

- ***Power Line***

 - Power Line Alternative 1 (Southern Boundary)

 - Power Line Alternative 2 (Northern Boundary)

- ***Water Pipeline extending from the Ebenhaeser Abstraction Point***

 - Pipeline Alternative 1 (Northern Boundary)

 - Pipeline Alternative 2 (Southern Boundary)

Specialist Input

Biophysical Environment	Social Environment
Flora & Flora and Bat Recommendation	Socio-Economic (including Agricultural)
Surface Water (Wetlands) & Aquatics	Air Quality
Geohydrology (Groundwater)	Visual
Avifaunal	Palaeontology
Waste	Noise
	Traffic

Summary of Key Specialist Findings

Fauna & Flora

- Habitat destruction with transformation of natural vegetation and habitats within the proposed CSP site
- Loss and fragmentation of habitats
- Destruction of suitable habitat for Red listed plants and animals
- Increased levels of road fatalities of dispersing animals
- Erosion and sediment control from the cleared site

Specific recommendations/mitigation:

- A permit from the Department of Agriculture, Fisheries and Forestry (Forestry Branch) and Provincial Nature Conservation for the removal of Camel Thorn, Grey Camel Thorn and Shepherd's Trees
- A Bat Specialist must undertake a site walkthrough and inspection before any construction is undertaken

Summary of Key Specialist Findings

Avifauna

- Temporary displacement due to disturbance associated with the construction of the solar plant and associated infrastructure
- Collisions with the heliostats or solar panels
- Burning due to solar flux
- Permanent displacement due to habitat transformation; and
- Collisions with the associated power lines resulting in mortality

Specific recommendations/mitigation:

- No developments are to be undertaken within a 2.5km radius of the identified Martial Eagle's nest found on site

Summary of Key Specialist Findings

Hydrogeology (Groundwater)

- No groundwater abstraction is anticipated on site
- Deep water levels on site which would indicate very long travel times for surface contamination to reach and negatively affect the aquifer
- The area experiences low rainfall and therefore low recharge which will also minimise the probability of surface contamination affecting the underlying aquifer

Summary of Key Specialist Findings

Surface Water (Wetlands)

- Impacts associated with the proposed CSP Plant
 - All CSP site alternatives are located in areas of the Sand Draai farm in which no surface water features are located
- Impacts associated with the proposed water pipeline and access road
 - A number of ephemeral watercourses will be traversed and a section of the Orange River riparian corridor will be impacted
 - Subject of a Water Use Licencing (WUL) application process
- Impacts on the Orange River Riparian Zone
 - Minimal impact on the Ebenhaeser abstraction point as it is currently in use
 - A section of the proposed road and pipeline has been aligned from this point through the Orange River riparian corridor (running northwards), to avoid having an impact on the orchards located adjacent to the riparian zone

Summary of Key Specialist Findings

Aquatics

- The construction of abstraction infrastructure will lead to a certain level of aquatic habitat destruction
- Soil disturbances aggravating soil erosion
- Soil contamination
- Modification of hydraulic conditions to accommodate the abstraction infrastructure
- Poorly maintained equipment (pumps, etc.) could lead to fluid leaks
- Inadequate site reinstatement and landscaping may lead to aggravation of soil erosion in the long term
- Disturbances of the flora will lead to transformation of the vegetation structures that will lead to alien vegetation proliferation

Summary of Key Specialist Findings

Socio-Economic

Potential Impact	Proposed Recommendation/Mitigation
<ul style="list-style-type: none">• Increased road traffic, dust and noise• Overall impacts on surrounding farms	<ul style="list-style-type: none">• Implementation of speed limits on roads• Surfacing of access roads to site (Gariep Road)• Implement dust suppression on access roads on a regular basis• Regular meetings to be held where I&APs can raise grievances
<ul style="list-style-type: none">• Influx of migrant workers• Social challenges in communities• Additional pressure on basic services provision	<ul style="list-style-type: none">• Migrant Labour Influx Control Plan can be developed with the Local Municipality• Construction Phase Code of Practice for Contractors to be developed• Social awareness to be raised among the Proponent and Municipal Government Departments and various stakeholders

Summary of Key Specialist Findings

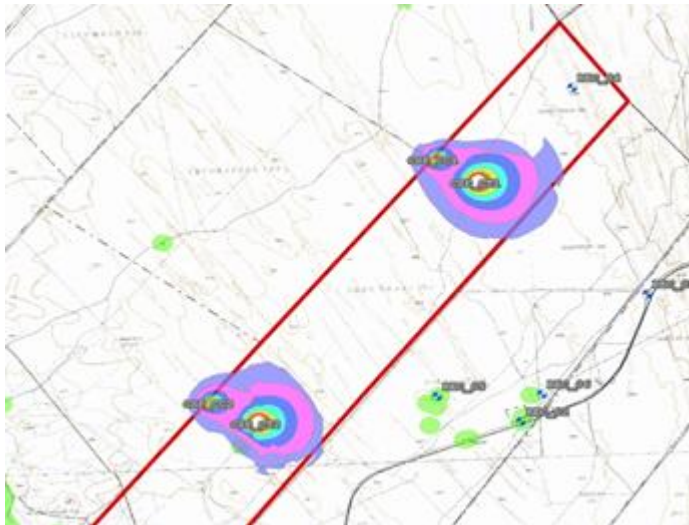
Visual

- The total clearing of the site would be conducive to the creation of large clouds of dust
- As the tower is constructed, the cranes used to construct it would be visible from a wide area due to their height
- Heavy vehicles traveling to the site along the Gariep Road will create large dust clouds
- The receiver at the top of the tower will be brilliantly lit during the day, making it highly visible from a wide radius
- The heliostats could cause glint and glare (very low possibility)

Summary of Key Specialist Findings

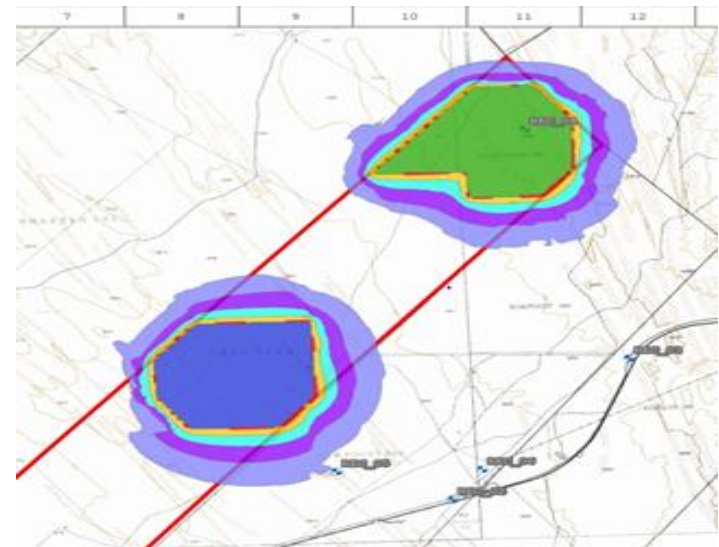
Noise

- The typical noise that would be generated by the construction activities are all from heavy machinery
- The noise generated by the activities does not extend to the sensitive receptors identified



Central Receiver Alternatives

Parabolic Trough Alternatives



Summary of Key Specialist Findings

Air Quality

- The impact on air quality and air pollution of fugitive dust is dependent on the quantity and drift potential of the dust particles
- Large particles settle out near the source causing a local nuisance problem
- Fine particles can be dispersed over much greater distances
- Fugitive dust may have significant adverse impacts such as reduced visibility, soiling of buildings and materials, reduced growth and production in vegetation and may affect sensitive areas and aesthetics

Summary of Key Specialist Findings

Air Quality (Continued)

Heat Island Development

- It is expected that during the day at a height of 2.5m above the array
- An increase in temperature is noted to reach up to 1.9°C warmer than the surrounding ambient air
- With the thermal increase having completely dissipated 11.5m above the array
- It is likely that by a distance of 300m from the edge of the array, the temperature is approximately 0.3°C above ambient temperature

Summary of Key Specialist Findings

Waste

- Waste might contaminate the surrounding environment especially water resource systems such as rivers, groundwater, wetland as well as soil
- Solid waste may impact negatively on the ambiance of the locality
- Waste generation will occur during the construction and operational phase of this project
- Proper mitigation measures will prevent any waste contamination from occurring throughout the project phases

Summary of Key Specialist Findings

Palaeontology

No impacts on palaeontological resources are envisaged

Specific recommendations/mitigation:

If, in the unlikely event that fossil plant or animal material is discovered during the construction of the CSP plants then it is strongly recommended that a professional palaeontologist be called to assess the importance and rescue the fossils if necessary (with the relevant SAHRA permit)

Summary of Key Specialist Findings

Traffic Impact

- Potential deterioration of existing traffic conditions on the external road network
- Reduction of existing road space available for pedestrian and cyclists
- Deteriorating road safety conditions for all road users
- Deterioration of the existing condition of the surrounding road network

Impact Statement & Recommendations

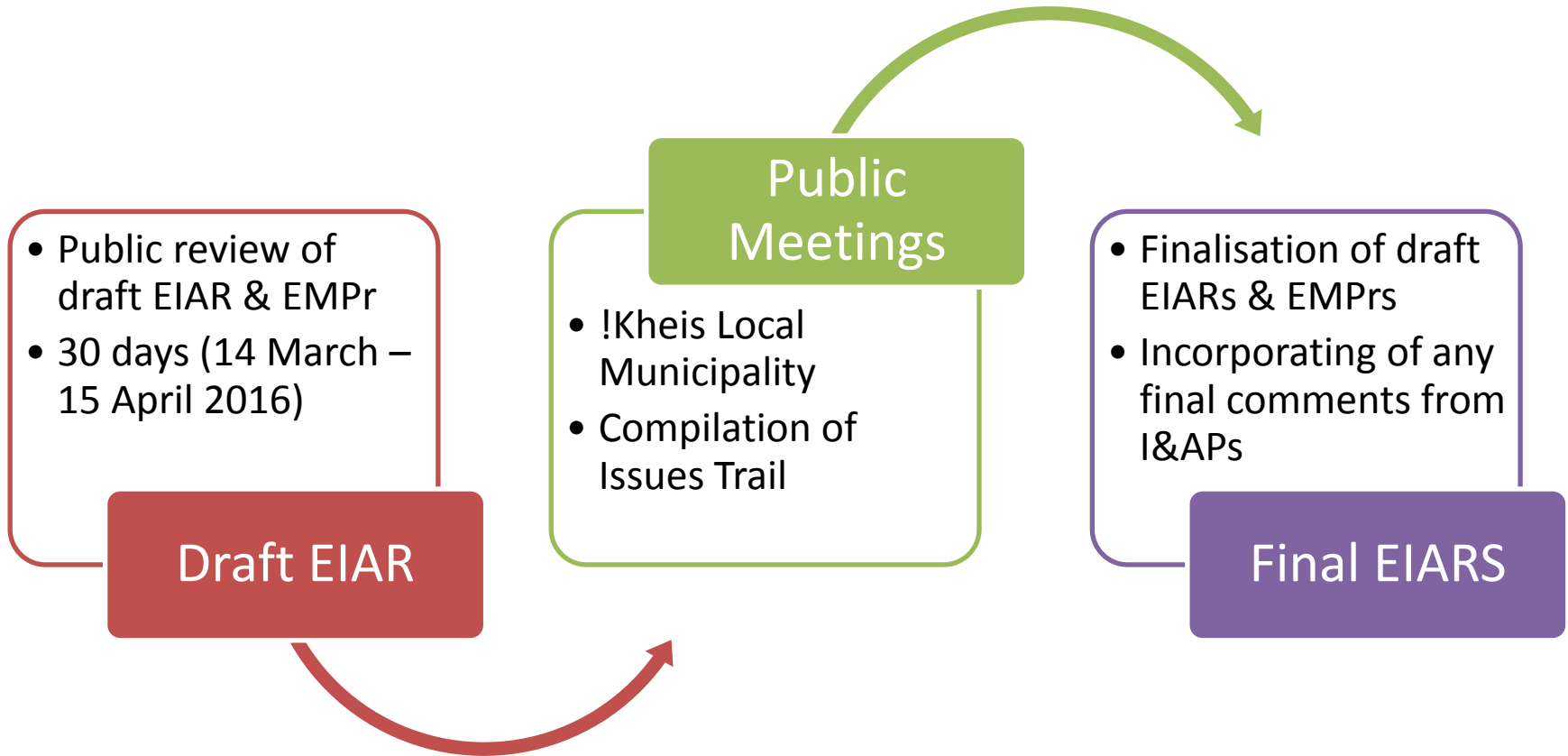
- Significant impacts on biodiversity, visual, surface water, air quality and social
- Key Recommendations:
 - Mitigation through the implementation of the EMPr
 - Mitigation and special attention to be given on the Gariep access routes before any construction is undertaken
 - A forum such as an Environmental Liaison Committee could be created between I&APs, the Proponent and the Developer where opportunities and constraints highlighted during the EIA study can be discussed and an approach determined (before any construction is undertaken/started) that would benefit all concerned
 - Compliance with key environmental legislation (NEMA, Waste Act, Water Act, Air Quality Act, Heritage Act)
 - A bat specialist to undertake a site walkthrough and inspection before construction phase.
 - Avifaunal monitoring to be undertaken once site is operational
 - Responsible disposal and handling of waste

Impact Statement & Recommendations

Comparative assessment of site alternatives & EAP recommendation –

- CSP Site Alternative 1 preferred over CSP Site Alternative 2;
Parabolic Site Alternative 1 preferred over Parabolic Site Alternative 2;
- Road & Pipeline Alternative 2 is preferred over Road & Pipeline Alternative 1; and
- Power Line Alternative 1 is preferred over Power Line Alternative 2

Public Participation



Way Forward

Compilation and distribution of meeting minutes

Inclusion of Authority & I&AP comments into final EIARs & EMPs

Submission of final EIARs & EMPs to DEA

DEA decision (Integrated Environmental Authorisations)

Discussion

- Questions?
- Comments?



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Thank You for your attention