DEMARCATION OF AGRICULTURAL AREAS

METHODOLOGY AND PRINCIPLES

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2018

PURPOSE:

- National food security
- Economic growth
  - Job creation
- Natural resources management
  - Sustainability
  - Optimal land use
- Holistic Spatial planning

PURPOSE:

- Legislative requirements:
  - Subdivision of Agricultural Land Act, 70 of 1970
  - Draft Preservation and Development of Agricultural Land Bill – PDALB
  - Indirectly: Spatial Planning and Land Use Management Act, 16 of 2013

- PDALB: Agricultural Areas:
  - "cartographic delineated areas with shared agricultural characteristics, based on the
  - (a) agricultural potential;
  - (b) agricultural capability;
  - (c) agricultural suitability
  - (d) conservation status;
  - (e) use; and
  - (f) geographic location."

- PDALB: Protected Agricultural Areas (PAAs):
  - "cartographic delineated area of agricultural land –
  - (a) preserved for purposes of ensuring high value agricultural land is protected against non- agricultural land uses in order to promote long-term agricultural production and food security;
  - (b) includes all areas demarcated as such;

TERMINOLOGY:

- Various and interactive use of terminology
  - Land capability
  - Land suitability
  - Crop suitability
  - Agricultural potential
- Literature to be read in context and purpose

- Land capability" means the most intensive long-term use of land for purposes of rainfed farming, determined by the interaction of climate, soil and terrain;

- The FAO (1976) stated that the process of assessment of land performance when used for specified purposes, involves the execution and interpretation of surveys and studies of land forms, soils, vegetation, climate and other aspects of land in order to identify and make a comparison of promising kinds of land use applicable to the objective of the evaluation. Land evaluation and land use planning evaluation include concepts such as land management, current land use, the characteristics of the land, land use requirements and the improvement thereof. Van Niekerk (1981) stated that a land capability map should enable the user to attain the best long-term utilization of the land.
- Land capability should not be seen as a substitute for the interpretation designed to show land suitability.

TERMINOLOGY:

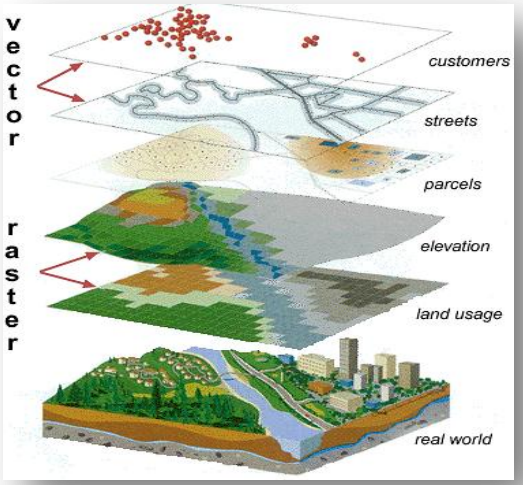
- Agricultural potential”
  - (a) is a measure of potential productivity per unit area and unit time achieved with specified management inputs; and
  - (b) for a given crop or veld type and level of management, is largely determined by the interaction of climate, soil and terrain;
  - Productivity is regarded as an indication of the agricultural potential for a given crop under a management level and for an identified portion of land as being dependent on precipitation, temperature, soil conditions, terrain and crop characteristics (Schoeman & Scotney, 1987).

- Land suitability: Statement of the adaptability of a given area for a specific kind of land use

- Crop suitability: Describe the suitability of a given area for the sustained and continued production of a given crop with the required level of management and skills

METHODOLOGY:

- Evaluation factors:
  - Land capability
  - Crop suitability
  - Land use / cover
    - Cultivated fields
    - Plantations
  - Irrigated Areas



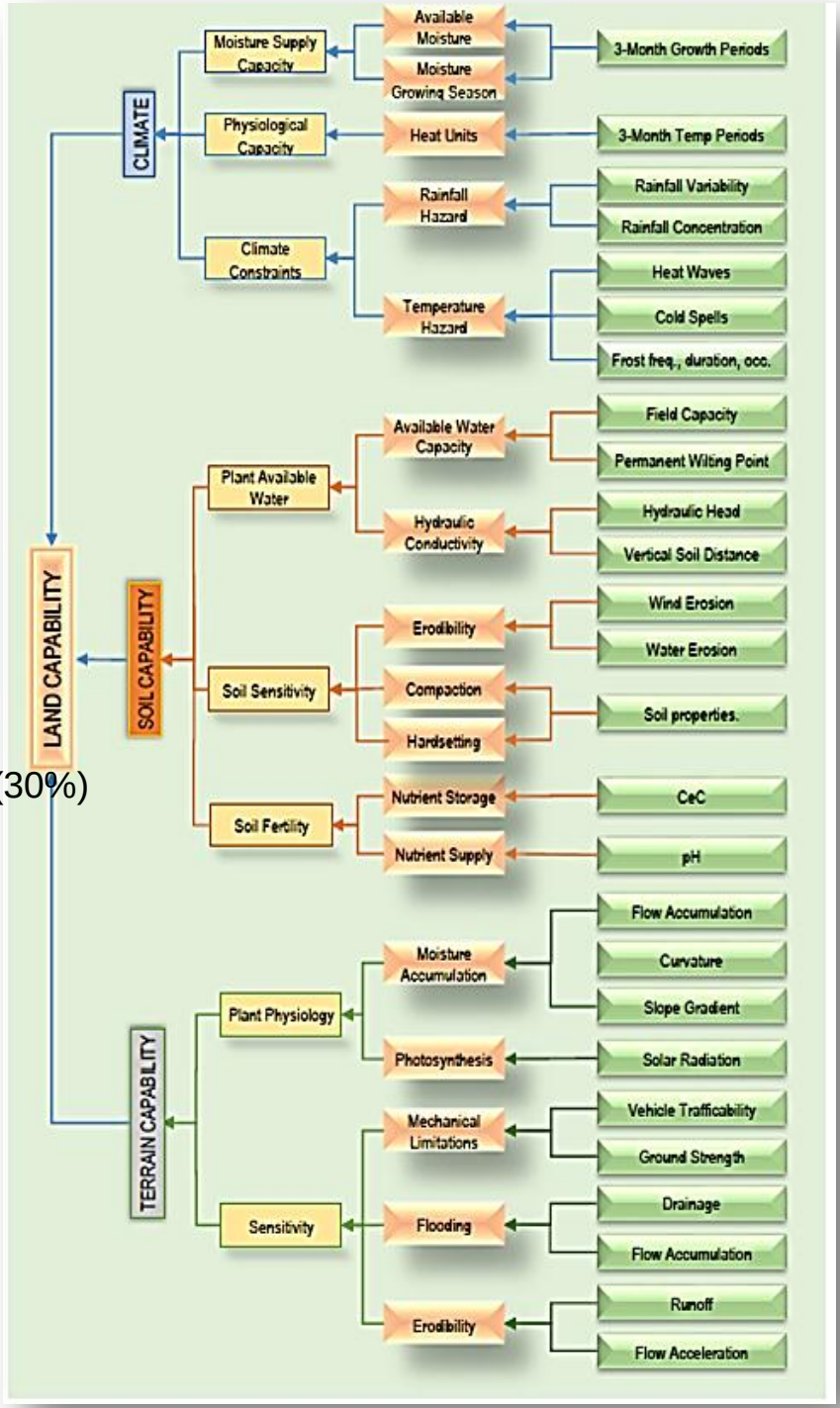
LAND CAPABILITY EVALUATION APPROACH

- **Soil Capability (30%)**
  - Plant available water (80%
  - Soil sensitivity (17%)
  - Soil fertility (3%)

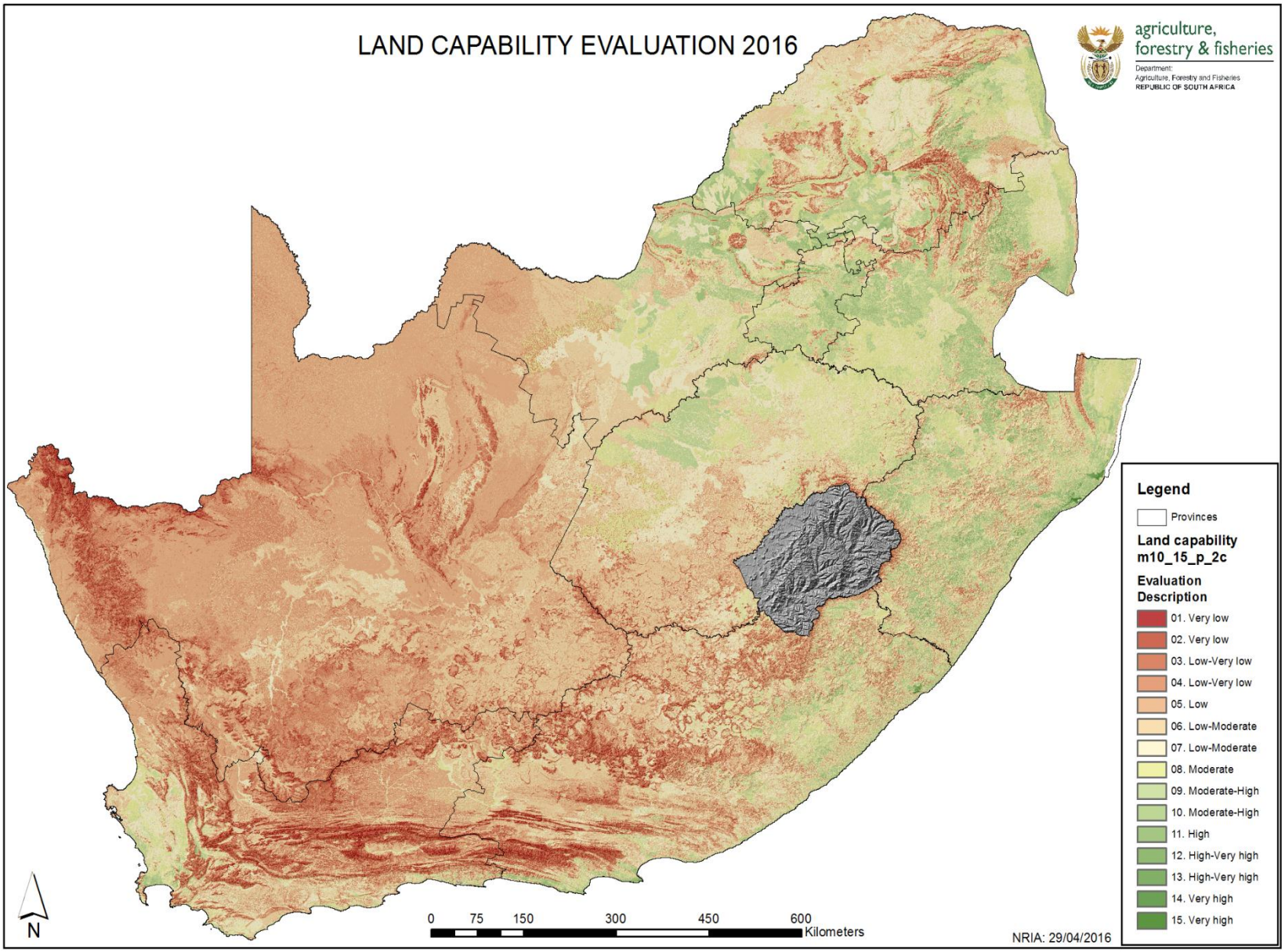
- **Climate Capability** (40%)
  - Moisture supply capacity (50%)
  - Physiological capacity (20%)
  - Climate constraints (rainfall / temperature) (30%)

- **Terrain Capability** (30%)
  - Moisture accumulation (20%)
  - Photosynthesis (15%)
  - Sensitivity (65%)

- Slope
  - 0 - 3%3 – 12% 12 – 20%
  - 20 – 25% 25 – 35% >35%



RESULTS – LAND CAPABILITY (RASTER)



METHODOLOGY: CROP SUITABILITY

- Although land capability is a very good indicator of the capability of the resources to sustain agricultural production, another factor to take into consideration is the number of crop that is suitable to be planted within a certain geographic area.
- An area that is suitable for the planting of 10 different crop types, based on its soil, climate and terrain parameters in relation to a crop's environmental parameters is regarded as of higher importance in comparison with an area that has the suitability for only 2 types of crops.
- A total of 43 identified crops were used to develop crop suitability layers for each of the crops.

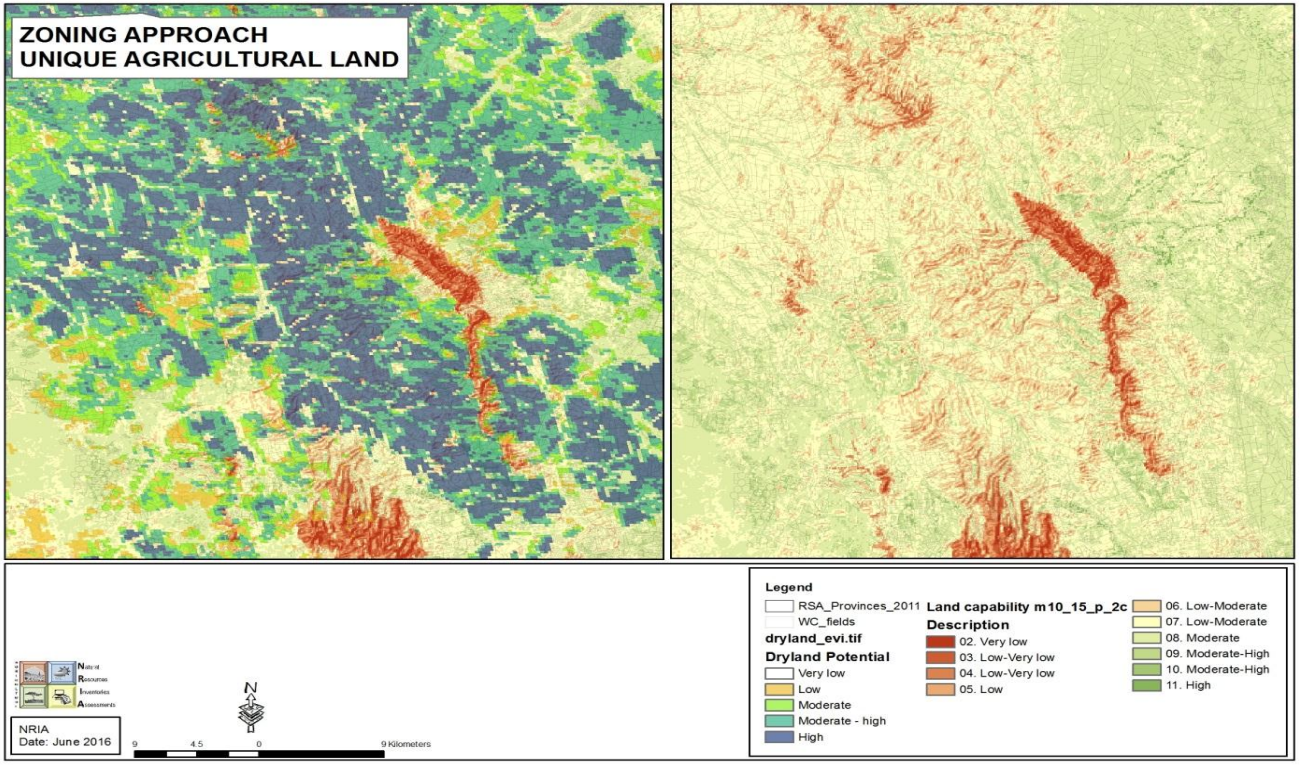
METHODOLOGY: CROP SUITABILITY

- After completion the 43 crop suitability layers were re-classified into the Crop type classes as described in the Land Use Classification System for the Agricultural Sector.
- The Land Use Classification System for the Agricultural Sector was adopted in January 2015 and all agricultural land use classifications have to adhere to this standard.

  - Grain crops (Maize; Sorghum; Wheat; Barley; Oats)
  - Beverage crops (Coffee; Rooibos; Honeybush)
  - Oil seed crops (Soya beans; Canola; Ground nuts; Sunflower)
  - Sugar crops (Sugar beet; Sugar cane)
  - Fibre and Industrial Crops (Cotton)
  - Forage and planted pastures (Kikuyu; Lucerne; Ryegrass; *E. curvula* (Oulandsgras)
  - Tropical and Subtropical Fruits (Pineapples; Mango; Avocado; Banana; Litchi; Olives)
  - Citrus Fruits (generic)
  - Stone and Pome fruits (Peaches; Apples; Plums)
  - Nuts (Macadamia; Pecan nuts)
  - Viticulture (Grapes)
  - Melons (Water melon)
  - Vegetables (Potatoes; Tomatoes; Cabbage; Carrots; Drybeans; Pumpkins; Sweet potato)
  - Forestry (Pines; Eucalyptus)

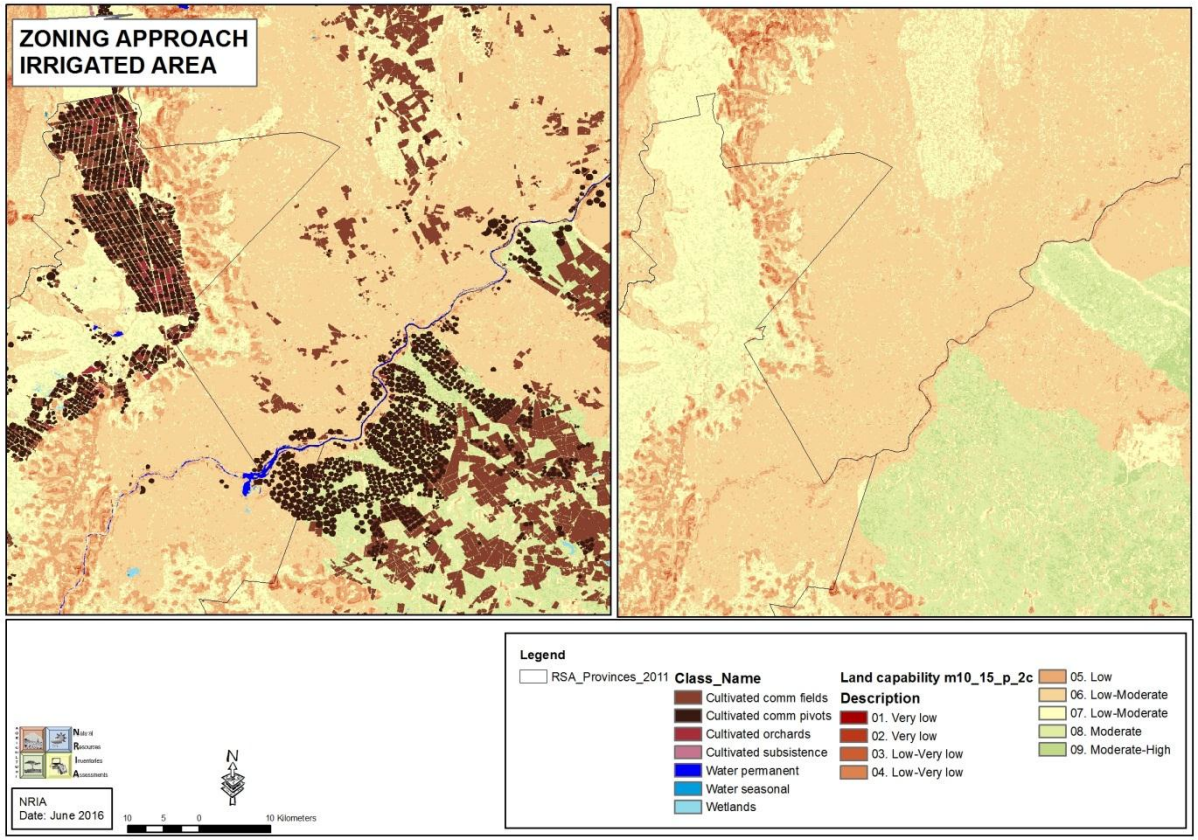
METHODOLOGY: LAND COVER / LAND USE

- Cultivation (FCB 2017 & others)
- Crop types



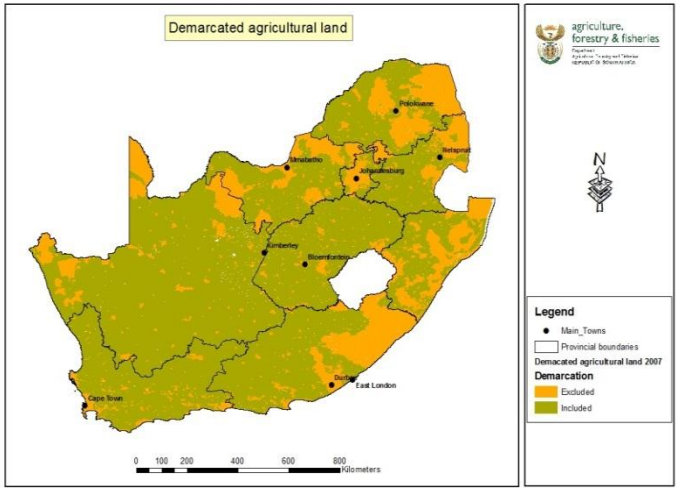
METHODOLOGY: IRRIGATION

- FCB 2017; WC Fly-Over; Known irrigation schemes



METHODOLOGY: DEMARCATION GUIDELINES

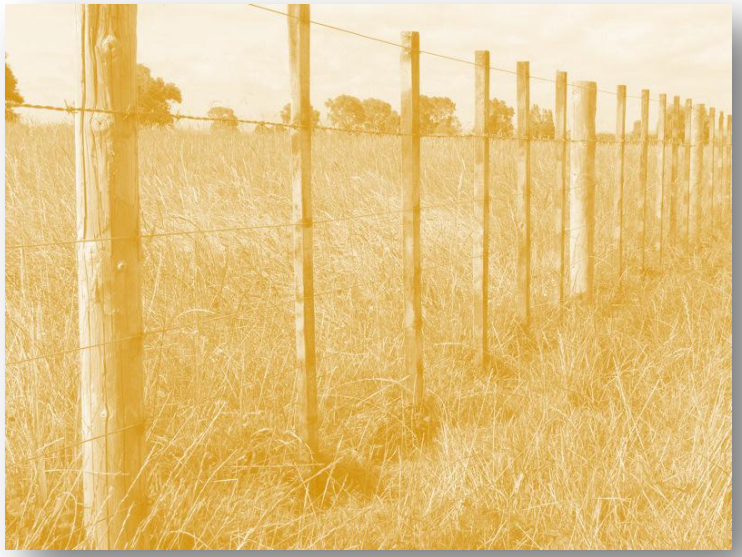
- Excluded Areas
  - Permanently transformed (Landcover 2013/14)
    - Built up (residential; industrial; commercial)
    - Mining
    - Waterbodies
  - Municipal areas prior 1994 (2009)
    - Areas not regarded as agricultural land under Sub-division of Agricultural Land Act, 70 of 1970 / PDALB
  - Formally proclaimed Protected Areas
    - Areas not available for agricultural production in any format



Demarcation of agricultural land in South Africa according to SALA, 2009

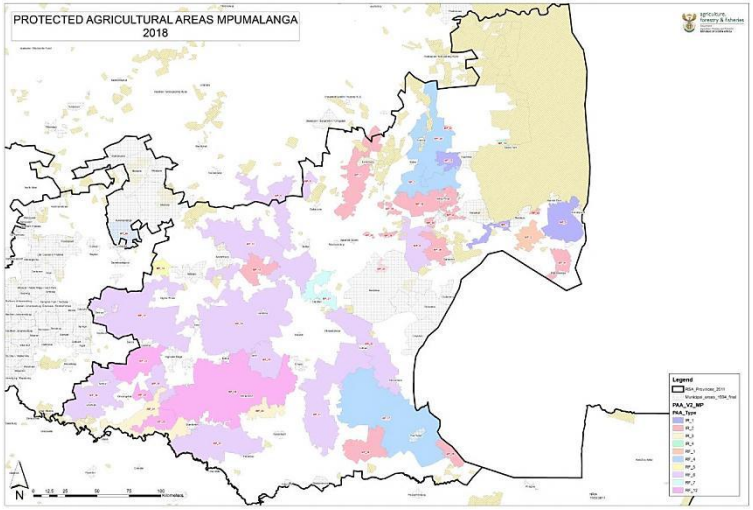
METHODOLOGY: DEMARCATION GUIDELINES

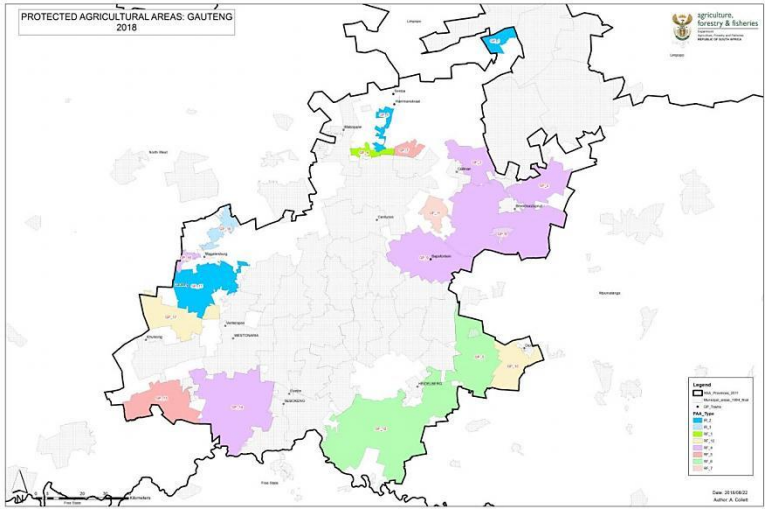
- Boundary Alignments
  - Cadastre (parent farms / portions
  - Rivers
  - Roads
  - Any other visible feature
  - (Catchment boundaries)
- Adjacent land uses
- Areas (size)
  - Not currently specified
    - Larger non-fragmented primary agricultural land use
- Agro-ecosystem
- Impact on biodiversity to be determined



PROPOSED AGRICULTURAL AREAS:

- Classification approach
- Rainfed areas
  - Classification priority rating - A - F
- Irrigated areas
  - Classification priority rating - A - D





PDALB – other aspects

- Development of:
  - Norms & Standards
  - Regulations

  for the
  - Proposed Protected Agricultural Areas &
  - Agro-ecosystems


Thank
You!!!