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SPECIALISTS IN ENVIRONMENTAL, SOCIAL AND SAFETY PERFORMANCE

SURAT GAS PROJECT EIS
AGRICULTURE IMPACT ASSESSMENT
October 2011

Outline

- Scope of agriculture impact assessment
- Planning policies
- Darling Downs: prime farming country
- Constraints to agricultural development
- Agricultural enterprises
- Potential impacts of CSG development
- Lasting (residual) impacts
- Conclusions and recommendations

Scope of agriculture impact assessment

- Informed by a technical study
- Arrow commitments
  - No development on intensively farmed land (IFL) until stakeholder concerns properly addressed
- Objectives
  - Describe agricultural enterprises/activities
  - Describe farming practices that underpin success/viability
  - Describe key impacts
  - Propose management measures

Planning policies

- Good Quality Agricultural Land (GQAL)
  - Class A and B
- Draft Strategic Cropping Land (SCL)
  - Draft trigger maps define potential SCL
  - Defined at property level through on-site mapping
  - Triggers type 1 and possibly type 2(c) developments
    - Type 1 – temporary diminished productivity
    - Type 2(c) – causes long-lasting impacts that prevent cropping capability (soil structure or contamination)

Darling Downs: prime farming country

- Temperate climate
  - Good rainfall, few frosts
- Relatively flat to gently undulating terrain
  - Condamine River floodplain
- Seasonal flooding
  - Replenishes nutrients and recharges soil water
- Soils
  - Black (clayey) soils (Vertosols, Dermosols)
  - Sandy loams (Rudosols, Tensols and Kandosols)

Challenges to agricultural development

- Giglai
  - Localised waterlogging, irrigation water distribution
- Dissected landscapes/erosive flooding
  - Gullies, drainage lines limit cultivation; loss of topsoil
- Salinity
  - Shallow groundwater, saline soils, saline irrigation water
- Sodic/impermeable soils
  - Impeded subsurface drainage, perched water tables
- Water supply
  - Surface water (drought exposed), groundwater

Agricultural enterprises

- Rangeland grazing
- Dryland broadacre farming
  - Cereals, pulses and cotton
- Irrigated broadacre farming
  - Surface, spray and localisted
- Horticulture, vineyards, agro-forestry
- Animal industries
  - Feedlots, piggeries, dairies and poultry farms
- Each enterprise is unique with its own challenges and sensitivities; some are more tolerant to change than others

Potential impacts of CSG development

- Loss of arable land
- Crop yield (productivity)
  - Disturbance of soils
    - Inverted soil horizons, breakdown of soil structure
    - Compaction
  - Farm workability
    - Headlands, cultivation islands and controlled traffic runs
    - Irrigation infrastructure (head ditches, tail drains, booms)
    - Inconvenience of working around CSG infrastructure

Potential impacts of CSG development cont'd

- Farm management
  - Operating overheads including management of CSG activities
  - Coordination of activities (spraying and withholding periods)
- Amenity
  - Contractors and employees entering and working on properties
  - Disruption to lifestyle
  - Noise
  - Dust
  - Visual impact of CSG infrastructure

Potential impacts of CSG development cont'd

- Project development area – 8,600 km^2 (860,000 ha)
  - GQAL 59%
  - Potential SCL 49%
- To be developed on land to be purchased by Arrow
  - Integrated processing facilities (~223 ha per facility)
  - Central gas processing facilities (~18 ha per facility)
  - Field compression facilities (~0.50 ha per facility)
- Production wells and gathering systems
  - 2-3 % of typical 160 acre (~65 ha) production spacing during construction i.e., ~1.95 ha per 65 ha production area

Lasting (residual) impacts

The majority of impacts are temporary in nature, during construction and rehabilitation, however some may be lasting in nature:

- Changed operations (reduction of cultivated/irrigated area)
  - Installation of coal seam gas infrastructure
  - Ability to develop or modify farm plan
- Potential for diminished productivity
  - Unsuccessful rehabilitation (soil structure, surface relief)
  - Effects may not be known for some time
- Changed land use
  - Rehabilitation of production facility sites to sustainable land use e.g., grazing land

Lasting (residual) impacts cont'd

Example of unsuccessful rehabilitation

Example of successful rehabilitation

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Conclusions and recommendations

- Plan development to integrate with farming practices, including:

A. Design and planning objectives
   - Twelve objectives aimed to design out impacts where possible

B. Specific mitigation and management measures
   - Accepted practice

C. Rehabilitation trials
   - Techniques and treatments to return land to former use/productivity

D. Develop assessment method for productivity
   - To measure success of rehabilitation

E. Rehabilitation of soils fundamental to long-term productivity