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 localised
- 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 km² (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
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