### INTRODUCTION

The faults and fractures project has a focus on understanding the mechanisms behind the large variation in permeability in the Walloon Coal Measures. The contribution of underlying structure and the succession of deformation to fracture development is not well understood. This portion of the project was intended to better understand the deformation affecting the Surat succession and the dependence on pre-existing structural fabric. Primary Walloon faulting is related to transpressional style deformation. Permian subcrop is associated with an increased density of faulting.

## **OBSERVATIONS**

### Bowen Deformation:

- Major structures are primarily vertical and bounded by high angle reverse faults
- Fault morphology for larger structures is complex due to apparent shear component Surat Deformation (Cenozoic):

- Faults rarely are re-activated directly to continue along same plane Keystone structures prevalent where remnant Permian coals subcrop
- Transpressive shear results in distinctive "keystone" deformation in Walloon



**Complex Bowen Fault Morphology** 

# Faults and Fractures in the Surat Basin: A Seismic Perspective Jeff Copley <sup>ab</sup> , Saswata Mukherjee <sup>ab</sup> & Joan Esterle<sup>ab</sup> a School of Earth Sciences, The University of Queensland, b Centre of Coal seam Gas, The University of Queensland

### **Project: Understanding Faults and Fractures in the Surat Basin**

Bowen age deformation underpins and partially controls major Surat age deformation

• Pre-Surat complex structures are reactivated as folds with small faults in Cenozoic def.

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