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## **Abstract**

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**Acknowledgments**

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# Introduction

## 1.1 Introduction

Last year, over forty percent of energy generation in the UK was provided by coal-burning power stations ([Gosden, 2013](#)). However this rising proportion of coal-based energy production is occurring against a background of increasing external coal imports, where 80% of steam-coal hails from abroad ([CoalImp, 2013](#)). This is despite there being, in March 2012, an estimated 728 million tonnes of coal remaining in known UK reserves ([The Coal Authority, 2012](#)). This contribution from outside is only compounding the profound decline of the UK coal industry, causing both industry commentators and insiders to refer to the industry as “dying” ([Carrington, 2011](#)).

Between 2004 and 2012, a *third* of all the UK’s saleable coal was extracted from the East Ayrshire district of Scotland ([East Ayrshire Council, 2012](#)). This area lies on the south west flank of The Midland Valley, a NE-SW trending structure that crosses the width of the country; delineated by the Highland Boundary Fault on the northern edge, and the Southern Uplands Fault on the other; shown in Figure 1.1:

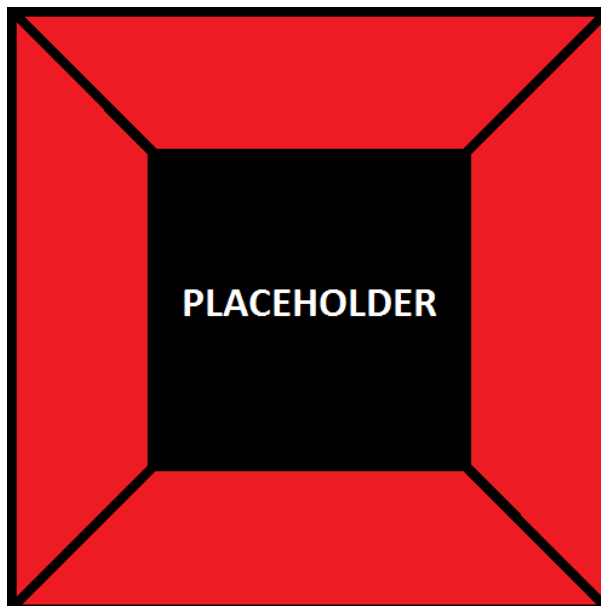


Figure 1.1: Map of The Midland Valley in relation to the British Isles, showing the two main bounding faults. Modified after [Google Inc. \(2013\)](#) and [Smith \(1995\)](#).



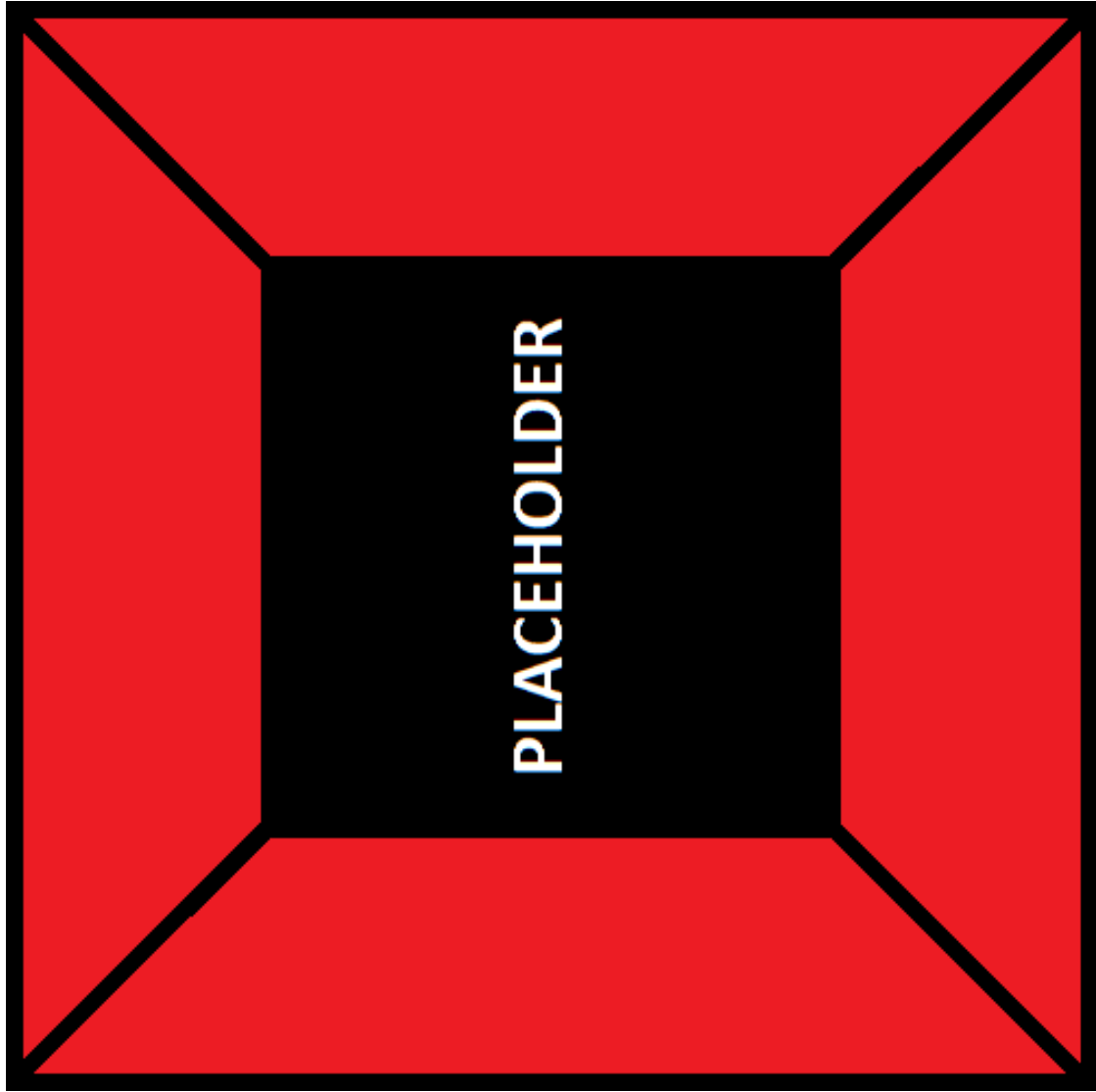


Figure 1.2: Maps showing location of study area. Area covers 20 km N-S and 25 km E-W. Maps compiled from [Google Inc. \(2013\)](#) and [The British Geological Survey \(1980, 2000\)](#).

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Appendix A

## *Petrel* Edge Detection