



**WELL-SAFE**  
SOLUTIONS

CASE STUDY

# Viking CCS legacy well assessment

Well-Safe Solutions delivered a comprehensive analysis of unassessed legacy wells in the Southern North Sea to determine the quality of in situ abandonment barriers for CO<sub>2</sub> containment.

**This project will play a vital role in assessing the suitability of planned CO<sub>2</sub> storage sites for the Viking CCS CO<sub>2</sub> transport and storage network in the Humber, Northern England.**

With the majority of wells in the licence area having been abandoned previously and only a minority remaining online, this desktop study drew upon Well-Safe Solutions' considerable well evaluation offering.

Completed in line with the company's Well Decommissioning Delivery Process (WDDP), this multi-discipline service includes geophysical, petrophysical, geological, reservoir and geomechanics specialisms, backed by the company's well engineering resources.

This project focused on screening, analysing and ranking wells in each field so that future detailed work could be focused upon areas of higher relative risk. The research examined the geological characteristics and history of each well, in addition to assessing the suitability of barriers present in the annuli and internal bore of each well.

The assessment process was split into four stages:

- Definition of scope through analysis of subsurface elements;
- Data mining and research of barrier elements;
- Individual well assessment;
- Scoring of wells.

In the first stage, analysis of the characteristics of the Rotliegendes Leman sandstone – the main producing reservoir of the Southern North Sea, and the formation intended to store CO<sub>2</sub> – was undertaken.

### Key facts:

- Legacy wells examined and assessed
- Southern North Sea project
- Desktop study carried out in line with industry best practice
- Part of large-scale energy transition project
- Project utilised Well-Safe Solutions' well evaluation specialism and WDDP



Supporting your energy transition projects

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Identification of areas for zones of flow potential (ZOFP), cap rock and minimum safe abandonment depth (MSAD) was completed as part of stage one.

Moving onto the second stage of the process saw data mining take place to accurately assess well elements. This focused upon the cap rock and the locations of rock-to-rock barriers in relation to the identified ZOFP and MSAD.

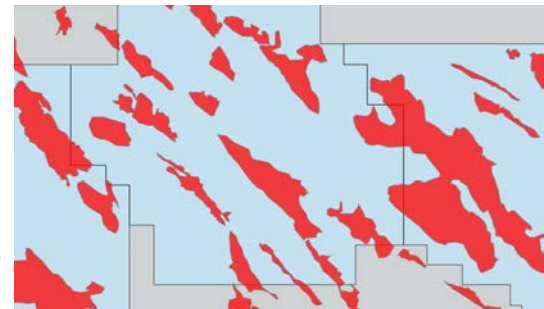
Stage three required detailed, individual well assessment, with particular attention paid to the internal and annular wellbore elements. Key considerations included the presence of a base to the cement barrier, the amount of cement pumped and its verification, and the analysis of annular isolation using abandonment data and cement bond logs.

The final stage of analysis quantified this information, scoring internal cement, cap rock and annular cement to reach a conservative overall score. This approach gives a consistent and relative assessment of wells, allowing detailed analyses to be focused on the most appropriate areas.

This holistic approach enabled Well-Safe Solutions to accurately and confidently assess legacy wells for Harbour Energy, in line with the Offshore Energies UK Well Decommissioning and Well Decommissioning for CO<sub>2</sub> Storage guidelines.



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***Well-Safe Solutions has the capability to assist with your CCS or CCUS project.***

*Our multi-discipline service includes geophysical, petrophysical, geological, reservoir and geomechanics specialisms, backed by the company's well engineering resources and deep sector experience.*



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