

Legacy Well Re-Entry Services / Studies

Product Applications:

- Offshore Carbon Capture and Storage projects
- Re-entering and re-abandoning legacy wells

Key Features:

- Repurpose depleted reservoirs and saline aquifers safely and efficiently
- A cost-effective alternative to drilling relief wells
- Can support repurposing of well to a monitoring well, when combined with installation of [our CO2 monitoring solution](#)
- Supports identification of location of wells to re-enter for CO2 storage
- Provides a methodology for re-entry and foundations for best approach to achieving an environmental and pressure retaining barrier

Storing CO2 in Legacy Well Formations

Ensuring the security of CO2 storage formations is paramount for offshore carbon capture initiatives. While legacy oil and gas fields offer promising storage locations with established infrastructure, the presence of legacy suspended or abandoned wells pose a significant risk.

Many offshore CCS storage sites are rendered unsuitable due to problematic legacy wells that were previously abandoned without proper isolation for pressurisation and CO2 injection. Traditional approaches, like drilling relief wells, are costly and sometimes impractical, particularly for shallow saline aquifers.

Our Legacy Well Re-Entry Services specialise in facilitating safe re-entry into these wells to establish the environmental and pressure-retaining barriers that are essential for CO2 storage readiness.

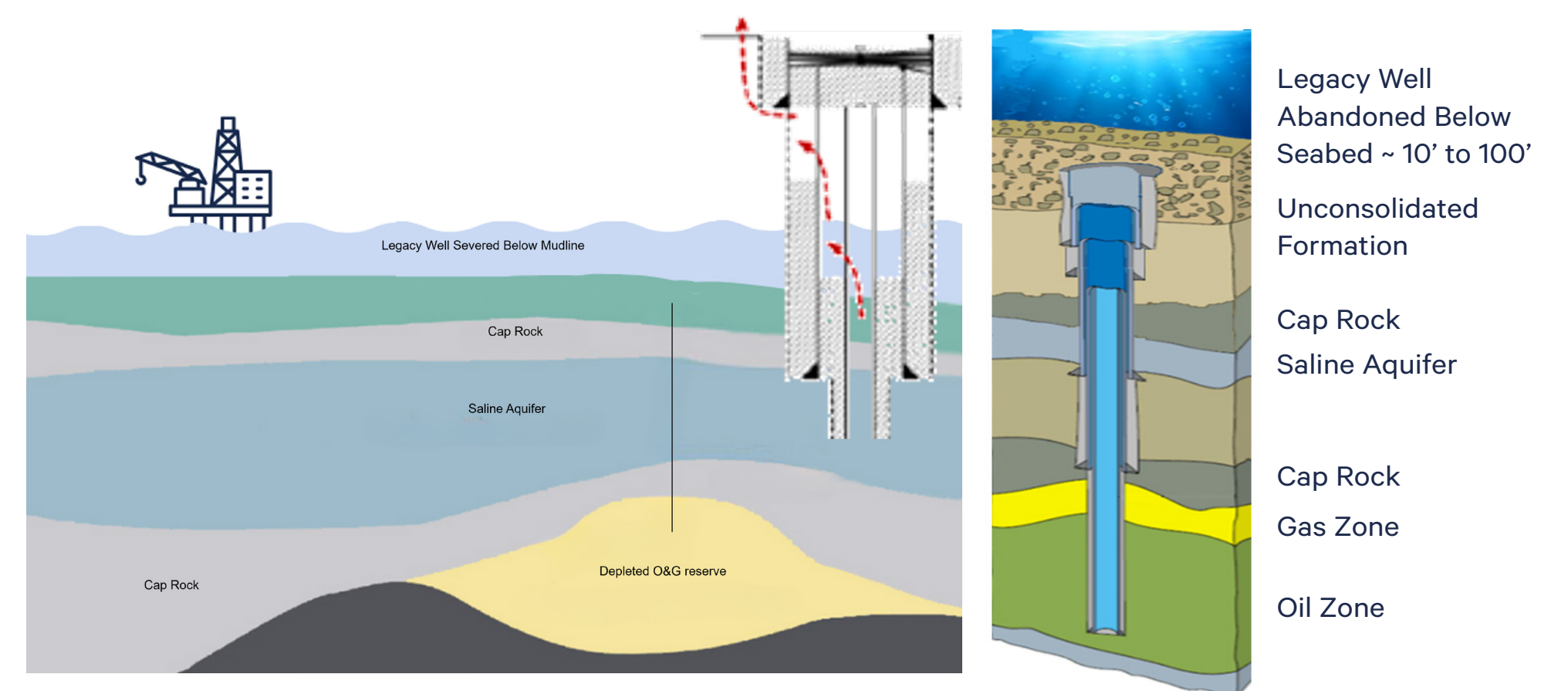
Leveraging our extensive experience in well re-entry and tieback engineering, we offer tailored solutions to repurpose depleted reservoirs and saline aquifers effectively.

Legacy Well Challenge

There are hundreds of potential offshore CCS storage sites globally that could be suitable for CO2 storage, but they are being ruled out due to problematic legacy wells that were previously severed below mudline, plugged, and abandoned.

These formations are unlikely to have the correct well bore isolation in place to facilitate pressurisation, and therefore CO2 injection. Current practice would see these subsurface wells treated like a well blowout scenario, where you would drill an intersection well, or a relief well, to seal off the well bore. But drilling relief wells can be extremely costly, and in some cases, might not be possible for shallow saline aquifers.

CCS at its core is a waste disposal business and costs are very important, therefore removing prohibiting barriers such as these are vital to success.



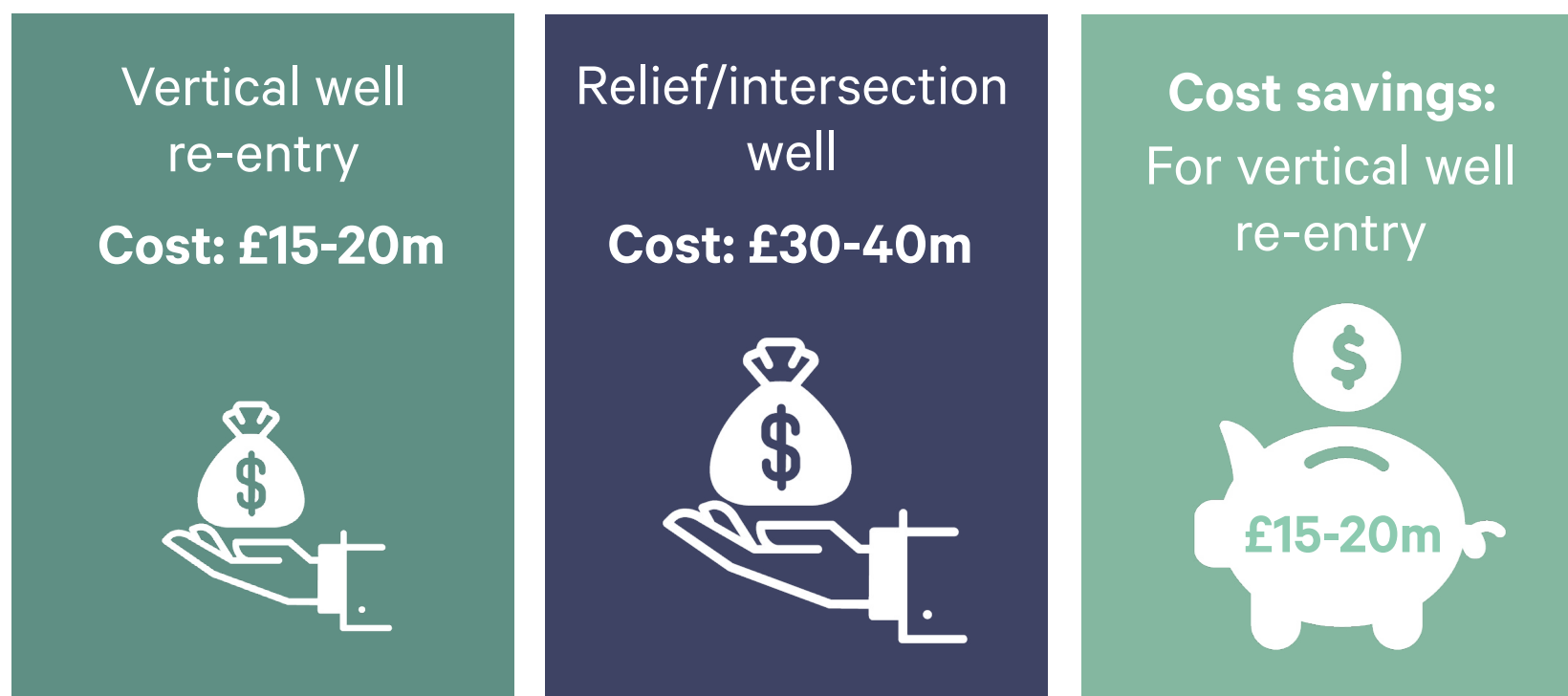
Vertical Well Re-entry

Our services are centered around vertical well re-entry, which if achievable for your location, is much faster and cheaper than drilling a relief well.

- We can work with your teams to support locating the well centre accurately, re-enter with Aquaterra Energy specialised equipment and safe re-abandonment that results in a safe CO2 storage location.
- Casing strings can be logged and tested above and below during / once abandoned.
- Can be repurposed as a monitoring well if geo phones and fibre optics are installed within the cement plugs for active or passive seismic.

Potential Savings:

It has been calculated that opting for vertical well re-entry, using Aquaterra Energy bespoke equipment to gain access and tie back on to the well, could cost between £15-£20 million. This estimate is half the cost of drilling a relief/intersection well to intercept the legacy wellbore, which is estimated to cost £30-£40 million.



Feasibility Studies

Our legacy well and re-entry feasibility studies are the first step to help you first understand the viability and risks of re-entering and re-abandoning legacy wells in your CCS project, including those severed beneath the mudline, and those that have been explosively severed.

Our studies will support in identifying the location of wells to re-enter, but also, identify the best re-entry solution for your project. They typically include:

- Identification of the key risks and issues with re-entering previously abandoned wells.
- A methodology of locating the well.
- A review of options for re-entry, including estimated costs of each approach.
- An overview of approach for achieving an environmental and pressure retaining barrier, to allow re-abandonment activities to take place.
- Detailed step-by-step operational storyboards.
- Analysis, including a site-specific data review, VIV screening plus structural analysis.
- Drawings, procedures and equipment identification to support successful tieback operations.

Related Products and Services

CO2 Monitoring Platform

We've developed a complete CO2 monitoring solution for offshore carbon capture and storage that uses field-proven technology to provide you with the confidence that your storage sites are performing as expected, against baseline engineering and seismic data, during and post CO2 injection.

This, combined with our patent pending approach to long-term site integrity, will provide a further measure of security by alerting engineers to any actual CO2 leaks into the water column long during and after the injection process has been completed. Our unique combination of a data buoy, stretch mooring cable and subsea structure has created a standalone system that has a unique collection of industry-best benefits.

Riser Systems for CCS

Our Subsea High-Pressure Drilling Riser, with AQC-SR connectors, and our Completion and Workover Riser Systems, with AQC-CW connectors, have both been designed and qualified ready for the low temperatures required to complete successful CCS operations. And our field-proven well re-entry and tieback engineering products and services will support legacy well re-entry and abandonment operations.

Sea Swift CCS Platforms

If you're considering a platform for reintroducing CO2 into an offshore storage location, you may have the option of utilising an existing platform in a suitable location or building a new one.

Due to its flexible nature, it can serve as a crucial hub for injecting CO2 into depleted offshore reserves. The platform topsides can be easily modified to include the required components, including CO2 compressors and storage infrastructure designed to withstand the specific properties and behaviour of CO2 that are crucial to optimise injection operations. Depending on the number of wells you are planning to inject a monopile, conductor-supported or jacket design could be utilised.

Tieback Engineering & Tooling

At Aquaterra Energy, our staff have been engineering tiebacks since 1981. Our primary focus when assisting in the pre-planning of well tieback operations is to maximise efficiency and cost effectiveness. We do this without compromising attention to detail, while minimising rig time and reducing risk.

We are also able to provide the specified specialist tieback tooling equipment required for customers' operations via our rental equipment service, Aquaterra Express.



Supporting the full offshore energy ecosystem



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