

# CULZEAN

## DESCRIPTION

The Culzean field is located in Block 22/25a of the UK sector of the Central North Sea, approximately 240km due east of Aberdeen (57° 00'42"N 01°50'16"E) in a water depth of approximately 88m. The Culzean field covers three reservoirs.

Hydrocarbons in the Joanne, Pentland and Judy reservoirs were discovered and appraised in 2008, 2012 and 2020 respectively. The reservoirs are HP/HT with reservoir pressure c.936 bar and temperature c.175° C. The full development includes the following:

- 12 + 2 Wellhead Platform (WHP);
- Central Processing Platform (CPF) with flare tower;
- Separate Living Quarters and Utility Platform (ULQ);
- Two interconnecting bridges;
- Gas Export Pipeline to the CATS pipeline;
- Liquid export route to the Ailsa FSO.



Culzean came onstream in June 2019, has a design life of more than 20 years and is one of the largest HP/HT installations in the world. The Culzean complex currently consists of a wellhead platform situated directly over the HPHT reservoirs and bridge linked to the Culzean CPF (Central Processing Facility) and a further bridge linked living quarters platform. Around 3km from the production facility is the Ailsa FSO (Floating Storage Offloading) for storing associated condensate (capacity ~400k bbls) received from the CPF.



The CPF is designed to process 15M standard cubic metres per day (scm/d) of gas to CATS (Central Area Transmission System) entry specifications. A 30km 10" pipeline connects the Culzean facilities to the T5 tie-in point on the main CATS pipeline. The CATS terminal further processes the gas to meet National Grid specification at Teesside terminal. At CATS, NGLs are extracted from the gas and exported to storage on Teesside for onward shipping. A 3km pipeline carries associated condensate to the Ailsa FSO and ultimately offtake via shuttle tankers.

Under current expectations of long-term oil and gas prices and indications given by production to date and geoscience expectations, the infrastructure is anticipated to be operational beyond 2030.

### **Provisions for Third Party Access**

The Culzean facilities provide a major new infrastructure development in the Central North Sea providing potential host services for third party fields.

## OWNERSHIP

Ownership interests in Culzean are as follows:

Company	Equity Interest
TotalEnergies E&P North Sea UK Limited	49.9873%
Britoil Limited	32.0000%
NEO Energy Petroleum Ltd	18.0127%
Total	100.0000%

## SERVICES WE PROVIDE

We offer the following service levels to third-parties:

### Gas and Liquids Transportation and Processing

- Fields may tie-in at the Culzean WHP or CPF for processing. Produced condensate is exported via the Ailsa FSO with wet Gas treated to CATS entry specification on the CPF then exported via pipeline to CATS pipeline connector (T5) and ultimately to Teesside.
- The gas treatment plant at CATS reception facilities removes CO<sub>2</sub> and H<sub>2</sub>S, controls dew point and other characteristics to meet National Transmission Service (NTS) delivery specifications
- Gas can then be provided to the NTS from CATS or re-routed via the TGPP adjacent to CATS terminal (subject to agreement between the third parties & terminals)
- NGL's extracted from the gas stream are then sent via pipeline to Norse Sea Terminal, Sabic and/or Navigator terminals on Teesside for onward sale / transportation by vessel

### Facilities and Technical Information

The process system on the Culzean CPF separates gas from condensate and exports the wet gas and condensate through separate pipelines to the CATS system and Ailsa FSO respectively. Nameplate capacities for the platform facilities are:

- Gas handling up to around 15M scm/d;
- Export 25,000 bpd of Condensate;
- Handle 5000+ bpd of condensed + formation water.

The ULQ provides utilities for the installation as well as living and recreation facilities for a maximum operational POB of 120. However, bed capacity and emergency response provisions are provided for 140 persons to account for a potential helicopter breakdown.

### Liquids Processing and Export

Condensate is separated on the CPF and transferred to the Ailsa FSO by a 3km pipeline and then offloaded to shuttle tanker. The facility is a new-build facility completed in 2018, of Aframax dimensions and is moored using an internal turret that allows the vessel to freely weather vane. Thrusters are not required for any operation. The design of the Ailsa FSO is to the most stringent of regulatory standards and is designed to be on station for life of field, or 25 years at a minimum. The key technical information for Ailsa is below:

Length:	243.2m
Beam (Width):	42m
Draft:	9.5-13.5m
Weight (gross):	66,654 t
Displacement:	115,561 t
Crude Oil Storage:	70,317m <sup>3</sup>
Fuel Oil Capacity:	4,306.3m <sup>3</sup>
Lifeboats:	2 x 55 person capacity
Liferafts:	3 x 20 person capacity

1. Turret
2. Process Module
3. Vent Tower
4. Utility Module
5. Living Quarters
6. Condensate Offloading
7. Mooring Lines & Anchors
8. Fuel Gas Import Riser
9. Condensate Import Riser
10. FSO Riser Bases
11. Pipeline Protection (Mattress & Rock Dump)
12. Fuel Gas & Condensate Pipelines from Fixed Installation
13. Hull
14. Cuzcoan Fixed Installation



## TECHNICAL SPECIFICATION

As the gas export infrastructure beyond the Culzean CPE is operated by a third party, the entry and specifications for liquids and gas are based on standards negotiated with these Operators. Further technical data on these systems is available through the infrastructure Operators as detailed below:

CATS	<a href="#">Main Site</a>	<a href="#">Technical Information</a>
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Entry specifications for the Culzean CPF will be negotiated as part of the technical inputs to the tie-in agreements.

## COMMERCIAL PROCESS

Culzean aims for an efficient negotiation process that helps give commercial confidence to third-party developments. In this section we outline how we aim to negotiate and the types of items that may be considered during a negotiation. Further information on the process or terms and conditions can be obtained by contacting our commercial team as detailed on the Contact Us page.

As a general rule, where an offshore tie-in or additional equipment is required to process the enquirer's fluids, the associated capital expenditure (capex) is charged directly to the service user. Where equipment is exclusive to a particular user, then opex for such equipment will be at their sole cost.

### Connecting to Culzean

TotalEnergies E&P UK Ltd would normally perform engineering and modifications work for such equipment on behalf of new users. Ownership of the offshore tie-in or additional equipment would be transferred to the Culzean Owners on completion of the works.

### How We Work

Culzean is committed to the Commercial Code of Practice and the Oil and Gas UK Infrastructure Code of Practice. We aim to respond in a timely manner to all service enquiries. The typical process for negotiations is as follows:



The process typically starts with a formal written enquiry from the Operator (or substitute commercial operator) of the field development group requiring access to the infrastructure containing relevant field information and an outline of requirements in accordance with the process described in the [Code of Practice on Access to Upstream Oil and Gas Infrastructure on the UK Continental Shelf](#).

## Standard Terms and Conditions

The Culzean facilities operate in a highly competitive area of the North Sea. We seek to provide both attractive terms and conditions and an equitable negotiation process to parties interested in utilising our infrastructure. Individual terms and conditions may vary according to the needs of tie-in parties.

## Tariffs and Operating Costs

Any offer may be on the basis of a tariff, an operating cost share mechanism, or a combination of the two. Operating expenditure (OPEX) is normally charged based on a pro-rata throughput share of the plant OPEX. This varies over time as a function of total throughput.

A tariff may be applied to reflect an appropriate risk-reward balance for the services to be provided. This will be dependent upon the level of service, hydrocarbon quality, opportunity costs and modification requirements amongst others.

Tariffs are typically indexed annually, based on a standard index published by the UK Office for National Statistics.

## Throughput

### Capacity Basis

For transportation only services, capacity is offered subject to unreserved capacity in the CATS pipeline system. In the case of the platform processing and transportation service, the service is offered on a firm or reasonable endeavors basis. The profile and duration of the firm service will be negotiated on a case-by-case basis as well as the required notice period for amendments to the production profile.

### Send or Pay

These conditions are negotiated with incoming parties on an individual basis dependent on the level of service required.

## Capital Works

### Tie-in and Construction

The third party will be expected to pay for costs associated with the design, procurement and execution of the tie-in. An appropriate liabilities and indemnities regime will also be required in which the third party will indemnify the Culzean Owners for all losses

Where equipment is exclusive to a particular user, then OPEX for such equipment will be at their sole cost.

## Start-up and Duration

In order to ensure capacity is available in both the CPF, CATS line and the Ailsa at the appropriate time we will work with third parties to help to meet their commercial timelines. This could include a funneling mechanism in the contract that ensures that each party sequentially commits to the start date as more information about the development becomes available. Culzean is a development with a long future ahead of it, so the duration of the contract can be negotiated on an individual basis.

## Other Conditions

In addition, the following conditions will form the basis of negotiations:

- Maintenance – A shutdown plan for the CATS system is prepared in advance and to coincide with any shutdown of connected facilities (as far as possible).
- Governing Law and Disputes – English law will govern the agreement and disputes for certain technical matters will be settled through expert determination.
- Liabilities and Indemnities – will be based on the Industry Mutual Hold Harmless standard established in the UKCS, however the tying-in party should provide full indemnity up to an agreed cap during the construction and tie-in phase (except for willful misconduct of the Operator). All tie-ins must become party to the CATS cross-user liability agreement which allows for liabilities arising from off-spec gas.

## ULLAGE PROFILES

The ullage in the various components of the Culzean transportation and processing system is given in the following sections. The ullage is based on the Operator's best estimates at the time of publishing. Ullages for CATS pipeline, CATS processing, TGPP and NGL storage providers are provided by the respective system operators.

The traffic light system is used to communicate ullage as follows:

Ullage as % of system capacity	
<5%	●
5% to 25%	●
>25%	●

## Culzean

The ullage profile for the different components of the Elgin PUQ is as follows:

	Capacity	2021	2022	2023	2024	2025	2026	2027	2028	2029
Oil export	25,000 bbl/d	●	●	●	●	●	●	●	●	●
Gas Compression	15 Msm <sup>3</sup> /d	●	●	●	●	●	●	●	●	●
Gas Export	15 Msm <sup>3</sup> /d	●	●	●	●	●	●	●	●	●
Produced Water Handling	2,000 m <sup>3</sup> /d *	●	●	●	●	●	●	●	●	●
Power Generation MW Water Injection	16MWNil *	●	●	●	●	●	●	●	●	●
Power Generation MW	16MW	●	●	●	●	●	●	●	●	●

### Notes

- (1) Gas Lift Currently not available on platform
- (2) Produced water re-injection well anticipated to be completed in Q2 2022

## Other Infrastructure

The estimate of ullage for other infrastructure used by the Culzean complex is maintained by the system operators for those systems as follows:

- CATS : Gas Transportation & Processing;
- TGPP : Gas Processing;
- NORSEA : LPG Storage & Transportation;
- NAVIGATOR : C5+ Storage & Transportation.



## CONTACT US

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