

P E R E N C O



PERENCO GAS (UK) LIMITED



Guinevere Field Decommissioning Programmes (Installation & Pipeline) Close Out Report

PUK DOCUMENT No: DECOM-2025-GUIN-QS-Q-003

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 2 of 45

DOCUMENT CONTROL:

Revision	Reason for Issue	Date	Author	Checked	Approved
D01	Initial Draft issued for internal review	29/04/2025	NM	CF	
D02	OPRED comments included	10/07/2025	NM	CF	

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 3 of 45

Table of Contents

1.0	SUMMARY	7
1.1	Summary of Decommissioning Programmes.....	7
1.2	Schematic of Installation(s)/Pipeline(s) Being Decommissioned.....	12
1.3	Project Delivery against the Approved Schedule.....	14
1.4	Associated Decommissioning Approvals	16
2.0	DECOMMISSIONING ACTIVITIES	17
2.1	Contracts Awarded	17
2.2	Platform Operations	17
2.2.1	Well P&A	18
2.2.2	Making the Platform Safe	18
2.2.3	Making Pipelines Safe	19
2.2.4	Heavy Lift Preparations.....	20
2.2.5	Lighthouse Mode Preparations.....	20
2.3	Surface Installations Decommissioning	20
2.4	Pipelines/Umbilical & Jumpers Decommissioning.....	21
2.5	Stabilisation Features Decommissioning	22
2.6	Drill Cuttings.....	23
2.7	Post Decommissioning & Environmental Surveys & Debris Clearance Activities.....	23
2.8	Key Milestones	24
2.9	Stakeholder Engagement.....	24
3.0	IMPACT ON ENVIRONMENT.....	24
3.1	Activities/Incidents	24
3.2	Future Monitoring & Management Planning	25
4.0	IMPACT ON HSE	33
5.0	WASTE	34
6.0	LESSONS LEARNED	35
7.0	COST SUMMARY	36
8.0	PHOTOGRAPHS	37
9.0	REFERENCES	41
10.0	APPENDICES	42
10.1	Clean Seabed Certificates	42
10.2	Risk Matrix for Post-decommissioning Monitoring Frequency	44

ABBREVIATIONS & EXPLANATION	
Abbreviation	Explanation
"	Inches
AB2/AB3	Abandonment Level 2/3
AL	Action Levels (1 and 2)
ANOSIM	Analysis of Similarity
As	Arsenic
AToN	Aids to Navigation
Ba	Barium
BAC	Background Assessment Concentrations
BEIS	Department for Business, Energy and Industrial Strategy
BGT	Bacton Gas Terminal
BSH	Broad Scale Habitat
CA	Comparative Assessment
Cd	Cadmium
Cefas	Centre of Environment Fisheries and Aquaculture Science
CIP	Communication Interface Plan
COP	Cessation of Production
CP	Chemical Permit
CPI	Carbon Preference Index
Cr	Chromium
CtL	Consent to Locate
Cu	Copper
DDC	Drop Down Camera
DDU	Double Drill Unit
DOB	Depth of Burial
DP	Decommissioning Programme
DSC	Dismantling Safety Case
DTI	Department for Trade and Industry
EA	Environmental Appraisal
EL	Elevation
EMT	Environmental Management Team
ERL	Effects Range Low
HCS	Hydrocarbon Safe

ABBREVIATIONS & EXPLANATION	
Abbreviation	Explanation
Hg	Mercury
HLV	Heavy Lift Vessel
HM	Heavy and Trace Metal
HOCI	Habitat of Conservation Interest
HSEx	Health & Safety Executive
IP	Injured Person
ISQG	Interim Sediment Quality Guideline
IWS	International Waste Shipment
JUB	Jack-up barge
Km	Kilometres
M	Metres
MAT	Master Application Template
MEG	Monoethylene Glycol
ML	Marine Licence
MMO	Marine Mammal Observer
MOC	Management of Change
N/A	Not Applicable
NFFO	National Federation of Fishermen's Organisations
Ni	Nickel
NORM	Naturally Occurring Radioactive Material
NRC	National Research Council
NSTA	North Sea Transition Authority (formerly OGA)
NUI	Normally Unmanned Installation
OEUK	Offshore Energies UK (formerly OGUK)
OEL	Ocean Ecology Limited
OGA	Oil & Gas Authority (now NSTA)
OPEP	Oil Pollution Emergency Plan
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSPAR	Oslo and Paris Convention
OTP	Oil Discharge Permit
P&A	Plug and Abandon (wells)
PAH	Polyaromatic Hydrocarbons

ABBREVIATIONS & EXPLANATION	
Abbreviation	Explanation
Pb	Lead
PC	Physico-chemical
PEL	Probable Effects Level
Perenco	Perenco Gas (UK) Limited
PL	Pipeline
PON	Petroleum Operations Notice
PSA	Particle Size Analysis
PSR	Pipelines Safety Regulations
PTW	Permit To Work
PWA	Pipeline Works Authorisation
ROV	Remote Operated Vessel
SAC	Special Area of Conservation
SAT	Subsidiary Application Template
SNS	Southern North Sea
Tba	Total Barium
TBT	Toolbox Talk
Te	Tonne
TEL	Threshold Effect Levels
TGT	Theddlethorpe Gas Terminal
THC	Total Hydrocarbon Content
TOC	Total Organic Carbon
UKHO	United Kingdom Hydrographic Office
UKCS	United Kingdom Continental Shelf
WHPS	Wellhead Protection Structure
Zn	Zinc

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 7 of 45

1.0 SUMMARY

1.1 Summary of Decommissioning Programmes

This document, prepared by Perenco Gas (UK) Limited (Perenco), is the Close Out Report for the Guinevere Installation and Pipeline Decommissioning Programmes (DPs), which includes the Guinevere installation and pipelines PL874 and PL875 up to the edge of the Lancelot Safety Zone. The sections in the Lancelot Safety Zone will be considered as part of the Lancelot Pipeline Decommissioning Programme, which will be submitted at a later date.

The Guinevere field is located in the Southern Basin of the United Kingdom Continental Shelf (UKCS), in licence block 48/17b, approximately 60km north of the Bacton Gas Terminal (BGT), 56km east of the Theddlethorpe Gas Terminal (TGT) on the Lincolnshire coast and 12km north-west of the Thoresby Field. The Guinevere field was discovered in March 1988 by exploration well 48/17b-5. The platform was installed in 1993, with the first gas produced the same year. Guinevere exported processed and water-separated gas through an export pipeline PL874 to the Lancelot Platform. On Lancelot, the gas was comingled with gas produced from the Lancelot field, before being exported to the TGT on the Norfolk coast via the PL876 pipeline system.

The coordinates of the former Guinevere Platform were Latitude: 53° 24' 53" North, Longitude: 01° 16' 25" East (see Figure 1.1).

Perenco explored all avenues for continuing production as described in a Cessation of Production (COP) Notice in November 2016 and concluded that, due to the reduction of gas production, continued operations were uneconomical. OGA agreed to the permanent COP from the Guinevere field on or after 16th December 2016 at a date to be decided by Perenco and co-venturers, in a letter dated 16th December 2016. COP occurred in Q4 2017.

The Guinevere pipelines (approx. 6.5km each in length) are located within Block 48/17b in the Southern North Sea (SNS). The two infield pipelines, the 8" export pipeline PL874 and the 3" MEG pipeline PL875, connected the Guinevere installation to the Lancelot installation, which remains operational under Perenco operatorship. These pipelines have been air-gapped from the topsides process at Lancelot.

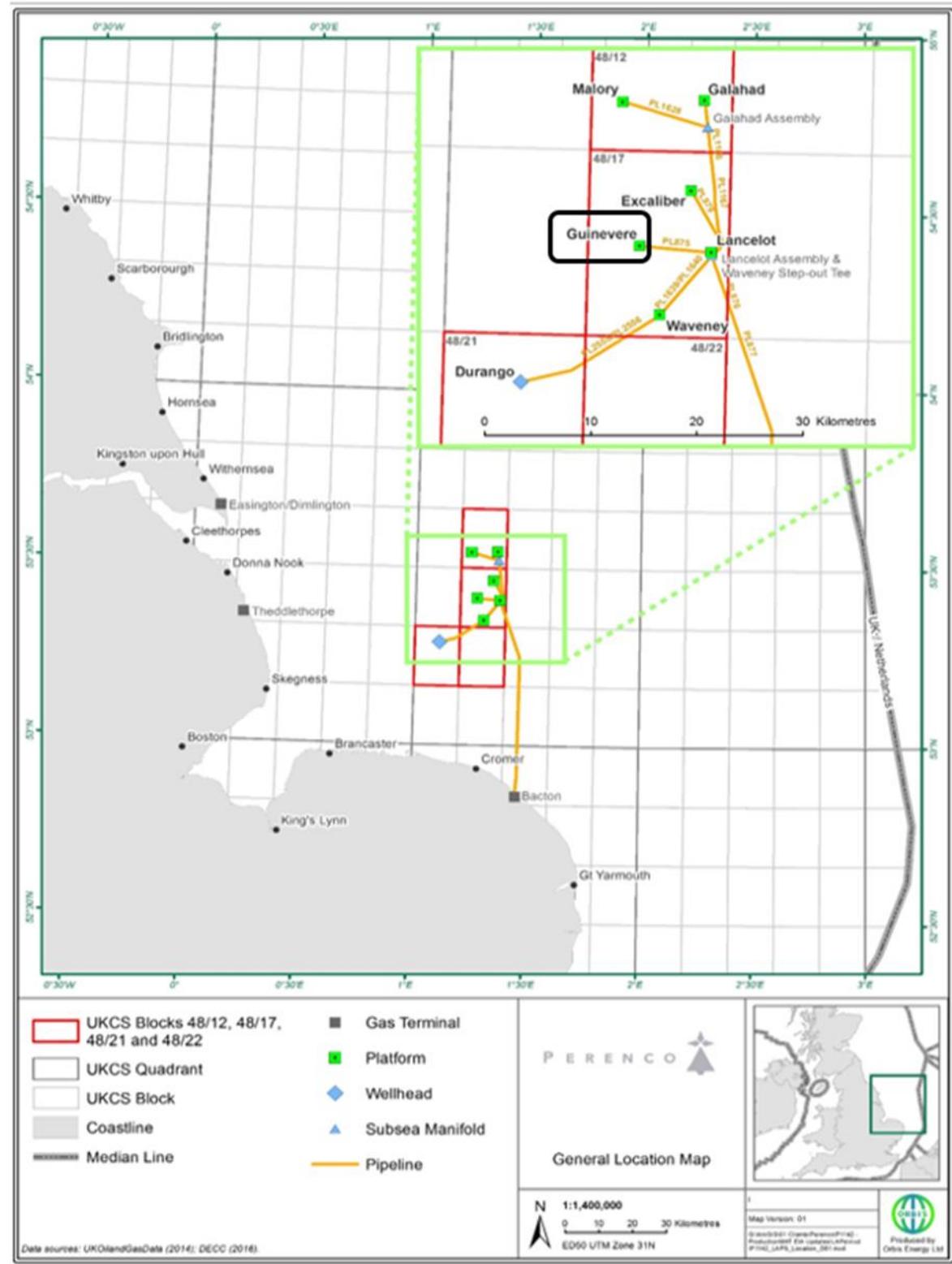
Following public, stakeholder and regulatory consultation, the Installation Decommissioning Programme was submitted without derogation and in full compliance with BEIS (now OPRED) guidelines in January 2019.

Following public, stakeholder and regulatory consultation, the Pipeline Decommissioning Programme was submitted without derogation and in full compliance with OPRED guidelines in September 2024.

The approved decommissioning proposal was for both pipelines to be left in situ, with monitoring at an agreed interval. The entire pipeline is fully buried, and all previous existing stabilisation materials, exposures and snagging hazards are buried with rock. PL874 and PL875 pipeline sections within the Lancelot 500m safety zone have not been included within this DP.

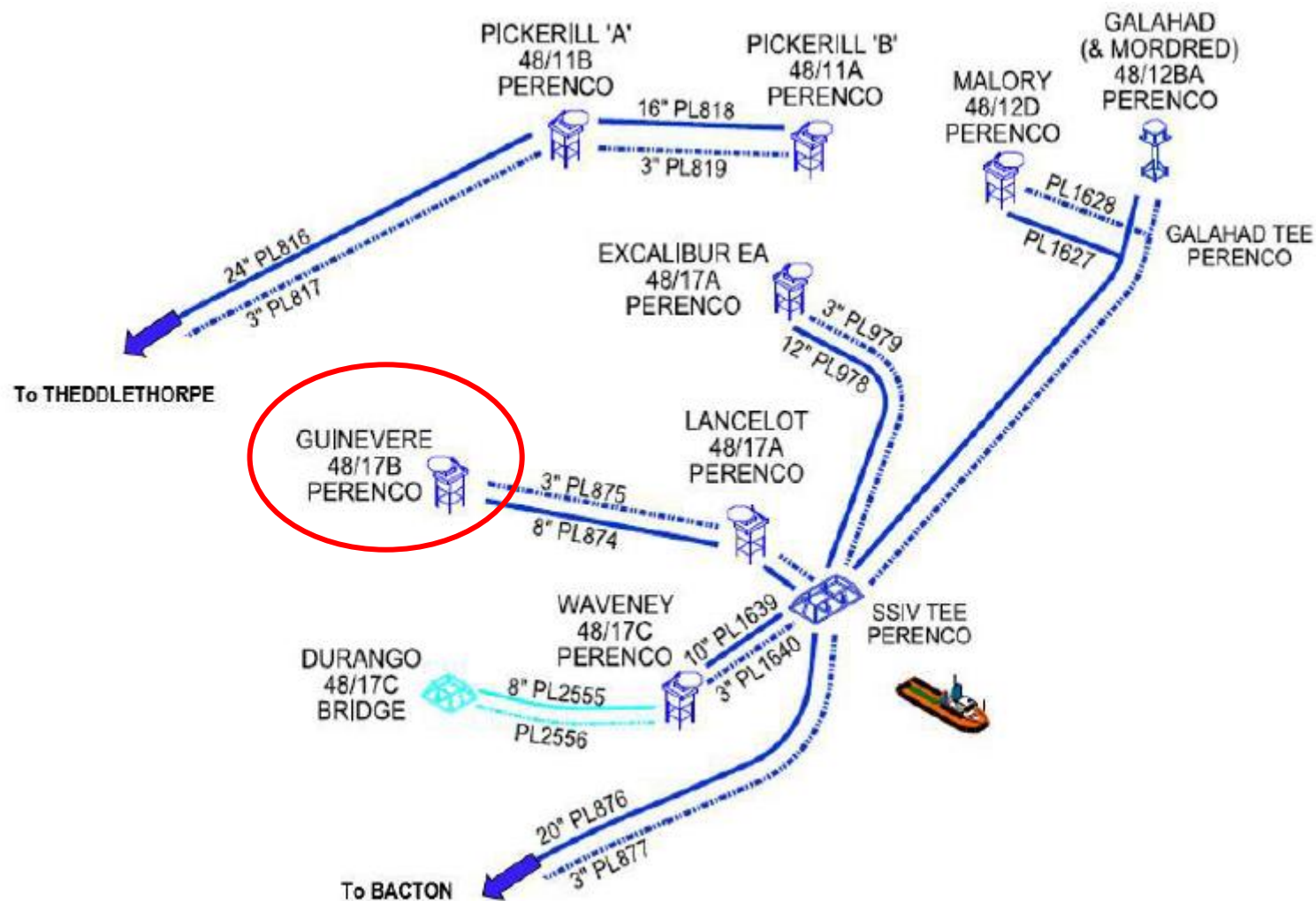
This Close Out Report summarises the decommissioning activities completed, and the status of the installation and pipelines covered under the Guinevere DPs.

Figure 1.1: Guinevere Field Location in the UKCS



Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 9 of 45

Figure 1.2: Field Layout



Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 10 of 45

Table 1.1: Overview of the Decommissioned Installation(s) In the Approved DP		
Installation Type	Number	Weight (Te)
Small Fixed Steel Jacket	1	1,929 Topside – 818 Jacket – 1,111*
Subsea Installation Type		
N/A	N/A	N/A

* Jacket weight 509 Te, Marine Growth 107 Te, and weight of piles removed with jacket of 185 Te and 5 Te grout. 305 Te of the jacket piles are left in situ.

Table 1.2: Overview of the Decommissioned Pipelines & Umbilicals in the Approved DP	
Number of Pipeline(s) to be decommissioned	2
Number of Umbilical(s) to be decommissioned	N/A
Total km of Pipeline(s) & Umbilical(s) to be decommissioned	13.097 PL874 – 6.560 PL875 – 6.537
Total km of Pipeline(s) & Umbilical(s) left in situ	0.495*

*495m of Guinevere pipeline within the Lancelot 500m safety zone

Table 1.3: Overview of the Stabilisation Features in the Approved DP	
Type	Number
Concrete Mattresses	4
Grout Bags	50 (estimate)
Rock Placement	2 sections (1 x 120m long section and 1 x 22m long section)

Table 1.4: Overview of the Wells in The Approved DP	
Type	Number
Platform Wells	2

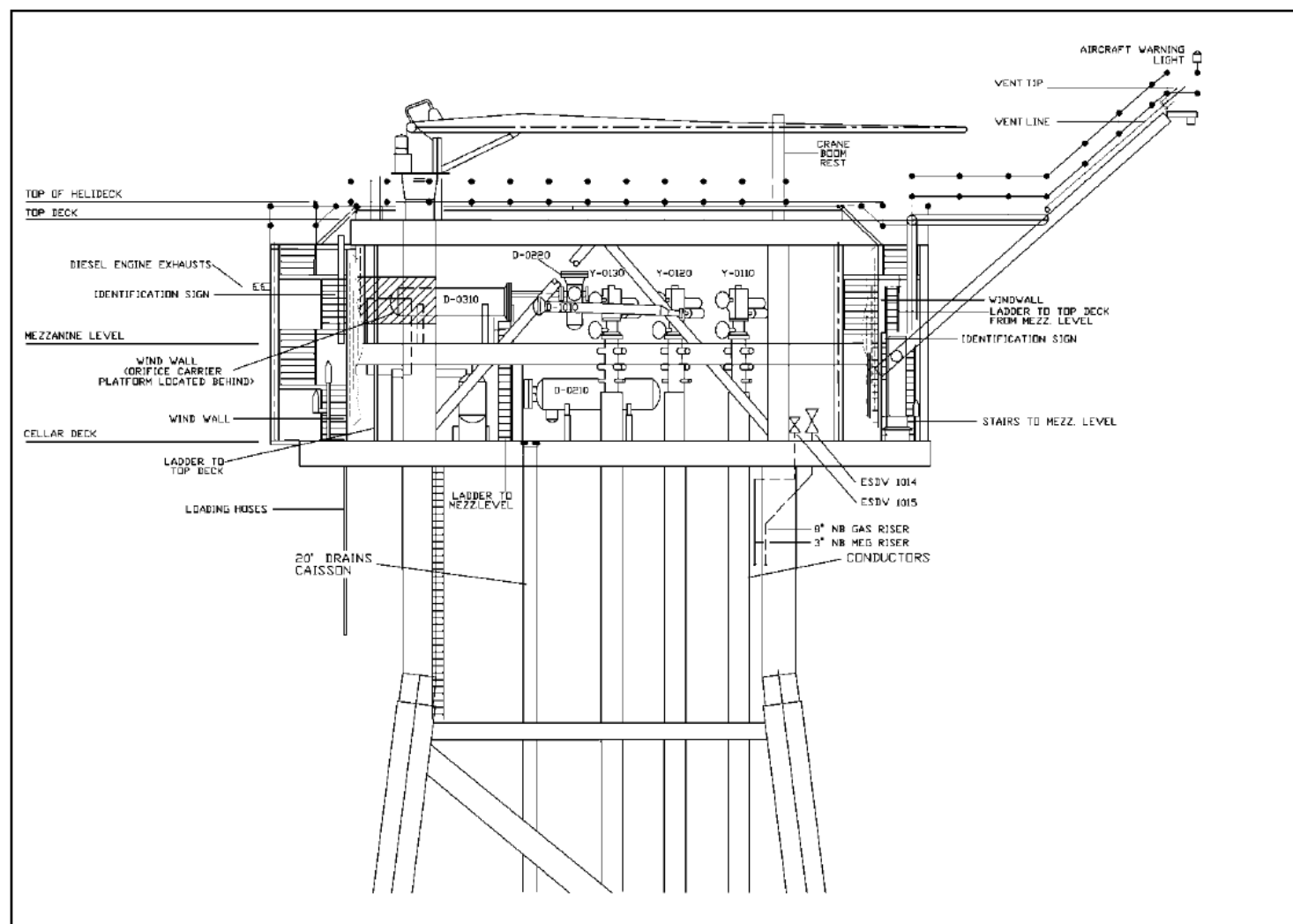
Table 1.5: Overview of the Drill Cuttings in The Approved DP	
Number of Piles	0

Table 1.6: Summary of the Approved Decommissioning Option(s) In the Approved DP	
Type	Selected Option
1. Topsides	Complete removal, re-use or recycle. Decontaminate the topside and remove the topside either by Heavy Lift Vessel (HLV) or a combination of crane vessel and small piece dismantling. Re-use, followed by recycling and then landfill will be the prioritised disposal options for the topside.

Table 1.6: Summary of the Approved Decommissioning Option(s) In the Approved DP	
Type	Selected Option
2. Substructures (Jackets)	Complete removal and recycling. Jacket legs will be removed and dismantled at an onshore location. Recycling and then landfill will be the prioritised disposal options. Piles will be severed at least -3.0m below the seabed. If any practical difficulties are encountered, Perenco will consult BEIS.
3. Subsea Installation(s)	N/A
4. Subsea Installation(s) stabilisation features	N/A
5. Pipelines, Flowlines & Umbilicals & Riser Sections	Within the Guinevere 500m safety zone: Partial removal and remediation. Guinevere risers have already been removed. The pipeline spool piece free span, and jacket riser section were removed during the platform decommissioning campaign. The protruding pipeline spool remaining on the seabed has been remediated with rock placement to prevent potential snagging hazards to other sea users. The proposed decommissioning solution was selected following the Comparative Assessment (CA) recommendation. From the edge of Guinevere 500m safety zone to the edge of Lancelot 500m zone: Leave in-situ. Pipelines are sufficiently buried and stable. Minimal seabed disturbance to the seabed, reduced risk to personnel engaged in the activity, and reduced environmental impact from the generation of emissions and waste. The proposed decommissioning solution was selected following the CA recommendation.
6. Pipeline and related infrastructure stabilisation Features (within Guinevere 500m safety zone)	Leave in-situ. The stabilisation materials are concrete mattresses and are all buried under rock placement. The proposed decommissioning solution was selected following the CA recommendation.
7. Pipeline Crossings	N/A
8. Wells	Plugged and abandoned to comply with HSE regulations.
9. Drill Cuttings	Leave in place to degrade naturally. Cutting pile is widely dispersed and falls below OSPAR 2006/5 thresholds.

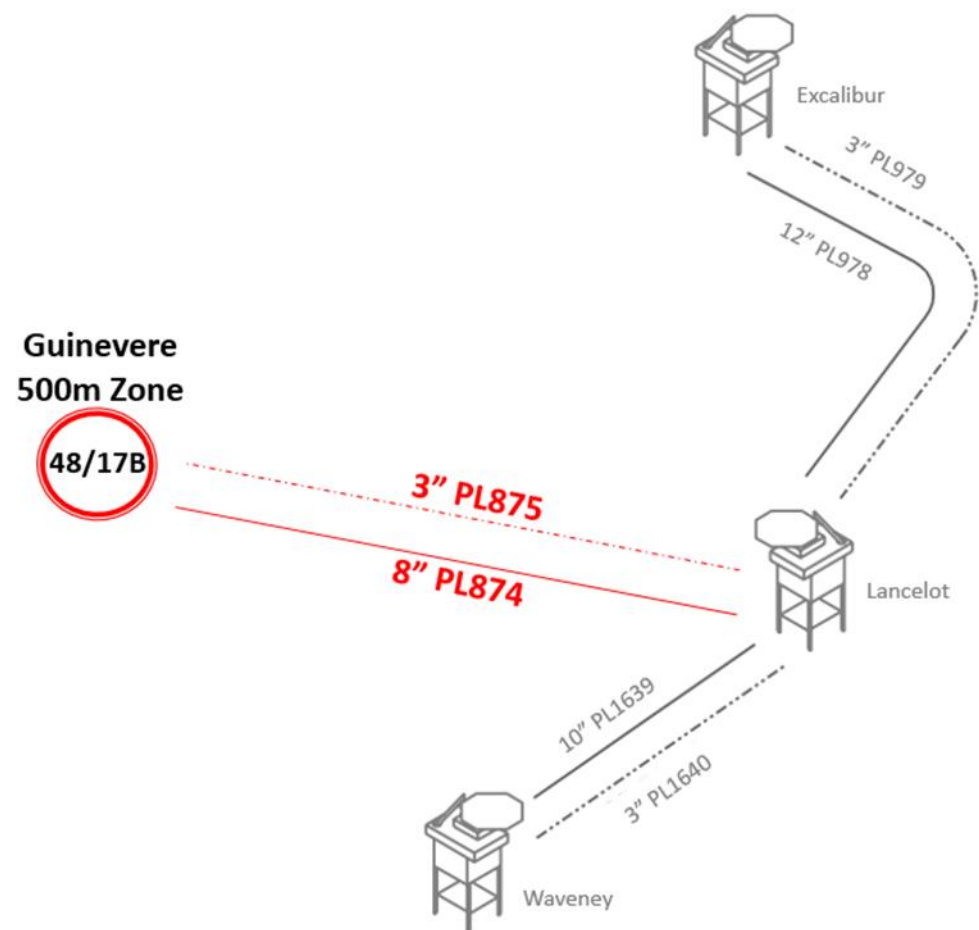
1.2 Schematic of Installation(s)/Pipeline(s) Being Decommissioned

Figure 1.3: Schematic of the Guinevere Installation



Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 13 of 45

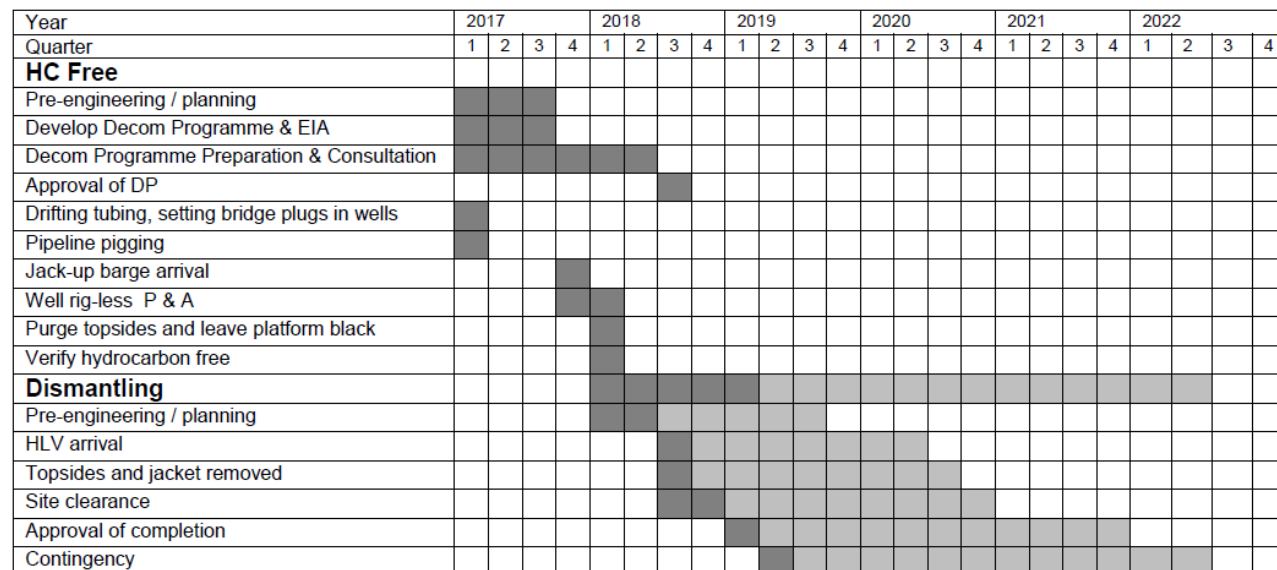
Figure 1.4: Guinevere Field layout showing pipelines



1.3 Project Delivery against the Approved Schedule

The Installation DP was formally approved on 24th January 2019. There have been no requests to extend the schedule.

Figure 1.5: Gantt chart of project plan from Guinevere Installation DP



Legend



Earliest date task could be completed



Period in which task is to be completed

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 15 of 45

The Pipeline DP was formally approved on 23rd October 2024. There have been no requests to extend the schedule.

Figure 1.6: Gantt chart of the project plan from Guinevere Pipeline DP

Year	2021				2022				2023				2024				2025				2026			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Installation & Pipelines Decommissioning Programme																								
Submission of DP																								
Consultation																								
Approval of DP																								
Post Decommissioning Activities and Surveys																								
Post Decommissioning Surveys																								
Remediation (if required)																								
Obtain Clear Seabed Certification																								
Close Out report																								

LEGEND	
	Earliest date task could be completed
	Period in which task is to be completed
	Date Tasks were completed

1.4 Associated Decommissioning Approvals

Table 1.7: Associated Decommissioning Approvals	
Guinevere Field COP	Cessation of Production (COP) document for Guinevere field accepted by OGA (now NSTA) on 16 th December 2016. COP occurred in Q4 2017.
Guinevere Field Decommissioning Programmes Approvals	Installation DP approved by OPRED on 24 th January 2019. Pipeline DP approved by OPRED on 23 rd October 2024.
Guinevere Dismantling Safety Case (DSC)	Acceptance of Guinevere DSC on 2 nd April 2019.
Consent to Locate (Ctl)	Consent to Locate for Guinevere was relinquished on 20 th February 2020, (MAT PRA/186, CL/647).
Pipelines Safety Regulations (PSR) Notification	PSR Notification submitted to HSE in June 2016 for Guinevere pipelines.
Pipeline Works Authorisation (PWA) variation consent	PWA 11/W/92 – PL874 and PL875. PWA for flushing and air-gap – PA/2278, approved in May 2017. PWA for subsea cut – PA/2548, approved in September 2018, with works completed in December 2019.
PWA Deposit Consents	PWA Deposit Consent for rock berm to cover exposed tie-in spools and mattresses (DepCon: 15/D/22).
Transfrontier Waste Permit	GB 0001 007713 - Waste permit to transport Guinevere installation to the Netherlands for re-use, recovery & disposal. Approved in January 2019.
Marine Licence	Marine Licences for P&A operations (WIA537, ML/273).
	Marine Licence for removal of subsea pipeline (PLA/543, ML/345/2).
	Marine Licence for pipeline deposits (PLA/888, ML/77).
	Marine Licence for removal of Guinevere jacket (DCA/107, ML/534/0).
NORM Permit	Approval of NORM Permit EPR/VB3094DA for removal of NORM waste.
Oil Discharge Permit	Oil Discharge Permit for P&A operations (WIA/537, OTP/572).
	Oil Discharge Permit for updated discharges (PRA/186, OLP/251).
	Oil Discharge Permit for pipeline residual hydrocarbons (PLA/543 OTP/663).
Chemical Permit	Chemical Permit for P&A operations (WIA/537 CP/1374).
	Chemical Permit for pipeline cleaning operations (PRA/186 CP/1262).

2.0 DECOMMISSIONING ACTIVITIES

2.1 Contracts Awarded

Table 2.1: Contracts Awarded		
Company	Contract Award Year	Activity Services & Equipment Provided
SEAFOX	2017	Jack Up Barge (JUB) for accommodation and logistic support
HALLIBURTON MANUFACTURING SERVICES LTD	2017	Technical support and engineering services
FUGRO SUBSEA SERVICES LIMITED	2018	Technical support and engineering services
EXPRO NORTH SEA LTD	2017	Technical support and engineering services
ESR TECHNOLOGY LTD	2018	Technical support
EPIC INTERNATIONAL LTD	2017	Labour
DERRICK SERVICES UK LTD	2017	Labour
CLAXTON ENGINEERING SERVICES LTD	2018	Technical support and engineering services
BMT UK LIMITED	2017	Technical support
BLUE TERN B.V.	2019	Heavy lift transport and disposal
ALTRAD SERVICES LTD	2017	Labour
ASCO UK LTD	2018	Logistics
JEE LIMITED	2017	Engineering study
LUCION RADIATION PROTECTION SERVICES LTD	2017	NORM Study
NOBLE DENTON CONSULTANT LIMITED	2018	Marine warranty surveyor
BAKER HUGHES ENERGY TECHNOLOGY	2018	Technical support and engineering services

2.2 Platform Operations

The Guinevere Hydrocarbon Safe (HCS) campaign commenced in Q4 2017, utilising the Seafox 1 JUB. The Seafox 1 arrived at the Guinevere platform on 16th October 2017 and de-interfaced after 121 days on 14th February 2018.

The HCS phase consisted of the following activities:

- P&A of the two platform wells, including conductor removal.
- Flushing and isolation of the export and MEG pipelines.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 18 of 45

- Cleaning and purging of the topsides process pipework.
- Independent verification of the platform HCS status.
- Preparation of the platform for heavy lift.
- Lighthouse Mode Preparations.

HCS verification was achieved in December 2017.

2.2.1 Well P&A

Between October 2017 and February 2018, the two Guinevere platform wells were decommissioned to Abandonment Phase 3 in accordance with the Oil and Gas UK Guidelines for the Abandonment of Wells, Issue 5 (July 2015). The abandonment programme was conducted using the Seafox 1 JUB.

Due to the presence of gauge cables in the A annulus, the wells were categorised as PL2-1-1 code of the Oil & Gas UK abandonment guidelines appendix D. The removal of the production tubing and gauge cable (using the Seafox 1 crane) before cement placement using Coiled Tubing was considered the most cost-effective means of conducting the P&A campaign.

Following the placement of cement plugs the Xmas trees were removed providing access for an internal cutter. An abrasive water jet cutting system was used to sever the casings and conductor below seabed. The Seafox crane was then used to recover all casings and conductors.

Table 2.2: Well Decommissioning			
Well	Designation	Status and Date of Abandonment	Category of well
48/17b-G1	Gas production	Level 3 – Abandoned (December 2017)	PL0-0-0
48/17b-G2	Gas production	Level 3 – Abandoned (December 2017)	PL0-0-0

2.2.2 Making the Platform Safe

During Q4 2017, the Guinevere gas processing facilities were isolated, flushed, cycle purged with nitrogen and irreversibly decommissioned, made redundant and air-gapped. The HCS campaign was conducted using the Seafox 1 jack up barge supporting operations.

The risers were isolated from the process with double block and bleed isolation, and the platform wells were isolated from the process by the removal of well choke valves.

Nitrogen quads were connected to the process, and the gas was purged through the process and into the vent header. Sample points at the end of each purge route were monitored and gas levels recorded to ensure that all the gas was displaced. When satisfactory results were obtained (gas levels <5% LEL and oxygen <11%), the N₂ was replaced with air purges and the venting process continued until all N₂ was displaced with air. Vessels were left open to the atmosphere at the end of the process.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 19 of 45

At the end of these works, a rigorous verification activity took place by the Independent Verification Body Lloyd's Register to verify the hydrocarbon safe status of the Guinevere platform.

2.2.3 Making Pipelines Safe

As part of the 2017 Guinevere decommissioning programme the 8" gas pipeline was rendered hydrocarbon free and the 3" MEG line was flushed with seawater.

The operation to decommission the 8" gas pipeline was completed in two phases. The first phase was driving cleaning pigs through the pipeline with production gas. The purpose of this operation was to provide opportunistic initial cleaning and deliquification and provide confidence that the pipeline was "piggable". Three pigs were used in the following order: foam pig, brush foam pig, bi-di pig. All three pigs were run through the line successfully with no issues.

The second phase of decommissioning the 8" gas pipeline was flushing and air gapping. A train of three bi-di cleaning pigs were driven through the pipeline with seawater. To maximise the cleaning and debris carrying efficiency cleaning chemicals were injected in the compartments between the pigs. In total 112% of the pipeline volume was pumped into the pipeline, and three consecutive readings of less than 10ppm oil in water were achieved.

In addition to flushing the pipeline, the pipeline was positively isolated from any potential sources of hydrocarbons to achieve the hydrocarbon safe status. This was achieved by removing spools (i.e., air gapping) between the pipeline and the live process systems on Lancelot. Rated blind flanges were connected onto the open-ended pipework.

The 3" MEG pipeline was already disused before the Guinevere decommissioning programme began. The pipeline had been air gapped at both Guinevere and Lancelot but was left full of MEG. To remove the MEG, the same flushing arrangement for the 8" pipeline flushing was utilised. A gel pig was inserted into the pipeline and all MEG displaced out, leaving the pipeline flooded with seawater.

Table 2.4 below outlines the key work scopes executed for the Guinevere pipelines during the 2017 HCS decommissioning campaign.

Table 2.3: Well Decommissioning			
Activity	Purpose	Execution Date	Result
Production gas pigging	Initial cleaning and removal of remnant liquids. Reduce the probability of a stuck pig during flushing.	April 2017	Successfully ran three cleaning pigs through the pipeline.
Pipeline flushing	Flood the pipeline and clean to a target cleanliness of 30 ppm oil in water.	Oct–Nov 2017	Successfully cleaned pipeline to less than 10 ppm oil in water.
Lancelot air gapping	Positively isolate the pipeline from live process systems on Lancelot.	Oct–Nov 2017	Successfully air gapped pipeline from Lancelot live systems.
MEG pipeline flushing	Flood the pipeline and displace out MEG.	Oct–Nov 2017	Successfully removed MEG from the pipeline.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 20 of 45

2.2.4 Heavy Lift Preparations

In preparation for the heavy lift campaign, some activities were completed in Q1 2018 during the HCS campaign; they included:

- Inspection and recertification of platform and jacket lifting pad eyes.
- Installation of leg cutting platforms (x4).
- Removal of export pipeline and MEG pipeline risers.
- Removal of sea water lift and drains caissons.
- Completion of all outstanding structural Repair Orders.

In addition to the activities listed above, a borescope inspection of the jacket leg grout levels was carried out. A simple 50mm hole was drilled in each leg at EL +11.4m (close to spider deck level) and an inspection camera dropped into the leg.

2.2.5 Lighthouse Mode Preparations

In preparation for Lighthouse Mode, several activities were completed in Q1 2018 during the HCS campaign before the Seafox 1 de-interfacing from the platform; they included:

- Installation of solar-powered Nav-Aids
- Decommissioning of platform equipment, including power generation, platform crane, communications, potable water, and diesel fuel supply, including bunkering hoses.

2.3 Surface Installations Decommissioning

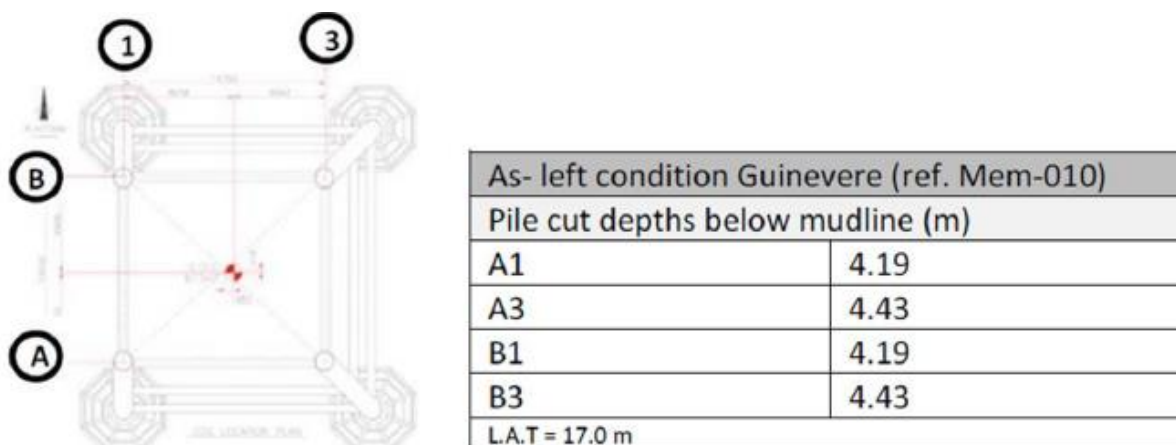
Dismantlement of the Guinevere installation was completed by the Blue Tern JUB, which departed from the Tyne field on 28th December 2019. Works commenced on the installation on 29th December 2019 for a period of 14 days, with works completing on 12th January 2020, when the Blue Tern departed.

The dismantlement works consisted of Guinevere topsides, jacket, and pipeline free span removal. Critical cuts were completed to separate the topsides from the jacket, and both the topsides and jacket were removed via heavy lift onto the Blue Tern deck.

Before jacket removal, the pipeline free span removal was completed using ROV and diamond wire cutting, and pile cuts were made. It was planned for all piles to be cut -3m below the mudline, and this was achieved, as detailed below in Figure 2.1.

Recovered material from the Guinevere platform was offloaded at the Hoondert quay, Vlissingen, under an International Waste Shipment permit, accompanied by waste movement documentation.

Figure 2.1: Guinevere Pile Configuration and As-left Condition



2.4 Pipelines/Umbilical & Jumpers Decommissioning

In June 2016, in accordance with Regulation 14 of the Pipeline Safety Regulations 1996, Perenco notified the HSE of the decommissioning of the Guinevere pipelines (Ref. PSR Notification SVC 4355817).

In 2017, pre-decommissioning surveys were carried out along the pipeline to assess the status along a 100m corridor, including a depth of burial. The 2017 depth of burial survey indicated that, except for the exposed section of pipeline spool pieces at the base of the Guinevere installation, the average burial depth along the pipeline was 0.75m (Min: 0.3m, Max: 1.2m) with no reportable spans/exposures. No debris was identified along the pipeline lengths during this survey. Details of this survey, including the depth of burial (DOB) profiles, are shown in the CA scoping report Table 3.2.

In early Q4 2019, a pre-decommissioning debris survey at Guinevere was undertaken by Deep BV [I]. This survey clarified the exposed length of pipelines identified by the 2017 survey detailed above. The pipeline spool piece free spans were within the Guinevere 500m safety zone, close to the Guinevere installation. The span lengths were: 12.9m along the Guinevere export pipeline PL874 and 13.3m along the piggy-backed MEG pipeline PL875. In late 2019 and early 2020, during the dismantlement campaign, the pipeline spool piece-free spans were removed.

The removal of the Guinevere installation and pipeline spool piece free spans was completed by the Blue Tern Jack-up vessel. The dismantlement works consisted of Guinevere topsides, jacket, and pipeline-free span removal. Critical cuts were completed to separate the topsides from the jacket, and both the topsides and jacket were removed via heavy lift onto the Blue Tern deck. Pipeline riser and spool piece free span removal was completed under an approved variation to the PWA 11/W/92. The cut sections were recovered and transported ashore for processing in the UK.

The post-platform removal ROV survey, completed immediately after the dismantlement campaign, identified that at the pipeline spool piece cut locations, the pipeline spools were protruding from the seabed and posed a potential snagging hazard that required attention. This resulted in a rock placement campaign in 2022, ensuring the snagging hazard was resolved. The rock placement was conducted within the Guinevere 500m safety zone to bury the exposed tie-in spools and associated stabilisation materials. The rock deposits formed a berm designed with a 1:3 slope to make it

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 22 of 45

overtrawable. The berm is approximately 22m in length. This work was completed under (DepCon: 15/D/22). The rock deposit tied into the existing rock placement that was installed in 1993.

In 2022, a post-decommissioning survey was completed along PL874 and PL875 and within the Guinevere 500m safety zone (post-rock placement). This confirmed no debris, free spans, or exposures. This survey included the post-decommissioning Environmental Survey and Habitat Assessment Survey (HAS).

Perenco conducted a CA for the decommissioning of PL874, PL875 and associated stabilisation materials on 21st March 2023. The outcome of the CA was that the preferred decommissioning option of leaving in situ would prevent the generation of waste. As determined by the CA, it was concluded that the best option is for both pipelines to be left in situ, with monitoring at an agreed interval.

Table 2.4: Pipelines/Umbilicals & Jumpers Decommissioning			
PL Number	Description	Agreed Decommissioning Solution and Date of Removal	Current Status (Length in kms, left in situ/removed)
PL874	8" export line	Leave in situ	6.56 km in situ
PL875	3" MEG line	Leave in situ	6.537 km in situ

2.5 Stabilisation Features Decommissioning

The original Pipeline CA deemed that, in accordance with current guidance, the pipeline sections and any associated stabilisation materials which have been covered by rock placement have been excluded from the CA process and will be left in situ.

Recent surveys conducted confirmed that the western extent of the pipelines, on approach to the previous Guinevere jacket, are covered by historical rock placement. Additionally, in Q1 2022, the NSTA authorised additional rock placement to cover and secure the exposed cut end of the pipelines at the Guinevere installation location. This rock placement fully covers the 4 concrete mattresses within the Guinevere 500m safety zone with a berm designed with a 1:3 slope to make it overtrawable.

Table 2.5: Subsea Stabilisation Features Decommissioning		
Description	Agreed Decom Solution and Date of Removal	Status
Concrete Mattresses (x4)	To remain in situ, they were covered by rocks in 2022	Left in situ
Grout Bags	To remain in situ, they were covered by rocks in 2022	Left in situ
Rock Dump (x2 rock berms) 120m + 22m = 142m	To remain in situ	Left in situ

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 23 of 45

2.6 Drill Cuttings

Table 2.6: Drill Cuttings Decommissioning		
Description & Volume (m3)	Agreed Decom Solution	Status
Cuttings were widely dispersed and fall below OSPAR 2006/5 thresholds.	Leave to degrade naturally	Left in situ

2.7 Post Decommissioning & Environmental Surveys & Debris Clearance Activities

Table 2.7: Environmental Surveys & Debris Clearance		
Activity	Scope	Date
Pre-decommissioning Environmental Baseline and Debris Survey	MV Bibby Tethra: - Assess the status/diversity of benthic habitats in the vicinity of the Guinevere platform and PL874 pipeline. - Provide data on the chemical and physical properties of the sediments in the vicinity of the structures to be decommissioned. - Provide high-resolution still images and corresponding video at specific points in a cruciform pattern around the platform and at nominal 3km intervals along the pipeline. - Provide sufficient benthic data to establish a baseline to adequately assess the environmental impact of the future decommissioning operations.	Q1 2017
Pre-decommissioning debris survey	Deep BV: This survey clarified the exposed length of pipelines identified by the 2017 survey detailed above.	Q4 2019
Post-decommissioning MBES and Environmental Survey	MV Braveheart Spirit: MBES surveys covering a 1 x 1 km platform box-in and a 100m wide pipeline corridor along the PL874/PL875 route.	Q3 2022
Overtrawl Survey	Atlas WY170: Overtrawl survey completed by NFFO in former Guinevere 500m safety zone and along 100m wide pipeline corridor up to the Lancelot 500m safety zone. Clean Seabed Certificates were issued in March 2025 (see Section 10).	Q1 2025

2.8 Key Milestones

Table 2.8: Key Milestones	
Cessation of Production	Q4 2017
IVB HCS verification	December 2017
Dismantlement Safety Case accepted	April 2019
Topsides and jacket removal campaign completion	January 2020
Clean Seabed Certificate	Q1 2025

2.9 Stakeholder Engagement

Table 2.9: Stakeholder Engagement
OPRED/NSTA - Quarterly Progress Meetings and Reports. Trinity House - Meeting to review and agree on the navigation aids (AToN) requirements for the Lighthouse Phase of the Guinevere platform in the SNS (meeting held 4/11/16).

3.0 IMPACT ON ENVIRONMENT

3.1 Activities/Incidents

There has been a negligible impact on the environment from the work that was carried out on the Guinevere installation. The following activities/incidents have occurred:

HCS campaign

- PON1/6990: On 22nd December 2017, an oil sheen was noticed on the sea surface around the legs of the Guinevere platform. Upon investigation, it was discovered that a hydraulic hose from the BOP was dripping oil (0.00017 tonnes) to sea. The hose had been disconnected for operational reasons, and the fitting had become caught up in the deck gratings. This had resulted in the sprung 'nipple' of the connection being depressed and allowing the hose contents to escape onto the grated deck and hence drip into the sea. As an immediate action, the hose was lifted from the grating and placed in a secure position. As the hose was over gratings, minimal clean-up was required on deck.
- Marine Mammal Observers (MMOs) monitored the P&A operations that involved small explosive charges, which were detonated deep within the wells. An MMO report regarding this monitoring was submitted to BEIS Environmental Management Team (EMT) following completion of the P&A work.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 25 of 45

- In accordance with the BEIS EMT request and in accordance with the OPEP and CIP, an exercise was carried out after the Seafox 1 interfaced with the Guinevere platform in Q4 2017 to simulate a large chemical spill and the offshore team's response to it.

Other

A chromium (Cr) VI paint survey was conducted at the Guinevere platform in February 2020, with focus on the paint on the handrails and helideck. RPS Group issued a certificate of analysis stating the occurrence and level of Cr VI. The levels of Cr VI on the Guinevere helideck were deemed to be acceptable.

3.2 Future Monitoring & Management Planning

3.2.1 Comparative Analyses of Benthic Survey Results

A pre-decommissioning environmental survey was conducted in 2016 by Bibby Hydromap [A]. Environmental sampling was undertaken at 10 stations around the platform. Historic sampling stations were arranged along a cruciform transect centred on the platform. Additionally, three environmental samples were collected along the 6.9km Guinevere to Lancelot pipeline (PL874/PL875).

Perenco then contracted N-Sea to undertake post-decommissioning geophysical and environmental surveys at the Guinevere field in August 2022 [B]. The environmental survey was conducted by a team of Ocean Ecology Limited (OEL) environmental scientists and included Drop Down Camera (DDC) and sediment grab sampling for subsequent physico-chemical (PC) and macrobenthic analysis.

A total of 10 stations were proposed to be surveyed in and around the platform and three along the Guinevere to Lancelot Pipelines (PL874 and PL875) as a repeat of the pre-decommissioning survey carried out in 2016. A new reference station, GU_11_REF, was positioned 4.9 km from the platform along a perpendicular axis to the predominant tidal current in an area predicted to be characterised by the same EUNIS Broad Scale Habitat (BSH) present around the Guinevere platform, namely EUNIS A5.14 – circalittoral coarse sediment.

OEL then undertook an independent Decommissioning Environmental Survey Review of the pre- and post-decom environmental survey data for the Guinevere platform area and pipeline [C]. The review focused on sediment composition, contaminants, and benthic biodiversity to assess the condition of the Guinevere platform area and identify any changes that may have occurred between pre- and post-decommissioning activities.

Comparison with pre-decommissioning data revealed no statistically significant changes in sediment type and composition over time and no statistically significant changes in the concentration of sediment contaminants over time. These findings indicate that contamination resulting from the decommissioning activities across the Guinevere field has been minimal and has resulted in no measurable impact on the local environment. Conversely, the macrobenthic community observed during the post-decommissioning survey was different from that observed at pre-decommissioning. However, no opportunistic species or anomalies in the assemblage composition were observed in 2022 that would suggest a negative effect of decommissioning activities on the macrobenthic community.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 26 of 45

Annex 1 Habitat Assessment

Seabed imagery analysis and particle size analysis (PSA) revealed a homogeneous seabed dominated by sandy sediments with areas of mixed and coarse sediments. Ripples were observed across the Guinevere field, and most of the sediments encountered were deemed to be representative of the habitat of conservation interest (HOCI) 'Subtidal sands and gravels', which is among the most common offshore habitats found in the UK.

The Ross worm *Sabellaria spinulosa* is a protected species under the Habitats Directive and as a threatened and/or declining species in the OSPAR list [D] in its reef form. A total of 41 individuals were identified across the Guinevere field, with 38 specimens recorded at station PL874_03 along the pipeline. Nevertheless, no evidence of Annex I biogenic or geogenic reefs was observed in the imagery analysis.

Benthic Fauna

Significant differences in both abundance and diversity were found between the pre- and post-decommissioning surveys. The major difference between pre- and post-decommissioning macrobenthic assemblages was the presence in high numbers of *O. borealis*, *S. bombyx*, *E. blomstrandii* and *B. elegans* which was not replicated in the pre-decommissioning survey. In turn, *U. elegans* and *A. alba* were abundant in the pre-decommissioning community but not as dominant in 2022.

Despite the differences in the macrobenthic community between the pre- and post-decommissioning surveys, no anomalies were observed in its composition that would suggest a negative impact of decommissioning activities on the community.

As none of the characteristic taxa observed in 2022 are opportunistic species that would typically be present and dominate a community under stressful environmental conditions, it is proposed that no further monitoring of benthic fauna is required.

Sediment Characteristics

Based on post-decommissioning data only, some variations in sediment type and composition were observed across the Guinevere field, with finer sediments to the SE of the platform. However, most stations belonged to either BSH A5.1 'Subtidal coarse sediments' or A5.2 'Subtidal sands and muddy sands', which are among the most common habitats found in offshore settings across the UK coast and are considered a component of the HOCI 'Subtidal sands and gravels'.

Differences in sediment type and composition were also observed between pre- and post-decommissioning surveys, with finer sediment sampled during the post-decommissioning survey. Nevertheless, most stations were dominated by sand during both surveys, and no statistically significant differences were found between pre- and post-decommissioning surveys.

Total Organic Carbon (TOC) & Total Hydrocarbon Content (THC)

TOC content in sediments across the Guinevere field varied between 0.11% to 0.30%, with an average value of 0.16%. The concentrations are low overall compared to the average content of 0.5% for the deep ocean and 2% for coastal seas [E].

To determine whether the decommissioning of the Guinevere field has had a significant impact on the hydrocarbon content of sediments, the THC and carbon preference index (CPI) of sediments were compared between pre- and post-decommissioning surveys. THC concentration did not differ significantly when comparing data collected from pre- and post-decommissioning surveys. Similarly, no statistically significant differences were found between surveys, meaning that the source of hydrocarbons across the Guinevere field did not change over time.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 27 of 45

It is proposed that no further monitoring of TOC and THC is required, as the concentrations are low compared to the average concentration for deep ocean and coastal seas.

Heavy and Trace Metals

A total of 8 main heavy and trace metals were analysed from sediments taken at each of the sampling stations for the pre-and post-decommissioning surveys. These were Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni), and Zinc (Zn).

There are currently no definitive guides for 'acceptable' contamination levels from oil and gas activities. A common practice is to assess contamination levels against:

- Centre for Fisheries and Aquaculture Science (Cefas) action levels for the disposal of dredged material, and/or
- Interim Sediment Quality Guideline (ISQG) levels.

While dredging is a different activity from gas field decommissioning, the industry has relatively well-developed guidelines concerning the remobilisation of sediment contaminants, which provide useful reference points for other activities:

- Cefas guidelines have two Action Levels (AL). Contaminant concentrations below Action Level One (AL1) are thought to be of no danger to the environment if disposed of at sea, whilst levels above Action Level Two (AL2) are considered unsuitable for disposal at sea.
- The ISQG provides Threshold Effect Levels (TEL) and Probable Effects Levels (PEL). Below TEL it is thought that contaminants will have little or no effect on the environment, whilst levels above PEL are expected to show at least some effects on the environment.
- Additionally, OSPAR developed Background Assessment Concentrations (BAC) and Effects Range Low (ERL) values to allow assessment of contaminant concentrations in the environment and indicate potential levels which may cause toxic effects, respectively.

Where relevant, comparisons against the 'guidance' contamination levels (i.e., Cefas, ISCG, OSPAR), detailed in Table 3.1, were made for the survey samples analysed pre- and post-decommissioning.

Barium (Ba) is known to be present in higher concentrations in sediments potentially affected by drilling fluids which can contain substantial amounts of barites (barium sulphates) [F]. Therefore, monitoring of Total Ba (TBa) is of relevance for the oil and gas industry. There are no specific industry guidelines for Ba contamination, instead, the survey concentrations are compared with the background levels of Ba and TBa in the North Sea and mean concentrations within 500m of active platforms. The background level of Ba for this sector of the North Sea is 70.14mg/kg, and the mean level of Ba within 500m of active platforms is 1,754.7mg/kg, as outlined in the UKOOA (2001) document [G]. Background TBa concentrations for the North Sea range between a mean concentration of 33,5562.12mg/kg within 500m of an active platform, and a mean concentration of 320.26mg/kg at locations over 5,000m away from active platforms [G].

Table 3.1 – Industry Contaminant Guidelines for Heavy Metals								
Analyte	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
Cefas AL1	20	0.4	40	40	50	0.3	20	130
Cefas AL2	100	5	400.0	400.0	500	3.00	200.0	800.0
OSPAR BAC	25	0.31	81	27	38	0.07	36	122
OSPAR ERL	8.2*	1.2	81	34	47	0.15	21*	150
TEL	7.24	0.7	52.3	18.7	30.2	0.13	-	124
PEL	41.6	4.2	160	108	112	0.7	-	271

Focusing on the pre-decommissioning survey

Heavy and trace metal (HM) concentrations were generally low, with the mean concentrations of all metal levels below the contamination guidelines and background levels for the North Sea, except for As. The concentration of As was consistently elevated at all stations (mean 10.25mg/kg). Concentrations were above the ERL threshold of 8.2mg/kg and the TEL threshold of 7.24mg/kg at all stations except for station 1,000mNW (1,000m Northwest of the former platform location).

The mean concentration of Ni was low (mean 6.31 mg/kg) across all stations except for station PL874/03 (located on PL84 pipeline), where the Ni concentration was 28.4mg/kg which is above the ERL threshold of 21mg/kg and Cefas Action Level (AL) 1 of 20mg/kg.

Ba levels were consistently low within the survey area (mean 29.33mg/kg) except for station PL874/03, where the concentration was 78mg/kg; this is slightly above the background level of Ba for this sector of the North Sea (70.14mg/kg), but significantly lower than the mean level of 1,754.7mg/kg within 500m of active platforms [G].

TBa levels varied from 94.1mg/kg to 251mg/kg (at station PL874/03) with a mean level of 142.2mg/kg; these concentrations are below the mean concentration of 320.26mg/kg at locations over 5,000m away from active platforms and are significantly less than the mean concentration of 33,5562.12mg/kg within 500m of an active platform [G].

Table 3.2 - Total sample exceedances of threshold levels for Heavy Metals (Pre-decommissioning survey 2016)						
Metal	Cefas		OSPAR BAC		CSQG	
	AL1	AL2	BAC	ERL	TEL	PEL
As	0	0	0	12	12	0
Cd	0	0	0	0	0	0
Cr	0	0	0	0	0	0
Cu	0	0	0	0	0	0
Pb	0	0	0	0	0	0
Hg	0	0	0	0	0	0
Ni	1	0	0	0	0	0
Zn	0	0	0	0	0	0

Focusing on the post-decommissioning survey, as with the pre-decommissioning survey, Table 3.3 below illustrates the comparison of the heavy metal contaminant levels for the post-decommissioning samples against the ‘guidance’ contaminant levels.

Heavy and trace metal concentrations were generally low with the mean concentrations of all metal levels not exceeding guideline levels and in range with background levels for the North Sea, except for Arsenic (As). The concentration of As was consistently elevated at all stations (mean 14.4 mg/kg) and above the ERL threshold of 8.2 mg/kg and the TEL threshold of 7.24 mg/kg. At reference station GU_11_REF, the concentration was 24.1 mg/kg, which is above the Cefas Action Level (AL) 1 of 20mg/kg, but below the Cefas BAC level of 25mg/kg and the Cefas AL 2 of 100 mg/kg.

Cadmium (Cd) and Mercury (Hg) had concentrations below detection limits at most stations, while Lead (Pb) concentrations varied between 4.9mg kg⁻¹ and 7mg kg⁻¹, not exceeding guideline levels and below the Cefas BAC level of 38 mg/kg.

Ba levels varied from 11.4mg/kg to 70.3mg/kg (at station GU_10) with a mean level of 41.2mg/kg. Except for station GU_10, these concentrations are below the background level of Ba for this sector of the North Sea (70.14mg/kg), and significantly lower than the mean level of 1,754.7mg/kg within 500m of active platforms [G]. TBa levels varied from 200mg/kg to 400mg/kg (at station GU_10) with a mean level of 264mg/kg. Except for station GU_10, these concentrations are below the mean concentration of 320.26 mg/kg at locations over 5,000m away from active platforms [G] and are significantly less than the mean concentration of 33,5562.12mg/kg within 500m of an active platform [G]. There was no discernible geographical pattern to the distribution of Ba around the platform, although there was an increasing trend along the pipeline route from the platform in the west to the deeper seabed in the east. There was a significant correlation between Ba and the percentage of fines in the sediment. However, no correlation was found between sediment composition and TBa.

Table 3.3 - Total sample exceedances of threshold levels for Heavy Metals (Post-decommissioning survey 2022)						
Metal	Cefas		OSPAR BAC		CSQG	
	AL1	AL2	BAC	ERL	TEL	PEL
As	1	0	0	13*	13	0
Cd	0	0	0	0	0	0
Cr	0	0	0	0	0	0
Cu	0	0	0	0	0	0
Pb	0	0	0	0	0	0
Hg	0	0	0	0	0	0
Ni	0	0	0	0	0	0
Zn	0	0	0	0	0	0

Comparison of results

The concentration of As pre- and post-decommissioning was consistently elevated at all stations and above the ERL threshold and the TEL threshold. However, the ERL threshold for As is below the BAC. Therefore, As concentrations are usually assessed only against the BAC. Post-decommissioning, only

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 30 of 45

the reference station (GU_11_REF) concentration was above the Cefas Action AL 1, but the concentration was below the Cefas BAC level and the Cefas AL 2.

For the oil and gas industry, the OSPAR commission recommended the monitoring of metals to focus on Cd, Pb and Hg [H]. However, as Cd and Hg were below detection limits at most stations during both surveys, they were not included in the comparative analysis below.

Additionally, Ba is known to be present in higher concentrations in sediments potentially affected by drilling fluids which can contain substantial amounts of barites (barium sulphates) [F]. Therefore, monitoring of TBa is of relevance for the oil and gas industry.

The results of the Analysis of Similarity (ANOSIM) test performed on heavy and trace metal data from each of the 12 stations sampled during the pre- and post-decommissioning surveys indicated that there were no statistically significant differences in the concentrations of Pb, Ba and TBa between pre- and post-decommissioning surveys, ref. Table 3.4 (N.B. significant results are $p \leq 0.05$), suggesting that the decommissioning of the Guinevere field did not have a negative impact on local sediments.

Table 3.4 ANOSIM results for comparison on heavy and trace metal concentrations pre- and post-decommissioning surveys.		
Analyte	R Statistic	Significance Level (p)
Pb	-0.02	0.578
Ba	0.05	0.137
Tba	0.012	0.276

Background TBa concentrations for the North Sea range between 33,5562.12mg kg⁻¹ within 500m of an active platform and 320.26 mg kg⁻¹ at locations over 5,000m away from the active platform [G]. Current TBa concentrations across the Guinevere field were below the respective background levels. No correlation between any of the metals and either mud or TOC content was found across the Guinevere post-decommissioning survey area due to the very narrow range of TOC in the sediments and the predominance of sandy sediments across the survey area.

It is proposed that no further benthic samples be analysed for heavy and trace monitoring as:

- There are no statistically significant differences in the concentrations of Pb, Ba and TBa between pre- and post-decommissioning surveys.
- Cd and Hg levels were undetectable and Pb levels were below the industry guidelines and background levels for the North Sea.
- Although As levels were higher than the ERL, they are below the background levels for the North Sea.
- Current TBa concentrations across the Guinevere field were below the respective background levels.

Polyaromatic Hydrocarbons (PAH)

The full range of PAHs was tested for all 13 contaminant samples collected. PAH concentrations were compared to Cefas AL1 (no Cefas AL2 available for PAHs), OSPAR BAC levels and ERLs, and TEL and PEL, where possible. None of the measured PAHs exceeded any of the guideline levels, and most PAHs occurred in concentrations below the detection limit at most stations. Total PAHs concentration did not differ significantly when comparing data collected from pre- and post-decommissioning surveys. Therefore, the source (pyrogenic) of PAHs across the Guinevere field did not change over time. It is proposed that no further monitoring of PAH is required, as the concentrations detected were below compared to the industry contamination guidelines.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 31 of 45

3.2.2 Pipeline Survey Trending of Exposures & Spans

Pre-decommissioning surveys (2017 & 2019)

Bibby HydroMap was commissioned by Perenco in March 2017 to carry out debris surveys at the Guinevere platform, together with pipeline inspection and depth of burial surveys along the Guinevere to Lancelot 8" pipeline (PL874) and the piggy-backed Guinevere to Lancelot 3" MEG pipeline (PL875) [A].

The 2017 depth of burial survey indicated that, except for the exposed section of pipeline spool pieces at the base of the former Guinevere platform and a free span (10.8m) at the Lancelot platform, the average burial depth along the pipeline was 0.75m (Min: 0.3m, Max: 1.2m) with no reportable spans/exposures. No debris was identified along the pipeline lengths during this survey.

In early Q4 2019, a pre-decommissioning debris survey at Guinevere was undertaken by Deep BV [I]. This survey clarified the exposed length of pipelines identified by the 2017 survey detailed above. The pipeline spool piece free spans were within the Guinevere 500m safety zone, close to the Guinevere installation. The span lengths were: 12.9m along the Guinevere export pipeline PL874 and 13.3m along the piggy-backed MEG pipeline PL875. In late 2019 and early 2020, during the dismantlement campaign, the pipeline spool piece-free spans were removed.

Post-decommissioning surveys (2022)

N-Sea was commissioned by Perenco in August 2022 to conduct post-decommissioning seabed surveys in the Guinevere areas in August 2022 [B]. The scope of work at the Guinevere area consisted of MBES surveys covering a 1 x 1 km platform box-in and a 100m wide pipeline corridor. Along the PL874/PL875 pipeline route.

The PL874/PL875 pipeline was protected by the rock placement at the approaches to the Guinevere platform location. No exposures of these pipelines were observed within the 1 x 1 km area around the platform location. Thirteen remnant spudcan depressions, grouped in three sets, were observed to SW and NE of the platform location. Two of those contained a single boulder of a significant size. One set of four spudcans (NE of platform location) is the latest, still very well developed in the seabed and showing a pull-out sediment spoil around the central wide depression.

The PL874 and PL875 pipelines exit the Guinevere platform location in SE direction, continuing to the Lancelot platform, for approximately 6.5km. The seabed morphology within the first couple hundred metres of the route is very similar to the Guinevere area's seabed. The seabed then gradually becomes featureless, until a clear boundary of megarippled area is seen at approximately KP 1.0.

The megarippled seabed dominates the first 2.5km of the pipeline's route corridor, with a large single sand wave crossing the route around KP 1.7. A clear boundary marks a change to featureless seabed, which continues to the end of the route at the Lancelot location, except for a narrow megarippled area at the approaches to Lancelot. No rock dumps, scour, or pipeline exposures were observed throughout the entire length of the pipeline route.

Risk assessment to determine post-decommissioning monitoring frequency

The findings from the pre- and post-decommissioning surveys have been used as input into a risk assessment to determine the legacy inspection interval for each pipeline. The risk assessment has been performed against a modified risk matrix for decommissioned pipelines. The risk matrix, along with its associated likelihood and consequence definitions, is provided in Appendix 10.2. In all cases, the event being risk assessed is third-party interaction (e.g., trawler snag) occurring with the decommissioned pipeline.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 32 of 45

The Guinevere pipeline system (8" PL874 & 3" PL875) was made HCS in December 2017, flooded with seawater and left in-situ. The Guinevere platform was decommissioned and removed from the seabed in 2020, with the pipeline ends at the base of the Guinevere jacket cut subsea and removed under PWA (PA2548). Approximately 12.9m of PL874 and 13.3m of PL875 were cut and removed at the Guinevere platform location. At the eastern extent, the pipelines remain connected to the Lancelot riser.

The PL874/875 pipeline sections within the Lancelot 500m safety zone have not been included within this risk assessment. These sections will be considered as part of the Lancelot Pipeline Decommissioning Programme, which will be developed at the appropriate time.

The risk assessment has been performed against a modified risk matrix for decommissioned pipelines. The risk matrix, along with its associated likelihood and consequence definitions, is provided in Appendix 10.2.

The legacy inspection interval risk assessment for the Guinevere pipelines PL874 and PL875 is provided in Table 3.5, based on the known pipeline details and the results of the pre- and post-decommissioning surveys.

Table 3.5 - PL874/PL875 Risk Assessment to determine PL monitoring frequency									
PL no.	Likelihood	Consequence						Risk	Freq. (Years)
		Other sea users	Env.	Financial	Socio-economic	Regulatory	Reputation		
PL874	E	3	4	3	4	4	4	3E	13
PL875	E	4	4	3	4	4	4	3E	13

The likelihood of a third-party interaction event was conservatively assessed as an 'E' for both pipelines. The pipelines are trenched and buried. No scour or pipeline exposures were observed throughout the entire length of the pipeline route during the post-decommissioning surveys. An overtrawl survey of the Guinevere platform area and the pipelines was performed in March 2025. Clean Seabed Certificates were issued by the NFFO on 28th March 2025 (see Appendix 10.1).

The assessment assigned a consequence rating of '3 – Medium' for the impact to other sea users' category for the 8" pipeline, and a '4 – Low' for the 3" umbilical. These consequences align with varying degrees of loss/damage to fishing gear or anchor equipment (N.B., most frequently used gear type is static gears to target shellfish species). Loss of a vessel is not considered to be a credible scenario for either pipeline due to their relatively small diameters, and the flexible nature of the umbilical (which justifies the lower consequence score compared to the 8" rigid pipeline).

The financial consequence associated with a third-party interaction event was assessed as a '3 – Medium' for both pipelines. This assumed that subsea intervention work would be required to inspect and make the pipeline safe again following a third-party interaction event. The cost of this is estimated to be in the range of £100,000 - £1,000,000. The type of fishing vessel used in the area is smaller and is unlikely to cause significant damage to the pipeline. Any remediation to the pipeline could be carried out using an MSV, as the pipeline diameter is only 8".

The environmental impact assessment has been assessed as a '4–low' for both pipelines since the pipelines do not transit through Special Areas of Conservation (SACs). The nearest Special Area of

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 33 of 45

Conservation (SAC), Southern North Sea SAC, is 17km northeast of the Guinevere 500m exclusion zone.

Socio-economic, regulatory, and reputational impacts have all been assessed as ‘4–low’ and do not govern the overall risk score.

The governing risk score for both PL874 and PL875 is a ‘3E’, driven by the financial impact, resulting in a 13-year inspection frequency, and putting the next scheduled inspections in 2035.

3.2.3 Proposed Post-decommissioning Monitoring Regime

Table 3.6: Future Surveys and Monitoring Proposals	
1. Substructures (Jackets)	
	All substructures have been removed. No further monitoring is required.
2. Pipelines, Flowlines & Umbilicals	
	The proposed pipeline inspection frequency for PL874 and PL875 is 13 years. As the post-decommissioning survey was completed in 2022, the next pipeline monitoring survey will be in 2035.
3. Pipeline Stabilisation Features	
	The pipeline stabilisation mattresses within the Guinevere exclusion zone have been covered with rock placement. The pipeline stabilisation mattresses within the Lancelot exclusion zone will be considered within the Lancelot Pipeline Decommissioning Programme. No grout bags were identified during the pre- or post-decommissioning surveys. It is considered that the grout bags have deteriorated, and the contents are widely dispersed.
4. Drill Cuttings	
	No further monitoring is required. Cuttings are widely dispersed.
5. Environmental Surveys	
	It is proposed that no further benthic environmental surveys are required for the Guinevere Field. Concentrations, when compared to industry contamination guidelines and background levels for the North Sea, are considered to be of no danger to the environment.

4.0 IMPACT ON HSE

- **Gas hose leak and ignition of equipment:** Whilst using cutting tools on the deck of the Blue Tern on 13th January 2020, a leak from the gas hose led to the ignition of the equipment, causing a compression injury to the personnel using the equipment. The incident occurred after the departure of the Blue Tern from the Guinevere field and in Dutch waters. Hence, it was not classed as a Perenco recordable event.
- **Lifting equipment overloaded during removal of production tubing using Seafox 1 crane:** While picking up production string to commence removal as per programme, the Huisman 300Te Seafox 1 crane experienced a “shock load” when the production string “jumped”,

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 34 of 45

probably while overcoming friction within the well. All work was stopped at this point and the well made safe and an investigation commenced.

- **Cut to little finger during conductor pulling activity:** Injured person (IP) sustained cut to little finger on right hand during drilling operation whilst involved in removal of casings/conductors on Guinevere on 2nd January 2018. IP accidentally activated the lever which engaged the power to the drill. The IP's finger was cut by the drill. The IP was wearing cut resistant gloves at the time of the incident.

5.0 WASTE

The Guinevere installation was removed in January 2020. Recovered material from the Guinevere platform was offloaded at the Hoondert quay, Vlissingen, under the International Waste Shipment permit, accompanied by waste movement documentation on 13th January 2020. The Transfrontier Waste (TFW) Permit was carried out under GB 0001 007713.

The total waste to shore recorded by the HLV was 1,309 Te; however, the total waste recorded at the weigh bridge at the exit of the site was 1,227 Te. The difference in weights is due to the:

- Accuracy of the HLV weight indicator and the waste site weighbridge (only a small factor, the weighbridge is calibrated).
- Marine growth on the legs dries out, and the flooded members drain out and dry out on the site, both losing weight.
- Mud/ sand/ stones/ marine growth falls off and loss from torch cutting; dust, slag from kerf are all collected as yard sweepings and not recorded separately.

More than 99% of the materials brought to shore were recovered. Only the construction and demolition waste, including 450kg of asbestos-contaminated waste, went to incineration, and then the ash was landfilled.

An asbestos survey was carried out and several samples were taken, but no asbestos was found. Nevertheless, a few flanges were removed. The gaskets of these flanges seemed suspicious, so a precautionary approach was taken. Therefore, a total of 450 kg of 'suspected' asbestos-contaminated materials was treated and disposed of in accordance with applicable laws and regulations.

A NORM survey was carried out, and no NORM was detected on the Guinevere Installation.

The total weight detailed in the Guinevere Installation and pipeline DP was 1,929 Te. This was only an initial 'conservative' estimate based on assessment of as-built information and weight reports.

Table 5.1a: Materials/Waste Returned to Shore – Installation					
Material/Waste	Total Weight (Te) – as per the approved DP	Tonnage In situ (Te)	Tonnage to shore (Te)	Date to shore	Disposal Method
Steel – Surface Installations	1,801	305*	1199	Jan 2020	Recycling
Plastics	8	N/A	0**	Jan 2020	Landfill/incineration**
Non-ferrous metal	4	N/A	18	Jan 2020	Reuse/recycle
Hazardous (NORM scale)	4	N/A	0***	Jan 2020	N/A
Other	112	N/A	9.8	Jan 2020	Landfill/incineration
Total	1,929	305	1,227		

*305 Te of jacket piles left in situ

** Plastic is included in general construction (“Other”) waste sent to incineration, and then the ash goes to landfill.

***A survey carried out in February 2020 at Hoondert disposal yard (Netherlands) showed that the contamination levels were low enough to consider the installation not to be contaminated with NORM.

All sections of the pipelines between the cut ends of the pipeline spool pieces and the Guinevere jacket (including the riser section attached to the jacket) were removed during the Guinevere jacket removal campaign. The remaining Guinevere pipelines were left in-situ (see Table 5.1b).

Table 5.1b: Materials/Waste Returned to Shore – Pipeline					
Material/Waste	Total Weight (Te) – as per the approved DP	Tonnage In situ (Te)	Tonnage to shore (Te)	Date to shore	Disposal Method
Steel – Pipelines	753	753	0	N/A	N/A
Plastics	5	5	0	N/A	N/A
Other	35	35	0	N/A	N/A
Total	793	793	0		

6.0 LESSONS LEARNED

- Lifting equipment overload** – The incident involving the removal of production tubing using Seafox 1 crane caused a delay of 7 days to the programme. Issues were identified with the recording of the pre-start toolbox talk (TBT), and no Management of Change (MOC) was completed regarding the changes to the lift plan. The importance of pre-job TBT was re-emphasised to the crew, and the need for an MOC should the lift plan require changing.

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 36 of 45

- **Cut to finger during conductor pulling activity:** The investigation concluded that Claxton procedures and Risk Assessment were insufficient and had not considered the possibility of accidental activation of the drill 'ON' switch whilst clearing cuttings. The procedure has now been amended to include isolation of the hydraulic power unit as a second control to prevent accidental activation of the drill.
- **Change of contractor:** The change of contractor, from Seafox to Fred Olsen, impacted the schedule as a new safety case was required for the new ownership, name change of vessel and safety management system. The change of contractor was due to the purchase of Seafox by Fred Olsen.
- **Contractor crew changes:** Contractor crew changes should be staggered with split shifts to avoid mass change-outs and downtime at the work site.
- **Integrated plan:** An integrated plan is required, encompassing ALL decommissioning activities (topside, pipeline and wells P&A) to help identify work scope clashes.
- **Cr VI:** Check for Cr in the hazardous materials assessment.

7.0 COST SUMMARY

The cost summary for the decommissioning of the Guinevere Installation and Pipelines decommissioning scopes has been provided separately by Perenco to OPRED.

8.0 PHOTOGRAPHS

Figure 8.1: Blue Tern HLV at Guinevere Platform

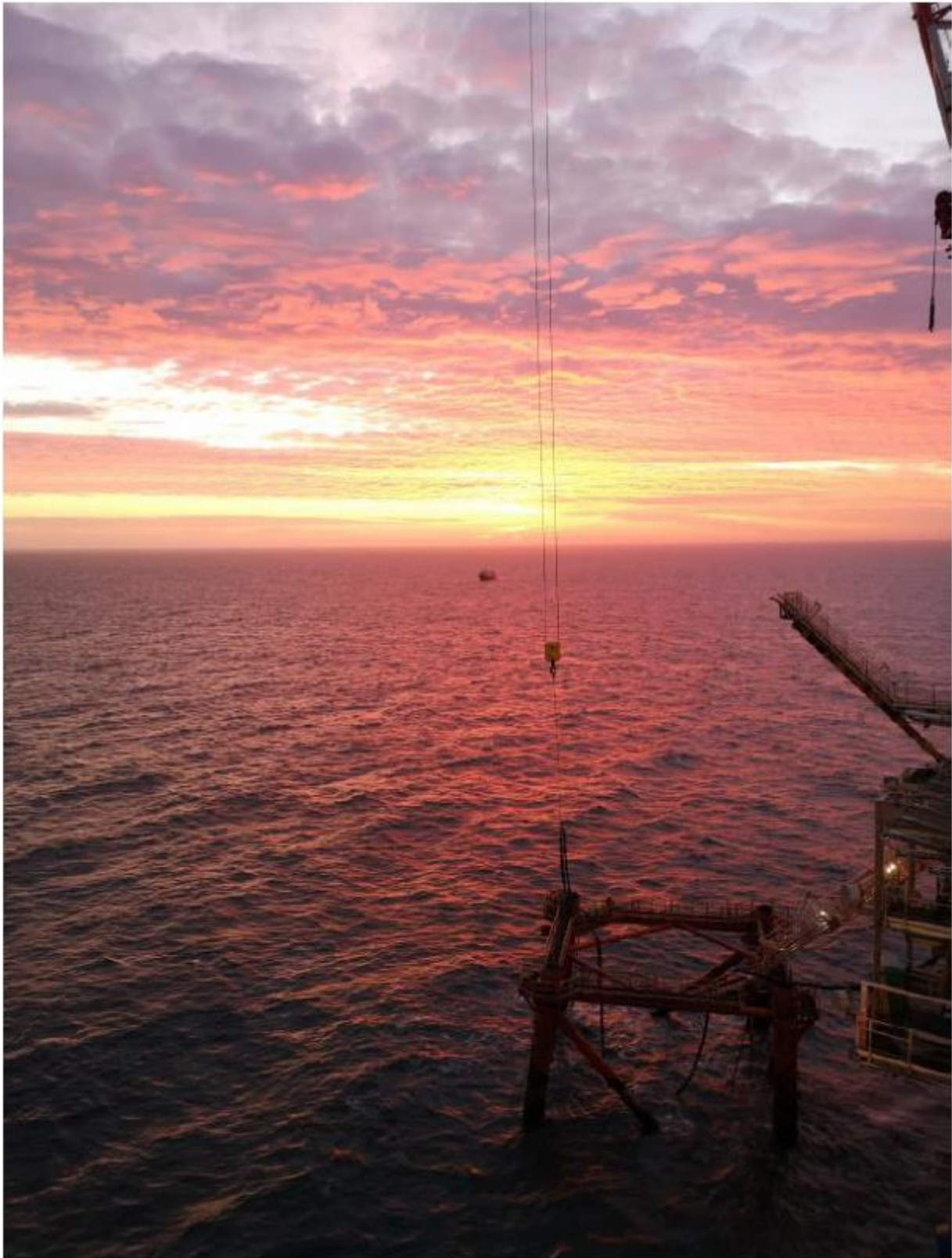


Figure 8.2: Topside dismantlement



Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 39 of 45

Figure 8.3: Jacket removal



Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 40 of 45

Figure 8.4: Jacket removal



9.0 REFERENCES

Table 9.1: Referenced Documents		
Document Number	Title	Reference
A	Guinevere Pre-Decommissioning Environmental Survey, Bibby HydroMap Project No. 2017-001	Bibby Map (2017)
B	Post Decommissioning MBES & Environmental Survey Results Report - Guinevere	NSO-PJ00292-RR-DC-SUR-003
C	Guinevere Platform Post-Decommissioning Seabed Environment Survey 2022, Ocean Ecology Limited OEL_NSEPER0422_GUI_TCR	OEL (2022)
D	OSPAR List of Threatened and/or Declining Species and Habitats. Reference Number 2008-06. OSPAR Commission.	OSPAR (2008)
E	Organic carbon content in surface sediments - Defining regional provinces. Deep Sea Res 1 Oceanogr Res Pap.	Seiter K, Hensen C, Schröter J, Zabel M (2004)
F	Research on environmental fate and effects of drilling fluids and cuttings. American Petroleum Institute, Lake Buena Vista, Florida, Florida, p 723–736	Chow T, Snyder CG (1980)
G	An analysis of U.K Offshore Oil & gas Environmental Surveys 1975-95. 141.	UKOOA (2001)
H	Background Document on CEMP Assessment Criteria for QSR 2010. Monitoring and Assessment Series.	OSPAR, Webster L, Fryer R, Davies I, Roose P, Moffat C (2009)
I	Field debris survey report Guinevere & Tyne	Deep BV (2019)
	Radiatco 2020-02-05 survey report Guinevere Platform	
	Guinevere Asbestos Survey	NL202005160-report Guinevere-11022020 version01

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 42 of 45

10.0 APPENDICES

10.1 Clean Seabed Certificates



The National Federation of
Fishermen's Organisations

Clean Seabed Certificate.

Date: 28th March 2025
Issue Number: 2025-001

To whom it may concern.

Guinevere 500m Zone Decommissioning.

The Commercial Trawl Vessel Atlas WY170 operating under NFFO membership conducted the following activities in the Decommissioned Guinevere 500 - metre zone.

A series of intense bi-directional sweeps over the 500 - metre zone has been conducted with the objective of safe future over trawl within the said zone.

A significant number of passes have been made across each area. (Individual plotter data has been supplied)
Standard Southern North Sea trawl equipment was used to conduct the sweeps in 2 phases:

- Phase 1: with standard rock hopper ground gear with no net attached.
- Phase 2: using standard trawl gear as used in the Southern North Sea with trawl net attached.

A light tickler chain was attached to the trawl to ensure continuous contact with the seabed to determine whether there were any major obstructions which might present a major snagging hazard for future fishing activities. The trawl net was also seen as a means of gathering any items of debris located in the area.
No debris or obstructions were encountered.

Following completion of the sweep programme the skipper of the trawl vessel Atlas WY170 has reported to the NFFO the following:

- a) No major snag was experienced during any of the sweeps.
- b) On no occasion did the winch pressure show any increase.
- c) As a result of the sweeps and the absence of any debris or snagging points on any of the above-named decommissioned site the Commercial Fishing Skipper to the best of his knowledge is satisfied that the areas will not pose any significant problem for future fishing operations.

Based upon feedback provided by the skipper, the Federation accepts that, at the time of the Survey Operations, the decommissioned Guinevere 500m safety zone was found to be clear of debris or major obstruction and posed no significant problem for future fishing operations.

The Federation would like to thank Perenco for their efforts in ensuring that all significant items of equipment and debris have been recovered.

Signed

M Cohen, Chief Executive
National Federation of Fishermen's Organisations

Perenco UK	Version D02	Date 10/07/2025
Guinevere Field Decommissioning Programmes Close Out Report		Page 43 of 45



The National Federation of
Fishermen's Organisations

Clean Seabed Certificate.

Date: 28th March 2025
Issue Number: 2025-002

To whom it may concern.

Guinevere to Lancelot Pipeline Decommissioning.

The Commercial Trawl Vessel Atlas WY170 operating under NFFO membership conducted Overtrawl Survey activities along the Guinevere to Lancelot Pipeline (maximum 50m either side of the pipeline), stopping at the 500m boundary of the Lancelot:

A series of trawl sweeps has been conducted with the objective of safe future over trawl along each pipeline. (Individual plotter data has been supplied).

Phase 1: with standard rock hopper ground gear with no net attached.

Phase 2: using standard trawl gear as used in the Southern North Sea with trawl net attached.

A light tickler chain was attached to the trawl to ensure continuous contact with the seabed to determine whether there were any major obstructions which might present a major snagging hazard for future fishing activities. The trawl net was also seen as a means of gathering any items of debris located in the area.

No debris or obstructions were encountered.

Following completion of the sweep programme the skipper of the trawl vessel Atlas WY170 has reported to the NFFO the following:

- a) No major snag was experienced during any of the sweeps.
- b) On no occasion did the winch pressure show any increase.
- c) As a result of the sweeps and the absence of any debris or snagging points on any of the above-named decommissioned site the Commercial Fishing Skipper to the best of his knowledge is satisfied that the areas will not pose any significant problem for future fishing operations.

Based upon feedback provided by the skipper, the Federation accepts that, at the time of the Survey Operations, the decommissioned Guinevere to Lancelot Pipeline was found to be clear of debris or major obstruction and posed no significant problem for future fishing operations.

The Federation would like to thank Perenco for their efforts in ensuring that all significant items of equipment and debris have been recovered.

Signed

M Cohen, Chief Executive
National Federation of Fishermen's Organisations

10.2 Risk Matrix for Post-decommissioning Monitoring Frequency

Survey inspection frequency for pipelines decommissioned

PERENCO

Consequence	Likelihood					Extension factor
	E	D	C	B	A	
Rating	Pipeline is fully buried or has only short crown exposure(s) present (<5% of total line length), seabed considered stable based on survey trending. No free spans are present.	Pipeline is fully buried or has only short crown exposure(s) present (<5% of total line length), some seabed instability has been observed based on survey trending. OR Pipeline is exposed, either wholly or over longer segments (>5% of total line length), seabed considered stable based on survey trending. No free spans are present.	Pipeline is exposed, either wholly or over longer segments (>5% of total line length), some seabed instability has been observed based on survey trending. OR Pipeline has non-reportable (<10m x 0.8m) freespans present, seabed considered stable based on survey trending.	Pipeline has non-reportable (<10m x 0.8m) freespans present, some seabed instability has been observed based on survey trending. OR Pipeline has reportable (>10m x 0.8m) freespans present, seabed considered stable based on survey trending.	Pipeline has reportable (>10m x 0.8m) freespans present, some seabed instability has been observed based on survey trending.	
5 Very Low	15	11	8	3	2	1.5
4 Low	14	10	7	3	1	1.375
3 Medium	13	9	6	3	1	1.25
2 High	11	8	6	2	1	1.125
1 Very High	10	7	5	2	1	1

Note 1: Numbers in matrix define the initial recommended inspection interval for pipelines in the decommissioning phase (years)

Survey inspection frequency for pipelines decommissioned



Consequence						
Rating	Other users of the sea	Environmental (Notes 2 and 3)	Financial	Socio-economic	Regulatory	Reputation
5 Very Low	Negligible impact	Negligible – Immeasurable or undetectable change (i.e. within the range of normal natural variation.	≤ £10,000	No identifiable impact to stakeholder economic practices.	No notification to Regulatory Authorities required. No regulatory concern.	Isolated complaint from neighbour. No adverse media coverage.
4 Low	Loss / damage to fishing gear or anchor equipment	Minor – Short term (a few days to weeks), temporary change in baseline environmental conditions, which could possibly occur. Impact may be on-off, intermittent and / or localised in scale, limited to the area surrounding the site. Impact would not result in exceedance of environmental quality standards or threshold criteria.	£10,000 To £100,000	Localised impact small number of stakeholders that are affected for < 6 months.	Notification to Regulatory Authorities required. Regulatory compliance issue (e.g. verbal warning), which does NOT lead to higher severity level consequence.	Regular short term complaints on similar issues from neighbours. Short term adverse local media coverage.
3 Medium		Moderate – Short to medium term (<1 year), temporary change in baseline environmental conditions, which is likely to occur. Impact may be one-off, intermittent or continuous and/or regional scale (i.e. beyond the area surrounding the installation site to the wider region).	£100,000 To £1,000,000	Localised impact to a small community of stakeholders. Impact does not affect economic practices. 6 - 12 months.	Notification to Regulatory Authorities required. Regulatory compliance issue (e.g. letter / inspection items), which does NOT lead to enforcement or other higher severity level consequences.	Ongoing unresolved complaint on similar issue from neighbours. Prolonged adverse local media coverage.
2 High		Major – Medium to long-term (1-5 years), reversible change in baseline environment conditions, which is likely to occur. Impact may be one-off, intermittent or continuous and/or experienced over a wide area (i.e. national in scale). Impact could result in one-off exceedance of environmental quality standards or threshold criteria.	£1,000,000 To £10,000,000	Impact to regional population and national stakeholders for a period >12 months.	Notification to Regulatory Authorities required. Regulatory enforcement / improvement notice. Serial noncompliances which may lead to enforcement action, where return to compliance is unlikely within a year.	Short term adverse national media coverage. Damage to relationships with stakeholders of benefit to the asset.
1 Very High	Loss of vessel	Substantial- permanent of long-term (>5 years) change in baseline environmental conditions, which is certain to occur. Impact may be one-off, intermittent or continuous and/or experienced over a very wide area (i.e. transboundary in scale). Impact is likely to result in environmental quality standards or threshold criteria being routinely exceeded.	≥ £10,000,000	Long term impact to communities including displacement of communities or loss of economic stability of large number of stakeholders. Long term impacts to national stakeholder groups.	Notification to Regulatory Authorities required. Major regulatory enforcement action (i.e. prohibition / suspension notice).	Interventions from Governments in which Perenco has aspirations to operate. Partner / stakeholder outrage in major market. Prolonged adverse national media coverage. Adverse international media coverage.

Note 2: Environmental consequence assessment should be focussed on the level of impact to benthic populations from seabed disturbance associated with the pipeline being dragged from its laid route

Note 3: If pipeline route is through a Marine Protected Area (MPA) for habitat features sensitive to benthic impacts, then increase the consequence score by +1 category relative to the same scenario outside the MPA