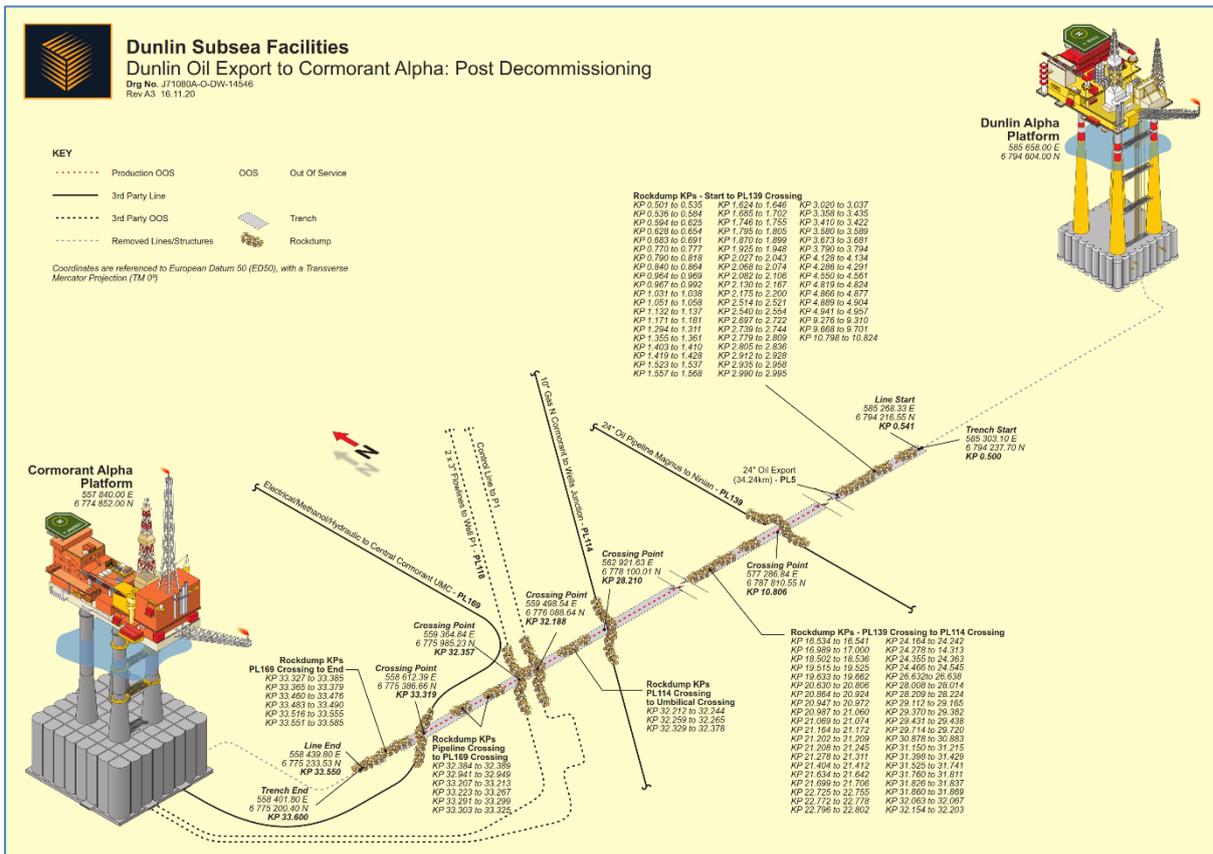




Fairfield Betula Limited

Dunlin Alpha to Cormorant Alpha Pipeline (PL5) Decommissioning Programme Regulatory Close Out Report



Document number	FBL-DUN-DUNA-PL5-01-RPT-0001-01
Revision	A2
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APPROVALS

	Name	Signature	Date
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Reviewed by	James Clarkson	<i>J. Clarkson</i>	25/02/2021
Approved by	Peter Lee	<i>P. Lee</i>	25/02/2021

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A1	OPRED review	Owner comments included	27/01/2021
A2	Final	OPRED comments included	25/02/2021

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Terms and Abbreviations

Term	Meaning
BEIS	Department of Business, Energy and Industrial Strategy
CGBS	Concrete Gravity Base Substructure
CA	Comparative Assessment
COP	Cessation of Production
COR	Close Out Report
CSV	Construction Support Vessel
DFGI	Dunlin Fuel Gas Import
DP	Decommissioning Programme
DPI	Dunlin Power Import
EMT	Environmental Management Team (OPRED)
FBL	Fairfield Betula Limited
FEL	Fairfield Energy Limited
HS&E	Health, Safety and Environment
MER	Maximising Economic Recovery
N/A	Non Applicable
ODU	Offshore Decommissioning Unit (OPRED)
OGA	Oil and Gas Authority
OGUK	Oil and Gas UK
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
P&A	Plug and Abandonment
PL	Pipeline
PON	Petroleum Operations Notice
PWA	Pipeline Works Authorisation
ROGI	Report of an Oil and Gas Incident
ROV	Remotely Operated Vehicle
SEPA	Scottish Environment Protection Agency
SSIV	Subsea Isolation Valve
t	Tonne (1000 kg)



1 Summary

1.1 Summary of Decommissioning Programme

The PL5 infrastructure Decommissioning Programme (FBL-DUN-DUNA-HSE-01-PLN-00004) was approved on the 3rd July 2019. A summary of the decommissioned infrastructure is outlined below.

The Greater Dunlin Area consists of the Dunlin, Dunlin South West, Osprey and Merlin Fields, located in the Shetland Basin of the northern North Sea. The Dunlin Alpha platform served as the production facility for the Greater Dunlin Area and is located in block 211/23a, approximately 137 km north east of Scotland and 11 km from the UK / Norwegian median line, in a water depth of 151 m.

Pipeline PL5 is a rigid 34.2 km concrete-clad 24" diameter pipeline. Installed in 1975, PL5 historically transported stabilised production fluids from Thistle Alpha, Murchison and the Greater Dunlin Area into the Brent Pipeline System at Cormorant Alpha. Termination of Production from the Greater Dunlin Area was announced in May 2015, having Maximised Economic Recovery (MER) from these oilfields. Termination of Production was agreed with the Oil & Gas Authority (OGA) on 9th July 2015, with Cessation of Production (COP) on 15th June 2015, confirmed by letter dated 15th January 2016. Following COP of the Greater Dunlin Area, PL5 continued to transport fluids from Thistle Alpha until it was taken out of service in June 2019.

In accordance with the approved Decommissioning Programme, the surface laid ends of the pipeline have been cut and removed for recycling, leaving the remainder largely trenched below mean seabed level. Rock cover has been applied at the cut locations of the exposed pipeline ends and identified areas of spanning or crowning in order to mitigate against potential snagging hazards. Partially buried concrete mattresses have also been removed, together with the anode skids and spools at either end of PL5 at the Dunlin Alpha platform and Cormorant Alpha platform.

Buried deposits consisting of concrete mattresses and grout bags that continue to provide pipeline stability to protect against movement and spans have been decommissioned *in situ* and rock coverage has been applied to prevent snagging hazards. Oilfield debris within the pipeline corridor has also been recovered as part of debris clearance operations.



Table 1-1: Overview of the Decommissioned Installation(s)		
Subsea Installations	Quantity	
Wells	n/a	
<i>Associated Cuttings Pile(s)</i>	n/a	
Other	Estimated Quantity	Actual Removed ¹
Anode Skids	2	3
Stabilisation Features ²	Estimated Quantity	Actual Removed
Concrete Mattresses	17 (8 off partially buried and 9 off buried)	8
Grout Bags	4,340	0
Sand Bags	n/a	n/a

Table 1-2: Decommissioned Pipelines & Controls Umbilicals				
Item being Decommissioned	Components	Total length (km)	Total length removed (km)	Total length left <i>in situ</i> (km)
Risers	2 ³	0.42993	0.0000	0.42993
Pipeline(s)	1	34.1004 ⁴	1.0914	33.0090
Tie-in Spools/Jumpers	5	0.1476	0.1476	0.0000
Control Umbilicals/Jumpers	n/a	n/a	n/a	n/a
Total	6	34.67793	1.2390	33.43893

¹ Three anode skids were recovered, however only two were connected to the pipeline.

² Under the approved Decommissioning Programme, Section 1.5, only the partially buried mattresses were to be removed and returned to shore for disposal. Grout bags, providing pipeline support, were to remain *in situ* with rock cover.

³ Located in Dunlin Alpha (1 off) and Cormorant Alpha (1 off) Concrete Gravity Base Substructure legs which are covered by other Decommissioning Programmes.

⁴ Total length listed in the DP of 34.21787 km was incorrect. Actual length was 34.1004 km as noted in the total lengths of the PWA.



Table 1-3: Summary of the Approved Decommissioning Options		
Selected Option	Reason for Selection	Approved Decommissioning Solution
Subsea Installations		
n/a	n/a	n/a
Pipelines, Flowlines and Umbilicals⁵		
Group 1: Subsea structures (Anode skids)	Meets OPRED regulatory requirements	Full Removal
Group 2: Deposits (Partially buried)	Meets OPRED regulatory requirements	Full Removal
Group 3: Deposits (Buried)	CA indicates that decommissioning <i>in situ</i> provides the best option particularly on Safety, Technical and Environmental grounds.	Leave <i>in situ</i>
Group 4: Deposits (Pipeline support)	CA indicates that decommissioning <i>in situ</i> provides the best option particularly on Technical and Environmental grounds.	Leave <i>in situ</i> with minimum intervention. Spot rock cover over snag hazards added to provide an overtrawlable berm profile.
Group 5: Dunlin Alpha (Topsides items)	Meets OPRED regulatory requirements	Remove with Dunlin Alpha topsides
Group 6: Dunlin Alpha (Riser within Concrete Gravity Base Substructure)	Dunlin Alpha CA indicates that decommissioning <i>in situ</i> provides the best option particularly on Safety, Technical and Environmental grounds	Leave <i>in situ</i> within Dunlin Alpha Concrete Gravity Base Substructure
Group 7: Pipeline (Surface laid spools)	Meets OPRED regulatory requirements	Full Removal
Group 8: Pipeline (Trenched)	CA indicates that decommissioning <i>in situ</i> provides the best option particularly on Environmental and joint technical grounds	Leave <i>in situ</i> with minimum intervention. Pipeline ends removed and remedial rock cover provided.
Wells		
n/a	n/a	n/a
Drill Cuttings		
n/a	n/a	n/a

⁵ A-301649-S17-TECH-001 - Dunlin Alpha to Cormorant Alpha Pipeline CA – Specific Scope Technical Note, Appendix A: Depth of Burial & Lowering Charts.

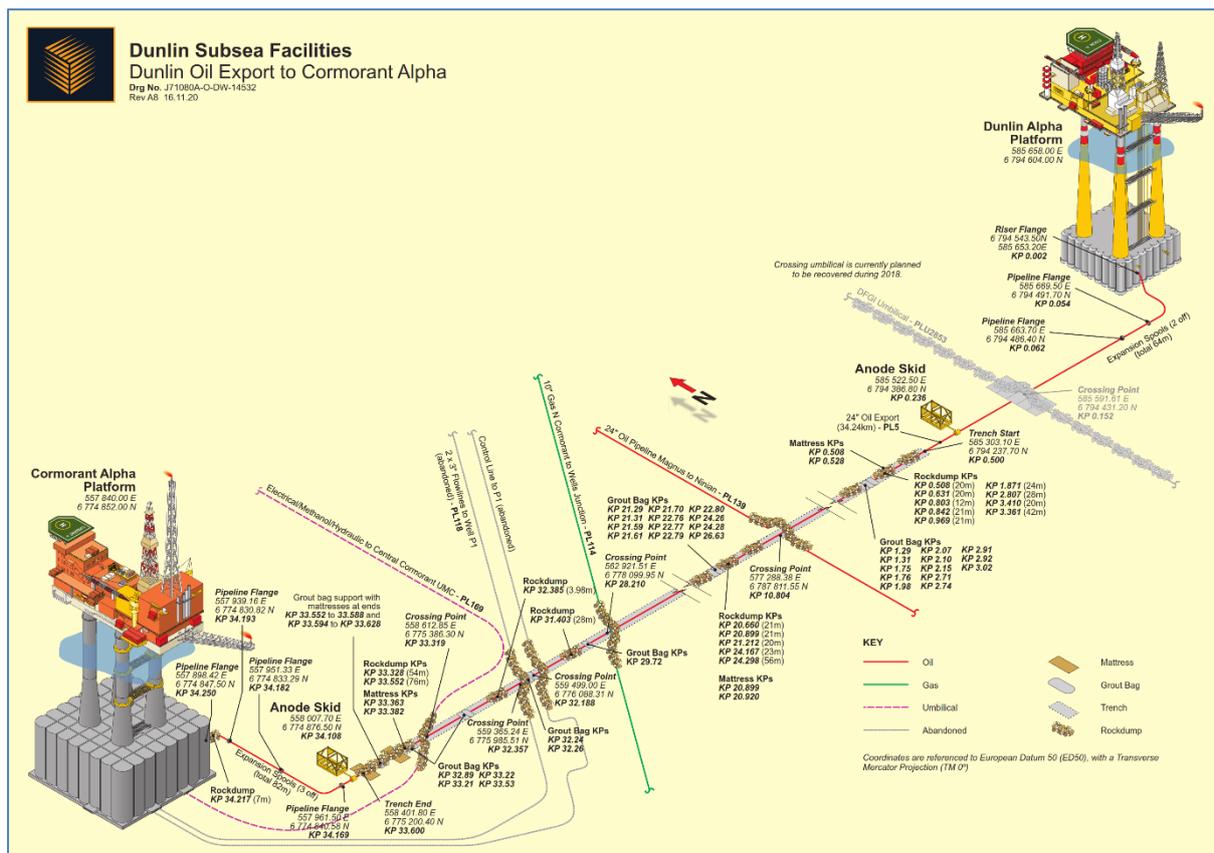


Table 1-3: Summary of the Approved Decommissioning Options

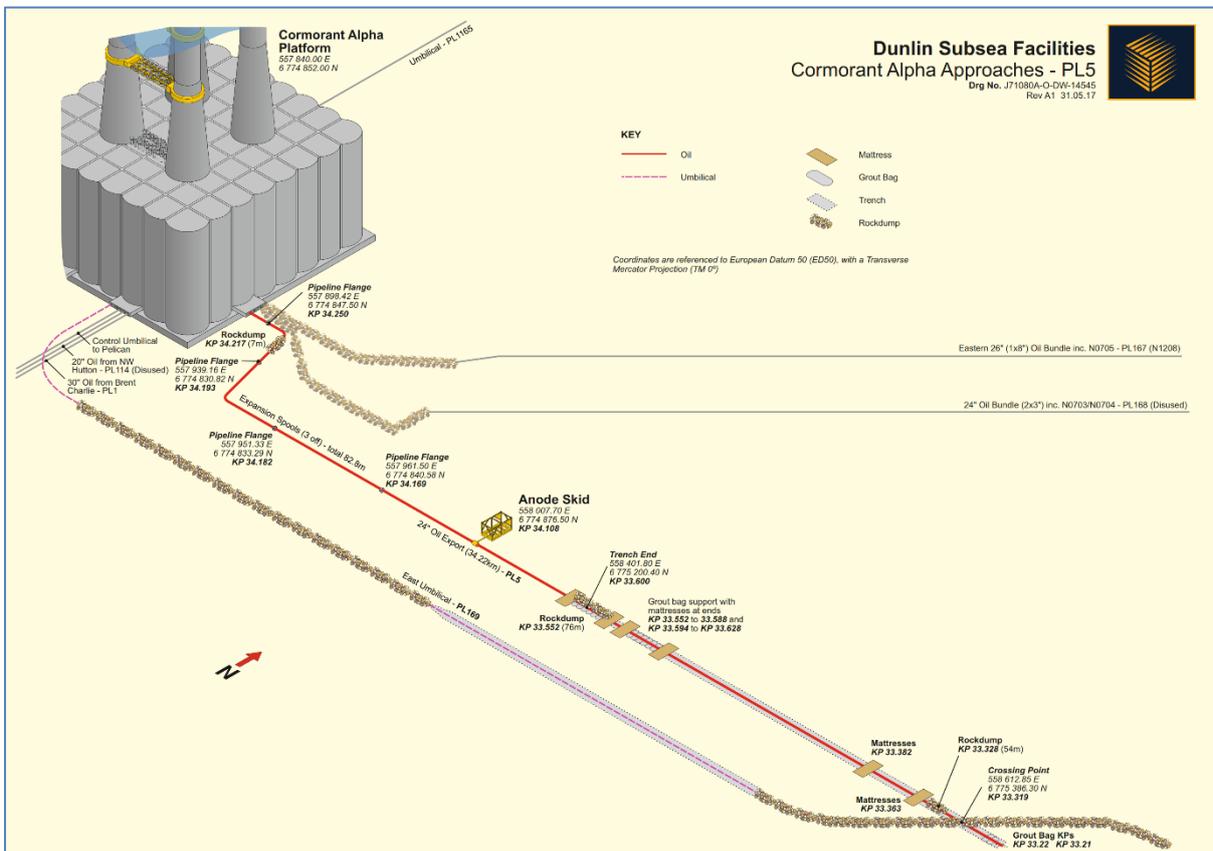
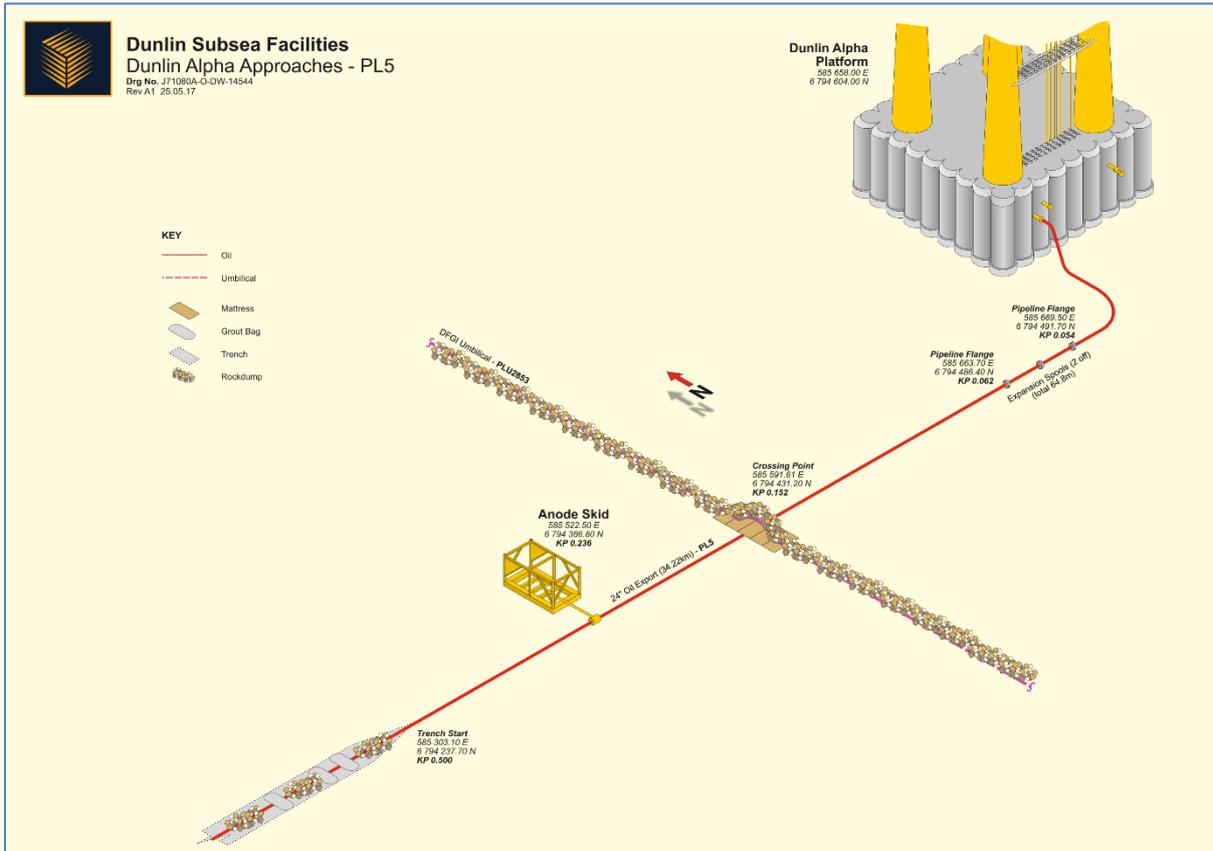
Selected Option	Reason for Selection	Approved Decommissioning Solution
Interdependencies (prior to decommissioning)		
The Dunlin Alpha to Cormorant Alpha pipeline (PL5) crosses under the following infrastructure:		
1)	Dunlin Fuel Gas Import (DFGI) SSIV umbilical PLU2853 (to be decommissioned under a separate approved Decommissioning Programme)	
2)	24" oil pipeline from Magnus to Ninian PL139 (operational)	
3)	10" gas pipeline from North Cormorant to wells junction PL114 (operational)	
4)	Control line to Cormorant A well P1 M/H UMB (abandoned)	
5)	2 x 3" flowlines to Cormorant A well P1 PL118 (abandoned)	
6)	Electrical/hydraulic/chemical umbilical to the Central Cormorant Underwater Manifold Centre PL169 (operational)	

1.2 Schematic of Field Layout⁶

1.2.1 Operational

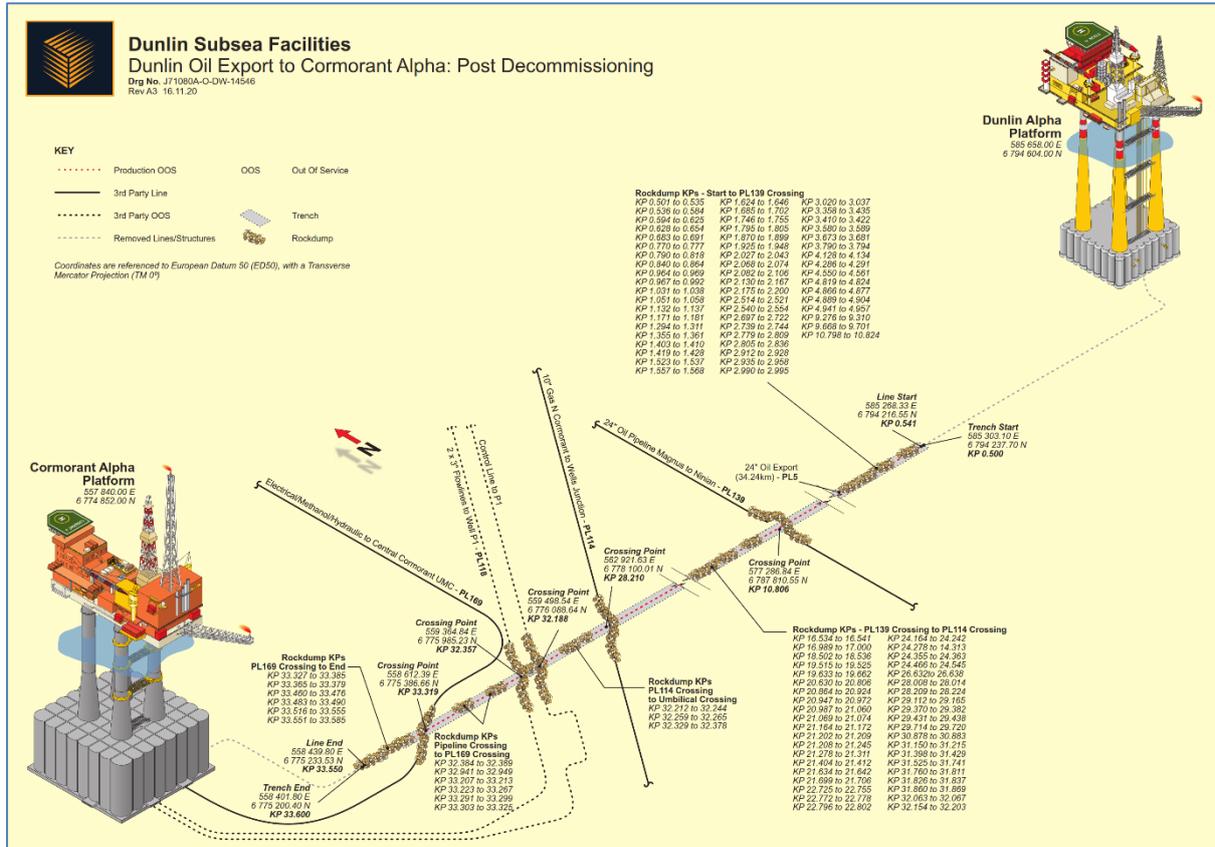


⁶ See appendix 1 for larger graphics





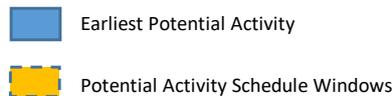
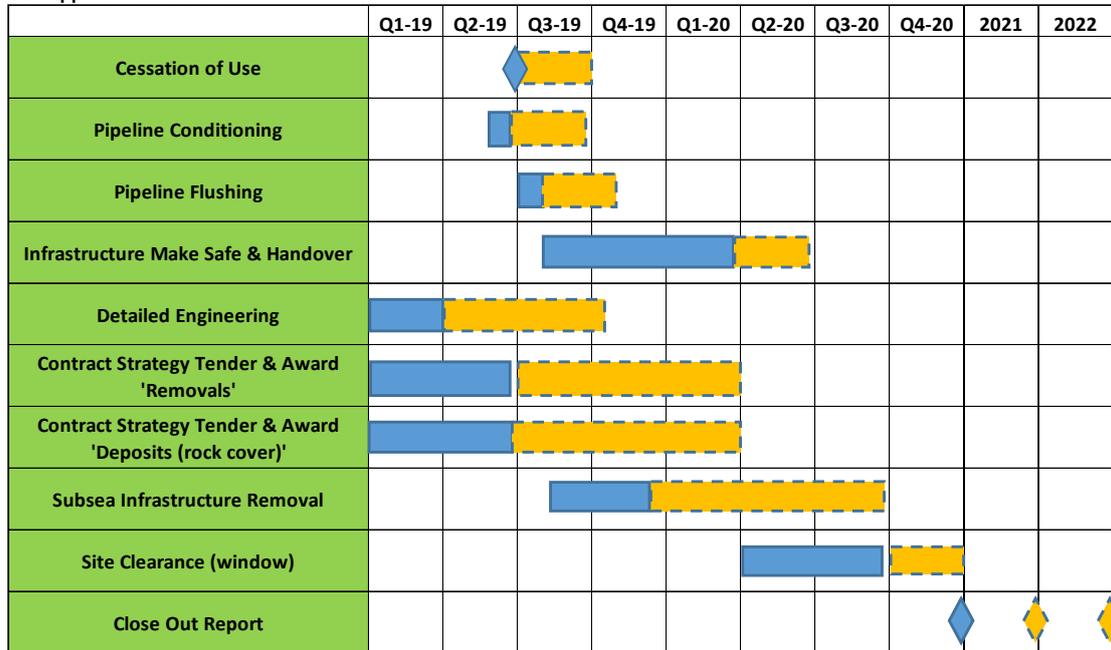
1.2.2 Post-Decommissioning



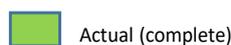
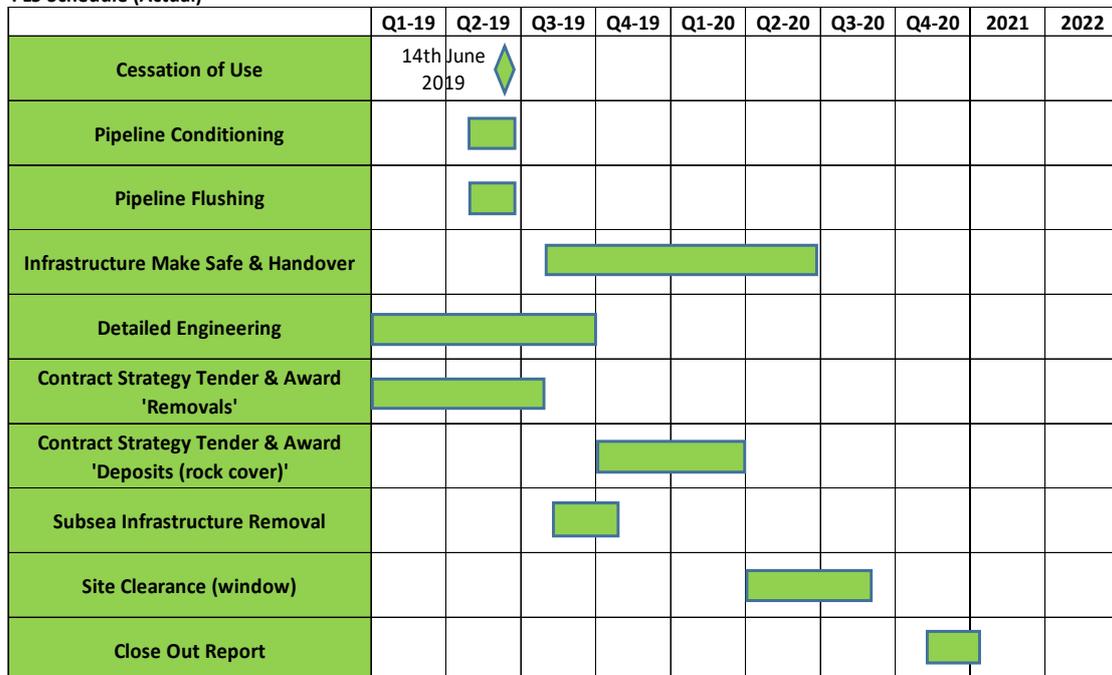


1.3 Project Delivery against Approved Schedule

PL5 Approved DP Schedule



PL5 Schedule (Actual)





1.4 Associated Decommissioning Approvals

Table 1-4: Associated Decommissioning Approvals	
Cessation of Production (COP)	15/06/2015 Greater Dunlin Area 14/06/2019 Thistle up and over services to Cormorant Alpha
Decommissioning Programme Approval	03/07/2019
Well P&A	n/a
Topside Removal	This will be completed as part of the approved Dunlin Alpha Topsides Decommissioning Programme
Subsea Installation Removal	Pipeline Application (PLA) permit PLA/702 (approved 12/09/2019) Required for marine licences and oil/chemical discharges
Pipeline Preparatory Works	Pigging and flushing of PL5 was completed in May 2019 using flushing water provided by Thistle Alpha.
Pipeline Works Authorisation (PWA)	PWA 14/W/11 301/V/19, approved 06/09/2019 Recovery of 5 off Spools & Modification of 1 off Pipeline to remain <i>in situ</i> Advised work completed 11/11/2019

Supporting documents are:

1. Dunlin Alpha to Cormorant Alpha Pipeline (PL5) Final Decommissioning Programme (FBL-DUN-DUNA-HSE-01-PLN-00004 rev A6)
<http://www.fairfield-energy.com/assets/documents/PL5-Final-Decommissioning-Programme.pdf>
2. PL5 Comparative Assessment Report (A-301649-S17-REPT-003 (Xodus) Rev A01)
<http://www.fairfield-energy.com/assets/documents/A-301649-S17-REPT-003-PL5-CA.pdf>
3. PL5 Environmental Statement (XOD-DUN-HSE-RPT-00006 (Xodus) rev A04)
<http://www.fairfield-energy.com/assets/documents/XOD-DUN-HSE-RPT-00006-PL5-EA.pdf>
4. PL5 Cost Summary Report (confidential) (FBL-DUN-DUNA-HSE-01-RPT-00006 Rev A2)

No amendments have been made since approval.



2 Decommissioning Activities

The PL5 infrastructure Cessation of Production (COP) occurred on the 14th June 2019 once Thistle fluids were rerouted to the Magnus platform, followed by an approved Decommissioning Programme on the 3rd July 2019.

The following sections detail the PL5 decommissioning activities that have taken place.

2.1 Contracts Awarded

Table 2-1: Contracts Awarded
EnQuest Plc were awarded the contract to disconnect and recover the PL5 spools. The work was sub contracted to Rever Offshore.
Veolia Environmental Services (UK) Plc were awarded the waste management contract for the PL5 spool sections and hazardous materials returned to Lerwick.
Fugro GB North Marine Limited were awarded the post-decommissioning survey and debris removal contract.
ASCO Group were awarded the waste management contract for PL5 debris returned to Peterhead.
DEME Offshore NL BV were awarded the contract for rock installation.

2.2 Platform Operations

Table 2-2: Platform Decommissioning
n/a

2.3 Subsea P&A

Table 2-3: Well Decommissioning			
Subsea Wells	Designation	Status	Category of Well
n/a	n/a	n/a	n/a

2.4 Subsea Installations

Table 2-4: Subsea Installations			
Description	Planned status (Estimated quantity)	Total removed (Actual)	Total left <i>in situ</i>
n/a	n/a	n/a	n/a



2.5 Pipelines / Umbilicals & Jumpers

Table 2-5: Pipelines / Umbilicals & Jumpers			
PL number	Description	Agreed Decom Solution	Status
PL5	Dunlin Alpha pig launcher	Removal with Dunlin Alpha topsides	<i>In situ</i>
PL5	Dunlin Alpha pig launcher pipework to ESDV	Removal with Dunlin Alpha topsides	<i>In situ</i>
PL5	PL5 ESDV in Dunlin Alpha leg	Leave <i>in situ</i>	<i>In situ</i>
PL5	PL5 riser in Dunlin Alpha leg	Leave <i>in situ</i>	<i>In situ</i>
PL5	Tie-in expansion spools to Dunlin Alpha	Removal	Removed
PL5	PL5 pipeline	Leave <i>in situ</i> with the surface laid ends cut	<i>In situ</i>
PL5	Tie-in expansion spools to Cormorant Alpha	Removal	Removed
PL5	PL5 riser in Cormorant Alpha leg	To be determined by Cormorant Alpha DP	-
PL5	PL5 ESDV in Cormorant Alpha leg	To be determined by Cormorant Alpha DP	-
PL5	Cormorant Alpha ESDV to pig receiver	Removal with Cormorant Alpha topsides	<i>In situ</i>
PL5	Cormorant Alpha pig receiver	Removal with Cormorant Alpha topsides	<i>In situ</i>

The Dunlin Alpha pipeline to Cormorant Alpha (PL5) has been disconnected from its respective installations.

The Dunlin Alpha to Cormorant Alpha pipeline (PL5) crossings are detailed below:

- 1) Dunlin Fuel Gas Import (DFGI) SSIV umbilical PLU2853, this has now been fully removed under a separate approved Decommissioning Programme.
- 2) PL139 oil pipeline (24") from Magnus to Ninian Central crosses over PL5. Crossing responsibility belongs to EnQuest Heather Limited. This line is currently operational.
- 3) PL114 gas pipeline (10") from North Cormorant to wells junction crosses over PL5. Crossing responsibility belongs to TAQA Bratani Limited. This line is currently operational.
- 4) Control line to well P1 crosses over PL5. Crossing responsibility belongs to TAQA Bratani Limited. This line is currently abandoned.
- 5) PL118 flowlines (2 x 3") to well P1 crosses over PL5. Crossing responsibility belongs to TAQA Bratani Limited. This line is currently abandoned.
- 6) PL169 Electrical/hydraulic/chemical umbilical to the Central Cormorant Underwater Manifold Centre crosses over PL5. Crossing responsibility belongs to TAQA Bratani Limited. This line is currently operational.



2.6 Pipeline Stabilisation Features

Deposit removal was conducted over the 2019 – 2020 period using both diving and Remotely Operated Vehicle (ROV) techniques for infrastructure decommissioning and ROV for debris removal and survey.

Table 2-6: Pipeline Stabilisation Features		
Description	Agreed Decom Solution	Status
Concrete mattresses (Partially buried)	Removal (8 off)	The amount removed was 8. All visible / partially buried mattresses have been removed.
Concrete mattresses (Buried)	Leave <i>in situ</i> (9 off)	All buried mattresses have been left <i>in situ</i>
Grout bags (Buried)	Leave <i>in situ</i> (1840 off)	All buried grout bags have been left <i>in situ</i>
Grout bags (Buried for pipeline support)	Leave <i>in situ</i> (2500 off)	All buried grout bags have been left <i>in situ</i>
Other (Anode skids)	Removal (2 off ⁷)	3 off anode skids have been removed

Under the approved decommissioning programme the exposed deposits were removed and returned to shore for re-use or disposal.

A dynamically positioned fall pipe vessel was mobilised to the PL5 line and installed 19,828 tonnes of rock over 96 locations. Exposed ends, free spans and areas of pipeline crowning were remediated. Rock cover activities were completed 26th Aug 2020

2.7 Drill Cuttings

Table 2-7: Drill Cuttings		
Description	Agreed Decom Solution	Status
n/a	n/a	n/a

⁷ A third redundant Anode Skid was also recovered.



2.8 Results of Post-Decommissioning & Environmental Surveys

Table 2-8: Post Decommissioning & Environmental Surveys Summary

A review of historical seabed surveys relevant to the PL5 area was undertaken and shared with OPRED and relevant stakeholders. It was agreed that the seabed characteristics and associated habitats were fairly consistent and homogenous across the area. As such, it was deemed that an additional environmental baseline survey was not necessary to inform the PL5 Decommissioning Programme.

The completed PL5 decommissioning activities have not resulted in any measurable impact on the marine environment or change to the surrounding seabed conditions along the pipeline route, apart from the placement of rock. Observations from completed operations have also indicated that there has been limited disturbance within the Dunlin Alpha and Cormorant Alpha 500 m zones, with no evidence of any additional impact.

Surveys of the pipeline corridor were undertaken using visual, Side Scan Sonar (SSS) and Multi-Beam Echo Sounder (MBES) techniques. Targets confirmed as oil field related debris or which presented a significant hazard to other users of the sea, regardless of debris type, were removed. In total, 50 targets were identified and removed. On completion of target removal, the area was re-surveyed to demonstrate and verify a clear seabed. Further details can be found in the Site Clearance Summary referenced below.

As agreed with OPRED, Fairfield have undertaken geophysical surveys of the decommissioned pipeline but have not undertaken a post-decommissioning environmental survey. Furthermore, Fairfield do not propose to undertake any future environmental survey of the PL5 pipeline area.

The following reports were produced as part of the final subsea close out documentation:

- PL5 Subsea Assets Site Clearance Summary (FBL-DUN-SSP-PL5-RPT-00008)
- PL5 *in situ* Subsea Assets, Post-Decommissioning Status (FBL-DUN-SSP-PL5-RPT-00009)
- PL5 Subsea Inventory, Pre Decommissioning - Pipelines, Umbilicals & Structures (FBL-DUN-SSP-PL5-RPT-00001)
- PL5 Subsea Inventory, Post-Decommissioning - Pipelines, Umbilicals & Structures (FBL-DUN-SSP-PL5-RPT-00007)
- 2020 Post-Decommissioning Survey, PL5 – 24" Pipeline from Dunlin A to Cormorant A, Visual Inspection Survey (201449_PL005_VI_001 to 012 – Final POST Rock)

Dispensations

One deviation to the decommissioning programme was sought and approved.

As described in Table 3-1, it had been previously agreed with OPRED that an additional environmental baseline survey was not necessary to inform the PL5 Decommissioning Programme. Meanwhile, the completed PL5 decommissioning activities have not resulted in any measurable impact on the marine environment nor change to the surrounding seabed conditions. As a result, Fairfield sought a deviation from the approved Decommissioning Programme with regards to the requirement for a post-decommissioning environmental survey. Acceptance was received on 2nd December 2019 in an email from OPRED's Environmental Management Team.



2.9 Key Milestones

Table 2-9: Key Milestone Summary

June 2015	COP from the Greater Dunlin area
May 2019	Agreement placed with EnQuest (subcontracted to Rever Offshore) for the engineering, preparation and removal of subsea infrastructure
June 2019	COP from Thistle up-and-over services to Cormorant Alpha
June 2019	PL5 pipeline conditioning (pigging) and flushing completed
July 2019	Dunlin Alpha to Cormorant Alpha Pipeline (PL5) Decommissioning Programme approved by OPRED
September 2019	Commenced subsea decommissioning activities
October 2019	Completed subsea decommissioning activities
June 2020	Commenced and completed deposit recovery operations and post-decommissioning survey operations
August 2020	Commenced and completed remedial rock cover operations

2.10 Stakeholder Engagement

Table 2-10: Stakeholder Engagement Summary

1.	Engaged with SEPA on 12 th January 2018 to discuss decommissioning waste management requirements, which were incorporated in the project waste management plan.
2.	Regulatory project execution progress reports (FBL-DUN-DUNA-HSE-01-RPT-00009) post-approval of the Decommissioning Programme were issued to the OPRED for reporting periods Q3-19 (rev A1.1), Q4-19 (rev A2), Q1-20 (rev A3.1), Q2-20 (rev A4) and Q3-20 (rev A5.1). Execution work was completed in Q4-19.
3.	No payments to UK Fisheries Offshore Oil and Gas Legacy Trust Fund Limited were required.



3 Impact on the Environment

3.1 Activities

There were no significant environmental impacts resulting from the decommissioning of the PL5 infrastructure. There was limited seabed disturbance associated with the recovery of the spool ends, stabilisation features and debris, with no evidence of any impact on the marine environment.

Marine licence ML/517 was varied during the decommissioning campaign to account for the placement of rock cover.

3.2 Future Monitoring

The following Long Term Legacy Management Plan is in place for future monitoring.

Table-3-1: Future Surveys and Monitoring Proposals	
1. Substructure (Jackets)	n/a
2. Pipelines, Flowlines & Umbilicals	<p>In accordance with the approved Decommissioning Programme, the infrastructure remaining <i>in situ</i> has been confirmed by post-decommissioning survey to be either trenched below seabed level or covered to greater than or equal to 0.6 m. All spans, crowning and areas of low cover have been remediated with the addition of rock. Based on the line being trenched below seabed level or covered to a depth of greater than or equal to 0.6 m, other users of the sea are unlikely to interact with it.</p> <p>Fairfield Betula Limited (Fairfield) propose that one further condition survey be undertaken to confirm that no further crowning, spans or interactions have materialised. Fairfield believe the interval for this follow-up survey should be in the order of five years. If evidence of anomalies were subsequently found, any necessary remedial action would be undertaken and the survey results used to inform both the owners and the regulator on whether an additional future survey was warranted.</p>
3. Pipeline Stabilisation Features	Monitoring of stabilisation features will form part of the proposed pipeline survey.
4. Drill Cuttings	n/a
5. Environmental Surveys	The completed PL5 decommissioning activities have not resulted in any measurable impact on the marine environment or change to the surrounding seabed conditions, apart from the placement of rock. As agreed with OPRED, Fairfield have undertaken geophysical surveys of the decommissioned pipeline but have not undertaken a post-decommissioning environmental survey. Furthermore, Fairfield do not propose to undertake any future environmental survey of the PL5 pipeline area.



4 Impact on Health, Safety and Environment

4.1 Details of any Incidents / Accidents during Project Execution

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 reportable injuries and dangerous occurrences, and reportable releases to sea (PON1) were as follows:

Table 4-1: Incidents / Accidents during Project Execution			
Date	Type	Location	Details
15 October 2019	PON1 reported by Fairfield (inside 500 zone)	DSV Rever Sapphire	Pipeline abandonment scope. Diamond wire cutting system. Hydraulic fluid leak from hydraulic fittings. Shell Tellus S2 MX 22 Volume lost: 25 litres
12 June 2020	PON1 submitted on behalf of Fugro	Edda Sun / PL5	Damaged ROV tooling fitting during cable cutting operations resulting in loss of hydraulic fluid.

5 Waste

Fairfield have had ongoing engagement with SEPA who have provided positive feedback on the project waste management strategy (FBL-DUN-HSE-STR-00003). The Waste Management Strategy is a key document for informing the production of an Active Waste Management Strategy to ensure compliance with the Waste Framework Directive.

Subsea waste returned to shore during the decommissioning of PL5 is detailed below.

Table 5-1: Waste Returned to Shore	
Infrastructure	Weight Returned (t)
Ferrous Metal - Steel all grades Anode skids / steel pipe / debris clearance	324.22
Non-ferrous Metal - Non-ferrous (copper; aluminium; zinc; indium) Anodes	4.78
Concrete - Aggregates (mattresses; grout bags; sand bags) Mattresses; grout; pipeline coating	291.6
Plastics - Rubbers; Polymers None reported	n/a
Hazardous - Asbestos containing materials, Residual Fluids (hydrocarbons; chemicals; control fluid) Asbestos bitumen/bagged waste	23.4
Hazardous - NORM Scale None reported	n/a
Other- Debris Tyres; Poly sheeting (landfilled); General waste	5.7
Total	649.7

It should be noted that the weights recorded above are approximate wet weights.



All recovered infrastructure materials were returned to shore and recycled utilising 'Fairfield contracted', appropriately licensed, waste management and recycling contractors. These were located at either Veolia Environmental Services (UK) Plc, Greenhead Base, Gremista, Lerwick for recovered infrastructure⁸ or ASCO Group in Peterhead for cleared debris for processing. Steel was forwarded on to either John Lawrie Group or John Williamson for recycling.

6 Lessons Learned

The project was delivered as expected, without any significant learnings to report.

⁸ Waste figures were captured in the report VEOLIA-FBL-RE-0001



7 Cost Summary

Project cost data has been redacted for this uncosted PL5 COR version. The costed PL5 COR version has been forwarded to OPRED and the OGA separately



8 Photographs

PL5 Decommissioning Album



Normand Clipper Cut Line Recovery



PL5 Route Debris



PL5 Route Debris



PL5 Route Debris



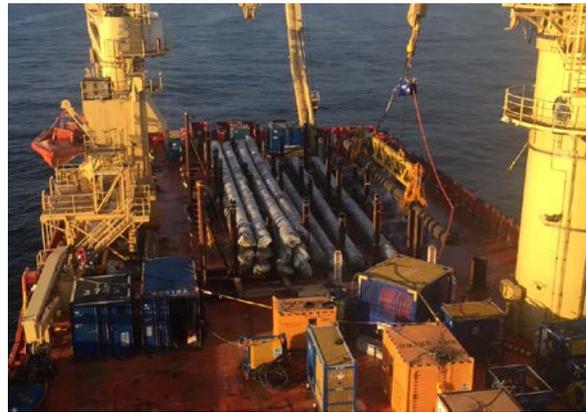
PL5 Route Debris



PL5 Route Debris



PL5 Route Debris Recovered to Deck



PL5 Recovery Operations



**Rever Sapphire undertaking PL5 Disconnect
at Dunlin Alpha**



**PL5 Spool Sections Recovered to CSV
(Asbestos Precautions Visible)**



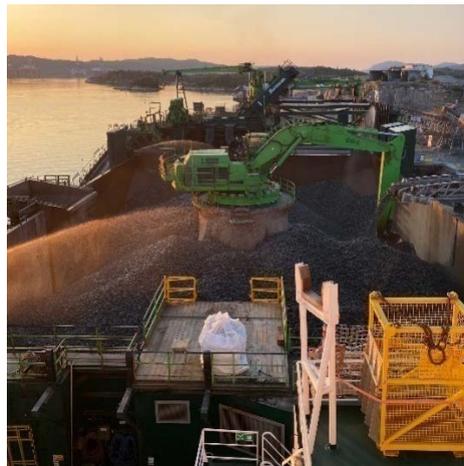
Discharge of PL5 Sections in Lerwick



PL5 Spool Sections on Quayside



DPFPV Flintstone



Rock Loading for PL5 Remedial Operations



Rock Placement Operations on PL5



PL5 cut section

PL5 pipeline sections for controlled disposal:







9 Appendix 1

