Norman Wells Operations Annual Flowline Integrity and Break-Up Report

February 2025

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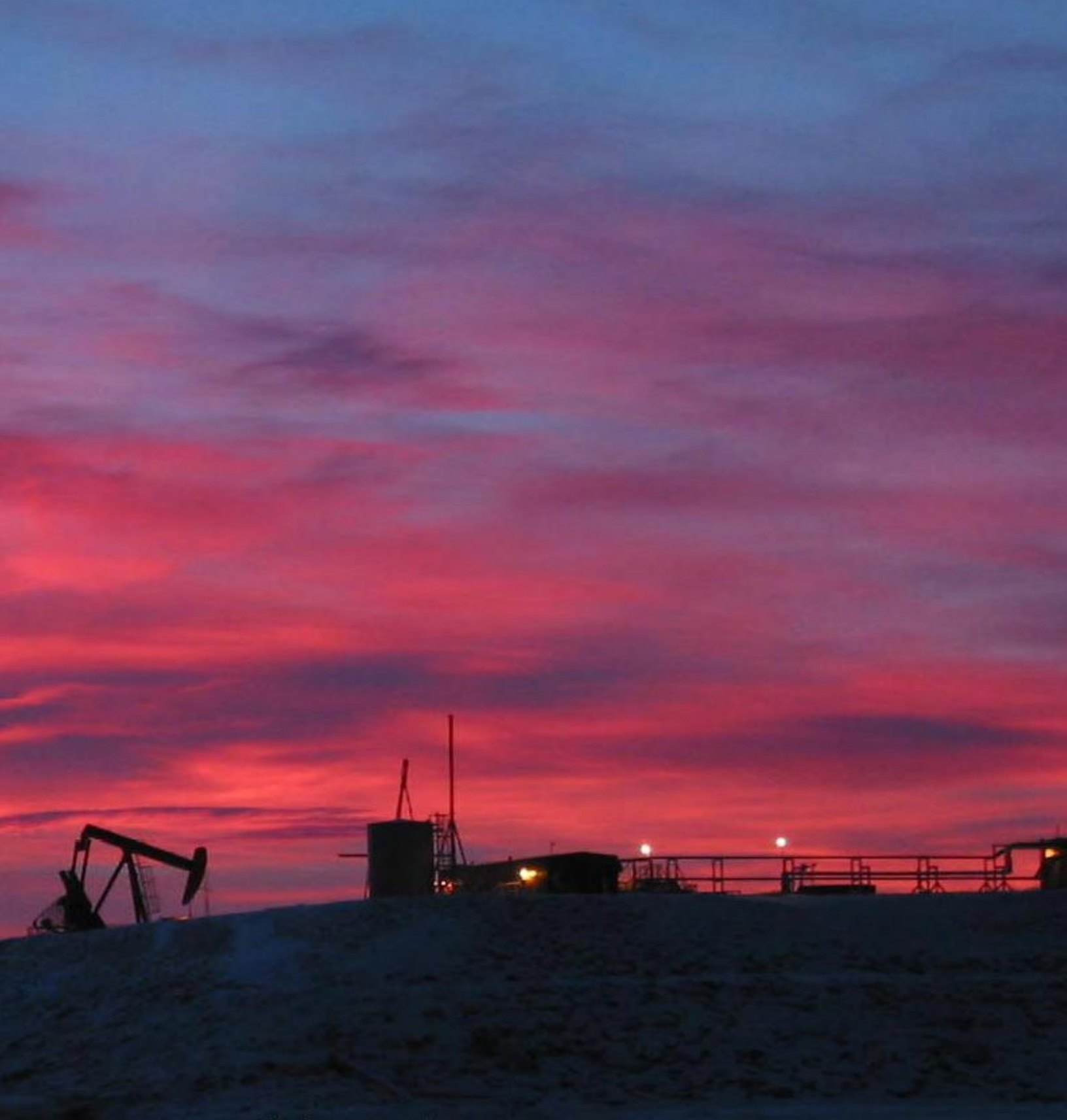

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TABLE OF CONTENTS

LIST OF IMAGES, FIGURES, AND TABLES

LIST OF TABLES

ACRONYMS

BIT	Bear Island Terminal
cm	Centimeters
CER	Canada Energy Regulator
CIRNAC	Crown Indigenous Relations and Northern Affairs Canada
CPF	Central Processing Facility
DoC	Depth of cover
GIT	Goose Island Terminal
GPS	Global Positioning System
ILI	In-Line Inspection
IMU	Inertial mapping unit
IOR	Imperial Oil Resources
LT	Land Terminal
m^3	meters cubed
m	Meters
masl	meters above sea level
MFL	Magnetic flux leakage
N/A	Not applicable
NDE	Non-destructive evaluation
NWO	Norman Wells Operations
PM	Preventative Maintenance
RTK	Real Time Kinematic
SLWB	Sahtu Land and Water Board
SSSV	Subsurface Safety Valves
TRS Advisian	Tłegǫ̀hłı̨ Reclamation Services Advisian

1 INTRODUCTION

Imperial Oil Resources N.W.T. Limited (Imperial) is required by the Sahtu Land and Water Board (SLWB) Water Licence S13L1-007 (Schedule 5, Item 1) and Canada Energy Regulator (CER) Operations Authorization OA1210-001 to annually submit a Flowline Integrity and Break-Up Report no later than October 31st of the year being reported.

The 2024 bathymetric survey was planned to be performed in September when the water levels and flow rates would be lowest which increases accuracy of the measurements. As communicated, this delayed Imperial's receipt of the bathymetric survey results and accompanying report from the contractor performing the work. Because of this, Imperial requested an extension of report submission to February 15th 2025, which both SLWB and CER granted.

Details on the Licence requirements for this report and the corresponding sections within the report can be found in the following concordance table.

Licence Requirement			Section of Report
a)	The results and inspections of the physical condition of each Artificial and Natural Island, including channel erosion, island scour holes and erosion, flowline landfalls, the condition of rip rap and the following information:		Sections 4 & 5
	i.	Locations, depth, and volume of channel scour in the vicinity of any Flowline(s)	Section 4
	ii.	Locations and magnitude of Artificial Island slope erosion	Section 5
	iii.	Locations and severity of Artificial Island rip rap disturbance	Section 5
	iv.	Structural integrity of the Artificial Islands, and other related structures	Section 5
	v.	Structural integrity of the Natural Islands where it is applicable to project activities	Section 5
b)	The dates and results of Flowline(s) and fuel storage tank integrity tests		Section 6
c)	Details on necessary repair and maintenance work along with a schedule for completing such work prior to the following spring Mackenzie River Break-Up period.		Section 4 & 5

2 2024 BREAK-UP SUMMARY

As required by Water Licence S13L1-007, Imperial shall undertake any necessary annual maintenance required to preserve the structural integrity of the islands (Part F, Item 2). Imperial inspects the riverbeds, channels, and banks of the Mackenzie River in the vicinity of the flowline(s). To determine structural integrity of the islands, Imperial conducts an annual artificial island inspection. The results of these surveys are included in this report.

The average water level during the Mackenzie River break-up at Norman Wells is approximately 9 m (44.5 masl) and typically occurs between May 10th and May 15th. In 2024, break-up occurred on May 12-15th.

2.1 Annual Inspections

The 2024 bathymetric survey was completed in September 2024. The results of this survey are summarized in Section 4 of this report and Appendix A.

The annual artificial island inspection was performed in August 13-15 2024 and is summarized in Section 5.

3 BREAK-UP PREPARATION

Prior to each year's Mackenzie River break-up, a number of essential tasks must be completed. The key items are listed below.

- Spot heavy equipment on Bear and Goose Island
- Service equipment (e.g. compressors, operator trucks, etc.)
- Plug wells (e.g. wireline activity)
- Verify bunker lids and water intake hatch are secured and protected from ice flow
- Install and function test sub surface safety valves (SSSVs)
- Ensure adequate supply of chemical, fuel and potable water on island locations
- Remove equipment from low lying areas
- Inspect Bear Island purge equipment and review purge plan
- Finalize helicopter plans in preparation for ice road closure
- Execute weekly ice profiles
- Close ice road to equipment
- Remove ice road signage
- Monitor river levels and upstream break up conditions

4 2024 BATHYMETRIC SURVEY

The annual bathymetric survey was performed from August 27 to September 5 2024 by Arcadis. The purpose of the survey is to:

- Determine the amount of instream cover over Imperial's eight cross river flowline bundles located in the bed of the Mackenzie River.
- Monitor the riverbed immediately adjacent to eight cross river flowline bundles enabling interception of scour hole movement towards flowline bundles.
- Monitor the riverbed at the base of the six artificial islands and Bear and Goose causeways for possible erosion or scouring.
- Monitor the build-up or movement of the sandbars over the flowline bundles.
- Identify any changes in the shape and elevation of the riverbed in the areas adjacent to the islands, causeways, and docks.

Arcadis staff completed their survey of the Mackenzie River channel bottom using Single Beam Sonar and drone-based LiDAR to cover a significantly larger area than the 2023 survey. Arcadis also updated the pipeline depth of cover points to increase confidence in the elevation and location of the Imperial pipelines that cross the Mackenzie River. Pipeline depth of cover measurements were collected at a higher resolution than what was collected in 2023.

Information on the methodology and equipment used for the Norman Wells bathymetric survey scope can be found in Section 2 of the 2024 Norman Wells Bathymetric Survey Report (Appendix A), prepared by Arcadis.

4.1 Bathymetric Survey Results

The scope of work for the annual bathymetric survey is to measure the elevation of the river bottom for the entire length of each cross-river flowline corridor and compare to the measured elevations of the flowlines to determine the depth of cover along the entire channel. The methodology used to achieve this can be found in Section 2 of Appendix A.

The 2024 cross-river flowline bundle survey results can be found in Section 4.0 of Appendix A. The bathymetric survey drawings for each flowline corridor are found in Appendix B of the bathymetric report (Appendix A). The list of flowline corridors and the corresponding bathymetric survey drawing is provided in Table 1 below.

Table 1. List of Flowlines and Associated Bathymetric Survey Drawings

Drawing Number	Drawing Title
Figure B1	Key Plan
Figure B2	Mainland to Island 1 Pipeline Bundle – Plan and Profile
Figure B3	Mainland to Island 2 Pipeline Bundle – Plan and Profile
Figure B4	Mainland to Island 3 Pipeline Bundle – Plan and Profile
Figure B5	Goose Island to Island 3 Pipeline Bundle – Plan and Profile
Figure B6	Goose Island to Island 4 Pipeline Bundle – Plan and Profile
Figure B7	Bear Island to Island 5 Pipeline Bundle – Plan and Profile
Figure B8	Bear Island to Island 6 Pipeline Bundle – Plan and Profile

The corridors are managed on a case-by-case basis based on historical fluctuation and future projections of potential scour. Cover material is intended to:

1) Provide protection against physical impact, and
2) Provide protection against failure modes due to pipeline free span (e.g. vortex induced vibration, bending).

The primary intent of the bathymetric survey is to verify that flowline bundles are not exposed (i.e. depth of cover remains > 0m), such that the risks outlined above are reduced to the extent possible. Areas which show relatively low cover (< 0.6m) or significant increases or decreases in cover between surveys are flagged for review on an annual basis as locations to be monitored.

A summary of the depth of cover measured in 2024 is shown below in Table 2 for each cross-river bundle.

In cases where exposure or near-exposure of the bundle is confirmed, appropriate remedial action is triggered. Remedial action typically consists of deposition of armoring rock on the pipeline corridor. This armoring rock is sized to be stable during anticipated river flow rates and is not expected to be subject to scour. If armoring material is confirmed to be in place, the flowline corridor underneath it is considered to be protected from the risks described above. Following the placement of armoring, the corridor will continue to be surveyed annually to monitor for any further changes to the riverbed.

4.2 Summary of Depth of Cover Readings

Section 4.4 of the bathymetric report (Appendix A) sets out the depth of cover survey findings for all flowline corridors surveyed as listed in Table 1 above. Table 2 below summarizes the depth of cover measurements for the flowline corridors identified for closer monitoring due to possessing less than one meter of cover.

In 2023, Imperial retained a new contractor (Arcadis) for its bathymetric survey work; Imperial retained Arcadis again in 2024. The work performed by Arcadis enabled additional data to be captured during the survey including the depth of cover on land as well as the pipeline elevation underneath the riverbed. This allowed the flowline profiles, which indicate depth of cover, to be updated from the historical construction profile elevations. As a part of the survey work, Arcadis also ensured that the entire extent of the channel was surveyed, to record the riverbed and pipeline elevations. This approach provided complete coverage of each crossing and lists any locations where depth of cover along the entire corridor, including the inland and channel portions, were found to be less than 0.6 meters.

The pipeline elevation data was an important additional data set collected during the 2023 survey. It allowed the pipe elevation and riverbed to be compared in the modern NAD83 geodic datum and when this was done, it was observed that the pipeline elevation was higher than shown on previous bathymetric surveys. This updated survey data has resulted in a decrease in the depth of cover measure during the 2023 survey when compared to recent years. The updated pipeline elevation data was the main source of decreases in depth of cover observed across the asset rather than changes in the river morphology due to scouring and sediment loss. Flowline elevations were resurveyed in 2024 to reconfirm pipeline flowline depth.

In 2024, sediment sampling was an additional data set collected. Samples were collected at 38 locations and sent to a lab for analysis; the results were incorporated into the hydrodynamic modeling to refine each crossing's scour potential. The actual sediment data is compared to the assumptions of general sediment types used in the 2023 model in section 3.1.4 of Appendix B.

Table 2. 2024 Pipeline Depth of Cover Summary

Corridor	Minimum Depth of Cover (m)	Stationing of Minimum Depth of Cover (m)	Location of Minimum Depth of Cover	Maximum Measurement Depth in Corridor (m)
Mainland to Island 1 Pipeline	0.42	0+633.00	Right Bank Mainland	4.3
Mainland to Island 2 Pipeline	0.64	1+324.00	Right Bank Mainland	4.5
Mainland to Island 3 Pipeline	0.24	0+433.00	Channel	12.0
Goose Island to Island 3 Pipeline	0.36	0+636.00	Side Channel	4.3
Goose Island to Island 4 Pipeline	0.17	1+358.00	Side Channel	3.4
Bear Island to Island 5 Pipeline	0.21	0+381.00	Channel	7.3
Bear Island to Island 6 Pipeline	0.95	0+497.00	Left Bank Bear Island	4.5

To complement the bathymetric survey, Arcadis also developed a hydrodynamic model for the Mackenzie River to estimate river flows and predict potential future scour along each flowline corridor to help inform flowline integrity risk. The bathymetric survey and hydrodynamic model were used to update each corridor's risk assessment. The hydrodynamic model summary report can be found in Appendix B, titled "Scour Assessment". Based on the results of the bathymetric survey and the hydrodynamic model, Imperial is able to provide the following summary for each crossing below:

4.2.1 Island 1 to Mainland

The 2024 bathymetric survey found that the flowlines between Island 1 and the Mainland were buried below the channel bottom. The minimum depth of cover in this corridor was found to be approximately 0.42 m at Station 0+633 m. At this location the pipeline is within the top of the banks of the Mackenzie River but above normal water levels in dry conditions at the time of the survey. The minimum pipeline depth of cover within the active channel below the waterline was measured to be 1.55 m near Station 0+235 m.

The rip-rap armour stone placed above the pipeline bundle in the winter of 2024 between Stations 0+277 m and 0+367 m have increased the low depth of cover identified in this area during the 2023 survey to greater than 0.6 m. Although the low depth of cover found at station 0+633m is above normal water levels in dry conditions, Imperial is planning to armor the flowline corridor as per the submitted engineered design to increase the pipeline cover.

Going forward Imperial will continue to monitor the depth of cover through the annual bathymetric survey. Once the armoring has been installed, Imperial will update the hydrodynamic model utilizing the results of future bathymetric surveys to reflect the new riverbed morphology to assess the future scour potential of the corridor. This revised scour profile will then be utilized to inform Imperial's management of the crossing going forward.

4.2.2 Island 2 to Mainland

The 2024 bathymetric survey found that the flowlines between Island 2 and the Mainland were buried below the channel bottom. The minimum pipeline DoC measured across this right-of-way was approximately 0.64 m at Station 1+324 m.

The rip-rap armour stone placed above the pipeline bundle in the winter of 2024 between Stations 0+238 m and 0+348 m and between 0+598 m to 0+628 m have

increased the low depth of cover identified in these areas during the 2023 survey to greater than 0.6 m.

Going forward Imperial will continue to monitor the depth of cover through the annual bathymetric survey. Imperial will continue to update the hydrodynamic model utilizing the results of future bathymetric surveys to reflect the new riverbed morphology to assess the future scour potential of the corridor. This revised scour profile will then be utilized to inform Imperial's management of the crossing going forward.

4.2.3 Mainland to Island 3

The 2024 bathymetric survey found the flowlines between the Mainland and Island 3 were buried below the channel bottom. The minimum pipeline depth of cover in the corridor was measured to be approximately 0.24 m at Station 0+433 m.

In 2024 the wetted perimeter of the channel along this right-of-way extended from Station 0+132 m to Station 1+260 m or for a total length of 1,128 m. Between these stations, within the active channel in 2024, 361 linear meters of pipeline exhibited a depth of cover of less than 1 m below the channel bottom and 761 m of pipeline exhibited a depth of cover greater than 1 m below the channel bottom. Imperial is planning to armor the flowline corridor as per the submitted engineered design to increase the pipeline cover.

In 2024, sediment sampling was incorporated into the bathymetric survey scope to refine each crossing's scour potential. Going forward Imperial will continue to monitor the depth of cover through the annual bathymetric survey. Imperial will continue to update the hydrodynamic model utilizing the results of future bathymetric surveys to reflect the new riverbed morphology to assess the future scour potential of the corridor. This revised scour profile will then be utilized to inform Imperial's management of the crossing going forward.

4.2.4 Goose Island to Island 3

The 2024 bathymetric survey found the flowlines between Goose and Island 3 were buried below the channel bottom. The minimum depth of cover within the 2024 active channel was measured to be 0.36 m near Station 0+636 m and greater than 1 m to either side of this station.

In 2015, rip-rap armour stone was placed on top of the pipeline bundle between the top of the left bank on Goose Island between Stations 0+540 m to 0+612 m and between Stations 0+675 m and 0+718 m. A 'scour hole' was again observed to be forming in

2024 with depth of cover 1.35 m between Station 1+125 m to 1+145, however the updated hydrodynamic model does not predict exposure at this location.

In 2024, sediment sampling was incorporated into the bathymetric survey scope to refine each crossing's scour potential. Going forward Imperial will continue to monitor the depth of cover through the annual bathymetric survey. Imperial will continue to update the hydrodynamic model utilizing the results of future bathymetric surveys to reflect the new riverbed morphology to assess the future scour potential of the corridor. This revised scour profile will then be utilized to inform Imperial's management of the crossing going forward.

4.2.5 Goose Island to Island 4

The 2024 bathymetric survey found the flowlines between the Goose and Island 4 were buried below the channel bottom. Rip-rap armour stone was previously placed on top of the pipeline bundle from the top of the left bank on Goose Island between Station 1+200 m and 1+340 m, and the depth in this area is considered stable despite a scour hole observed to be forming near Station 1+340 m in 2023. This was again observed in 2024, where the minimum pipeline depth of cover within the active channel was measured to be approximately 0.17 m near Station 1+358 m, with the pipeline depth of cover reported to be at least 1 m to either side of this area.

The hydrodynamic model does not predict exposure in this corridor, however Imperial is planning to armor the flowline corridor as per the submitted engineered design to increase the pipeline cover.

In 2024, sediment sampling was incorporated into the bathymetric survey scope to refine each crossing's scour potential. Going forward Imperial will continue to monitor the depth of cover through the annual bathymetric survey. Imperial will continue to update the hydrodynamic model utilizing the results of future bathymetric surveys to reflect the new riverbed morphology to assess the future scour potential of the corridor. This revised scour profile will then be utilized to inform Imperial's management of the crossing going forward.

4.2.6 Bear to Island 5

The 2024 bathymetric survey found the flowlines between Bear and Island 5 were fully buried below the channel bottom. The minimum depth of cover noted between Bear and Island 5 was 0.21 m at Station 0+381m.

The flowlines in this corridor are currently non-operational as communicated following the Line 490 failure. Further assessment will be completed prior to any reinstatement of production.

4.2.7 Bear to Island 6

The 2024 bathymetric survey found the flowlines between Bear and Island 6 were buried below the channel bottom. The minimum depth of cover noted between Bear and Island 6 was 0.975m at Station 0+497m.

The flowlines in this corridor are no longer operating, as communicated after the Line 490 failure. Further assessment will be completed prior to any reinstatement of production.

4.2.8 Bear to Goose Island

Depth of cover measurements were not collected on this pipeline, as in both the 2022 and 2023 survey, suspended flowlines were observed between Bear to Goose Island. The flowlines within this corridor remain shut-in and purged (INC2022-122, NT-NU 2022382). At this time, Imperial does not anticipate resuming operation of this corridor. Final decisions regarding abandonment of existing flowlines will be addressed as part of the closure process in collaboration with stakeholders.

4.3 Planned Depth of Cover Repairs

Due to the low depth of cover identified within the Mainland to Island 1, Mainland to Island 3, Goose to Island 3, and Goose to Island 4 corridors, Imperial has submitted plans to add additional cover to each of these corridors where there is less than 0.6m of cover. All required regulatory notifications and applications will be confirmed prior to execution.

Additional repairs in the future may be driven by the outcomes of Imperial's risk assessment process utilizing the outputs of the hydrodynamic model to develop monitoring and mitigation plans for each crossing.

5 ARTIFICIAL ISLAND PROTECTION ASSESSMENT AND MAINTENANCE

5.1 2024 Completed Repairs

As there were no recommended repairs from the 2023 Artificial Island Inspection, no repairs were completed 2023-2024.

5.1.1 Island 1

The inspection showed Island 1 to be in good condition; therefore, no repairs were required during the winter 2024 season.

5.1.2 Island 2

The inspection showed Island 2 to be in good condition; therefore, no repairs were required during the winter 2023 season.

5.1.3 Island 3

The inspection showed Island 3 to be in good condition; therefore, no repairs were required during the winter 2023 season.

5.1.4 Island 4

The inspection showed Island 4 to be in good condition; therefore, no repairs were required during the winter 2023 season.

5.1.5 Island 5

The inspection showed Island 5 to be in good condition; therefore, no repairs were required during the winter 2023 season.

5.1.6 Island 6

The inspection showed Island 6 to be in good condition; therefore, no repairs were required during the winter 2023 season.

5.2 2025 Proposed Repairs

The 2024 Artificial Island inspection was completed in August by Wim M. Veldman Consulting and TRS Advisian. The 2024 recommendations put forth by the inspectors are summarized below. As part of the annual inspection, following the field activities Wim M Veldman Consulting and TRS Advisian present the preliminary results and recommended

repairs to the Operations staff onsite. The 2024 recommendations identified repair scopes on Island 3 and Island 4, but upon on review the repairs were deemed to be minor in nature, and were selected to defer to the next season. Details are provided below, but as such there are no planned repairs scoped for 2024. The upcoming artificial island inspection is scheduled to be completed later this year in August 2025, and need for further repairs will be assessed at that time.

5.2.1 Island 1

The inspection showed Island 1 to be in good condition; therefore, no immediate repairs are required during the 2024/2025 winter period.

5.2.2 Island 2

The inspection showed Island 2 to be in good condition; therefore, no immediate repairs are required during the 2024/2025 winter period.

5.2.3 Island 3

The inspection of Island 3 identified one area where movement of the river side corner blocks is visible. Recommendation is to place riprap at base to cover gaps and minimize the potential for more movement. Due to recommended repair being minor in nature, it is deferred and no immediate repairs are required during the 2024/2025 winter period.

5.2.4 Island 4

The inspection of Island 4 identified one area where movement of the Norman Wells side corner blocks is visible. Recommendation is to place riprap at the base to cover gaps and minimize the potential for more movement. Due to the recommended repair being minor in nature, it is deferred and no immediate repairs are required during the 2024/2025 winter period.

5.2.5 Island 5

The inspection showed Island 5 to be in good condition; therefore, no immediate repairs are required during the 2024/2025 winter period.

5.2.6 Island 6

The inspection showed Island 6 to be in good condition; therefore, no immediate repairs are required during the 2024/2025 winter period.

6 FLOWLINE AND FUEL STORAGE TANK INTEGRITY

The operational integrity of all critical equipment is stewarded through Imperial's preventative maintenance program, which is derived from the OIMS Facility Integrity Management System (FIMS). FIMS is the system that identifies critical equipment and sets forth the required preventative maintenance programs and frequencies.

6.1 Fuel Storage Tank Integrity Inspections

Table 3 lists the fuel storage tanks on site, the type and frequency of inspection performed on each tank, along with the results.

Table 3: 2023 Fuel Storage Tank Integrity Inspections Results

Tank Name	Type of Inspection	Results
Goose Island Diesel	5 Year External Visual	– Last inspection completed in 2020; no issues – Next inspection due in 2025
	10 Year External Visual and UT Survey	– New vessel installed in 2015. Baseline UT survey completed in 2015; no issues – Next inspection due in 2025
	1 Month External Visual	– Completed monthly; no issues
Goose Island Gas	5 Year External Visual	– Last completed in 2020; no issues – Next inspection due in 2025
	10 Year External Visual and UT Survey	– New vessel installed in 2015. Baseline UT survey completed in 2015; no issues – Next inspection due in 2025
	1 Month External Visual	– Completed monthly; no issues
Bear Island Gas	5 Year External Visual and UT Survey	– 2021 inspection completed; no issues – Next inspection due in 2026
	1 Month External Visual	– Completed monthly; no issues
Bear Island Diesel	5 Year External Visual and UT Survey	– New vessel installed in 2020 – Next inspection due in 2025
	1 Month External Visual	– Completed monthly; no issues
Mainland Diesel	5 Year External Visual	– New vessel installed in 2015 – Last inspection completed in 2020; no issues – Next inspection due in 2025
	10 Year External Visual and UT Survey	– New vessel installed in 2015. Baseline UT survey completed in 2015; no issues – Next inspection due in 2025
	1 Month External Visual	– Completed monthly; no issues
CPF T-103 Diesel	5 Year External Settlement	– External settlement inspection completed in 2022; no issues – Next inspection due in 2027
	5 Year External Visual	– Last completed in 2021; no issues – Next inspection due in 2026
	10 Year Internal	– Last completed in 2015; no issues

		– Next inspection due in 2025
T-104 Emergency Generator Diesel	5 Year External Visual	– Last completed in 2024; no issues – Next inspection due in 2029
	10 Year External UT	– Last completed 2017; no issues – Next inspection due in 2027
Mainland Heating Oil	1 Month External Visual	– Completed monthly; no issues.
CPF Heating Oil Double Wall Tank	1 Month External Visual	– New tank installed in 2018 – Completed monthly; no issues.
Warehouse Heating Oil Double Wall Tank	1 Month External Visual	– New tank installed in 2018 – Completed monthly; no issues.
Mud Plant Heating Oil Double Wall Tank	1 Month External Visual	– New tank installed in 2018 – Completed monthly; no issues.

6.2 Flowline Integrity

The Norman Wells flowline system includes the network of flowlines used to connect the mainland and cross-river operations to the Central Processing Facility (CPF). The cross-river flowlines are inspected using a combination of in-line inspection and non-destructive examination (NDE). Conservative assumptions coupled with an evaluation of inspection results are used to determine the inspections frequencies. Table 4 lists the planned flowline integrity (cross-river and land based) inspections that were completed in 2024, along with the inspection type for each of the flowlines, and the inspection results.

Table 4: 2024 Flowline Integrity Inspections Results

Flowline	Route	Cross -river (Y/N)	Date	Scope	Type of repairs completed	Anomaly Description		Comments
55	Island 2 to LPT1	Y	July 21, 2024	Inline Inspection (ILI) MFL, Caliper, IMU	Repair completed in 2024	Depth and Length of anomaly	D: 47% w.t. L: 10 mm	The pipeline was inspected using Rosen RoCombo MFL-A/XT with Gyro tool in July 2024. The deepest feature found was 47% w.t. external metal loss. The failure pressure was calculated to be above the line's Maximum Allowable Operating Pressure of 5100 kPa. Therefore, based on engineering judgement, the pipeline is fit for continued operation while a formal engineering assessment can be completed. The final Engineering Assessment for Line 55, which provides a more comprehensive understanding of the line's fitness for service over time, is in progress.
						Position of anomaly (o'clock)	6:59	
						Distance from nearest girthweld (m)	11.896 m downstream of girthweld (GW) 1720	
106	Island 4 to GIT4	Y	July 24, 2024	Inline Inspection (ILI) MFL, Caliper, IMU	No repairs completed in 2024	Depth and Length of anomaly	D: 48% w.t. L: 99 mm	The pipeline was inspected using Rosen RoCombo MFL-A/XT with Gyro tool in July 2024. The deepest feature found was 48% w.t. external metal loss cluster. The failure pressure was calculated to be above the line's Maximum Allowable Operating Pressure of 5100 kPa. Therefore, based on engineering judgement, the pipeline is fit for continued operation while a formal engineering assessment can be completed. The final Engineering Assessment for Line 106, which provides a more comprehensive understanding of the line's fitness for service over time, is in progress.
						Position of anomaly (o'clock)	4:38	
						Distance from nearest girthweld (m)	7.46 m downstream of girthweld (GW) 490	
133	BIT 3 to BIT 4	N	August 30, 2024	Inline Inspection (ILI) MFL, Caliper, IMU	No repairs completed in 2024	Depth and Length of anomaly	D: 39% L: 6 mm	The pipeline was inspected using Rosen RoCombo MFL-A/XT with Gyro tool in August 2024. The deepest feature found was 39% w.t. external metal loss. The failure pressure was calculated to be above the line's Maximum Allowable Operating Pressure of 5100 kPa. Therefore, based on engineering judgement, the pipeline is fit for continued operation while a formal engineering assessment can be completed. The final Engineering Assessment for Line 133, which provides a more comprehensive understanding of the line's fitness for service over time, is in progress. **Note that this line currently holds no product.**
						Position of anomaly (o'clock)	10:34	
						Distance from nearest girthweld (m)	0.181 m downstream of girthweld (GW) 460	

1029	Frenchy's to BIT 3	N	August 29, 2024	Inline Inspection (ILI) MFL, Caliper, IMU	No repairs completed in 2024	Depth and Length of anomaly Position of anomaly (o'clock) Distance from nearest girthweld (m)	D: 53% L: 17mm 6:01 0.167 m downstream of girthweld (GW)	The pipeline was inspected using Rosen RoCombo MFL-A/XT with Gyro tool in August 2024. The deepest feature found was 53%w.t. external metal loss. The failure pressure was calculated to be above the line's Maximum Allowable Operating Pressure of 5100 kPa. Therefore, based on engineering judgement, the pipeline is fit for continued operation while a formal engineering assessment can be completed. The final Engineering Assessment for Line 1029, which provides a more comprehensive understanding of the line's fitness for service over time, is in progress. **Note that this line currently holds no product.**
44	LPT1 to CPF	N	December 12, 2024	NDE (Ultrasonic Testing (UT), Magnetic Particle Testing, Long Range UT)	Repair completed in 2024	Depth of Anomaly	Wall loss finding: 60% w.t.	Excavation and subsequent direct examination was used to identify and characterize localized corrosion features on Line 44, and to verify a previous ILI inspection. The corrosion was arrested using STOPAQ, and the line was rewrapped.
55	Island 2 to LPT1	Y (Inspection on land)	July 6, 2024	NDE (Ultrasonic Testing (UT), Magnetic Particle Testing, Long Range UT)	Repair completed in 2024	Depth of Anomaly	Wall loss finding: 53.6% w.t.	Excavation and subsequent direct examination was used to identify and characterize corrosion features on Line 55. Site selection for this examination was determined based on prioritization of previous engineering assessments in preparation for low water levels. Findings will be used to verify subsequent ILI inspection. Repair was completed per Condition 5 notification.
419	CPF to Mainland West	N	May 11, 2024	NDE (Ultrasonic Testing (UT), Magnetic Particle Testing, Long Range UT)	No repairs completed in 2024	Depth of Anomaly	Wall loss finding: 15% w.t.	Excavation and subsequent direct examination was used to identify and characterize corrosion features on Line 419. There was no significant internal or external corrosion found
438	LPT1 to Island 2	Y (Inspection on land)	July 6, 2024	NDE (Ultrasonic Testing (UT), Magnetic Particle Testing)	Repair completed in 2024	Localized external corrosion found	Wall loss finding: 67% w.t.	Excavation and subsequent direct examination was used to identify and characterize corrosion features in two locations on Line 438. Composite wrap repairs completed.

1037	O-45X to BPT2	N	May 10, 2024	NDE (Ultrasonic Testing (UT), Magnetic Particle Testing, Long Range UT)	No repairs completed in 2024	Localized external corrosion found	Wall loss finding: 24% w.t.	Direct examination was used to identify and characterize corrosion features on Line 1037. **Note that this line currently holds no product.**
281	BIT3 to K-48X	N	September 30, 2024	Ground Riser Inspection: Visual, Holiday testing	No repairs required	No significant findings.		(BIT 3 Riser) Excavation to expose riser, external coating determined to be in good condition. **Note that this line currently holds no product.**
351	BIT3 to J-52X	N	October 1, 2024	Ground Riser Inspection: Visual, Holiday testing	No repairs required	No significant findings.		(BIT 3 Riser) Excavation to expose riser, external coating determined to be in good condition. **Note that this line currently holds no product.**
536/585/591	BIT3 to L-47X / J-45X / J-47X and I-50X	N	October 4, 2024	Ground Riser Inspection: Visual	No repairs required	No significant findings.		(BIT 3 Riser) Excavation to expose riser, external coating determined to be in good condition. **Note that this line currently holds no product.**

7 LIST OF APPENDICES

Appendix A: 2024 Norman Wells Bathymetric Survey Report (Arcadis)

Appendix B: 2024 Norman Wells Hydrodynamic Model and Scour Report (Arcadis)