

APPENDIX A FIGURES



SOURCE: NSDNR Aerial Photography



CLIENT:
Pieridae Energy Canada Ltd

PROJECT:
GOLDBORO LNG

TITLE:
PROJECT FOOTPRINT



AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



DWN BY: TM

DATUM: UTM Zone 20

DATE: February 2013

CHK BY: GB / UW

PROJECTION: NAD83

PROJECT No: TV121039

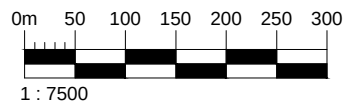
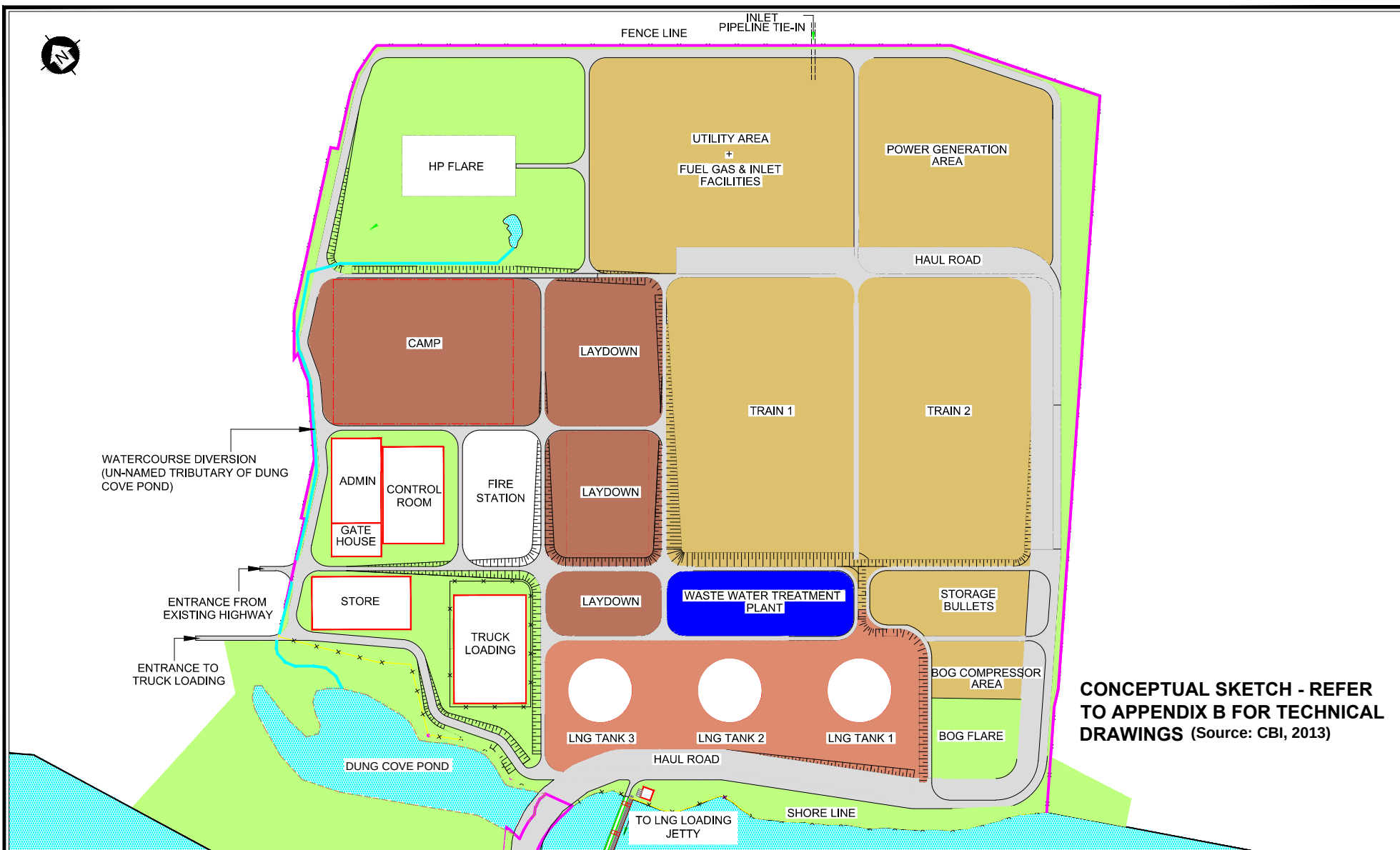
REV NO: N/A

SCALE: 1 : 11,000

FIGURE: 5.1

-  Vessel
-  Project Footprint





AMEC Environment & Infrastructure
50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



CLIENT

PIERIDAE ENERGY CANADA LTD.

PROJECT

GOLDBORO LNG

TITLE

LNG FACILITY LAYOUT

DWN BY:

PROJECTION:

DATE:

BTO

NAD83

FEBRUARY 2013

CHK'D BY:

DATUM:

PROJECT NO:

GB/UW

UTM ZONE 20

TV121039

REV. NO.:

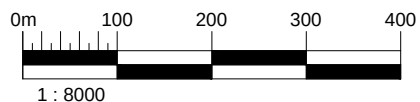
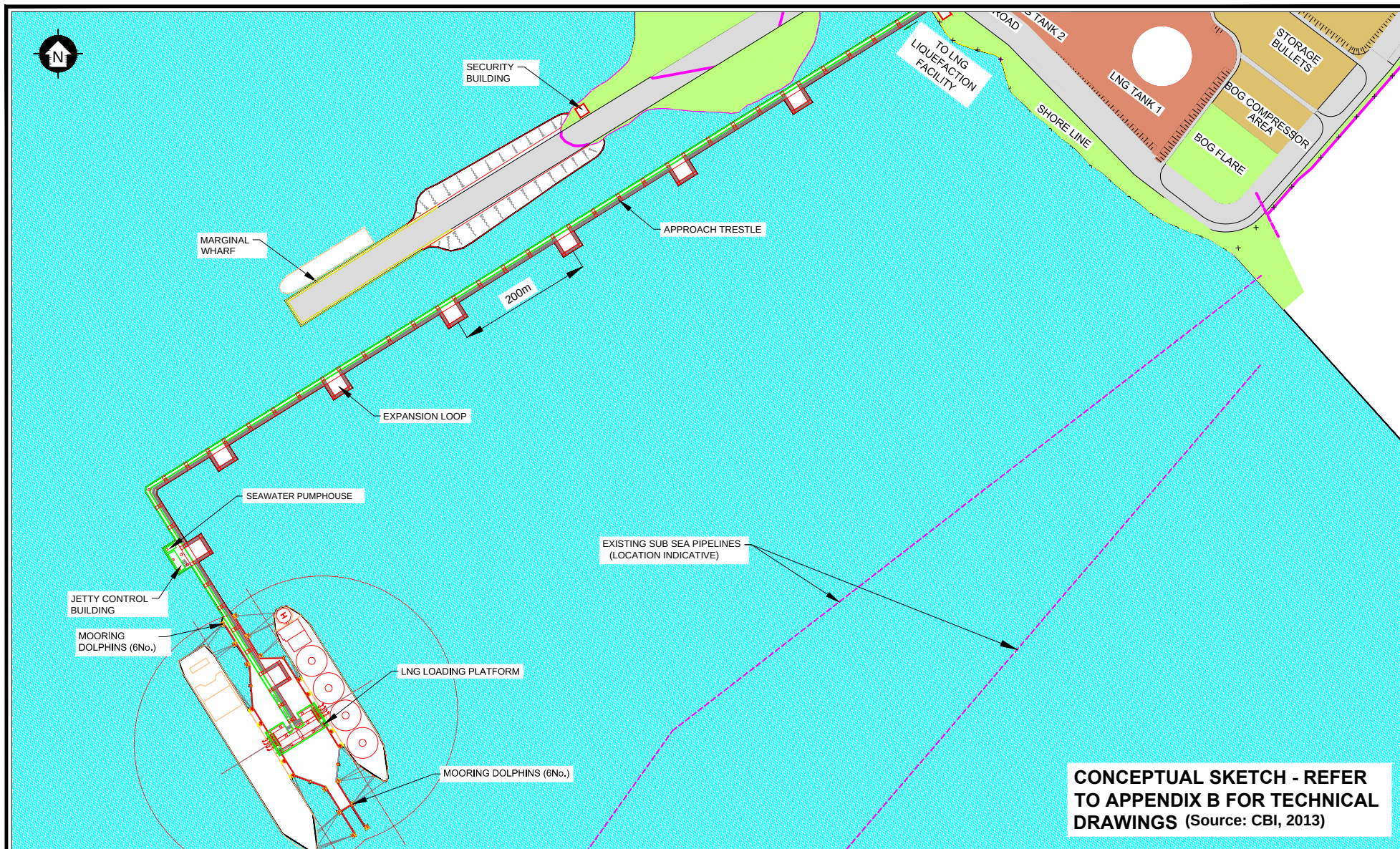
SCALE:

FIGURE No.

N/A

1:7500

FIGURE 5.2



AMEC Environment & Infrastructure
50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



CLIENT

PIERIDAE ENERGY CANADA LTD.

PROJECT

GOLDBORO LNG

TITLE

LNG JETTY LAYOUT

DWN BY:

BTO

PROJECTION:

NAD83

DATE:

FEBRUARY 2013

CHK'D BY:

GB/UW

DATUM:

UTM ZONE 20

PROJECT NO:

TV121039

REV. NO.:

N/A

SCALE:

1:7500

FIGURE No.

FIGURE 5.3



SOURCE: AMEC, 2006
NSDNR Topo, 2007

CLIENT: **Pieridae Energy Canada Ltd**

PROJECT: **GOLDBORO LNG**

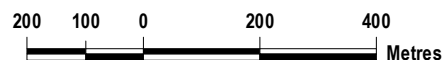
TITLE: **LOCATION OF HERITAGE RESOURCES**

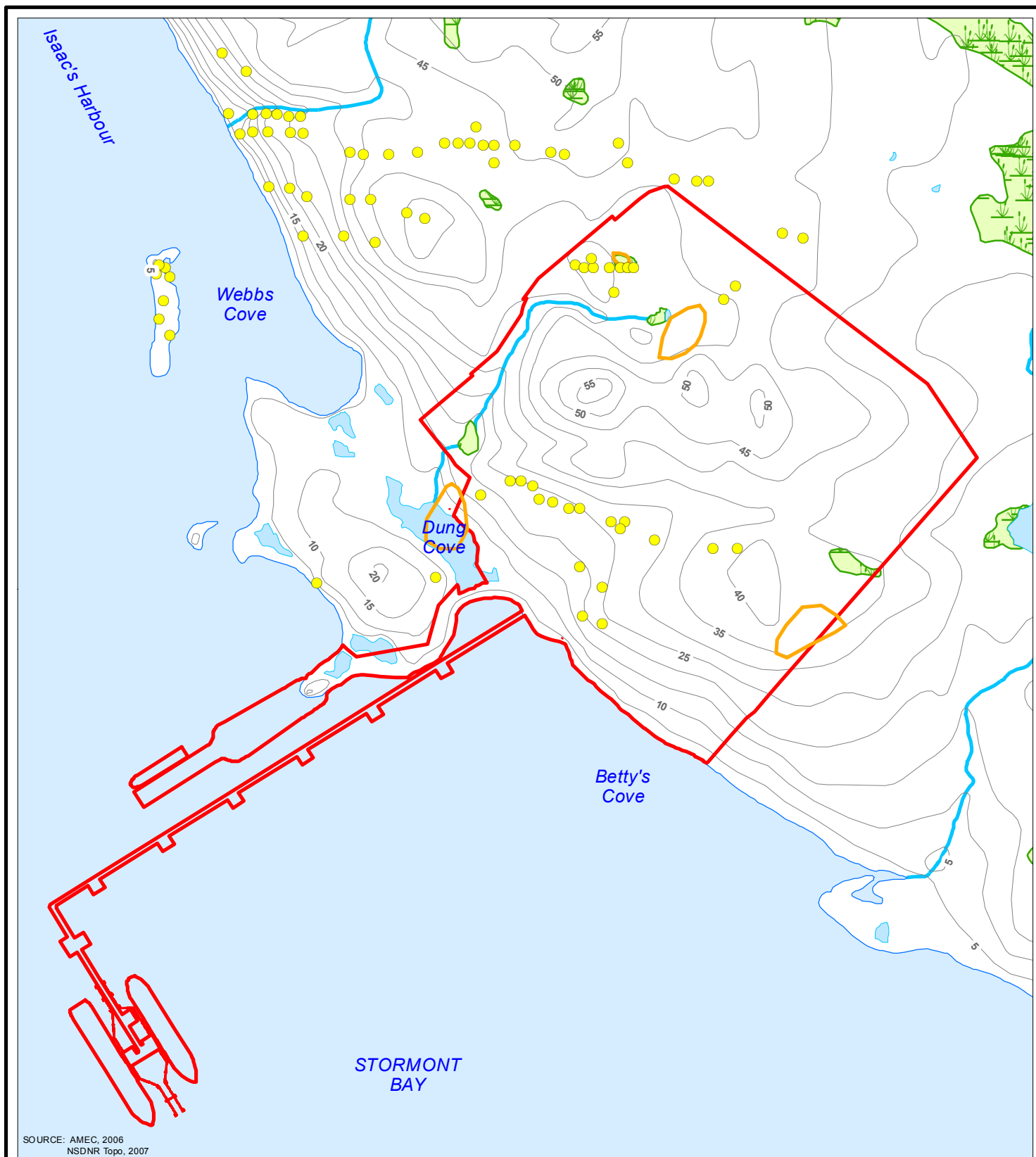
AMEC Environment & Infrastructure
50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



DWN BY:	TM	DATUM:	UTM Zone 20	DATE:	February 2013
CHK BY:	GB / UW	PROJECTION:	NAD83	PROJECT NO:	TV121039
REV NO:	N/A	SCALE:	1 : 13,000	FIGURE:	6.1

- Heritage Resources
- Project Footprint
- Elevation Contours (5m Intervals)
- Roads
- Watercourse
- Freshwater
- Wetland
- Ocean





CLIENT: **Pieridae Energy Canada Ltd**

PROJECT: **GOLDBORO LNG**

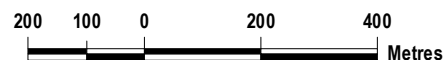
TITLE: **ABANDONED MINE WORKINGS**

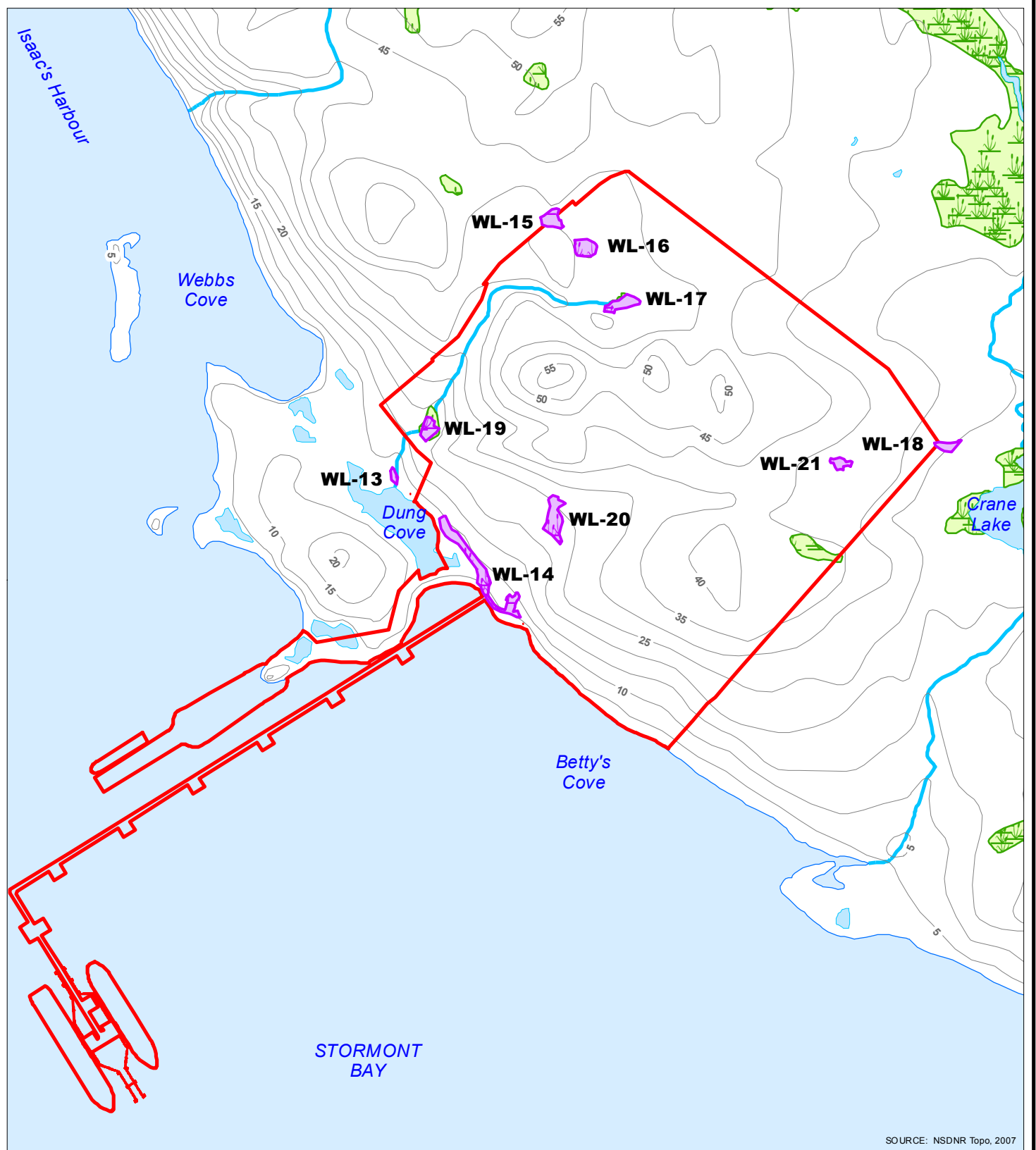


AMEC Environment & Infrastructure
50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314

DWN BY:	TM	DATUM:	UTM Zone 20	DATE:	February 2013
CHK BY:	GB / UW	PROJECTION:	NAD83	PROJECT NO:	TV121039
REV NO:	N/A	SCALE:	1 : 13,000	FIGURE:	6.2

- Approximate Location of Abandoned Mines
- Approximate Tailings Locations
- Project Footprint
- Elevation Contours (5m Intervals)
- Watercourse
- Freshwater
- Wetland
- Ocean





SOURCE: NSDNR Topo, 2007

CLIENT: **Pieridae Energy Canada Ltd**
 PROJECT: **GOLDBORO LNG**
 TITLE: **WATERBODIES AND WETLANDS**

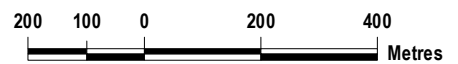


AMEC Environment & Infrastructure
 50 Troop Avenue, Unit 300
 Dartmouth, N.S., B3B 1Z1
 (P) 902-468-2848 (F) 902-468-1314



DWN BY:	TM	DATUM:	UTM Zone 20	DATE:	February 2013
CHK BY:	GB / UW	PROJECTION:	NAD83	PROJECT No:	TV121039
REV NO:	N/A	SCALE:	1 : 13,000	FIGURE:	6.3

- Field Verified Wetland
- Project Footprint
- Elevation Contours (5m Intervals)
- Watercourse
- Freshwater
- Wetland
- Ocean

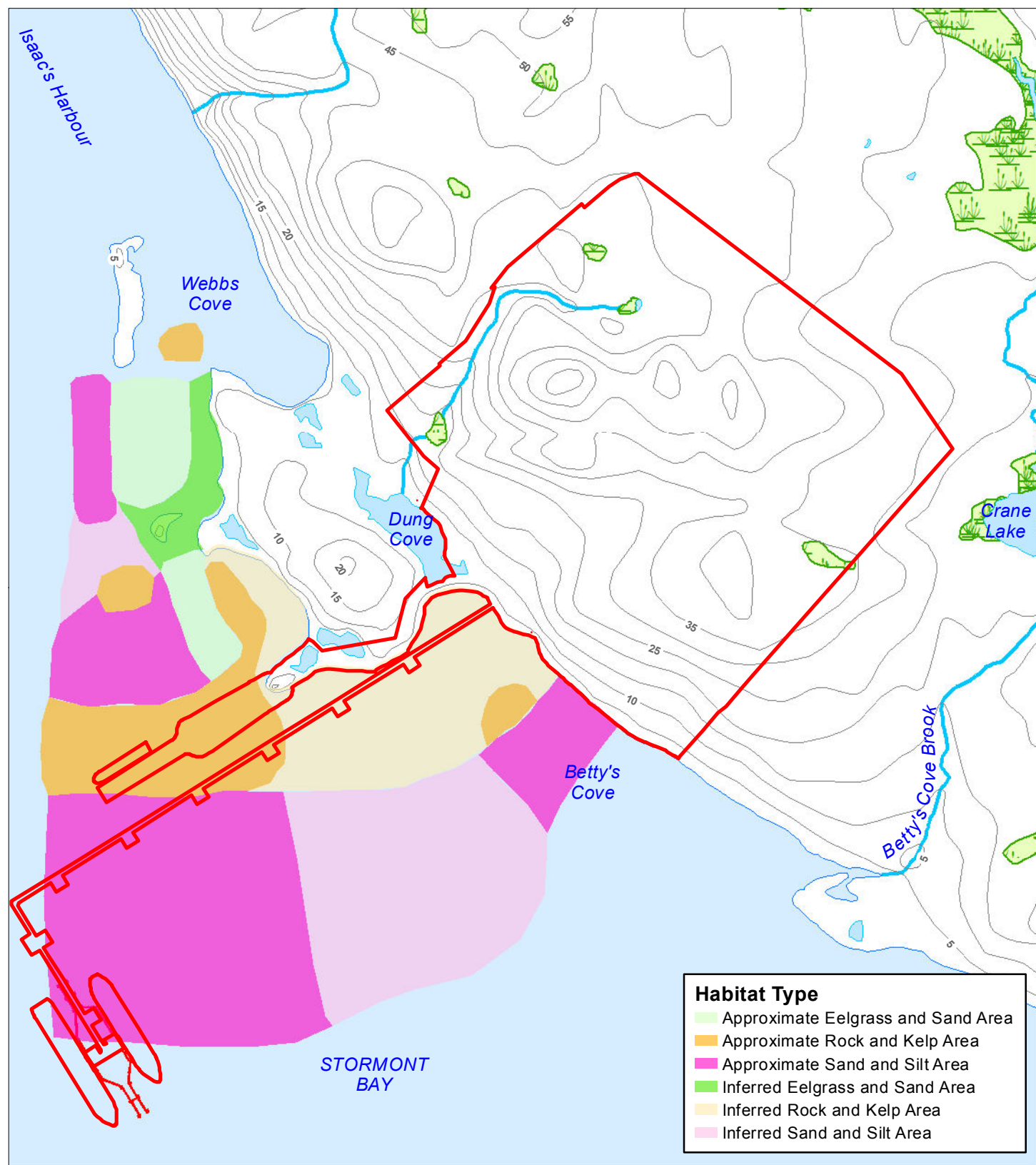




CLIENT: Pieridae Energy Canada Ltd		
PROJECT: GOLDBORO LNG		
TITLE: RED HEAD PENINSULA SURFACE WATER FEATURES		
AMEC Environment & Infrastructure 50 Troop Avenue, Unit 300 Dartmouth, N.S., B3B 1Z1 (P) 902-468-2848 (F) 902-468-1314		
DWN BY:	TM	DATUM: UTM Zone 20
CHK BY:	GB / UW	DATE: February 2013
REV NO:	N/A	PROJECT No: TV121039
		SCALE: 6.4



SOURCE: AMEC, 2006



CLIENT: **Pieridae Energy Canada Ltd**

PROJECT: **GOLDBORO LNG**

TITLE: **FISH HABITAT IN THE VICINITY OF LNG FACILITIES**

AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



DWN BY: TM DATUM: UTM Zone 20 DATE: February 2013

CHK BY: GB / UW PROJECTION: NAD83 PROJECT NO: TV121039

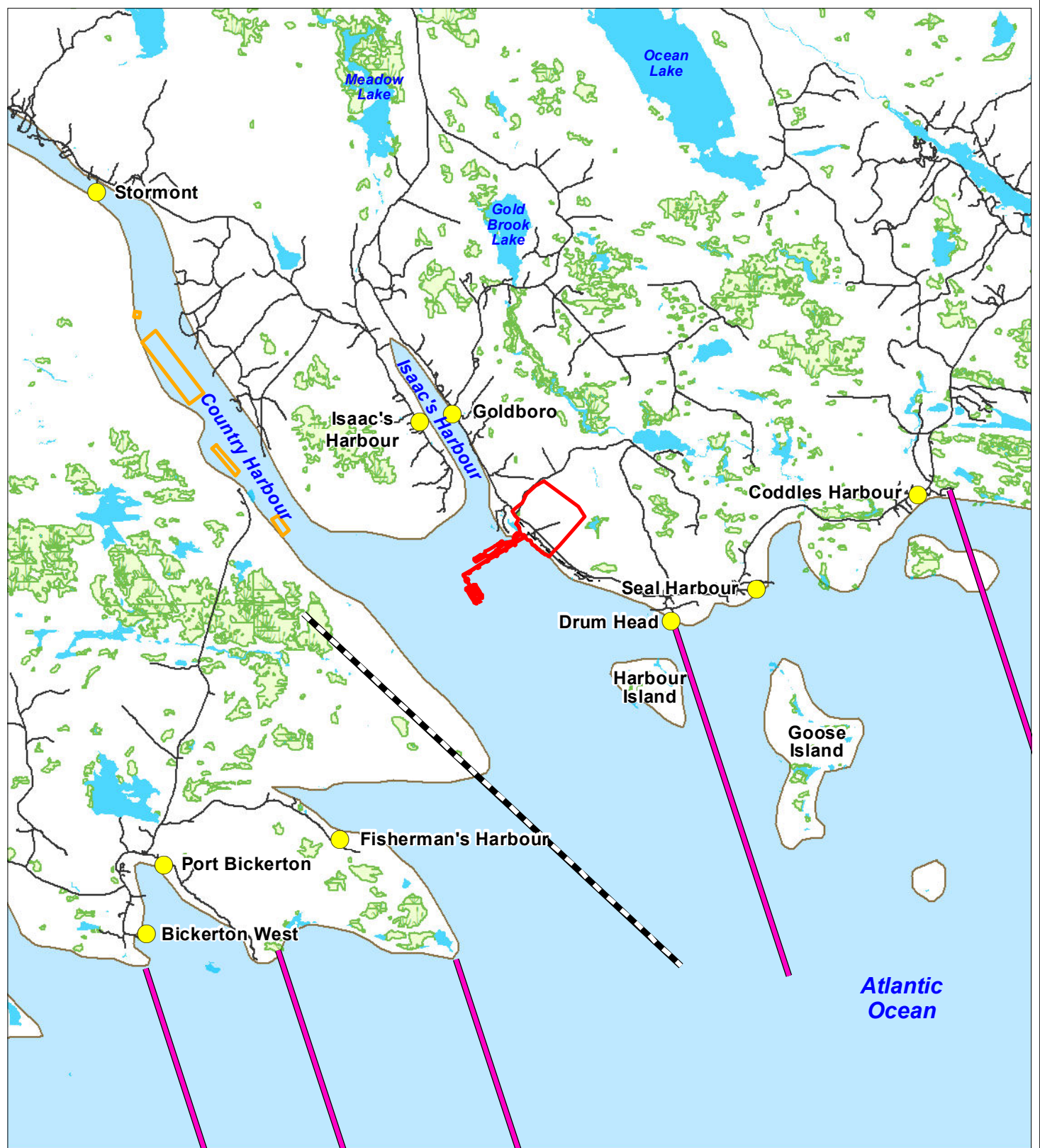
REV NO: N/A SCALE: 1 : 13,000 FIGURE: 6.5

- Project Footprint
- Elevation Contours (5m Intervals)
- Freshwater
- Wetland
- Ocean
- Watercourse

SOURCE: AMEC, 2006
NSDNR Topo, 2007



200 100 0 200 400
Metres



CLIENT: **Pieridae Energy Canada Ltd**

PROJECT: **GOLDBORO LNG**

TITLE: **FISHING AREAS AND AQUACULTURE
NEAR COUNTRY HARBOUR**

AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



DWN BY: TM DATUM: UTM Zone 20 DATE: February 2013

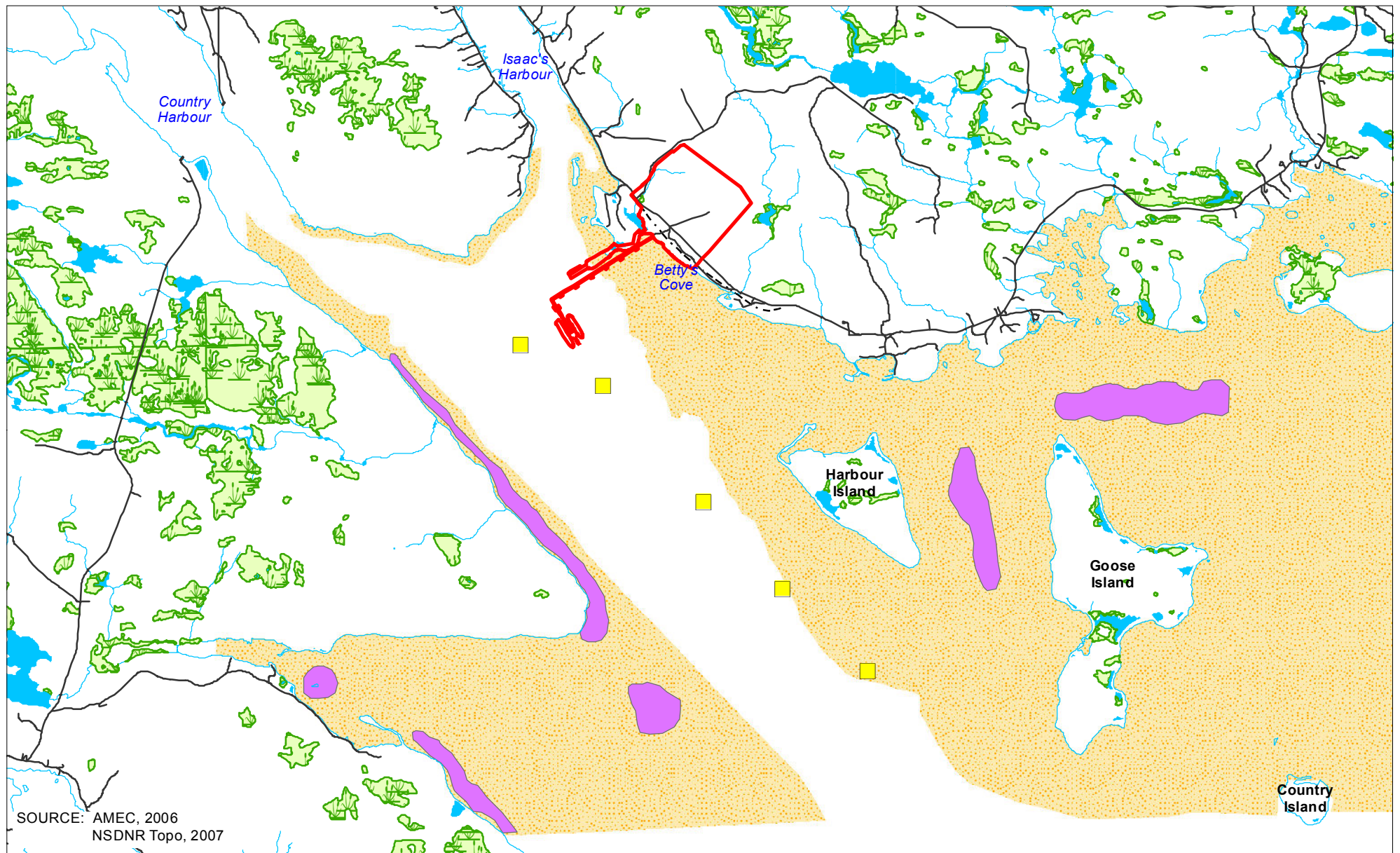
CHK BY: GB / UW PROJECTION: NAD83 PROJECT No: TV121039

REV NO: N/A SCALE: 1 : 100,000 FIGURE: 6.6

- Wharf Locations
- Statistical District Boundary
- Urchin Lease Boundary
- Project Footprint
- Freshwater
- Freshwater Wetland
- Aquaculture Facility

SOURCE: AMEC, 2006
NSDNR Topo, 2007





SOURCE: AMEC, 2006
NSDNR Topo, 2007

CLIENT:

Pieridae Energy Canada Ltd

PROJECT:

GOLDBORO LNG

TITLE:

**FISH HABITAT IN STORMONT BAY
AND ADJACENT AREAS**



AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



DWN BY:

TM

DATUM:

UTM Zone 20

DATE:

January 2013

CHK BY:

GB / UW

PROJECTION:

NAD83

PROJECT No:

TV121039

REV NO:

N/A

SCALE:

1 : 40,000

FIGURE:

6.7



Shipping Route



Lobster and Urchin Habitat Region



Lobster Habitat Region



Project Footprint



Roads



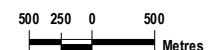
Watercourse

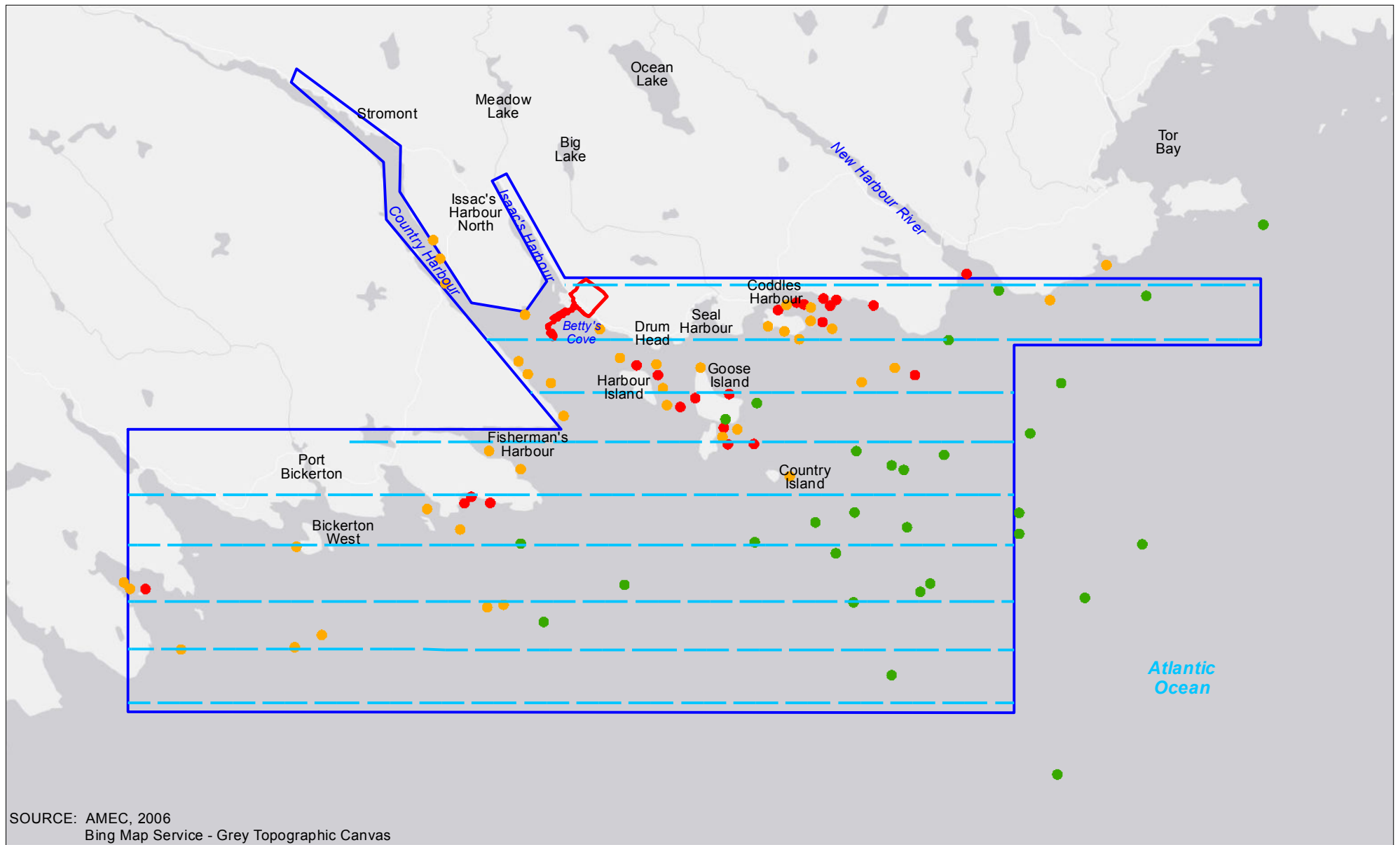


Waterbody



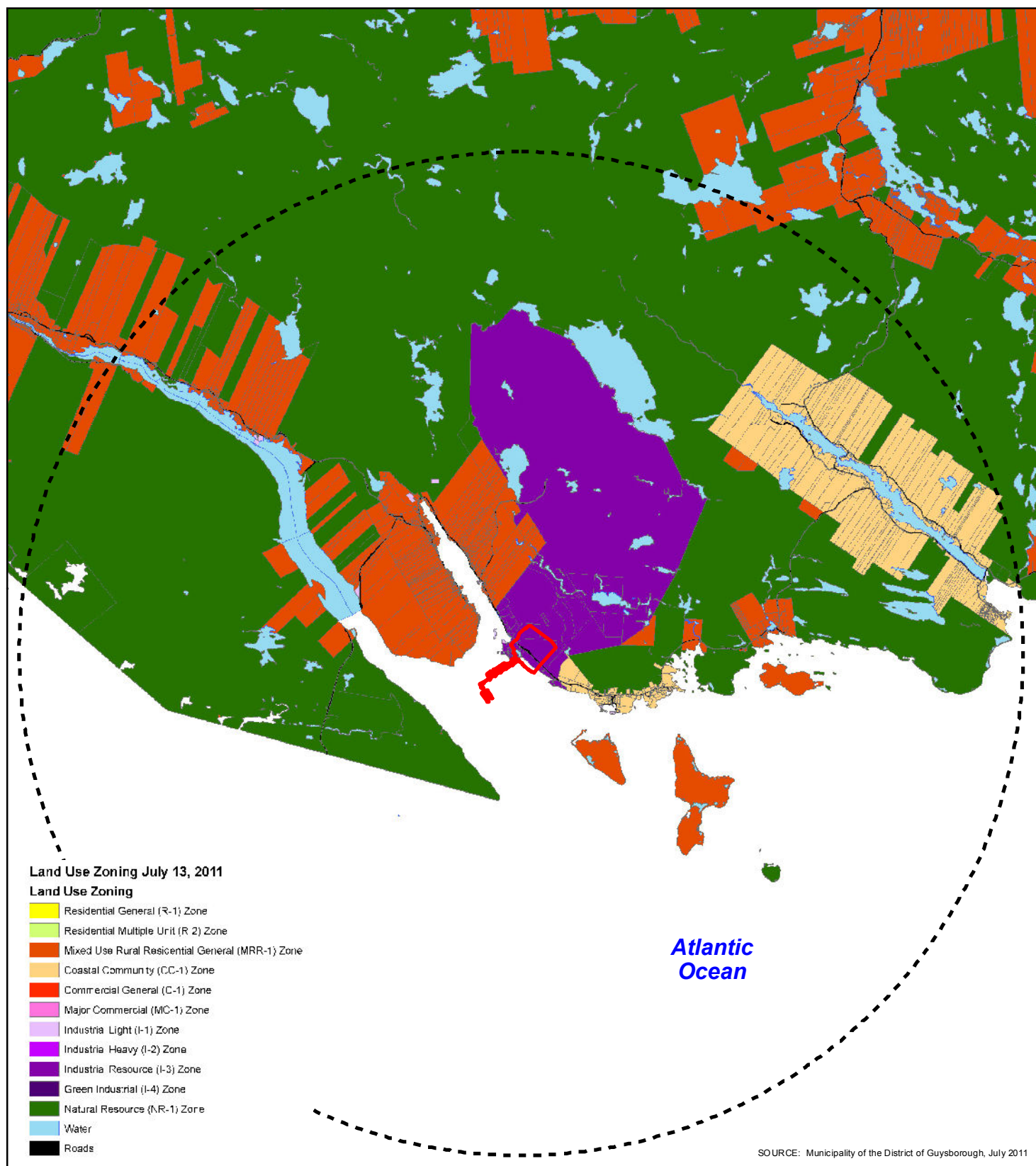
Wetland





SOURCE: AMEC, 2006
Bing Map Service - Grey Topographic Canvas

CLIENT: Pieridae Energy Canada Ltd		AMEC Environment & Infrastructure 50 Troop Avenue, Unit 300 Dartmouth, N.S., B3B 1Z1 (P) 902-468-2848 (F) 902-468-1314 			 Common Tern  Arctic Tern  Roseate Tern  Transects  Survey Perimeter  Project Footprint  
PROJECT: GOLDBORO LNG		DWN BY: TM	DATUM: UTM Zone 20	DATE: February 2013	
TITLE: ROSEATE TERN FORAGING SITES AND FORAGING SURVEY		CHK BY: GB / UW	PROJECTION: NAD83	PROJECT No: TV121039	
		REV NO: N/A	SCALE: 1 : 200,000	FIGURE: 6.8	



CLIENT: **Pieridae Energy Canada Ltd**

PROJECT: **GOLDBORO LNG**

TITLE: **LAND ZONING MAP**

AMEC Environment & Infrastructure

50 Troop Avenue, Unit 300
Dartmouth, N.S., B3B 1Z1
(P) 902-468-2848 (F) 902-468-1314



DWN BY: **TM** DATUM: **UTM Zone 20** DATE: **February 2013**

CHK BY: **GB / UW** PROJECTION: **NAD83** PROJECT No: **TV121039**

REV NO: **N/A** SCALE: **1 : 160,000** FIGURE: **6.9**

LNG Site 15km Radius

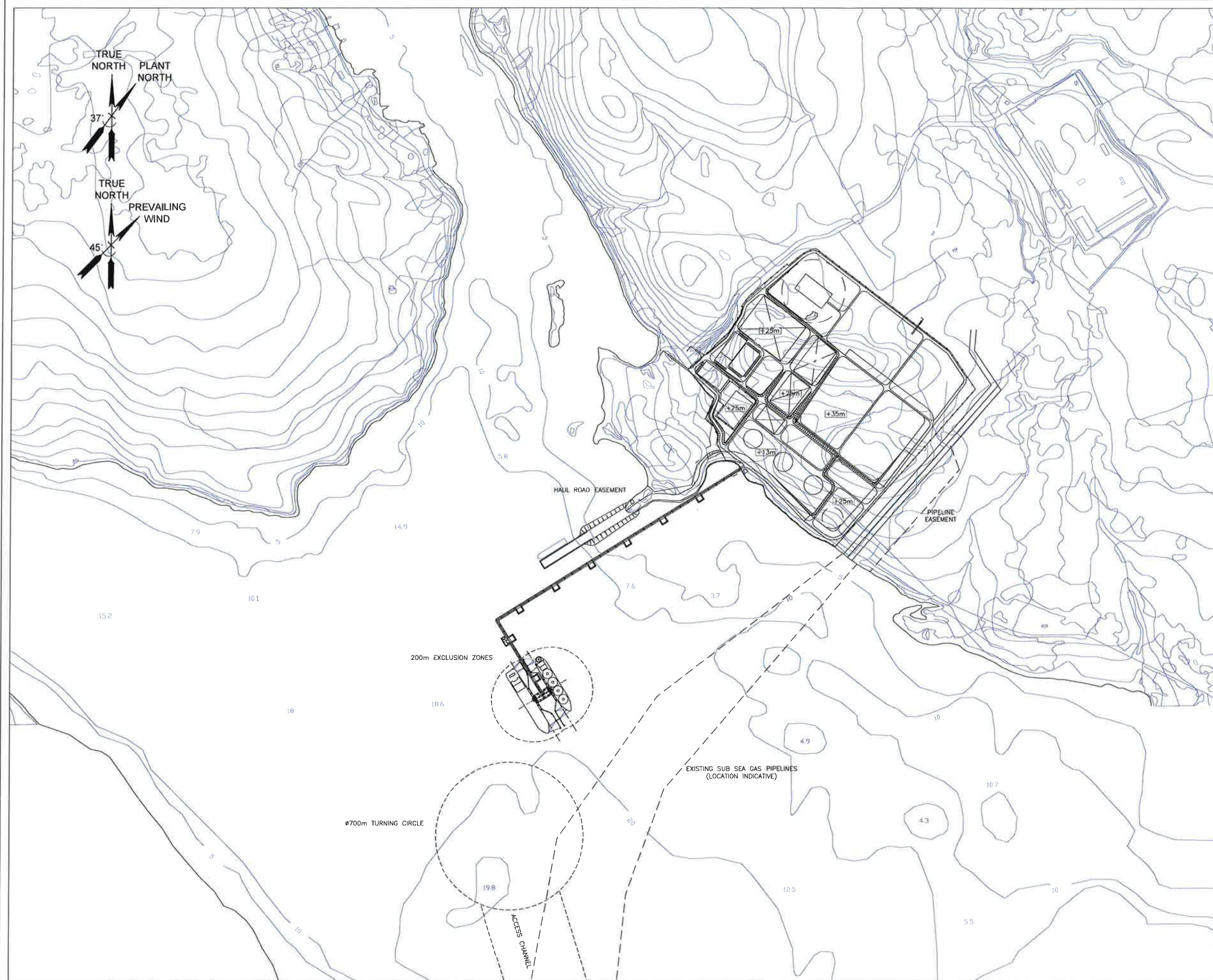
LNG Property

5,000 2,500 0 5,000
Metres



APPENDIX B

TECHNICAL DRAWINGS



NOTES



1. ALL DIMENSIONS ARE IN METRES
UNLESS OTHERWISE NOTED

HOLDS

1. CAMP LOCATION TO BE CONFIRMED FOLLOWING FURTHER DEVELOPMENT
2. EARTHWORKS AT SITE PERIMETER

REFERENCE DRAWINGS

1. 185352-000-PI-01-000002
2. 185352-000-PI-01-000003
3. 9Y0903/PF/0001
4. 9Y0903/PF/1001

B	25JAN13	ISSUED FOR REVIEW	CJ	PJW	MW	
A	03JAN13	ISSUED FOR REVIEW	CJ	AM	MW	
REV	DATE	DESCRIPTION	DRN	CHK	APP	CL



GOLDBORO LNG PROJECT



TITLE: OVERALL SITE PLAN
LNG

SCALE (A1): SEE SCALE BAR

DOCUMENT ID: -

CONTRACT No: -

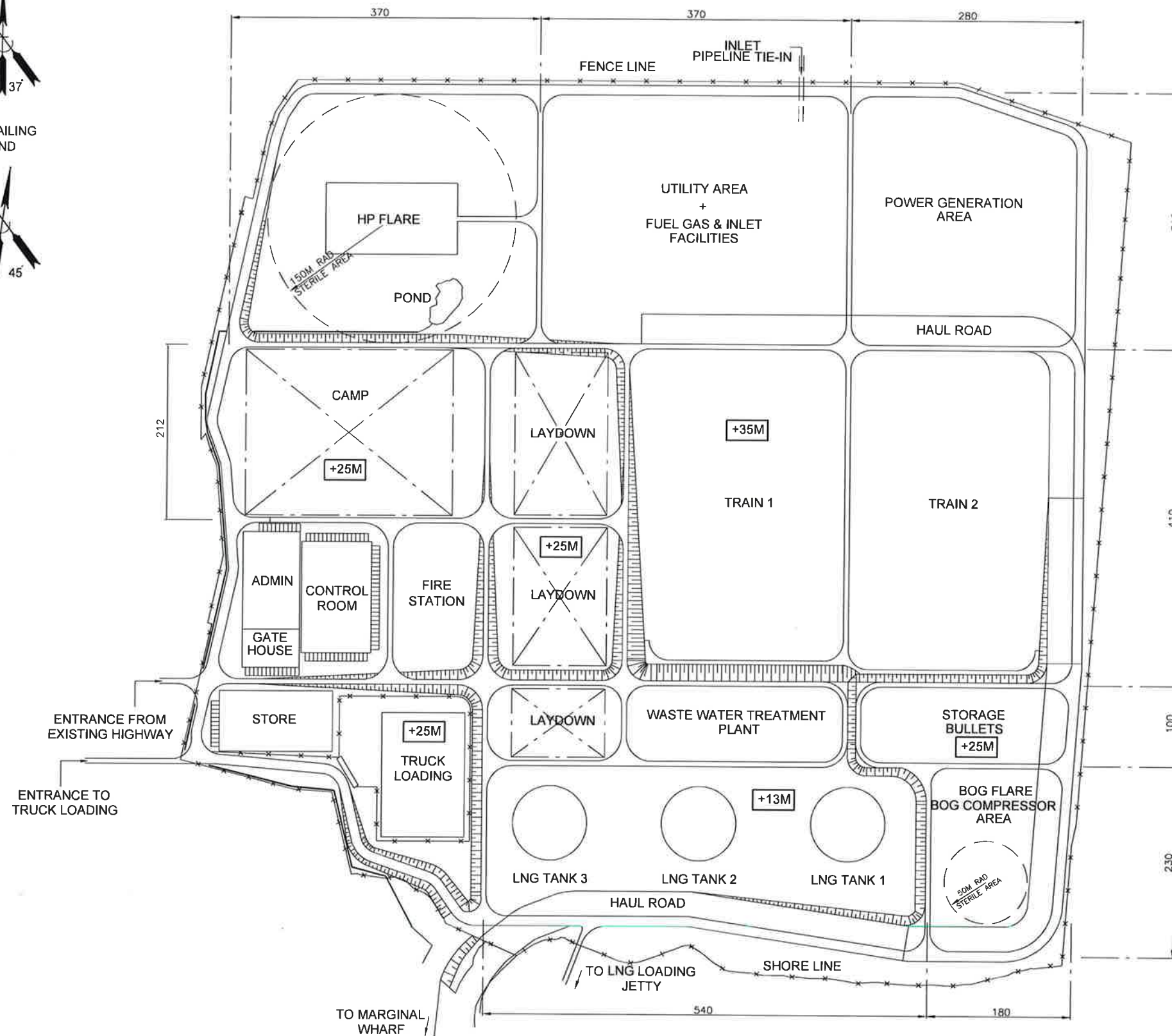
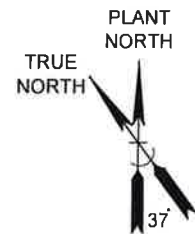
CLIENT CONTRACT No: -

DRAWING No.

185352-000-PI-01-000001

REV

B



NOTES



1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED

HOLDS

1. CAMP LOCATION TO BE CONFIRMED FOLLOWING FURTHER DEVELOPMENT
2. EARTHWORKS AT SITE PERIMETER

REFERENCE DRAWINGS

1. 185352-000-PI-01-000001
2. 185352-000-PI-01-000003

REV	DATE	DESCRIPTION	DRN	CHK	APP	CLT
B	25JAN13	ISSUED FOR REVIEW	CJ	PJW	MW	
A	03JAN13	ISSUED FOR REVIEW	CJ	AM	MW	



GOLDBORO LNG PROJECT



TITLE: OVERALL PLOTPLAN LNG

SCALE (A1): SEE SCALE BAR

DOCUMENT ID: -

CONTRACT No: -

CLIENT CONTRACT No: -

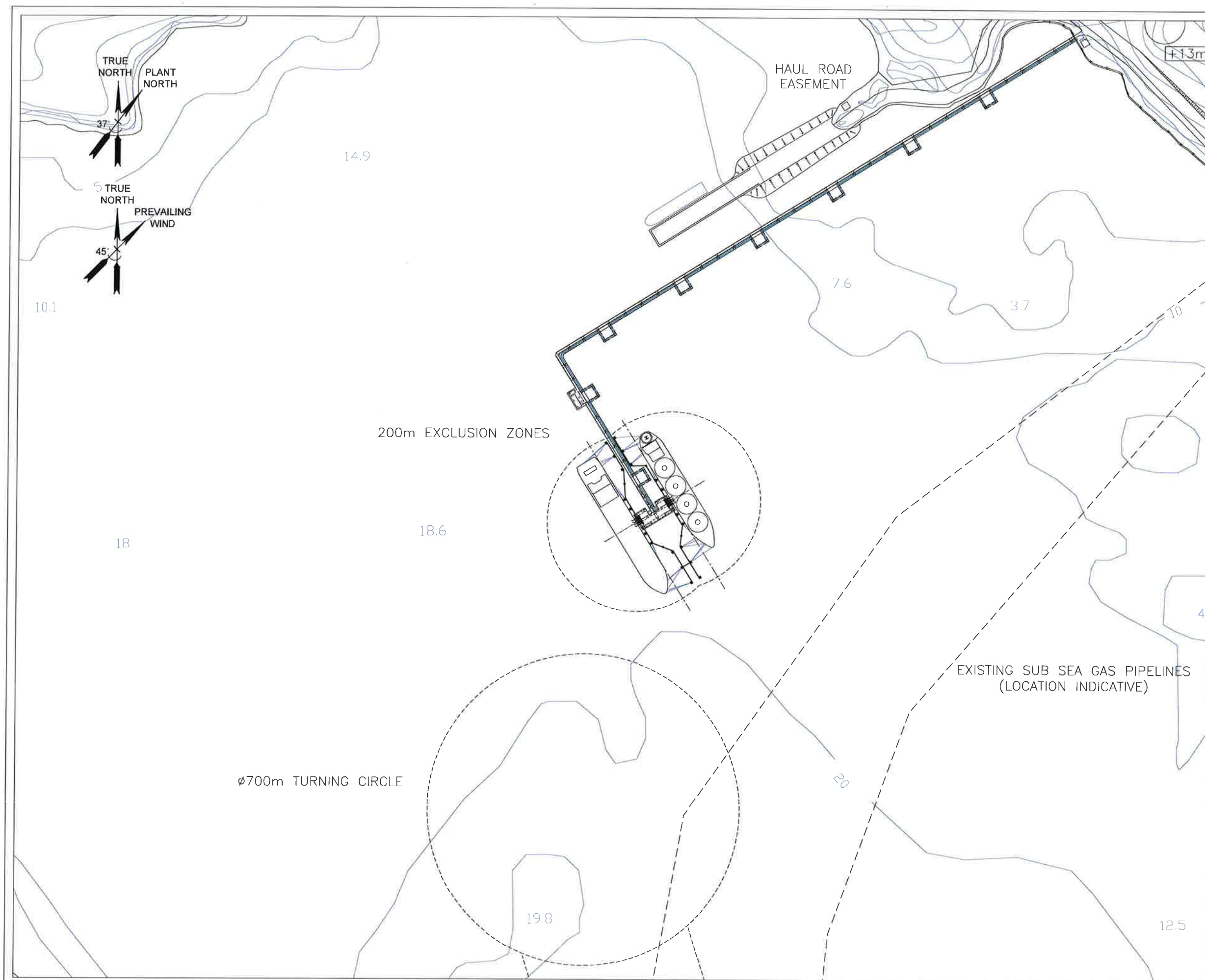
DRAWING No.

185352-000-PI-01-000002

REV

B

FILENAME: P:\185352 - GOLDBORO LNG PRE FEED STUDY\PIPING\SKETCHES\PILOT PLAN\185352-000-PI-01-00002REV02.DWG



NOTES



ALL DIMENSIONS ARE IN METRES
UNLESS OTHERWISE NOTED

HOLDS

1. EARTHWORKS AT SITE PERIMETER

REFERENCE DRAWINGS

1. 185352-000-PI-01-000001
2. 185352-000-PI-01-000002
3. 9Y0903/PF/0001
4. 9Y0903/PF/1001

B	25JAN13	ISSUED FOR REVIEW	CJ	PJW	MW		
A	03JAN13	ISSUED FOR REVIEW	CJ	AM	MW		
REV	DATE	DESCRIPTION	DRN	CHK	APP	C	

PIERIDAE ENERGY

GOLDBORO LNG PROJECT



TITLE: OVERALL PLOTPLAN
JETTY & BERTHS

SCALE (A1): SEE SCALE BAR

DOCUMENT ID: —

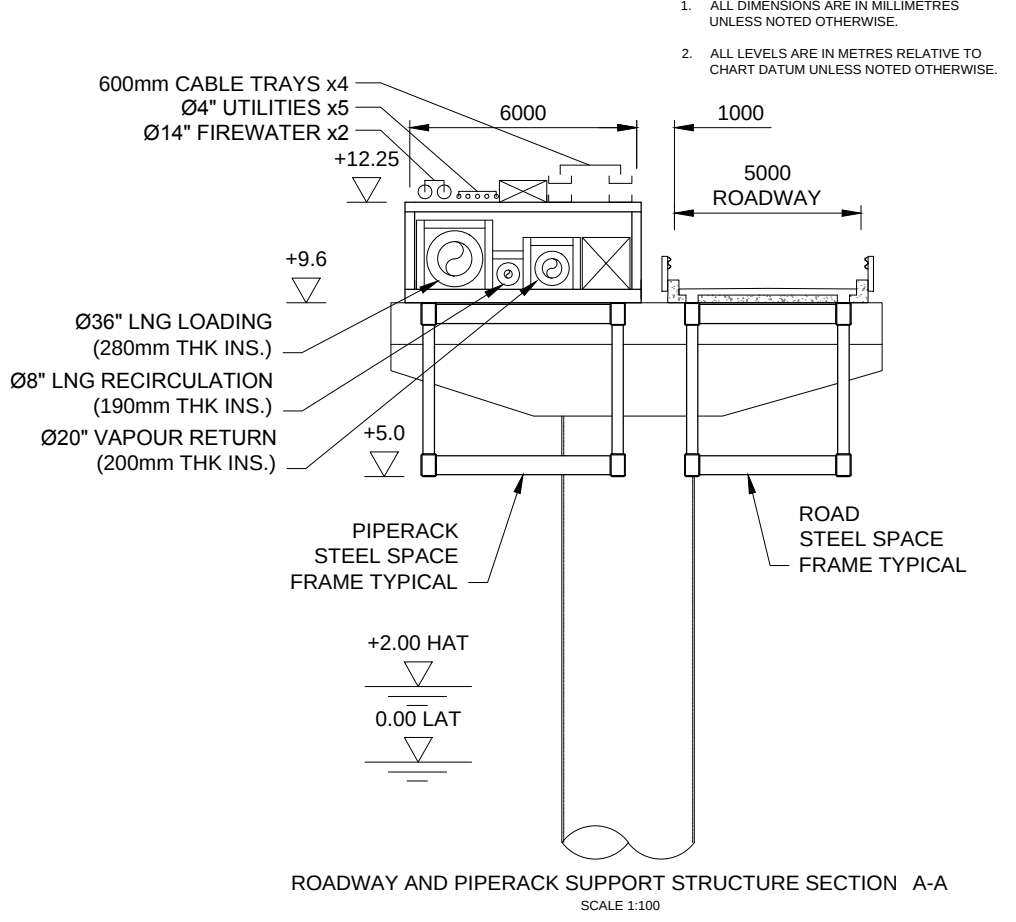
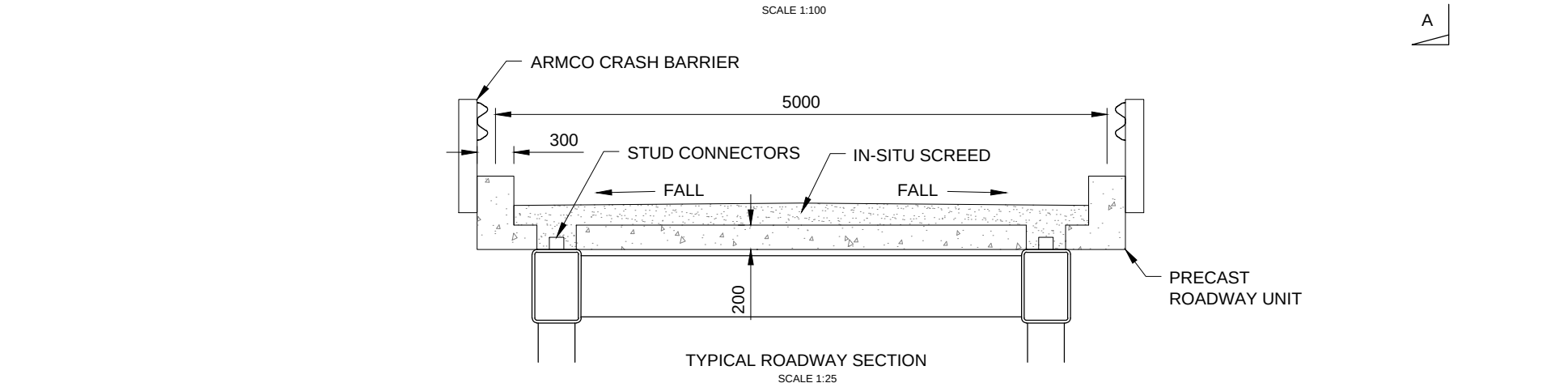
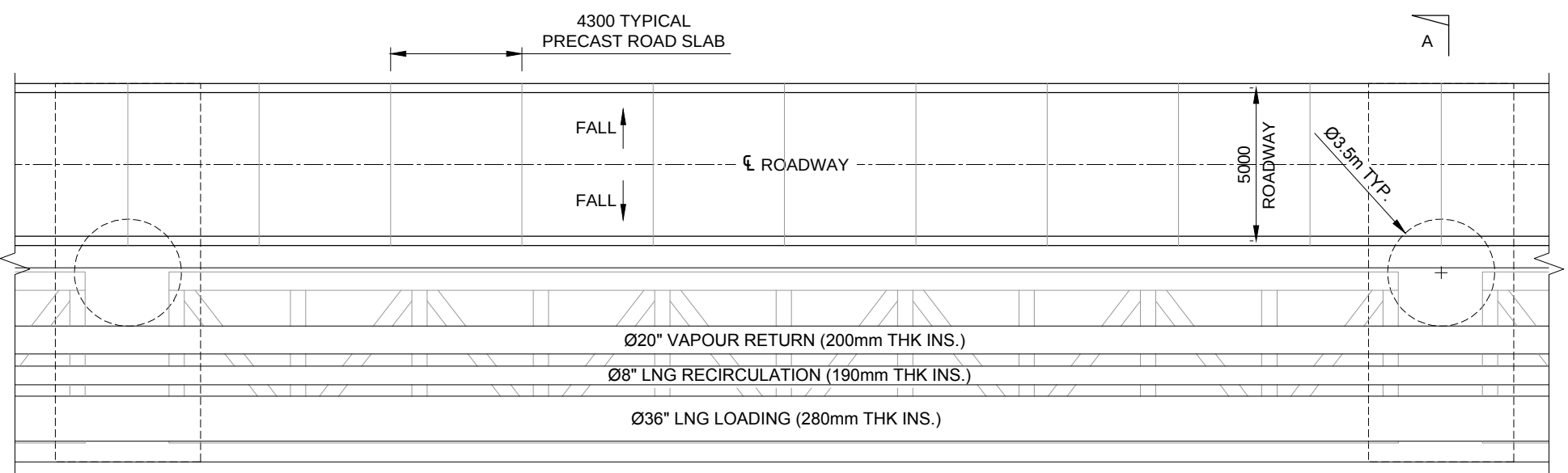
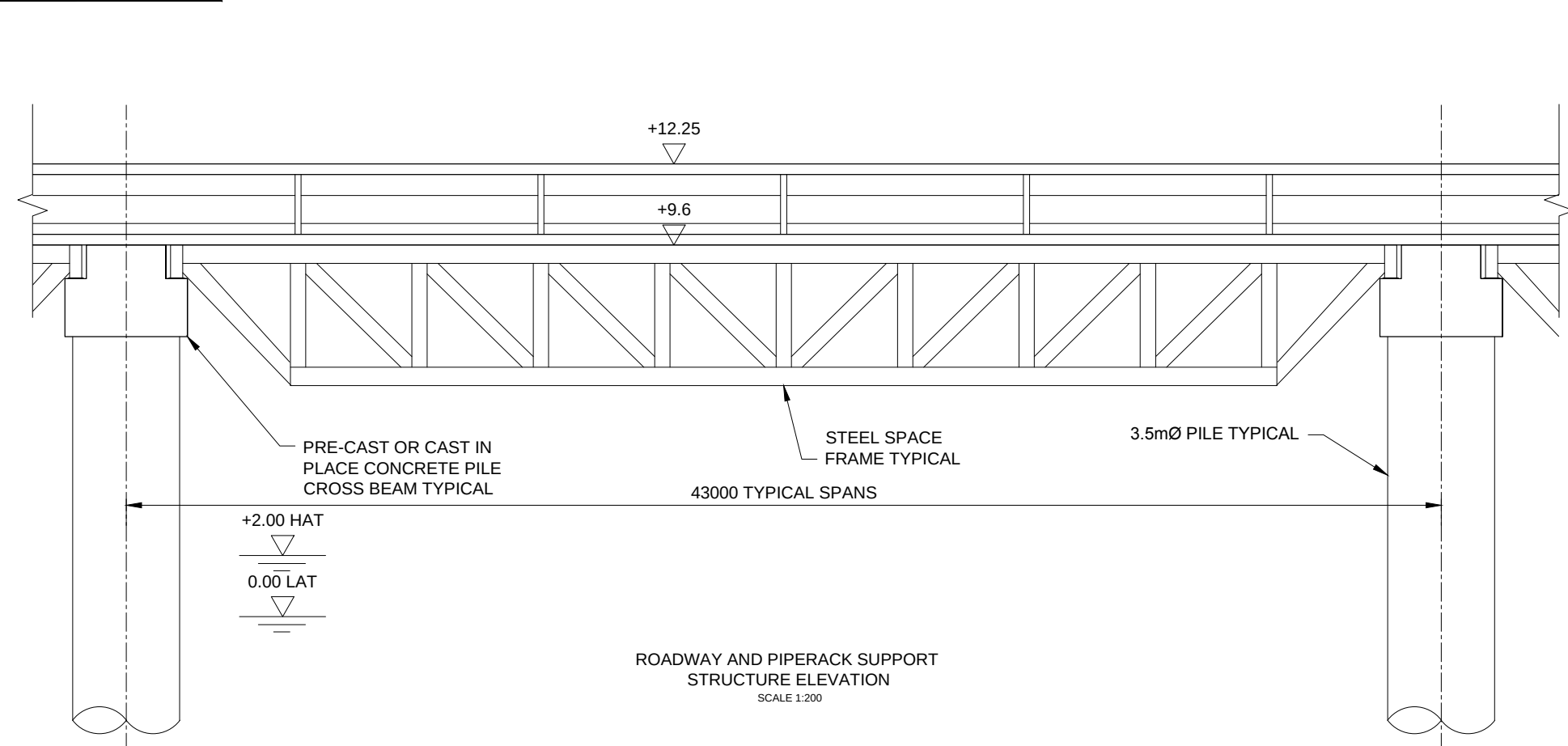
CONTRACT No: —

CLIENT CONTRACT No: —

DRAWING No.

185352-000-PI-01-000003

REV
B



**PRE FEED
DESIGN STAGE
ONLY**

REV	DATE	DESCRIPTION	BY	CHK	APP
REVISIONS					
CLIENT					
PROJECT					
GOLDBORO LNG PRE-FEED STUDY					
TITLE					
LNG JETTY APPROACH TRESTLE DETAILS					
4 Desbris Yard, Westminster London, SW1P 3NL Tel +44(0)207 222 2115 Email info.london@rdhv.com Website www.royalhaskoning.com					
DRAWN	TF	CHECKED	GM	APPROVED	SH
DATE	01/13	SCALE	AT A1 AS SHOWN	REF.	
DRAWING No. 9Y0903/PF/1021					REVISION 0

	A	B	C	D	E	F	G	H	I	J						
	Stream No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	Temperature	°C	7.0	7.0	45.0	44.7	44.9	44.5	73.9	-151.4	-160.5	44.5	44.5	44.5	60.0	1100.0
	Pressure	barg	43.0	43.0	66.0	65.2	64.6	63.0	67.7	10.0	0.1	63.0	63.0	63.0	30.0	0.0
	Phase		Vapour	Vapour	Vapour	Vapour	Vapour	Vapour	Vapour	Liquid	Liquid	Liquid	Liquid	Vapour	Vapour	Vapour
	Molecular weight		17.6	17.6	17.6	17.6	17.2	17.2	17.2	17.2	78.2	78.2	17.2	16.5	44.0	
	Density	kg/m³	38.3	38.3	50.6	50.0	48.2	47.0	44.7	432.7	446.2	627.2	627.2	47.0	19.3	0.4
	Mass Flow	kg/h	702414	702414	702414	702414	673170	655465	655246	655246	604580	219	219	17705	50666	32326
	Mass Flow (Note 3)	MTpa	5.7	5.7	5.7	5.7	5.5	5.3	5.3	5.3	4.9	0.0	0.0	0.1	0.4	0.3
2	Notes									4, 5		5		5		2
3																
4																
5																
6																
7																
8																
9																
10																

1. STREAM DATA IS FOR SINGLE TRAIN OPERATING FOR PHASE 1.

2. ACID GAS VENT INCLUDES FOR COMBUSTION OF FUEL GAS IN ACID GAS INCINERATOR.

3. ANNUAL PRODUCTION RATES ARE BASED ON AN ASSUMED FACILITY AVAILABILITY OF 340 DAYS/YEAR

4. LNG PRODUCT STREAM IS A ESTIMATED FREE ON BOARD VALUE ALLOWING FOR EXPECTED STORAGE AND LOADING LOSSES.

5. AGGREGATE RATE BASED ON A TIME WEIGHTED AVERAGE OF ESTIMATED HOLDING AND LOADING MODE OPERATION.

HOLDS

1. HOLD FOR LIQUEFACTION LICENSOR INPUT.

A	11/01/2013	ISSUED FOR REVIEW														
REV	DATE	DESCRIPTION	DRN	CHK	APP	CLT										

Pieridae Energy Ltd

GOLDBORO LNG

CBI

TITLE:

OVERALL BLOCK FLOW DIAGRAM
SHEET 2 OF 2

SCALE (A1): NTS

DOCUMENT ID:

CONTRACT No: 185352

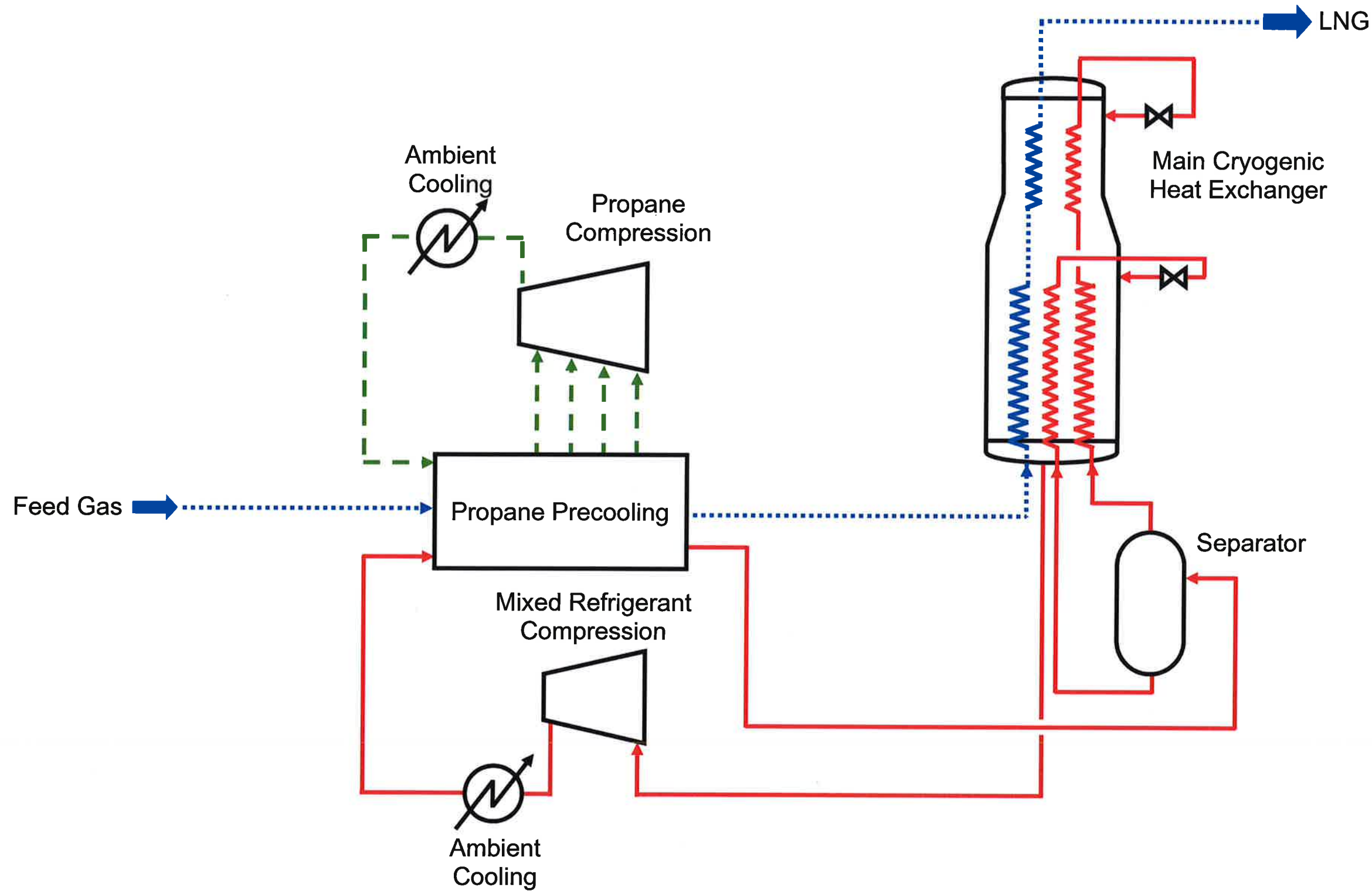
CLIENT CONTRACT No:

DRAWING No:

185352-000-PR-05-000001

REV

A



NOTES

HOLDS

A	05/02/2013	ISSUED FOR INFORMATION	RAD	DEC	MW
REV	DATE	DESCRIPTION	DRN	CHK	APP



GOLDBORO LNG



TITLE:
GENERIC LIQUEFACTION SCHEMATIC

SCALE (A1): NTS	
DOCUMENT ID:	
CONTRACT No: 185352	
CLIENT CONTRACT No:	
DRAWING No: 185352-000-PR-SK-000001	REV A