

Power and Water Corporation

Report for Bathymetric and Benthic Survey of the Proposed East Point Outfall

Part Two Bathymetric Report

January 2009



Photo: East Point at high tide



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Appendices

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1. Hydrosurvey Australia Bathymetric Report



Appendix A

Maps

Map 1, East Point Outfall Study Area (B08-1731)

Map 2, East Point Bathymetric Study Area

Map 3, Larrakeyah Outfall Study Area

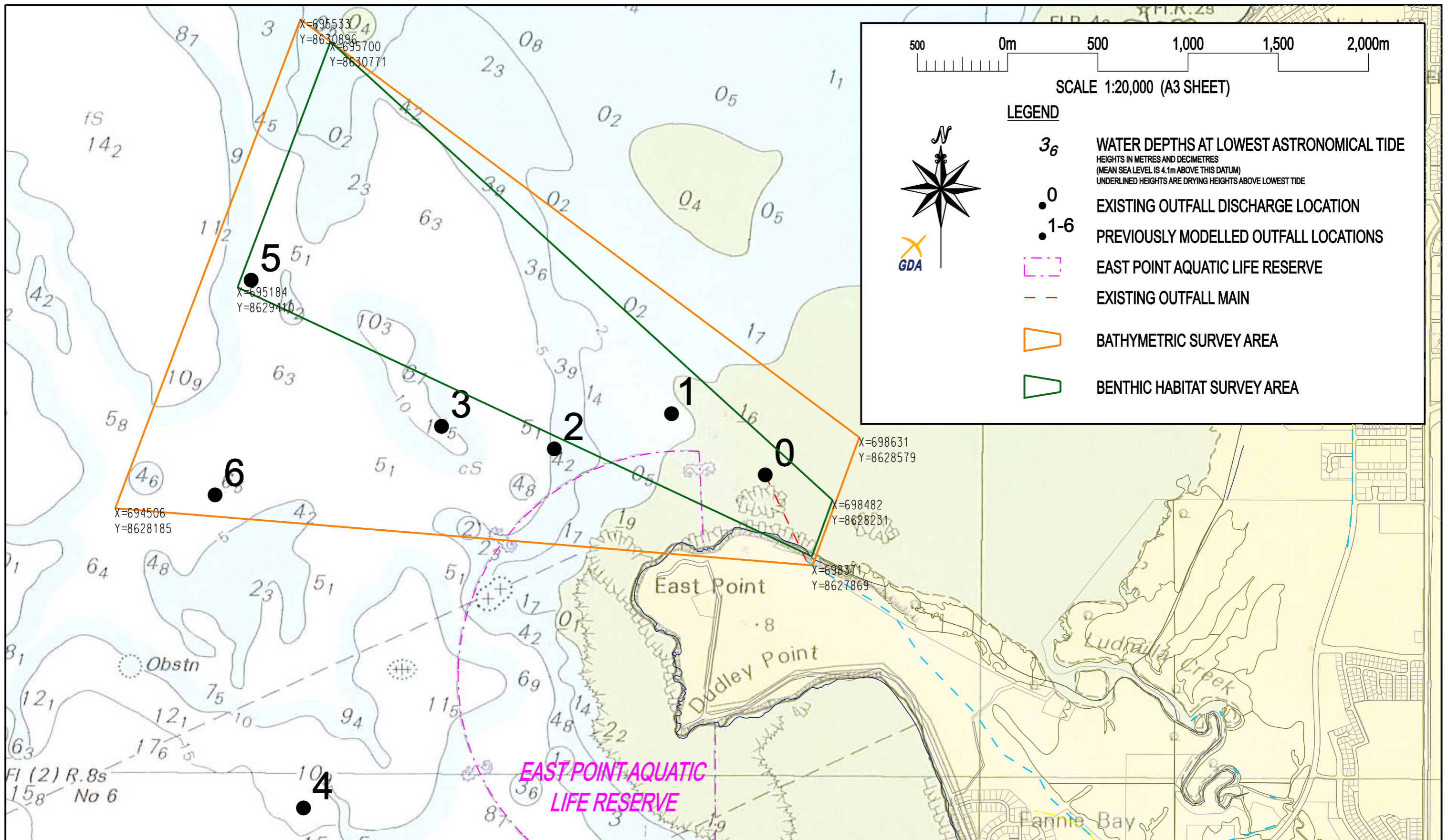
Map 4, East Point (FP1679)

Map 5, East Point (FP1678)

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Map 7, Larrakeyah (FP1680)

Map 8, East Point Study Area and Proposed Pipeline Alignment



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 NORTHERN TERRITORY

NO	DESCRIPTION	DRN	DATE	CKD	APPD
2	AREA OF INVESTIGATION AMENDED.	RGI	SEP'08
1	AREA OF INVESTIGATION AMENDED	AJC	March 08	JF	TD
AMENDMENTS					

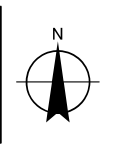
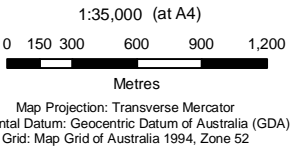
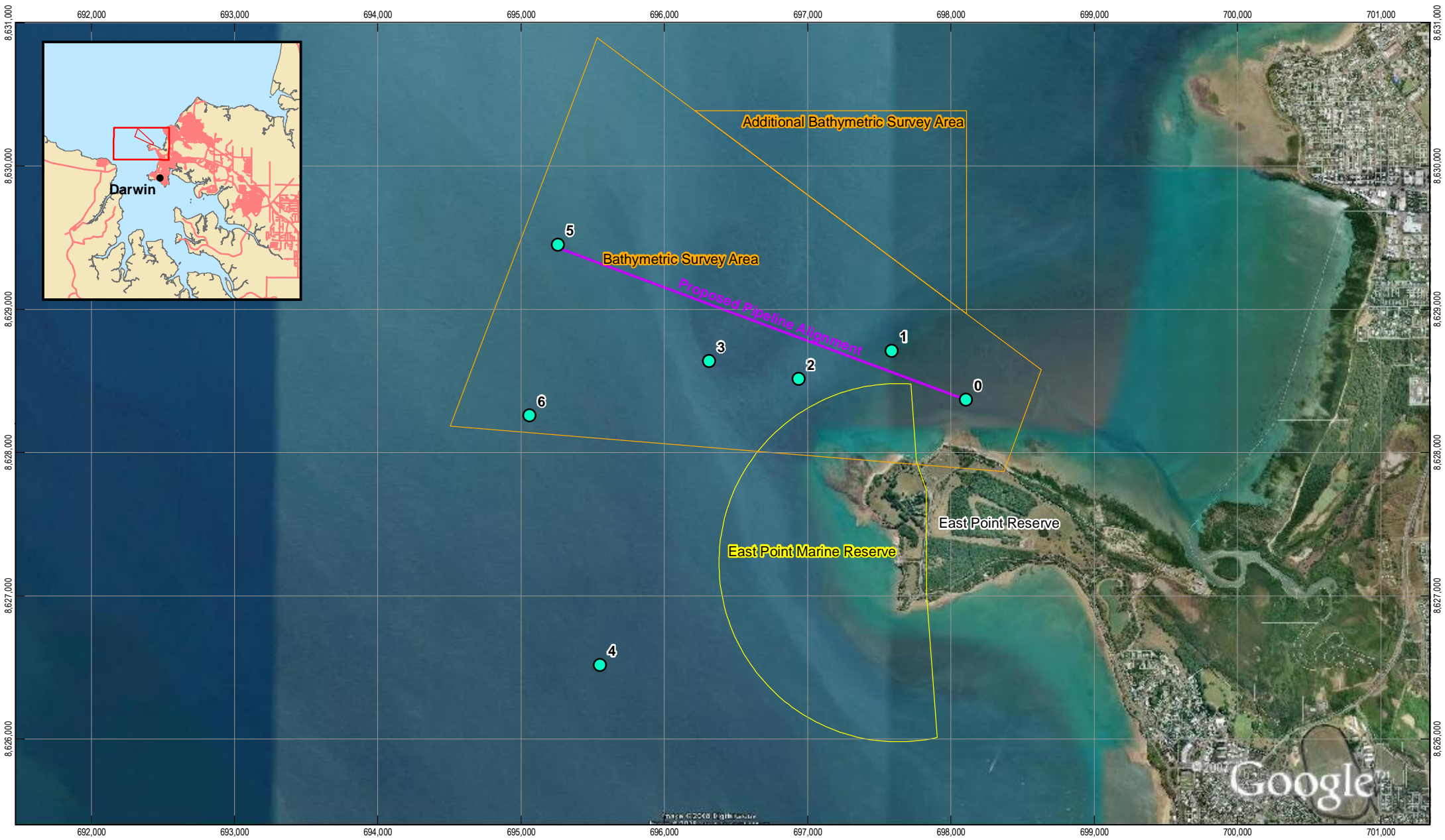


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DRN	R. INNES
CKD	-
APPD	T. DURLING
SCALE	1:20,000
ISSUED	FEB'08
ALL DIM.	IN mm
DRAFTING STANDARD TO A.S.1100	

EAST POINT SEWAGE OUTFALL AUGMENTATION INVESTIGATIONS PLAN OF OPTIONS (PORT MAP)

A3	DRAWING NUMBER	B08-1731
CAD PRODUCT - DO NOT AMEND MANUALLY		





LEGEND

- Potential Outfall Locations
- Proposed Pipeline Alignment
- Bathymetric Survey Area
- East Point Marine Reserve

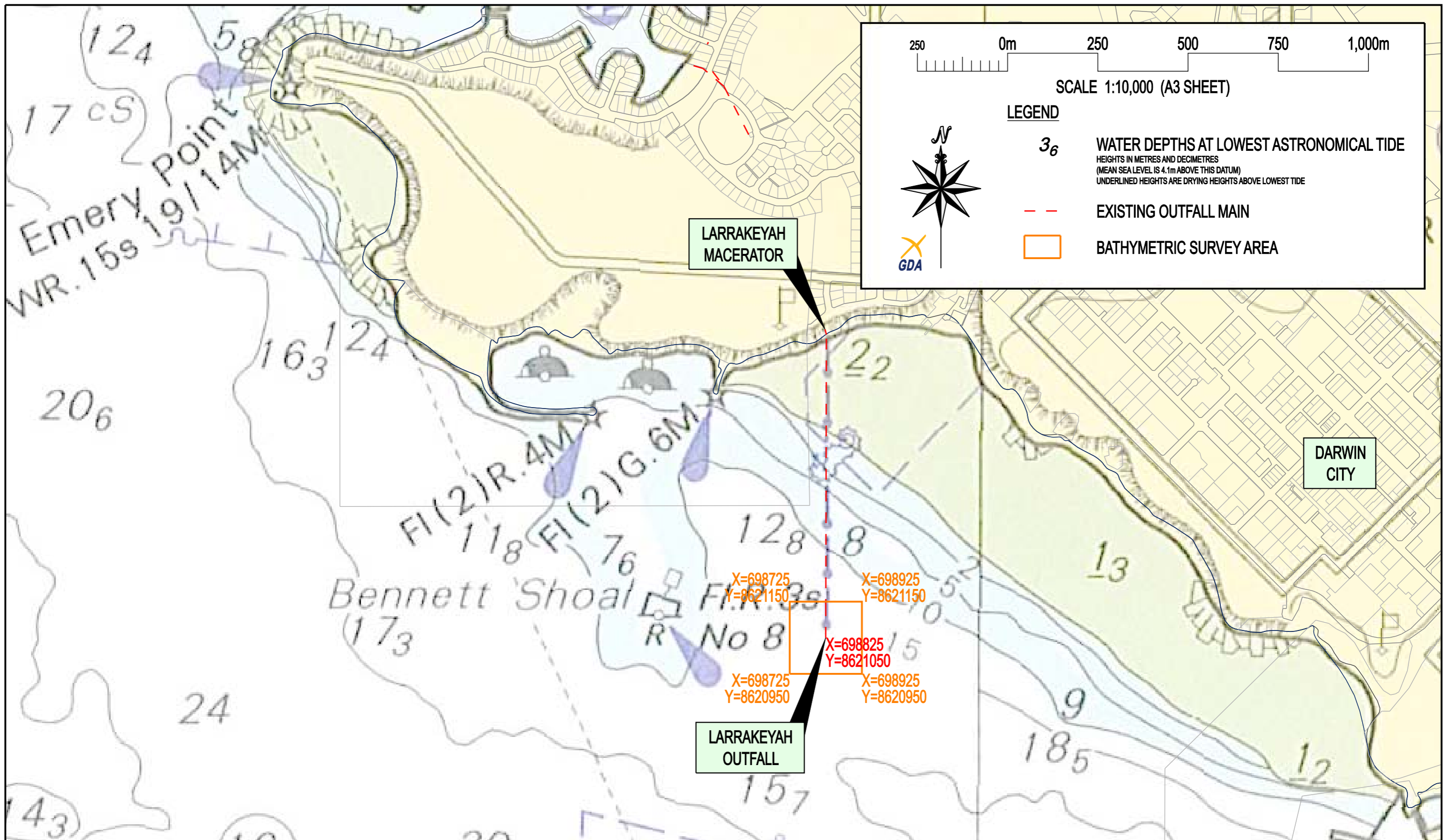


Power and Water Corporation
Proposed East Point Outfall, Bathymetric and Benthic Survey

Job Number	43-21461
Revision	A
Date	02 FEB 2009

The East Point Bathymetric Study Area Map 2 Appendix A

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 Data source: Bathymetric Survey Area Data from Power and Water Corporation, Northern Territory Coastline data, Cadastre and Roads Data from Northern Territory Government, Reserve Data from GHD, Imagery Obtained from Google Earth Pro, WARNING Google Earth Imagery is not Orthorectified Created by: sdwoodger
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NO	DESCRIPTION	DRN	DATE	CKD	APPD
AMENDMENTS					

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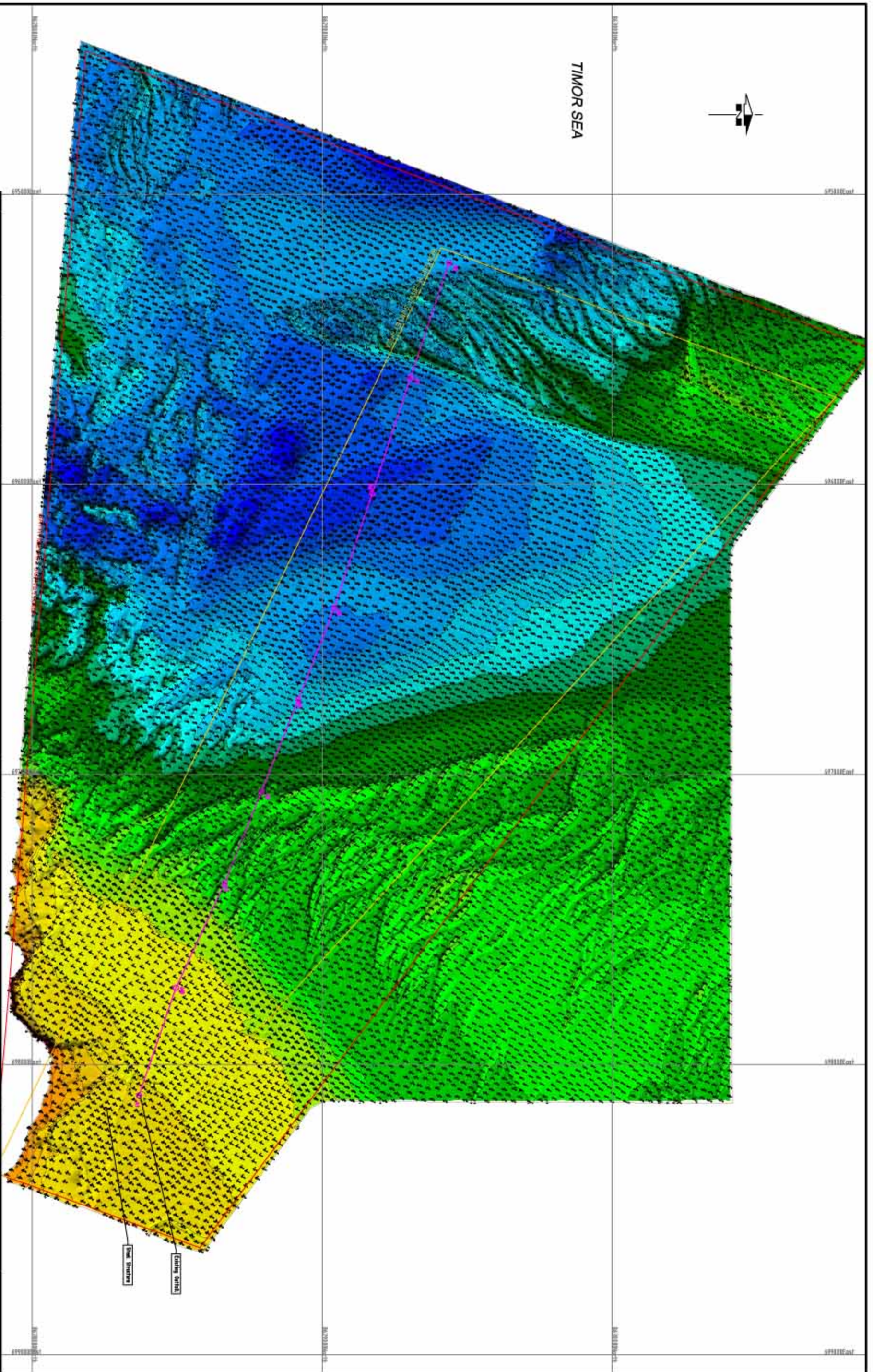
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DRN	R. INNES
CKD	...
APPD	...
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ISSUED	OCT'08
ALL DIM.	IN mm
DRAFTING STANDARD	TO A.S.1100

**LARRAKEYAH SEWAGE OUTFALL
 PLAN WITH PORT MAP
 FOR BATHYMETRIC SURVEY**

A3	DRAWING NUMBER	B08-6946	 AMDT
DRAFTING STANDARD TO A.S.1100		CAD PRODUCT - DO NOT AMEND MANUALLY	



TIMOR SEA



Row	Description of marker	Date	Scale

This survey has been carried out using a Chironom hydrographic survey system with a dual survey system to ILO, QdA standard for accurate under way survey work. (A) Full survey work (to total bottom coverage) has been achieved over survey area. (B) A section survey (to total bottom coverage) has been achieved over survey area. (C) Data processing and plotting has been carried out using a CHART Hydrographic Surveyor. (D) Sounding soundings given on this plan are medium depths within a 4m depth of influence. (E) Horizontal position has an accuracy of ± 1m (95% confidence level).

VERTICAL DATUM
 Located on or near to and datum related to East datum.
 CHART DATUM = 10.000m (Mean Sea Level)
 BRIDGE = E.L. (Chart A1.2)
QUANTUM
 High tide of Australia 1984 (MSL) (Tide 2)
QUANTUM
 High tide of Australia 1984 (MSL) (Tide 2)
QUANTUM
 High tide of Australia 1984 (MSL) (Tide 2)
 TIDE GAUGE 122025 (Darwin)
 TIDE GAUGE 122025 (Darwin)
 TIDE GAUGE 122025 (Darwin)

RES
 SOUNDINGS TAKEN 20 October - 21 November 2008
 (UNPUBLISHED) PRELIMINARY SOUNDINGS

NOISE
 SOUNDINGS TAKEN 20 October - 21 November 2008
 (UNPUBLISHED) PRELIMINARY SOUNDINGS

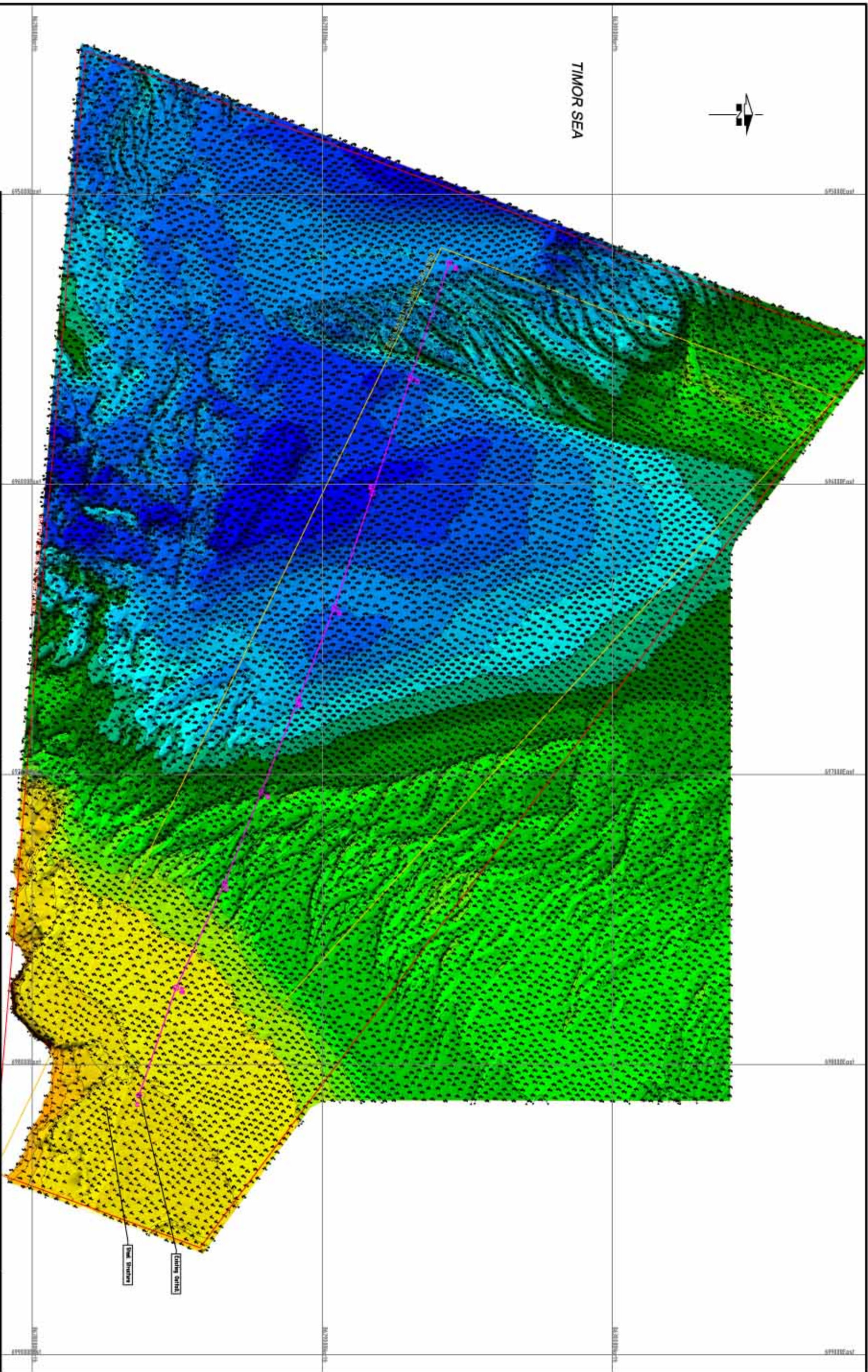
SCALE
 Soundings reduced to 1:1000
 Horizontal scale 1:1000
 Vertical scale 1:1000

Flinders Ports
EAST POINT DARWIN
PROPOSED OUTFALL SITE
CHART DATUM SOUNDINGS
 SURVEYED 2008

SCALE 1:12,500 @ A3

JOB NO.	10044
SHEET	3 of 3
LOC.	660
TITLE	13
DATE	

FP1679



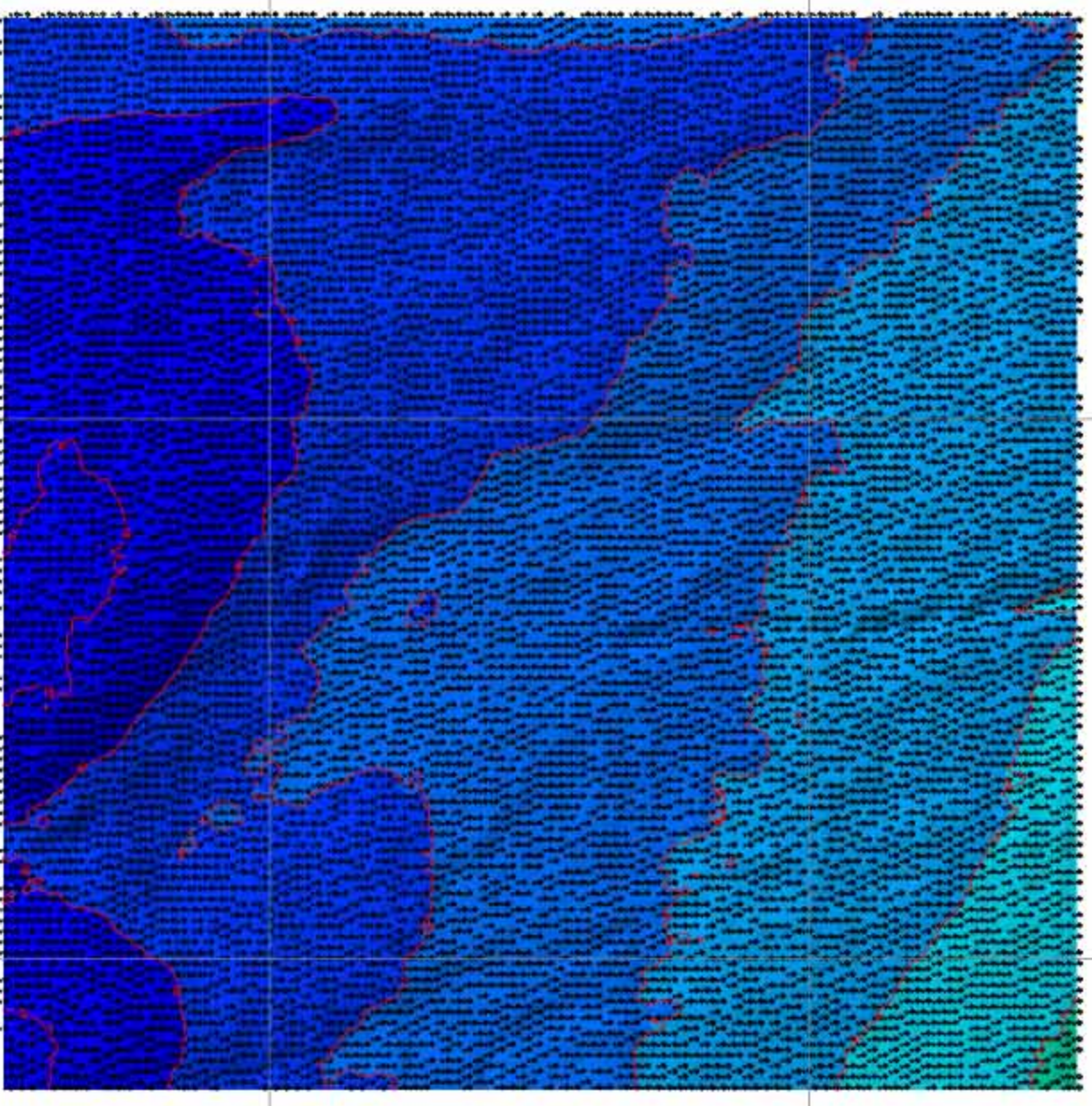
TIMOR SEA

Date: 20/11/08 Drawn: A.S. Checked: J.S. Survey: 2008	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	This survey has been carried out using a Chirp echosounder with multi-survey system to 110.0. Data standard for single beam surveys and the (A) Full beam mode (the total bottom coverage) has been activated over survey area. (B) A 2° beam 100 shot program. (C) Data processing and including has been carried out using a CHIRP Hydrographic Surveyor. (D) Sounding soundings given on this plan are medium depths within a 4m depth of tolerance. (E) Horizontal position has an accuracy of ± 1m (95% confidence level).	VERTICAL DATUM Sounding is in meters and datum related to Australian Height Datum (AHD). Reference: 541 100 (Sounding) from Bank (M) 541000 + 0.30m AHD. SOUNDING DATUM High Water of Australia 1984 (MHW 1984)	HRS SOUNDINGS TAKEN 20 CHIRP - CHIRP/2008 (MAPPED) PLOTLINE ROUTE SHOWN	NOISE SOUNDING TOLERANCE: ± 0.30m PLOTLINE ROUTE SHOWN	EASTING 1000000 1000000 1000000 1000000 1000000	NORTHING 6200000 6200000 6200000 6200000 6200000							
								Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08
								Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08	Date: 20/11/08 Date: 20/11/08 Date: 20/11/08

SCALE 1:12,500 @ A3

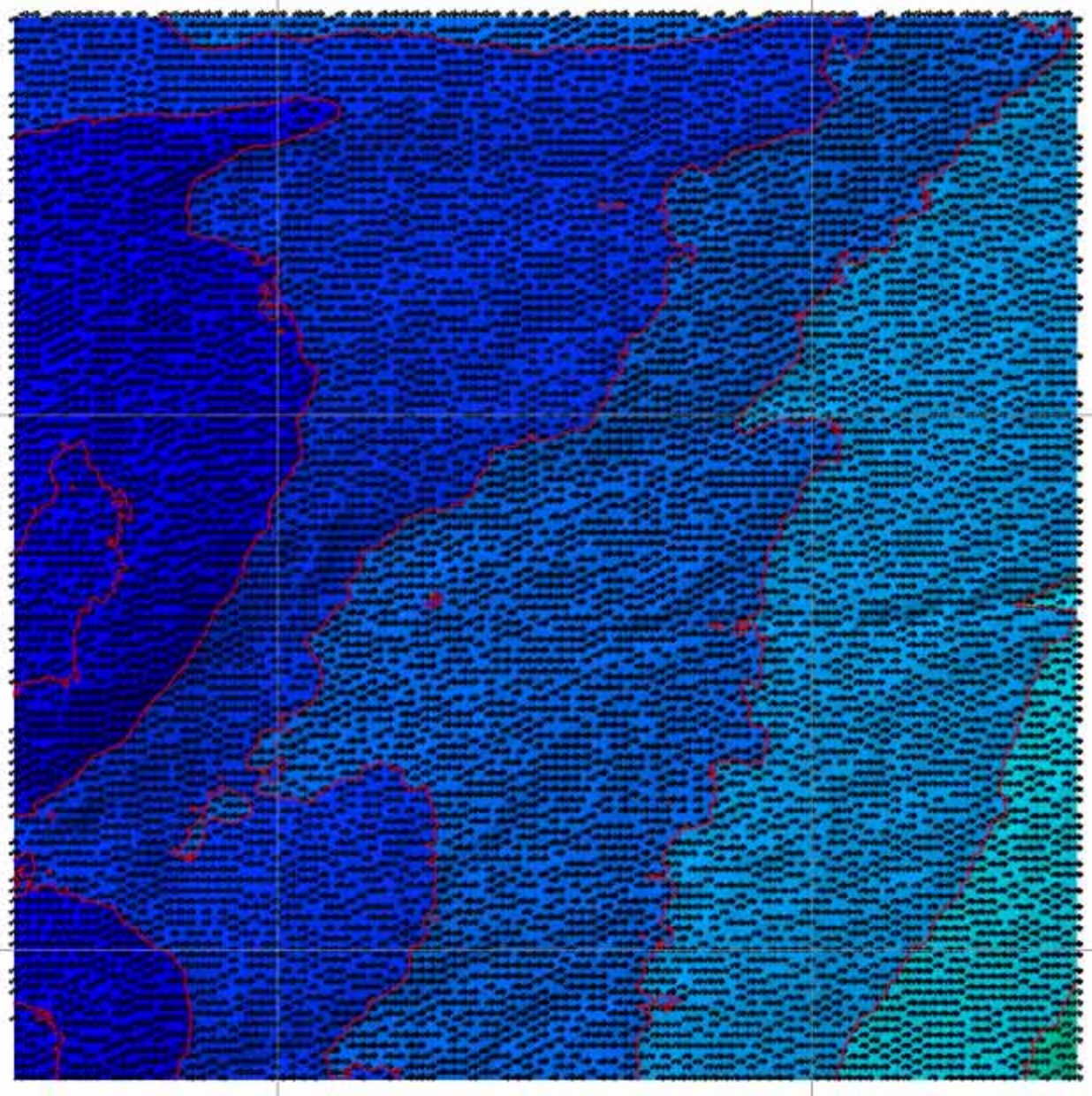
Flinders Ports
 SOUTH AUSTRALIA
EAST POINT DARWIN
PROPOSED OFFFALL SITE
A.H.D. SOUNDINGS
 SURVEYED DATE:

JOB NO:	H004V
SHEET:	1 of 2
LDC:	660
TYPE:	13
DATE:	FP1678



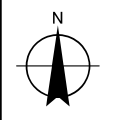
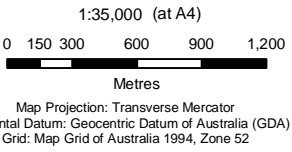
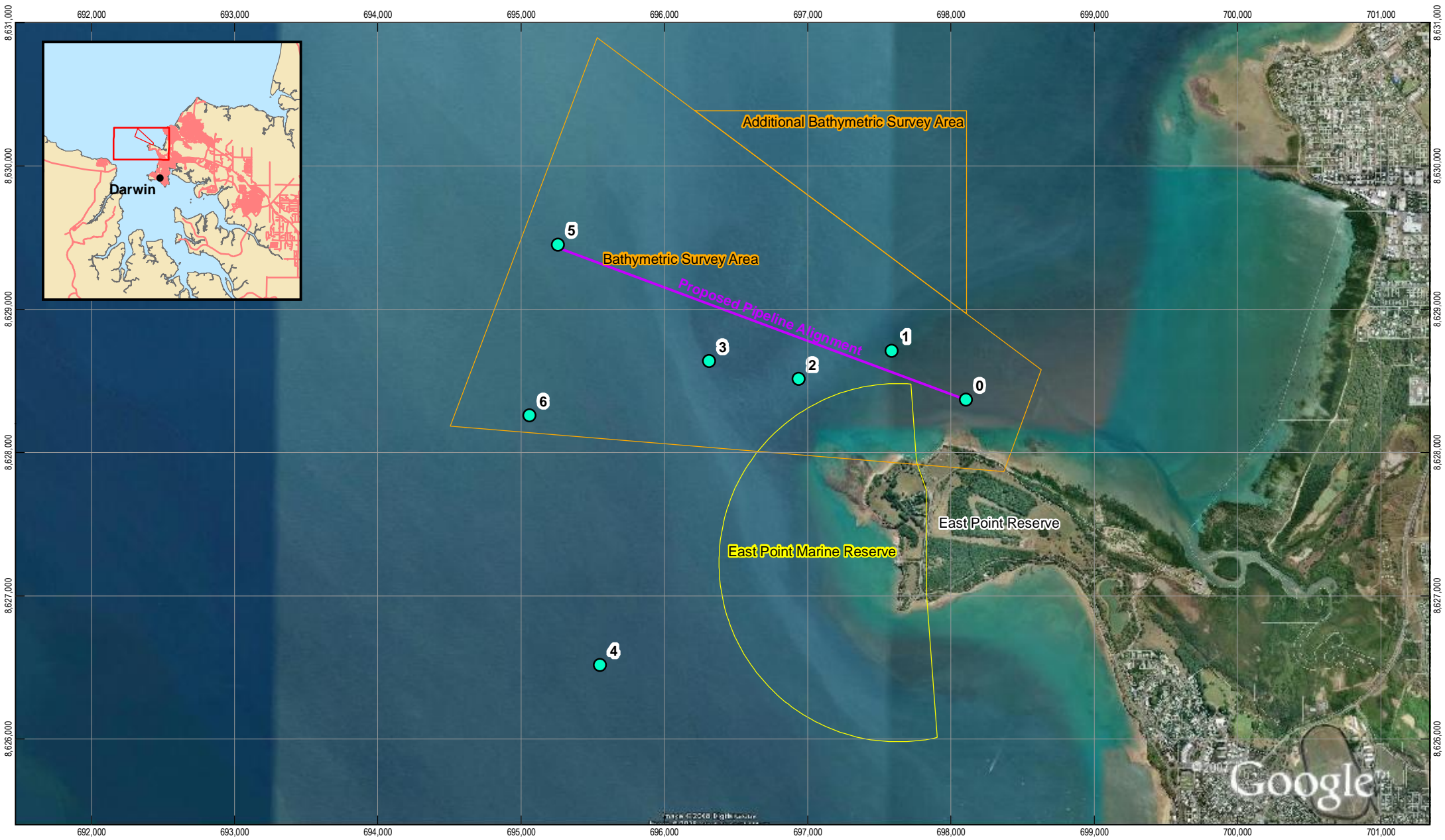
<p>Flinders Ports SOUTH AUSTRALIA</p> <p>LARRAKEYAH DARWIN OUTFALL PIPELINE CHART DATUM SOUNDINGS</p> <p>SOUNDINGS ONLY</p>		<p>JOB NO. 1681</p> <p>SHEET 3 of 3</p> <p>DATE 13</p> <p>REV</p>
<p>VERTICAL DATUM</p> <p>Soundings are in meters and depths indicated to centimeters.</p> <p>CHART DATUM IS TO DATA NEW SYSTEMS DERIVED FROM THE DATUM.</p> <p>VERTICAL DATUM IS TO DATA NEW SYSTEMS DERIVED FROM THE DATUM.</p> <p>Map of Australia 1996 (MGA96) Zone 49</p> <p>ICD/INDIC</p> <p>Scale used 1:500</p> <p>Soundings are in meters and depths indicated to centimeters.</p> <p>Total AG 200 datum reference. THIS DATUM IS NOT TO BE USED FOR ANY OTHER PURPOSE.</p>		<p>REVISIONS</p> <p>DATE</p> <p>BY</p> <p>REVISION</p>
<p>NOTES</p> <p>BOUNDINGS FROM 01 November 2008.</p> <p>SCALE</p> <p>Scale reduction: 1:500</p> <p>Metres 0 10 20 30 40 50 Metres</p>		<p>DESCRIPTION OF REVISION</p> <p>DATE</p> <p>BY</p>
<p>DETAILED DESCRIPTION</p> <p>(A) Full section was (to total station coverage) has been rectified over survey area.</p> <p>(B) A section was (to total station coverage) has been rectified over survey area.</p> <p>(C) Data was (to total station coverage) has been rectified over survey area.</p> <p>(D) Soundings shown on this chart are in meters and depths indicated to centimeters.</p> <p>(E) Horizontal position has an accuracy of ± 1 m.</p>		<p>DATE</p> <p>BY</p> <p>DATE</p> <p>BY</p>

SCALE 1:1250 @ A3



<p>888000 East</p> <p>888500 East</p> <p>889000 East</p> <p>889500 East</p> <p>890000 East</p> <p>890500 East</p> <p>891000 East</p> <p>891500 East</p> <p>892000 East</p>		<p>8621000 North</p> <p>8621250 North</p> <p>8621500 North</p> <p>8621750 North</p> <p>8622000 North</p>	
<p>888000 East</p> <p>888500 East</p> <p>889000 East</p> <p>889500 East</p> <p>890000 East</p> <p>890500 East</p> <p>891000 East</p> <p>891500 East</p> <p>892000 East</p>		<p>8621000 North</p> <p>8621250 North</p> <p>8621500 North</p> <p>8621750 North</p> <p>8622000 North</p>	
<p>888000 East</p> <p>888500 East</p> <p>889000 East</p> <p>889500 East</p> <p>890000 East</p> <p>890500 East</p> <p>891000 East</p> <p>891500 East</p> <p>892000 East</p>		<p>8621000 North</p> <p>8621250 North</p> <p>8621500 North</p> <p>8621750 North</p> <p>8622000 North</p>	
<p>888000 East</p> <p>888500 East</p> <p>889000 East</p> <p>889500 East</p> <p>890000 East</p> <p>890500 East</p> <p>891000 East</p> <p>891500 East</p> <p>892000 East</p>		<p>8621000 North</p> <p>8621250 North</p> <p>8621500 North</p> <p>8621750 North</p> <p>8622000 North</p>	
<p>888000 East</p> <p>888500 East</p> <p>889000 East</p> <p>889500 East</p> <p>890000 East</p> <p>890500 East</p> <p>891000 East</p> <p>891500 East</p> <p>892000 East</p>		<p>8621000 North</p> <p>8621250 North</p> <p>8621500 North</p> <p>8621750 North</p> <p>8622000 North</p>	

<p>Drawn</p> <p>Checked</p> <p>Surveyed</p>	<p>Add</p> <p>Sub</p>	<p>Date</p> <p>Date</p> <p>Date</p>	<p>30/1/00</p> <p>01/1/00</p> <p>27/2/00</p>	<p>This survey has been carried out using a Chouinard Hydrographic Surveying system with a 1:10,000 scale standard for accurate depth soundings and has been reduced to Mean Low Water (MLW) using the following method:</p> <p>(A) Full soundings were (in total bottom coverage) (has been reduced) over survey area</p> <p>(B) A correction for reduced depths (98% confidence level) was applied</p> <p>(C) Data was plotted and including has been carried out using a CHART Hydrographic Surveying system</p> <p>(D) Soundings shown on this plan are minimum depths within a 4m area of influence</p> <p>(E) Horizontal position has an accuracy of ± 1m (95% confidence level)</p>
<p>REVISIONS</p> <p>NO. DATE BY</p> <p>1 20/1/00 JAB</p>				<p>VERTICAL DATUM</p> <p>Soundings are in metres and are based on the Australian Height Datum (AHD) which is a mean sea level datum based on the 1992 datum</p> <p>Map sheet of datum (1992) (MAD) Zone 48</p> <p>Scale used: 1:10,000</p> <p>Soundings are in metres</p> <p>Vertical Datum: AHD</p> <p>Horizontal Datum: WGS 84</p> <p>Scale: 1:1250 @ A3</p>
<p>BOUNDING BOX (Meters)</p> <p>Easting: 888000 to 892000</p> <p>Northing: 8621000 to 8622000</p>				<p>VERTICAL DATUM</p> <p>Soundings are in metres and are based on the Australian Height Datum (AHD) which is a mean sea level datum based on the 1992 datum</p> <p>Map sheet of datum (1992) (MAD) Zone 48</p> <p>Scale used: 1:10,000</p> <p>Soundings are in metres</p> <p>Vertical Datum: AHD</p> <p>Horizontal Datum: WGS 84</p> <p>Scale: 1:1250 @ A3</p>
<p>SCALE</p> <p>1:1250 @ A3</p> <p>0 10 20 30 40 50 Meters</p>				<p>VERTICAL DATUM</p> <p>Soundings are in metres and are based on the Australian Height Datum (AHD) which is a mean sea level datum based on the 1992 datum</p> <p>Map sheet of datum (1992) (MAD) Zone 48</p> <p>Scale used: 1:10,000</p> <p>Soundings are in metres</p> <p>Vertical Datum: AHD</p> <p>Horizontal Datum: WGS 84</p> <p>Scale: 1:1250 @ A3</p>
<p>Flinders Ports</p> <p>SOUTH AUSTRALIA</p> <p>LARRAKEYAH DARWIN</p> <p>OUTFALL PIPELINE</p> <p>A.H.D. SOUNDINGS</p> <p>SOUNDINGS ONLY</p>				<p>VERTICAL DATUM</p> <p>Soundings are in metres and are based on the Australian Height Datum (AHD) which is a mean sea level datum based on the 1992 datum</p> <p>Map sheet of datum (1992) (MAD) Zone 48</p> <p>Scale used: 1:10,000</p> <p>Soundings are in metres</p> <p>Vertical Datum: AHD</p> <p>Horizontal Datum: WGS 84</p> <p>Scale: 1:1250 @ A3</p>
<p>JOB NO. 1680</p> <p>SHEET 1 of 2</p> <p>DATE 13</p> <p>FP1680</p>				<p>VERTICAL DATUM</p> <p>Soundings are in metres and are based on the Australian Height Datum (AHD) which is a mean sea level datum based on the 1992 datum</p> <p>Map sheet of datum (1992) (MAD) Zone 48</p> <p>Scale used: 1:10,000</p> <p>Soundings are in metres</p> <p>Vertical Datum: AHD</p> <p>Horizontal Datum: WGS 84</p> <p>Scale: 1:1250 @ A3</p>



LEGEND	
	Potential Outfall Locations
	Bathymetric Survey Area
	Proposed Pipeline Alignment
	East Point Marine Reserve



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Power and Water Corporation
Proposed East Point Outfall, Bathymetric and Benthic Survey

Job Number	43-21461
Revision	A
Date	02 FEB 2009

East Point Study Area and Proposed Pipeline Alignment

Map 8 Appendix A

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Level 5, 66 Smith Street Darwin NT 0800
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T: (08) 8982 0100 F: (08) 8981 1075 E: drwmail@ghd.com.au

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		Name	Signature	Name	Signature	Date
1	HyrdoSurvey Australia	K Rope		W Freeland		03.02.2009