



## DELIBERASAUN N. 64/V/CAFI/2025

Conselho de Administração do Fundo das Infraestruturas – CAFI, bazeia ba artigo 10º (1) e (3) DL Nº. 25/2024, de 22 de maio, Primeira Alteração ao DL Nº.13/2016, 18 de Maio, realiza reuniaun ordinária iha loron Sexta-feira, 23 de maio de 2025, e halo deliberasaun ba assunto tuir mai ne'e:

**Asuntu:** Pedidu aprovasaun no autorizasaun despezas no konfirma finansiamentu iha FI 2025 ba Projetu *Consultancy Services for Bathymetric Survey of Seafront, Dili*

**Proponente:** Ministério do Planeamento e Investimento Estratégico – MPIE

**Notas/justifikasaun:**

- Bazeia ba despacho husi Ministro do MPIE ho karta no. Ref.: 763/CG-GMPIE/V/2025, data 14 de Maio de 2025, ba karta pedidu husi Diretor Executivo ADN, I.P. Sr. Rui Lourenço da Costa, ho no. Ref.: 0738/DN, I.P/V/2025, data 13 de Maio de 2025, ho asuntu: Entrega resultadu Verifikasiun ba Projetu Consultancy Services for Bathymetric Survey of Seafront, Dili;
- Bazeia ba karta husi ADN, I.P. ho Ref.: 0738/DN, I.P/V/2025, data 13 de Maio de 2025, ho asuntu: Entrega resultadu Verifikasiun ba Projetu Consultancy Services for Bathymetric Survey of Seafront, Dili ho montante \$84,530.00;
- Alokasaun FI 2025: \$ 0, Programa 026: Estradas e Pontes, Sub Programa Estrada Nasional & Municipal, kodigu atividade 0261292: Reklamasau praia do Pantai Kelapa Dili;
- Desizaun kona ba abertura ka inisiasiun prosesu aprovisionamentu bazeia, Artigo 24 & 25, Decreto Lei No.43/2024, de 20 de Dezembro, regra ezekusaun OGE 2025;
- Bazeia ba Artigo 21, DL No.13/2016, de 18 de maio, kona ba Regulamentu Fundo da Infraestrutura, determina katak aprovisionamento projetu FI nian sei lao tuir Regime Juridiku Aprovizionamento em vigor. Modalidade aprovizionamento bazeia ba kustu projetu no sei lao tuir Decreto-Lei No.22/2022 de 11 de Maio;
- Dono do projetu sei assume responsabilidade hodi assegura orsamentu ba Ezekusaun no Implementasaun projetu;
- Projetu nain konfirma katak sei asume responsabilidade ba monitorizasaun e akompanhamentu ba ezekusaun projetu ne'e no sei garante kualidade servisu nian tuir padraun no espesifikasiun ne'ebe aprova ona
- Lista Proposta:

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W/.



**IX GOVERNO CONSTITUCIONAL**  
**MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO**  
**FUNDO DAS INFRAESTRUTURAS**



Conselho de  
Administração

Naran Projetu	Alokasaun FI 2025 & Kodigu Atividade	Kustu estimasaun ADN, I.P.
<i>Consultancy Services for Bathymetric Survey of Seafrot, Dili</i>	FI 2025: \$0; Programa 026: Estradas e Pontes, Sub Programa Estrada Nasional & Municipal, kodigu atividade 0261292: Reklamasau praia do Pantai Kelapa Dili	\$84,530.00

**Rekomendasaun:**

- 1) CAFI atu aprova no autoriza despezas no kustu total nune'e mos konfirma finansiamentu iha FI 2025 bazeia ba pedidu husi MPIE ba projetu Consultancy Services for Bathymetric Survey of Seafrot, Dili, ne'ebe hetan ona Verifikasi saun husi ADN, I.P. ho montante verifikadu \$84,530.00;
- 2) Desizaun kona ba abertura ka inisiasaun prosesu aprovisionamentu bazeia, Artigo 24 & 25, Decreto Lei No.43/2024, de 20 de Dezembro, regra ezekusaun OGE 2025;
- 3) Bazeia ba Artigo 21, DL No.13/2016, de 18 de maio, kona ba Regulamentu Fundo da Infraestrutura, determina katak aprovisionamento projetu FI nian sei lao tuir Regime Juridiku Aprovizionamento em vigor. Modalidade aprovisionamento bazeia ba kustu projetu no sei lao tuir Decreto-Lei No.22/2022 de 11 de Maio;
- 4) Decreto-Lei No.22/2022 de 11 de Maio, o regime jurídico do aprovisionamento, dos contratos públicos e das respectivas infracções; artigo 42º Regras Espesiais, desizaun kona ba modalidade aprovisionamento determina bazeia ba kustu projetu no justifikasi saun tekniku no legal husi MPIE hanesan entidade adjudikante;
- 5) Dono do projetu sei assume responsabilidade hodi assegura orsamentu ba Ezekusaun no Implementasaun projetu;
- 6) Projetu nain sei asume responsabilidade ba koordenasaun entre entidade relevantes ba implementasaun projetu ne'e, e ba supervizaun, monitorizasaun e akompanhamentu ba projetu ne'e iha faze implementasaun, e sei garante kualidade servisu nian tuir espesifikasaun ne'ebe aprova ona;

**Desizaun:**

1. CAFI aprova no autoriza despezas no kustu total nune'e mos konfirma finansiamentu iha FI 2025 bazeia ba pedidu husi MPIE nudar projetu nain;
2. Desizaun kona ba abertura ka inisiasaun prosesu aprovisionamentu bazeia, Artigo 24 & 25, Decreto Lei No.43/2024, de 20 de Dezembro, regra ezekusaun OGE 2025;

DELIBERASAUN N.º64/V/CAFI/2025



3. Bazeia ba Artigo 21, DL No.13/2016, de 18 de maio, kona ba Regulamentu Fundo da Infraestrutura, determina katak aprovisionamento projetu FI nian sei lao tuir Regime Juridiku Aprovisionamento em vigor. Modalidade aprovisionamento bazeia ba kustu projetu no sei lao tuir Decreto-Lei No.22/2022 de 11 de Maio;
4. Decreto-Lei No.22/2022 de 11 de Maio, o regime jurídico do aprovisionamento, dos contratos públicos e das respectivas infracções; artigo 42º Regras Espesiais, desizaun kona ba modalidade aprovisionamento determina bazeia ba kustu projetu no justifikasaun tekniku no legal husi MPIE hanesan entidade adjudikante;
5. Dono do projetu sei assume responsabilidade hodi assegura orsamentu ba Ezekusaun no Implementasaun projetu;
6. Projetu nain sei assume responsabilidade ba koordenasaun entre entidade relevantes ba implementasaun projetu ne'e, e ba supervizaun, monitorizasaun e akompanhamentu ba projetu ne'e iha faze implementasaun, e sei garante kualidade servisu nian tuir espesifikasiadaun ne'ebe aprova ona;
7. Lista Aprovasaun:

Naran projetu	Kustu estimativa ADN, I.P. / Referensia proposta	Alokasaun FI 2025 no Kodigo atividade	Orgaun Kompetenti Autoriza despezas – DL no. 23/2022, 19 de maio
<i>Consultancy Services for Bathymetric Survey of Seafront, Dili</i>	\$84,530.00	FI 2025: \$0; Programa 026: Estradas e Pontes, Sub Programa Estrada Nasional & Municipal, kodigu atividade 0261292: Reklamasau praia do Pantai Kelapa Dili	CAFI : Konfirmasaun Finansiamentu CAFI: alinea 1 (b) Artigo Artigo 5.º Competência para a autorização da despesa.



IX GOVERNO CONSTITUCIONAL  
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO  
FUNDO DAS INFRAESTRUTURAS



Conselho de  
Administração

Aprovado husi CAFI iha loron 23 de maio de 2025.

O Conselho de Administração do Fundo das Infraestruturas  
O presidente,



Gastão Francisco de Sousa

Ministro do Planeamento e Investimento Estratégico

Santina José Rodrigues Ferreira Viegas Cardoso

Ministra das Finanças



Miguel Marques Gonçalves Manetelu

Ministro dos Transportes e Comunicações



Samuel Marçal

Ministro das Obras Públicas

DELIBERASAUN N.º64/V/CAFI/2025

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**IX GOVERNO CONSTITUCIONAL  
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO  
FUNDO DAS INFRAESTRUTURAS**



**Conselho de  
Administração**

**Annexo:**



REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE  
Ministério do Planeamento e Investimento Estratégico  
Fundo das Infraestruturas

## NOTA DE DESPAICHO

### 1. ORIGEM DO DOCUMENTO

N Ref; 763/CG-GMPIE/IV/2025

Data do Documento : 14/05 /2025

### Proveniência do Documento

G-MPIE

### 2. DETALHES DO DOCUMENTO

Data Entrada do Documento: 15/05 /2025

Enviado ao:

1. Sr/ Mauricio Borges
2. Sr/a \_\_\_\_\_
3. Sr/a \_\_\_\_\_
4. Assessores Nacionais / Internacionais

Assunto:

Encaminha Despacho Ministro, MPIE Kona-ba No. Ref 0738/ADN.IP/V/2025 Husi Directur Executivo ADN IP, Data 13 de Maio 2025, ho assunto Entrega Rezultado verifikasioun-projetu Consultancy Services for Bathymetric Survey of Seafront,Dili,

### 3. INSTRUÇÃO DO DIRETOR DO SGP

Data do Despacho: 15/05 /2025

Para Sr/a

1. Sr/a Agnia Viana
2. Sr/a Pauh Fobel
3. Sr/a Maria Fonsca

Despacho:

*Hore Asita id me*

Assinatura :



Mauricio Borges



**MINISTÉRIO DO PLANEAMENTO  
E INVESTIMENTO ESTRATÉGICO  
IX GOVERNO CONSTITUCIONAL  
GABINETE DO MINISTRO**



Dili, 14 Maio de 2025

Nu. Ref : 763.../CG-GMPIE/V/2025

Hato' o ba : Directur Executivo SGP  
Sr. Mauricio Borges

Asuntu : Encaminha Despacho Ministro, MPIE

Ho Respeito

Komformé assunto iha leten Gabinete do Ministro encaminha despacho Ministro MPIE kona ba No. Ref 0738/ADN.IP/V/2025 Husi Directur Executivo ADN IP, Data 13 de Maio 2025, ho assunto Entrega Rezultado verifikasiasaun – Projetu Consultancy Services for Bathymetric Survey of seafront, Dili, no despacho Ministro iha anexo.

Despaçho Ministro : Para SGP

Coordenarem e apresentarem na Reunião do CAFI

Data despaçho : 05.14.2025

Mak ne'e deit ba atensaun, lahaluha hato'o obrigado wain.

Hau nia melhores cumprimentos

**Tomás de Fatima da Silva**  
Chefe Gabinete do MPIE



MINISTÉRIO DO PLANEAMENTO  
E INVESTIMENTO ESTRATÉGICO  
IX GOVERNO CONSTITUCIONAL  
GABINETE DO MINISTRO



ADN + SGP

Conselho de Administração

Ma reus A CAFI

S. P.  
09.05.2025

Dili, 13 de Maio de 2025

Reff Nu : 738 /CG - GMPIE/V/2025

Exce<sup>mo</sup> Sr. Gastão Francisco de Sousa  
Ministro do Planeamento e Investimento Estratégico.

Assunto : apresenta resultadu Verifikasiadaun husi ADN.

Excelencia Senhor Ministro,

Baseia ba karta husi ADN no Ref: 0738/ADN IP/V/2025, dia 13 de Maio, ho Assunto entrega resulatdu verifikasiadaun, ho ida ne'e Gabinete apresenta ba Excelencia Ministro resultadu verifikasiadaun ba projeto, Consultancy Services for Bathymetric Survey, Dili nebe ADN finalisa ona sira nian servisu, ho ida ne'e apresenta ba Excelencia Minsitro atu bele hola solusaun e orientasaun.

Resultado verifikasiadaun anexa.

Mak ne'e deit, apresenta ba excelencia e obrigado.



Tomás de Fátima da Silva  
Chefe Gabinete.



AGENCIAS DE DESENVOLVIMENTO NACIONAL, I. P.

Dili, 13 de Maio de 2025

Ref : 038 /ADN, I.P./V/2025

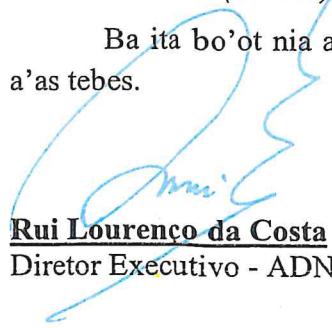
Hato'ba : Sr. Tomás de Fatima da Silva  
Chefe de Gabinete do MPIE

Assunto : Entrega Rezultado Verifikasiasaun – Projeto Consultancy Services for  
Bathymetric Survey of Seafrot, Dili

Ho Respeito,

Bazeia ba karta pedido verifikasiasaun ho no ref. 581/CG-GMPIE/IV/2025 data 07 de Abril de 2025, ba asuntu ne'ebe mensiona iha leten, ekipa verifikasiasaun Unidade Avaliação dos Projetos – ADN, I.P. hala'o ona verifikasiasaun ba dokumentos refere. Ho nune bele hare rezultado verifikasiasaun iha (*aneksu*).

Ba ita bo'ot nia atensaun ami hato'ba agradecimento wain no subkreve ho konsiderasaun a'as tebes.

  
Rui Lourenço da Costa  
Diretor Executivo - ADN, I.P.

CABINETE DO
Ministro do Planeamento e
Investimento Estratégico
RECIDIDO
DIA 13/5/2025
POR inocentu 1093



ok

Bedik-Hun, Ratnac  
Dili – Timor-Leste  
info@mpie.gov.tl  
+670 3310 289

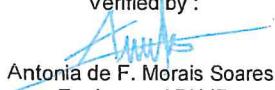
### Consultant Services of Bathymetry Survey for Seafloor in Dili

No.	Description	Qualification	Details						Unit Price (USD)	Total Price (USD)	
			Qty	Unit	Vol.	Unit	Freq	Unit			
<b>A. DIRECT PERSONNEL COSTS</b>											
1	Project Manager	Bachelor Degree in Geodetic Engineering	1	Person	1	Month	1	Time(s)	\$ 4,000.00	\$ 4,000.00	
2	Party Chief	Bachelor Degree in Geodetic / Mechanical Engineering	1	Person	1	Month	1	Time(s)	\$ 5,000.00	\$ 5,000.00	
3	Hydrographic Surveyor	Bachelor Degree in Geodetic Engineering	1	Person	1	Month	1	Time(s)	\$ 4,500.00	\$ 4,500.00	
4	Survey Engineer	Bachelor Degree in Mechanical/Electrical Engineering	1	Person	1	Month	1	Time(s)	\$ 4,500.00	\$ 4,500.00	
5	CAD/Data Processor	High School/Vocational Degree in Topographic/Geodetic	1	Person	1	Month	1	Time(s)	\$ 3,000.00	\$ 3,000.00	
6	Boat Helper	Local Personnel	1	Person	1	Month	1	Time(s)	\$ 550.00	\$ 550.00	
7	Driver	Local Personnel	1	Person	1	Month	1	Time(s)	\$ 550.00	\$ 550.00	
<b>Sub Total Direct Personnel Costs (A)</b>										\$ 22,100.00	
<b>B. DIRECT NON-PERSONNEL COSTS</b>											
No.	Description	Details						Unit Price (USD)	Total Price (USD)		
1	<b>Survey Preparation, Mobilisation and Installation</b>	Qty	Unit	Vol.	Unit	Freq	Unit				
	- Workshop Preparation & Equipment Test	1	Lot	10	Days	1	Time(s)				
	- Personnel Ticket Flight to Site	4	Person	1	Days	1	Time(s)	\$ 500.00	\$ 2,000.00		
	- Car Rental & Fuel	2	Car	6	Days	1	Time(s)	\$ 185.00	\$ 2,220.00		
	- Equipment Transportation/Cargo to Site	1	Lot	10	Days	1	Time(s)	\$ 250.00	\$ 2,500.00		
	- Office Establishment	1	Unit	1	Days	1	Time(s)	\$ 2,340.00	\$ 2,340.00		
	- Survey Consumable & HSE Supplies	1	Lot	1	Days	1	Time(s)	\$ 5,093.00	\$ 5,093.00		
	- Personnel Meals during field activity	7	Person	6	Days	3	Time(s)				
	- Tide Gauge Setup	1	Lot	1	Days	1	Time(s)	\$ 477.00	\$ 477.00		
	- Equipment Setup/Installation on Local Boat	1	Lot	2	Days	1	Time(s)	\$ 1,600.00	\$ 3,200.00		
2	<b>Equipment and Material</b>										
	<b>a. Survey Boat</b>										
	- Local Wooden Boat + Fuel + Personnel	1	Boat	6	days	1	Time(s)	\$ 550.00	\$ 3,300.00		
	<b>b. Survey Equipment</b>										
	- DGPS Positioning Systems	1	Ea	6	days	1	Time(s)	\$ 350.00	\$ 2,100.00		
	- Gyrocompass	1	Ea	6	days	1	Time(s)	\$ 250.00	\$ 1,500.00		
	- Navigation PC/Laptop	1	Ea	6	days	1	Time(s)	\$ 100.00	\$ 600.00		
	- Single Beam Echo Sounder	1	Ea	6	days	1	Time(s)	\$ 350.00	\$ 2,100.00		
	- Barcheck	1	Ea	6	days	1	Time(s)	\$ 50.00	\$ 300.00		
	- Heave Compensator & Motion Sensor	1	Ea	6	days	1	Time(s)	\$ 235.00	\$ 1,410.00		
	- CTD Profiler	1	Ea	6	days	1	Time(s)	\$ 200.00	\$ 1,200.00		
	- Qinsy Navigation Software	1	Ea	6	days	1	Time(s)	\$ 300.00	\$ 1,800.00		
	- Tide Gauge	1	Ea	6	days	1	Time(s)	\$ 150.00	\$ 900.00		
3	<b>Equipment &amp; Personnel Demobilisation</b>										
	- Equipment Dismantling from Local Boat	1	Lot	1	days	1	Time(s)	\$ 1,600.00	\$ 1,600.00		
	- Personnel Ticket Flight from Site	4	Person	1	days	1	Time(s)	\$ 500.00	\$ 2,000.00		
	- Equipment Transportation/Cargo from Site	1	Lot	10	days	1	Time(s)	\$ 250.00	\$ 2,500.00		
4	<b>Data Processing</b>										
	- Qinsy Processing Software	1	Lot	7	days	1	Time(s)	\$ 120.00	\$ 840.00		
	- AutoCAD Drafting & Charting Software	1	Lot	7	days	1	Time(s)	\$ 100.00	\$ 700.00		
	- Single Beam Echosounder Data Processing & Charting	1	Lot	7	days	1	Time(s)	\$ 1,250.00	\$ 8,750.00		

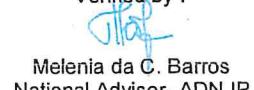
**Consultant Services of Bathymetry Survey for Seafront in Dili**

No.	Description	Qualification	Details						Unit Price (USD)	Total Price (USD)
			Qty	Unit	Vol.	Unit	Freq	Unit		
5	<b>Chart &amp; Report Generation</b>									
	- Detailed Chart Sheets		1	Set	6	copy	1	Time(s)	\$ 2,000.00	\$ 12,000.00
	- Report (Hardcopy)		1	Set	6	copy	1	Time(s)	\$ 500.00	\$ 500.00
	- Report (Softcopy)		1	Set	6	copy	1	Time(s)	\$ 500.00	\$ 500.00
6	<b>Others</b>									
	- Local Permits		1	Lot			1	Time(s)		
	- Socialization		1	Lot			1	Time(s)		
										Sub Total Direct Non-Personnel Costs \$ 62,430.00
										<b>GRAND TOTAL \$ 84,530.00</b>

Verified by :

  
Antonia de F. Moraes Soares  
Engineer - ADN,IP

Verified by :

  
Melenia da C. Barros  
National Adviser- ADN,IP

Checked by :

  
Johannes Hornay  
Chefe Dep EPMETIC-UAP ADN, I.P

Certified by :

  
Jose Fernando Liu Soares  
Coordenador UAP- ADN,IP



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I. P.

## FORMULARIO DESPACHO

Data de Entrada Documentos: 07 / Apr / 2025	Data do Documentos: 07 / Apr / 2025
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Husi: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO
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No Ref : 581/CG-GMPIE/IV/2025
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Projetu :	Quantidade Documentos : 1
-	Anexo :
Assuntos :	
Encaminha Despacho Ministro, MPIE (Encaminhamento de Documento e respetivas companhias recomendadas pelos Tecnicos).	
No. Tf : 3310320	
Companhia : -	
<b>Despacho :</b>	
<input type="checkbox"/> Unidade de Gestão Administrativa <input checked="" type="checkbox"/> Unidade de Avaliação de Projectos <input type="checkbox"/> Unidade de Controlo e Validação de Qualidade <input type="checkbox"/> Unidade de Estudo e Desenvolvimento de Competências	<input checked="" type="checkbox"/> Adjunto <input checked="" type="checkbox"/> Assessor/a <i>APCS</i> <input type="checkbox"/> Gabinete DE / Base de Dadus <input type="checkbox"/> Other
<p><i>Solicitação CAP para inspeções nos submete ao UGAs este contacto</i></p> <p><i>Rui Lourenço da Costa Director Executivo ADN</i></p>	
<p><i>Recebeu os documentos</i></p>	



MINISTÉRIO DO PLANEAMENTO  
E INVESTIMENTO ESTRATÉGICO  
**IX GOVERNO CONSTITUCIONAL**  
**GABINETE DO MINISTRO**



Dili, 07 de Abril de 2025

Nu. Ref : **581 /CG-GMPIE/IV/2025**

Hato'o ba : Diretor Executivo do ADN I.P  
Senhor Rui Lourenço da Costa

Assunto : Encaminha Despacho Ministro MPIE

Ho Respeito,

Konforme assunto iha leten, Gabinete do Ministro encaminha Despacho Ministro kona ba karta husi Vice-Primeiro Ministro, Ministro Coodenador dos Assuntos Econcomicos e Ministro do Turismo e Ambiente ho assunto Encaminhamento de Documentos e respetivas companhias recomendadas pelos Tecnicos. Despacho Ministro hakerek iha kraik no anexo iha kotuk.

Despacho Ministro : Para, ADN I.P– MPIE

Processar de acordo c/ a deliberação do CAFI

Data Despacho : 04.07.2025

Ba atensaun no kolabarasaun lahaluha hato'o obrigado wain.

Hau nia melhores cumprimentos

Tomás de Fatima da Silva  
Chefe Gabinete do Ministro-MPIE



VICE PRIMEIRO-MINISTRO  
MINISTRO COORDENADOR DOS ASSUNTOS ECONÓMICOS  
MINISTRO DO TURISMO E AMBIENTE  
IX GOVERNO CONSTITUCIONAL

ADM  
Protestar de acordo  
c/ a deliberação do  
CAF!  
No. 38 /GM-VPM-MCAE-MTA/Iv/2025  
Díli, 2 de abril de 2025

Exmo Senhor  
Eng.o Gastão Francisco de Sousa  
Ministro do Planeamento e Investimento Estratégico  
MPIE

**Assunto:** Encaminhamento de Documentos e respetivas companhias recomendadas pelos Técnicos

Excelência,

Tendo em vista a construção do projeto de "Seafront Díli" e a necessidade de realização de *Bathymetry Survey e Boring test (on beach)*, envio as propostas das companhias Hidrotecnic e Caryá Timor-Leste para apreciação e aprovação, com base na recomendação dos técnicos que integram a equipa de estudos de viabilidade dos Ministérios do Turismo e Ambiente e relevantes.

Agradecendo antecipadamente a atenção de V. Excelência, subscrevo-me apresentando os protestos os meus melhores cumprimentos.

Francisco Kalbuadi Lay  
Vice-Primeiro-Ministro  
Ministro Coordenador dos Assuntos Económicos e  
Ministro do Turismo e Ambiente

GABINETE DO

VICE-PRIMEIRO-MINISTRO  
MINISTRO COORDENADOR DOS ASSUNTOS ECONÓMICOS  
MINISTRO DO TURISMO E AMBIENTE

3 4 25  
Atanásio 781



**Ministério do Turismo República Democrática de Timor-Leste**

**TERMS OF REFERENCE**

**CONSULTANCY SERVICES FOR BATHYMETRIC SURVEY OF  
SEAFRONT, DILI, TIMOR-LESTE.**

May 2025

*[Handwritten signature]*

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## 1. Project Overview

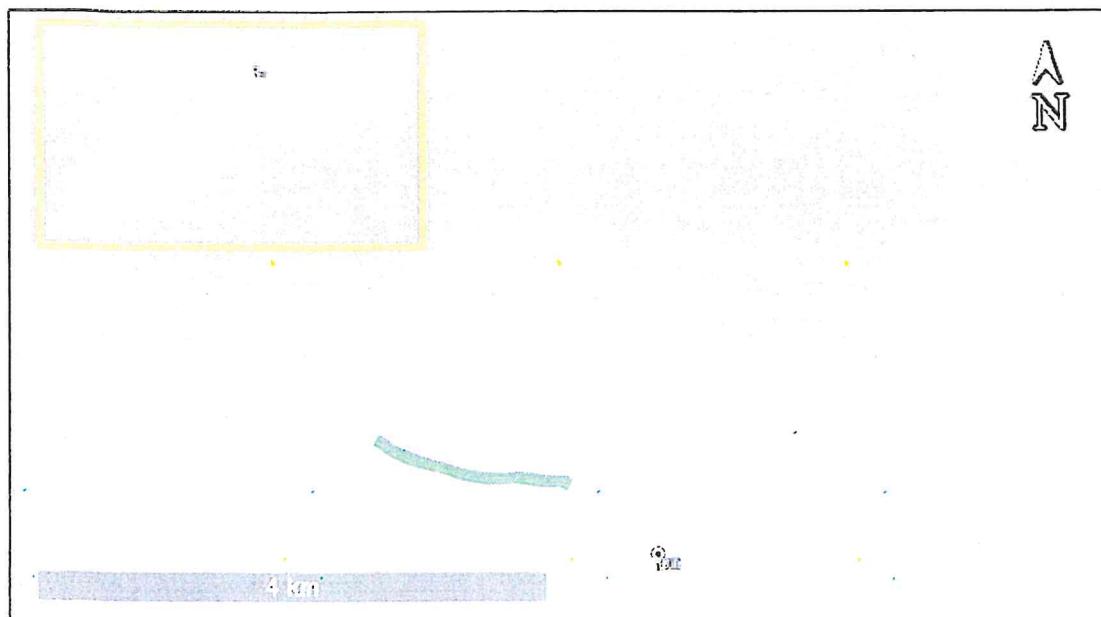
### 1.1. Introduction

**Ministério do Turismo República Democrática de Timor-Leste**, herein termed as "EMPLOYER", intends to require Bathymetric survey on northern coast of Timor-Leste in north of Dili, Timor-Leste.

**MIRZAHIDROKINETIK TIMOR, Lda.** (denoted as "CONTRACTOR") is submitting an integrated survey proposal for the Bathymetry survey services. For the execution of survey operation, CONTRACTOR will be supported with complete survey personnel and equipment for field work which all will be mobilized with equipment and qualified personnel provided by CONTRACTOR on the assigned date to support the survey operation

This document compiles the comprehensively Technical Proposal for the execution of the bathymetry campaign scope. This proposal also represents the complete understanding of the SOW (scope of work) and the plan to accomplish the work.

The PROJECT site for the Bathymetric Survey Campaign covering a 2500 meter section of the coastline and extending offshore 150m from the shoreline. The survey located on the northern coast of Timor-Leste in north of Dili, Timor-Leste, as shown in **Figure 1**.



**Figure 1.** General Project Location

CONTRACTOR'S Scope of Work comprises all the necessary operation to support the objective's achievement in a very effective and efficient manner. Based on the EMPLOYER's documentation and information, Scope of Work for Detailed Survey operation services are as follow:

#### 1.1.1. Preparation

The preparation process consists of Administrative Preparation and Technical Preparation. Administrative Preparation encompasses all the permits required to conduct the survey. On the other

hand, Technical Permits include checking the completeness and functionality of equipment, planning methods and work steps, as well as obtaining information about available reference points and planning accommodations and transportations.

#### **1.1.2. Scope of Work of Bathymetry Survey**

Bathymetry survey to provide accurate bathymetric charts of the seabed will be performed in the vicinity of the survey area as per Figure 1. To produce map scale 1:1000.

Survey will be completed with ancillary equipment, i.e Motion reference units (MRUs), GPS systems for positioning, tide gauges for water level correction, barchek and sound velocity profilers for calibration.

#### **1.1.3. Data Acquisition**

The following steps will be undertaken to ensure high-quality data collection:

##### **1. Calibration:**

- Conduct pre-survey calibration of the SBES systems, including CTD data and barchek test calibration.

##### **2. Data Collection:**

- Acquire single-beam data along planned survey lines.
- Simultaneously record ancillary data, such as sound velocity profiles and tidal variations, for data correction.

##### **3. Data Quality Control:**

- Real-time data monitoring to identify and correct anomalies during acquisition.
- Verification of positioning accuracy using redundancy checks with differential GPS (DGPS).

#### **1.1.4. Data Processing**

The collected data will undergo rigorous processing and analysis to ensure accuracy and completeness.

##### **1. Data Management:**

- Organize raw data files into a structured format for efficient processing and analysis.

##### **2. Processing Steps:**

- Apply tidal corrections to convert depths to Chart Datum (CD).
- Process SBES depth data to generate cleaned, corrected depth points along the survey lines.
- Create an interpolated bathymetric surface/grid from the processed SBES depth points.
- Filter noise and artifacts from the data using specialized software.

##### **3. Outputs:**

- Bathymetric charts with a target scale of 1:1000.

#### **1.1.5. Reporting**

The following reports and deliverables will be prepared:

##### **1. Survey Report:**



- Detailed description of survey activities, including methodology, equipment used, and data acquisition processes.
- 2. Data Deliverables:**
- Processed bathymetric data in ASCII XYZ formats.
  - Final bathymetric chart in CAD and PDF formats.
- 3. Final Presentation:**
- Present findings to the EMPLOYER, including an overview of the bathymetric data and recommendations for further investigations if required.

Below are the summary table of Bathymetry Survey Scope of Work

**Table 1.** Summary of Bathymetry Survey Scope of Work

No	SOW Area/Item	SOW Description
1	Mobilization, Field Operation & Demobilization	<ul style="list-style-type: none"> <li>• Preparation</li> <li>• Mobilization</li> <li>• Field operation</li> <li>• Demobilization</li> </ul>
2	Bathymetry Survey	<ul style="list-style-type: none"> <li>• Conducting Single Beam Echo Sounder (SBES) bathymetry survey within the specified coastal area, approximately 2500m in length along the shore and extending 150m wide from the shoreline</li> <li>• Acquiring depth data along pre-defined survey</li> <li>• Ensuring accurate positioning and recording relevant offsets.</li> <li>• Applying tidal or water level corrections.</li> </ul>
3	Data Processing & Analysis	<ul style="list-style-type: none"> <li>• Processing of raw SBES data (filtering, cleaning, tide/draft corrections)</li> <li>• Generation of finalized, corrected depth datasets</li> <li>• Creation of bathymetric profiles along survey</li> <li>• Development of an interpolated bathymetric surface and contours</li> <li>• Production of Bathymetric Charts with scale 1:1000.</li> </ul>
4	Documentation and Reporting	<ul style="list-style-type: none"> <li>• Daily Progress Reports</li> <li>• Mobilization and Calibration Procedure</li> <li>• Survey Procedure</li> <li>• Interim Report</li> <li>• Draft Final Report &amp; Chart</li> <li>• Final Report &amp; Chart</li> </ul>



## **1.2. CONTRACTOR Responsibility**

CONTRACTOR will be responsible for all aspects of the data collection and survey campaign, including the provision of suitably qualified staff, permitting requirement, equipment, instrumentation and consumables. This also includes the necessary activities required to successfully execute the described scope of works, which includes but is not limited to:

- Deploying, servicing and recovering all monitoring equipment;
- Operate all monitoring equipment and sampling equipment;
- Calibration and maintenance of all equipment required;
- Ensure the serviceability and safety of all equipment used;
- Submission of daily progress reports; and,
- Data processing, final reporting and provision of raw and processed (i.e. as ASCII or Excel files) data.

## **1.3. Accuracies**

CONTRACTOR will provide equipment with accuracies level as advised by EMPLOYER as stated in the Term of References documentation issued by EMPLOYER.

## **1.4. Data Storage and Document Retention**

CONTRACTOR will store all raw and processed data for a period of three (3) years after contract termination. CONTRACTOR will allow EMPLOYER to have access towards partial or all the data.

## **1.5. Healthy, Safety and Environment**

CONTRACTOR is committed to provide a healthy and safe workplace for entire crew at every work location in accordance with applicable laws and our HSE policies as well as environmentally aware towards the surroundings. Our commitment is based on the conviction that accidents are preventable. In order to achieve this objective, any HSE risks arises from our activities will be adequately identified and reduced to be as low as it is reasonably practiced.

## **1.6. Quality Assurance**

In order that the project is instigated, implemented, controlled and concluded in an efficient, professional, and safe manner, CONTRACTOR will provide management, systems, and documentation dedicated to that project. CONTRACTOR will operate within our own documented guidelines. It is our policy to provide quality service based on professional standards in order to meet our EMPLOYER's expectations.

### **“QUALITY SERVICE, PROFESSIONAL SUPPORT”**

This becomes achievable by implementing:

- Defining the requirements of the EMPLOYER, explaining them to the project team as well as proper planning and execution of those requirements.
- Continuous review of new products and technology available to the offshore survey industry.
- Keeping the CONTRACTOR's commitment in maintaining and improving its services to the EMPLOYER through implementation of a recognized Quality System.
- Providing adequate resources in terms of equipment and personnel, encouraging them to increase knowledge of their profession through appropriate training.

## **1.7. Quality Control (QC) and Quality Assurance (QA) Practices**

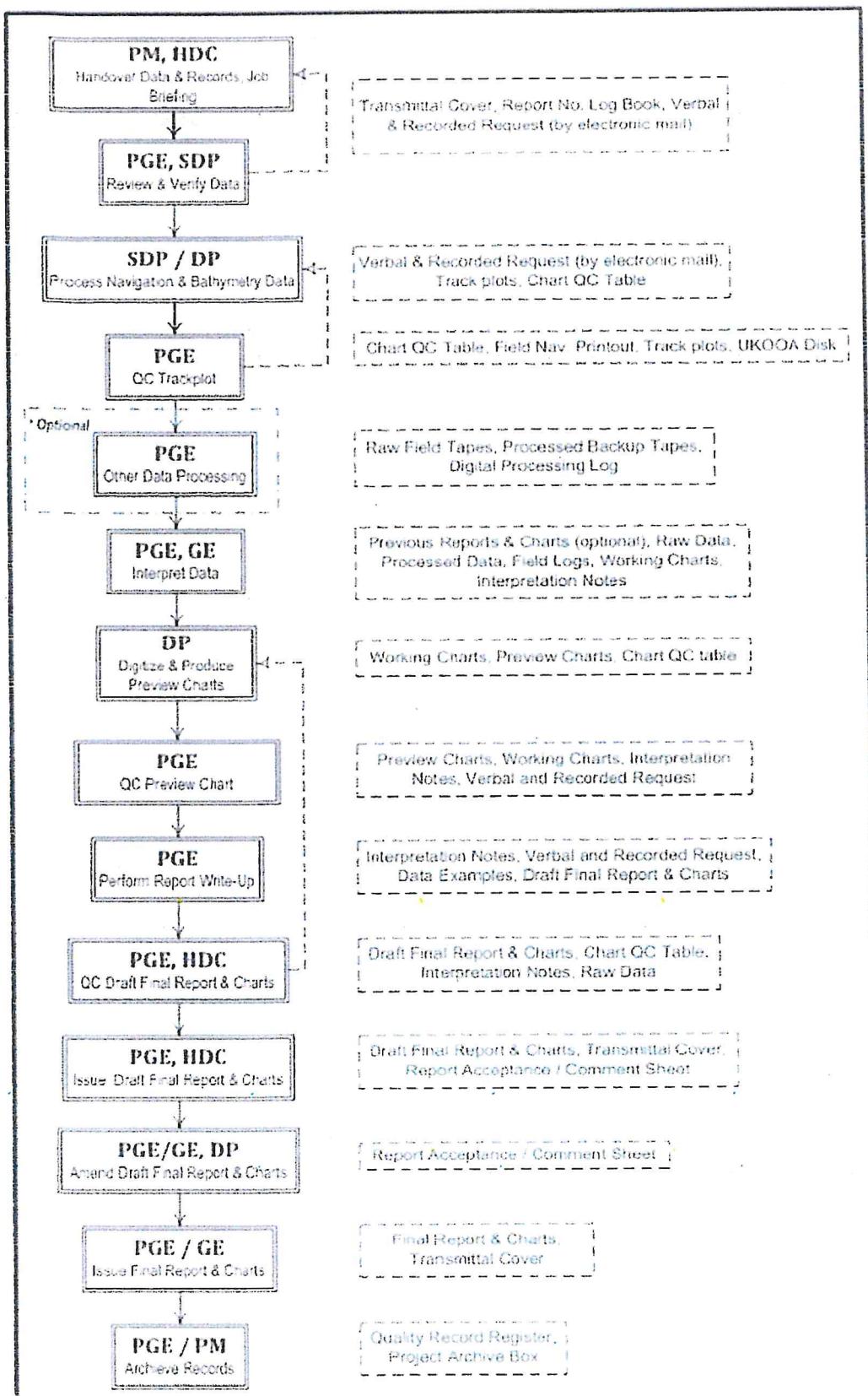
Our commitment to excellence in bathymetry surveys is demonstrated through a robust Quality Control (QC) and Quality Assurance (QA) framework. This framework integrates systematic procedures, internationally recognized certifications, and proven methodologies to deliver accurate, reliable, and high-quality results for our clients.

#### **Project Workflow and Quality Integration**

Our QC/QA processes are meticulously integrated into every phase of the project lifecycle to ensure data accuracy, minimize risks, and deliver reliable results. These stages include:

- **Equipment Bench Testing:** Comprehensive testing and calibration before mobilization.
- **Mobilization and Installation:** QC measures during equipment installation and deployment.
- **Survey Execution:** Real-time QC monitoring during data acquisition to validate accuracy and completeness.
- **Data Processing:** Rigorous QC checks at each processing stage to identify and correct discrepancies.
- **Final Reporting and Charting:** Detailed review and validation of deliverables before submission.

As an example, our procedure **MHTL-GPH/QHSE-2/001: Survey Data Preparation, Processing, Interpretation, Reporting and Quality Control** outlines a comprehensive workflow. This includes steps from field data handover to the issuance of the final report, ensuring quality is maintained at every step.



**Figure 2.** Workflow diagram data handling, processing and reporting

The table of Internal Procedure below provides a categorized summary of our relevant procedures and work instructions related to this project scope, demonstrating the depth of documentation and structure in our QC/QA processes:

**Table 2. CONTRACTOR internal procedure related to the project scope**

Category	Document No.	Title
Equipment Handling	MHTL-TCH/QHSE-2/001	Survey Equipment Inspection, Maintenance, and Testing Procedure
	MHTL-TCH/QHSE-2/002	Survey Equipment Calibration and Servicing Procedure
	MHTL-TCH/QHSE-2/003	Survey Equipment Failure Control Procedure
	MHTL-TCH/QHSE-2/004	Handling and Storage of Equipment Procedure
Data Acquisition	MHTL-GPH/QHSE-2/002	Survey Data Acquisition and Quality Control
	MHTL-GPH/QHSE-3/004	Use of Navigation Data Logging System
	MHTL-GPH/QHSE-3/005	Use of Single Beam Echo Sounder
Data Processing	MHTL-GPH/QHSE-2/001	Survey Data Preparation, Processing, Interpretation, Reporting, and Quality Control
	MHTL-GPH/QHSE-2/003	Site Survey Report Format
Reporting and Charting	MHTL-GPH/QHSE-2/004	Standard Charting Format

Category	Document No.	Title
Mobilisation	MHTL-OPM/QHSE-2/005	Mobilisation
	MHTL-TCH/QHSE-2/001	Survey Equipment Inspection, Maintenance and Testing Procedure
	MHTL-TCH/QHSE-2/002	Survey Equipment Calibration and Servicing Procedure
	MHTL-TCH/QHSE-2/004	Handling and Storage of Equipment Procedure
Survey Operation	MHTL-GPH/QHSE-2/002	Survey Data Acquisition and Quality Control
	MHTL-GPH/QHSE-2/006	General Bathymetric Survey - Nearshore
	MHTL-GPH/QHSE-2/014	Reconnaissance Survey
	MHTL-GPH/QHSE-2/020	CTD Deployment Procedure
	MHTL-TCH/QHSE-2/003	Survey Equipment Failure Control Procedure
	MHTL-TCH/QHSE-2/005	Survey Equipment Identification and Tracking
	MHTL-TCH/QHSE-2/006	Offsite Electronic Data Storage
	MHTL-TCH/QHSE-2/007	Control of Survey Monitoring & Measuring Equipment Procedure
Data Processing	MHTL-GPH/QHSE-2/001	Survey Data Preparation, Processing, Interpretation, Reporting and Quality Control
	MHTL-GPH/QHSE-2/003	Site Survey Report Format
	MHTL-GPH/QHSE-2/004	Standard Charting Format
	MHTL-TCH/QHSE-2/007	Handling and Storage of Electronic Data Procedure

In addition to the categorized summary of our internal procedures provided in Table 2, Table 3 below outlines the specific work instructions related to this project scope. These work instructions provide detailed, task-oriented guidance to ensure consistency, accuracy, and adherence to best practices throughout survey operations.

**Table 3. CONTRACTOR internal work instruction related to the project scope**

Category	Document No.	Title
Survey Operation	MHTL-GPH/QHSE-3/001	DGPS Positioning System
	MHTL-GPH/QHSE-3/002	Local Differential Station Set-up
	MHTL-GPH/QHSE-3/004	Use of Navigation Data Logging System
	MHTL-GPH/QHSE-3/005	Use of Single Beam Echo Sounder
	MHTL-GPH/QHSE-3/007	Use of Sound Velocity Profile
	MHTL-GPH/QHSE-3/010	Install, Calibrate and Operate Motion Sensor
	MHTL-GPH/QHSE-3/014	Tide Level Measurement
	MHTL-GPH/QHSE-3/018	Single DGPS Verification
	MHTL-GPH/QHSE-2/026	Datum Transformation and Geodetic Parameter Verification

## **2. Project Management, Communication and Control**

CONTRACTOR is providing project management team which consists of Office Support and Survey Team.

It is our policy that CONTRACTOR personnel assigned to the project ensured that their work is executed to the highest professional standards, within the guidelines of these procedures with project management being the focal point and driving force for the project. It is therefore the responsibility of the assigned **Project Manager** that the aspects of Quality Control are instilled into the team members during the period of the project, that project documentation is issued, updated or issued and updated in a controlled manner so that all personnel aware of the intentions of EMPLOYER and project requirements.

The **Party Chief** will read and understand the documentation and be responsible for the implementation of such documentation whilst communicating with the EMPLOYER representative. With this in mind, a quality plan is mated for the project and the team members will execute the work as per this plan with reference to the appropriate sections in the procedures.

The Party Chief is responsible for the planning and co-ordination of the work scopes and is the single point of contact for all co-ordination and liaison; he is also the single point of contact for technical matters. Day to day communication is integral to the successful performance of the project and therefore an open line of communication must exist. The EMPLOYER Representative will have a direct line of communication to the Party Chief. During the project execution, the team will also be supported with Supervisor, Crew Coordinator and Field Logistic Support for a quick response towards project necessities.

### **2.1. Office Support**

The Office Support project management team will be stationed onshore. Project manager who will be in charge of whole project on both technical and administrative grounds, he will be the CONTRACTOR Representative.

The Project Manager will nominate a Party Chief to be responsible for the whole acquisition and interpretation work, if he cannot himself be technically involved. The Project Manager in the first instance, which ensure relevant onshore personnel are informed.

It is the intention that this project has one onshore line of communication to the EMPLOYER and that is via the Project Manager.

Whenever office based final reporting and charting performed, it will be conducted under the supervision of Data Centre and Survey Division as the Quality Assurance and Quality Control of the entire documentation's submission.

## 2.2. General Project Flow Chart

General flow chart of survey operation can be shown in figure below :

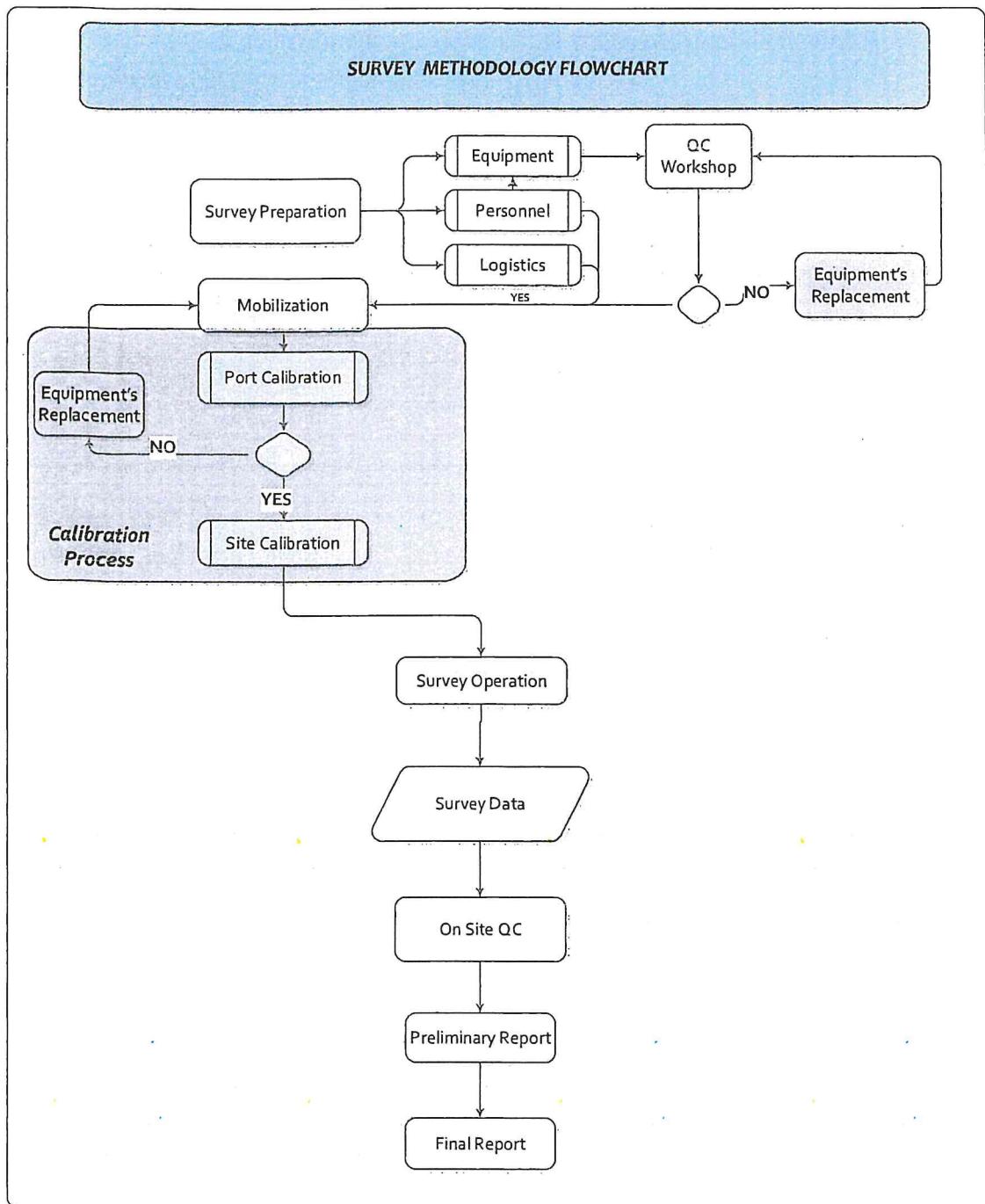


Figure 3. General flow chart of survey operation

## 2.3. Preparation of Equipment and Personnel

### 2.3.1. Equipment

For the execution of investigation operation, CONTRACTOR will be supported with qualified personnel and equipment, which all will be mobilized by CONTRACTOR on the assigned date to support the survey operation. CONTRACTOR will ensure that the equipment's are properly calibrated at the start of the work to reflect factual values.

**Table 4.** List of survey equipment

No	Category	Equipment	Quantity (at least number of equipment)	Type
1	Positioning and Navigation	Primary Positioning System	1	Fugro Starfix 8200 DGNSS
		Secondary Positioning System	1	Fugro Starfix 8200 DGNSS <small>*also serve as backup heading (DGNSS satellite vector)</small>
		Gyro Compass	1	TSS Meridian Surveyor
		Navigation PC	1	Interfacing to the following: 2x DGPS 1x Gyro 1x SBES Interface 1x SBES System
2	Bathymetry	Single Beam Echo Sounder	1	Teledyne Odom MKIII Dual frequency (200/33kHz) Echosounder
4	Motion Compensation Device	MRU	1	Kongsberg Seatex MRU-5
5	SVP Profiler	CTD Profiler	1	Valeport Swift CTD
6	Survey Vessel	SBES Boat	1	Local Wooden Boat
8	Software	Navigation Software	1	QINSy Navigation
		Processing Software	1	QINSy Processing
		Charting Software	1	Autodesk AutoCAD

Please refer to Appendix C to Technical Proposal: Equipment (List of Equipment) for detailed specifications and accuracies.

Equipment will be provided with necessary backup spare parts to ensure uninterrupted survey activities. Our commitment to preparedness aims to prevent any potential showstoppers, ensuring a seamless and efficient survey operation.

### 2.3.2. Survey Boat



The Bathymetry survey will be performed using a shallow draft boat (local wooden boat). It will be equipped with CONTRACTOR's survey equipment as well as Communication facilities i.e. onboard Ship-to-Ship VHF system, Ship-to-Shore radio. The figure below shows the example of the local wooden boat that will be utilized.



**Figure 4.** Nearshore Survey Boat for equipped with SBES Survey Equipment

**Table 5.** Boat Specifications and Parameters

Parameter	Specification
Type of Boat	Wooden Boat / Skiff
Material	Wood
Length (LOA)	3 meters
Width (Beam)	1.5 meters
Hull Height	0.6 meters
Draft (Waterline Depth)	0.5 meters
Passenger Capacity	Maximum 6 persons (depending on total weight)
Load Capacity	~ 500 kg (including passengers and cargo)
Engine	Single Outboard Engine, 10 HP
Maximum Speed	~8 knots
Hull Design	Flat bottom (suitable for shallow waters)
Type of Waters	Rivers, lakes, and nearshore
Propulsion System	Single Outboard Motor
Safety Equipment	Life jackets, whistle, spare paddles, UHF/VHF radio communication

### 2.3.3. Personnel



It is our policy that personnel assigned to the project will execute their work to the highest professional standards, within the guidelines of the survey procedures with project management being the focal point and driving force to the project. It is therefore the responsibility of the assigned Project Manager that the aspects of Quality Control are instilled into the team members during the period of the project, that project documentation is issued, updated or issued and updated in a controlled manner so that all personnel are aware of the intentions of CONTRACTOR and project requirements.

The following key personnel are proposed for the survey works:

**Table 6. List of Key Personnel**

No.	Description	Qualification	Details	
			Qty	Unit
<b>A. Key Personnel</b>				
1	Project Manager	Bachelor Degree in Geodetic Engineering	1	Person
2	Party Chief	Bachelor Degree in Geodetic / Mechanical Engineering	1	Person
3	Hydrographic Surveyor	Bachelor Degree in Geodetic Engineering	1	Person
4	Survey Engineer	Bachelor Degree in Mechanical/Electrical Engineering	1	Person
5	CAD/Data Processor	High School/Vocational Degree in Topographic/Geodetic	1	Person
6	Boat Helper	Local Personnel	1	Person
7	Driver	Local Personnel	1	Person

Below are the detailed field personnel roles and responsibilities:

#### 1. Project Manager

- Overall project management and execution responsibility.
- Acts as the official interface between CONTRACTOR and EMPLOYER.
- Provides visible safety leadership in line with the CONTRACTOR Home Safe initiative.
- Ensures development, implementation, and continual review of the HSSEQ Management Plan.
- Manages project execution, risk, and compliance.
- Coordinates HSSEQ Management Plan review meetings.
- Verifies compliance with HSSEQ Management Plan and JSA documentation.
- Provides appropriate resources and ensures adequately trained personnel.
- Maintains proactive communication to ensure milestones are achieved.

**2. Party Chief**

- Oversees all survey operations to ensure project objectives, timelines, and quality standards are met.
- Acts as the primary point of contact between the survey team and EMPLOYER representatives on-site.
- Coordinates daily field activities, including personnel deployment, equipment mobilization, and task assignments.
- Monitors and manages survey data collection to guarantee quality and completeness.
- Identifies and addresses field challenges, ensuring minimal disruptions to operations.
- Prepares and submits daily progress reports, highlighting key activities, challenges, and achievements.

**3. Hydrographic Surveyor**

- Leads topographic and bathymetric data collection efforts.
- Conducts onshore topographic and bathymetric surveys.
- Collects accurate field data using specialized survey equipment.
- Prepares and processes survey data for analysis and reporting.
- Ensures data quality and consistency with project requirements.
- Coordinates with project teams to align survey objectives.
- Operates and maintains survey instruments and equipment.

**4. Analogue Engineer/Survey Engineer**

- Operates and maintains bathymetric survey equipment.
- Ensures accurate data collection during field operations.
- Supports survey team in equipment setup and calibration.
- Troubleshoots and resolves technical issues with survey equipment.
- Monitors real-time data quality during surveys.
- Conducts periodic equipment inspections and maintenance.

**5. CAD/Data Processor**

- Converts field data into usable formats for analysis.
- Processes and analyzes survey data for accuracy.
- Performs quality control checks on processed data and drafts.
- Drafts technical drawings based on survey results.
- Coordinates with survey teams to resolve data discrepancies.
- Ensures all processed data complies with project specifications.
- Collaborates with project teams to meet deadlines and objectives.

### **3. Project Operation**

#### **3.1. Preparation and Mobilization**

Project planning and execution will be managed from the CONTRACTOR Office, which will be responsible for the performance of the works and will be the official nominated point of contact under any contract. The survey plan will be carefully planned to create an effective and efficient survey operation.

All utilized equipment and assigned personnel will be mobilized to near survey area in the project location as the point of mobilization.

Personnel mobilization phase 1 will be flight on the day before equipment arrived at location, which will be responsible for kick-off meeting, Local permit, accommodation, setting up working area, and other consumable needed.

Personnel mobilization phase 2 will be flight 1 (one) day before equipment arrived at location from Jakarta to near project location. And continued to land transportation to basecamp.

#### **3.2. Calibrations**

CONTRACTOR will ensure that the equipment/instruments are properly calibrated at the start of the work to reflect factual values.

#### **3.3. Quality Control for Geophysical Data**

##### **3.3.1. SBES QA STANDARD**

- The depth of the transducer will be compensated for before the vessel arrives on location and the zero setting will be maintained throughout the survey.
- Speed of sound measurements are to be carried out at operationally feasible intervals but at least once every site.
- The depth of the transducer will be compensated for before the vessel arrives on location and the zero setting will be maintained throughout the survey.
- Speed of sound measurements are to be carried out at operationally feasible intervals but at least once every site.

### **3.4. Bathymetry Surveys**

Bathymetry Survey Services will be performed to provide data for CONTRACTOR to analyze the morphology of seabed in the area.

#### **3.4.1. DGPS System**

DGPS will obtain the positioning data using 26 tracking channels dual-frequency precision GPS receiver with two additional channels for receiving Satellite Based Augmentation System (SBAS) signals and an L-band demodulator for reception of Starfix correction service. The receiver is ideally suited for positioning of dynamic and static vessels on a global basis.

#### **3.4.2. Starfix 8200/9200 Correction**

Pseudo range corrections derived at each Reference Station are sent to the mobile GPS receiver via an Inmarsat-based data link. An independent mobile position fix is computed using the data from each Reference Station and these fixes compared in real-time in the system QC computer.

Nominally, the Reference Stations closest to the survey area will be used to compute a Primary Position Fix and the Secondary DGPS Position Fix will be computed using other available References in the region.

The DGPS position data will then be integrated into the navigation data-logging package which will provide the survey parameters for the project. CONTRACTOR is confident with the receiver system as the DGPS primary and secondary positioning system produced horizontal accuracy of less than 10 centimetres.

#### **3.4.3. QINSy Navigation Software**

Quality Integrated Navigation System (QINSy) Version 8 software will be utilized during the survey on the operating boat. The navigation software enabled comprehensive navigation, tracking, monitoring and logging system. QINSy receives position data from the DGPS receiver and processes it to provide a real time, alphanumeric or graphical navigation display on the PC and external monitor. The data received from sensors such as single beam echo sounders can also be displayed and logged to a file. These data can be printed or plotted real time.

QINSy also allows users to put the vessel's diagram and offset positions of equipment on board the vessel. Based on single coordinate reference 0,0,0 for the X, Y and Z position which preferably is the location of center of gravity (CoG) of the vessel, the offset positions of equipment on board are determined.

#### **3.4.4. TSS Meridian Surveyor Gyro**

The Meridian Surveyor is a master heading reference instrument that applies the characteristics of a dynamically tuned gyroscope and the effects of gravity and earth rotation with dynamic accuracy 0.2 degrees to provide a true North reference.

The Meridian Surveyor specification makes the system ideal for installation and operation on board of almost any size and in a wide range of applications. It is a self-contained precision navigation instrument, which capable of supplying heading reference information simultaneously to a wide range of equipment on board the vessel.

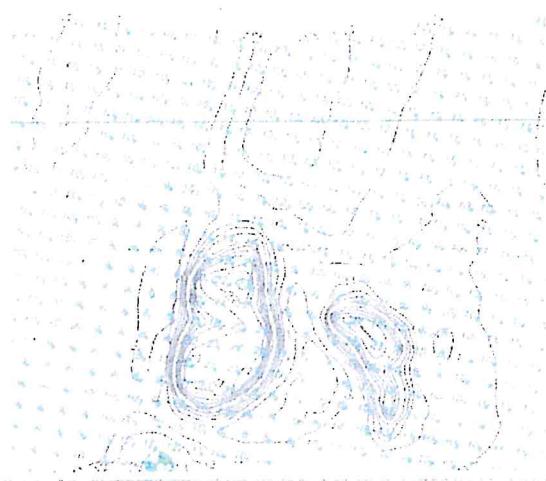
It is important to align the gyrocompass to the vessel accurately. Any misalignment will appear directly as a fixed error in heading measurements. Because measurements from the Meridian Surveyor are available for use by diverse systems around the vessel, any misalignment between the gyrocompass and the fore-aft datum might have a significant impact in many other areas of application.



The Meridian Surveyor Gyrocompass will be installed in the survey vessel and used to provide a true North reference.

#### **3.4.5. Single Beam Echo Sounder**

CONTRACTOR will acquire soundings data to make bathymetric maps that acquired from a Single Beam Echosounder (SBES) dual frequency mounted beneath or over the side of a boat, "pinging" a beam of sound downward at the seafloor or from remote sensing systems. The amount of time it takes for the sound to travel through the water, bounce off the seafloor, and return to the sounder tells the equipment how far down the seafloor is. The figure below shows an example of the result of section bathymetry map.



**Figure 5. Section Bathymetry Map**

#### **3.4.6. Heave Compensator and Motion Sensor (Motion Compensating Device)**

Kongsberg Seatex MRU-5 Heave compensator and motion sensor will be interfaced to the single beam echo sounder to correct the soundings towards the horizontal and vertical effects of wave and swell occurred during the survey. Heave compensator and the motion sensor will be positioned as close as possible to the echo sounder transducer mounting and sonar head. The solid-state sensors and gimbals-mounted accelerometers comprised within the heave compensator measured vertical motion of the survey vessel whilst the motion sensor measured roll, pitch and yaw due to varying sea conditions, giving reliable depth data to the entire measurements. The processor then applies the measured data as the digitized sounding is being corrected.

#### **3.4.7. Sound Velocity / CTD Profiler**

A calibrated Valeport SWIFT CTD Profiler velocity profiling system is fitted with Valeport's high stability conductivity sensor; a high accuracy temperature compensated piezo-resistive pressure transducer, and a fast response PRT temperature sensor. The Valeport Swift CTD Profiler uses the concept of distributed processing, where its sensor has its own microprocessor controlling sampling and calibration of readings. Each of these is then controlled by a central processing, which issues global commands and handles all the data. This means that all data is sampled at precisely the same instant, giving superior quality profile data. The instruments will operate autonomously, with set up and data extraction performed by direct communications with PC before and after deployment.



The Valeport Swift CTD Profiler is fitted with 16Mb solid state non-volatile FLASH memory. Valeport Swift CTD Profiler velocity profiling system utilization during the survey operation, the precision and accuracies are increased through the augmentation function of the wavelength, frequency and propagations of velocity.

### 3.5. Bathymetry Survey System and Quality Metrics

To meet the project requirements, bathymetric data will be collected using the Odom Echotrack MK III, which is capable of delivering high-resolution bathymetry with exceptional accuracy and density. The system has been selected specifically to ensuring sufficient data coverage and quality.

#### 3.5.1. Total Vertical Uncertainty (TVU) and Total Horizontal Uncertainty (THU) Compliance

The proposed survey approach and system configuration are designed to fully comply with IHO Special Order, which is the minimum requirement for this project. Specific efforts will be made to ensure that the following standards are met:

- **Depth Accuracy:** Within  $\pm 0.25 \text{ m} + 0.0075 \times \text{Depth}$  (IHO Special Order).
- **Horizontal Position Accuracy:** Within 2 m (95% confidence level).

The equipment specifications in table below demonstrate how the CONTRACTOR's proposed equipment meets or exceeds the required accuracy thresholds.

**Table 7.** Equipment Specifications for Compliance with IHO Special Order TVU and THU Requirements

Equipment Type	Key Specification	CONTRACTOR Proposed Equipment	Specification of Proposed Equipment
Positioning System	- Horizontal accuracy (THU): <2m or 2% of depth - Differential GNSS (DGNSS) or RTK corrections for sub-meter precision	<b>Fugro Starfix G4 DGNSS satellite correction service</b>	<ul style="list-style-type: none"> <li>- DGNSS Signals: GPS, GLONASS, Galileo and BeiDou</li> <li>- Horizontal Positioning: 10 cm accuracy phase-based service using orbit clock data valid worldwide.</li> </ul>
		<b>Fugro Starfix G2 DGNSS satellite correction service</b>	<ul style="list-style-type: none"> <li>- DGNSS Signals: GPS, and GLONASS</li> <li>- Horizontal Positioning: 10 cm accuracy phase-based service using orbit clock data valid worldwide.</li> </ul>
Single Beam Echosounder (SBES)	- Minimum vertical accuracy (TVU): $\pm 0.25 \text{ m} + 0.0075 \times \text{depth}$	<b>Teledyne Odom MKIII</b>	<ul style="list-style-type: none"> <li>- 0.01m / 0.10 ft. +/- 0.1% of depth @ 200kHz</li> <li>- 0.10m / 0.30 ft. +/- 0.1% of depth @ 33kHz</li> </ul>
		<b>Teledyne Odom E20</b>	<ul style="list-style-type: none"> <li>- 0.01m resolution and 2cm +/- 0.1% of depth @ 200kHz</li> </ul>

Equipment Type	Key Specification	CONTRACTOR Proposed Equipment	Specification of Proposed Equipment
			- 0.05m resolution and 10cm +/- 0.1% of depth @ 33kHz
Tide Gauge	Tidal heights should be observed so that the total measurement error at the tide gauge, including timing error, does not exceed +/- 5 cm at 95% for Special Order	LUWES Promithevo Water Level	Accuracy: ±2 mm
Acquisition & Processing Software	- Must allow post-processing of bathymetric data with vertical and horizontal uncertainty calculations	QPS Qinsy	Capable of computing Total Horizontal/Vertical Uncertainty (THU/TVU) values

### 3.6. Bathymetry Equipment Installation and System Sea Trial

After all the required survey equipment is installed on the survey vessel, survey vessel, personnel, and equipment will be mobilized to the site location. Once all the checking and port calibrations processes are performed, the vessel will sail out to survey area. Sea trials will be conducted after equipment installation to ensure the integrity of all systems and peripherals.

The system's tests, sea trials, and offshore equipment calibrations are as follows:

- Navigation system interfacing checks;
- DGPS Verification and Integrity checks;
- Gyro heading calibration;
- Determination of the speed of sound through the water column;
- Echosounder bar checks;
- Test of bathymetric system;
- Assessment of the functioning of the online navigation computer and bathymetric data logging system.

All the checks will be carried out prior to the vessel departing for sea. The CONTRACTOR's test programs will be used to ensure that all instruments and peripheral devices are properly interfaced to the computer systems. The survey data files will be updated with the measured vessel offsets. These offsets are to be measured twice by independent personnel to ensure their validity.

During the trials checks will be carried out to ensure that all the interfacing is working correctly between the various systems and that the correct annotation is produced. A check of the entered data in to the on-line computer will be made to ensure that all survey parameters and vessel offsets are correct. A check computation of the vessel offsets will be carried out manually to verify that gyro and laybacks are correctly applied.

All tests and calibrations shall be witnessed by the Client Representative.



### **3.6.1. DGPS Verification and Integrity Checks**

A DGPS system check to verify the accuracy of the installed positioning system will be carried out. The first step of DGPS verification will be applied by comparing the measurement of a reference point with its fix known local coordinate. The discrepancy of those positions shows the DGPS accuracy and also determines the correctness of transformation to the local geodetic parameter.

In practical application, a local reference point will be measured; in this case measurement referred to a satellite observation, utilizing a mobile field system containing Starfix 9200, and QINSy navigation software installed on a laptop (mobile DGPS system).

The value of discrepancy between the observation result and its known coordinate must be within the accepted limit related to survey requirement's accuracy.

Once accepted the mobile DGPS system later on will be installed together with the vessel's survey navigation system to pursue the next and final step of DGPS verification.

On board of the vessel, the antenna will be installed at a single point on the vessel and simultaneously observed one reference point for 15 minutes. The observed positions from both systems with the exact same geodetic parameters will be compared to determine their discrepancies. Again, the discrepancy's value of both observations reflects the on-board equipment's accuracy. With the mobile DGPS system having the status of the correct measurement, if the discrepancy's value is higher than the minimum requirement of accuracy than the on board DGPS equipment shall be substituted to a more proper system.

In addition to the initial verification, checks for the positioning devices will be conducted every 5 days during survey operations. These checks will involve observing and recording the DGPS data for a period of 30 minutes, ensuring that the system continues to operate within the required accuracy limits. Any deviations detected during these periodic checks will prompt immediate corrective action.

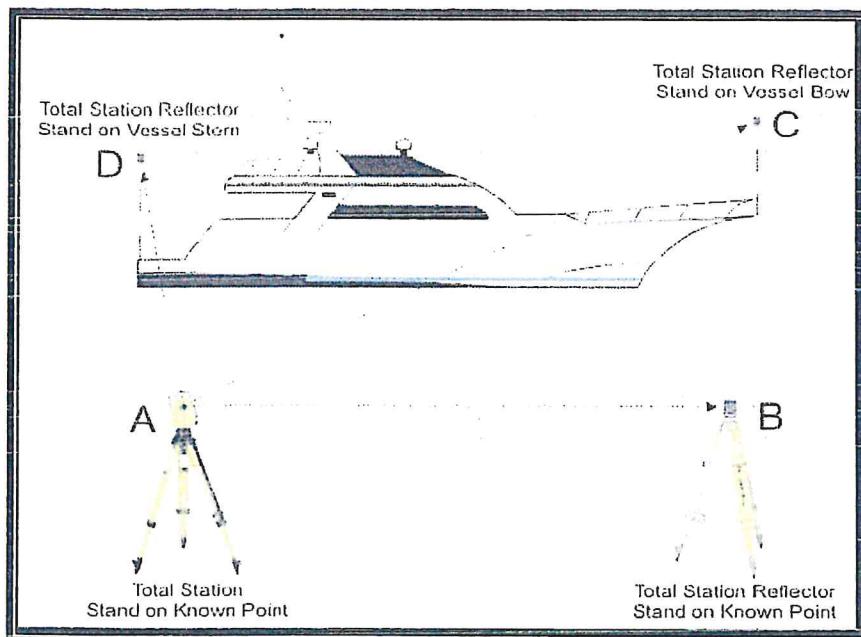
All integrity checks report and value will be approved by CONTRACTOR's Representative before the start of survey operation and inserted in the reporting documentation,

### **3.6.2. Heading Calibration**

Heading Calibration is performed to increase the accuracy of the survey heading equipment utilized. It is important to align the antenna position to the vessel accurately. Any misalignment will appear directly as a fixed error in heading measurements. Because measurements from the equipment are available for use by diverse systems around the vessel, any misalignment between the Gyro and the fore-aft datum might have a significant impact in many other areas of application.

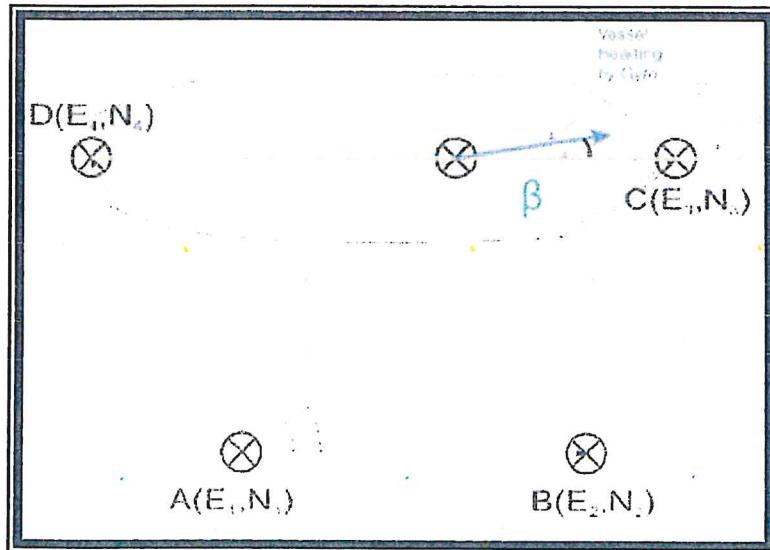
Heading calibration will be conducted by comparing readings of vessel's heading from installed Gyro and the total station observation at the exact same time.





**Figure 6.** Gyro Calibration Scheme

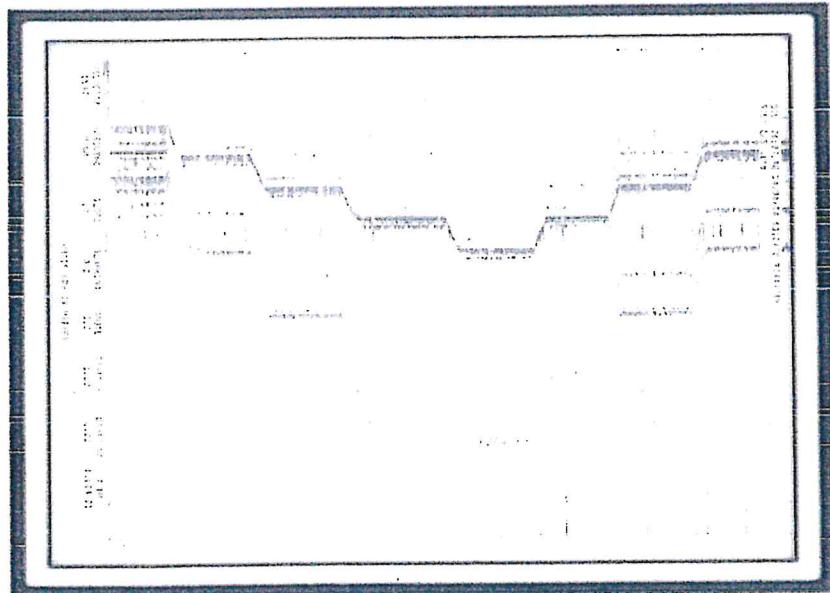
The discrepancy of readings between Gyro readings and total station observation will be positioned as a correction factor which will be applied to navigation system to eliminated heading biases.



**Figure 7.** Gyro Calibration Computation Principle

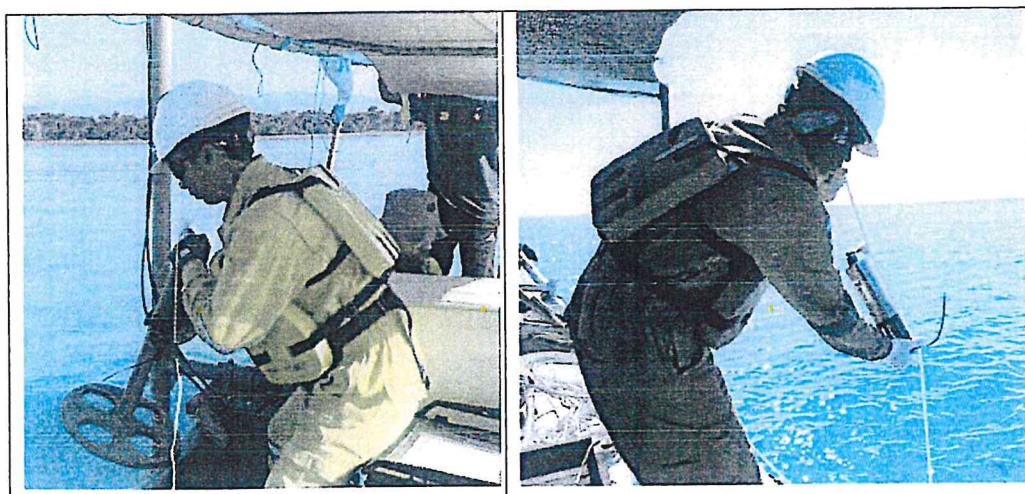
### 3.6.3. Echo Sounder Bar Check

The echo sounder transducer depth will be determined by lead line and vessel draft observations. Single beam transducers are calibrated with a bar check coupled with a velocity cast. With the bar lowered to a given depth, the depth recorder signal output can be adjusted to match the known bar depth. The velocity cast gives the speed of sound in the water column, and the proper speed can be applied to the echo sounder. The figure below shows samples of recorded echogram during the bar check operation.



**Figure 8.** Echo Sounder Barcheck Record

Echosounder bar check will be performed prior and after the survey operation, while Sound Velocity Profiling (SVP) will be performed daily at the start of day's operations.



**Figure 9.** Echo Sounder Barcheck Activity and SVP Activity



### **3.7. Bathymetry Data Acquisition**

Survey operations are conducted daylight only to ensure safety. The survey team departs from the basecamp in the morning after conducting a toolbox meeting, which covers the day's planned activities, safety measures, and task allocations. All survey operations are planned to be completed before the afternoon ends, ensuring that the team can return safely to their basecamp.

During bathymetry survey operations, a systematic approach is implemented to ensure data quality, compliance with project specifications, and efficient acquisition. The following activities are carried out daily during data acquisition:

#### **1.) Pre-Survey System Checks**

- Conduct a daily check of all survey systems, including Single Beam Echosounder (SBES), Positioning System, Motion Reference Unit (MRU), and Sound Velocity Profiler (SVP), to confirm operational readiness.
- Verify calibration settings of equipment, such as tide gauge readings, sound velocity corrections, and geodetic parameters.
- Perform an initial quality check of positioning and echo-sounding systems to ensure no discrepancies.

#### **2.) Daily Navigation Planning and Updates**

- Review the survey plan and ensure that daily navigation lines are updated and loaded into the navigation software.
- Consider environmental factors such as tides, currents, weather, and vessel position to adjust survey schedules as needed.
- Communicate with the vessel crew about planned survey areas and routes.

#### **3.) Gross Error Checks on Survey Spread**

- Perform daily gross error checks to validate the performance of the survey spread.
- Determine and report the reduced depth over the feature, including the average, shoalest, and deepest depth.
- Document and analyze results of the gross error check to ensure that the measured depths meet project accuracy requirements.
- Include results of these checks in both interim and final reports.

#### **4.) Data Acquisition**

- Begin bathymetric data acquisition along predefined survey lines.
- Monitor real-time data from the Single Beam Echosounder systems.

#### **5.) Sound Velocity Profiling**

- Conduct regular sound velocity casts using the Sound Velocity Profiler (SVP) to obtain accurate sound velocity profiles for data corrections.
- Apply updated sound velocity profiles to the survey system to maintain data accuracy.

#### **6.) Real-Time Data Quality Control (QC)**

- Continuously monitor data quality during acquisition, including depth soundings and positioning accuracy.
- Perform real-time QC checks on survey data to identify noise, or errors that require immediate rectification.

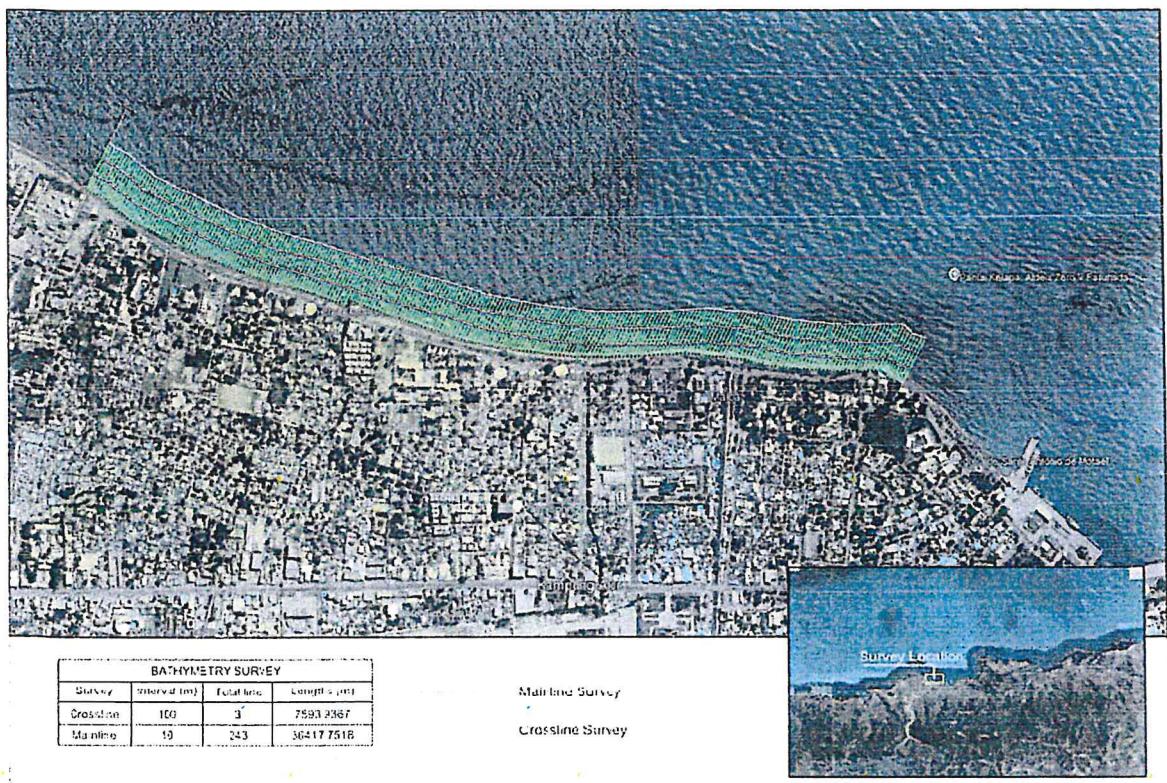
#### **7.) Daily Data Backup and Logging**

- Backup raw survey data, navigation logs, and system logs onto a secure storage device at the end of each survey session.
- Maintain an activity log detailing the progress of survey lines, weather conditions, equipment performance, and any issues encountered.

#### 8.) Reporting and Review

- Prepare a daily progress report summarizing completed survey lines, data quality, and any challenges faced.
- Include results of gross error checks and system performance evaluations in the daily reporting.
- Review the data with the survey team to identify any areas requiring re-survey or further investigation.

Bathymetry data will be collected using planned survey lines to cover the survey area as shown below.



**Figure 10.** Bathymetry Survey line design

### **3.8. Demobilization**

Upon completion of all activities within the scope of work and to the EMPLOYER satisfaction the survey vessel and associated equipment will be demobilized from the project. Any equipment not functioning or needed on other projects will be securely packed and labelled and arrangements will be made for the equipment to be shipped from the vessel to the technical workshops as soon as possible.

Any data gathered will be dispatched to the Jakarta data processing centre. The data can include copies of daily reports, the survey logbook and any files that pertain to the project. The Party Chief will be responsible for their safe return and the Project Manager will be responsible for any subsequent final report to be issued concerning the project.

### **Project Debriefing**

Upon arrival of the survey team in the site office / location, the Project Manager, or his deputy, will debrief the personnel the following subjects:

- a) HSE;
- b) Logistics, timing, planning and communications;
- c) Results;
- d) Equipment performance;
- e) Performance of positioning system;
- f) Problems encountered (if any) and possible improvements for future work;
- g) Data contained in the field binder;
- h) Data processing and reporting requirements and notes.

The Report will be prepared by the Supervisor who carried out the survey. The format will be in accordance with the standard CONTRACTOR'S layout for reporting.

## **4. Data Processing**

For survey services, preliminary interpretation of all data will be carried out in local office/mess after personnel back from field to ensure surveyed locations do not present any show stopper for the subsequent engineering operation. Quality control of all records will be performed onboard to enable the EMPLOYER representative to monitor the progress of the survey activities, and verify that acceptable quality data are being acquired.

### **4.1. Navigation Trackplot**

Survey track plot will be generated on board to verify coverage and quality of surveyed lines.

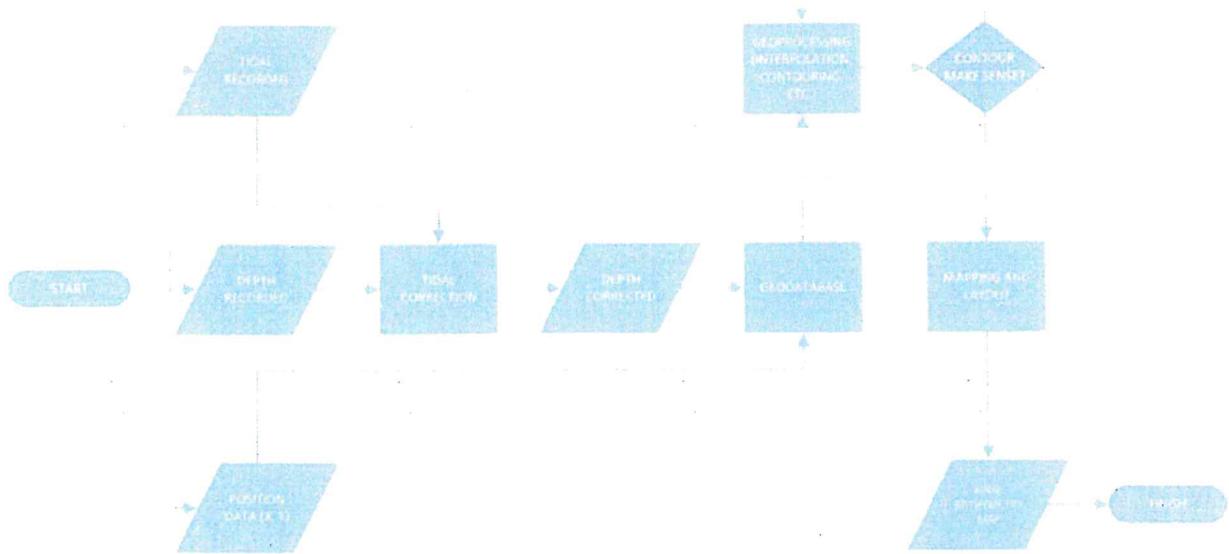
### **4.2. SBES Data**

Filtering and despiking process will be performed towards the error depth data.

SBES data will be reduced to Lowest Astronomical Tide (LAT) or any other appointed vertical datum addressed by EMPLOYER using tidal information derived from tide station to create a bathymetric chart.

The bathymetry survey data processing starts from the raw data and finally becomes a bathymetry map. In general, the steps of processing bathymetry survey data are divided into three parts namely, pre-processing, data correction, and drawing of bathymetry maps.

For more details, see the flow chart below.



**Figure 11.** Flowchart of Bathymetry Data Processing.

Pre-processing consists of early data filtering and noise removal. The data correction consists of draft correction and tidal correction. Finally, the mapping consists of data interpolation, contouring, and layout.



## 5. Reporting

### 5.1. Daily Progress Reports

Daily Progress Reports will be compiled by the CONTRACTOR throughout the course of the survey duration and provided to the EMPLOYER or EMPLOYER Representative for approval, inclusive of during mobilisation and demobilisation. Daily Progress Reports (DPR's) will be provided every 24 hours throughout field operations.

These reports will include:

- A summary of work performed and work conditions
- Breakdown of personnel, plant and equipment present on site
- Logs of start and end positions of surveyed run-lines
- Data examples, particularly of any unexpected or anomalous conditions
- Health, Safety and Environmental issues
- Any changes in programme or proposed methods, personnel or equipment;
- Progress in relation to the estimated schedule, including strategies to recover any lost time
- The occurrence of any previously unforeseen circumstances that may have arisen.
- Daily reports will be provided in editable native format and portable electronic (\*.pdf) format no later than by 10 am on the day following the completed shift.
- Daily reports (or similar) should be sufficient in detail and content to support and justify all progress claims submitted by the CONTRACTOR for review and approval by the EMPLOYER.

### 5.2. Interim Report

The CONTRACTOR will deliver an Interim Report to the EMPLOYER within five (5) days following demobilisation from the field. This report will present a clear and factual record of all survey activities conducted during the project.

The report will include:

- **Survey Activities:** A detailed account of work completed, including any deviations from the plan and their justifications.
- **Survey Methodologies:** A description of the approaches used and how they were applied during the survey.
- **Equipment and Resources:** An inventory of vessels, tools, and equipment deployed.
- **Personnel Information:** A list of team members involved, along with their specific roles and contributions.
- **Survey Influences:** Observations on factors that affected survey operations, including weather, equipment performance, or other unforeseen events.

The Interim Report will be submitted in both editable and portable electronic formats for EMPLOYER review.



### **5.3. Final Survey Report**

The CONTRACTOR will provide a comprehensive Final Survey Report to the EMPLOYER within seven (7) days of completing the survey works. This report will document all activities and findings related to bathymetric data collection, as outlined below:

- **Survey Overview:** A detailed factual account of all survey activities undertaken, including any variations from the initial plan.
- **Methodologies:** A clear description of the methods employed for data acquisition and processing.
- **Resources:** Full details of vessels, equipment, and tools utilized throughout the survey.
- **Personnel:** A summary of the project team, including field and office personnel, with their respective roles and responsibilities.
- **Survey Influences:** Comments on factors affecting survey execution, such as environmental conditions or equipment performance.
- **Data Processing and Calibration:**
  - Steps taken in processing bathymetric survey data.
  - Calibration details (barcheck and SVP)
- **Processing Workflow:** A step-by-step explanation of the data processing workflow used for the bathymetric survey.
- **Quality Control:**
  - Assessment of error budgets, including Total Horizontal Uncertainty (THU) and Total Vertical Uncertainty (TVU).
  - Any adjustments or corrections applied to the positioning dataset.
  - Mis-closure values from all levelling traverses.
- **Data Presentation:**

A comprehensive presentation of gathered data, with quality control applied:

  - Bathymetric charts detailing both spot elevations and contoured bathymetric datasets annotated with seabed features, inclusive of a coloured contour map of the survey area with contours and colour changes at 0.5 m intervals and overlaid with a grid at 100 m spacing
- **Results Assessment:** A concise evaluation of the survey results and their implications.
- **Datasets Inventory:** An inventory of all datasets produced, including their formats and specifications.
- **Appendices:**
  - Electronic versions of all Daily Progress Reports (DPRs).
  - Logs related to survey acquisition and processing.

The report will be delivered in editable native format and portable electronic formats for EMPLOYER review and approval.



#### **5.4. Additional Reporting**

- All recorded data will be plotted, with spurious or erroneous data flagged.
- Field logs and Daily Progress Reports (DPRs) will be included as an appendix to the survey report.
- Monument descriptions for all monuments used during the survey will be appended to the main survey report.
- Survey drawings, charts, plans, profiles, and reports will be delivered digitally in both native formats and PDF format.
- All data and drawings will follow the specified Vertical and Horizontal Datums for the project and include the required survey metadata.

#### **5.5. Data Deliverables**

The bathymetric survey will provide the following deliverables to meet the project requirements:

- Raw bathymetric datasets will be recorded using survey navigation software (QINSy) with file names indicating survey dates.
- Contoured bathymetric depth charts will be provided, reduced to the specified Datum for both High and Low Frequency Channels.
- ASCII XYZ files of bathymetry will be supplied, reduced to the specified Datum for both High and Low Frequency Channels.
- Vessel offset diagrams and vessel track plots will be included.
- Documentation of bar checks, sound velocity profiles, and navigational checks will be provided.
- Monument descriptions for benchmarks or locations where navigation checks were performed will be included.

#### **5.6. CONTRACTOR Data Management**

CONTRACTOR employs robust IT management practices to ensure the secure and efficient handling, storage, and retention of all data acquired during the survey project. The following outlines our approach to data management, security, lifecycle retention, and disaster recovery:

##### **i. Data Management**

We adhere to industry best practices for data management to ensure the secure and organized handling of survey data throughout the project lifecycle. Acquired data is securely stored onboard the data processor's PC during acquisition, with daily copies sent to our Basecamp system immediately after acquisition. Additionally, data is regularly transmitted to our headquarters via Starlink's reliable satellite data link, ensuring seamless transfer for further processing and analysis. To mitigate the risk of data loss, backups are sent to headquarters at a minimum frequency of twice a week, ensuring redundancy and data protection at all stages.

##### **ii. Data Security**

Data security is a top priority, and we have implemented robust measures to protect sensitive information throughout the transmission and storage processes. All data transmissions via Starlink are secured using end-to-end encryption based on Advanced Encryption Standard (AES) protocols, with strong key management practices ensuring confidentiality and data integrity. Furthermore, the Starlink router supports WPA2 and WPA3 protocols to provide additional encryption and safeguard network communication from unauthorized access.

iii. **Data Lifecycle Retention**

Our data retention practices comply with contractual and industry standards to ensure the availability of data throughout and beyond the project duration. All raw and processed data are securely stored for a period of three years after the contract termination date. During this retention period, the employer will have full access to retrieve partial or complete data sets as needed. This approach guarantees that valuable project data remains accessible for analysis or reference within the stipulated retention period.

iv. **Disaster Recovery**

We have established a comprehensive disaster recovery framework to ensure data integrity and availability in the event of unforeseen incidents. Our disaster recovery system includes the following key components:

- **Data Backup and Redundancy:** Biweekly data backups are performed, and multiple copies of data are stored across secure locations to ensure redundancy.
- **Secure Recovery Protocols:** Protocols are designed to enable rapid recovery of data in the event of hardware failure, cyberattacks, or other disruptions.
- **ISO 9001:2015 Certification:** Our adherence to ISO 9001:2015 standards reflect our commitment to maintaining high levels of quality control and IT management.
- **Regular Testing and Updates:** The disaster recovery plan is reviewed, tested, and updated annually to ensure its effectiveness and alignment with evolving technologies and best practices.

v. **Internal Procedures**

To further strengthen our IT management capabilities, we operate in accordance with well-defined internal procedures:

- **MHTL-TCH/QHSE-2/007 Handling and Storage of Electronic Data Procedure:** This procedure outlines the methods for proper storage, protection, and handling of all electronic data to prevent loss or compromise.
- **MHTL-TCH/QHSE-2/007 Control of Survey Monitoring & Measuring Equipment Procedure:** This procedure governs the management, calibration, and maintenance of survey monitoring and measuring equipment to ensure accuracy and reliability in data collection.

## 5.7. PAYMENT METODE

Payment Terms will be determined in contract.



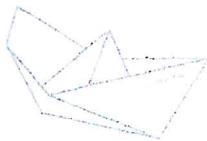
# QUOTATION PROPOSAL

To:

*Ministério do  
Turismo da  
República  
Democrática de  
Timor-Leste*

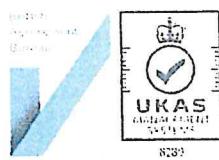
# hidrokinetik

## PROFILE



hidrokinetik

hydrographic survey | marine geophysical survey | met ocean survey  
topographical survey | geotechnical survey | USV design & manufacturing  
underwater sonar & autonomous marine systems | research & development



ISO 9001 | ISO 14001 | ISO 45001

**MOGSC**  
MALAYSIAN OIL & GAS ENERGY SERVICES COUNCIL

## QUOTATION

To : Ministério do Turismo República Democrática de Timor-Leste	Quotation No. : MHTL/RFQ/III-25/001
	Date : Thursday, 27 March 2025
	Quantity : 1 (one)

Dear Sir(s),

Further to your request, we are pleased to provide the following quotation for the survey works of "Drone LiDAR and Bathymetry Survey (SBES, ADCP, Tide Gauge and SBP)" for your reference.

Table 1. Table of Prices

No	Description	Quantity	Unit	Unit Price (USD)	Sub-Total Price (USD)
1	<b>Preparation &amp; Mobilization:</b> <ul style="list-style-type: none"> <li>• Project Management</li> <li>• Permit Arrangement</li> <li>• Workshop Preparation &amp; Consumable</li> <li>• Equipment &amp; Personnel Transportation to Site</li> <li>• Equipment Installation at Boat</li> <li>• Equipment Calibration &amp; Deployment at Site</li> </ul>	1	LS	32,581	32,581
2	<b>Survey Operations:</b> <p>SBES Bathymetry Survey Operation of the area 2500m x 150m, which consists of:</p> <ul style="list-style-type: none"> <li>• Survey Boat</li> <li>• Provision &amp; Fuel</li> <li>• Satellite Communication</li> <li>• Survey Personnel: <ul style="list-style-type: none"> <li>• Party Chief x1</li> <li>• Hydrographic Surveyor x1</li> <li>• Analogue Engineer x1</li> <li>• CAD Operator x1</li> </ul> </li> <li>• Survey Equipment: <ul style="list-style-type: none"> <li>• Qinsy Navigation System</li> <li>• Starfix DGPS Signal</li> <li>• Odom MKIII SBES System</li> <li>• Motion Reference Unit</li> <li>• SVP Probe</li> </ul> </li> </ul>	1	LS	28,913	28,913
3	<b>Demobilization:</b> <ul style="list-style-type: none"> <li>• Equipment Dismantle from Boat</li> <li>• Equipment Transport from Site to Office</li> <li>• Equipment &amp; Personnel Transportation from Site to Office</li> </ul>	1	LS	23,076	23,076



MIRZA HIDROKINETIK TIMOR, Lda.

Naroman B.T, Madohi,  
Comoro, Dom Aleixo, Dili, Timor-Leste

[timor@hidrokinetik.com](mailto:timor@hidrokinetik.com)

## QUOTATION

To : Ministério do Turismo República Democrática de Timor-Leste	Quotation No. : MHTL/RFQ/IV-25/002
	Date : Friday, 25 April 2025
	Quantity : 1 (one)

Dear Sir(s),

Further to your request, we are pleased to provide the following quotation for the survey works of "Bathymetry Survey" for your reference.

Table 1. Table of Prices

Bathymetry Survey										
No.	Description	Qualification	Details					Unit Price	Total Price	
			Qty	Unit	Vol.	Unit	Freq	Unit	(USD)	(USD)
1	Project Manager	Bachelor Degree in Geodetic Engineering	1	person	1	month	1	time(s)	4,000	4,000
2	Party Chief	Bachelor Degree in Geodetic / Mechanical Engineering	1	person	1	month	1	time(s)	5,000	5,000
3	Hydrographic Surveyor	Bachelor Degree in Geodetic Engineering	1	person	1	month	1	time(s)	4,500	4,500
4	Survey Engineer	Bachelor Degree in Mechanical/Electrical Engineering	1	person	1	month	1	time(s)	4,500	4,500
5	CAD/Data Processor	High School/Vocational Degree in Topographic/Geodetic	1	person	1	month	1	time(s)	3,000	3,000
6	Boat Helper	Local Personnel	1	person	1	month	1	time(s)	550	550
7	Driver	Local Personnel	1	person	1	month	1	time(s)	550	550
Sub Total Direct Personnel Costs (A)									22,100	

B. DIRECT NON-PERSONNEL COSTS

No.	Description	Details						Unit Price	Total Price	
		Qty	Unit	Vol.	Unit	Freq	Unit	(USD)	(USD)	
<b>Survey Preparation, Mobilization and Installation</b>										
1	- Workshop Preparation & Equipment Test	1	lot	10	days	1	time(s)	180	1,800	
	- Personnel Ticket Flight to Site	4	person	1	days	1	time(s)	500	2,000	
	- Car Rental & Fuel	2	car	6	days	1	time(s)	185	2,220	
	- Equipment Transportation/Cargo to Site	1	lot	10	days	1	time(s)	250	2,500	
	- Hotel Accommodation	4	person	9	days	1	time(s)	65	2,340	
	- Survey Consumable & HSE Supplies	1	lot	1	set	1	time(s)	5,093	5,093	
	- Personnel Meals during field activity	8	person	6	days	3	time(s)	10	1,440	
	- Tide Gauge Setup	1	lot	1	days	1	time(s)	477	477	
	- Equipment Setup/Installation on Local Boat	1	lot	2	days	1	time(s)	1,600	3,200	
<b>Equipment and Material</b>										
<b>a. Survey Boat</b>										
2	- Local Wooden Boat + Fuel + Personnel	1	boat	6	days	1	time(s)	850	5,100	
	<b>b. Survey Equipment</b>									
	- DGPS Positioning Systems	1	ea	6	days	1	time(s)	350	2,100	
	- Gyrocompass	1	ea	6	days	1	time(s)	250	1,500	
	- Navigation PC/Laptop	1	ea	6	days	1	time(s)	100	600	
	- Single Beam Echo Sounder	1	ea	6	days	1	time(s)	350	2,100	
	- Barcheck	1	ea	6	days	1	time(s)	50	300	
	- Heave Compensator & Motion Sensor	1	ea	6	days	1	time(s)	235	1,410	
	- CTD Profiler	1	ea	6	days	1	time(s)	200	1,200	
3	- QINSy Navigation Software	1	ea	6	days	1	time(s)	300	1,800	
	- Tide Gauge	1	ea	6	days	1	time(s)	150	900	
	<b>Equipment &amp; Personnel Demobilization</b>									
	- Equipment Dismantling from Local Boat	1	lot	1	days	1	time(s)	1,600	1,600	
4	- Personnel Ticket Flight from Site	4	person	1	days	1	time(s)	500	2,000	
	- Equipment Transportation/Cargo from Site	1	lot	10	days	1	time(s)	250	2,500	
	<b>Data Processing</b>									
5	- QINSy Processing Software	1	lot	7	days	1	time(s)	120	840	
	- AutoCAD Drafting & Charting Software	1	lot	7	days	1	time(s)	100	700	
	- Single Beam Echosounder Data Processing & Charting	1	lot	7	days	1	time(s)	1,250	8,750	
<b>Chart &amp; Report Generation</b>										
6	- Detailed Chart Sheets	1	set	6	copy	1	time(s)	2,000	12,000	
	- Report (Hardcopy)	1	set	6	copy	1	time(s)	500	500	
	- Report (Softcopy)	1	set	6	copy	1	time(s)	500	500	
<b>Others</b>										
6	- Local Permits	1	lot			1	time(s)	2,500	2,500	
	- Socialization	1	lot			1	time(s)	2,500	2,500	
<b>Sub Total Direct Non-Personnel Costs</b>									<b>72,470</b>	
<b>Total Cost (A+B)</b>									<b>94,570</b>	

## **General Terms and Conditions of Quotation and Sale:**

All goods and services ("Provision") are provided on the terms and conditions set out herein and no addition or variation to this terms and conditions will have any effect unless expressly agreed in writing by the CONTRACTOR.

### **1. Quotation**

- a. MIRZAHIDROKINETIK TIMOR, Lda. hereinafter referred to as the "CONTRACTOR", and Ministério do Turismo República Democrática de Timor-Leste hereinafter referred to as the "COMPANY".
- b. Unless previously withdrawn, this quotation is valid for thirty (3) days. This quotation is not to be construed as an obligation to sell but merely an invitation to treat and no contractual relationship shall arise from it until the COMPANY's order has been accepted by the COMPANY.
- c. Cancellation of a Provision can be made only with the COMPANY's consent and upon terms that will compensate the COMPANY against any loss included any cost that incurred by the COMPANY when preparing for the Provision.
- d. Change Provisions requested by the COMPANY shall not be effective unless accepted in writing by the CONTRACTOR. There will be additional charge for any costs, expenses, and liabilities incurred by the CONTRACTOR in connection with any such change Provision.

### **2. Provision**

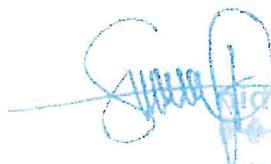
- a. Provision as per specified in Table 1.
- b. All rates are specified in USD (United State of American Dollars).
- c. All quoted price includes 4% VAT, in accordance with the applicable regulations.
- d. Related to the Scope of Work:
  - i. COMPANY shall be responsible for all working permits to authority and socialization.
  - ii. CONTRACTOR shall responsible to the COMPANY only for the Provision as stated in this quotation and CONTRACTOR shall be released from any claim, loss, damage, cost, expenses, any payment and responsibilities incurred in connection with the provision in COMPANY's main contract with COMPANY's client.
  - iii. **Mobilization charge means:**
    - a. Applied for one (1) call out.
    - b. Fees for survey permit and/or security clearance administration and other permit deemed necessary in relates to the project operation.
    - c. Provision of mobilization plan, survey procedures, and QA/HSE documents.
    - d. Preparation and installation of survey equipment at CONTRACTOR's premises.
    - e. Deployment and Calibration of survey equipment.
    - f. Transit of vessel, survey equipment, and personnel from Office to Site.
  - iv. **Survey Operation charge means:**
    - a. Acquisition of SBES bathymetry data using the proposed survey equipment, personnel and method for 2500m x 150m area.
    - b. Any additional survey coverage beyond proposed area will be charged at the applicable daily rate.
    - c. For detailed technical explanation of the survey services, please refer to our Technical Proposal MHTL-TP-BAT-IV-25-001.
  - v. **Demobilization charge means:**
    - a. Fees for survey permit and/or security clearance administration and other permit deemed necessary in relates to the project operation.
    - b. Transit of vessel, survey equipment, and personnel from Site.
    - c. Dismantle of survey equipment.
  - vi. **Additional charge:**
    - a. Any additional survey coverage beyond 2500m x 150m area will be charged at the applicable daily rate.
    - b. Standby of vessel due to Interruption of the work process due to bad condition of weather, force majeure events, and/or other events specified by CLIENT's approval or standby by CLIENT's request.

- c. The Survey spread daily rates shall apply for any eight (8) hour period. Part of day shall be considered a whole day for invoicing purposes.
- vii. **The provision of invoicing and payment:**
  - a. 35% of the Total Cost as Down Payment should be remitted to Contractor prior Mobilization to site.
  - b. 30% of the Total Cost will be invoiced after the completion of survey acquisition.
  - c. 25% of the Total Cost will be invoiced after the demobilization process is completed, specific by the completion certificate.
  - d. 10% of the Total Cost will be invoiced after the issuance of final report.
  - e. The total amount of Daily Rate, calculated by the actual additional Operation and Standby occurred, will be invoiced to COMPANY upon demobilization of Survey. The payment should be made 15 days after invoice submission.
  - f. The payment terms should be settled maximum 30 days after receipt of invoice.
- e. 1‰ (one per mil) interest per day will be applied to the invoice that already exceeded due date, with maximum cumulative interest 2 % (two percent) in one month. The interest remains applied until the COMPANY released all payment to the related invoice.

### 3. Additional Clause

It is a policy of the COMPANY that a duly authorized officer of the COMPANY sign and return this quotation within a maximum of 7 (seven) days from the receipt of this offer, which states the COMPANY's acceptance of the Terms and Conditions of this quotation. If within the validity period as stated in point 1.b above, the COMPANY has not signed this quotation, CONTRACTOR will then make a new quotation and this quotation becomes invalid.

Yours sincerely,



**Mirzahidrokinetik**  
Technologies  
Water Resources & Energy Solutions

**CORNELIO PACHECO**

Director of MIRZA HIDROKINETIK TIMOR, Lda.

CUSTOMER ACCEPTANCE OF QUOTATION

I hereby acknowledge and agree to the Terms and Conditions contained herein and certify that I am authorised to execute this agreement.

For and on behalf of Ministério do Turismo República Democrática de Timor-Leste

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Signature \*: \_\_\_\_\_

\* Please sign with a company stamp