

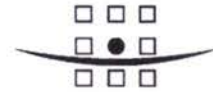


Navigational Channel for Turkmenbashi Port

TACIS/2005/109-967

Navigational Channel for Turkmenbashi Port

21 August 2006
Inception Report
9R1827.21



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Date: 13 September 2006
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Navigational Channel for Turkmenbashi Port
EuropeAid/120539/C/SV/TM
Inception Report

Dear Sirs,

Please find herewith a copy of the Inception Report which includes a report on proposals for the Hydrographic Survey for the study of the Navigational Channel for Turkmenbashi Port.

Yours faithfully,

Keith Bunning
Port Infrastructure / Dredging Specialist



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CONTENTS

	Page
PROJECT SYNOPSIS	1-3
1 INTRODUCTION	1-4
2 OBJECTIVES AND APPROACH	2-5
2.1 Wider Objective	2-5
2.2 Project Purpose	2-5
2.3 Risks and Assumptions	2-5
2.4 Approach	2-6
3 FIRST FINDINGS	3-9
3.1 Preamble	3-9
3.2 Economics and finance	3-9
3.3 Technical conditions	3-10
4 PLANNING	4-13
4.1 General	4-13
4.2 Missions	4-13
4.3 Non-key Experts	4-14
4.4 Hydrographic Survey	4-15
4.5 Activity/bar chart	4-17
5 REPORTING	5-18
5.1 Working papers	5-18
5.2 EIA Scoping Report	5-18
5.3 Draft/Final Report	5-18
5.4 Environmental Statement (EIA)	5-19
5.5 Monthly Progress Reports	5-19
5.6 Report Distribution	5-19
6 LIAISON AND LOGISTICS	6-20
6.1 Liaison	6-20
6.2 Logistics	6-20



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ANNEX A	REFERENCES
ANNEX B	PERSONS & POSITIONS
ANNEX C	ORGANISATION STRUCTURE
ANNEX D:	FORM 1.4 - OVERALL PLAN OF OPERATIONS
ANNEX E:	FORM 1.5 - OVERALL OUTPUT PERFORMANCE PLAN
ANNEX F:	FORM 1.6 - PLAN OF OPERATIONS FOR THE NEXT PERIOD (WORK PROGRAMME)
ANNEX G:	REPORT ON PROPOSALS FOR HYDROGRAPHIC SURVEY
ANNEX H:	CURRICULA VITAE OF NON-KEY STAFF





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PROJECT SYNOPSIS

Project Title	: Navigation Channel for Turkmenbashi Port
Project Number	: EUROPE AID/120539/C/SV/TM
Country	: Turkmenistan

Overall objective	To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made
Project purpose	To ensure safe and reliable access to Turkmenbashi Port according to international standards for all ships operating on the Caspian Sea, and to protect the environment
Planned outputs	<ul style="list-style-type: none"> • International standards for channel navigation defined • Port dredging plan developed • Training for maintenance dredging delivered • Environmental Impact Assessment executed • Economic and financial feasibility – and Financing Plan established
Activities	<ul style="list-style-type: none"> • Specification of alternatives, analysis of optimal channel configuration and routing • Review of existing channel measurement and existing dredging facilities • Survey of existing dredging facilities • Hydrographic survey and environmental testing • Elaboration of a Dredging plan (capital and maintenance) • Training Needs Assessment, programming and delivery of maintenance dredging • Environmental Impact Assessment • Economic Cost-Benefit Analysis, Revenue Forecast, Financing Plan

Contract signing date 12 May 2006. Work effectively started 1 July 2006. Contract duration 12 months. End of project planned 11 May 2007.



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I INTRODUCTION

This Inception Report (IR) takes stock of the first 3 months of the Study: preparation, mission to Turkmenistan (TM), first findings and work plan.

The IR is short and concise, as the original objectives and approach, laid down in the Terms of Reference and the Consultant's Technical Proposal have not been changed significantly.

However, the requirements for timing of the execution of the Study has changed: where the Terms of Reference described a duration of 6 months, the Contract stipulates a maximum of 12 months. Deviations from the Technical Proposal are given in this IR.

Although not always clear in the Terms of Reference, Consultants have adopted two distinct notions for "Project", i.e. navigability improvements of the access channel, and "Study", the present technical, economic, financial and environmental assessment.

The IR covers in the following chapters:

- Objectives and Approach (2)
- First Findings (3)
- Work Plan (4)
- Reporting (5)
- Liaison and Logistics (6)



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2 OBJECTIVES AND APPROACH

2.1 WIDER OBJECTIVE

The wider objective of the Project is to contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made

2.2 PROJECT PURPOSE

To ensure safe and reliable access to Turkmenbashi Port according to international standards for all ships operating on the Caspian Sea, and to protect the environment

The Project's specific objectives have been carefully defined in the Terms of Reference and the Consultant's Technical Proposal, and will be followed throughout project execution. No significant changes are foreseen.

2.3 RISKS AND ASSUMPTIONS

The assumptions and risks, pertaining to the Study, as mentioned in the Terms of Reference are still considered relevant:

Assumptions

- Close cooperation of entities responsible for the Project
- Affected shipping lines and operators are willing to cooperate
- There is a timely and reliable cooperation at the local government level

Risks

- The port is not able to provide the necessary funding for the Project
- Inadequate technical status of the floating means
- Lack of dry dock works and inspection of vessels
- Technical and/or organisational conditions impede a rapid implementation of project objectives

The validity of these risks and assumptions is assessed throughout the Study.



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2.4 APPROACH

The objective of the present Study is to establish the technical and economic feasibility, the financial sustainability and the environmental impacts of the Project. Ways to achieve this goal are addressed in the following “10 points agenda” of the Study.

2.4.1 Economy and Transport

Transport developments, relevant to the Port of Turkmenbashi are closely linked to economic growth, not only in Turkmenistan, but in a much wider region. Particularly oil and gas (products) will be a main generator of transportation flows. At the same time, the growing Gross Domestic Product in the region will boost the demand for general cargo transportation in the region.

The Study starts from a world energy perspective, zooming in on the Central Asian region and then to the TRACECA corridor. The competitive position of the Port of Turkmenbashi vis-à-vis other Caspian seaports will be analysed in terms of accessibility for increasing volumes and ship sizes, and quality of the overall transport chain.

2.4.2 Alternatives for navigability improvements

Alternative for Primary Channel could be improvement of the Southern Channel. Each of the channel alternatives could be specified according to options for widening and deepening. In addition, navigational aids and regulations determine the capacity of the entrance channel.

In any case, International Standards shall apply, as is emphasised in the Terms of Reference of the Study. A benchmarking exercise will be undertaken to define the appropriate configuration, dimensions and facilities of the channel, to serve growing traffic with larger ships in a safe and environmentally sound way.

2.4.3 Mapping hydrographical and environmental conditions

In order to properly specify project alternatives, hydrographical measurements and environmental tests will be carried out. An inventory of the available capacity in Turkmenistan has first priority, aiming at organising the surveys as soon as possible, that is before the bad weather begins in autumn.

Proposals for surveying will be submitted to the Europe-Aid Task Manager.



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2.4.4 Specification of the project

Once the surveys have been executed, the most appropriate project configuration will be specified in terms of location and dimensions. If not determined by "International Standards", a very limited number of alternatives may be assessed in terms of channel width and depth.

In a longer run and regional perspective, a step-wise approach seems indicated, whereby channel dimensions grow with ship sizes in a further future.

2.4.5 Dredging Plan

For the optimal project configuration, a detailed Dredging Plan will be developed. For capital dredging, one could – in principle - choose between the deployment of the Port's own dredger and international contracting. The latter option would give a good indication of the cost of the Project ("opportunity cost"). However, contracting out the capital dredging works is most likely not realistic in view of institutional conditions and the current financing position of the Port.

Next to the capital dredging, the Dredging Plan shall contain a detailed proposal for the execution of maintenance dredging works on a permanent basis.

In an early stage of the Study, an Inspection of the Port's Dredger will be carried out to estimate the necessary refurbishment the vessel has to undergo to make it ready for the capital dredging works.

2.4.6 Training

The Terms of Reference call for training in maintenance dredging of the entrance channel. Activities pertain to:

- Training Needs Assessment (TNA)
- Outline of a Training Programme
- Organisation and implementation of the proposed training

The TNA will be executed shortly to establish the scope of work during the remainder of the Study, and the proposed approach will be submitted to the Europe-Aid Task Manager for approval.

2.4.7 Environment

Environmental studies will be carried out as outlined in the Technical Proposal, phased in three main tasks:

- Environmental scoping



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- Main "impact assessment" and preparation of the EIA report
- Permit application

The environmental tests to be executed will be coordinated closely with the hydrological surveys

2.4.8 Cost-Benefit Analysis

Costs and benefits of the Project (alternatives) will be defined and estimated over the lifetime of the Project for which a period of 20 to 30 years is a fair proxy.

- Costs: Investment cost of capital dredging and recurrent cost of maintenance dredging, and channel operations (required pilotage, services)
- Benefits: Widening and deepening of the channel set improved navigational conditions by which shipping companies incur reduced waiting times, and may be able to employ larger vessels. Increased safety/reduced risks of environmental damage

2.4.9 Financial sustainability

To achieve financial sustainability – needed to secure repayment of any project loans/debts and annual maintenance dredging – some financial autonomy of the channel operating entity is recommended. Cannel dues could be earmarked to this purpose. The institutional conditions within the Port organisation and beyond will be investigated.

2.4.10 Financing options

The Terms of Reference are explicit in the Consultant's task to assist the beneficiary to seek external finance for the capital dredging works. International Financing Institutions (IFIs) will be approached to learn the opportunities.





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3 FIRST FINDINGS

3.1 PREAMBLE

Due to visa problems, the Study experienced a false start and some weeks were lost to get the first mission to Turkmenistan fielded. Following contract signing on 15 May 2006, the Study effectively started on the first of July 2006 and the first mission took place 7 – 18 July.

Arrival of the core team in Ashgabat was not smooth as there were misunderstandings between the National Coordinating Unit (NCU) and the Contractor. The Contractor puts on the hair shirt and promises to mend its way. A mode of operation with the NCU has been agreed upon.

Consultants are indebted to both the NCU in Ashgabat and the Port Organisation in Turkmenbashi (TMRL: Turkmen Maritime and River Lines) for the good cooperation with the mission.

3.2 ECONOMICS AND FINANCE

3.2.1 Recent trends and forecasts

Following severe transition and economic decline during the nineteen nineties, Turkmenistan's economy started to grow around the millennium change and during the past few years GDP growth rates were even in two digits. Oil and gas are the main drivers of economic growth.

Economic growth is reflected in transportation developments in all segments: oil and gas (products) and general cargo.

As the existing traffic forecasts (see Annex A for references), they have been prepared during the years 1999-2001, just around the economic turn around which was not visible yet at that time. These forecasts are rather conservative and should be revised in view of recent trends and longer term perspectives.

As to the shipping industry, using the port of Turkmenbashi, the Caspian Ferry Lines experienced some capacity problems, suppressing potential demand and shipping frequencies. However, new companies are entering the market, i.e. the Makhachkala line, taking over part of the growing demand for shipping services.

3.2.2 Economic and financial feasibility studies

Data collection has been put into progress to estimate Project benefits, i.e. time savings accruing to shipping lines. However, it is anticipated that such



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benefits might not be enough to fully justify the Project in economic terms as the benefits from increased safety are and reduced risks of environmental damage are difficult to quantify.

Ample attention shall be given to the proper description of "International Standards", that implicitly take account of norms for Navigational Safety and Environmental Risks.

Financial data are now being collected to forecast the revenues from future channel use. Tariffs may be increased to charge users for the improved service once the Project is implemented. However, our first impression is that it may not be expected at short notice that institutional and organisational changes will be implemented allowing for earmarking revenues from channel charges to secure repayment of any external loan.

3.2.3 Financing

Preliminary consultations with IFIs in Ashgabat taught us that the portfolio of EBRD, World Bank and others in Turkmenistan is rather thin. Contracting parties are basically in the private sector as sovereign guarantees are not provided at the moment. Financing of infrastructure projects through private banks is unlikely.

It is expected that if the Government wants to pursue the present Project, it will be financed through own resources (TMRL or other government).

3.3 TECHNICAL CONDITIONS

3.3.1 Present and Historical Situation

There was much enthusiasm from TMRL for the study with extensive help given in defining the existing situation and searching for relevant historical data. Meetings were held with heads of appropriate departments and their key staff to identify and provide information relative to this study. Where extensive details are required from key personnel questionnaires and data request lists have been prepared and distributed.

Regulatory and interested bodies as scheduled elsewhere in this report were also met to make them aware of the project and to seek their advice and support to the project objectives.

Since the November 2000 Tacis Traceca Corridor Traffic and Feasibility Studies (TNREG 9803) Module D: Navigation Channel for Turkmenbashi Port and following sections report the following outlines the situation and changes that have taken place:



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- No further maintenance dredging of the channel has taken place.
- The port was provided with 16 new navigation buoys under an EC Tacis grant and a few of these have already been lost.
- The port has acquired some very basic hydrographic survey equipment through grant aid.
- Some unspecified maintenance has been undertaken to the dredger SHAGADAM and barges by a contractor who hired the TMRL equipment for a project in Cheleken. After trials the dredging did not proceed.
- The TMRL dry-dock has been declared unfit for use and is being scrapped with no replacement available in Turkmenbashi.
- An additional ferry line has been introduced linking Turkmenbashi with Makhachkala using two new 3000t capacity ferries with a third reported as being under construction.
- There are reported groundings in the channel of a general cargo vessel and of a tanker carrying crude oil.
- Compulsory use of pilots is in place.
- Approval has been given for a new dumping ground to the south of the channel entrance for dredged material.

3.3.2 Alternative Channel Alignments and Sediment Dynamics

In addition to the primary channels from the entrance cut through the Turkmenbashi Spit in 1956 and leading up to the general cargo, ferry terminal and Ufra Oil Station, there remains the old southern entrance which is still navigable for vessels drawing less than 4.4m. It is in fact used in some circumstances when weather conditions make the primary entrance unsafe to use.

There have also been proposals at various times for straightening out dog-legs to the primary and southern channels and these remain to be investigated.

There has been some indication that significantly larger vessels are being considered for use between several ports in the Caspian Sea. A policy from Turkmenistan has been requested which will be used along existing vessel sizes to give options for channel width in consideration of regulations, use of single or passing traffic holding points and anchorages among other things. There may be a capital dredge now and future dredge scheme if larger vessels become a reality.



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Dredge quantities influence cost and environmental matters amongst other issues and thus it appears that it will be prudent to concentrate the study on the above options. However the mobility of the dredger and its potential impact on the passage of vessels along the channel could also influence dredge cost, the cost to traffic for delay etc. and thus consideration will be given to dredging along one side of the channels.

Sources for much information on coastal and lagoon sediment dynamics has been found together with comments from vessel masters, Port Captain and others. This will be reviewed on completion of translations to formulate studies on the likely impacts of the above channel configurations and any proposed widening.

3.3.3 Dredging and Maintenance

The TMRL bucket dredger, SAGADAM, is not the most appropriate for the scale of works and was acquired we are informed as part of a barter. It was manufactured in 1993 and at 13 years of age its main 500kW engine has only run for 2600 hours. It has suffered along with the barges from corrosive and environmental deterioration and can no longer operate under some of its automatic functions.

Inspection by an expert will be performed to assess its capabilities and to identify those works that are required to bring it up to a level fit for capital dredging and/or maintenance works. The defects list will be used to form a cost estimate and basis for tendering the works to selected ship repair yards. As the survey will be done while the vessel is in water there will be the need for a contingency to cover any defects that might further be revealed in a dry-dock.

The consideration of contracting options for the SAGADAM dredger has begun along with the search for alternative solutions.



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4 PLANNING

4.1 GENERAL

The tasks and activities are basically the same as required by the Terms of Reference and specified by the Technical Proposal. A marked difference, however, pertains to the timing of the Study. The ToR and Proposal assume Study duration of 6 months, whereas the contract stipulates 12 months.

At the moment of submitting this Inception Report, it has become clear that the survey works will demand substantially more time than originally anticipated in our offer, and that the results are expected to be available by the end of the year (see also paragraph 4.4). As some of the key activities of the study, such as the formulation of the dredging plan with cost estimates, are based on the outcome of these survey works, it is now envisaged that the total duration of the study will be 12 months, as stipulated in the contract.

The following paragraphs present the revised planning, based on duration of the study up to 11 May 2007, making a total duration of 12 months since contract signing per 12 May 2006.

4.2 MISSIONS

The Study activities are clustered around seven missions to Turkmenistan, foreseen as follows

1. July 2006
2. August 2006
3. September 2006
4. October/November 2006
5. December 2006
6. January/February 2007
7. March 2007

The findings of the first mission are reported in this IR.

The second mission is to prepare the surveys:

- Hydrological measurements
- Environmental tests

for which approval will be sought with the Europe-Aid Task manager.

In addition, adequate expertise will be employed for the inspection of the dredger. A proposal for refurbishment will also be submitted to the Europe-Aid Task Manager.

The Study's analytical part will end with the last mission, at mid March 2007. After that, one month will be used for producing and distributing the Draft Final Report and one month for processing comments and submitting the Final Report.



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4.3 NON-KEY EXPERTS

The project's core team consists of three key experts:

- Key expert 1: Transport economist / Team Leader: Mr. Hans Vogelaar
- Key expert 2: Port Infrastructure/Dredging specialist: Mr. Keith Bunning
- Key expert 3: Environmental specialist: Mr. Charles Haine

Apart from this core-team, the ToR and the proposal also include the assignment of international and local non-key experts.

Based on a detailed assessment of the needs of the project during the inception mission, the following non key experts have been added to the team:

- International Coastal geomorphologist / navigation specialist: Mr. Filip Augustyns
- International Marine survey specialist: Mr Ian Thompson
- Local Maritime Engineer: Mrs. Enegul Haydarova

Further, the Consultant is of the opinion that for an efficient and successful execution of the study, it is advantageous to make optimum advantage from the experience available within the team. The Consultant therefore proposes to share the responsibilities of and the time attributed to the following non-key experts among the existing team of international experts as follows:

- International training specialist (15 days); it is proposed to assign the tasks for this position to the whole team of international experts, each for his expertise
- International geotechnical engineer (20 days): it is proposed to assign the tasks for this position to the port infrastructure and dredging specialist (key expert 2) and to the coastal morphologist

The CV's of the proposed non-key experts are included in Annex H: Curricula Vitae of Non-Key Staff.

At the time of submitting this Inception Report, following positions are still vacant:

- Local environmental specialist (40 days)
- Local hydrographer (25 days)
- Local inspector (10 days)

It is envisaged that the latter two positions will be filled in at the time of sub-contracting the survey works. Candidates for the position of environmental specialist will be identified during the following mission in September.



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4.4 HYDROGRAPHIC SURVEY

In accordance with Section 4 of the Terms of Reference, a hydrographic survey is to be carried out. A proposal for these works is presented in Annex G: Report on Proposals for Hydrographic Survey.

Information from the hydrographical survey is critical to other elements of the study and thus commencement of the study is of paramount importance. A separate report will be made with proposals very shortly when full enquiry results are available but the following gives a preliminary outline on the issues.

During our first mission we have consulted with the Ministry of Defence Cartography Section who inform that they are not equipped to carry out hydrographic surveys although they are located alongside the port; they rely on information from TMRL. They inform that amongst other things, only those bodies licensed to both undertake the work and use the type of equipment needed will be permitted to do so. It seems that at present only TMRL are currently permitted to do this survey work and that others who have tried to register and obtain licences have been turned down.

One concern is that the equipment of TMRL is of "fish finding" grade that can be used to give indicative profiles and would be useful for maintenance dredging but has a poor equipment accuracy made worse by the very limited satellite coverage such that it has been suggested by our expert that this may be + or - 3m horizontally. While this equipment may be used in the absence of all others to give indicative quantities any repeat surveys would give different results and the equipment would not be suitable for contracting works on a measurement basis.

The Consultant worked out a detailed proposal for these works, including a survey plan and an evaluation of companies that could be sub-contracted for the execution of the works. This proposal is presented in Annex G: Report on Proposals for Hydrographic Survey, and it has been submitted to the EU Project Manager and to TMRL for their approval.

During the assessment of the works to be carried out, and of the offers submitted by companies capable of executing the works in accordance with the required quality standards, it became clear that these works (with preparation) require more time than originally envisaged (3 months instead of 1 month as mentioned in the original proposal for the study).

The following paragraphs present the main recommendations of the proposal.

4.4.1 Recommendations

It is recommended that the hydrographic survey work with production of drawings and results be awarded to LD INFO Ltd for the Sum Of US\$ 97,423 (approximately €76,380) as a sub-contract to Royal Haskoning.



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It is recommended that the preparation and repairs of the boat be undertaken by LD INFO Ltd and that a budget of €5,000 be allocated for this.

It is recommended that a provision be made for fuel, oils and general provisions for the survey boat together with some contingency for exchange rate fluctuation over the contract sum with LD INFO Ltd. It is recommended that a combined sum for this and the above two items is set at the sum of €85,000.

It is recommended that Royal Haskoning undertake the management of the above contracted works for a fee equating to 7% of the cost which computes to a **total budget figure of €90,950.**

It is recommended that the survey work be undertaken under the banner of TMRL and that Royal Haskoning with their sub-contractor provide services to TMRL.

It is recommended that the equipment is imported under the project to carry out the survey work and that on completion TMRL undertakes negotiations with the customs authorities with regard to any transfer and settles any amount due for their permanent import into Turkmenistan.

4.4.2 Follow-up actions

The instruction needs to be given to LD INFO Ltd immediately to allow procurement of equipment and implementation of the survey before the onset of the deterioration in the weather expected in the latter part of the year.

An early identification of the radio frequencies required by the equipment and those permissible should be identified with TMRL approached to obtain the necessary approvals and licences.

The defining of the precise requirements for the survey can be made following the input from other team experts and the review of the training needs. The costs for all the survey works, provision of local surveyors and training can be reviewed and accounted for and proportioned between training budgets, incidental expenditure and sums allocated for use of local surveyors. It is proposed that this is best done when the precise nature of the survey work is established with further analysis of the inputs from LD INFO Ltd., TMRL and Royal Haskoning..

It has been estimated that one month will be required to procure the equipment and between one and two months to carry out the works. Prioritising the areas to be surveyed is a possibility but the subject remains critical to the outcome of the study as a whole.



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4.5 ACTIVITY/BAR CHART

The Study's tasks and activities are not simply to be allocated to specific time slots. Actually, they will be dealt with throughout the analytical part of the Study, that is July 2006 – April 2007, both during the missions and at the home office (intermittent). Nevertheless, a tentative schedule is presented in Annex D: FORM 1.4 - OVERALL PLAN OF OPERATIONS and in Annex F: FORM 1.6 - PLAN OF OPERATIONS FOR THE NEXT PERIOD (Work programme).

The table below indicates team members (core team and specialists), their area of expertise and their assignment to missions and home office time.

<i>Core team</i>		1	2	3	4	5	6	7	Home
Hans Vogelaar	TL, economist	x		x	x	x	x	X	X
Keith Bunning	Principle engineer	x	x	x	x	x	x	X	X
Charles Haine	Environmentalist		x	x	x				X
<i>EU-Specialists</i>									
Filip Augustyns	Coastal geomorphologist, Navigation specialist			x	x	x	x	X	X
Ian Thompson	Marine survey specialist				X				X
Hans Vogelaar / Keith Bunning / Charles Haine / Filip Augustyns / Ian Thompson	Training specialist								
Keith Bunning / Filip Augustyns	Geotechnical engineer								
<i>TM-Specialists</i>									
Enegul Haydarova	Maritime specialist								X
To be nominated	Environmental specialist								X
To be nominated	Hydrographer								X
To be nominated	Inspector								X





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5 REPORTING

The following paragraphs briefly present the reports that will be submitted during the course of the assignment. An overview of the outputs is also shown in Annex E: FORM 1.5 - OVERALL OUTPUT PERFORMANCE PLAN.

5.1 WORKING PAPERS

As the project progresses the many various issues that have been discussed in this proposal to meet the Study's objectives will result in continuous consultation with all stakeholders. The Team Leader will organise "Working Papers" to be issued at periodic intervals to provide a concise and accurate summation of project progress to date. The working papers will be issued to all stakeholders.

In the Technical Proposal the submission of the following Working Papers was foreseen:

- Working Paper no.1: Training Programme
- Working Paper no.2: Evaluation of Training Programme
- Working Paper no.3: Additional Survey Results
- Working Paper no.4: Dredging Maintenance Philosophy / Sustainable Development
- Working Paper no.5: Dredging Plan and Optimum Channel Configuration

In addition, Working Papers will be produced on economic/financial matters:

- Traffic Forecasts
- Economic Feasibility
- Financial Sustainability

5.2 EIA SCOPING REPORT

An EIA Scoping Report will be delivered within 3 months of commencing the assignment. The results of the reviews carried out, the interpretation of the existing information and observations gleaned from site reconnaissance visits will be documented.

5.3 DRAFT/FINAL REPORT

At the end of Month 8, a draft Final Report will be issued which includes the analysis and findings for the port dredging plan, cost estimates and financial recommendations for the implementation phase. Following the review by stakeholders the draft Final Report will be amended after comments and issued at the end of Month 9.



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5.4 ENVIRONMENTAL STATEMENT (EIA)

The Environment Statement providing complete details of all work performed, analyses made and the justification of options and recommendations proposed will be provided simultaneously with the Draft Final Report. The Draft (i.e. for review and comment by the project proponent) and Final version of the Environmental Statement will then be issued together.

5.5 MONTHLY PROGRESS REPORTS

In addition to the above reports, monthly progress reports will be issued following the submission of this inception report. These brief reports will amongst others include the progress reporting on the project monitoring mechanism.

5.6 REPORT DISTRIBUTION

The number of reports and language requirements shall be as per the Terms of Reference as in the following table taken from Section 7.2 ToR.

	Bound		Loose-Leaf		CD-Rom (Eng+Rus)
	English	Russian	English	Russian	
European Commission	2	0	0	0	1
Port of Turkmenbashi	2	2	1	1	1
Turkmenistan – Cabinet Of Ministers	1	1	0	0	0
National Coordination Unit in Turkmenistan	1	1	0	0	1
Permanent Secretariat Baku	1	1	1	1	1





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6 LIAISON AND LOGISTICS

6.1 LIAISON

As required by the Terms of Reference, the Team Leader will liaise with:

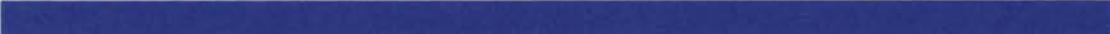
- The Permanent Secretariat of the IGC TRACECA, and
- The Expert Team of the EU-financed project "Trade Facilitation and Institutional Support"

In addition, the Team Leader will maintain regular contacts with

- The Europe-Aid Task Manager in Brussels, and
- The National Coordinating Unit in Ashgabat

6.2 LOGISTICS

Office space have been made available in one of the Port buildings in Turkmenbashi. The office is now being furnished and made operational for the remainder of the study. There will be a permanent secretary, and the office will be equipped with telephone, fax and e-mail.





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ANNEX A REFERENCES

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ANNEX B PERSONS & POSITIONS

Meetings with

Regulative Bodies representatives

1. President of TMRL – Ashirov Kurbannazar Amanmuradovich
2. Deputy of State Nature Reserve “Khazar” – Gurbantuwakov Yusup
3. Deputy of “Kaspecocontrol” Service – Bairamamedov Bairamamed
4. Deputy of Turkmenistan State Fish Control – Ballyev Bairamgeldy
5. Deputy of Ministry of Defense branch No5 of Balkan district – Bazarov Akmamed

TMRL representatives

1. Chief of Foreign economic relations and port & fleet operations department - Gurbandurdyeva Altyn
2. Deputy chief of Foreign economic relations and port & fleet operations department – Guwanchew Shamurat
3. Key specialist of Foreign economic relations and port & fleet operations department – Yazmuradova Ayna
4. Key specialist of Foreign economic relations and port & fleet operations department – Tashlieva Jakhan
5. Leading specialist of Foreign economic relations and port & fleet operations department – Hankulieva Yazgul
6. Deputy chief of Technical development department – Retunskaya Lydia
7. Key specialist of Technical development department – Mamedseidova Gulshirin
8. Leading specialist of Technical development department – Bairyev Akmurat
9. Chief of Planning & economy department of TMRL - Allagulyev Merdan
10. Chief of Port Control Service – Lychkin Aleksandr
11. Deputy Chief of Port Control Service – Shanurov Sapar
12. Chief of Planning & economy department of TSIP – Amanova Ogulgul
13. Chief of commercial department – Agarov Arslan



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14. Deputy of head of TSIP on commercial issues – Mutdikov
Meylis
15. Deputy of head of TSIP on technical issues – Reimberdiev
Nury
16. Group mechanic of Fleet operation Service – Kandabarov
Mikhail





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ANNEX C ORGANISATION STRUCTURE

The diagrams on the following pages present the organisation structure of TMRL.

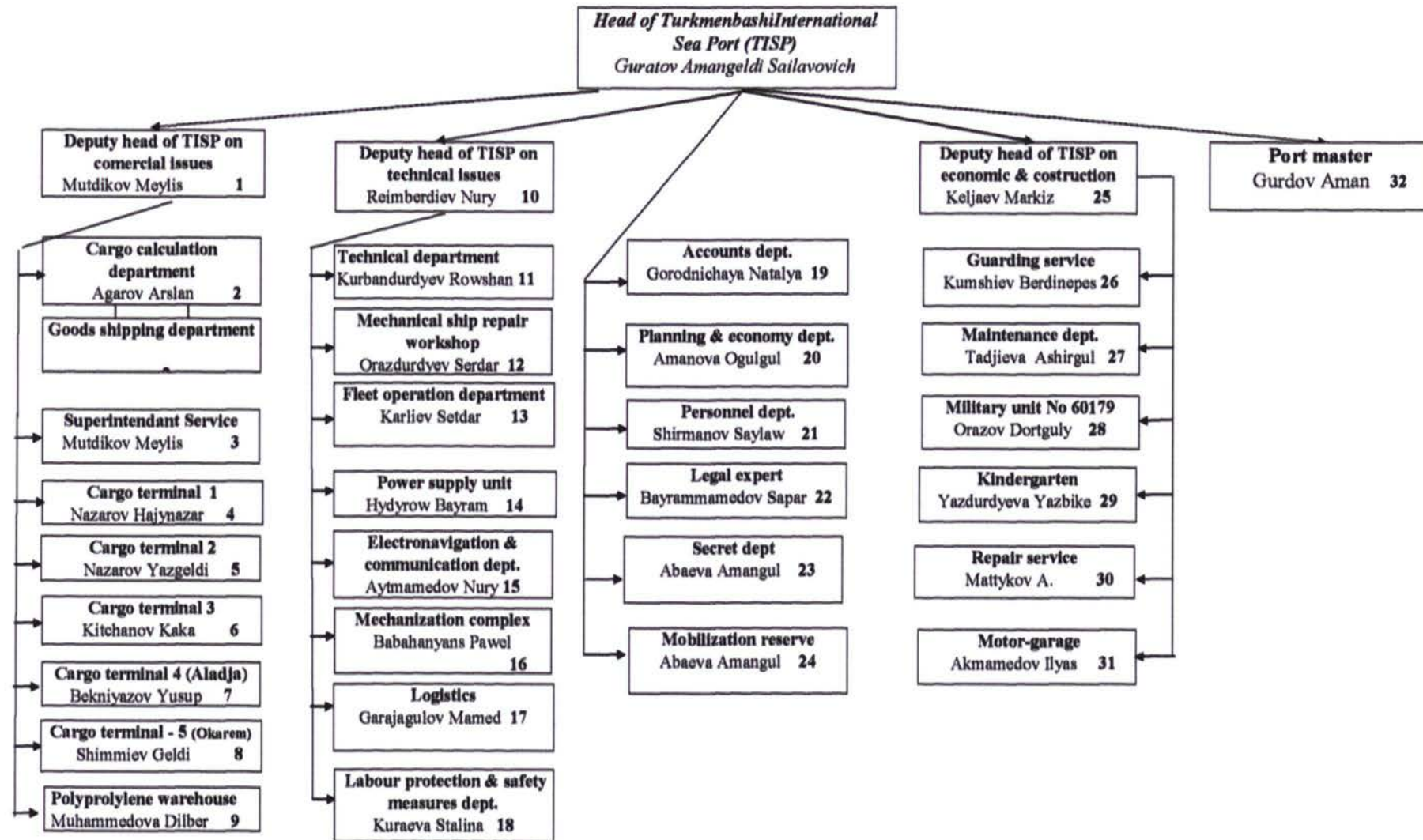


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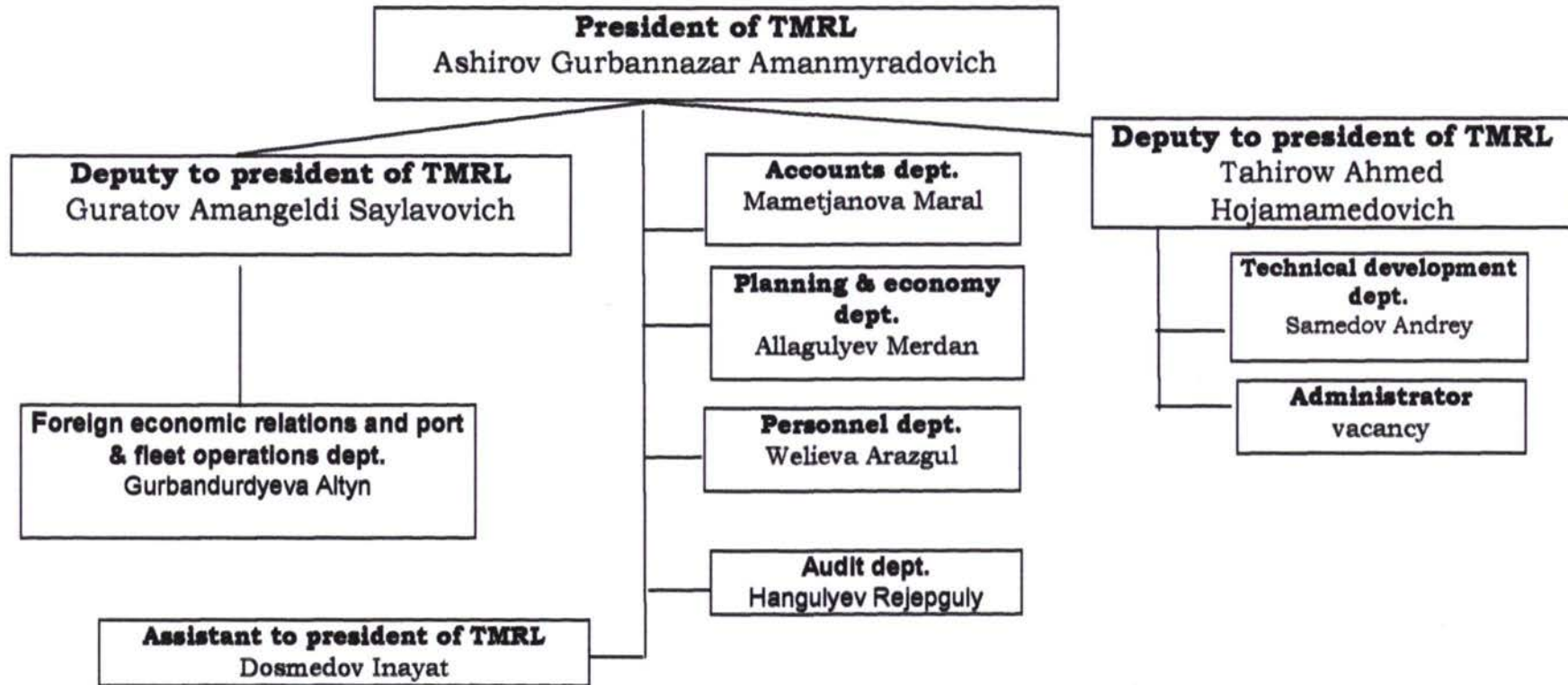
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Turkmenbashi International Sea Port structure chart





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ANNEX D: FORM I.4 - OVERALL PLAN OF OPERATIONS

Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan				Project number : TACIS/2005/109-987				Country : Turkmenistan				Page :					
Planning period : 08/2006-05/2007				Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano									
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made																	
No	MAIN ACTIVITIES	TIME FRAME												INPUTS			
		2006				2007				2008				PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER
		1	2	3	4	1	2	3	4	1	2	3	4	International	Local		
01	Information Data Gathering			xxxx										21	18	PC and AC for project office	
02	Information/reports review			xxxx	Xxxx									43	15		
03	Survey requirements - hydrographic			Xxxx										11	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan	Project number : TACIS/2005/109-967	Country : Turkmenistan	Page :
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Planning period : 08/2006-05/2007	Prepared on : 08/2005	EC Consultant : Mr. Fabio Di Stefano
--------------------------------------	--------------------------	---

Project objectives :
To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made

No	MAIN ACTIVITIES	TIME FRAME												INPUTS			
		2006			2007			2008			PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER			
	Survey requirements – soils			Xxxx										5	5		
	Review / vetting of survey proposals			Xxxx										8	5		
	Surveys				xxxx									5	36	To be determined during vetting of survey proposals	To be determined during vetting of survey proposals
	Survey/inspection of floating craft				Xxxx									8	8		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan			Project number : TACIS/2005/109-967			Country : Turkmenistan			Page :					
Planning period : 08/2006-05/2007			Prepared on : 08/2005			EC Consultant : Mr. Fabio Di Stefano								
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made														
No	MAIN ACTIVITIES	TIME FRAME									INPUTS			
		2006			2007			2008			PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER
	Technical documentation of ship repair works			Xxxx							8	8		
	Formulation of alternative channel routings			Xxxx	Xxxx						31	5		
	Preparation of dredging plan				Xxxx						15	5		
	Development of maintenance dredging programme				Xxxx						10	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan		Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :						
Planning period : 08/2006-05/2007		Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano										
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made																
No	MAIN ACTIVITIES	TIME FRAME												INPUTS		
		2006			2007			2008			PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER		
	Tender documents for dredging works					Xxxx							14	5		
	Training needs assessment				Xxxx								10	5		
	Outline of training programme				Xxxx								7	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan		Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :							
Planning period : 08/2006-05/2007		Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano											
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made																	
No	MAIN ACTIVITIES	TIME FRAME										INPUTS					
		2006		2007			2008					PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER		
	Organisation and implementation of training				xxxx	Xxxx								15	5	To be determined during training needs assessment	To be determined during training needs assessment
	Logical framework analysis				Xxxx									10	5		
	Evaluation of available traffic projections				xxxx	Xxxx								12	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan				Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :					
Planning period : 08/2006-05/2007				Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano									
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made																	
No	MAIN ACTIVITIES	TIME FRAME												INPUTS			
		2006				2007				2008				PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER
	Review of port service fees					xxxx	Xxxx							10	5		
	Assessment of revised fee structure						Xxxx							10	5		
	Economic feasibility assessment						Xxxx							15	5		
	Recommendations on financing of port access improvements						Xxxx							5	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan				Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :					
Planning period : 08/2006-05/2007				Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano									
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made																	
No	MAIN ACTIVITIES	TIME FRAME												INPUTS			
		2006				2007				2008				PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER
	Support / advice to portl n dealings with IFIs						Xxxx							5	5		
	EIA scoping study			Xxxx										8	10		
	Review of legal environmental setting			Xxxx										3	5		
	Survey/study requirements – environmental			Xxxx										3	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan				Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :							
Planning period : 08/2006-05/2007				Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano											
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made																			
No	MAIN ACTIVITIES	TIME FRAME												INPUTS					
		2006			2007			2008			PERSONNEL (man-days)		EQUIPMENT AND MATERIAL	OTHER					
	Review/vetting of survey proposal			Xxxx										1	2				
	Surveys				Xxxx										2	5	To be determined during vetting of survey proposals	To be determined during vetting of survey proposals	
	EIA statement					Xxxx										5	3		
										TOTAL		300	200						



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ANNEX E: FORM I.5 - OVERALL OUTPUT PERFORMANCE PLAN

Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan	Project number : TACIS/2005/109-967	Country : Turkmenistan	Page :
Planning period : 08/2006-05/2007	Prepared on : 08/2006	EC Consultant : Mr. Fabio Di Stefano	
Outputs (to be described and target dates indicated)	Agreed Objective Verifiable Indicators	Constrains and Assumptions C/A	
1. Training programme identifying the courses, description of contents, its goal, specific objectives, envisaged group of attendees, and organisational matters for the course (October 2006)	Working Paper 1: Training programme	No particular constraints or assumptions envisaged	
2. Evaluation of the achievement of the objectives of the training programme realised (December 2006)	Working Paper no. 2: Evaluation of training programme	Envisaged trainees are willing to participate	
3. Presentation of the results of surveys executed, to complete the information to serve as a basis for execution of further activities. Surveys will include, a.o. hydrographical survey and survey of the technical condition of the dredger (January 2007)	Working Paper no. 3: Additional survey results	Smooth execution of the survey works: - Necessary permits from relevant authorities are obtained (including customs), allowing start of actual surveys by end of September - Weather conditions allow quasi continuous surveying during October - December	
4. Presentation of the dredging maintenance philosophy and on issues regarding sustainable development (February 2007)	Working Paper no.4: Dredging Maintenance Philosophy / Sustainable Development	No particular constraints or assumptions envisaged	



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan	Project number : TACIS/2005/109-987	Country : Turkmenistan	Page :
Planning period : 08/2006-05/2007	Prepared on : 08/2005	EC Consultant : Mr. Fabio Di Stefano	
Outputs (to be described and target dates indicated)	Agreed Objective Verifiable Indicators	Constrains and Assumptions C/A	
5. Presentation on the evaluation of alternative channel alignments, international standards on navigation channels, optimum channel configuration and dredging plan (March 2007)	Working Paper no.5: Dredging Plan and Optimum Channel Configuration	No particular constraints or assumptions envisaged	
6. Presentation of economic and financial issues of the project (March 2007)	Working Paper no. 6: Economic/financial matters: - Traffic Forecasts - Economic Feasibility - Financial Sustainability	No particular constraints or assumptions envisaged	
7. An EIA Scoping Report will be delivered. The results of the reviews carried out, the interpretation of the existing information and observations gleaned from site reconnaissance visits will be documented (September 2006)	EIA Scoping Report	No particular constraints or assumptions envisaged	
8. Comprehensive presentation of the environmental aspects of the project (April 2007)	EIA Statement		
8. Draft presentation of the results of the study (April 2007)	Draft final report	No particular constraints or assumptions envisaged	
9. Presentation of the final results of the study, taking into account comments and observations received on the draft final report (May 2007)	Final report	No particular constraints or assumptions envisaged	



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ANNEX F: FORM I.6 - PLAN OF OPERATIONS FOR THE NEXT PERIOD (WORK PROGRAMME)

Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan		Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :	
Planning period : 08/2006-05/2007		Prepared on : 08/2006				EC Consultant : Mr. Fabio Di Stefano					
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made											
		TIME FRAME						INPUTS			
		2005/2006 (months)						PERSONNEL (mandays)		EQUIPMENT AND MATERIAL	OTHER
No	ACTIVITIES	9	10	11	12	1	2	International	Local		
	Information Data Gathering (*)	Xxxx	xxxx					11	4	PC and AC for project office	
	Information/reports review (*)	xxxx	xxxx	xxxx	Xxxx			33	5		
	Survey requirements – hydrographic (*)	Xxxx						3	3		
	Survey requirements – soils	Xxxx						5			
	Review / vetting of survey proposals (*)	Xxxx						3	2		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan	Project number : TACIS/2005/109-967	Country : Turkmenistan	Page :
Planning period : 08/2006-05/2007	Prepared on : 08/2005	EC Consultant : Mr. Fabio Di Stefano	

Project objectives :

To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made

No	ACTIVITIES	TIME FRAME										INPUTS					
		2005/2006 (months)										PERSONNEL (mandays)		EQUIPMENT AND MATERIAL	OTHER		
		9		10		11		12		1		2		International	Local		
	Surveys			xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	Xxxx						To be determined during vetting of survey proposals	To be determined during vetting of survey proposals
	Survey/inspection of floating craft					xxxx	Xxxx							5	36		
	Technical documentation of ship repair works						Xxxx							8	8		
	Formulation of alternative channel routings	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	Xxxx			28	5		
	Preparation of dredging plan (**)										Xxxx	xxxx	Xxxx	12	3		
	Development of maintenance dredging programme (**)												Xxxx	7	3		
	Tender documents for dredging works (**)												Xxxx	7	2		
	Training needs assessment			xxxx	Xxxx	Xxxx								10	5		



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan	Project number : TACIS/2005/109-967	Country : Turkmenistan	Page :
Planning period : 08/2006-05/2007	Prepared on : 08/2005	EC Consultant : Mr. Fabio Di Stefano	

Project objectives :

To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made

No	ACTIVITIES	TIME FRAME						INPUTS			
		2005/2006 (months)						PERSONNEL (mandays)		EQUIPMENT AND MATERIAL	OTHER
		9	10	11	12	1	2	International	Local		
	Outline of training programme			Xxxx				7	5		
	Organisation and implementation of training				Xxxx			15	5	To be determined during training needs assessment	To be determined during training needs assessment
	Logical framework analysis (*)	Xxxx						3	2		
	Evaluation of available traffic projections (*)	Xxxx	Xxxx					9	2		
	Review of port service fees		xxxxx	Xxxx				10	5		
	Assessment of revised fee structure (**)						xxxx	Xxxx	5	2	
	Economic feasibility assessment (**)							Xxxx	5	3	
	Recommendations on financing of port access improvements (**)							xxxx	2	2	



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Project title : Navigational Channel for Turkmenbashi Port at Turkmenistan		Project number : TACIS/2005/109-967				Country : Turkmenistan				Page :		
Planning period : 08/2006-05/2007		Prepared on : 08/2005				EC Consultant : Mr. Fabio Di Stefano						
Project objectives : To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made												
		TIME FRAME						INPUTS				
		2005/2006 (months)						PERSONNEL (mandays)		EQUIPMENT AND MATERIAL	OTHER	
No	ACTIVITIES	9	10	11	12	1	2	International	Local			
	Support / advice to port n dealings with IFIs (**)							xxxx	2	2		
	EIA scoping study	xxxx	xxxx					8	10			
	Review of legal environmental setting	xxxx	xxxx					3	5			
	Survey/study requirements - environmental	xxxx						3	5			
	Review/vetting of survey proposal	Xxxx	Xxxx					1	2			
	Surveys		xxxx	xxxx	xxxx	xxxx	xxxx				To be determined during vetting of survey proposals	
									2	5	To be determined during vetting of survey proposals	
	EIA statement (**)							Xxxx	2	3		
								TOTAL		217	142	



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(*) task already started up in previous period

(**) task continues beyond the next 6-month period



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ANNEX G: REPORT ON PROPOSALS FOR HYDROGRAPHIC SURVEY

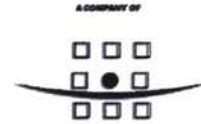
Navigational Channel for Turkmenbashi Port
EuropeAid/120539/C/SV/TM

Navigational Channel for Turkmenbashi Port

10 August 2006

Report On Proposals For Hydrographic Survey

9R1827



ROYAL HASKONING

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Arnhem 09122561 CoC

Document title Navigational Channel for Turkmenbashi Port
EuropeAid/120539/C/SV/TM
Document short title Navigational Channel for Turkmenbashi Port
Status Report On Proposals For Hydrographic Survey
Date 10 August 2006
Project name Navigational Channel for Turkmenbashi Port
Project number 9R1827.11
Author(s) Keith Bunning
Client EuropeAid Co-Operation Office
Reference 9R1827/SH/Nijm



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CONTENTS

	Page
1 INTRODUCTION	1-1
2 OBJECTIVES OF THE PROJECT WITH REFERENCE TO HYDROGRAPHIC SURVEY	2-2
3 SITUATION IN TURKMENISTAN RELATING TO THE HYDROGRAPHIC SURVEY	3-4
4 STANDARDS AND PROPOSED REQUIREMENTS FOR HYDROGRAPHIC SURVEY	4-7
5 INVESTIGATION INTO MEANS OF ADDRESSING NEEDS OF HYDROGRAPHIC SURVEY	5-10
6 REVIEW OF RESPONSE TO SURVEY ENQUIRIES AND OPTIONS AVAILABLE	6-12
7 CONCLUSIONS AND RECOMMENDATIONS	7-15
ANNEX 1 - PROPOSED SURVEY AREAS	
ANNEX 2 - SCHEDULE OF SURVEY PRICES RECEIVED	
ANNEX 3 CLYDESIDE SURVEYS SUBMISSION	
ANNEX 4 EGS SUBMISSION	
ANNEX 5 LD INFO LTD SUBMISSION	
ANNEX 6 HIRETECH SUBMISSION	
ANNEX 7 KOREC SUBMISSION	



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Project Synopsis

Project Title	: Navigation Channel for Turkmenbashi Port
Project Number	: EUROPE AID/120539/C/SV/TM
Country	: Turkmenistan

Overall objective To contribute to the improvement of the overall transport chain from the Caucasus to the Central Asian Countries, in terms of improved efficiency, safety, reliability and transport time, and to secure investments already made

Project purpose To ensure safe and reliable access to Turkmenbashi Port according to international standards for all ships operating on the Caspian Sea, and to protect the environment

Planned outputs

- International standards for channel navigation defined
- Port dredging plan developed
- Training for maintenance dredging delivered
- Environmental Impact Assessment executed
- Economic and financial feasibility – and Financing Plan established

Activities

- Specification of alternatives, analysis of optimal channel configuration and routing
- Review of existing channel measurement and existing dredging facilities
- Survey of existing dredging facilities
- Hydrographic survey and environmental testing
- Elaboration of a Dredging plan (capital and maintenance)
- Training Needs Assessment, programming and delivery of maintenance dredging
- Environmental Impact Assessment
- Economic Cost-Benefit Analysis, Revenue Forecast, Financing Plan

Contract signing date 15 May 2006. Work effectively started 1 July 2006. Contract duration 12 months. End of project planned 15 February 2007



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1 INTRODUCTION

The Terms of Reference require that the Consultant carries out an "Elaboration of a complete hydrographic survey, starting with a survey plan to be approved by the beneficiary and the EuropeAid Task Manager. The measurement scheme has to take into account, that latest measurements were undertaken in 1999 and it shall schedule a new measurement system. Thereafter, required measurements have to be carried out."

The Technical Proposal noted that the various surveys will be on the critical time path of the assignment and as such consent to the surveys is to be sought as early as possible in the programme. It was suggested that the survey requirements be identified in advance of the Inception Report and a submission be made for approval.

The first mission was undertaken by the Transport Economist (Team Leader) and the Port Infrastructure, Dredging Specialist in July 2006 during which an assessment was made on the project needs; the sources and availability of information along with any constraints and difficulties that would have to be addressed and overcome. This short report covers only those matters related to the survey works and more precisely those for hydrographic surveys.

The Environmental Specialist did not visit Turkmenbashi during the first mission but preliminary investigations on the subjects of interest to the environmental team and coastal geomorphologist amongst others were introduced through meetings with regulatory bodies and data gathering on earlier studies and historical processes. While it is likely that some environmental surveys will be required it is not considered that these will be so time consuming, extensive or costly as those for the hydrographic survey. The scope of any environmental surveys will be assessed during the next visit planned for early September 2006.

This report will address the following issues:

- Objectives of the Project with Relevance to the Hydrographic Survey
- Situation in Turkmenistan Relating to the Hydrographic Survey
- Standards and Proposed Requirements for the Hydrographic Survey
- Investigation into Means of Addressing Needs of Hydrographic Survey
- Review of Response to Survey Enquiries and Options Available
- Conclusions and Recommendations



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2 OBJECTIVES OF THE PROJECT WITH REFERENCE TO HYDROGRAFIC SURVEY

2.1 AS GUIDED BY TERMS OF REFERENCE

In addition to the Terms of Reference specifying that a hydrographic survey should be undertaken as mentioned in the Introduction, there are various other pointers as to the standard for this survey which make good sense and are identified below before coming to a conclusion.

- Item 1.4 of ToR sets as an objective the aim that the channel after any works meets international standards for a navigational channel.
- Item 1.5 of ToR covers how the EU and EBRD have provided assistance and investment on other related works at the port to international standards.
- Item 2.1 of ToR points out that this current project has as an aim the securing of previous investments.
- Item 2.2 of ToR is very clear that "The specific objective of the project is the safe and reliable access to Turkmenbashi Port according to international standards for all ships operating in the Caspian Sea and to protect the environment".
- Item 2.3 of ToR identifies that the project results should achieve that "technical requirements for the access to Turkmenbashi Port according to international standards are to be developed. This includes the elaboration of a detailed port dredging plan with hydrographic surveys,...".
- Item 4.1.1 of ToR specifies that one objective is to provide tender documents for dredging with others being for providing both formal and on-the-job training while planning and implementing the hydrographic surveys.

2.2 OTHER POINTS FOR CONSIDERATION

From the above abstracts and notes taken from the Terms of Reference the desirability for the project to follow international standards is apparent. In a hydrographic survey simply for a study it could be argued that perhaps a survey to international guidelines was not required provided that it was competently made and the likely errors were acceptable and taken as a risk. However for any study to



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have credence and authority it is desirable that an approved methodology be adopted.

Moreover there is a project objective for production of tender documents and by implication that these be suitable for use in international tendering. This strengthens any case for the hydrographic survey to be carried out to industry recognised standards.

A further aim of the project is that the channel should be dredged and maintained according to international standards which will require measurement and regular surveying to appropriate standards.

Training is also to be provided to prepare the port staff to meet those international standards for the channel. There seems little value in training anyone to carry out the works to a lesser standard than that set down by international guidelines.

The Terms of Reference specifies that the study "shall schedule a new measurement system".





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3 SITUATION IN TURKMENISTAN RELATING TO THE HYDROGRAPHIC SURVEY

3.1 PREAMBLE

During the first mission interviews were held with various departments within the port (TMRL), the Ministry of Defence Cartography and various contractors involved in marine construction and surveying. The clear picture that emerged was that there were very few facilities available in Turkmenistan for hydrographic surveys and that there were restrictions in place which made expansion of any surveying industry difficult. The following covers some of the information gained.

3.2 EARLIER SURVEY METHODS

Prior to 2005 all hydrographic soundings undertaken in the previous 15 years had been carried out manually using a lead-line with positions recorded by taking compass bearings to fixed points in and around the channel. These readings were computed manually and plotted by hand on tracing paper for overlaying previous record drawings.

3.3 CURRENT SURVEY METHODS

In 2005 TMRL received under a grant aid scheme some GPS equipment, echosounder and software to aid with the plotting of results. The equipment comprises of a Lowrance LMS-480 Fish Finding Sonar & Mapping GPS Software. It is of a low budget type and while giving a facility that was better than previous it would have an accuracy in the range of +/- 3m horizontally and +/- 0.3m vertically. Additionally the software is limited to providing a series of spot levels with no facility for plotting contours or providing cross-sections.

No lap top or similar large data storage facility was included such that all data had to be stored on a memory chip with a capacity of 65Mb. This limited the survey time as the vessel had to return frequently after short working periods to have the information downloaded onto computers in the TMRL offices.

The GPS equipment is currently broken and it was reported that there were some problems with the software as not all of what is shown on the screen can be printed. An estimate for the repair and updating of the software has been obtained at €4,155 with a further €1,960 for a lap top.

With the supply of the survey equipment TMRL had received some training in both the on-water survey works and the use of the software. The technical staff at the port had taken to this very well and were very enthusiastic in its use. Levels had been taken and plotted for the whole



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of the channel but these were of course limited by the equipment accuracy with wide spacings and any interpretation or evaluation had to be done manually.

3.4 SURVEY VESSEL

The TMRL vessel used for the survey works was out of service during the visit and on visual inspection would require significant repairs before being fit for use by professional survey teams. An estimate for repairs was given by the company that undertook the previous training of TMRL staff which amounted to around €5,000.

3.5 MINISTRY OF DEFENCE CARTOGRAPHY SECTION VIEWS

3.5.1 MoD Facilities

The Ministry of Defence Cartography Section have equipment to undertake terrestrial surveys but do not have any equipment to undertake hydrographic surveys. They acknowledge that they are the responsible authority for hydrographic surveys and maintenance of chart data outside the port but advise that they rely on old charts and data passed to them by TMRL.

3.5.2 Other Surveyors in Turkmenistan

The Ministry of Defence Cartography Section advised that there was only one private company licensed to use GPS systems for surveying in Turkmenistan with other licences held by ministerial bodies such as the Geological Institute. None of these GPS licensed bodies were authorised or equipped to carry out hydrographic surveys. Only TMRL have been granted a licence that permits them to carry out hydrographic surveys.

3.5.3 Use of Radio Frequencies and Equipment

The survey equipment requires a land base station with radio signal connection to the GPS equipment on board the survey vessel. This radio link is necessary to improve the accuracy obtained from the satellite controlled system. To use such radio equipment a further licence is required which the Ministry of Defence indicated would take considerable time. Royal Haskoning can testify to the difficulty evidenced on previous projects in Turkmenbashi where it took months to obtain licences for radios with a 3km range with those for greater range rejected.



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It should be noted that some of the hydrographic survey work will be 40km distant from the port and that the survey will pass and be in range of the Presidential Palace at Alwazar.

TMRL already have licences for various frequencies and the MoD considered that they should be able to obtain a licence for an additional frequency within a few weeks of applying.

3.5.4 Licence for undertaking hydrographic survey

It has been strongly suggested that since the project is part of a Tacis initiative and guided by the Coordinating Unit under The Cabinet of Ministers of Turkmenistan that any company could obtain registration to work within Turkmenistan and that this process would take a few weeks. Nevertheless it was emphasised by the MoD Cartography Section that no one other than TMRL has been issued with a licence or has gained registration to undertake such works as hydrographic surveying.

It has been suggested that the works be notionally undertaken by TMRL and that any experts be brought in to provide assistance and direction to TMRL.

3.6 STATE CUSTOMS VIEWS

The State Customs suggested that as the project was a Tacis scheme and registered then any company brought in for surveying under it would not necessarily be required to register. However any survey equipment brought into the country would need to be registered with them for temporary use or permanent import. This they advised will require descriptions of the equipment and method statements outlining its use from Royal Haskoning together with letters from TMRL.

3.7 OVERVIEW OF POTENTIAL DIFFICULTIES

The discussion as a whole with the regulatory bodies indicated that there could be several procedural and logistical hurdles that have the potential for delaying the planning and implementation of the hydrographic survey works. In addition to those presented during the mission it must be considered that there could also be matters arising from visa applications, availability of survey teams and their response times, unforeseen delays, travel and transport/shipment of equipment. With a tight programme and the coming of poorer weather it is most desirable to adopt an option which minimises the risks of delay and its potential for added costs.



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4 STANDARDS AND PROPOSED REQUIREMENTS FOR HYDROGRAPHIC SURVEY

4.1 GENERAL

From the review of the Terms of Reference undertaken in Section 2 it is concluded that it is most desirable to have the survey works carried out to internationally accepted specifications or guidelines. This will enable assessment of contractor's prices for the surveying required on a fair and comparable basis. It will also ensure that the results from any survey are compatible with any software on this project and those to be undertaken in the future. Training will also be standardised and there should be a good level of confidence that the figures generated during the study reflect the actual situation.

4.2 CHOICE OF STANDARD

The International Hydrographic Organisation (IHO) traces its origin to 1921 but it was in 1970 that its current name was formally adopted by the Member States. In April 1998 the IHO Standards For Hydrographic Surveys 4th Edition was produced. It should be noted that the IHO Standards are voluntary and are provided as a guidance to Member States and others in their conduct of hydrographic surveys. The principal aim of the publication was to specify **minimum** standards for hydrographic surveys and it is proposed to use this standard for the Navigational Channels at Turkmenistan Port.

4.3 AVAILABILITY OF EQUIPMENT TO MEET THE STANDARD

The equipment currently owned by TMRL is not up to the required specification to undertake surveys to the IHO Standard and thus alternative equipment will be necessary.

The options for consideration are:-

- Use of expert survey team with their own equipment.
- Hire of suitable equipment for use by expert survey team.
- Purchase of suitable equipment for use by expert survey team with training of local team and gifting of equipment to them.

The above options have been investigated and evaluation of the results is undertaken in Section 5.



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4.4 EXTENT OF THE AREA TO BE SURVEYED

4.4.1 Terms of Reference

The ToR requires that an evaluation of the optimum routing of the channel be taken after review of existing studies and own inspections. It also calls for the elaboration of a complete hydrographic survey.

4.4.2 Review of the Past and Present Situation

In addition to the primary channels from the entrance cut through the Turkmenbashi Spit in 1956 and leading up to the general cargo, ferry terminal and Ufra Oil Station, there remains the old southern entrance which is still navigable for vessels drawing less than 4.4m. It is in fact used in some circumstances when weather conditions make the primary entrance unsafe to use.

There have also been proposals at various times for straightening out dog-legs to the primary and southern channels and these remain to be investigated.

There has been some indication that significantly larger vessels are being considered for use between several ports in the Caspian Sea. A policy from Turkmenistan has been requested which will be used along existing vessel sizes to give options for channel width in consideration of regulations, use of single or passing traffic, holding points and anchorages among other things. There may be a capital dredge now and future dredge scheme if larger vessels become a reality.

Dredge quantities influence cost and environmental matters amongst other issues and thus it appears that it will be prudent to concentrate the study on the above options. However the mobility of the dredger and its potential impact on the passage of vessels along the channel could also influence dredge cost, the cost to traffic for delay etc. and thus consideration will be given to dredging along one side of the channels.

Sources for much information on coastal and lagoon sediment dynamics has been found together with comments from vessel masters, Port Captain and others. This will be reviewed on completion of translations to formulate studies on the likely impacts of the above channel configurations and any proposed widening.

4.4.3 Choice of Areas to Be Surveyed

The study is in its very early stage and a decision will have to be made on the extent of the hydrographic survey to be undertaken. It would be cost prohibitive to survey the whole of the Turkmenbashi Lagoon and while this would perhaps facilitate the development of new and creative



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solutions the cost of any new alternatives would be high because of increased dredge quantities and environmental impact mitigation. It is thus proposed that the survey be limited to the existing north and old south channel routes both of which are currently in use. With these some surveying will be allowed for on sections where there could be a navigation benefit from straightening an alignment. The survey width across the channel will be sufficiently wide, around 300m to allow consideration of slight alignment improvement and options for carrying out the bulk of the dredging to one side of the channel to minimise disruption to shipping.

Annex 1 shows a chart with the sections of surveying marked.

As the study progresses there will be a window of opportunity to adjust the survey areas while the survey team are on site if the assessments suggest that better alignments should be considered in more detail.





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5 INVESTIGATION INTO MEANS OF ADDRESSING NEEDS OF HYDROGRAPHIC SURVEY

5.1 LOCAL TURKMENISTAN SUPPLY

5.1.1 Previous Supply to TMRL

The hydrographic survey equipment currently owned by TMRL was supplied along with training by LD INFO Ltd. The training included bringing in experts from St Petersburg and giving instruction in both the use of the hardware and software to produce the drawings plotting the levels recorded "in the field".

TMRL advised that it was they who specified the equipment which was done to meet the available budget. They confirm that they were pleased with the service provided by LD INFO Ltd. During the first mission the Consultant was impressed by the number of TMRL technical staff who had a working knowledge of the software and the operations staff enthusiasm and responsibility towards the survey equipment. It was not however known how this became broken.

5.1.2 The Local Supplier

LD INFO Ltd has a local representative in Turkmenistan and he indicated interest in being considered for the further planned hydrographic survey works. They provided unsolicited information to indicate their knowledge of the IHO standards and the equipment necessary to undertake the works to such limits.

LD INFO Ltd has previously provided IT equipment to TMRL along with training in accountancy software under earlier assistance and development programmes.

LD INFO Ltd favoured supply of the survey equipment through their services and then to undertake the works with their experts and employment of local staff or staff provided by TMRL. On the job training would be included for both the physical measurement works and drawing production.

LD INFO Ltd provided manufacturer's data for the equipment they would recommend. They suggested that hiring the equipment would not make a significant saving and pointed to the obvious that the equipment, if hired, would not be available during future dredging and monitoring works.

5.1.3 Bench Mark For Pricing

The equipment proposed by LD INFO Ltd. was checked for suitability through other survey companies who verified its acceptability. In



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general this was then used as a bench mark for other survey companies and suppliers along with the IHO Standard for the provision of survey services, supply of equipment through sale or hire. The option was given for "similar approved".

5.1.4 Enquiries to Suppliers

The first enquiries to survey companies were sent out from 24 July 2006. Some declined and some passed on the enquiry to others. Eight companies were contacted with some wishing to price only the surveying and others only the supply of equipment.

There was some difference between the survey companies in their interpretation of the IHO standards which reflected in the spacing between survey lines across the channels. This arose from the need to give a designation to the harbour which is derived from the critical tolerances, nature of sea bed and acceptable risks. Because the survey is being undertaken for a study it was decided to obtain the prices for survey sections at 20m intervals. It may well be necessary in any future measurement of dredging for payment or for production of charts and monitoring to close up the intervals to 5m. The cost for increased survey work was not considered beneficial to this study,

One survey company suggested the use of multi beam survey equipment and side scan sonar, which although a superior system, was considered to be too expensive and too advanced for local involvement and training.

5.1.5 Response to Enquiries

The final return to enquiries was received on 10 August 2006 and a summary of the financial element of these is set out in a spreadsheet attached as Annex 2. Discussion and consideration on the responses is covered under Section 6.

The figures given in the spreadsheet are the prices quoted to Royal Haskoning and make no allowance for management of the survey contract and handling the accounts. All prices are based on being able to undertake the works within given timescales and exclude risks associated with delays beyond their control in entering Turkmenistan and being able to work effectively.

In addition prices have been received in various currencies including UK Sterling. For comparison purposes current exchange rates have been used and only equivalents in US\$ and EURO have been shown in the spreadsheet.



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6 REVIEW OF RESPONSE TO SURVEY ENQUIRIES AND OPTIONS AVAILABLE

6.1 UNDERTAKING SURVEY INCLUSIVE OF EQUIPMENT

It was established that some survey companies own their own equipment while others may hire in to supplement their stock or in total. It is immaterial to the project whether a contracted surveyor owns or hires in the necessary equipment.

Three prices were received for bringing the necessary equipment to Turkmenbashi, undertaking the survey works and providing drawings and digital presentation of the data.

▪ Clydeside Surveys	€ 115,028
▪ EGS (International)	€ 104,325
▪ LD INFO Ltd.	€ 72,857

While LD INFO Ltd. appear to be the least experienced in hydrographic survey work of the three they do have best local knowledge and their proposal provides more local transfer of knowledge and additional details on the drawings.

6.2 ADDITIONAL COST FOR SALE OF EQUIPMENT

LD INFO Ltd. provided several price options (not all shown in the spreadsheet). Of specific interest is their proposal for sale of the equipment and then to undertake the survey with the same number of experts and local staff. The increase in cost for this over their hire option is €5,523 which is a small amount since it includes the provision of a lap top computer and leaves the whole with TMRL for future use. The LD INFO Ltd. price for importing the equipment, carrying out the survey works and then handing over the equipment is €76,380.

The comparison between LD INFO Ltd. prices for handing over equipment and using hired equipment is made on the assumption that under their total hire and implementation price the hire equipment would be required for a three month shipment and use period.

Should any equipment be brought into the company under the name of Royal Haskoning or LD INFO Ltd. and cleared with customs for use on the project only, then on leaving the equipment there will most likely be an import or similar duty to be paid.



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6.3 REVIEW OF EQUIPMENT PROVISION COSTS

A price for hire of the survey equipment was obtained from HIRETEC and an assumption made that the period of hire would be 3 months based on estimated shipping times, clearance and use.

A price was also obtained from KOREC for the purchase of equipment and an allowance made to this for shipping and insurance.

These prices, exclusive of provision of lap top computer and software, can be compared with those rates allowed by the other survey companies in their break-downs as follows:-

Clydeside Surveys	€56,871	own equipment
EGS (International)	€29,589	own or hired
LD INFO Ltd.	€23,143	sale & handover
LD INFO Ltd.	€26,774	hire & return
HIRETECH	€26,186	hire & return
KOREC	€27,882	sale & handover

The above indicates firstly that the pricing structure of Clydeside Surveys differs from the others and that they are generally more expensive.

Of the others there is no great difference but it does indicate there to be a distinct financial advantage to purchase of the equipment. It must be borne in mind that in any hire scenario a 3 month period has been allowed which could possibly be reduced if all went well with procedures and weather.

6.4 SURVEYING SERVICE SUPPLY ONLY AND USE OF PROVIDED EQUIPMENT

It is interesting to note that Clydeside surveys provide a price of €36,252 to provide one expert to undertake the survey work with a competent person provided by others locally and to include with this some level of training in use of the survey equipment again supplied separately. This price for the one expert can be compared with that of LD INFO Ltd. for provision of all experts for the survey work which was €37,632.



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6.5 COMPUTER EQUIPMENT FOR FIELD DATA

Clearly those prices for undertaking the full works without sale of equipment would need to have in their package facilities for data storage on the vessel to maximise the period they could be at sea. Additional software for processing the data would be needed and is commonly held and in use regularly by survey companies.

LD INFO Ltd. have included in their pricing for the supply of a lap top computer and appropriate software which possibly indicates that each project is undertaken as a separate venture. In their equipment supply/sale scenarios they have included for new software and training in its use with an expert present during production of drawings including cross-sections and computation of quantities.



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7 CONCLUSIONS, RECOMMENDATIONS AND FOLLOW-UP ACTIONS

7.1 CONCLUSIONS

The proposals of LD INFO Ltd give the best financial package for undertaking the hydrographic surveys and production of drawings. They are based on supply of equipment and leaving this with TMRL so even if the equipment was thrown away it would still represent the best financial package.

LD INFO Ltd. has the least experience in hydrographic surveying but has undertaken similar works. Their experts have worked in other ports and are familiar with the standards required.

LD INFO Ltd. include in their proposal closer liaison with local staff and on the job training with the staff of TMRL.

LD INFO Ltd. experts are Russian speaking and will be able to convey their messages and advice more readily to local and TMRL staff.

It is noted that the Terms of Reference advise that "No equipment is to be purchased on behalf of the Contracting Authority/beneficiary country as part of this service contract or transferred to the Contracting Authority/beneficiary country at the end of this contract". This clause comes under "Requirement" and could be construed as intending to indicate to the Consultants what they should be allowing for in their price. There is no additional cost implication to the purchase of the hydrographic equipment and there a potential long term benefit to the beneficiary country in extended training, motivation of staff, savings on future works and ongoing safety improvement with the ability to closely monitor the channel.

The availability of equipment on a "permanent" basis during the study will give more flexibility for the study of options that might arise. It will also minimise the financial risk if surveying over-run occurs as a consequence of poor weather or other obstacles.

It is noted that around €5,000 is required to repair the port's survey boat and equip this to an appropriate standard for the hydrographic survey work. LD INFO Ltd has advised that they would be able to organise this work to be undertaken.



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7.2 RECOMMENDATIONS

It is recommended that the hydrographic survey work with production of drawings and results be awarded to LD INFO Ltd for the Sum Of US\$ 97,423 (approximately €76,380) as a sub-contract to Royal Haskoning.

It is recommended that the preparation and repairs of the boat be undertaken by LD INFO Ltd and that a budget of €5,000 be allocated for this.

It is recommended that a provision be made for fuel, oils and general provisions for the survey boat together with some contingency for exchange rate fluctuation over the contract sum with LD INFO Ltd. It is recommended that a combined sum for this and the above two items is set at the sum of €85,000.

It is recommended that Royal Haskoning undertake the management of the above contracted works for a fee equating to 7% of the cost which computes to a total budget figure of €90,950.

It is recommended that the survey work be undertaken under the banner of TMRL and that Royal Haskoning with their sub-contractor provide services to TMRL.

It is recommended that the equipment is imported under the project to carry out the survey work and that on completion TMRL undertakes negotiations with the customs authorities with regard to any transfer and settles any amount due for their permanent import into Turkmenistan.

7.3 FOLLOW-UP ACTIONS

The instruction needs to be given to LD INFO Ltd immediately to allow procurement of equipment and implementation of the survey before the onset of the deterioration in the weather expected in the latter part of the year.

An early identification of the radio frequencies required by the equipment and those permissible should be identified with TMRL approached to obtain the necessary approvals and licences.

The defining of the precise requirements for the survey can be made following the input from other team experts and the review of the training needs. The costs for all the survey works, provision of local surveyors and training can be reviewed and accounted for and proportioned between training budgets, incidental expenditure and sums allocated for use of local surveyors. It is proposed that this is best



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done when the precise nature of the survey work is established with further analysis of the inputs from LD INFO Ltd., TMRL and Royal Haskoning..

It has been estimated that one month will be required to procure the equipment and between one and two months to carry out the works. Prioritising the areas to be surveyed is a possibility but the subject remains critical to the outcome of the study as a whole.



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ANNEX 1 Channel Areas Proposed For Survey

CAPE

TURKMENBASHI

UFFRA

TURKMENBASHI SPIT

NAVIGATION CHANNEL

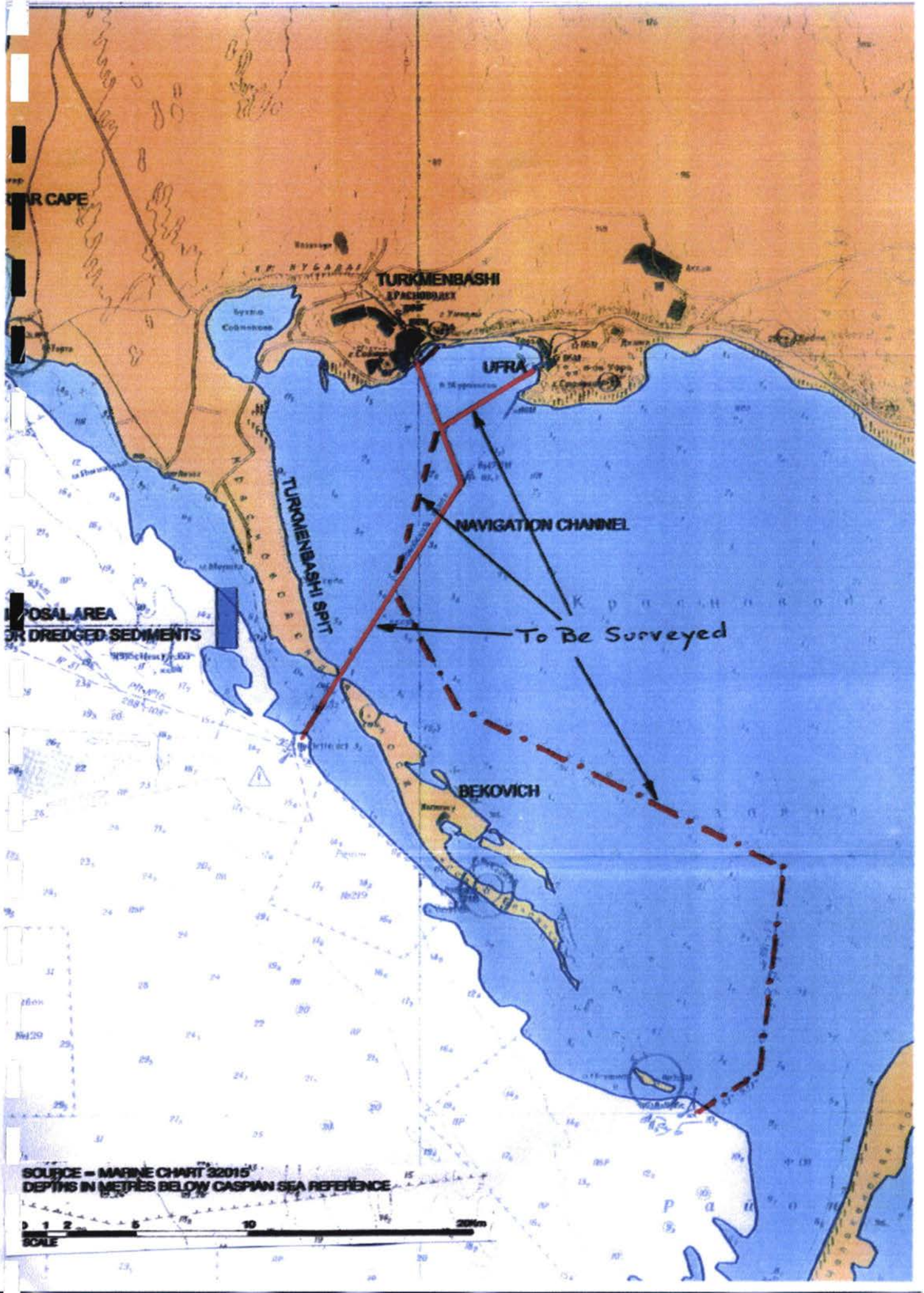
To Be Surveyed

BEKOVICH

OSAL AREA
OR DREDGED SEDIMENTS

SOURCE - MARINE CHART 32015
DEPTHS IN METRES BELOW CASPIAN SEA REFERENCE

SCALE 0 1 2 5 10 20km





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ANNEX 2 Survey Price Schedules

Schedule of Prices Received for Survey Works

Item No.	Work Description	Survey Company																					
		Clydeside Surveys						EGS (International)				LD INPO Ltd.						HIRETEC		KORBC			
		With use of own/hired equipment						With use of own or hired equipment				Based on sale of equipment including software to Port and LD INPO use of it and thus leaving it		Based on use of Port's existing equipment with repairs and ungrading		Based on hire of equipment and assumed period of 3 months		Equipment hire only, assumed 3 month		Equipment Purchase			
		Survey Lines at around 10 - 20 m intervals						Survey lines at 50m intervals		Survey lines at 20m intervals		Survey Lines at 5m intervals		Survey lines at 20m intervals		Survey Lines at 5m intervals							
		Option 1 Single Beam		Option 2 Multi Beam		Work with any new equipment purchased by Port providing one expert and training																	
US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro	US\$	Euro		
1	Supply of survey equipment											15,793	12,362	15,793	12,362	3,000	2,352	21,840	17,123	13,875	10,875	19,473	15,267
2	Supply of echo sounder	84,980	50,944	82,325	84,543			9,990	7,832	21,090	16,538	10,075	7,899	10,075	7,899	existing		7,590	5,927	13,875	10,875	13,090	10,263
3	Supply of lap top for site use											2,580	2,007	2,580	2,007	2,500	1,980	excluded		excluded		excluded	
4	Delivery and insurance	7,580	5,927	13,900	10,898			15,725	12,328	16,950	13,054	3,650	2,862	3,650	2,862	incl.		4,750	3,724	5,950	4,430	3,000	2,352
5	Use or supply software for analysis, drawing of sections	incl.		incl.				incl.		incl.		10,345	8,110	10,345	8,110	2,300	1,803	3,750	2,984	excluded		11,637	9,123
6	Carry out survey works	42,260	33,132	29,090	22,783	46,240	36,252	41,810	32,779	71,140	55,774	52,000	40,766	48,000	37,632	33,000	25,872	48,000	37,632	excluded		excluded	
7	Reporting and drawing production	31,820	25,026	30,825	23,932	excluded		5,750	4,584	16,186	12,691									0	excluded		excluded
8	Local staff costs	n/a		n/a				n/a		n/a		14,000	10,976	7,000	5,488	14,000	10,976	7,000	5,488	excluded		excluded	
9	Accommodation, transport, food etc for experts	incl.		incl.		incl.		5,000	3,920	5,000	3,920	incl.				incl.				n/a		n/a	
Totals before adding excluded costs		146,720	115,026	155,810	122,165	46,240	36,252	81,305	63,743	133,066	104,326	106,423	85,004	97,423	76,360	64,800	42,863	92,930	72,857	33,400	26,166	47,200	37,005

 Indicates figures used for comparison

 Indicates figures with estimate made by Royal Haskoning



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ANNEX 3 Clydeside Surveys Submission

Singlebeam Option

ITEM	ITEM DESCRIPTION	UNIT	RATE (US\$)	Quantity	AMOUNT (US\$)
1	General Items				
1.1	Packing Costs (Estimated)	sum	\$1,000.00	1	\$1,000.00
1.2	Provision of suitable survey vessel - Client	sum	\$0.00	1	\$0.00
1.3	Provision of suitable accommodation & meals - Client	sum	\$0.00	1	\$0.00
1.4	Customs Costs - Client	sum	\$0.00	1	\$0.00
1.5	Airfares (Estimated)	sum	\$2,000.00	1	\$2,000.00
2	Mobilisation				
2.1	Hydrographic Surveyor	Day	\$660.00	2	\$1,320.00
2.2	Survey Equipment	Day	\$1,140.00	2	\$2,280.00
2.3	Airfreight (Estimated)	Sum	\$1,000.00	1	\$1,000.00
3	Site Work (Day Rate)				
3.1	Hydrographic Surveyor	Day	\$660.00	57	\$37,620.00
3.2	Survey Equipment	Day	\$1,140.00	57	\$64,980.00
4	Demobilisation				
4.1	Hydrographic Surveyor	Day	\$660.00	2	\$1,320.00
4.2	Survey Equipment	Day	\$1,140.00	2	\$2,280.00
4.3	Airfreight (Estimated)	Sum	\$1,000.00	1	\$1,000.00
5	Processing & Reporting				
5.1	Per site day	Day	\$560.00	57	\$31,920.00
PROVISIONAL TOTAL					\$146,720.00

Multibeam Option

ITEM	ITEM DESCRIPTION	UNIT	RATE (US\$)	Quantity	AMOUNT (US\$)
1	General Items				
1.1	Packing Costs (Estimated)	sum	\$2,000.00	1	\$2,000.00
1.2	Provision of suitable survey vessel - Client	sum	\$0.00	1	\$0.00
1.3	Provision of suitable accommodation & meals - Client	sum	\$0.00	1	\$0.00
1.4	Customs Costs - Client	sum	\$0.00	1	\$0.00
1.5	Airfares (Estimated)	sum	\$2,000.00	1	\$2,000.00
2	Mobilisation				
2.1	Hydrographic Surveyor	Day	\$660.00	2	\$1,320.00
2.2	Survey Equipment	Day	\$2,225.00	2	\$4,450.00
2.3	Airfreight (Estimated)	Sum	\$1,000.00	1	\$1,000.00
3	Site Work (Day Rate)				
3.1	Hydrographic Surveyor	Day	\$660.00	37	\$24,420.00
3.2	Survey Equipment	Day	\$2,225.00	37	\$82,325.00
4	Demobilisation				
4.1	Hydrographic Surveyor	Day	\$660.00	2	\$1,320.00
4.2	Survey Equipment	Day	\$2,225.00	2	\$4,450.00
4.3	Airfreight (Estimated)	Sum	\$2,000.00	1	\$2,000.00
5	Processing & Reporting				
5.1	Per site day	Day	\$825.00	37	\$30,525.00
PROVISIONAL TOTAL					\$155,810.00

Training Option

ITEM	ITEM DESCRIPTION	UNIT	RATE (US\$)	Quantity	AMOUNT (US\$)
1	General Items				
1.1	Packing Costs (Estimated)	sum	\$1,000.00	1	\$1,000.00
1.2	Provision of suitable survey vessel - Client	sum	\$0.00	1	\$0.00
1.3	Provision of suitable accommodation & meals - Client	sum	\$0.00	1	\$0.00
1.4	Customs Costs - Client	sum	\$0.00	1	\$0.00
1.5	Airfares (Estimated)	sum	\$2,000.00	1	\$2,000.00
2	Mobilisation				
2.1	Hydrographic Surveyor	Day	\$660.00	2	\$1,320.00
2.2	Survey Equipment	Day	\$0.00	0	\$0.00
2.3	Airfreight (Estimated)	Sum	\$1,000.00	1	\$1,000.00
3	Site Work (Day Rate)				
3.1	Hydrographic Surveyor	Day	\$660.00	60	\$39,600.00
3.2	Survey Equipment	Day	\$0.00	0	\$0.00
4	Demobilisation				
4.1	Hydrographic Surveyor	Day	\$660.00	2	\$1,320.00
4.2	Survey Equipment	Day	\$0.00	0	\$0.00
4.3	Airfreight (Estimated)	Sum	\$0.00	0	\$0.00
5	Processing & Reporting				
5.1	Per site day	Day	\$0.00	0	\$0.00
6	Equipment Purchase - TBA				
PROVISIONAL TOTAL					\$46,240.00



This project is funded
by the European Union



ANNEX 4 EGS Submission



**SURVEY OF
NAVIGATION CHANNELS
AT TURKMENBASHI PORT,
TURKMENISTAN
Rev.2**

Proposal & Quotation prepared for

Royal Haskoning

July 2006

CONTENTS

1	EGS (INTERNATIONAL) LTD	1
2	REQUIREMENT	2
3	PROPOSED SURVEY METHODOLOGY	2
4	EQUIPMENT	3
5	QUOTATION	3
6	BUDGET COSTING	4
	APPENDIX A – Equipment Specifications	5

1 EGS (INTERNATIONAL) LTD

EGS (International) Ltd is a Limited Company registered in the UK.

Electronic and Geophysical Services Ltd was founded in the UK in 1974. Since that time the company has evolved and we are now part of the EGS Group which now offices worldwide. In 2000, the UK company was re-organised into EGS (International) Ltd (EGSi). Since then, EGSi has moved into larger premises and has continued to invest in personnel and new equipment.

EGSi is part of a worldwide organisation which undertakes marine survey, oceanography and environmental monitoring for public and private sector clients in areas such as civil engineering, dredging and aggregate extraction, transport, telecommunications, oil & gas, water utility and coastal management.

Typical projects include:

- bathymetric, hydrographic and geophysical surveys for site investigations;
- cable and pipeline route survey and planning;
- beach level monitoring;
- wave and tidal current monitoring;
- sea bed response and sediment transport patterns;
- meteorological measurements;
- water and seabed sampling;
- environmental monitoring for baseline checks; and
- impact assessments and mitigation options.

EGS works in freshwater, coastal and ocean environments and undertakes desk top studies, field data acquisition, interpretation and advice, and project management.

The contact for this tender is Stephen Hayes who is based at the office below.

EGS (International) Ltd
27 Woolmer Way, Bordon, Hampshire, GU35 9QE

Stephen's contact details are:	Tel:	01420 489329
	Fax:	01420 489434
	Email:	shayes@egssurvey.co.uk

2 REQUIREMENT

We understand that hydrographic surveys are required along existing and proposed navigational channels in order that dredge quantities can be assessed. The required survey coverage is as follows:

- Existing Main Channel:- Length 25km, Width 300m
- Old Channel:- Length 34km, Width 300m
- Proposed New Alignment:- Length 8km, Width 300m

If cross profiles are surveyed at 20m intervals than a total of 1,005 line kilometres of survey line will be required to cover the areas indicated.

In addition to the bathymetric survey, it is understood that the shoreline on either side of the main channel where it passes through the Turkmenbashi Spit need to be mapped..

3 PROPOSED SURVEY METHODOLOGY

We would provide an experienced two man survey team, comprising a hydrographic surveyor and a survey engineer. If Royal Haskoning have staff present on site who would be able to assist during the survey, particularly during mobilisation, then we would be able to reduce the team to just the hydrographic surveyor. We have assumed that all in-country support, including security, accommodation, messing, transport and suitable survey vessel would be provided by the client.

The hydrographic survey would be carried out using a single beam dual frequency survey echo sounder that will provide depth information immediately beneath the survey vessel track. The echo sounder transducer assembly would be pole-mounted over the side of the survey vessel. A motion reference unit would be interfaced to the echo sounder to enable vertical boat motion to be corrected in the recorded depth data. Horizontal position would be obtained through the use of a C-Nav DGPS system, receiving satellite broadcast correction signals. Note that the C-Nav system is totally passive and will not require the establishment of any shore stations with radio transmitters. Worldwide real time positional accuracy of this system is sub 10cm at 1σ (40% of time) and better than 25cm at 2σ (95% of time). Positions and depths would be logged and displayed by our proprietary C-View Nav navigation software running on a laptop computer. This software will provide track guidance to the helmsman during the survey operation. Echo sounder calibration would be checked at the beginning and end of the day using the “bar check” method.

Although tidal effects on sea level in the Caspian are very small, significant fluctuations in water level may occur through variations in meteorological conditions and therefore water levels will need to be recorded during the course of the survey. We propose the installation a vented water level recorder for the duration of the survey at the port. We would require a nearby level control point or Bench Mark related to the required hydrographic datum, from which we would level in our water level recorder.

Mapping the coastline of the Turkmenbashi Spit would be accomplished by walking the waterline with the C-Nav DGPS mounted in on a back-pack, logging to the navigation laptop.

We anticipate that 2 days would be required on site to set up the survey vessel and install a tide gauge, 25 - 35 days should be allowed for the survey operations (if a 20m line spacing is used), and 1 further day to remove and pack equipment for return to the UK.

A small light-weight Van Veen grab sampler could be provided if surface sediment samples are required. Alternatively we could provide heavier coring equipment if sediment cores are required.

4 EQUIPMENT

EGSi maintains an extensive pool of survey equipment in the UK. Equipment for the present investigation will be drawn from this pool. The EGS Group as a whole maintains a comprehensive range of spares and backup systems that are available to individual offices as required.

A list of the equipment identified for this project are presented below. Make and model of some equipment items used may vary depending upon timing of the work.

SURVEY EQUIPMENT REQUIRED	MAKE & MODEL PROPOSED
Navigation software	EGSi C-Products C-View Nav running on laptop computer with separate helmsman's display
Primary positioning system	C&C Technologies C-Nav 2050 DGPS Receiver
Heading sensor	KVH Azimuth 1000 Fluxgate Compass
Survey echo sounder	Knudsen 320M dual frequency
Motion reference unit	Kongsberg Seatex MRU-H
Recording tide gauge	Valeport 740 vented water level recorder

Manufacturer specifications for the main items of equipment are attached in Appendix A.

5 QUOTATION

ITEM	DESCRIPTION	UNIT	£
1	Admin overheads, insurance and equipment preparations	Sum	2,000
2	Personnel transport costs; taxis, airfares etc, UK – Ashkabad – UK, two man team	Sum (estimated)	5,000
3	Equipment transportation costs, UK – Ashkabad - UK	Sum	3,000
4	Two man survey team, charged door to door UK	Day rate	800
5	Equipment in transit, charged door to door UK	Day rate	200
6	Equipment on site, Turmenbashi	Day rate	300
7	Data processing and reporting, based on scope of work described above	Sum	£8,750

The figures above assume that the client will be responsible for all costs in Turkmenistan, including provision of in-country security, accommodation, messing, transport and survey vessel. In addition the client would be responsible for all in-country taxes, import duties, customs dues and other statutory disbursements.

A descriptive report with a set of plan drawings and a digital data set would be provided.

6 BUDGET COSTING

Items 1-3, sums	£10,000
Item 4, estimate of survey team charges:	
In transit UK-site, 2 days	
Preparation on site 2 days	
Surveying, 35 days	
Packing up on site 1 day	
In transit site-UK 2 days	
Total of 42 days @ £800	£33,600
Item 5, estimate of equipment in transit charges:	
UK-Ashkabad, 3 days	
Customs in, 7 days	
Ashkabad-site, 1 day	
Site-Ashkabad, 1 day	
Customs out, 5 days	
Ashkabad-UK, 3 days	
Total of 20 days @ £200	£4,000
Item 6, estimate of equipment on site charges:	
Preparation, 2 days	
Surveying, 35 days	
Packing up, 1 day	
Total of 38 days @ £300	£11,400
Item 7, Data processing and reporting, sum	£8,750
Total	£67,750

The above total is thought likely to be on the generous side; the survey should take less than 35 days to complete, and equipment transit time may be less than illustrated.

If we agree to send one man survey team then Item 2 in the quotation would half and Item 4 would reduce to £450; this would result in a reduction of £17,200 in the illustrated budget.

APPENDIX A – Equipment Specifications



This project is funded
by the European Union



ANNEX 5 LD INFO Submission

Ref No. 1519 - TM
Date: Thursday, August 03, 2006
Att. : Mr. Keith Bunning

Dear Mr. Bunning

We are pleased to propose our tender "Turkmenbashi Port Navigation Channel Hydrographic survey" to your kind consideration.

Prior to submission of our tender marketing and analytical work have been performed based on which we suppose our proposal has been brought to a maximum compliance with the international standards and requirements. This proposal has been based on use of the equipment produced by famous leading in specified field companies.

Our specialists had a good opportunity to participate in the World Bank projects on navigation channel of port Turkmenbashi which also considered measurement works and have implemented it successfully.

Our company assures the performance of the tasks under the recent project. To assure the contract performance our company would agree to implement the flexible form of payment such as the payment after services provided.

Hope for good cooperation.

Best regards,



Pavel Sheremetyev,
Representative Director LD INFO LTD in Turkmenistan

TECHNICAL DESCRIPTION AND QUOTATION

INTRODUCTION

TASKS OF THE HYDROGRAPHIC SURVEY

Hydrographical survey in seaport of Turkmenbashi is required for primary acquisition for drawing up of the **FEASIBILITY REPORT** for the further dredging, also proof-readings of marine navigation charts and required manuals for floating for a safety of pass of vessels on the navigating channel. The chief task of hydrographical survey of navigating channel is result to require condition for it rises of income. Hydrographical survey is the basic constituent of hydrographic researches in gulf of Turkmenbashi.

The main tasks of a hydrographical survey are:

- Detailed inspection of the navigating channel in gulf of Turkmenbashi approaches to piers and wharfs;
- Finding-out of the general bottom configuration and character of a bottom;
- Revelation and inspection of navigation risk, also other characteristic of a bottom relief.

Reliability of the received data is defined by survey accuracy and a completeness of inspection of a bottom configuration. Therefore works should be organized and fulfilled so that the opportunity of the lacunas space of shoal and other characteristic forms of a bottom configuration was excluded. The repetitive errors arising at any sort measurements on a hydrographical survey should be as much as possible moderated, and rough gross errors are excluded.

MODEL OF THE HYDROGRAPHIC SURVEY

For providing adequacy of data, and also taking into consideration of available technology and necessary limitations what requisite for getting concluding result, the survey will be coastal - from coastline up to an exit of limits of cape; systematic - fulfilled by systematic cover of all extension of the channel and all inspecting area by system of sounding lines with an a proper detail; by boat - by means of the sounding boat belonging a port (under condition of its repair).

SOUNDING DENSITY

The sounding density is generally characterized by distances between sounding lines and distances between depths on sounding lines.

Distances between sounding lines of the general system of cover should be established proceeding from geomorphologic features of area of a hydrographic survey so that the accepted frequency of sounding lines has allowed revealing signs of shoal and other characteristic forms of a bottom configuration (underwater ridges, cavities, gutters, etc.).

Approximate distances between sounding lines at drawing up of an engineering design appoint being guided by character of a bottom configuration and an average depth of area of a survey.

On occasions at a choice of distances between sounding lines of the common system of cover it is necessary to consider also a significance of inspected area in navigating, economic or other relation, a scale of chart or the plan, for drawing up or which proof-readings survey is fulfilled, and for an ocean survey and an expected position fixing accuracy on sounding lines.

Established in an engineering design distances between sounding lines of the common system of cover during a survey specify, condensing a survey and changing directions of sounding lines in those places where in process of detection of the valid character of a bottom configuration there is in it a necessity.

At a hydrographic surveys of the crucial sites and zones of straitened for floating, sounding lines should be:

- At approaches of a port and anchoring is not less often than through 100 m.
- At roadstead, natural fairways, in harbors and narrowness with width of pass no more than 300 m - not less often than through 20 -50 m depending on a bottom configuration and depths.
- For navigation channel through 10, 20 or 50 m, and at sundry mooring lines - through 5-10 m besides along moorage walls laid 1-2 sounding lines on such distance from them to take depth for vessels which can be moored at these mooring.
- On hydrographic survey at mooring line (piers) the diagrammatic drawing of a mooring line on which its sizes are shown, height above a chart datum, sounding lines of the fulfilled hydrographic survey with the indication of distance up to a mooring line should be developed, and also its brief description and assignment is given.

METHODS OF HYDROGRAPHIC SURVEYS

For providing necessary accuracy of hydrographic survey of the navigating channel it is necessary to supply a sounding boat with the high-accuracy equipment in consisting of DGPS, an echo-sounder, a mobile computer with the preinstalled software for execution of hydrographic survey in real time. Besides for increase in accuracy of positioning, it is necessary to set a stationary base station of differential correction.

The description of structure of the used equipment

Positioning

Base station

For receiving minimal mistake of positioning, it is necessary to install station of differential correction in area of hydrographic survey.

At usage of station, by means of the receiver located on district in a point with in advance precisely certain coordinates, it is possible to calculate the errors arising in satellite signals. From again received reference point on the radio signals of correction are transmitted to the mobile receiver GPS installed on a sounding boat. Both receivers are in a zone of hydrographic survey.

Owing to simple organization of satellite messages, this unique correcting signal removes all possible errors of system irrespective of, whether there are they because of a leaving of hours, errors in definition of current position of the satellite, or from ionosphere and troposphere delays.

The message on correction which is dispatched in an ether with a base station, is sent to mobile receiver by telemetry (radio modem), then it process a signal together with own position data for improvement of coordinates.

Mobile GPS receiver installed on a sounding boat

Receiver DGPS installed on a sounding boat allows integrating it in software and hardware complexes in view of the information on a position, speed, and the status of reception of corrections and time by data port in formats NMEA 0183 or NMEA 2000®.

Echo-sounder

In view of small depths in a zone of surveys, there is no necessity to use the expensive exact echo-sounder, achievement of an admissible error is necessary at survey. The basic advantage of an echo-sounder should be simplicity in usage and an opportunity of integration and devices of positioning and a mobile computer.

Software

For getting acceptable results, and the main thing, for calculation of volume of a bottom ground, the specialized software will be used at all stages of hydrographic survey, namely:

- . Planning a hydrographic survey
- . Collection and preliminary processing of hydrographic survey data in «real time» rate
- . Office studies of the collected data
- . Representation of results of hydrographic survey in a graphic and electronic kind
- . An exchange of hydrographic data with other systems in the basic formats

Following tasks will be processed by software:

- . **3D visualization of data of a hydrographic survey**
- . **Calculation of volume on the basis of 3D models (visualization 3D)**
- . **Entering of the parameters of calculation of the planed bottom volume (the breadth, depth, an angle, other parameters - will be specified)**
- . **An inverse task - input of the demanded volume and reception 3D the plan**
- . **Superimposition 3D models (real, planed, before the beginning of works)**
- . **Calculation of necessary parameters (volume, time at the set of parameters)**
- . and so forth

All works and results will be made, and then presented in digital formats.

WORKS (BRIEFLY)

For performance of sounding it is necessary:

- To get permission on usage of required radio frequencies
- It is necessary to rent a sounding boat
- To carry out temporary import of the equipment for time which will sufficient for completion of all work in view of weather and other conditions.
- To install the equipment on a sounding boat and calibrate it
- To deploy a base station of differential corrections in zone of survey

To shrink an operating time and reduce expenditure, it is necessary to train sounding batch from port for new approaches in work about the equipment and tasks in view.

STRUCTURE OF WORKS

All works share on the following 3 items:

- Planning hydrographic survey
- Collecting and preliminary processing of hydrographic data in conditions «real time»
- Post processing the collected data

The full structure of works must be developing on a place, after in-depth study of all parameters. In view of a length of the channel about 25 km and its combined area about 3 123 600 square meters, it is possible to count approximately time for all works:

Planning of hydrographic survey

At stage of planning of survey, in view of the software, the system of sounding lines superimposing all channel, approaches to moorings, and also other required sites of a gulf with take into consideration necessary accuracy should be constructed. The system of sounding lines is plotted according to the items of information presented in item Introduction. For a survey of all channel and approaches to wharfs, about 30000 sounding lines should be pre-arranged.

Terms of carrying out: some days, numerical strength - 3 people.

Hydrographic survey

In view of planned accuracy and length of the channel, for a survey of all length of the channel, the sounding boat should pass significant distance, it, in view of the channel, piers and mooring - about 750 km.

Terms of carrying out: 30 days, numerical strength - 2 people.

Postprocessing

- Input of amendments
- Editing depths
- Generation of a chart board with depths and to isobathic lines
- The portrayal of demanded channel parameters
- Construction 3D models of a bottom configuration
- Construction of isobathic lines
- The conclusion of a chart board to the plotter
- Calculations of volumes

Terms of carrying out: 20 days, numerical strength - 2 people.

STAGE I. PRELIMINARY OPERATIONS

For execution of survey operations it is necessary:

- Order of equipment
- Design of visas and other
- Repairing of a sounding boat (a tentative estimation \$ 3000)
- Delivery of the equipment and software and preparation of the sounding complex for survey
- Obtaining the import license of the equipment
- Obtaining of the permission to usage of radio frequencies
- Elementary education of staff of port
- Planning of surveys

SPECIFICATION OF EQUIPMENT

Positioning accuracy to within a sub meter

Depth observation accuracy to within a few centimeter

1. Stationary DGPS base station	1 kit	10 348,00
1.1. Trimble DSM 232 receiver, antenna Zephyr Plus, antenna cable 10 m., interface cable power/data, interface cable RTCM/NMEA, magnetic bracing for antenna, user's manual, software for installation	1	5 495,00
1.2. Telemetry radio modem Pacific Crest PDL HPB 410-470 MHz (power 2/35 watt), antenna 410-470 MHz, antenna bracket, PC interface cable, telescopic tripod 4.5 m, GPS interface cable, accumulator 33 Ah with charger, case, user's manual, software for installation	1	3 845,00
1.3. Trimble tripod	1	325,00
1.4. Trigger with optical centerer	1	545,00
1.5. Power supply for trigger	1	138,00
2. Floating rover receiver	1 kit	5 445,00
2.1. DSM 232 receiver, antenna Zephyr Plus, antenna cable 10 m., interface cable power/data, interface cable RTCM/NMEA, magnetic bracing for antenna, user's manual, software for installation	1	3 495,00
2.2. Telemetry radio rover modem Pacific Crest PDL (only reception) with the built in accumulator, antenna 410-470 MHz, charging device, interface cable to PC, GPS interface cable, user's manual, installation software	1	1 950,00
3. Hydrographic software package Trimble HYDROpro Navigation/Terramodel HDMS		10 345,00
3.1. Software package Trimble HYDROPro Navigation/TM HDMS	1 license	7 495,00
3.2. TerraModel Visualiser	1 license	2 850,00
Note: At the booking second and the subsequent licenses ON HYDROPro Navigation/TM HDMS the discount of 25 % from cost of the first license is granted.		
4. Echo depth-sounder	1 kit	10 075,00
4.1. NaviSound 110 echo-sounder, interface cable, power cable, transducer TC 2024 (200 kHz, 9.5°) with cable 20 m., case, user's manual, software for installation and data recording on the PC		8 470,00
4.2. The complete set for TC 2024 outboard device		1 605,00

5. Mobile PC	2 560,00
5.1. Laptop for real time data collection from GPS and sonar	2 560,00
6. Express delivery by air and insurance	3 652,00
TOTAL EQUIPMENT:	42 425,00

Price in USD

Guarantee period – 1 year.

Conditions of delivery – CIP Ashgabat

Delivery to Turkmenbashi time – 4 weeks.

STAGE II. EXECUTION OF OPERATIONS

Considering guidelines of the international hydrographic society and supporting documents for carrying out of similar operations the survey works will be carried out as follows.

Amount of works

For support of entirety of data (look a picture) will be made survey as following:

1. Main navigation channel
2. An old navigation channel
3. Lines of continuation of the main navigation channel
4. Places around Turkmenbashi spit.

With a view of an expedition of operations, I suggest to make surveys round the clock by watch method. The brigade of four people - two local and two from LD INFO LTD in this case is required. To keep within minimum time it is necessary to process the collected data in office at once after their taking readings - one person is necessary. Thus, sounding team will composed of 5 people.

For obtaining results of necessary accuracy it is necessary to observe guidelines for similar surveys.

Calculation of time for the main Navigation Channel

Simple calculation shows that at frequency of cross-tacks of 20 m and length of a tack of 300 m, the general distance which should pass a sounding boat is about 400 km. We shall add to it at least four check longitudinal tracks. For survey of the channel at favorable weather 400 hours - about 17 day is required. Considering weather oscillations and time necessary for periodic calling of the vessel at port, it is possible to define time of surveys is not less than 30 day.

Therefore we can offer the following:

Two local workers in the team, on setting-up and to completion of operations	\$ 7 000 (for both)
One "LD INFO LTD" expert comes on setting-up and remains up to the end of surveys	\$ 12 000
One expert from LD INFO Ltd present on all extent of the project (manager)	\$ 21 000
One invited expert comes once on setting-up and assists for 3 weeks. The minimum operating time of the expert is 140 hours.	\$ 15 000
TOTAL:	\$ 55 000

GRAND TOTAL WITH TRIMBLE EQUIPMENT: \$ 97 425

As a performance guarantee we can propose the following scheme of payments: 20% advance payment for each stage of works (equipment delivery, mobilization, survey works and data processing)

Considering the aforesaid, we present the

TIME SCHEDULE:

	- 4-th week	- 3-rd week	- 2-nd week	- 1-st week	Beginning of operations	1-st week	2-nd week	3-rd week	4-th week	5-th week	6-th week	7-th week	8-th week	9-th week	10-th week
Stage I. Preliminary operations															
order of the equipment	■														
Repairing of a sounding boat				■											
Delivery of the equipment and software and preparation of the sounding complex for operation	■	■	■	■											
Obtaining the import license of the equipment	■	■	■	■											
Obtaining of the permission to usage of radio frequencies	■	■	■	■											
Elementary education of staff of port			■	■											
Planning of measurements				■											
Stage II. Hydrographic surveys and data processing															
The main navigation canal						■	■	■	■	■	■				
Old navigation canal						■	■	■	■	■	■	■	■	■	■
Data processing at office						■	■	■	■	■	■	■	■	■	■
Stage III. Interpretation of results (preparation of reports)															
Construction of cuts										■					
Calculation of volumes															■
Other															■

About LD INFO LTD Company

LD Info Ltd Company has been working with customers from Turkmenistan with 1990. During operation the company organized deliveries of the equipment and services for such companies in Turkmenistan as Turkmentelecom, TML, United Nations, State fear, various banks, publishing houses, individual companies for the sum about 9 million US dollars. The main directions of activity of the company in Turkmenistan are the areas demanding presence of new technologies, whether it is computer facilities or other sorts of the hi-tech equipment and software.

The company is registered on Cyprus, but primary activity is arranged in the CIS countries.

Legal address: 12 Promitheos Street, Pelecanos Court, 3rd floor, suite 302, CY-1065 Nicosia, Cyprus
Phone: (357 25) 384 747
Fax: (357 25) 384 858

Address in Turkmenistan: 744015, TURKMENISTAN, ASHGABAT, 2a-13 M. KURBANOV STREET
Phone: (993 12) 353 260
Fax: (993 12) 321 805
Mobil: (993 66) 335 949
E-mail: 1cfran@online.tm

Our bank details:

Account with: DEUTSCHE BANK TRUST COMPANY AMERICAS, NEW YORK
SWIFT: BKTRUK33
Account: 04-053-863
Favour of: Federal Bank of the Middle East Ltd.
Account: 52613
Director General: Michael Michaelidis

VAT ID Number: 10093530D

Operation with port Turkmenbashi

Delivery and implantation of economic databases (1999-2000):

In cooperation with Royal Haskoning, implantation of an economic software package on the basis of 1C:Enterprise (1C:Enterprise economical software package - 80 % of the market of the Russian Federation in a corresponding direction) is started. Was being trained 20 employees of accounting, planning, economic, etc. departments of port in operation with databases in general and with system 1C in particular. During implantation the most effective method of training - training during operation was spent. Simultaneously there were consultations in the various economic and accounting questions, the new approach to operation.

Delivery and implantation of computers and peripherals for a new building of TML (2002-2003):

The network server, about 70 units of computers and office equipment was delivered. Functioning of local area network is organized. The old building of TML is connected to common network. Carrying over of

economic databases to new hardware. The common number of computers in a network about 70 units. All equipment Hewlett Packard, since LD Info Ltd - is HP sales partner.

Continuation and strengthening of implantation of economic programs (2002-2003):

In connection with understanding of possibilities of the approach offered by us the port has made a decision on continuation of cooperation in a direction of development of usage of new technologies. As a result complete switch of port operation on new software has been lead. Eventually for workers appear more and more than possibilities for the analysis of data.

Delivery of the ecological equipment, delivery of the hydrographic equipment (2004-2005):

For a possibility of fast reaction to extreme situations, the mini-package on liquidation of possible spill oil has been delivered. The package has included skimmer, oil boom and emergency tank. Training with a crash crew has been. Supply has allowed raising ecological security of port.

The package of the equipment and the software for hydrographic survey, constructions bathymetric chart, cuts of a bottom has been supply. The staff of port in operation with the new equipment was trained. Creation of bathymetric map of channel and some places of a gulf is finish of work.

The description of too small works with port, we have considered possible to neglect.

There is still a lot of projects (security, equipping of vessels with sea electronics, equip of sea training centre, etc.), which employees of company LD Info Ltd were engaged in development "on a turn-key basis". Incompleteness of projects speaks only shortage of financing.

In connection with systematic contracts with various employees of port, LD Info Ltd completely enough and distinctly represent structure of port, its need.

Navigation channel

As it was spoken above, the company already was engaged in learning of the questions linked to a ship canal. In port the equipment and the software have been put, allowing carrying out planning hydrographic measurements, measurements and processing of their results. The staff of port for operation with this equipment is trained.

Acquaintance to applied questions to their subsequent solution allows already now, without additional researches, to present a number of the steps, allowing carrying out the project of coercion of availability index of ship canal to the world standards, and its subsequent maintenance.

Resume

We express availability in cooperation with you and we hope that it will bring a lot of useful to port, and also our companies.



This project is funded
by the European Union



ANNEX 6 HIRETECH Submission

Augustyns, FLJ (Filip)

From: ptranfield@aol.com
Sent: 24 July 2006 21:51
To: keithbunning@btinternet.com
Subject: Re: Hydrographic Survey Equipment

Dear Keith

We can certainly quote for the hire of equipment, but not the sale. Even the hire may be problematic, as you mention you require insurance; in our industry, it is always the customer who arranges insurance. Our equipment gets sent out to so many varied locations around the world, it is impossible for us as a rental company to get it insured; hydrographic survey companies have a blanket insurance covering all their own, and hired-in, equipment.

From your point of view I would have thought subcontracting to an experienced survey company would be the best option.

Our equipment has been hired by several companies recently for various projects in the Caspian Sea. Whilst we would not normally recommend any particular customer over another, I have no problem in stating that Andrews Survey of Gt Yarmouth, Norfolk have a good reputation, and have used our and their own kit on various Caspian projects. The other issue is that whereas we only rent out GPS systems, a survey company such as theirs can offer the full spread, and more importantly, the field personnel.

WWW.ANDREWS.CO.UK

Getting down to what we could supply for a 2 month rental; I am sorry to say that we no longer offer Trimble MS750 equipment. We have moved more and more towards Ashtech, Thales and C-Nav (Navcom) Real Time Kinematic GPS systems.

The system in your attached XLS €is fairly typical of the specification for this kind of project; most projects have a good degree of flexibility regarding the use of an alternative GPS systems, so long as it fulfils the same requirements - in this case centimetric accuracy using an RTK Base, RTK rover, and UHF radio link. We usually supply Ashtech/Thales Zxtreme RTK receivers as a substitute for MS750, simply because the Zxtreme is also used a lot in marine survey applications. Every project we have supplied in the Caspian has been either Zxtreme, or Aquarius LRK, or the older Ashtech Z12 GPS systems.

The radio link is not a problem - we have the PDL High Power transmitters and PDL rovers with built-in batteries. Ours operate in the 458 Mhz band, but we can retune them to a 12 channel band anywhere between 450 and 470 Mhz.

From our own experience, radio frequency allocation is a hit and miss affair in the Caspian; most operators tend to go in with a system in the 4450 to 460 Mhz band and fingers crossed. When specific frequency allocations are requested, there seems to be little rhyme or reason to the frequency allocated.

Rental Rates:

Ashtech Zxtreme RTK Base Station
Ashtech Zxtreme RTK Rover
PDL 35 watt base transmitter
PDL Rover with built-in battery
All cables, antennae, Tripod, manuals, power supplies etc.

Day rate for above: £ 90 + vat & delivery, based on 2 month (60 days) rental.

17/08/2006

After 60 days, a reduction of 20 % will apply, bringing the rental rate to £ 72 per day.

For all shipments into Baku we normally use Pentagon International Freight Services.

If the Zxtreme doesn't suit, we can substitute Navcom 2050M or Thales Z-Max, or Aquarius LRK (Long Range Kinematic) or Ashtech Z12, at the same rates.

If you prefer to give us a call to discuss any of these systems, or indeed anything regarding RTK GPS systems for this application, feel free to get in touch. We will try to point you in the right direction, regardless of whether you end up coming to us or not.

Best regards

Paul Tranfield

HIRETEC GPS Rentals
Border Lodge
49 Damgate Lane
Acle
Norfolk
NR13 3DJ
United Kingdom
tel. 10493 750067
fax 01493 751268
WWW.HIRETEC.CO.UK

-----Original Message-----

From: keithbunning@btinternet.com
To: paul@hiretec.co.uk
CC: ptranfield@aol.com

Sent: Mon, 24 Jul 2006 7.09PM
Subject: Hydrographic Survey Equipment

Paul

I am the technical consultant for an EU funded study for dredging a 16 n.mile channel for a port in the Caspian Sea. We need urgently to have the area surveyed. There are some local government controls to overcome such as licence for any radio equipment and frequency use. Thus subcontracting the work in total to an international company may prove difficult or at least time consuming. This would be my preferred option and I have not yet ruled it out so if you are able to provide the full package then please let me know.

Other options are to hire the necessary equipment and to have others experienced in hydrographic surveys and who have the licences to use it, or to purchase the equipment and to donate it to the port and to provide them with technical assistance and training in its use. I attach a schedule of equipment options provided by a surveyor placed in the country and I would be pleased to receive your price for hiring this with any insurance cost for say two months with any cost for extension and for the purchase of the items. If you are able to supply could you provide information on availability/delivery.

I need to report very quickly to the EC as the funding agency and therefore your early response and any comment would be appreciated.

Many thanks in anticipation of your help.

Keith Bunning

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by the Royal Haskoning E-mail Virus Protection service.

17/08/2006

Augustyns, FLJ (Filip)

From: PTRANFIELD@aol.com
Sent: 27 July 2006 14:32
To: keithbunning@btinternet.com
Subject: Re: Hydrographic Survey Equipment

In a message dated 27/07/2006 11:41:49 GMT Daylight Time, keithbunning@btinternet.com writes:

could you please advise if you have allowed for an echo depth-sounder and connections for it to the other equipment. If not can you provide cost for doing so. I must be sure that the survey team will have everything they require.

Dear Keith

We don't have any echo-sounder equipment at all. We offer only precision GPS systems.

That was the reason for suggesting a survey company that could offer the full package, as it were.

If we are talking about *interfacing* our GPS to an echosounder, then the standard cables that we would supply normally interface to this type of equipment; it's a standard 9 pin D serial plug. The GPS is then set to output whatever NMEA type message is required.

I have contacted Andrews Survey to ask about echo-sounders; they have them as part of their spread. Incidentally they said they hadn't heard from you yet, but I will just leave you to liaise direct if you so wish.

They quoted us a rental rate of around £ 90 a day for an echo sounder of that specification. Because we do not deal with any underwater equipment, we would not be able to support it in a satisfactory way, unlike our GPS systems.

If Andrews were to undertake the project, they would very likely hire in the GPS system from us anyway; they are familiar with all our GPS systems.

If you do go the hire route, then the GPS equipment should prove relatively straightforward to set up and operate for anyone who has used dual frequency RTK GPS systems of any make before. The principles of operation are the same for all systems. The general principles are these:

- the base station needs to be installed on a known point, and the known coordinates need to be input into the unit. It then begins transmitting corrections via the PDL transmitter to the rover.
- the rover receives and applies the corrections, generating a real-time position accurate to 3 to 5 cm depending on conditions. In turn the rover needs to be configured to output the calculated position to your navigation PC running whatever navigation software you are using. The most common message formats that are used in this type of application are GGA (lat long height, satellite information, position fix quality etc.), and VTG (velocity)

This is really all bread and butter stuff for a specialised survey company.

The replacement value of an Ashtech Xtreme Base + Rover spread with all cabling, antennae, radios etc., is GBP £ 26,000

Best regards

Paul Tranfield

HIRETEC
BORDER LODGE
49 DAMGATE LANE
ACLE, NORFOLK, NR13 3DJ

17/08/2006

UNITED KINGDOM
WWW.HIRETEC.CO.UK
tel. (+44) 01493 750067

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ANNEX 7 KOREC Submission

Proposal to: Keith Bunning dated 31 July 2006.
 From: Bill Robinson, KOREC

VARIANT I (REAL TIME KINEMATIC)

	Unit Price	Notes
1 RTK Base Station		
1.1 Trimble SPS750 Max L1/L2 GPS Base Rover. RTK/DGPS receiver c/w.	£7,410	MS750 is no longer in production SPS750 Max is the replacement
Kit - SPS750 Accessory Kit:		
Cable - Power, Universal, 18V, 3Ah		
ADPT 26P DSUB TO 6S HIROSE		
ADPT MULTIPORT USBOTG PWR ETH		
Cable - 0.03m, DB26F-DB9M, Adapter		
ADPT MULTIPORT 9P DSUB PWR ETH		
Cable - 1.5m, USB		
Cable - Data, DB9(F) to DB9(F), null modem		
Software - GPS, SPS Series Software CD		
Notice for charging Radio		
CBL ASSY 6 LEMO-BATT CLIPS		
CBL ASSY GPS TNC-TNC 1.6M/63"		
TRANSPORT CASE TRIMBLE SPS		
Zephyr Model 2 Geodetic GPS antenna	£1,935	
10m RG58 GPS antenna cable TNC-TNC	£97	
SPS750 Hammerhead data cable DB9(M)/DB9(F)	£50	To enable 2 serial I/O ports
1.2 Pacific Crest PDL HPB, 35W, 410-430 MHz or 430-450 MHz or 450-470 MHz 25kHz channel spacing c/w.	£2,846	Frequency band to be confirmed
PDL HPB		
5dB Whip antenna		
PDL HPB to PC programming cable		
Tripod antenna mast and bag		
Whip antenna pole mount - 8' cable		
Tripod mount system		
PDL HPB to Trimble interface cable		
SAE to pig-tail w/hardware and fuse power cable (VDC in)		
Desktop Power Supply (optional power if VAC available)		
PDL HPB battery, cables, carrying case		
Battery charger		
PDL HPB Pelican shipping case		
2 RTK Rover receiver		
2.1 Trimble DSM 232 RTK c/w.	£5,175	
Assy - DSM232 - RTK		
Antenna - Z Plus, L1/L2, High Accuracy		
Mount - Magnetic Mount		
Cable - Antenna, 10 Meter RG-58		
Cable - Data/Power, 12ft, 12-pin CX(F) to bare leads/DB9(F)		
Cable - Data, 4ft, 8-pin BD(F) to DB9(F)/DB9(M)/BNC		
CD-ROM, DSM232 Support		
OmniSTAR Activation Card		
2.2 Pacific Crest EDL II, 0.5W, 410-430 MHz or 430-450 MHz or 450-470 MHz. 25kHz channel spacing c/w.	£1,215	EDL II is better suited to marine Frequency band to be confirmed
Interface cable Turck to DE9 & SAE		
3dB Omni Directional Collinear Antenna		
Mount hardware for Antenna		
Mount hardware for EDL II		
Power cable SAE to Pigtail w/hardware & fuse 1.8m		
Shipping cost for Pacific Crest to Korec	£42	
3 Hydrographic Survey Software		
3.1 Trimble HYDROpro Navigation/TM HDMS	£4,595	
3.2 Terramodel Visualizer option	£1,695	
4 Echo Sounder		
4.1 Navisound 110 c/w.	£5,418	
TC 2024 200kHz Survey Transducer	£461	
Outboard Rig for TC 2024	£1,150	
Shipping cost for Navisound ex-works Copenhagen to Korec UK	£50	
5 Total Shipping cost from Korec to Customer within mainland UK	£75	
6 Total Variant I	£32,214	
7 Notes:		
All prices are exclusive of VAT and are valid for 30 days. Payment Terms. In advance for non-account customers.		

Augustyns, FLJ (Filip)

From: Bill Robinson [billrobinson6@compuserve.com]
Sent: 31 July 2006 09:13
To: Keith Bunning
Subject: Trimble Product Proposal

Keith,

Sorry for the delay. I had hoped to get the full proposal out to you today 31/07/06, however I am waiting clarification from Pacific Crest re the PDL HPB. I will have this tomorrow.

Also there are two items in your Variant II that I do not recognise, please clarify.

- 1.4. Trigger with optical centerer
- 1.5. Power supply for trigger

With best regards

Bill Robinson
KOREC
Direct Tel: 01483 572 611
Direct Fax: 01483 572 622
mobile: 07803 053 203
Direct email: billrobinson6@compuserve.com
Company email: bill.robinson@korecgroup.com
www.korecgroup.com

Please note that Survey Supplies began trading as KOREC from 01 December 2005

For more information about Trimble Marine Construction / Survey visit:
<http://www.trimble.com>

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by the Royal Haskoning E-mail Virus Protection service.

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Augustyns, FLJ (Filip)

From: Bill Robinson [billrobinson6@compuserve.com]
Sent: 01 August 2006 10:51
To: Keith Bunning
Subject: Hydrographic Survey Turkmenistan Equipment Proposal
Attachments: Keith Bunning Proposal Variant II 31.07.06.xls; Keith Bunning Proposal Variant I 31.07.06.xls

Hi Keith,

Please find attached Variants I and II.

The Trimble MS750 is no longer in production and has been replaced by the SPS 750 Max.

Note that I have substituted the Pacific Crest PDL radios on the boat for Pacific Crest EDL II radios as they are IP67 watertight and better suited to the marine environment.

The frequency band of the radio link needs to be confirmed as there are 3 bands to choose from.

I also require clarification on items 1.4 and 1.5 on Variant II.

Please contact me if you have any questions or comments about my proposal.

With best regards

Bill Robinson
KOREC
Direct Tel: 01483 572 611
Direct Fax: 01483 572 622
mobile: 07803 053 203
Direct email: billrobinson6@compuserve.com
Company email: bill.robinson@korecgroup.com
www.korecgroup.com

Please note that Survey Supplies began trading as KOREC from 01 December 2005

For more information about Trimble Marine Construction / Survey visit:
<http://www.trimble.com>

17/08/2006

Proposal to: Keith Bunning dated 31 July 2006.
 From: Bill Robinson, KOREC

VARIANT II (DGPS)

	Unit Price	Notes									
1 DGPS Base Station											
1.1 Trimble DSM 232RS DGPS Reference Station c/w:	£3,450										
<table border="1" style="width: 100%;"> <tr><td>Mount - Magnetic Mount</td></tr> <tr><td>CD-ROM, DSM232 Support</td></tr> <tr><td>Cable - Data, 8ft., Rt. angle 12-pin BD(F) to DB9(M)/DB9(M)</td></tr> <tr><td>Cable - Data/Power, 12ft., 12-pin CX(F) to bare leads/DB9(F)</td></tr> <tr><td>Antenna - Zephyr, L1/L2, Geodetic (5700)</td></tr> <tr><td>Cable - Antenna, 10 Meter RG-58</td></tr> <tr><td>OmniSTAR Activation Card</td></tr> </table>			Mount - Magnetic Mount	CD-ROM, DSM232 Support	Cable - Data, 8ft., Rt. angle 12-pin BD(F) to DB9(M)/DB9(M)	Cable - Data/Power, 12ft., 12-pin CX(F) to bare leads/DB9(F)	Antenna - Zephyr, L1/L2, Geodetic (5700)	Cable - Antenna, 10 Meter RG-58	OmniSTAR Activation Card		
Mount - Magnetic Mount											
CD-ROM, DSM232 Support											
Cable - Data, 8ft., Rt. angle 12-pin BD(F) to DB9(M)/DB9(M)											
Cable - Data/Power, 12ft., 12-pin CX(F) to bare leads/DB9(F)											
Antenna - Zephyr, L1/L2, Geodetic (5700)											
Cable - Antenna, 10 Meter RG-58											
OmniSTAR Activation Card											
1.2 Pacific Crest PDL HPB, 35W, 410-430 MHz or 430-450 MHz or 450-470 MHz 25kHz channel spacing c/w: PDL HPB 5dB Whip antenna PDL HBP to PC programming cable Tripod antenna mast and bag Whip antenna pole mount - 8' cable Tripod mount system PDL HPB to Trimble interface cable SAE to pig-tail w/hardware and fuse power cable (VDC in) Desktop Power Supply (optional power if VAC available) PDL HPB battery, cables, carrying case Battery charger PDL HPB Pelican shipping case	£2,846	Frequency band to be confirmed									
1.3 Trimble Tripod - Adjustable height, 2m for GPS	£529										
1.4 Trigger with optical centerer	N/A	Please clarify requirement									
1.5 Power supply for trigger	N/A	Please clarify requirement									
2 DGPS Rover receiver											
2.1 Trimble DSM 232 Basic c/w:	£2,075	Basic version is sufficient									
<table border="1" style="width: 100%;"> <tr><td>Assy - DSM232 - DGPS</td></tr> <tr><td>Antenna - GPS/Beacon (DSM132)</td></tr> <tr><td>Mount - Magnetic Mount</td></tr> <tr><td>CD-ROM, DSM232 Support</td></tr> <tr><td>Cable - 15m, Coax RG58, TNC - Open</td></tr> <tr><td>Accessory - TNC/M/R/A, for RG58 cable</td></tr> <tr><td>Cable - Data, 12ft., Rt. angle 12-pin BD(F) to DB9(F)</td></tr> <tr><td>Cable - Data/Power, 12ft., 12-pin CX(F) to bare leads/DB9(F)</td></tr> <tr><td>OmniSTAR Activation Card</td></tr> </table>			Assy - DSM232 - DGPS	Antenna - GPS/Beacon (DSM132)	Mount - Magnetic Mount	CD-ROM, DSM232 Support	Cable - 15m, Coax RG58, TNC - Open	Accessory - TNC/M/R/A, for RG58 cable	Cable - Data, 12ft., Rt. angle 12-pin BD(F) to DB9(F)	Cable - Data/Power, 12ft., 12-pin CX(F) to bare leads/DB9(F)	OmniSTAR Activation Card
Assy - DSM232 - DGPS											
Antenna - GPS/Beacon (DSM132)											
Mount - Magnetic Mount											
CD-ROM, DSM232 Support											
Cable - 15m, Coax RG58, TNC - Open											
Accessory - TNC/M/R/A, for RG58 cable											
Cable - Data, 12ft., Rt. angle 12-pin BD(F) to DB9(F)											
Cable - Data/Power, 12ft., 12-pin CX(F) to bare leads/DB9(F)											
OmniSTAR Activation Card											
2.2 Pacific Crest EDL II Rover c/w Pacific Crest EDL II, 0.5W, 410-430 MHz or 430-450 MHz or 450-470 MHz. 25kHz channel spacing c/w: Interface cable Turck to DE9 & SAE 3dB Omni Directional Collinear Antenna Mount hardware for Antenna Mount hardware for EDL II Power cable SAE to Pigtail w/hardware & fuse 1.8m	£1,215	EDL II is better suited for marine Frequency band to be confirmed									
Shipping cost for Pacific Crest to Korec	£42										
3 Hydrographic Survey Software											
3.1 Trimble HYDROpro Navigation/TM HDMS	£4,595										
3.2 Terramodel Visualizer option	£1,695										
4 Echo Sounder											
4.1 Navisound 110	£5,417										
TC 2024 200kHz Survey Transducer	£460										
Outboard Rig for TC 2024	£1,149										
Shipping cost for Navisound ex-works Copenhagen to Korec UK	£50										
5 Total Shipping cost from Korec to Customer within mainland UK	£75										
6 Total Variant II	£23,598										

7 Notes:
 All prices are exclusive of VAT and are valid for 30 days.
 Payment Terms. In advance for non-account customers.



This Project is funded
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ANNEX H: CURRICULA VITAE OF NON-KEY STAFF

The following pages present the CV's of the non-key experts assigned to the team:

- International Coastal geomorphologist / navigation specialist: Mr. Filip Augustyns
- Local Maritime Engineer: Mrs. Enequl Haydarova