

RFI 069 2044

D154 Project
Pre-Contract Award
Evaluation of DML



October 1994

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Project Management Consultant

(S.40)

D154

PRIME CONTRACT
PRE-CONTRACT AWARD
EVALUATION REPORT

20th October 1994

(S.40)

Approved

[Redacted Signature]

Team Leader

Date 20th October 1994.

[Redacted Name] Project Management Consultant

EXECUTIVE SUMMARY

- 1. Set out below are the main conclusions and recommendation of the Pre-Contract Award Evaluation that was undertaken to determine the suitability of Devonport Management Ltd (DML) to undertake the role of Prime Contractor for project D154.
- 2. The evaluation carried out has revealed that in 8 out of 10 main areas of assessment (see Figure i) considerable improvement is required to demonstrate an acceptable level of performance and in 53 of the 70 sub-topics this required degree of improvement is repeated.
- 3. Given these results, DML's current organisation would not prequalify for inclusion on a list of tenderers as a Prime Contractor for Project D154 or be considered a suitable organisation to be awarded the contract, at a normal level of risk.
- 4. To enable DML to qualify for appointment as the prime Contractor the risk needs to be reduced to an acceptable level and the broad conclusions by audit area and recommendations that follow, identify the main areas requiring attention. These recommendations take account of the findings of the National Audit Office Report entitled " Management of Trident Works Programme"
- 5. **CORPORATE ISSUES** - The DML corporate working relationships and some of the systems in use on the D154 project which until recently have been mainly informal and an extension of the practices associated with the normal dockyard operations of naval refitting, could not sustain the enhanced activity level that will now arise from the major D154 project. These systems and relationships are changing somewhat with the recent introduction of a Project Director with extensive construction industry experience to be specifically responsible for the D154 project, but the development of a major project team within the existing DML management structure requires different systems and experience and a significant change in culture for many staff. In particular those key staff without previous experience of major construction who will be responsible for the management of external consultants and contractors in the period leading up to and during construction are seen to represent a significant risk to the success of the project that requires to be addressed.

Assessment: Fair

FIGURE 1

AUDIT SUMMARY	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit		█	█		█	█	⊗	⊗	○
Corporate Issues							⊗	⊗	
Project Management					█		⊗	⊗	
Planning & Programming			█				⊗	⊗	
Commercial/Financial Management					█		⊗	⊗	
Quality Management			█				⊗	⊗	
Workforce Management					█		⊗	⊗	
Design Management							⊗	⊗	
Commissioning Management					█		⊗	⊗	
Construction Management					█		⊗	⊗	
Nuclear Safety							⊗	⊗	

6. **PROJECT MANAGEMENT** - The organisation, capability, capacity and control systems of DML do not confirm their capability to undertake the project management functions of the D154 project. Significant action needs to be taken by DML to address the deficiencies identified prior to the award of any prime contract.

Assessment: Poor

7. **PLANNING AND PROGRAMME MANAGEMENT** - The delegation of programming responsibilities across the project disciplines, necessitating whole project involvement in the planning process, is seen as a positive initiative. Countering this there is an over reliance on informal working relationships for the control and monitoring of project programmes. A full suite of programmes should be developed; this will enhance programme visibility, project control and performance monitoring. Although a wide reporting capability is available there are shortcomings in proposals for keeping the PS fully aware of the status of the project through the reporting process. Additionally, the reporting process is historic and applied at a very detailed level resulting in a large administrative burden; more proactive management is required.

Assessment: Fair/Good

8. **FINANCE & COMMERCIAL MANAGEMENT** - The Contractor is lacking in his approach/commitment to the MoD project requirements and the control of costs to within budget. DML appear to be applying their standard procedures without any critical evaluation of their suitability for D154 to this activity and have not tailored them to meet the demands of this complex project.

Assessment: Poor

9. **QUALITY MANAGEMENT** - DML's lack of proven ability in the field of nuclear construction appears to have been adequately covered by their choice of suitably experienced sub-contractors. Although there is little evidence to demonstrate that the defined quality management system would be effectively implemented, it is judged to be very comprehensive. The quality management system is obviously based and reliant entirely on BNFL's experience and expertise and managed by BNFL staff seconded to the project.

Assessment: Good

- **10. WORKFORCE MANAGEMENT** - The interviews revealed the staff managing Security, Industrial Relations, Personnel, and Health and Safety areas were very much on the periphery of the project. The DFF Project Manual had not been issued to these groups and did not contain relevant working procedures. The staff interviewed were considered capable but lacking in resources, clear tasking and integration with the project.

Assessment: Fair/Poor

- **11. DESIGN MANAGEMENT** - The Design Management procedures follow closely those currently in use by BNFL for the management of nuclear/chemical works projects. These should provide an appropriate basis for the management of the D154 design, with some modification anticipated to accommodate RRA's method of working. However, the arrangements result in much of the design risk residing with the Prime Contractor with little risk being transferred down the contracting chain to the sub-contractors.

Assessment: Fair

- **12. COMMISSIONING MANAGEMENT** - DML's Commissioning Management Strategy only exists as an unwritten proposal. Although there is an awareness that the commissioning of the works is important, priority has not been given to this subject. DML appear to have overlooked the need to include their Commissioning, Acceptance and Handover proposals in their Tender Response.

Assessment: Poor

- **13. CONSTRUCTION MANAGEMENT** - There appears to be a misappreciation of the real requirements and problems of managing the construction work. It is sensed that there is an over-reliance on a "cosy" relationship existing with the Main Contractor. The perception that the common goal within the parent Company Group would override individual commercial and contractual interests within the Main Contractor's joint venture may be falsely comforting.

Assessment: Fair/Poor

- 14. **NUCLEAR SAFETY** - The DFF Project Manual provides a comprehensive suite of design and Safety Case control documents. In theory these would appear to satisfy project requirements. However, the control of the Safety Case production process is an area of concern as this will principally be carried out remote from the DML "core team". This will necessitate proactive rather than reactive management.

Assessment: Fair


KEY RECOMMENDATIONS

- 1. The role of the Project Director, his relationship with the Project Manager et seq below and with other DML Directors with responsibilities which impact on Project D154 needs to be quickly and clearly defined and made known to all staff engaged on the project.
- 2. Key existing staff whose lack of experience of managing nuclear works and ability does not fit them for the role they are discharging, and the organisational structure itself, require to be changed or significantly reinforced to strengthen the team and improve working relationships. The weaknesses are notably in the area of Project Management, Risk Management, Commissioning Management, Construction Management, Financial Control, Independent Technical Assessment, Health and Safety, Security, Industrial Relations and DML representation as client. The missing skills and experience are capable of provision through a commercial contract.
- 3. The project planning organisation needs to be urgently developed to establish a programme structure. The programme for design development and safety case approval requires to be reviewed in relation to the strategic and construction programmes to demonstrate the adequacy of resource levels, provide key data for management control and identify key tasks and roles.
- 4. The proposals for commissioning with its long lead-in activities requires to be given a significantly higher priority to enable performance requirements and procedures and acceptance criteria to be established and built in to the design and construction contract.
- 5. Site control responsibilities need to be defined between DML and their main contractor such that clear procedures exist to reconcile perceived differences on safety, quality control, off-site fabrication, the occupation of the dockyard area, the transport of plant and materials and the role of design staff.
- 6. The relationship between DML and RR&A needs to be clearly defined to show that role and responsibilities are fully understood and demonstrate the Prime Contractor's ability to manage this important interface.

- 7. The Project Sponsor's role as the MoD's focal point for all instructions on project D154 must be fully documented by DML and communications between DML, other external organisations and other parts of MoD, formalised by DML to reflect this role.
- 8. The approach to risk management within DML needs to be addressed in relation to the provisions of the Prime Contract and management effort directed to the control of the residual project risk.
- 9. More effective procedures need to be introduced to assess external consultants and contractors to be employed under tight commercial contracts through which their work can be controlled.
- 10. Change control procedures need to be formalised and focused on one post within DML, with the responsibility for gathering change information, reviewing it to confirm its validity, separating out any considered to have resulted from the change in the MoD's requirements for presentation to the PS.
- 11. Effective working arrangements and communication systems need to be put in place to coordinate the work of all consultants and subcontractors on the project, which are compatible and permit the necessary speed of response.
- 12. Financial management systems need to be introduced to compare actual expenditure with budgets, rate of expenditure with rate of achievement and relate them to the residual allowance made for risk.
- 13. Construction risk assessment requires to be incorporated into the risk management regime and the programming of the requirement for rock anchoring in relation to the safety case given particular emphasis.
- 14. The Safety Case approval route has not been fully developed and agreed with the MoD's Authorisation Nuclear Regulatory Body (the Central Plant Control Authority (CPCA)). Without CPCA's consent the D154 Project will be unable to gain a fully approved Safety Case. Agreement must be reached before award of the Prime Contract.


1. Contents

	<u>Page</u>	<u>Figures</u>
Executive Summary	I - v	I
1. Contents	1	
2. Objectives	3	1
3. Key Event History	3	
4. D154 Project	3	
4.1 Background	3	2, 3
4.2 Contract	4	
4.3 Strategic Programme	4	4
4.4 DML Company	5	5, 6, 7
4.5 Financial Overview	6	
5. Evaluation	7	
5.1 Strategy	7	
5.2 Subject Areas and Sub-Topics	8	
5.3 Key Performance Indicators	8	
6. Audit Summaries	8	
6.2 Corporate Issues	8	8
6.3 Project Management	10	9
6.4 Planning and Programme Management	11	10
6.5 Financial and Commercial Management	12	11
6.6 Quality Management	13	12
6.7 Workforce Management	14	13
6.8 Design Management	15	14
6.9 Commissioning Management	16	15
6.10 Construction Management	17	16
6.11 Nuclear Safety Management	18	17
7. Detailed Recommendations	19	
7.1 Corporate Issues	19	
7.2 Project Management	19	
7.3 Planning and Programme Management	22	
7.4 Financial and Commercial Management	23	
7.5 Quality Management	23	
7.6 Workforce Management	24	
7.7 Design Management	25	
7.8 Commissioning Management	26	
7.9 Construction Management	26	
7.10 Nuclear Safety Management	27	



1. Contents (continued)

		<u>Page</u>	<u>Figures</u>
Annex A	Reference Information	29	
Annex B	Evaluation Methodology	30	
Annex C	Audit Tasking Record	31	
Annex D	Performance Indicators	34	

List and Location of Figures

		<u>Follows Page No</u>
Figure i	Overall Audit Summary Record	i
Figure 1	Project Organisation	3
Figure 2	The Existing Facilities	4
Figure 3	Proposed Modernised & Enhanced Facilities	4
Figure 4	Future Facilities Project - Key Date Programme	4
Figure 5	DML - Executive Committee & Department Managers	5
Figure 6	DML - Phase 2 Project Organisation	5
Figure 7	Contract Structure	5
Figure 8	Audit Summary Record - Corporate Issues	9
Figure 9	Audit Summary Record - Project Management	10
Figure 10	Audit Summary Record - Planning & Programme Management	11
Figure 11	Audit Summary Record - Financial/Commercial Management	12
Figure 12	Audit Summary Record - Quality Management	13
Figure 13	Audit Summary Record - Workforce Management	14
Figure 14	Audit Summary Record - Design Management	15
Figure 15	Audit Summary Record - Commissioning Management	16
Figure 16	Audit Summary Record - Construction Management	17
Figure 17	Audit Summary Record - Nuclear Safety Management	18

[REDACTED]

2. Objectives

- 2.1 Prior to the award of contract to formally evaluate the capability of DML to fulfill the role of Prime Contractor without exposing MOD to undue risk (see Figure 1).

3. Key Event History

November 1991	DML submit the proposals for the modernisation and enhancement of the nuclear submarine support facilities at Devonport
July 1993	Issue of The Royal Dockyards Future Arrangements for Ship Refitting Consultative Document.
July 1993	Report of the House of Commons Select Committee into the location of future refitting facilities for Nuclear Powered Submarines
September 1993	Confirmation by the Secretary of State for Defence of the location for undertaking future refuelling facilities for Nuclear Powered Submarines at Devonport
October 1993	Statement of the Government's intention to offer for competition the Government's remaining interest in Devonport Dockyard
June 1994	D/DGFS(S)/SSD/171/21/2/3 DGFS(S) Management Board endorsed paper approving the D154 PCAE.
July 1994	Issue of Invitation to Tender for D154 to DML

Reference documents are listed in Annex A

4. D154 Project Information.

4.1 Background

4.1.1 On 29 November 1984, the SoS for Defence announced that the Government had decided that the future upkeep facilities for Vanguard class submarines would be constructed at Rosyth. This resulting project became known as RD57. The "Options for Change" review projected a reduced submarine force level such that it was necessary to reexamine the future submarine upkeep proposals. DML, VSEL and BTL were asked to develop proposals for nuclear facilities to support the reduced force level. In November 1991 DML and BTL submitted their proposals, the DML scheme was a combination of the modernisation of existing facilities and the conversion of existing surface ship docks for Vanguard submarines. The BTL proposals were a modified version of the RD57 design. VSEL did not submit comprehensive proposals. Both DML and BTL continued to develop their designs with BTL submitting a further proposal to upgrade the existing docks at Rosyth.

4.1.2 The SoS for Defence announced on 29 September 1993 after detailed consideration of the future submarine upkeep proposals submitted by DML and BTL, that subject to satisfactory contractual arrangement, all nuclear submarine upkeep work would be concentrated at Devonport.



MINISTRY OF DEFENCE INTERESTS

SAFETY ADVISOR

PRINCIPAL "STAKEHOLDERS"

- CSO(SyW/T)
- DNP
- DDN(Sea)
- DN(Trans)
- FOSEM
- ADSP/P
- NESM
- DSM
- DCS/SIM
- DFSS(SS)
- DFS/SIM
- DST(W)
- CINO
- CBS
- CN/TSF
- DFS(S)/P
- DFS(S)/C
- DFS/PD

NUCLEAR WORKS ADVISOR

PROJECT SPONSOR

CONTRACT

DELEGATIONS

PRIME CONTRACTOR DML

AREA BEING EVALUATED

PRINCIPAL CONSULTANTS

- AEA
- ECH
- GIBB
- BNFL
- S&H
- RRA

MAIN CONTRACTORS

SUBCONTRACTORS & SUPPLIERS

[REDACTED]

4.1.3 To make the facilities at Devonport suitable for the refitting and refuelling of the Navy's fleet of Nuclear Powered Submarines, work needs to be carried out to modernise 14 and 15 Docks and enhance 9 and 10 Docks to provide facilities to support their operation. The existing facilities and the proposed modernised and enhanced facilities are shown in Figures 2 and 3.

4.2 Contract

4.2.1 The Prime Contract for D154 is proposed to be let to DML subject to the negotiation of satisfactory terms, but approximately one year into the contract, the GOCO arrangements will end with the sale of the site. The D154 Prime Contract will, at that time, be assigned to the new dockyard owner.

4.2.2 For the above reasons the DML organisation for the project must be clearly identifiable and separable from the other parts of DML so that it can, if required, either in whole or in part, be transferred to the new owners without detriment to progress.

4.2.3 Chief of Defence Procurement has determined that, due to the unique situation of having to construct a nuclear facility within an operating dockyard, the dockyard operator (DML) having ownership of the D154 design and being responsible for obtaining the necessary statutory authorisations and that a competition has already taken place in the form of the "comparator exercise", the MoD should contract with DML as Prime Contractor.

4.2.4 The Invitation to Tender for the D154 Prime Contract was issued to DML on 15 July 1994. The I.T.T consists of Conditions of Contract specifically developed for the unique circumstances of this project and the Authority's Requirement that sets out the MoD's requirements for the facility in high level performance terms. A response is awaited and now expected on 31 October 1994.

4.3 Strategic Programme

4.3.1 The Vanguard refuelling and refitting facilities need to be in place and operational by the end of 1999 and this has necessitated a tight programme of sequential activities as shown in Figure 4. Figure 4 is an indicative programme based on information provided by DML on 22 August 1994.

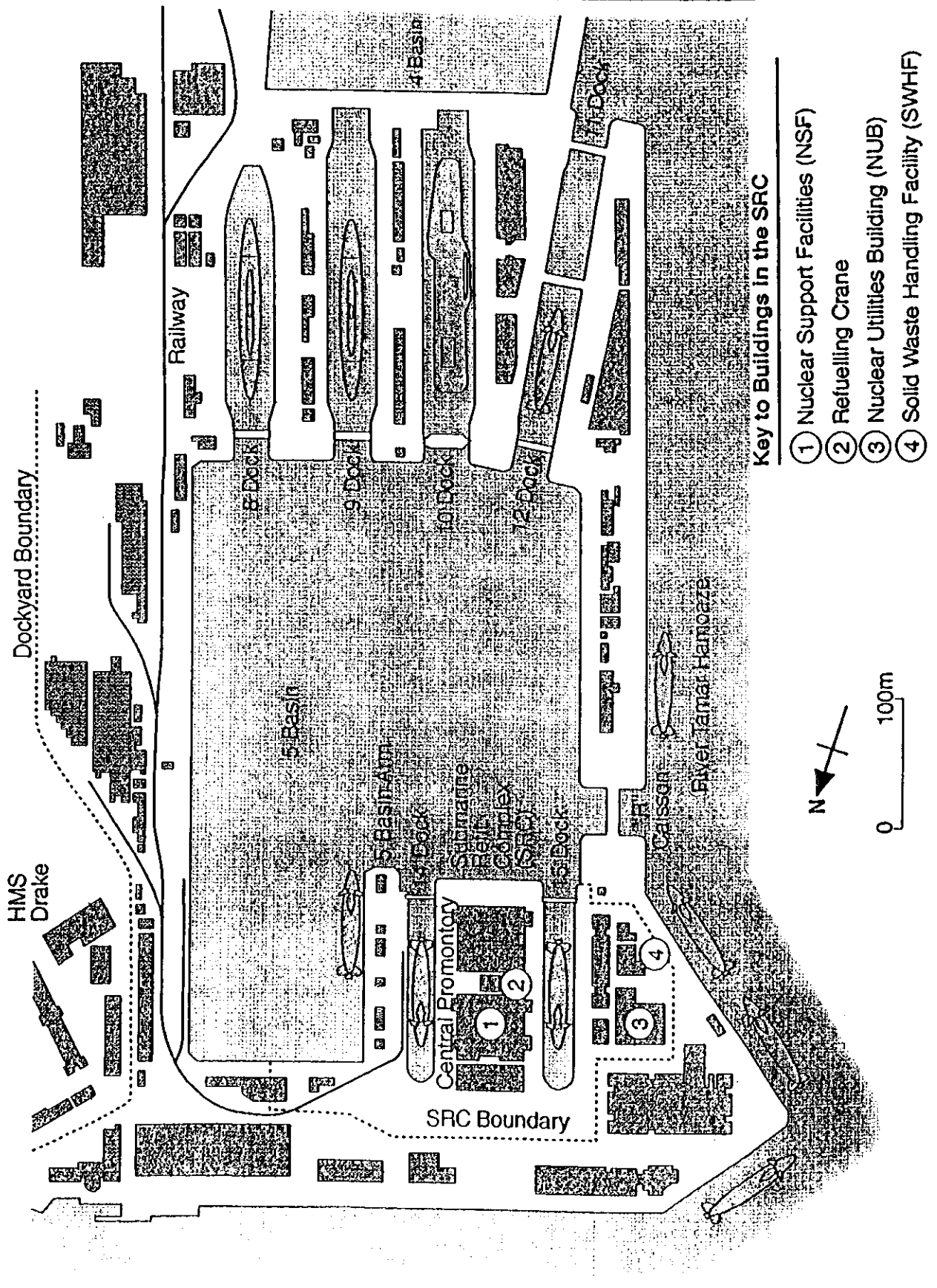
4.3.2 The four principal stages of the project and the key events are shown on the programme although it has to be recognised that these could migrate when a fully developed logic network is drawn up and any float available identified.

4.3.3 Notwithstanding the absence of a detailed programme it is clear from the strategic programme that the timescale for the project is not generous, substantial delays would compromise achievement of the objectives and firm management will be required to exercise control of the time available without compromising the quality of the work or its cost.

4.3.4 The programme for obtaining the statutory approvals (Planning, Nuclear Site Licence and Nuclear Waste Discharge) together with the programme for subsequent approvals of Nuclear Safety Cases and the timely placement of the Prime Contract could all impact upon the D154 programme.

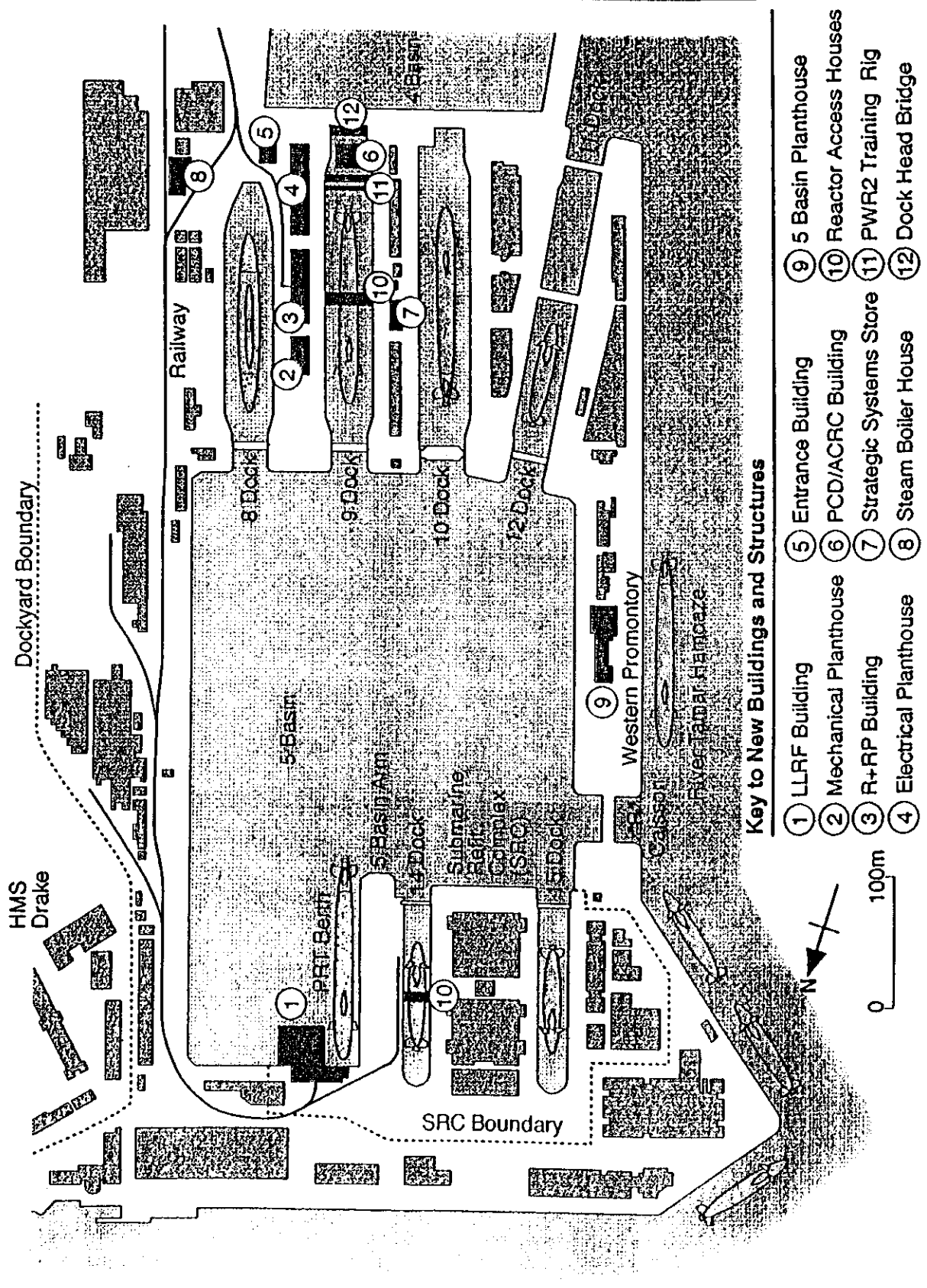
4.3.5 The D154 programme could impact on the programmes for privatisation of the dockyard site and the nuclear submarine upkeep programme.

FIGURE 2



THE EXISTING FACILITIES

FIGURE 3



THE PROPOSED MODERNISED & ENHANCED FACILITIES

4.4 DML Company

4.4.1 DML is a company formed in 1986 as a joint venture between 4 independent private companies to bid for the management of the Government Owner and Contractor Operated (GOCO) Term Contract of Devonport Royal Dockyard. The corporate management and financial guarantees necessary to obtain the Term Contract for Naval refitting are provided collectively by the private companies in joint venture, the skilled labour force being provided largely by Devonport Royal Dockyard plc. DML has very limited fixed assets but a turnover of approximately [redacted] per annum. DML's core business is defence related ship repair and it has had only a very limited success in diversifying into other fields. (S.43)

The Company is now a joint venture between 3 independent firms, viz:

<u>Company</u>	<u>% Share</u>	<u>Nature of Business</u>	<u>Approx Turnover £M pa</u>
BICC	33.3%	Electrical Cable, Data networks, Civil Engineering Major Projects, Housing, Electronics	[redacted]
Weir Group PLC	33.3%	Engineering Control Systems, Valve Manufacture, LPG Equipment, Offshore Engineering, Pumps, Machine Tools	[redacted] (S.43)
Brown & Root (UK) Ltd (A subsidiary of Halliburton Holdings Ltd)	33.3%	Construction, North Sea Oil Fabrications, Deep Ocean Services, Project Management	[redacted]

4.4.2 The primary business of DML is to refit and repair Naval vessels which will progressively concentrate onto nuclear submarine work with surface ships work from the unallocated programme being won in competition with other yards.

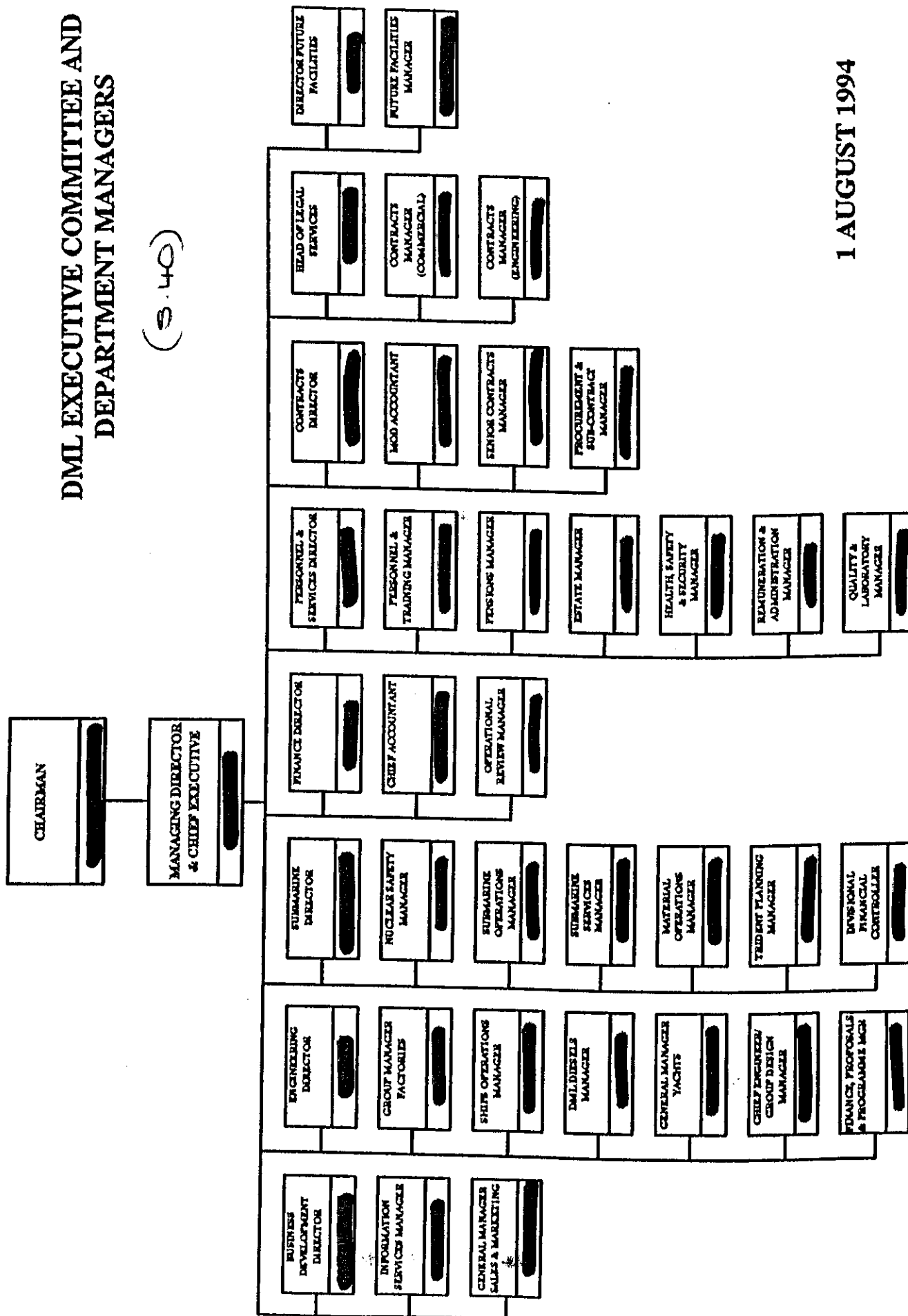
4.4.3 To perform its primary function, DML needs to carry out modernisation and enhancement to the Dockyard facilities which has hitherto been considered an ancillary task. In the case of D154, the scale of the development required, its funding by Government and the scale of the project risks, promote the need for the provision of more specific management arrangements. Figure 5 shows the structure of the Company, identifying the Director of Future Facilities to be responsible as Project Director for the D154 project. Figure 6 shows the proposed DML organisation of the project below project Director level, incorporating personnel from DML, AEA, Balfour Beatty, BNFL, EC Harris, Gibb, Strachan and Henshaw, RR&A.

The contractual relationship between MOD, DML and the other parties for the D154 project as seen by DML is shown in outline on Figure 7.

DML EXECUTIVE COMMITTEE AND DEPARTMENT MANAGERS

(S.40)

1 AUGUST 1994



DML - PHASE 2 PROJECT ORGANISATION

(DFF PROJECT MANUAL ISSUE 01 MAY 1994)

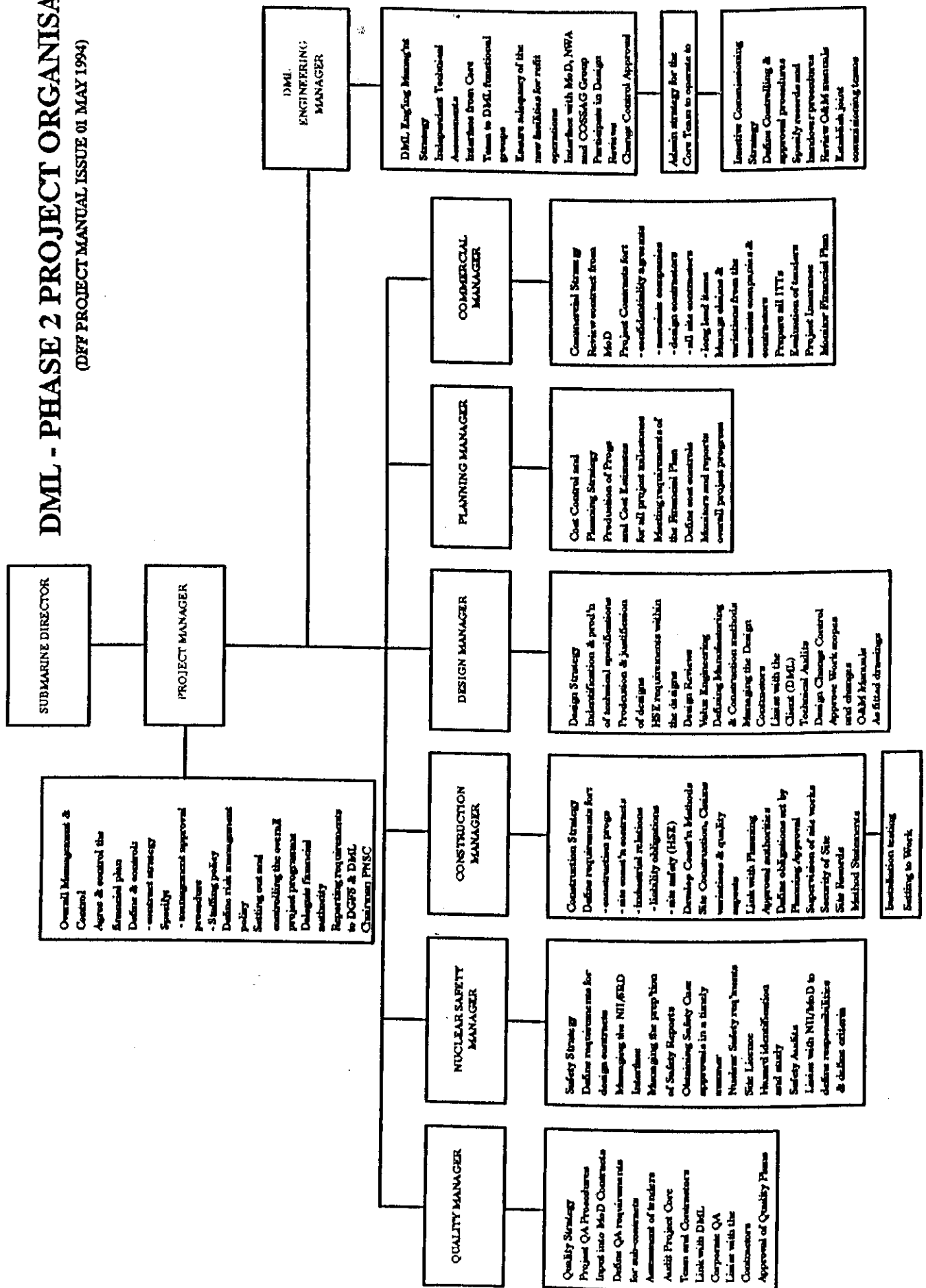


FIGURE 6

CONTRACT STRUCTURE

(DFP PROJECT MANUAL ISSUE 01 SEP 1994)

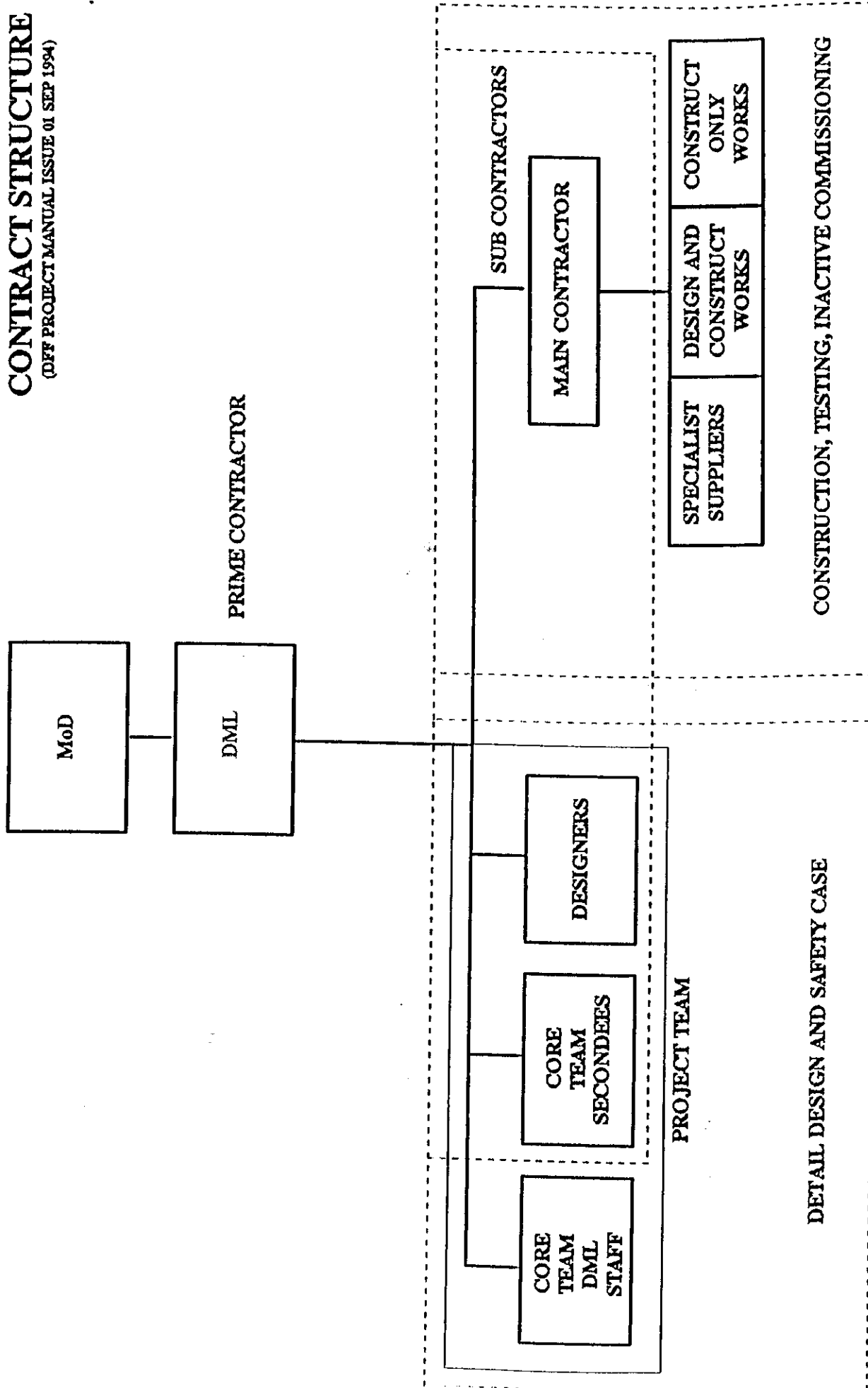


FIGURE 7

4.4.4 DML Company Details

Trading Styles DML
DML Diesels
Devonport Yachts

Management Board Chairman [REDACTED] (S. 40)
MD [REDACTED]
Directors 8

Finance (1993) Turnover £261M
Pre Tax Profit £14M
Current Assets £68M
Current Liabilities £58M
Submarine Income £108M

QA Held AQAP1 Ed 3
ISO9001
BRCQA
NAMAS

4.5 Financial Overview

4.5.1 D154 is currently a MoD controlled project and as such has the status of Crown Development. This status will continue unless a prospective new dockyard owner is prepared to complete D154 as a private project.

4.5.2 The D154 Prime Contract will be a performance contract under which the MoD will not accept ownership of the facilities on completion. When completed the new facilities will become the property of the new dockyard owner who will operate them.

(S.43)

4.5.3 In order to control the risk to MoD arising from a company failure and respect the danger that MoD as a monopoly client represents to contractors, it is not normally desirable for the work carried out for MOD under contract to have an annual value in excess of 25% of the amount of the company's annual turnover. Based on the turnover for 1993 of [REDACTED] the maximum annual value of MOD work would not normally be expected to exceed [REDACTED]. In the case of DML however approximately 93% of the company's existing turnover is on MOD work, by virtue of the special circumstances that have conditioned the formation of the company. If the turnover of the parent companies are taken into account however, the 93% reduces to 5.9% and the addition of a maximum of [REDACTED] per year from the D154 Project would increase this to 8.1%, all of which is protected by parent company guarantees. On this basis the risk to MOD is contained within acceptable margins as long as the parent company guarantees are adequate and the parent companies do not themselves take on significant MOD work.

4.5.4 D154 is a £200M+ Civil/Nuclear Engineering project that involves the modernisation of existing nuclear submarine refit facilities and the conversion of other facilities from surface ship to submarine upkeep. Initial project costings indicate that the contract will be 40% Civil Engineering and 60% Nuclear Equipment Engineering. The contracted programme as presently envisaged will extend over approximately 8 years.

4.5.5 The fixed components of the cost of the D154 project need to be understood to enable the

[REDACTED]

scale of the prime contractors job to be appreciated. As published in the "The Royal Dockyards Future Arrangements for Ship Refitting" these are:-

	<u>£M</u>
DML Fixed Price bid accepted by SofS subject to satisfactory negotiations into a contract	120.6
The estimate of the costs of the nuclear component by RR&A	66.5
Devonport Additions	3.5
Contingency for MoD retained Risk	5.5
TOTAL (ex VAT)	<hr/> 196.1

4.5.6 This cost needs to be compared with the cost of the much troubled Trident works programme in Scotland which amounted to £1870M, a typical modern Nuclear Power Station such as Sizewell B at £2,500M, the massive new MOD office complex at Bristol £200M, a typical major new hospital £200M and one of the new generation of gas powered (CCGT) Power Stations at £300M.

5. Evaluation

5.1 Strategy

5.1.1 The Evaluation Team (see Annex B) restricted all enquiries to that information required to determine the ability of DML to perform as a Prime Contractor under the D154 Prime Contract.

5.1.2 The wider issue of DML's overall viability as a company to undertake D154 were addressed by reference to the companies latest set of published annual accounts and those for their parent firms.

5.1.3 For each defined area of audit, the adequacy of DML to control risk in particular, was evaluated by framing questions to reveal their:-

Organisational Structure

Resources, Experience and Qualifications

Support Facilities Available

Management Procedures

[REDACTED]

5.2 Subject Areas and Sub Topics

5.2.1 See Annex C.

5.3 Key Performance Indicators

5.3.1 To achieve consistency in the evaluation standard performance indicators were agreed and used. Performance was judged against 5 indicators, Excellent, Good, Fair, Poor and Non Compliant. (See Annex D for detailed descriptions).

5.3.2 As the contractor has been developing the project for over 4 years (and not just from receipt of the Phase 2 I.T.T), it was considered reasonable to expect a performance indicator of 'good' in most areas but that 'fair' should be the minimum acceptable in all areas.

6. Audit Summaries

6.1 The reports for each area of audit are given below and shown graphically with sub-topics in Figures 8 to 17 which follow each summary.

6.2 CORPORATE ISSUES (Figure 8)

6.2.1 The role of the Project Director and his relationship with the other DML Directors with responsibilities which impact on Project D154, needs to be clearly defined and made known to all staff engaged on the project.

6.2.2 Formal arrangements need to be put in place to achieve the coordination of the activities of other DML Directors and their staff where they impact on the D154 project or vice versa.

6.2.3 Formal arrangements are required to deal with MOD's interests as party to the Prime Contract in addition to any regular project meeting required in the I.T.T. These should provide a regular formal high level forum held at quarterly intervals between the MOD Project Sponsor together with his advisers and the DML Project Director, Project Manager and other key contributors, to identify and review strategic issues, such as Residual Project Risk, Project Control (incl review of MOD Stakeholder contacts made with DML) and Audit concerns.

6.2.4 The provision of delegation procedures is required in order to permit structured decision making at all levels of DML management

6.2.5 More effective procedures are required to assess external consultants and contractors at the selection stage, draw up commercial contracts and control and coordinate their work. A major review of DML management practice is necessary in this area which appears to require either the introduction of substantial design management systems or preferably the relocation of design teams onto site at Devonport, associated with less onerous design management systems.

6.2.6 DML's parent firms acting as sub-contractors under the D154 prime contract, require to have the fitness for purpose provisions of the prime contract reflected in their sub-contracts, if the subsequent sale of the dockyard is not to be compromised.

6.2.7 System support via the IT provision within DML needs to be effectively applied to the work of external consultants and contractors on the D154 project, so that all are working on compatible

[REDACTED]

systems with an adequate degree of inter-communication.

- 6.2.8 The approach to Risk Management within DML requires to be addressed in relation to the provisions of the Prime Contract and the management effort to be directed to the control of the residual project risk.
- 6.2.9 The roles of the existing key staff need to be reviewed against their abilities and experience and adjustments made to strengthen the team in areas judged to be weak.

CORPORATE ISSUES	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit							X	X	○
Organisational Structure (Director & Above)							X	X	
Relationship with MOD							X	X	
Resources and Support Facilities							X	X	
Management Procedures Including Risk Exposure							X	X	
Financial Stability/ Guarantees							X		

[REDACTED]

6.3 PROJECT MANAGEMENT (Figure 9)

6.3.1 The organisation, capability, capacity and control systems of DML do not confirm their capability to successfully undertake the project management functions on the D154 project. Significant action needs to be taken by DML to address the deficiencies prior to the award of any prime contract. Action will also be required after the placement of such a contract and it is likely that there will need to be MoD oversight to ensure that the required level of performance is being achieved.

6.3.2 Areas of critical weakness are identified below:-

- a. Only limited project management experience or experience of large nuclear orientated works projects in the project management team.
- b. Lack of resource information at the time of the PCAE.
- c. No clear definition of the respective roles of the Project Director and the Project Manager
- d. The requirement for a Deputy Project Manager to ease the burden on the Project Manager
- e. No clear role for the DML Engineering Manager. It is unclear whether he is an independent representative of the DML client organisation or an Assistant Project Manager.
- f. Lack of recognition by DML of the Project Sponsor's role.
- g. Project management control not apparent in the press/public relations work.
- h. Lack of management expertise in the risk management and cost control areas..
- i. Lack of a clearly defined focal point with responsibility for risk management.
- j. Lack of procedures for risk management.
- k. The urgent requirement to appoint an appropriately qualified Construction Manager

[REDACTED]

6.4 PLANNING & PROGRAMME MANAGEMENT (Figure 10)

6.4.1 At the current stage of the Project the arrangements are generally satisfactory.

6.4.2 The delegation of programming responsibilities across the project disciplines, necessitating whole project involvement in the planning process, is seen as a positive initiative. Countering this there is an over reliance on informal working relationships for the control and monitoring of project programmes. another weakness is that the reporting process is historic and applied at a very detailed level; this will result in a large administrative burden. A pro-active reporting process should be developed, perhaps at discipline manager level, with the emphasis being directed towards identifying possible programme threats and proposed corrective actions. The planning organization resource profile across the project lifetime is ill defined; this shortcoming should be corrected. It would benefit the PS, and it is believed the PC, if a full suite of programmes was developed; this would enhance programme visibility and thereby the monitoring of performance. External interface programmes underpinned by formal working groups with agreed TORs should be included in this suite. The corporate support requirements and arrangements, currently ill defined and undocumented, should be formalized; in particular the resources that will be required to support project documentation processing/production should be quantified. Although a wide reporting capability is available, proposals should be developed to ensure that the PS is kept fully aware of the status of the Project through the reporting process; currently this is a significant shortcoming which will have to be addressed before tender response.

FIGURE 9

PROJECT MANAGEMENT	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit									
Overview of Project Organisation and Team									
Project/Refitting Interface within DML									
MoD/Sponsor Liaison									
Public Relations/Press									
Risk Management									
Cost Control									
Change Control									
Reporting & Information Flow									

[REDACTED]

6.5 FINANCIAL & COMMERCIAL MANAGEMENT (Figure 11)

- 6.5.1 Sections of the DFF Project Manual were not available for review prior to the commencement of the PCAE exercise, and furthermore DML could not confirm if and when this information would be made available.
- 6.5.2 Of the areas examined DML demonstrated a naïve confidence in their system of cost control and financial management. However, that confidence was not reciprocated by the investigating team, and the general feeling was that DML were lacking in their approach/commitment to the project and the controlling of costs to within the budget.
- 6.5.3 DML appear to be applying standard procedures to this activity and have not tailored them to meet the demands of this complex project.
- 6.5.4 DML demonstrated a total misunderstanding of the MoD requirements and this casts considerable doubt as to whether or not there was any commercial strategy in place for the D154 project as a whole.
- 6.5.5 It is not possible to be satisfied with DML's proposals and further development of the procedures will need to be carried out.

FINANCIAL/ COMMERCIAL MANAGEMENT		Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit									○
Commercial Contract							X		
Change Control							X		
Assessment of Sub-Contractors							X	/	
Competitive Tendering							X		
Interfaces								/	
Financial Management								/	
Cost Control							X	/	

[REDACTED]

6.6 QUALITY MANAGEMENT (Figure 12)

- 6.6.1 DML's lack of proven ability in the field on nuclear construction appears to have been adequately covered by the suitable selection of experienced subcontractors. Although there was little evidence to demonstrate that the defined quality management system would be effectively implemented, it was judged to be very comprehensive.
- 6.6.2 The Quality Management System (QMS) was obviously based entirely on British Nuclear Fuels Ltd's (BNFL) experience and expertise and managed by BNFL staff seconded to the project. If, for any reason, BNFL withdrew this support, confidence in maintaining the system would be lost.
- 6.6.3 The situation with RR&A needs to be looked into from the point of view of the QMS and the approval of concessions by DML.

QUALITY MANAGEMENT	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit		■	■		■	■	⊗	⊗	○
Status of Registration		■							○
Qualifications of Third Parties			■						○
Control of Sub-Contracted Work		■							○
Quality Management Systems			■					△	



[REDACTED]

6.7 WORKFORCE MANAGEMENT (Figure 13)

- 6.7.1 The overall impression gained from the interview with the DML Deputy Security Manager (DSM) was that he was competent to undertake the task but lacked resources. The DSM did not have a copy of the DFF Project Manual, also Security Procedures had not been produced. There was a lack of integration with the D154 Project Team and because of this the security requirements for D154 were seen as no more than a slight modification to DML current practices. The difficulties in controlling up to 650 contractors personnel on site during the peak construction period had not been appreciated. Because almost none of the security documentation listed in the Security Aspect Letter was available to the DSM the significance of this project, the increase in security requirements and potential workload had not been appreciated.
- 6.7.2 The overall impression gained from the interview with DML's Personnel and Training Manager (PTM) and his team was that they were competent to develop the D154 Industrial Relations, Personnel and Training procedures and plans. However it is considered that to create adequate resource levels staff would need to be dedicated to D154 and a member integrated with the D154 Project Team. The PTM did not have a copy of the DFF Project Manual nor had any procedures been developed.
- 6.7.3 The DML H&S Department is manned by well qualified personnel and has sufficient resources to effectively oversee DML's normal business. The 3 senior staff interviewed are bright and genuinely interested in their subjects. They admitted the need for a Construction H&S Specialist to be recruited for the Construction phase. The department are not totally happy with their integration with the PM Team. This was not admitted as such, but was obvious by their lack of knowledge (or availability) of the DFF Project Manual and no participation in the planning for the COSSAG (Commissioning and Site Safety Authorisation Group)(and therefore by implication the Preliminary Safety Report (PSR)). They should be liaising with the Main Contractors Construction Manager.

WORKFORCE MANAGEMENT	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit							X	X	○
Industrial Relations							X	X	
Health & Safety							X	X	
Personnel Management and Training							X	X	
Security Clearance							X	X	

[REDACTED]

6.8 DESIGN MANAGEMENT (Figure 14)

- 6.8.1 The organisational arrangements in the core team are broadly adequate as far as the design management is concerned, although consideration should be given to the appointment of a deputy project manager with professional nuclear works experience to provide direction and positive management to the development of the design.
- 6.8.2 The design management procedures follow closely those currently in use by BNFL for the management of nuclear/chemical works projects. The procedures provide an appropriate basis for the management of the design of the D154 project, although some modification should be anticipated to accommodate RRA's method of working.
- 6.8.3 The arrangements result in much of the design risk residing with the Prime Contractor and little risk is transferred down the contracting chain to the design sub-contractors. This is a major weakness given the project objective of passing the risk to the group best able to control the factors influencing the occurrence and impact of the risk. Further consideration by the Prime Contractor is essential to achieve the aims of the proposed contractual arrangement.
- 6.8.4 The ability of the Prime Contractor to manage RRA remains a major concern. Clear definition of the roles and responsibilities and clear lines of communication must be established as a matter of urgency to show that an effective working relationship can be established for this critical element of the project.
- 6.8.5 A clear and coherent definition of the design and safety case document structure and clear planning of the approvals procedures both internally and externally is essential to show that the design and safety case programmes can be managed effectively.
- 6.8.6 The co-ordination of the seismic qualification strategy for the project requires substantial development. The absence of a clear definition of objectives and roles and responsibilities in the seismic qualification process introduces a concern at this stage and casts doubt on the Prime Contractor's ability to manage this important part of the design and safety case development.
- 6.8.7 The strategy adopted for the programming of the design presents a major challenge to the design management group to the extent that the current proposals present a major weakness and questions the ability of the group to deliver and meet programme targets.
- 6.8.8 The resources proposed to undertake the design management have a good deal of nuclear industry project experience and should have the capability to fulfill the design management function. Some strengthening of the design co-ordination team would be beneficial to the project.

FIGURE 14

DESIGN MANAGEMENT	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit		■	■		■	■	⊗	⊗	○
ORGANISATION									
Corporate								⊗	
Future Facilities Department								⊗	
Design Management Group			■						○
Design Sub-Contractors			■						○
PROCEDURES									
Design Briefs/WIs			■						○
Design Change Control			■						○
Sub-Contractor Management					■		⊗	⊗	
Design Documentation								⊗	
Independent Assessment			■						○
PROGRAMME									
Design					■		⊗		
Safety Case					■		⊗		
Safety Approval					■		⊗		
Construction Phase						■	⊗		
RESOURCES									
Level								⊗	
Capabillity							⊗		

[REDACTED]

6.9 COMMISSIONING MANAGEMENT (Figure 15)

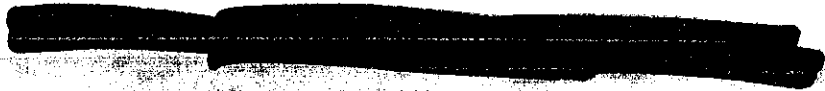
6.9.1 DML's Commissioning Management Strategy exists as an unwritten proposal. In discussion the appearance of being well advanced is given, possibly as it is a repeat of the approach taken for the Submarine Refit Complex (SRC).

6.9.2 There is an awareness that the Commissioning of the Works is important but priority has not yet been given to this.

6.9.3 DML appeared to have overlooked the need to include Commissioning, Acceptance and Handover proposals in their Tender Response (for Phase 2). Given the time that DML have had to consider the project, the Commissioning Management strategy and proposals are for less than the evaluator anticipated.

6.9.4 It is not possible to be satisfied with the existing situation.

COMMISSIONING MANAGEMENT		Evaluation Indicator	Overall Audit Assessment							
			Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit										○
Commissioning Management Strategy										
Commissioning Management Structure & Resources										
Management of Interfaces										
Area/Function Evaluation										



[REDACTED]

6.10 CONSTRUCTION MANAGEMENT (Figure 16)

- 6.10.1 The Project Manager's ability to be authoritative on Construction Management issues is doubted. His confidence on the subject was clearly let down by misappreciation of the real requirements and problems of managing the construction work.
- 6.10.2 An over-reliance on the 'cosy' relationship with the Main Contractor is sensed. The perception that the common goal within the Company Group would override individual commercial and contractual interests within the Main Contractor's joint venture may be falsely comforting.
- 6.10.3 The current proposals for site control with regard to technical inspection of the works through various construction stages did not give confidence that the required QA would be achieved.
- 6.10.4 It is believed that the recruitment of the Construction Manager and the 'resident' site supervisory staff so late in the planning/design phase is a bad decision. The benefits of having a Temporary Construction Manager for 6 months at the beginning of this year appear to have been wasted. The lack of continuity in planning now, through the previous incumbent who will not be re-appointed, is seen as a significant disadvantage.
- 6.10.5 The lack of documentation to support the construction strategy, procedures, assessments and previous studies by the Temporary Construction Manager, reinforce the concerns that insufficient and inappropriate emphasis has been applied to address the construction aspects of the project.

CONSTRUCTION MANAGEMENT	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit							X	X	○
Construction Management Strategy and Organisation							X		
Construction/Design Interface								/	
Method Statements								/	
Sub-Contract Activities							X	X	
Construction Practices							X	X	
Health and Safety							X	X	
Site Management							X	X	

[REDACTED]

6.11 NUCLEAR SAFETY MANAGEMENT (Figure 17)

6.11.1 Three major areas of concern have been revealed by the evaluation, these are:

- a. the control of the Safety Case production process as this will principally be carried out remote from the DML 'core team' and will therefore require proactive rather than reactive management
- b. the MOD route for the approval of the Safety Case needs to be fully discussed and approved with Central Plant Control Authority (CPCA) prior to the first section of the Pre-Construction Safety Report (PCSR) being presented to the Project Nuclear Safety Committee (PNSC).
- c. the programming of works in 14 Dock needs to be revised to satisfy the Authorities Requirements

6.11.2 The DFF Project Manual provides a comprehensive suite of design and Safety Case control documents. These appear in theory to satisfy project requirements but will need to be audited during the early stages of the project to ensure that they are both operating satisfactorily and are being complied with.

NUCLEAR SAFETY	Evaluation Indicator	Overall Audit Assessment							
		Excellent	Good	Fair	Poor	Non Compliant	Requires Action Pre-Contract	Requires Monitoring	Reassuring
Areas of Audit		■	■		■	■	⊗	⊗	○
Strategy			■						○
Organisation			■					⊗	○
Personnel			■						○
Nuclear Safety Approvals Programme						■	⊗		
Definition of Safety Case Requirements to the Designers			■						○
Management of the Regulatory Interface								⊗	
Management of Safety Reports						■	⊗		
Nuclear Safety Requirements								⊗	
Hazard Identification								⊗	
Safety Audits								⊗	
Training								⊗	

[REDACTED]

7. Detailed Recommendations

7.1 Corporate Issues

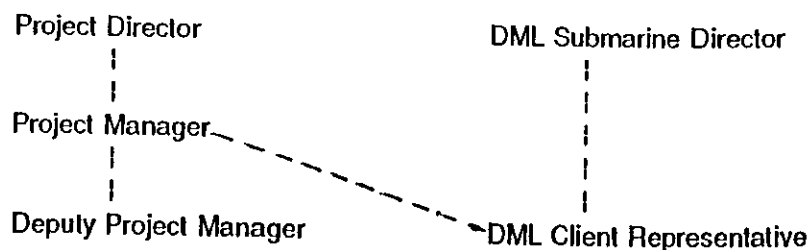
- 7.1.1 The role of the Project Director and his relationship with the other DML Directors with responsibilities which impact on Project D154, needs to be clearly defined and made known to all staff engaged on the project.
- 7.1.2 Formal arrangements need to be put in place to achieve the coordination of the activities of other DML Directors and their staff where they impact on the D154 project or vice versa.
- 7.1.3 Formal arrangements are required to deal with MOD's interests as party to the Prime Contract apart from the regular project meetings required in the I.T.T. These should provide a regular formal high level forum held at quarterly intervals between the MOD Project Sponsor together with his advisers and the DML Project Director, Project Manager and other key contributors, to identify and review strategic issues, such as Residual Project Risk, Project Control (incl review of MOD Stakeholder contacts made with DML) and Audit concerns
- 7.1.4 The provision of delegation procedures is required in order to permit structured decision making at all levels of DML management
- 7.1.5 More effective procedures are required to assess external consultants and contractors at the selection stage, draw up commercial contracts and control and coordinate their work. A major review of DML management practice is necessary in this area which appears to require either the introduction of substantial design management systems or preferably the relocation of design teams onto site at Devonport, associated with less onerous design management systems.
- 7.1.6 DML's parent firms acting as sub-contractors under the D154 prime contract, require to have the fitness for purpose provisions of the prime contract reflected in their sub-contracts, if the subsequent sale of the dockyard is not to be compromised.
- 7.1.7 System support via the IT provision within DML needs to be effectively applied to the work of external consultants and contractors on the D154 project, so that all are working on compatible systems with an adequate degree of inter-communication.
- 7.1.8 The approach to Risk Management within DML requires to be addressed in relation to the provisions of the Prime Contract and the management effort to be directed to the control of the residual project risk.
- 7.1.9 The roles of the existing key staff need to be reviewed against their abilities and experience and adjustments made to strengthen the team in areas judged to be weak.

7.2 Project Management

- 7.2.1 The role of the Project Director, particularly at the interface with the Project Manager, needs to be quickly defined before prime contract placement. A clear job description should be developed for the Project Director and included in the DFF Project Manual which should also be amended to take account of his appointment and any other changes in key roles.

- [REDACTED]
- 7.2.2 A formalised system of delegation to cover all managerial, financial, contractual and technical issues should be developed and embodied in the DFF Project Manual . All members of the project management team need to have a clear delegation and be aware of the delegation of other members of the team. At the present time there would appear to be insufficient delegation, particularly in the managerial, financial and contractual areas, a situation which is likely to adversely affect the project as it progresses. The role of the DML Engineering Manager in this area needs to be clearly defined.
- 7.2.3. The blend of qualifications and experience illustrated by the CVs and interviews of the key DML project management staff does not indicate sufficient input from individuals who have successfully been involved at a senior level, in major nuclear works projects. Neither the proposed Project Manager nor the DML Engineering Manager, who could be considered to be the Deputy Project Manager, would normally be considered suitably experienced for their appointments.
- 7.2.4 Consideration needs to be given to bringing in a senior Project Manager with a track record in the management of major nuclear works projects.
- 7.2.5 The Planning Manager has insufficient knowledge in the risk management and cost control areas. The Project Manager and the Planning Manager indicated at interview that a Financial Manager was to be appointed who would take over part of the Planning Manager's role. The role of the Financial Manager and the nominated person needs to be considered further when DML present their formal proposal.
- 7.2.6 A Construction Manager should be quickly nominated by DML. The nominated person needs to be considered further when DML present their full proposal. The "Lessons Learned Report" (Reference 9) highlights the need for the early involvement of construction management expertise and the requirement to consider acceptance criteria and commissioning procedures from the outset.
- 7.2.7 The Schedule of Qualifications and Experience in the DFF Project Manual needs to be amended to address the observations and findings above.
- 7.2.8 DML should establish what core skills and competencies are required from all members of the project team. Once a team has been established who have the broad core skills and competencies then DML should develop a systematic training programme to assist team members in their roles. This is particularly the case in the risk management area - see later. In some cases the training requirements will be on-going and certain staff may need refresher courses in some areas later in the project's life.
- 7.2.9 The role and responsibility of the MoD Project Sponsor must be recognised and respected by DML. The DFF Project Manual need amending to reflect this.
- 7.2.10 In order to protect its investment and control risk MOD may need the opportunity to be represented, in a non-executive capacity, at project level on some of the relevant Project Boards/Committees in addition to the Project Nuclear Safety Committee, providing Prime Contractor responsibility and contractual conditions are not weakened. It is, however, accepted that MOD should not be represented on Boards/Committees which deal exclusively with DML's commercial position under the proposed prime contract. At the present time the status of the various Project Boards/Committees is unclear and should be defined by DML in order that the project Sponsor can judge when representation is necessary.

- [REDACTED]
- 7.2.11 No DML resource information was available for the PCAE. Full Resource Schedules/Charts, in a format acceptable to MOD, must be included in the DML proposal at tender stage. This information must be fully investigated in order that MOD can be satisfied that the total resource and the spread of resource across the Project Team members and project life are realistic for a project of this nature. Until MOD are fully satisfied the prime contract should NOT be placed with DML.
 - 7.2.12 DML's tender proposal needs to fully illustrate that staff not based at Devonport can properly fulfill their functions. As the project develops it may from time to time become necessary to base support staff at Devonport. DML need to consider this issue further.
 - 7.2.13 DML should put in place a regime that clearly establishes that all their major sub-consultants are capable of fulfilling the role for which they have been engaged. Such a regime should establish, inter alia, that each company has a relevant track record, that they are employing staff with appropriate qualifications, skills and experience, that they are adequately resourced and that they have the necessary quality systems and accreditation in place. Retrospective action by DML to confirm the capability of their existing subcontractors should be taken.
 - 7.2.14 The DFF Project Manual needs to clearly establish the role that is being, and will be, played by the major sub-consultants.
 - 7.2.15 The role of the DML Engineering Manager needs to be more clearly defined and focused. Either he is the DML client's representative and should therefore report to the DML Submarine Director or he is the Deputy Project Manager and should remain in the Project Manager's line management. The DML Engineering Manager cannot be truly independent and responsible for, among other things, independent technical assessments, if he works to the Project Manager. The nature and extent of the project could well warrant both an independent DML client representative to liaise between the DML customer and the Project Manager, and a separate Deputy Project Manager. The later would ease the burden on the Project Manager but this does of course depend on the role adopted by the Project Director. A possible high level structure is indicated below:-



- 7.2.16 If a Deputy Project Manager is appointed he must be a relatively senior and experienced individual, whose background and experience will blend with the other key team members. It would be advantageous for him to have experience of major works projects, probably with nuclear implications.
- 7.2.17 A policy and strategy should be developed for dealing with public relations/press issues on project D154. DML are fully within their rights to choose to handle the issues at a corporate/Board level. However, they must come through the project management regime in order that the Project Manager is fully aware and in control of the situation. Additionally where any contact is to be made with the MOD this should be to the Project Sponsor or with the project Sponsor's knowledge.

- [REDACTED]
- 7.2.18 The risk management procedures should be formalised before the prime contract is placed.
 - 7.2.19 A risk management function needs to be identified at the management level below the Project Manager. The function needs to be undertaken by an individual with risk management and not just risk analysis experience. The appointed individual will then seek to ensure risk management activities are on-going during the project and not confined to the 3/4 monthly review.
 - 7.2.20 While the 3/4 monthly internal review is reasonable the time allocated for each review may not be sufficient when preparatory and follow-up work are also included.
 - 7.2.21 All key staff need to be properly trained in risk management techniques.
 - 7.2.22 If primary responsibility for cost control is passed to the Financial Controller it must be established that the individual concerned has the necessary experience and track record for the role.
 - 7.2.23 DML must implement the necessary security control measures to the Cost Control Management System (TRACCS).
 - 7.2.24 The DFF Project Manual requires to be amended/clarified to cover the identification of the sponsor of design change control forms.
 - 7.2.25 The DFF Project Manual needs to be amended to reflect the MOD's right to formally change the project, without DML rejection, as set out under the terms of the prime contract.

7.3 Planning & Programme Management

- 7.3.1 Expertise in OPENPLAN programming should continue to be developed.
- 7.3.2 Full use should be made of the expertise provided by the BNFL secondees in developing the programme suite.
- 7.3.3 An additional less detailed level of reporting should be required of the functional managers with the emphasis on threats (current and anticipated) and corrective action taken.
- 7.3.4 Urgent attention be given to establishing the project planning organization and its total responsibilities in order that the planning responsibilities can be discharged in the most effective and efficient manner. A formal review programme should be developed.
- 7.3.5 The support arrangements with the DML corporate departments should be defined, agreed and documented.
- 7.3.6 Training requirements for additional team members should be addressed.
- 7.3.7 A formal programme structure should be developed encompassing Level 1 to Level 3 programmes. The following list, in addition to facility programmes, is an example of the suite of programmes, within a strategic programme framework, that would be associated with a major nuclear project: Overall, Licensing (including PSR, PCSR, POSR), Design, Manufacture, Construction, Commissioning, QA, Procurement, Submission of Engineering Documents, ARM, ALARP, Maintenance, Preliminary Works, Key Event Schedule, Schedule of Commencement & Completion Dates, Schedule of Project meetings, Schedule of Planning Consents &

[REDACTED]

Authorizations, Expenditure.

- 7.3.8 Formal document production programmes should be available demonstrating compliance with the requirements of the Level 2 programme.
- 7.3.9 The monthly summary report from the associate companies/Main Contractor should be formalised.
- 7.3.10 DML must develop proposals for presenting programming details to the Project Sponsor.
- 7.3.11 The resource requirements to satisfy the Planning Team's proposed audit programme of the associate companies and Main Contractor, in order to verify the accuracy of the reporting information, should be identified and established.
- 7.3.12 The route should be identified and the policy agreed for formal contact with all organizations/bodies that could impact upon D154. Formal contact should be established to address external programme interfaces.
- 7.3.13 Dependent upon the number of comments/observations in the future the DFF Project may wish to establish formal procedures for addressing observations or comments made by the Project Sponsor.
- 7.3.14 Formal procedures/mechanisms should be established to generate responses to Change Proposals.

7.4 Commercial & Financial Management

- 7.4.1 DML must demonstrate that it has a commercial strategy in place capable of managing the totality of the D154 project in accordance with the MoD's requirements as set out in the I.T.T.
- 7.4.2 A cohesive strategy of cost and financial control needs to be developed, and thought needs to be given to who should be given responsibility for the collation and input of this information into the company's cost monitoring systems.
- 7.4.3. The person with overall responsibility for Financial and Commercial Management should develop review procedures for monitoring actual expenditure against budget, with particular attention being given to how expenditure is to be linked to actual Project progress. Budgetary controls in the event of cost overruns need to be developed.
- 7.4.4 The selection, vetting and monitoring procedures for sub-contractors and the like need to be developed, to ensure satisfactory progress and quality control.
- 7.4.5 Change control procedure needs to be finalised, and consideration given to who will be responsible for gathering this information and who will have overall responsibility for its review.
- 7.4.6 Ultimately, the Prime Contractor should take a more pro-active role in the administration of the Financial and Commercial Management affairs.

7.5 Quality Management

- 7.5.1 DML sub-contracts need to contain conditions requiring sub-contractors to implement and adhere to their approved Quality Management System.

- [REDACTED]
- 7.5.2 RR&A and the other key sub-consultants and sub-contractors require to be subjected to an investigation of their quality management systems and the procedures for the approval of concessions. RR&A are a subcontractor who may seek a concession from DML. They are also MoD's Design Authority who approve concessions. DML need to clarify how they intend to process concessions from RR&A.
- 7.5.3 Prior to the award of contract DML should demonstrate that the quality documentation stemming from BNFL sources is that covered by BSI's quality assessment and registration of DML.
- 7.6 **Workforce Management**
- 7.6.1 A copy of the DFF Project Manual must be held by the Personnel and Training Manager.
- 7.6.2 Priority must be given to the development of procedures for the DFF Project Manual .
- 7.6.3 Priority must be given to developing proposals for the Phase 2 ITT, in particular the Method Statement and Resource Levels.
- 7.6.4 Priority should be given to the long term identification of personnel resources both from other DML departments and externally under contract.
- 7.6.5 Consideration must be given to having a member of the D154 Project team dedicated to Industrial Relations and Personnel Management and Training.
- 7.6.6. Priority/resources must be given to the Security Controller to allow completion of the security procedures for the DFF Project Manual .
- 7.6.7. The Security Controller must be issued with a copy of the DFF Project Manual .
- 7.6.8. The Security Controller must be issued with all security documentation detailed in the contract Security Aspects letter.
- 7.6.9. Priority must be given to the completion of the Security Plan required for the Phase 2 ITT response.
- 7.6.10 DML must review their response to the Security Aspects Letter (SAL).
- 7.6.11 There is a need for a closer relationship between the DML H&S Department and the PM Team.
- 7.6.12 A copy of the DFF Project Manual must be held by the H&S Department.
- 7.6.13 The Safety Section of the Preliminary Safety Report requires to be reviewed by DML H&S Department, especially with respect to Site Safety.
- 7.6.14 A construction H&S Specialist requires to be introduced into the DML Project Team.
- 7.6.15 The Safety Plan must contain a Risk/Hazard Analysis (CONDAM will require this as well as Management of H&S at Work Regulations 92).
- 7.6.16 The Construction Manager, who will be responsible for day to day site safety requires to be identified and subject to initial evaluation and monitoring.

[REDACTED]

7.7 Design Management

- 7.7.1 Consideration should be given to the appointment of a Deputy Project Manager with experience in the design of nuclear safety-related projects to provide a lead in the technical direction of the design and safety case development.
- 7.7.2. The selection of Project Design Engineers (PDE's) should be reviewed and consideration given to the appointment of professionally qualified personnel to fulfill the roles.
- 7.7.3 The PDE group should be strengthened by:
- a. The PDE (Strachan & Henshaw(S&H)) and Design Change Control (DCC) administrator requires two separate full time appointments.
 - b. The nomination of one of the PDE's to act as deputy to the Design Manager.
 - c. The tasking of appropriate PDE's to establish a strategy and closely co-ordinate the seismic qualification of the RAH/Dock walls/Docking cradles/Ships systems.
 - d. The close scrutiny and adjustment of the level of resource applied to co-ordinate and manage RRA's contribution to the project to suit the demands of the task.
 - e. The application of additional resources where required to assist in the production of specifications during critical stages of the design programme.
- 7.7.4. The management of the flow of information between the safety group and designers, and between designers should be critically reviewed during the course of the project and improved.
- 7.7.5 The structuring and management of design and safety case documentation should be improved.
- 7.7.6. The role and terms of reference for the independent assessment of the design should be clarified by the Prime Contractor.
- 7.7.7. The format for the production of specifications should be improved.
- 7.7.8 Suitable software and IT hardware should be introduced to enable the design inputs from all sources to be coordinated and the control and management of the verification of computer software used for the design should be developed to provide a common standard across the project.
- 7.7.9 The methods used for the co-ordination of space management in the building design should be reviewed.
- 7.7.10 Consideration should be given to the use of CAD for the production of working drawings and life-time records for the project as a whole.
- 7.7.11 The design and safety case programme should be reviewed in relation to the procurement and construction programmes to demonstrate the Prime Contractor's ability to manage the design.
- 7.7.12 The relationship between DML and RRA should be clearly defined to show that roles and responsibilities are fully understood and demonstrate the Prime Contractor's ability to manage

[REDACTED]

this important interface.

- 7.7.13 The management arrangements should be reviewed with a view to improving the distribution of risk across the design team. This is fundamental to the approach to be adopted in the management of the design within the Prime Contracting agreement.
- 7.7.14 The role of the designers during the construction phase should be fully defined.
- 7.7.15 The results of this audit should be reviewed in light of the results of the audits of other parts of the Prime Contractor's proposals.

7.8 Commissioning Management

- 7.8.1 DML's current proposal is that inactive and conventional commissioning would be addressed in the same procedural manner. DML believe that there could be some confusion if different procedures are adopted by the same parties for different technical areas. DML's Tender Response/Commissioning Management documentation when received should be examined for consistency of approach.
- 7.8.2 Thought has gone into the Commissioning Management Structure but the documentation is inadequate although required in the Tender Response. DML should document their Commissioning Management Strategy and proposals for implementation.
- 7.8.3 DML should be encouraged to commit resources at the earliest opportunity to develop commissioning proposals.
- 7.8.4 To have confidence that the interfaces will be proactively managed the terms of reference of the Site Safety Authorisation Group (SSAG) must be produced.
- 7.8.5 Performance criteria require to be set which will condition the management and procedures to be followed.
- 7.8.6 DML must establish the methodology and criteria by which they will ensure that the requirements of the Prime Contract are met. They must also be able to demonstrate such performance in tangible terms.
- 7.8.7 DML are establishing the tasks but do not have a programme. DML must establish a programme which meets the terms of the Prime Contract.
- 7.8.9 The prime Contract should not be awarded until acceptable proposals for the Commissioning Acceptance and Handover of the works are received by the Project Sponsor.

7.9 Construction Management

- 7.9.1 To strengthen the relationship at the interfaces between design and construction the DML core team should be collocated in one building and procedures introduced to overcome any separatist tendencies.
- 7.9.2 Site control responsibilities between DML and the Main Contractor require to be reconciled and procedures defined to ensure that positive control of quality of the construction and nuclear related work.

- [REDACTED]
- 7.9.3 A strategy on real estate requirements needs to be developed and written procedures set down.
 - 7.9.4 The communications necessary throughout the whole site, to accommodate the requirements of the complete workforce during construction, requires thorough attention.
 - 7.9.5 Responsibilities for the management of sub-contract activities off site during construction, including RR&A (fabrication/testing at works included) requires to be determined and the strategy set down and incorporated into the relevant contracts.
 - 7.9.6 Responsibility for the technical control of construction which lies outside the DML Construction Manager's direct supervision requires to be clarified.
 - 7.9.7 The proposal to ring fence areas and liaise with the Estates Department to contain and control the problems of construction activities impacting on other Dockyard work underestimates the potential difficulties and size of workforce etc involved, and requires more positive attention before a contract can be entered into.
 - 7.9.8 The proposal that the Construction Manager will review construction techniques and involve the COSSAG in the assessment of any which are complicated, contentious or present risk is not an adequate solution to address programme risks associated with such work. Construction risk assessment requires to be documented at this stage and agreed between the Project Manager and the Construction Manager.
 - 7.9.9 Proposals are required to indicate how the transportation of the Reactor Access House (RAH) at 9 and 14 Docks, along with the other bulk materials and the removal of excavated material is to be achieved defining the extent of reliance on road, rail and sea.
 - 7.9.10 The construction and programme effects of rock anchoring require to be included in the risk assessment.
 - 7.9.11 The proposal to transfer overall responsibility for Health and Safety to the Main Contractor who would have a Health and Safety Manager liaising with the various sub contractors, is at variance with the response received from the DML Health and Safety department and requires to be reconciled.
- 7.10 Nuclear Safety Management**
- 7.10.1 Close liaison will need to be maintained between the project Nuclear Safety Department and the Company Nuclear Department to control the impact of the D154 project on the existing Site Licence and Waste Authorisations.
 - 7.10.2 The anomaly in the description of the regulatory interface presented in Section 4 of the DFF Project Manual where the Engineering Manager rather than the Nuclear Safety Manager is described as being responsible for the adequacy of the interface arrangements between DML and the Regulators requires to be reconciled.
 - 7.10.3 The training of sub-contractors requires to be addressed as a requirement of BR 3018. The DFF Project Manual needs to be revised to reflect the BR 3018 requirements.
 - 7.10.4 The management of control of the Safety Case production process requires to be proactive

[REDACTED]

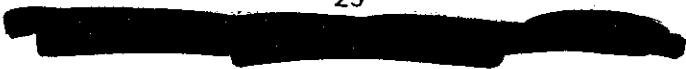
rather than reactive, as this is envisaged to be principally carried out remote from the DML 'core team'.

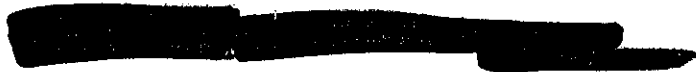
- 7.10.5 The MOD route for the approval of the Safety Case needs to be fully discussed and approved with Central Plant Control Authority (CPCA) before the prime contract is awarded.
- 7.10.6 The programming of works in 14 Dock needs to be revised to satisfy the Authorities Requirements. The nuclear regulatory body (NII) also need to agree the update process timescale to ensure that the SRC is able to fully function as a submarine refit facility.
- 7.10.7 The comprehensive suite of design and Safety Case control documents included in the DFF Project Manual require to be audited by DML during the early stages of the project to ensure that they are both operating satisfactorily and are being complied with.
- 7.10.8 The lines of responsibility and Terms of Reference of the COSSAG together with its interrelationship between the Nuclear Site Authorisation Group (NSAG), Commissioning and other Site Safety Administration Groups need to be properly defined and agreed with CPCA.
- 7.10.9 Managing the Safety Case process needs to be specifically tasked to one senior representative within DML with a suitable support team.



REFERENCE INFORMATION

1. Treasury CUP No 43 Project Evaluation
2. Compendium of Project Management Guidelines
3. MoD QA Regulation No 9
4. PCAE Information Pack D/DGFS(S)/SSD/171/21/2/3 dated 03 June 1994
5. DFF Project Manual Issue 01 May - September 1994
6. MoD D154 Phase 2 I.T.T July 1994
7. D154 Risk Log and Risk Analysis dated 01 July 1994
8. Ministry of Defence: Management of the Trident Works Programme (NAO) July 1994
9. Ministry of Defence Trident Works Programme The Inquiry Summary Report (Prepared for Director of Works (Strategic Systems) by The Bovis Construction Group and Nigel Parry Associates) dated 12 July 1993
10. Dunn & Bradstreet International Business Information Reports
11. MoD Company Database





EVALUATION METHODOLOGY

1. The Evaluation Team was staffed as shown below;

Team Leader	[REDACTED]	Project Management Consultant
Administration	[REDACTED]	WDS APS FF1
	[REDACTED]	WDS D154/MM
Evaluators	[REDACTED]	DWS/CSD Navy
	[REDACTED]	WDS PCM/FF
	[REDACTED]	WDS PCM/MW
	[REDACTED]	WDS PCM/PP
	[REDACTED]	CBFS T1
	[REDACTED]	WDS APS FF1
	[REDACTED]	WDS APS FF2
	[REDACTED]	NWA(D)
	[REDACTED]	NWA(C)
	[REDACTED]	NWA(T)
	[REDACTED]	NWA(R)
	[REDACTED]	NWA(P)
	[REDACTED]	NWA(Q)
	[REDACTED]	NWA(H)
	[REDACTED]	NWA(N)
	[REDACTED]	NBQM

(S.40)

2. Project areas were allocated to evaluators as is detailed in the attached task plan enclosed at Annex C.
3. The Evaluators were issued with PCAE Terms of Reference and an Implementation Procedure, they were also fully briefed on the requirements of the D154 Phase 2 I.T.T and the relevant part of the DFF Project Manual and the D154 Risk Log. All Evaluators attended a final briefing meeting prior to commencement of the audit.
4. A combined Audit Team/ Prime Contractor presentation and briefing session was undertaken prior to the commencement of the audit.
5. Audit reports and summaries were submitted by each auditor on completion of their audit task.
6. This Evaluation Report is based on information received from the auditors, has been prepared by the Team Leader.

D154 PRE-CONTRACT AWARD EVALUATION

Annex C

AUDIT TASKING RECORD

(S.40)

SUBJECT	SUB TOPICS	AUDITORS	DML SPONSOR
CORPORATE ISSUES	Organisation and Structure	[REDACTED]	[REDACTED]
	Relationship with MoD	[REDACTED]	[REDACTED]
	Resources and Support Facilities	[REDACTED]	[REDACTED]
	Management Procedures/Risk	[REDACTED]	[REDACTED]
	Financial Stability	[REDACTED]	[REDACTED]
PROJECT MANAGEMENT	Risk Management	[REDACTED]	[REDACTED]
	Cost Control	[REDACTED]	[REDACTED]
	Reporting & Information Flow	[REDACTED]	[REDACTED]
	Public Relations/Press	[REDACTED]	[REDACTED]
	Project/Refitting Interface within DML	[REDACTED]	[REDACTED]
	MoD/Sponsor Liaison	[REDACTED]	[REDACTED]
	Change Control	[REDACTED]	[REDACTED]
PLANNING & PROGRAMMING	Programming	[REDACTED]	[REDACTED]
	Network Development/Update	[REDACTED]	[REDACTED]
	Scheduling	[REDACTED]	[REDACTED]
	IT Hardware	[REDACTED]	[REDACTED]
	System Support & Software	[REDACTED]	[REDACTED]
FINANCIAL/COMMERCIAL MANAGEMENT	Commercial Contract	[REDACTED]	[REDACTED]
	Procurement	[REDACTED]	[REDACTED]
	Financial Management	[REDACTED]	[REDACTED]
QUALITY MANAGEMENT	Quality Plan	[REDACTED]	[REDACTED]
	Quality Control	[REDACTED]	[REDACTED]
	Quality Audit	[REDACTED]	[REDACTED]
WORKFORCE MANAGEMENT	Industrial Relations	[REDACTED]	[REDACTED]
	Health & Safety	[REDACTED]	[REDACTED]
	Personnel Management	[REDACTED]	[REDACTED]
	Security Clearance	[REDACTED]	[REDACTED]

SUBJECT	SUB TOPICS	AUDITORS	DML SPONSOR
DESIGN MANAGEMENT	Skill Range & Depth of Personnel	[REDACTED]	[REDACTED]
	Assessment of Consultants	[REDACTED]	[REDACTED]
	Terms of Engagement	[REDACTED]	[REDACTED]
	Coordination of Design Input	[REDACTED]	[REDACTED]
	Value Engineering	[REDACTED]	[REDACTED]
	Control of Rolls Royce & Associates	[REDACTED]	[REDACTED]
	Configuration Control	[REDACTED]	[REDACTED]
	Building & Fire Regulations	[REDACTED]	[REDACTED]
	Survey & Investigation	[REDACTED]	[REDACTED]
	Town Planning and Environmental	[REDACTED]	[REDACTED]
	Design Audit	[REDACTED]	[REDACTED]
	Whole Life Costing	[REDACTED]	[REDACTED]
COMMISSIONING MANAGEMENT	Performance Criteria	[REDACTED]	[REDACTED]
	Measurement of Performance	[REDACTED]	[REDACTED]
	Commissioning Programme	[REDACTED]	[REDACTED]
	Acceptance/Assessment	[REDACTED]	[REDACTED]
	Documentation	[REDACTED]	[REDACTED]
	Future Logistics Provision	[REDACTED]	[REDACTED]
	User Training	[REDACTED]	[REDACTED]

(S. 40)

SUBJECT	SUB TOPICS	AUDITORS	DML SPONSOR
CONSTRUCTION MANAGEMENT	Design/Site Coordination	[REDACTED]	[REDACTED]
	Info Flow on Design/Spec Development	[REDACTED]	[REDACTED]
	Project/Refilling Work Prioritisation	[REDACTED]	[REDACTED]
	Site Communication System	[REDACTED]	[REDACTED]
	Security Restrictions within Site	[REDACTED]	[REDACTED]
	Temporary Works	[REDACTED]	[REDACTED]
	Site Control	[REDACTED]	[REDACTED]
	Accommodation on and off Site	[REDACTED]	[REDACTED]
	Organisation & System Support	[REDACTED]	[REDACTED]
NUCLEAR SAFETY	Nuclear Safety Case & Discharge Authorisations	[REDACTED]	[REDACTED]
COMPANY INFORMATION	Ownership/Shareholding Financial Throughput Experience	[REDACTED]	[REDACTED]



PERFORMANCE INDICATORS

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- EXCELLENT:** shows a high degree of expertise, knowledge or competency. Highly acceptable, thoroughly comprehensive and little else desired.
-
- GOOD:** Indicates a satisfactory level of expertise or knowledge. Acceptable, comprehensive, generally does not require any corrective action or additional monitoring during the performance of the contract.
-
- FAIR:** A minimal acceptable level of expertise or knowledge. Requires improvement and/or additional monitoring during performance of the contract.
-
- POOR:** Below a minimal acceptable level. Requires considerable improvement. Indicates a low level of expertise, knowledge or competency. Requires rectification action prior to contract placement and additional monitoring during the performance of the contract.
-
- NON COMPLIANT:** Indicates a complete lack of capability to perform the work. Very unlikely that the contractor could rectify deficiencies or undertake the contract.
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