

An Analysis of the Effectiveness of Enemalta Corporation's Fuel Procurement

Report by the Auditor General

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List of Abbreviations

€ / EUR	Euro
\$ / USD	US Dollar
API	American Petroleum Institute
ASTM	American Society for Testing Materials
bbbl	Oil barrel
BOV	Bank of Valletta
BP	British Petroleum
BS	British Standards Institution
BSW	Bottom Sediment and Water
CBM	Central Bank of Malta
CCO	Chief Commercial Officer
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CFPP	Cold Filter Plugging Point
CO ₂	Carbon dioxide
CS	Case study
DERD	Directorate of Engine Research and Development
DoC	Department of Contracts
EN	European Standards
ENI	Ente Nazionale Idrocarburi
EU	European Union
FAME	Fatty acid methyl esters
Forex	Foreign exchange
FPC	Fuel Procurement Committee
HFT	Hot Filtration Test
HGO	Heating gasoil
HSBC	Hongkong and Shanghai Banking Corporation
IAS	International Accounting Standards
ICE	Intercontinental Exchange
IP	Institute of Petroleum
ISO	International Organisation for Standardisation
ITT	Invitation to tender
LASS	Luqa Airport Service Station
LM	Maltese Lira
kg/ltr	kilogram per litre

mg/ltr	milligrams per litre
MITA	Malta Information Technology Agency
MITC	Ministry for Infrastructure, Transport and Communications
MMT	methylcyclopentadienyl manganese tricarbonyl
MOBC	Mediterranean Oil Bunkering Corporation
MON	Motor Octane Number
MRA	Malta Resources Authority
MT	Metric tonnes
NAO	National Audit Office
NY	New York
OTC	Over-the-counter
ppm	parts per million
pS/m	picosiemens per metre
Q	Quarter
RMC	Risk Management Committee
RON	Research Octane Number
SOP	Standard Operating Procedure
VAT	Value Added Tax
WTI	West Texas Intermediate

Executive Summary

1. The purchase of fuel by Enemalta represents one of the Corporation's key business processes. During 2012, Enemalta's overall fuel procurement amounted to €578 million, accounting for 910,645 metric tonnes of assorted fuels imported to support and service various economic functions. The effectiveness of this process assumes critical importance and bears direct impact upon numerous avenues of Malta's socio-economic and political landscape.
2. It is against this contextual backdrop that the Honourable Leo Brincat (Parliamentary Sitting 373, dated 27 June 2011) indicated to the Auditor General the possibility of investigating the procurement of fuel undertaken by Enemalta Corporation throughout the 2008–2013 legislature.
3. The audit scope narrowly honed in on the fuel procurement process as executed by Enemalta Corporation. In this sense, the National Audit Office (NAO) focused on the procurement process as a whole, commencing at tendering stage, and subsequently proceeding to tender award, delivery and payment. Additionally, this audit also addressed Enemalta's hedging function, which is essentially carried out in parallel with the fuel procurement process, with the former intended to mitigate risks faced by the Corporation in attending to the latter process.
4. The aforementioned scope essentially frames the principal objective of this audit, which in effect relates to the determination of the effectiveness of fuel procurement undertaken by Enemalta Corporation. From this starting point emanate a number of subsidiary objectives critical in determining the overall effectiveness of fuel procurement undertaken by Enemalta Corporation, or otherwise. These subsidiary objectives are presented hereunder:

- a. Determining whether Enemalta's planning function ensures appropriate coordination of fuel shipments received;
- b. Reviewing processes and safeguards intended at ensuring that purchased fuel is accurately reconciled with fuel received by the Corporation, both in terms of quantity, as well as in terms of quality;
- c. Scrutiny of Enemalta's policy robustness, which subsequently relates to the assurance of transparency, accountability and overall good governance; and
- d. Analysis of the utilisation of alternative procurement mechanisms, which are hereby understood as referring to hedging.

Fuel Procurement under Review

- 5. NAO's review of Enemalta's fuel procurement function centred on the operations of the Fuel Procurement Committee (FPC), which was entrusted with the responsibility for the management of the fuel tendering process. This Committee was regulated by means of Enemalta's Fuel Procurement Policy, which also served to delineate the various stages constituting the procurement process.
- 6. Further to the above, NAO also reviewed Enemalta's standard operating procedures (SOP) thereby verifying whether the Corporation adhered to its established procedural framework. Finally, NAO analysed the various processes associated with the receipt of procured fuel, entailing quantity as well as quality-related verifications, among others, and leading up to the payment process.
- 7. Hereunder are a number of salient conclusions and recommendations emerging with respect to this analysis.

Conclusions

8. From an essentially strategic perspective, NAO's primary concern with respect to the operations of the FPC centres on the fact that no policy framework was in place during the period 2008 up to end 2010. Prior to the formulation of the Corporation's Fuel Procurement Policy in January 2011, Enemalta's fuel procurement function was effectively operating in a policy vacuum. The implications of such a shortcoming are, in NAO's opinion, immediately apparent, undermining the fundamental principles of good governance.
9. Such shortcomings in terms of good governance were brought to the fore in NAO's review of who the members of the said Committee were. Of concern to NAO, in this respect, were the instances of poor record-keeping, manifested by, what this Office considers to be, one of Enemalta's key strategic Committees. Once again, NAO considers this situation as indicative of the significant shortcomings in terms of the Corporation's adherence to the principles of good governance, accountability and transparency.
10. NAO noted that this situation persisted throughout the period 2008 up to May 2011, as the identification of members forming part of the FPC was thereafter rendered a straightforward endeavour through the appropriate methods of documenting such matters. This notable improvement in terms of record-keeping and documentation of decisions taken closely coincides with the commencement of this audit.
11. As stated above, NAO's concerns relating to the operations of the FPC intensify with respect to meetings held in 2008 and 2009. Corresponding FPC meeting minutes reviewed by NAO lacked the most rudimentary level of detail and bore no information relating to meeting discussions and decisions taken. Besides being handwritten and mostly undecipherable, these minutes also lacked a basic record of Committee members present. NAO fails to comprehend how decisions worth hundreds of millions of Euro could have been subject to this

abysmal level of record-keeping and documentation, in blatant violation of the principles of management, good governance, accountability and transparency.

12. In light of the above, NAO noted an element of improvement with respect to record-keeping practices and documentation-retention procedures employed by the Committee. Such improvements were implemented in a stage-based manner, with the first minor amelioration taking place from mid 2009 up to mid 2011. Despite the above termed improvement, weaknesses in terms of records kept, prevailed at this stage, as these minutes still lacked the necessary details accounting for the basis upon which decisions were taken, as well as difficulties in reconciling which Committee members were present during such meetings.
13. Real and tangible progress was subsequently registered from mid 2011 onwards, and this scenario, here defined as the second improvement to the Committee's modus operandi, represents a positive sense of progress that is hereby being acknowledged by this Office. NAO deems positive the much revised and improved quality of records and documents maintained in this respect, which clearly listed the Committee members in attendance, quotations received and decisions taken, among other notable areas of improvement.
14. The above-discussed implications associated with the systems of poor record-keeping and documentation that characterise and pervade the operations of the FPC prior to May 2011 rendered it impossible for the NAO to effectively audit the decision-making process employed by the Committee in adjudicated tender bids received and evaluated. The implications of such severe limitations in the availability of records documenting the FPC's decision-making process are brought to the fore in those instances when the Committee awarded tenders to bidders who (based on severely limited information at the NAO's disposal) did not submit the most favourable offer. The lack of any information justifying such decisions render the proper audit of this process an impossible

task, thereby fundamentally undermining the principles of good governance, accountability and transparency that are meant to characterise the operations of such a Committee.

15. This second analytic perspective adopted with respect to the tender process, following NAO's above-documented analysis of the operations of the FPC, centres on the Committee's adherence to tender-related procedures outlined in the Fuel Procurement Policy. At a general level of analysis, NAO considers adherence to the Policy as satisfactory, and an overall record of progress was registered with respect to the Committee's pre-policy modus operandi.
16. NAO's concern with regard to the first stage of the tender process, that is, the invitation to tender stage, is of a minor nature, once again relating to the retention of documents. With respect to the second stage of the tender process, that is, the tender submission phase, NAO's concern centres on the activation of the FPC's generic mail account. This Office's review of data supplied by the Malta Information Technology Agency (MITA) indicated that on four instances out of a possible seven, the Committee failed to adhere to the Fuel Procurement Policy guidelines on this particular stage of the tender process, which stipulated the timely reset of the generic mail account password prior to the convening of FPC meetings. Under the assumption that MITA's data is accurate and complete, NAO's concern in this regard relates to the fact that such failures in terms of adherence to the aforementioned Policy raises doubts as to the integrity of submitted bids.
17. NAO considers the current system in place, involving the use of a generic mail account, as one subject to numerous inherent flaws and risks. Apart from risks indicated by MITA, which include failure in delivery due to email bids being tagged as spam and automatic deletions of emails due to their quarantine status, classified as such on the basis of the type of file attached, NAO noted other more pertinent concerns. These risks essentially relate to possible instances where access to the generic mail account may be inappropriately

requested and subsequently granted. The risk associated with change of password requests being made in advance of FPC meetings is self-evident, with access to sensitive information submitted by bidding parties possibly jeopardised and inappropriately utilised to the detriment of Enemalta Corporation.

18. As indicated in the preceding text, integral components of the tender evaluation process were the retention of documentation and recording of decision-making processes, which were subject to considerable improvement following revisions instituted in May 2011. However, NAO considers certain aspects of this improved process as warranting further review and possible amelioration. Central to this concern is the latter part of the process, which essentially entails the negotiation of submitted tender bids, conducted over the phone. The lack in terms of systems that allow for the recording of such conversations is an area of significant concern to NAO, as the lack of verifiable data in this respect draws attention towards possible weaknesses in terms of accountability, transparency and good governance.
19. NAO is somewhat concerned with the approach adopted by the Enemalta FPC in its decision not to render public its concluded tender awards. NAO is of the considered opinion that the publication of such information would serve to ameliorate concerns relating to the transparency of Enemalta's fuel procurement, which, given the entity's public ownership, trumps concerns relating to the sensitivity of commercial information.
20. NAO commends the system of SOPs as published by the Corporation's Finance Department in October 2011. This Office opines that these procedures positively contribute to the assurance of a robust quality management system geared in attending to the coordination of functions with respect to the Electricity and Petroleum Divisions, leading to the eventual delivery of fuel. NAO considers the depth of detail and comprehensiveness that characterises the Finance Department's SOPs Manual as a clear instance of good practice

and an overall positive contributor to ensuring good governance within Enemalta.

21. NAO is somewhat concerned by the fact that stock movements, including consumption and supply, were recorded by means of a simple spreadsheet, which in this Office's opinion, lacks the necessary fundamental safeguards and controls, key in ensuring the integrity of data. Specific concerns emerging in this respect relate to poor document/version control, notably accentuated by the spreadsheet's multiple users, as well as the absence of an effective audit trail.
22. This Office did not identify any areas of significant concern with respect to adherence to procedural consistency. NAO's analysis of documentation in this respect indicated that records kept were, in their majority, complete, barring exceptional and minor circumstances. The audit team noted that record-keeping in this respect was of a good standard and documents were well organised according to their specific vessel file.
23. One notable shortcoming identified by this Office was the lack of necessary documentation detailing the relevant apportionment of the Bill of Lading, when circumstances so warranted. NAO considers the retention of such an official record, documenting the portion of stock received by Enemalta, as well as the remaining portion corresponding to third parties received through this same shipment, as a critically important aspect of appropriate record-keeping with respect to fuel receipts.
24. NAO reckons that Enemalta's follow-up of instances of major quantity discrepancies has been consistent, raising the necessary claims when variations exceeded the 0.5 per cent threshold, and therefore, this Office bears no concern in this regard. Explanations put forward by the Corporation with respect to the repeated occurrence of major quantity discrepancies, vis-à-vis

avgas, appear to be plausible and justifiable, and NAO's concern in this respect is once again mitigated by the fact that losses were in fact claimed.

25. Further to the review of quantity-related considerations, NAO also analysed quality-related issues emanating from the shipment files reviewed. The first point of significant concern drawn by NAO in this respect relates to the two shipment files that bore no quality certification records. NAO's contention in this regard is self-evident, with key information, represented by the relevant quality certification, absent in the quality control process. In light of such absent documentation, NAO was unable to determine on what grounds the Corporation accepted such shipments.
26. NAO's concerns relating to the appointment of independent inspectors are twofold, effectively conditioned by other shortcomings emerging with respect to Enemalta's management of its fuel quality control function. The first relates to the fact that no documentation relating to the appointment and confirmation of inspectors was retrieved in the sample vessel files reviewed. This Office considers such information as essential in the Corporation's subsequent analysis and review of inspectors' performance, particularly in cases where the quality certification process was not of the expected standard.
27. Second, in light of the somewhat anomalous quality certification results presented in a number of cases, NAO has an element of doubt with respect to the integrity of the appointment of independent inspectors by the Corporation's third-party suppliers. Here, specific reference is made to instances when the expense at load port was to be borne by the supplier, and therefore, it was within the supplier's right to nominate inspectors without consulting the Corporation.
28. With respect to the quality control process, and in specific reference to instances of incongruence between employed standards and test methods, albeit addressing the same parameter, NAO is somewhat concerned with the

absence of any documentation indicating equivalency checks. The fact that the parameter was measured against a recognised standard is, in Enemalta's favour, a measure of assurance. However, from a quality control point of view, a note should have been placed in the relevant files, stating whether the value of the parameter was acceptable in terms of the specifications, even though the parameter had been measured according to a different standard.

29. On the other hand, other instances of incongruence between test methods established as per contractual specifications, and those presented in the various analysis reports reviewed by this Office, were not in fact addressing the same parameter. It is in this context that NAO's concern intensifies, as such occurrences are clearly indicative of a system fraught with gaps and weaknesses in terms of quality control. Such shortcomings are immediately evident in the case of supplier-side errors (where various properties were erroneously tested for, instead of those originally stipulated in the contract specifications), with the implications of such quality control failings being that Enemalta was not vetting the submitted Quality Certificates. The absence of any queries regarding clear instances of incongruence in terms of quality control leads NAO to this conclusion.
30. Furthermore, a number of other instances of incongruence were not supplier driven, but instead, originated from Enemalta's establishment of contractual specifications. Here NAO's concern gravitates around the fact that no queries were raised by suppliers, who nonetheless proceeded in administering other test methods to those erroneously specified in Enemalta's contract specifications. This Office contends that such instances were indicative of the Corporation's shortcomings with respect to the establishment of quality-related contractual specifications.
31. Another issue of significant concern to NAO, with respect to quality analysis, related to the frequent occurrence of missing test results, that is, when actual testing of all parameters stipulated as per contractual specifications was not

carried out. NAO opines that audit evidence analysed in this regard indicates that the independently appointed laboratories were ignoring the specifications established as per contractual terms, and were simply carrying out their own standard test procedures.

32. Once again, NAO's concern with regard to borderline and out-of-spec results raises numerous important questions. The first, which has already been indicated in the preceding text, relates to whether Enemalta is in effect checking the Quality Certificates it receives, and subsequently formally recording such verifications. Secondly, NAO is also concerned with whether Enemalta is instituting the necessary corrective action when missing property test results are received, and what corrective action is taken in instances of out-of-spec results. Furthermore, NAO considers it imperative to support quality control processes and corresponding procedures for redress with an effective policy, which clearly establishes requirements for testing and inspection at port of loading and port of discharge.

33. NAO's principal concern emerging in relation to the transfer of diesel centres on the poor contract management practices exhibited by Enemalta. Such shortcomings were rendered amply evident through the series of contractual extensions directly conceded to Island Bunker Oils Ltd, which at best, may be considered as representing an affront to the principles of good governance. This already highly tenuous situation is further exacerbated by the considerable increase in the rate payable to the contractor. The revision in rate, irrespective of excuses regarding the cleansing of barges put forward by Enemalta on behalf of Island Bunker Oils Ltd is, in NAO's view, unacceptable justification for bypassing the most fundamental principles of good practice with respect to procurement. This conclusion can be readily applied to the period 2008 up to mid 2011, at which point the Corporation took appropriate action in issuing the relevant call for tenders.

34. Other explanations put forward by Enemalta, such as the imminent privatisation and lack of materiality, were also deemed weak and unacceptable justifications by NAO. In the case of the latter factor, that is, lack of materiality, the sixteen-month period reviewed by this Office resulted in a net expense of approximately €820,000 which, transposed on a monthly basis, results in an incurred cost of circa €51,000 per month, without Enemalta considering it necessary to issue a call for tender from 2008 to mid 2011.
35. Similar concern emerges with respect to the imminent privatisation of the Petroleum Division, which was first documented in the Corporation's 2006 Annual Report, and deemed imminent ever since insofar as contract management is concerned. Aggravating this situation is the fact that contractual safeguards and provisions to this effect were already catered for by the original barge transfer contract.
36. NAO's concern with regard to diesel transfers crystallises around the fact that no documentation, indicating how barge services were being sourced, was provided to this Office with respect to two considerably lengthy stretches of time. In NAO's view, Enemalta's failure to provide the relevant contractual extensions, if any were in fact drawn, is a clear symptom of a poorly managed function, which was ultimately to the Corporation's detriment.
37. Given the overall setup of the FPC, which is evidently geared towards the purchase of the vast majority of Enemalta's fuel requirements, NAO considers it appropriate to review the possibility of incorporating the purchase of avgas under its remit.
38. No concerns emerge with regard to NAO's review of the payment process undertaken by Enemalta in relation to the sampled case studies. This aspect of the fuel procurement process is, in NAO's opinion, well managed and emerges as one of the most positive elements of this audit review. Full reconciliation in terms of fuel quantities received, unit price establishment, and verification of

invoice accuracy vis-à-vis its corresponding proof of payment certification, among others, are all considered as valid indicators of good practice registered by the Corporation in this respect.

Recommendations

39. Enemalta should strive to ensure that the FPC observes the highest standards insofar as record-keeping and documentation of its various decision-making processes are concerned. To this end, NAO recommends that updated policy frameworks and relevant standard operational procedures be devised and implemented where gaps in the Corporation's governance structures and systems emerge.
40. NAO commends the notable improvements registered with respect to the FPC's record-keeping practices, particularly as evidenced in meeting minutes corresponding to the period May 2011 onwards. This Office opines that no effort should be spared at ensuring that such progress is maintained and further improved upon. NAO considers the recording and documentation of more detailed workings utilised in the comparative analysis undertaken by the Committee in its comparison and contrasting of submitted tender bids as one such possible avenue of further improvement. Such efforts would ensure that the principles of good governance, accountability and transparency are adhered to.
41. NAO commends Enemalta's implementation and application of the Fuel Procurement Policy, and considers this measure to have had an overall positive impact on the fuel procurement process. Nonetheless, the FPC should not rest on its laurels, and should instead, strive to ensure sustained adherence to this policy, while simultaneously exploring innovative avenues for further improvement.

42. In the context of procedures in place relating to the activation of the FPC's generic mail account, NAO recommends the strictest level of adherence to mechanisms established as per Fuel Procurement Policy. This Office considers such safeguards as an essential assurance ascertaining that the integrity of submitted tender bids has not been breached, and therefore, compliance with Enemalta's appropriately established procedures is considered to be of paramount importance.
43. With respect to tender evaluation issues, NAO is of the opinion that the FPC should consider exploring the possibility of investing in a specific and tailor-made electronic bidding system, as was in fact proposed by MITA. Such a purposely commissioned system may be designed in a manner so as to counter the risks posed by the presently in use mechanism employed in the receipt and evaluation of submitted tender bids.
44. NAO strongly recommends the recording of telephone conversations between FPC members and tendering parties in view of negotiating submitted tender bids. Such recordings should comprehensively complement the already in place detailed minute taking of all important decisions and actions taken by the FPC, which this Office considers to be a vitally important aspect in ensuring appropriate and necessary levels of accountability, transparency and overall good governance.
45. Finally, NAO recommends that Enemalta gives serious consideration to the publication of its tender results, which in this Office's view would act as a further safeguard with respect to the integrity and transparency of the tender process.
46. NAO encourages Enemalta to maintain its system of SOPs employed, ensuring that such procedures are continuously updated in line with evolving work practices. Moreover, NAO is of the considered opinion that Enemalta should

further promote the standardisation of other aspects of its operations through similarly documented SOPs manuals.

47. NAO recommends that Enemalta should strive to record changes relating to planned and scheduled deliveries of its fuel consignments in a more formal manner. The documentation of changes concerning the quantity of fuel to be delivered, delays in delivery and pricing are, in NAO's opinion, essential aspects of the logistical coordination of fuel shipment delivery, and certainly merit that formal records of such adjustments be retained in file.
48. An additional positive aspect emerging from NAO's analysis of Enemalta's adherence to established procedures was the good standard of record-keeping and documentation maintained by the Corporation with respect to the vessel files analysed. It is in this regard that NAO commends such a good practice and encourages its sustained upkeep. Similarly positive was Enemalta's address of major quantity-related discrepancies, necessitating the raising of insurance claims. Here too, NAO commends Enemalta's consistent recourse to corrective action.
49. NAO recommends that Enemalta takes the necessary measures with respect to the recording of apportioned fuel stock in corresponding vessel files, when circumstances so warrant. This Office considers the inclusion of such documents as an integral measure in ensuring that information retained on file is complete, and therefore, assuring and contributing to the sound management of the overall procurement process.
50. With reference to Enemalta's quality control processes, NAO considers the most fundamental element of assurance in this respect to be the receipt and retention of corresponding Quality Certificates. In this context, NAO strongly recommends that Enemalta spares no effort in ensuring that quality certification is duly provided by its various third-party suppliers.

51. In light of overall shortcomings noted by NAO with respect to Enemalta's fuel quality control function, this Office recommends that more comprehensive documentation relating to the appointment and confirmation of independent inspectors be recorded on file. Such records may aid Enemalta in the management of incidents relating to quality control non-conformities.
52. Further to the above, it is NAO's considered opinion that Enemalta should strive to be involved in the appointment of independent inspectors tasked with the quality certification of purchased fuel, particularly in instances when previous Quality Certificates submitted by supplier appointed inspectors gave rise to notable doubt as to the integrity of the quality control process. NAO is aware that involvement in the appointment of independent inspectors implies additional costs being incurred by the Corporation, however, this Office is of the opinion that such costs are more than offset if this involvement contributes to the safeguarding of the reliability and validity of quality control mechanisms.
53. With reference to the review of submitted Quality Certificates, NAO recommends that equivalency checks should be formally recorded in the vessel file, duly signed and stamped by responsible officials, thereby ensuring a more robust and complete quality control process. To this end, NAO recommends that Enemalta introduce a simple checklist system. Such a system would ensure formalisation of the quality control process and rapidly indicate cases of non-adherence to established test methods and standards, while duly affording the possibility of providing relevant justifications when equivalence considerations so warrant.
54. In addition, NAO recommends that instances of incongruence between test methods established as per contractual specifications, and those presented in the various Quality Certificates reviewed should be appropriately addressed. In cases where such shortcomings emanate from the poor drafting of quality-related contractual specifications by Enemalta, systems intended at ensuring the desired level of integrity should be introduced. A second level of review

and scrutiny should render immediately apparent the various instances of quality control related oversight.

55. Further to the above, NAO considers it essential for Enemalta to review and improve its vetting of quality control certificates submitted by suppliers following their consignment of fuel purchases. Cases of blatant incongruence that passed through Enemalta's quality control function undetected are indicative of a system that is somewhat ineffective in identifying parameters that merit further review and queries to be raised. Parallels may be similarly drawn to instances when Quality Certificates featured missing test results, which subsequently raises concern as to whether the independently appointed laboratories were ignoring the specifications established as per contractual terms. NAO's recommendation in light of such circumstances is straightforward, strongly urging Enemalta to more attentively vet quality-related submissions, raising clarifications where deemed necessary and instigating follow-up actions when required.
56. In line with other recommendations already put forward relating to Enemalta's documentation and retention of information, NAO encourages the Corporation to review its filing and registry functions. Perhaps the most pertinent application of this recommendation is in the context of the two considerably lengthy stretches of time, corresponding to which Enemalta failed to provide relevant contractual documentation outlining how barge transfer services were in effect sourced. To this end, NAO strongly recommends that relevant documentation, detailing Enemalta's management of this function, be appropriately recorded and retained.
57. NAO urges Enemalta to ensure that contract management shortcomings with respect to diesel barge transfers, particularly as experienced from 2008 up to mid 2011 are not repeated. Enemalta's failure to ensure adherence to the principles of good governance, and its ineffective management with respect to the sourcing of barge transfer services throughout the aforementioned period

is of grave concern. It is in this context that NAO opines that the management of this procurement process would more appropriately fit under the responsibility of the FPC, and therefore recommends the Committee's absorption of this function.

58. NAO commends the good practices employed by Enemalta with regard to the payment stage of the fuel procurement process, and encourages the Corporation to maintain such standards.
59. Finally, NAO is of the opinion that Enemalta's internal reporting functions can be further improved through the introduction of additional safeguards with respect to overall data integrity. In addition, NAO considers the implementation of information management protocols, possibly through the roll-out of a customised IT system, as conducive towards the more effective management of key business functions.

Understanding Derivatives

60. The indicative terms of reference upon which this audit is based refer to the utilisation of alternative procurement mechanisms, hereby understood as alluding to hedging. At a basic level of understanding, hedging is the process of removing undesirable risks. The fundamental principle of hedging is to match two opposing sensitivities in such a way that value changes on both sides of the created position cancel each other out. In other words, what is determined to represent unacceptable exposure to risk, is matched to the hedging instrument in such a way that the two sensitivities set off.
61. Enemalta Corporation undertakes hedging with respect to its fuel and foreign currency (forex) requirements. In the latter case, the Corporation's forex hedging requirement emerges from the fact that fuel is internationally traded in USD, whereas its cash collection is received in the local currency, that is, in

Euro. On the other hand, Enemalta's fuel hedging is carried out on crude oil, while in fact purchasing other types of fuel products, such as fuel oil and gasoil. The rationale behind such an arrangement relates to the fact that the fuel market is not considered to be as liquid as the crude oil market. The Risk Management Committee (RMC) manages hedging undertaken by Enemalta Corporation in this respect.

Hedging Undertaken by Enemalta Corporation

Conclusions

62. NAO's primary concern with respect to Enemalta's hedging policy essentially relates to the absence of an appropriate policy framework against which the Corporation may subsequently set its strategic orientation. NAO considers the guidelines provided in the three-page document entitled 'RMC Procedures' as a procedure-based brief, rather than an actual policy document, as was in fact claimed by Enemalta. Integral aspects appear to be absent from the Corporation's hedging policy, hence its inadequateness in NAO's views.

63. Although the RMC Procedures do make specific reference to the members forming part of this Committee, NAO was not provided with the formal description of roles that each member fulfils within the RMC. NAO is somewhat concerned at Enemalta's response regarding the collective roles and responsibilities assumed by the RMC members. Furthermore, besides the issue of ambiguity relating to the precise roles fulfilled by RMC members, the only documentation provided with respect to the CBM Representative was an expired letter of appointment corresponding to the period 25 April 2006 to 25 April 2007. In sum, NAO's predominant concern in this regard centres around the lack of accountability with respect to decisions and actions taken by the RMC in its management of Enemalta's hedging function.

64. NAO noted that the Corporation's hedging policy and its hedging strategies are in effect one and the same. In truth, such a state of affairs is not ideal, and NAO considers the overlap between hedging policy and hedging strategy as counterproductive in terms of the Corporation's governance structures.
65. In effect, NAO noted inconsistencies in eliciting who was ultimately responsible for the setting of Enemalta's hedging policy and strategy, with the apparent overlap between the Ministry's and Corporation's input on the matters obfuscating an already complex state of affairs. NAO's concern in this respect further intensifies with regard to instances when Ministerial interventions directly impacted on the setting of the RMC's hedging strategies. NAO considers such interventions as undue interference by the then Minister responsible for Enemalta, particularly when stating that he was to assume responsibility for any variances between the actual market price and hedged swap price for 2010. This, in NAO's opinion, goes against the fundamental principles of good governance.
66. In NAO's opinion, Enemalta's adopted hedging strategy relating to the defence of the set tariff (more precisely, the key indicators which feed into the tariff) is a contentious position. This Office supports the notion that working at securing hedges below the established tariff effectively constitutes working towards a false target. NAO considers it the ultimate responsibility of the RMC to seek to profit from all market scenarios, irrespective of their relative relation to the established tariff. Prematurely locking in to hedging arrangements, merely on the basis of concluded deals being below the set tariff, may represent a less than ideal hedging strategy being employed by the RMC. Testament to this are the hedging-related results corresponding to 2010, in which case locking in prices under the established tariff resulted in losses in eight out of twelve months, since the crude oil average spot price was below the locked-in hedge price.

67. NAO's main concern with respect to the scheduled frequency of RMC meetings relates to the prolonged period of inactivity registered in 2009. The implications of such inactivity are immediately apparent, with various opportunities of favourable market conditions not capitalised upon, and other circumstances characterised by their negative implication on Enemalta not reacted to. Resultantly, in NAO's opinion, Enemalta deviates from its risk-averse approach, given its exposure to spot purchases heavily conditioned by market fluctuations, and under such a scenario, can be classified as a risk-taker in its approach.
68. The relation of the RMC's prolonged inactivity to matters of governance and accountability is fundamental, essentially revolving around the issue of who was ultimately responsible for not convening such meetings. No documentation, meeting minute, email or record was provided to the NAO justifying the ten-month lull in RMC activity, which in this Office's view, constitutes a significant shortcoming on behalf of the Corporation's management.
69. NAO's concern further intensifies with respect to a number of forex hedging transactions that were undertaken by Enemalta during this ten-month period of RMC inactivity. Of paramount concern to NAO in this regard is the fact that such transactions were undertaken without any clear indication provided as to who was responsible for authorising such deals, given the Committee's evident inactivity, which subsequently raises notable concern with respect to the RMC's overall adherence to the principles of good governance and accountability.
70. NAO's primary concern with respect to the RMC's governance structure, as well as the mechanisms intended at ensuring its accountability, centres on the absence of key documentation, particularly so in cases of discrepancies arising between hedged volumes and hedged prices vis-à-vis the Committee's established targets. The absence of appropriately maintained records, most

notably the case with the RMC minutes, renders the process of identifying who was involved in particular decisions, and on what basis such decisions were made, an unachievable and impossible task. This Office's concerns, regarding inadequate record-keeping, further intensify when one considers the materiality of hedging decisions taken by the RMC, which in turn accentuates the importance of rigorous and robust recording of Committee proceedings.

71. An equally important issue of concern identified by NAO with respect to governance and accountability relates to instances when the RMC was informed of hedging-related decisions as a *fait accompli*. By means of example, reference is hereby made to the RMC meeting dated 29 July 2008, in which case, and according to information made available to this Office, the then Chief Financial Officer (CFO) concluded deals without the involvement of the RMC. Such a scenario bears a twofold impact. The first is the undermining of the functions and responsibilities of the RMC, while the second relates to the fact that such hedging deals were not regulated by an established hedging policy. The Office opines that operating in the detached manner exemplified above poses considerable risk to the system of checks and balances in effect provided by the existence of the Committee and its corresponding policy framework.
72. NAO acknowledges the importance of ensuring an adequate balance between adopting a flexible approach towards hedging, responsive to possibly volatile market conditions, versus adherence to the principles of good governance and accountability. This Office is aware of the fact that a cumbersome management system may shackle the RMC's effectiveness, and a slow reaction to changing market circumstances may quickly render favourable situations suddenly unfavourable. However, the Office considers it imperative to frame such flexibility within the contextual parameters (including price and volume considerations) set out by the Corporation's hedging policy.
73. Notwithstanding all of the above, certain instances of good practice exhibited by the RMC do emerge. NAO noted an improvement in terms of the overall

internal coordination of the RMC, particularly so in 2010 and 2011, in which case, the Committee demonstrates considerable improvement in terms of correspondence relating to hedging activities being circulated among all of its members. Another evident instance of good practice relates to the follow-up decisions dated August 2010, which were comprehensively detailed with respect to the factors conditioning deviation from originally planned targets, utilised the Committee's forex consultant's expertise, and were subject to scrutiny by all of the RMC members given their due involvement.

74. NAO has three main concerns regarding the various changes in strategy implemented by the RMC with respect to the hedging undertaken by the Corporation. First, NAO's concern centres on the lack of appropriate documentation recorded and retained by the RMC with respect to two shifts in strategy advocated by the same Committee, that is, the termination of payment of premiums, as well as the introduction of swaps to complement the use of collars. In this regard, NAO's focus specifically centres on the fact that no detailed calculations, analysis or estimates were provided by Enemalta, which would notionally determine how the application of these hedging-related measures could have impacted upon the Corporation's hedging activity.
75. NAO's second concern in this regard emanates from a course of action that this Office initially considered as representing good practice. The RMC's decision to hedge using swaps instead of collars was supported with detailed presentations outlining different scenarios under the collars and swaps structures, and it is in this context that this Office considered such preparatory work as sufficient proof that the Corporation had in fact carried out the necessary scenario planning. Yet, RMC's sound planning, exemplified in the Committee meetings held throughout October 2009, was quickly undermined early in November 2009. Here, the RMC was directed to close hedging deals below the key tariff driver of \$81.80/bbl, effectively rendering futile all of the well-devised scenarios evaluated by the Committee.

76. The third concern arising in this respect relates to the restructuring of the Corporation's hedged position, which was a situation that emerged on two separate instances. NAO considered the realignment of the Corporation's collars closer to the market scenario at these particular points in time as constituting sensible judgement and a sound business strategy, most notably in view of the intended mitigation of upside and downside risk respectively associated with each of these circumstances. However, the issue of inadequate and poor documentation resurfaces, with NAO's review of the corresponding RMC meeting minutes lacking explanations and reproductions of the calculations and computations deemed necessary in carrying out such a restructuring exercise.
77. In addition to the above three concerns, clear instances of good practice emerge with respect to forex hedging-related strategic revisions. NAO noted that such instances were appropriately documented, precisely delineating the intended course of action that was to be pursued by the Committee, and coupled with corresponding justifications supporting the proposed corrective measures.
78. The role and relevance of independent consultants appended to the RMC to aid the Committee in the decision-making processes associated with forex and fuel hedging was deemed to be of central importance by NAO. With respect to forex consultancy, this function remained largely consistent in nature throughout the four-year audit period under scrutiny. On the other hand, the fuel consultancy role was subject to a shift in approach instigated by the RMC, effectively transitioning from a system characterised by one fixed consultant forming part of all Committee meetings in 2008, to a rotational approach involving the sourcing of input from numerous consultants during 2010 and 2011. NAO considers it pertinent to note that all of the above-described changes must be contextualised against the fact that such consultants did not have a clearly defined role in terms of their respective engagements with the RMC, which is a point already emphasised by this Office in the preceding text.

79. NAO's overall impression of the level of technical input feeding into this Committee with regard to fuel hedging is one best termed as inadequate. In NAO's opinion, the source of this perceived weakness is the rotational system employed by the RMC with respect to its fuel consultants. This Office opines that the advice provided by the consultants engaged by the RMC on an ad hoc and rotational basis may be biased, possibly influenced by their respective organisation's own interests. Notwithstanding the above assertions, NAO acknowledges Enemalta's awareness of the potential subjective bias that forms an intrinsic element of the respective consultants' input, and is cognisant of the fact that the rotational system itself was designed in such a manner so as to offset subjective biases against one another. Nonetheless, it is NAO's considered opinion that the present system utilised in sourcing fuel hedging-related technical input for the RMC's perusal remains somewhat limited and not to the expected standard given the materiality of crude oil hedges.
80. Another salient point emerging with respect to the relationship between the RMC and its consultants relates to the former's adherence, or otherwise, with advice provided by the latter. NAO's concern in this regard centres on instances of disagreement between the two parties on what course of action would best accomplish the RMC's set objectives. While fully acknowledging the Committee's remit to act independently of its consultant's advice, NAO's point of contention specifically relates to the fact that no explanations or counterarguments were provided by the RMC on a number of occasions when the Committee chose to disregard its consultants' expert advice. A case in point, exemplifying NAO's concern, was when fuel prices reached record lows towards the end of 2008, and despite advice to this effect being provided by the Committee's fuel consultant, no hedging action was taken.
81. In sum, NAO is of the considered opinion that, in the vast majority of cases relating to currency hedging advice provided by the RMC's forex consultant, the Committee actively embraced recommendations put forward by the CBM representative. This Office considers the advice provided by the RMC's forex

consultant to have served an integral and essentially important role in aiding the Committee's attainment of its strategic and operational goals. On the other hand, with regard to advice provided by the fuel consultant, NAO's audit opinion is somewhat limited by the fact that this specifically designated oil market hedging expert only formed part of the RMC in 2008, and therefore an objective measure of performance was not entirely possible.

82. Finally, attention is directed towards other instances when the RMC failed to capitalise on favourable market conditions, with specific reference hereby directed towards the RMC meeting dated 29 July 2008 insofar as forex hedging is concerned, and the RMC meeting dated 18 November 2008 in relation to crude oil hedging. NAO's contention in this regard is with respect to the rationale employed by the RMC in deciding not to hedge, despite the near ideal market conditions, and further accentuated when seen in light of the respective recommendations put forward by its forex and fuel consultants. In addition, NAO reiterates an earlier-made point relating to the fact that counterarguments justifying the chosen course of action, and why the RMC's course of action was considered to be more favourable than that originally recommended by its expert consultants, were conspicuously absent from reviewed RMC minutes and related documentation. In NAO's view, such documentation, supporting the alternative course of action considered more appropriate by the Committee would conceptually be considered essential in arriving at an informed decision, which ultimately led to no hedging activity being concluded by the RMC.
83. In addition to the above issues, NAO's main concern with respect to hedge planning emanates from the scenario recorded in the RMC meetings held towards the end of 2008, which then further developed during 2009. NAO emphasises the poor performance of the RMC with respect to planning towards the end of 2008. This situation was accentuated by two factors, the first being the Committee's limited hedged cover of 48 per cent for 2009, while the second relates to the fact that the fuel consultant had indicated that

market prices had fallen sharply. NAO opines that the gravity of this issue is rendered all the more significant when contextualised against the fact that the RMC subsequently failed to meet for a period of ten months. While this in itself is a clear instance of poor governance, NAO finds great difficulty in reconciling how the Committee undertook in excess of \$70 million worth of forex hedges in this same ten-month period of RMC inactivity.

84. NAO's main concern emerging from its analysis of hedging agreements relates to quotations received. This Office considers the limited information provided in this respect as poor evidence of the actual quotations sourced by the RMC. With regard to crude oil hedging, quotations that were provided narrowly and exclusively corresponded to Committee activity registered in 2008, with no evidence put forward in relation to the other years under audit review. In its review of the limited information made available by Enemalta in this respect, NAO noted that the Corporation did not employ a systematic approach in its endeavours at sourcing quotations from investment banks/oil companies. NAO's concern further intensifies with regard to forex hedging, in which case no quotations were made available by the Corporation for this Office's review.

85. NAO is of the considered opinion that Enemalta Corporation does not have the required system in place to record the quotations requested, key in assessing prices provided, and accounting for the rationale upon which the final decision to hedge is based. In addition, since there is no structured system for the evaluation of quotes submitted by the Corporation's diverse suppliers, hedging deals are resultantly not concluded on the basis of established criteria, which would at a conceptual and notional level provide the Corporation with the necessary explanations for selecting one particular hedge agreement over another. Finally, NAO opines that the lack of an appropriately managed and systematic process with respect to hedging deals on crude oil and forex may hinder transparency as regards this critical function.

86. NAO's main concern with respect to Enemalta's hedge coverage is twofold. Barring 2008, when the Corporation's hedged volume percentage was adequate and well-aligned with its requirements, the years 2009, 2010 and 2011, provide a somewhat contrasting scenario. This Office's first concern in this respect relates to instances when the Corporation had a low hedge coverage, most notably in 2009, yet also the case in 2011. NAO considers such periods as inconsistent with Enemalta's stated risk-averse approach towards hedging, leaving the Corporation exposed to price surges in the crude oil market.
87. The second concern emerging in this regard relates to 2010, in which case Enemalta was effectively over-hedged. Interestingly, the Corporation claimed that its hedge coverage fully addressed its crude oil requirements in their entirety, and to this effect, it was instructed to exclude this collar structure from the tariff computation, primarily on the basis that it was expected to yield a neutral settlement. However, following inclusion of the zero cost collar previously unaccounted for in Enemalta's expected exposure database, this position changed to one that was, in effect, over-hedged. Again, NAO's concern in this respect is that the Corporation's over-hedging of its requirements bears no consistency with its stated risk-averse approach.
88. NAO's primary concern with regard to forex exposure relates to shortcomings identified in relation to the completeness and organisation of data. Various examples of such weaknesses emerged in NAO's analysis of data, which included the employment of different methodologies in seeking to establish the same result, ambiguous terminology such as the 'actual/estimate exposure', as well as an apparent lack of consistency with respect to which products were to be settled by means of forward contracts undertaken.
89. Further to the above, NAO's main concern with respect to forex exposure revolves around the variations arising between the hedged volume percentage with respect to actual/estimate exposure in USD, and the hedged volume

percentage with respect to oil purchased in Euro terms (as sourced from the Corporation's various Annual Reports). Although NAO understands that small variations may arise, the significant discrepancies that emerged in view of this analysis are of great concern. Given the aforementioned discrepancies, it was not possible for NAO to arrive at a definite audit opinion with respect to the adequacy of the Corporation's forex hedged coverage. NAO considers the above-described discrepancies and variations as possibly linked to gaps in coordination between the Corporation's fuel procurement arm and its hedging function.

90. Another concern with respect to forex hedging contracts centres on the discrepancies noted between the forward contracts provided as per records sheet and those recorded as per exposure sheet. NAO noted that these two sources of data should have reconciled, and not resulted in the significant discrepancies identified by this Office. Parallels may be drawn to concerns already discussed in clause 88, with NAO noting evident shortcomings with respect to the accuracy of retained data.
91. In sum of all of the above, Enemalta's crude oil hedging activity with respect to the period 2008 up to 2011 resulted in a net gain of approximately €744,000, while corresponding forex hedging activity similarly resulted in a gain of approximately €18.6 million.

Recommendations

92. In line with conclusions drawn by this Office regarding the inadequacy of Enemalta's hedging policy, NAO is of the considered opinion that a comprehensive policy governing hedging at a Corporation such as Enemalta should include, among others, the following components:

- a. A framework governing the regulation of meetings of the RMC along with an operating mechanism that is to come into effect during periods of inactivity;
 - b. Mechanisms intended at ensuring appropriate levels of governance and accountability, while simultaneously providing the necessary levels of flexibility with respect to hedging manoeuvres;
 - c. A mechanism delineating levels of tolerable risk, which would effectively establish what variations (between hedging targets set and market fluctuations) are considered acceptable and others that trigger corresponding corrective measures, in effect indicating the Corporation's risk appetite;
 - d. Establishment of the range of hedging instruments available for utilisation by the RMC, which also reflects Enemalta's risk appetite; and
 - e. The introduction of monitoring and feedback mechanisms that ultimately loop back to the RMC, particularly relevant in instances when further developments arise with respect to established hedging targets.
93. The setting of Enemalta's hedging policy and hedging strategies are, in NAO's opinion, two distinct matters. In NAO's view, a sound hedging policy should set the parameters within which the RMC subsequently sets its strategic goals and orientation. While the coordination of such a policy should undoubtedly involve Government and Enemalta, the setting of hedging strategies should fall under the responsibility of the RMC. In this sense, the RMC's hedging strategies should outline how plans to achieve established targets may be attained by operating within the boundaries set out by the previously referred policy.
94. As outlined earlier, Ministerial coordination is an important aspect that should be considered in the setting of the Corporation's hedging policy; however, intervention at the strategic level is unwarranted and should be avoided. NAO considers the responsibility for the setting of the hedging strategy to fall within the exclusive remit of the RMC, and therefore recommends that such a

situation be reflected through appropriate documentation in the Corporation's hedging policy.

95. The indecisiveness noted by NAO with respect to the Corporation's defence of the set tariff (more precisely, the key indicators which feed into the tariff), as opposed to opting for market optimisation, directly impacted upon Enemalta's hedging strategy. Furthermore, failure in adhering to one strategic target resulted in an approach towards hedging characterised by its lack of consistency and clarity of focus. Hence, NAO opines that Enemalta should base its hedging strategies on market factors, bearing in mind the Corporation's internal exigencies, irrespective of the established tariff.
96. As indicated in the preceding text, NAO considers it essential for the Corporation's hedging policy to include provisions that establish a structure and mechanism regulating the frequency and continuity of RMC meetings. Such provisions would effectively ensure that instances of prolonged inactivity and notable delay are averted, thereby safeguarding governance and accountability considerations. NAO considers it critically important for Enemalta to institute a documented mechanism that is to come into effect during periods of RMC inactivity. This Office opines that such a mechanism assists the regulation and recording of email communication between all RMC members, identifies who is responsible for shouldering decisions taken, as well as indicates who and in what way subsequent monitoring of hedging-related developments is to be carried out.
97. NAO strongly recommends that documentation maintained by the RMC more comprehensively represents and provides a detailed account of all aspects of the Committee's activity. In NAO's opinion, such detailed minutes and supporting documents should contribute towards ensuring the integrity and safeguarding of the principles of good governance, while simultaneously holding to account the Committee and all of its individual members. In this Office's view, the recommendation relating to the identified shortcoming in

terms of record-keeping merits further attention in circumstances when RMC established targets are not met and corrective action is subsequently instigated. Documentation of such deviations from the Committee's originally set course of action assumes pivotal and paramount importance.

98. Further to the recommendation made with respect to the required improvement in terms of documentation and record-keeping, NAO urges Enemalta to incorporate mechanisms regulating the management of hedge-related variations within its hedging policy. In this regard, NAO recommends the establishment and delineation of who is authorised to conclude hedging-related deals on the Corporation's behalf, and what authorisation is required under such circumstances. Key to ensuring the desired level of effectiveness of this policy is the segmentation of processes and procedures associated with the established limits and values of the hedge deals in concern. To this effect, and by means of example, the CFO's authorisation may be sufficient in concluding deals of an X per cent variation over and above RMC approved targets, while it would then be necessary to attain the Chief Executive Officer's approval for the conclusion of deals of a Y per cent variation over and the above RMC approved targets.
99. NAO commends the RMC's notable improvement in terms of its overall internal coordination, particularly so in 2010 and 2011, in which case the Committee demonstrates considerable improvement in terms of correspondence relating to hedging activities circulated among all of its members. Other instances of good practices, identified in clause 73, are in this Office's opinion, encouraging signs of improvement.
100. NAO's primary recommendation with respect to the RMC's planning function relates to the lack of documentation persistently emerging throughout this Office's analysis of the Committee's meeting minutes and supporting records. In this respect, NAO's recommendation is straightforward, urging the RMC to retain appropriate records of the Committee's activity, more specifically so in

instances of strategic relevance and importance. In addition, NAO recommends that Enemalta explores the possible introduction of a sound document management system, which would aid the completeness of the record-keeping process and ensure continuity in cases of changes to key personnel.

101. In synchronisation with the above, NAO recommends that RMC should spare no effort in ensuring that key strategic decisions are appropriately supported by detailed calculations, analysis and estimates. Here, specific reference is directed towards the instance when the RMC introduced the use of swaps to complement collars, as well as the exercises intended at restructuring the Corporation's hedged position. Such supporting data should also be rigorously documented, thereby ensuring that all of the Committee's members have duly honoured the principles of good governance and accountability.
102. NAO recognises the good practices employed by the RMC in shifting from collars to swaps, amply evident of the necessary scenario planning undertaken by the Committee in relation to this important strategic realignment. This level of preparation is deemed commendable by the NAO and is the standard that is to be adhered to in future instances of strategic repositioning.
103. However, notwithstanding the above, NAO reiterates its firm belief that Ministerial intervention at the strategic level is unwarranted and should be averted. Here specific reference is made to the chain of events that developed in late 2009, where the RMC was directed to close hedging deals below the key tariff driver of \$81.80/bbl, effectively rendering futile all of the above-referred and well-developed scenario planning undertaken by the Committee. As stated earlier, NAO considers the responsibility for the establishment of the Corporation's hedging strategy to form part of the exclusive remit of the RMC, and therefore recommends that such a situation be reflected through appropriate documentation in the Corporation's hedging policy.

104. In contrast to the shortcomings associated with fuel hedging, NAO's attention with respect to forex-related hedging strategy revisions centres on the consistent good practices that emerge in this regard. NAO commends the modus operandi employed by the RMC and its forex consultant in this respect, with strategic plans of action clearly documented and corresponding justifications supporting such proposed corrective measures consistently provided.
105. NAO recommends that the RMC revises and revisits its management of the fuel consultant's role within the ambit of the Committee. In this Office's considered opinion, the rotational system that is employed by the RMC with respect to fuel consultants is somewhat flawed, characterised by its axiomatic instances of subjective bias. Within this context, NAO recommends that RMC's choice of fuel consultants should be grounded on the principle of independence, that is, reflected in the provision of objective advice, not constrained by possible conflicts of interest.
106. NAO acknowledges the importance of providing the RMC with a framework of operational independence, and recommends that such independence should continue to be exercised by the Committee. However, NAO strongly recommends that instances when the RMC disagrees with advice put forward by its respective consultants should be clearly documented, with such documentation encompassing explanations, justifications and counterarguments supporting why the Committee considers alternative courses of action in a more favourable light to possible options put forward by its experts. This Office considers adherence to this recommendation as a matter of notable importance, notionally safeguarding and promoting a more complete sense of accountability throughout the Committee's undertakings.
107. In addition to all of the above, NAO recommends the strengthening of the RMC's planning procedures through a twofold approach. At a basic level of understanding, such strengthening could be further ensured through the

regularity of Committee meetings. Second, NAO strongly recommends that no hedging transactions are concluded outside of the RMC, as was the case with respect to over \$70 million worth of forex hedges undertaken during 2009.

108. Finally, NAO recommends that the RMC should plan its currency hedging requirements with due diligence, thereby minimising instances when the Corporation is short or long on its USD needs. If the market presents opportunities deemed favourable with respect to Enemalta, then the Corporation's short position should be largely mitigated. On the other hand, with respect to instances when the Corporation was long, such circumstances could be mitigated through the synchronisation of contract maturity with the payment of shipments for fuels received.

109. NAO considers the absence of appropriately sourced quotations as a major and significant weakness characterising the RMC-driven hedging process. To this end, NAO urges Enemalta to adopt a systematic approach in the sourcing of quotations with respect to its crude oil and forex hedging requirements. Such measures must become part of the standard procedures employed by the RMC in attending to its hedging function, particularly so when one considers the materiality of hedging contracts entered into by the Corporation. This recommended course of action will undoubtedly contribute towards the Committee's improvement in terms of the transparency and accountability of its hedging operations, while simultaneously ensuring an overall acceptable standard in terms of good governance.

110. Further to the above, NAO strongly recommends that all telephone conversations carried out by Enemalta officials with third parties, in relation to the execution of agreed hedge targets, should be recorded. This is now a standard practice implemented across industry, and considered integrally important and necessary by NAO in order to ensure the desired levels of integrity, transparency and accountability.

111. NAO recommends that Enemalta more appropriately maintains records of expected exposure data corresponding to hedging contracts concluded (particularly so in terms of forex hedging), while ensuring consistency in its analysis and subsequent reporting function. This Office understands that fluctuations arising due to market factors are beyond the Corporation's direct control; however, change in methodologies employed should be rigorously documented and explanations accordingly provided.

112. Critically important in the attainment of the Corporation's wider strategic goals is the need to strengthen the link between Enemalta's fuel procurement arm and its hedging function. In NAO's view, such coordination should mitigate the significant discrepancies in the analysis carried out by this Office with respect to the Corporation's expected exposure, and therefore, ultimately contribute to the reduction of long and short positions.

113. Finally, setting aside specific periods where substantial losses were incurred, NAO commends the positive performance registered by Enemalta with respect to crude oil and forex hedging undertaken throughout the period under review, that is, 2008 up to 2011. Nonetheless, NAO is of the opinion that should its above recommendations be implemented by the Corporation, more windows of opportunity could be capitalised upon.

Chapter 1: Introduction

This initial chapter contextualises the National Audit Office's (NAO) established audit scope and objectives with regard to the determination of the effectiveness of Enemalta Corporation's fuel procurement function. The indicative terms of reference assume critical importance in this respect. Following the setting of this contextual backdrop, NAO provides relevant information relating to key stakeholders involved in the procurement process within the Corporation. Bearing direct influence on the manner in which fuel procurement is undertaken are the regulatory frameworks Enemalta must adhere to. These national legislative parameters, together with relevant supranational regulations are reviewed in light of the Corporation's obligations and operations. Finally, this chapter outlines the scope and objectives of this report, together with the employed audit methodology.

1.1 Introduction

1.1.1 The purchase of fuel by Enemalta represents one of the Corporation's key business processes. During 2012, Enemalta's overall fuel procurement amounted to €578 million, accounting for 910,645 metric tonnes (MT) of assorted fuels imported to support and service various economic functions. The effectiveness of this process assumes critical importance and bears direct impact upon numerous avenues of Malta's socio-economic and political landscape.

1.1.2 It is against this contextual backdrop that the Honourable Leo Brincat (Parliamentary Sitting 373, dated 27 June 2011) indicated to the Auditor General the possibility of investigating the procurement of fuel undertaken by Enemalta Corporation throughout the 2008–2013 legislature. The indicated terms of reference primarily factored in the analysis of the

procedures and mechanisms employed by Enemalta in the procurement of fuel. The planning processes associated with this key function were also to be reviewed, together with the timing, and therefore overall coordination of fuel shipments received.

1.1.3 In addition to the above, and as per indicative terms of reference, audit attention was directed at the processes and safeguards in place at Enemalta intended at assuring that purchased fuel reconciled with fuel received by the Corporation. In effect, this analysis focused on two major dimensions, also specified in the aforementioned parliamentary debate, that is, concerns relating to the quantity and quality of fuel received.

1.1.4 Furthermore, referring to the report compiled by Standard and Poor's (2011), the Honourable Brincat indicated Enemalta's weaknesses with respect to standards of good governance and transparency. More precisely, the Standard and Poor's report specifically refers to these shortcomings in terms of the Corporation's publication of its financial information, stating, *"the significant delays to and infrequent publication of the company's financial reports pose high information risk, reduce transparency, and indicate weak corporate governance practices."*

1.1.5 In this context, NAO considered it necessary to assess Enemalta's fuel procurement processes and procedures against such sought-after standards of good governance and transparency.

1.1.6 One final aspect of analysis, also referred to in the parliamentary sitting of 27 June 2011, is the utilisation of alternative procurement mechanisms, which are hereby understood as referring to hedging. This understanding is substantiated by the reply submitted by the then Honourable Minister Tonio Fenech to points raised by the Honourable Brincat. In this respect, the then Honourable Minister proceeds in establishing the distinct roles of the Fuel

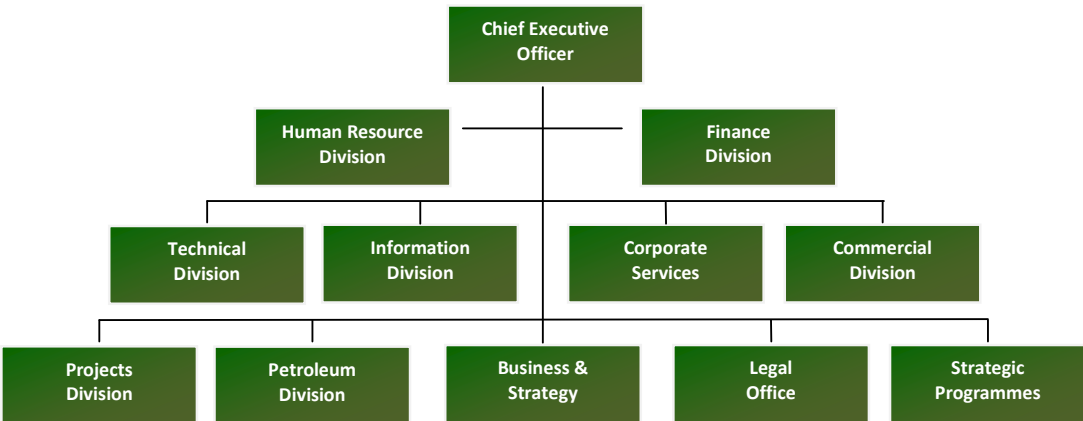
Procurement Committee (FPC) and the Risk Management Committee (RMC), with the latter Committee tasked with responsibility for hedging, and the former responsible for the actual procurement of fuel.

1.1.7 The overall structure of this performance audit report mirrors this dichotomous understanding of the procurement process, with initial attention directed at the purchase of fuel, and subsequent focus shifted towards hedging operations. In essence, this performance audit addresses and determines the effectiveness of the Enemalta Corporation’s fuel procurement process, identifying real and potential weaknesses, while subsequently proposing recommendations intended at rectifying such shortcomings.

1.2 Background Information

1.2.1 The Enemalta Corporation, which is the main provider of energy generation and distribution in the Maltese Islands, was set up in 1977. The Corporation is responsible for the importation, storage and distribution of petroleum products, as well as the generation and distribution of electricity. The various strategic divisions presented in Figure 1 address these core business processes, or parts thereof.

Figure 1: Enemalta Corporation Organisational Chart



1.2.2 As indicated in the preceding section, audit attention was directed at two major components of Enemalta's wide range of operations, that is, the actual procurement of fuel, encompassing all related functions thereto, and secondly, the hedging of fuel and foreign currency requirements. Therefore, and to this effect, the ensuing background information provided with respect to a number of the Corporation's divisions corresponds to this audit focus. Functional and operational details relating to each of Enemalta's divisions of interest to NAO are summarily presented hereunder.

1.2.3 The relevance and materiality of Enemalta's fuel procurement process is rendered immediately apparent in Tables 1 and 2, which respectively illustrate the Corporation's imports in metric tonnes and corresponding Euro value over the period 2008 to 2012.

Table 1: Imports in MT

Products	2008	2009	2010	2011	2012
Gasoil (MT)	109,434	84,014	98,608	74,215	77,497
Diesel (MT)	123,461	81,352	69,690	79,100	64,114
Unleaded Petrol (MT)	86,679	71,326	69,250	81,821	63,882
Jet A1 (MT)	148,369	61,030	93,910	106,526	99,562
Fuel Oil (MT)	722,136	506,102	511,965	544,750	605,534
Avgas (MT)	110	108	55	56	56
Total (MT)	1,190,189	803,932	843,478	886,468	910,645

Note: The drop in metric tonne imports from 2008 to 2009 relates to a number of factors, including, among others, an extended reporting period for 2008 (which was of 15 months instead of the customary calendar period). Further details in this respect may be retrieved from the Enemalta Corporation Annual Report 2009 & Financial Estimates 2008.

Table 2: Imports in Euro

Products	2008	2009	2010	2011	2012
Gasoil (€)	46,849,779	32,021,784	43,970,032	48,495,314	58,796,824
Diesel (€)	68,090,240	32,117,945	37,688,632	58,146,261	50,728,530
Unleaded Petrol (€)	43,178,680	32,479,352	40,634,996	59,716,876	53,336,168
Jet A1 (€)	89,738,980	24,938,165	52,263,792	77,907,164	80,283,141
Fuel Oil (€)	219,552,950	131,284,475	185,295,180	259,646,880	334,789,115
Avgas (€)	136,359	155,558	85,038	105,131	112,795
Total (€)	467,546,988	252,997,279	359,937,670	504,017,626	578,046,573

1.2.4 The Finance Division, which is responsible for managing and executing the Corporation's financial operations, includes the Financial Risk Management Department, the Financial Control (Electricity Division) Section and Financial Control (Petroleum Division) Section, as well as the Salaries Section. All four Departments and Sections report to the Chief Financial Officer (CFO), who is in turn assisted by Financial Controllers and Departmental Managers, each respectively assigned to the above-indicated subsidiary units.

1.2.5 The Financial Control (Electricity Division) Section, which is intricately and closely assisted by the Financial Risk Management Department, is responsible for the following main duties with respect to the purchase of fuel and subsequent stock movements:

- a. The recording and reporting of fuel consignments, which is duly followed by corresponding payment;
- b. The regular maintenance and updating of stock movements;
- c. Postings to SAP of various details corresponding to fuel consignments received, subsequently followed by reconciliation with consumption and closing stock;
- d. Transfers to Petroleum Division and other third parties;
- e. Transfers to and from the Mediterranean Oil Bunkering Corporation (MOBC);
- f. Stock reporting requirements in view of the Corporation's insurance policy;
- g. The reporting of stock figures to the Customs Department;
- h. The receipt of and reconciliation of shore tank reports;
- i. The checking of figures presented in the Monday Stock Position report forwarded by the Generation Section of the Corporation on a weekly basis;

- j. The submission of information relating to fuel stocks and forwarded to the National Statistics Office on a monthly basis;
- k. The updating of fuel prices, average prices, as well as Euro and US Dollar rates;
- l. Payments of fuels, which include heavy fuel oil, gasoil, together with security stocks; and
- m. The forecasting and estimation of heavy fuel oil and gasoil payments for cashflow statements.

1.2.6 On the other hand, the Financial Control (Petroleum Division) Section, while working in close conjunction with the Financial Control (Electricity Division) Section, bear responsibility for the following processes:

- a. Budgeting, which involves numerous sub-processes, such as the identification of variables, the estimation of sales as well as the calculation of fees and duties due;
- b. The inputting of budgetary balances;
- c. The financial management of local fuel sales to petrol stations and other entities, which notably entails the order and delivery of fuel, invoicing and payment-related responsibilities, as well as subsequent reconciliation and standard measures employed at ensuring adequate debtor control;
- d. Other ancillary issues relating to the local sale of fuel, such as procedural mechanisms in place for instances of fluid contamination, coordination with respect to kerosene hawkers supply, together with the financial management of sales from Ras Hanzir and Has-Saptan;
- e. The coordination of aviation sales, which include transactions relating to fuel type jet A1 and avgas;
- f. The delivery and management of fuel stocks;

- g. The procurement of maintenance stock, which incorporates items necessary for the upkeep of the petroleum installation;
- h. The financial management of fixed assets, which thereby includes assets that are yet under construction, regular fixed assets, as well as assets belonging to this category that are to be disposed of; and
- i. The preparation of cashflow statements, which are subsequently forwarded to the Financial Control (Electricity Division) Section for interdivisional coordination purposes.

1.2.7 Over and above the support provided to the Financial Control (Electricity Division) Section and the Financial Control (Petroleum Division) Section, the Financial Risk Management Section is entrusted with the critically important role of providing the RMC with relevant market data in view of planned hedging activities. Further details as regards to the role and functions of the Financial Risk Management Section, together with that of the RMC are provided in Chapter 4, which explores Enemalta Corporation's hedging activity in depth of detail.

1.2.8 The 2010 Annual Report outlines that the Finance Department within Enemalta Corporation had undergone considerable restructuring, which was primarily intended at consolidating and improving upon the general level of the Finance Division. This restructuring included the introduction of a Risk Management function within the Finance Division. In this respect, Enemalta considered it necessary to dedicate specialised personnel towards this function, and accordingly tasked its managers and financial analysts with the responsibilities of monitoring and managing risk. This was deemed to be a particularly sensitive function given the volatility which has come to characterise the oil and foreign exchange markets.

1.2.9 Enemalta's 2010 Annual Report proceeds in outlining how the set-up of the RMC aims at applying prudent hedging strategies in order to mitigate the Corporation's financial risks. The Report further accentuates the importance of constant market surveillance in terms of price fluctuations, particularly given the uncertainty associated with financial markets due to the high volatility of oil prices and foreign exchange. Moreover, the Report proceeds in stating that feeding into this key hedging-related decision-making process is the concerted assessment of various significant variables and fundamentals deemed influential in affecting market fluctuations, together with the review of numerous market outlooks published by different esteemed banks.

1.2.10 At this stage of analysis, it is imperative to note that the procurement and hedging processes as executed by Enemalta Corporation are two completely distinct activities, bearing very limited points of interface, which will be elaborated upon at a later stage in the report. While the various stages of the procurement process fall under the remit of the Commercial, Electricity and Petroleum Divisions, the hedging process forms part of the responsibilities borne by the Finance Division. Key in understanding this dichotomous division of roles and responsibilities is an appreciation of the fact that the hedging process does not involve any outright physical purchase of fuel, but only involves financial settlements based on the outcome of hedging contracts.

1.2.11 The Commercial Division, formally established in its present set-up in 2009, is responsible for the ensuing core business processes:

- a. Procurement, which essentially entails the processing and award of tenders of varying sizes and complexity;
- b. Stores, which function has centrally integrated the previously disparate four major store locations of the Corporation;

- c. Sales, spearheaded by the Sales Department, which is responsible for the non-consumption related sales of the Corporation, including, distribution centres, substations, and new services that are not covered by standard rates owing to their particular nature; and
- d. Contracts, which in essence involves the upkeep of all contracts in force across the Corporation, routine administrative work associated with ensuring contractual compliance, and notification in cases of contracts drawing near to expiry.

1.2.12 Each of the aforementioned four functions corresponds to an established Department or Section, which in turn are headed by Departmental Managers or Section Heads. Ultimate management responsibility corresponding to the Commercial Division is vested with the Chief Commercial Officer (CCO). For the purposes of this audit, contact was made with various officers assigned to this Division, most specifically focusing on tasks and processes directly impacting upon the procurement of fuels, including tendering and the actual delivery of fuel.

1.2.13 Finally, audit attention was also directed at the Petroleum Division, particularly in view of its role in the planning of petroleum product imports for use by power stations and the wider internal market. This function was attended to from 2008 through mid 2010 with respect to fuel utilised in electricity generation, and throughout the audit period for the remaining fuel types addressed by this audit. Apart from its import and sales-related responsibilities, the Division also caters for the storage and distribution of fuels, providing storage facilities at the Ras Hanzir and Has-Saptan complexes. The Petroleum Division is also entrusted with responsibility for the regular maintenance of its various depots and installations, thereby ensuring that these premises are kept to the expected standards. These latter-referred premises include the installations at Birżebbuġa, Has-Saptan and Ras Hanzir, as well as the depots at Wied Dalam and Luqa airport.

1.2.14 Pivotal to the context of the Petroleum Division is the process of privatisation that is currently underway. In preparation for this eventual privatisation, the programme for the importation of fuel and gasoil for the power stations was assumed by the Electricity Division. Furthermore, the handling of payments in relation to fuel and gasoil deliveries was taken over by the Electricity Division from the Petroleum Division in February 2010. Subsequently, from August 2010 onwards, the Electricity Division started taking over responsibility for the logistical coordination of the importation of fuel and gasoil for both power stations.

1.3 Understanding Enemalta's Regulatory Framework

1.3.1 Contextualising Enemalta's undertaken fuel procurement against legislative and regulatory frameworks in place aids in understanding the importance of why such a critical process must be conducted in an efficient, effective and economical manner. Adherence to such frameworks ensures the attainment of the latter-referred value-for-money gains, while simultaneously providing an internal control mechanism, key in safeguarding accountability and transparency concerns. It is in this sense that the ensuing section presents an overview of three important legislative and regulatory structures, namely, the Enemalta Act, the European Commission Greenhouse Gas Trading Scheme Regulations and the Crude Oil and Petroleum Products (Minimum Security Stocks and Crisis Management) Regulations.

The Enemalta Act

1.3.2 Enemalta Corporation is regulated by the Enemalta Act (2010, Cap. 272), which among others, details its responsibilities as follows *"the exercise and performance by or on behalf of such body of functions relating to the*

acquisition, transformation, manufacture, distribution and sale of sources of energy and the production, generation, distribution and sale of energy.”

1.3.3 Furthermore, and bearing direct relevance to this audit, Article 35 of the Enemalta Act, states that the procurement of petroleum by the Corporation is excluded from the general public procurement rules, whereby:

(1) *“Enemalta shall only enter into contracts for the procurement of goods, services or materials, other than petroleum, or for the execution of works, in accordance with the Public Procurement of Entities operating in the Water, Energy, Transport and Postal Services Sectors Regulations:*

Provided that the Minister may further limit Enemalta’s procurement procedures.

(2) *Enemalta shall obtain petroleum in such manner and under such terms and conditions as it may, with the occurrence of the Minister, determine or agree:*

Provided that this sub article shall not apply to such operator, concessionaire, manager, agent, independent contractor or other third party as is referred to in article 3(5).”

1.3.4 The Enemalta Act proceeds in defining petroleum as, *“all natural hydrocarbons whether in liquid or gaseous form, including crude oil, liquefied petroleum gas and natural gas, and whether in a crude or natural state or in a processed or refined form.”* Therefore, the above legislative clauses comprehensively apply to the purchasing of all fuels required by Enemalta Corporation.

1.3.5 In the context of this audit, the importance and relevance of the Enemalta Act is immediately apparent, as it directly impacts upon procurement methodologies adopted and regulations that the Corporation is obliged to

adhere to. Moreover, the hiving off of the Corporation from the general public procurement regulations further accentuates the importance of transparency, accountability and overall good governance, which are aspects dealt with in considerable detail throughout this audit report.

European Community Greenhouse Gas Emissions Trading Scheme Regulations

- 1.3.6** The European Union (EU), through Directive 2003/87/EC of the European Parliament and of the Council, has established a scheme intended at enabling EU Member States to meet commitments to reduce greenhouse gas emissions, as per the Kyoto Protocol. The Greenhouse Gas Emission Allowance Trading Scheme thereby established a system for greenhouse gas emission allowance trading within the Community. The aim of this Directive is related to the introduction of significant reductions in greenhouse gas emissions, with a view to reducing the influence of such emissions on the climate.
- 1.3.7** Under this scheme, the governments of EU Member States agree on national emission caps that have to be approved by the EU Commission. Following agreement at national level, allowances are next allocated to industrial operators, with actual emissions subsequently monitored in accordance with the relevantly assigned amounts.
- 1.3.8** Under this scheme, large emitters of carbon dioxide (CO₂) within the EU must monitor their CO₂ emissions, annually report them, and return an amount of emission allowances to the government that is equivalent to their CO₂ emissions in that particular year. Besides receiving an initial allocation of trading credits, if an installation has performed well at reducing its carbon emissions, then it has the opportunity to sell its credits at a profit.

1.3.9 As at 1 January 2005, all installations carrying out activities that emit greenhouse gases are required to be in possession of an appropriate permit issued by the competent authorities. In the case of Malta, this permit is issued by the Malta Resources Authority (MRA). This permit is issued subject to the competent authority's satisfaction that the operator of the installation is capable of monitoring and reporting the emissions. By 31 December 2011, the Commission had to adopt a regulation for the monitoring and reporting of emissions. By virtue of this regulation, Member States and the Commission had to ensure that all decisions and reports relating to the quantity and allocation of allowances and to the monitoring, reporting and verification of emissions were immediately disclosed in an orderly manner, while simultaneously ensuring non-discriminatory access.

1.3.10 Commission Regulation EU No 920/2010 has been adopted for the establishment of a system of standardised registries, recorded in the form of electronic databases utilised in the monitoring, holding, transfer and cancellation of allowances at Community level. The competent authority's role is that of conducting automated checks on each transaction relating to allowances. If irregularities are identified, the transactions in concern will be suspended until these irregularities have been corrected. To this effect, Member States have to submit a report on the application of this Directive on a yearly basis.

1.3.11 In Malta, this scheme is regulated by the European Community Greenhouse Gas Emissions Trading Scheme Regulations (S.L. 435.62, 2010). Consonant with the above-stated, these regulations provide for the implementation of greenhouse gas emissions allowance trading within the European Community, thereby promoting reduction of greenhouse gas emissions in a cost-effective and economically efficient manner.

1.3.12 In view of these regulatory obligations, Enemalta has to submit data related to CO₂ emissions to the MRA on a yearly basis. On account of Clause 14 of

Subsidiary Legislation 435.62 and the corresponding Commission decision (2004/156/EC), an obligatory, independent audit is carried out on an annual basis in order to verify that data submitted to the MRA is in fact correct. From 2008 until 2011, the period of principal interest with respect to this audit, Bureau Veritas carried out such verifications.

1.3.13 Summarily, the European Community Greenhouse Gas Emissions Trading Scheme Regulations bear relevance to this audit insofar as they influence the type and quality of fuel procured by Enemalta. In this respect, Table 3 illustrates the combustion emissions recorded as per Bureau Veritas reports corresponding to the Marsa Power Station and Delimara Power Station.

Table 3: Combustion Emissions recorded at Marsa and Delimara Power Stations

Year	Marsa Power Station (tonnes CO ₂)	Delimara Power Station (tonnes CO ₂)
2008	1,043,935	974,650
2009	961,727	935,386
2010	969,152	909,155
2011	1,015,594	915,972

Crude Oil and Petroleum Products (Minimum Security Stocks and Crisis Management) Regulations

1.3.14 The European economy and EU citizens are dependent on the continuous supply of oil and petroleum products, and as the dependence on the importation of oil grows, so too does the risk associated with disruptions to supply. The risk of oil supply disruptions can be attributed to a number of factors, including, but not limited to, an increasing global demand coupled with limited spare production capacity, the concentration of supply in a handful of countries, and potential geopolitical conflicts in supplier states.

1.3.15 Energy dependency strongly differs across the EU's various Member States, with Malta clearly and entirely dependent on its energy imports for sustained economic activity. It is against this contextual backdrop that the EU's internal

crisis mechanisms and security standards with respect to emergency oil stocks come to the fore. In this regard, the need for effective EU-wide coordination of systems and mechanisms catering for the possibility of such crises assumes central importance.

1.3.16 In order to ensure that Member States maintain minimum stocks for use in case of a supply disruption, a mandatory regime of emergency oil stocks has been in place since 1968.

1.3.17 Council Directive 2006/67/EC of 24 July 2006 imposed an obligation on Member States to maintain minimum stocks of crude oil and/or petroleum products. In this respect, the obligation on the Member States to build up and maintain a minimum petroleum reserve gives security of supply of petroleum resources to the EU. This promotes market stability and also provides suitable mechanisms to deal with the physical disruption of energy supplies, while simultaneously guaranteeing coordinated action in the event of an energy crisis.

1.3.18 Member States are obliged to build up and constantly maintain minimum stocks of petroleum products equivalent to at least 90 days of the average daily internal consumption during the previous calendar year. The calculation of the daily internal consumption is based on motor spirit and aviation fuel, gasoil, diesel oil, kerosene and jet fuel of the kerosene type and fuel oils.

1.3.19 Among the petroleum resources accepted in the statistical summary of strategic stocks are supplies held in ports of discharge, or those on board oil tankers in port for the purpose of discharging, once the port formalities have been completed, supplies held in tanks at the entry to oil pipelines and also those held in refinery tanks. On the other hand, certain resources may not be included in the statistical summary, such as crude oil not yet extracted, supplies intended for the bunkers of sea-going vessels, supplies in pipelines, in road tankers or rail tank-wagons, in the storage tanks of retail outlets and

those held by small consumers, as well as quantities held by or for the armed forces.

1.3.20 Member States may include in their statistical summary of strategic stocks only quantities that are at their full disposal in the event of an oil supply crisis. Stock-holding arrangements must ensure that the stocks are available to and accessible by Member States so that they can react immediately in the event of a supply crisis. These stocks can be held outside national territory in another Member State. The Member State on whose territory the stocks are held has control of them and guarantees their actual availability and does not include them in its statistical summary. Member States are obliged to send the Commission a statistical summary of the stocks existing at the end of each month, stating the number of days of average consumption of the previous calendar year that they represent.

1.3.21 In Malta, this is regulated by virtue of the Crude Oil and Petroleum Products (Minimum Security Stocks and Crisis Management) Regulations (S.L. 423.17, 2007). These regulations are aimed at the maintenance of minimum security stocks of crude oil and petroleum products, and at providing the competent authority with the necessary powers to manage such stocks in the event of difficulties arising in the supply of crude oil and petroleum products, which might appreciably reduce the supply of these products and cause severe disruption.

1.3.22 The relevance of these Regulations to the overall objectives of this audit are secondary and tangential, yet nonetheless warrant inclusion for completeness sake. In essence, the Crude Oil and Petroleum Products (Minimum Security Stocks and Crisis Management) Regulations necessitate that Enemalta makes the required arrangements for maintaining an established minimum stock level, and therefore bears impact on contractual arrangements relating to storage of fuel undertaken in honouring these obligations. Whereas the Greenhouse Gas Emissions Trading Scheme

Regulations correspond to quality requirements established by the Corporation, this now relates to quantity concerns.

1.4 Audit Scope and Objectives

1.4.1 This report focuses on fuel procurement undertaken by Enemalta Corporation throughout the four-year period 2008 to 2011. This audit timeframe was essentially set by the indicative terms of reference, as put forward in Parliamentary Sitting 373, which focused the Auditor General's attention on the 2008 – 2013 legislature. Given that audit work commenced in earnest in late 2011, the audit team determined that end 2011 would be the cut-off date in scoping terms.

1.4.2 The audit scope narrowly honed in on the fuel procurement process as executed by Enemalta Corporation. In this sense, NAO focused on the procurement process as a whole, commencing at tendering stage, and subsequently proceeding to tender award, delivery and payment. Additionally, this audit also addressed Enemalta's hedging function, which is essentially carried out in parallel with the fuel procurement process, with the former intended to mitigate risks faced by the Corporation in attending to the latter process.

1.4.3 As is often the case with core business processes, such as is fuel procurement to Enemalta, other functions become intricately interlinked, thereby rendering the clear delineation of where one function ends and the other begins an impossible task. The translation of costs incurred by Enemalta in the procurement process, to eventual consumer prices is one such task. Nonetheless, for the purposes of this audit, this issue was scoped out. NAO was of the considered opinion that the price-setting function, which falls under the responsibility of the MRA, was tangential to the main audit focus, that is, fuel procurement per se.

- 1.4.4 Another area deemed out of scope by NAO related to the storage of fuel and stock control mechanisms in place following payment for received stock. Here, NAO's focus and interest in terms of stock control is restrictively limited to the reconciliation of quantity procured with quantity received. To this end, what happens to the fuel stock after receipt at port of discharge was not considered to form part of the audit remit.
- 1.4.5 The above delineated scope essentially frames the principal objective of this audit, which in effect relates to the determination of the effectiveness of fuel procurement undertaken by Enemalta Corporation.
- 1.4.6 Directly feeding into this principal objective are the indicative terms of reference delved into in section 1.1 of this report. From this starting point emanate a number of subsidiary objectives critical in determining the overall effectiveness of fuel procurement undertaken by Enemalta Corporation, or otherwise. These subsidiary objectives are presented hereunder:
- a. Determining whether Enemalta's planning function ensures appropriate coordination of fuel shipments received;
 - b. Reviewing processes and safeguards intended at ensuring that purchased fuel is accurately reconciled with fuel received by the Corporation, both in terms of quantity, as well as in terms of quality;
 - c. Scrutiny of Enemalta's policy robustness, which subsequently relates to the assurance of transparency, accountability and overall good governance; and
 - d. Analysis of the utilisation of alternative procurement mechanisms, which are hereby understood as referring to hedging.

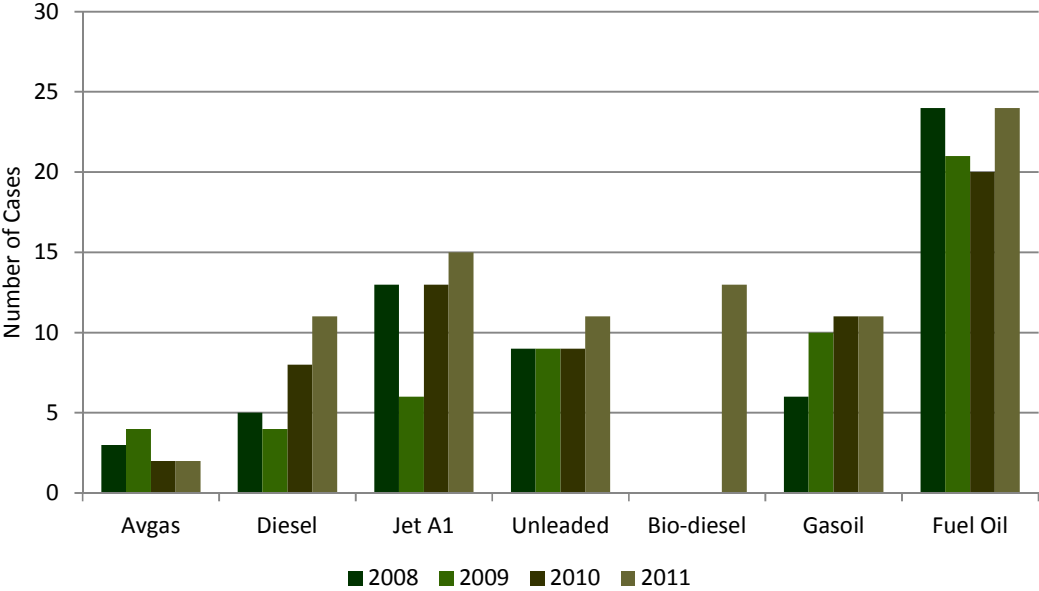
1.5 Audit Methodology

- 1.5.1 The broad-ranging and comprehensive nature of this performance audit warranted a correspondingly robust methodology, intended at ensuring the reliability and validity of utilised data. To this end, various data collection methods and analysis techniques were used in the conduct of this audit, essentially corresponding to and designed against the multiple audit objectives indicated in the preceding section.
- 1.5.2 On numerous occasions, information was obtained by means of in-depth interviews held with key officials of the Corporation, mostly hailing from the Petroleum, Commercial and Financial Divisions. As a general procedure, minutes of the various meetings with the aforementioned key officials were forwarded to the same official for confirmation of content, or otherwise, thereby ensuring the validity of collected data.
- 1.5.3 In the main, meetings were held with the CFO, the CCO, the Financial Risk Manager, the Manager of the Petroleum Division, the Station Managers of the Marsa and Delimara Power Stations, the officers responsible for shipping, as well as officers responsible for the various aspects corresponding to the overall fuel procurement process.
- 1.5.4 In parallel with the series of in-depth interviews referenced above, the NAO audit team also reviewed voluminous amounts of data corresponding to the multiple facets of the fuel procurement process subject to this audit's review. Supporting the NAO audit team in this endeavour were two external consultants, one providing technical input with respect to fuel-related specifications, and the other supporting the analysis of Enemalta hedging activity.

- 1.5.5 A systematic account of the finer methodological considerations pertinent to each of the stages of this audit is presented hereunder. These largely adopt a process-oriented approach, corresponding to the various stages of the fuel procurement process.
- 1.5.6 The first stage of NAO's undertaken analysis involved the evaluation of the internal operational procedures related to procurement in place at the Commercial, Financial and Petroleum Divisions. In this respect NAO sought to verify whether Enemalta adhered to its established standard operating procedures (SOP) and if any gaps existed in this regard.
- 1.5.7 Closely following this first stage of review was the analysis of the operational relationships between Enemalta Corporation's various sections and departments. This enabled the audit team to formulate a clear understanding of the operational and logistical procedures in place, while simultaneously identifying possible lacunae in the formal chain of communication.
- 1.5.8 NAO also analysed all FPC meeting minutes for the previously identified audit period, that is, 2008 up to 2011. The analysis of these Committee meeting minutes served a twofold purpose. First, this analysis allowed NAO to compare the tender evaluation process with actual contracts for the purchase of fuel entered into by Enemalta Corporation. Second, adopting a walkthrough approach in the analysis of the tender process, as documented in the minutes of the aforementioned FPC meetings, NAO sought to establish the extent of compliance with the Corporation's Fuel Procurement Policy. Supporting documentation retrieved from corresponding files was also utilised in this respect.
- 1.5.9 One of the most substantial exercises undertaken by the NAO audit team certainly related to the case study approach adopted in the analysis of fuel shipments. A total of 61 case studies were selected and subsequently

reviewed out of 294 vessel files. Two criteria were utilised in the selection of case studies, the first being the type of fuel procured, and the second being the year of procurement. These 61 case studies corresponded to 21 per cent of all files for fuel shipments received between 2008 and 2011, and included all types of fuels imported by Enemalta Corporation either through deliveries by tankers or in-tank and barge transfers. Figure 1 presents the total number of vessel files categorised according to fuel type and year of procurement.

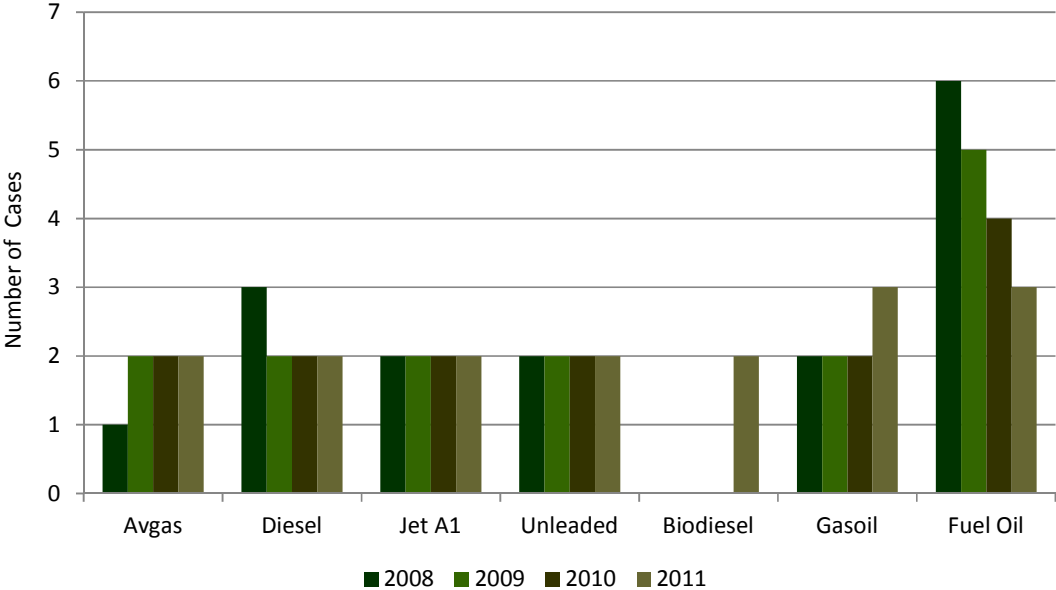
Figure 1: Total Number of Vessel Files per Fuel per Year



1.5.10 The types of fuel deliveries that were selected as sample case studies included the delivery of fuel oil and gasoil for Marsa and Delimara Power Stations, as well as deliveries corresponding to jet A1 fuel, avgas, diesel, biodiesel and unleaded petrol. The 61 case studies reviewed corresponded to 24 per cent of all shipments (258 vessel files) related to these types of fuels (as propane, liquefied petroleum gas and light heating oil shipments were not reviewed as part of this audit exercise) and accounted for a total expense in excess of €478 million. In the case of biodiesel, only case studies for the year 2011 were selected, as this type of fuel was in fact first procured and

imported in 2011. Figure 2 illustrates the distribution of the 61 selected case studies, categorised as per fuel type and year of delivery.

Figure 2: Selected Case Studies as per Fuel Type and Year of Delivery



1.5.11 This methodological approach entailed the in-depth analysis of documentation retained in shipment files, which resulted in a number of ad hoc review exercises. These included the thorough and meticulous quality analysis review, which essentially entailed the comparison of fuel quality specifications and the analogous test method indicated in the supplied quality certification against quality parameters and equivalent test methods established in the corresponding contract of supply.

1.5.12 Other ad hoc review exercises undertaken with respect to the sampled case studies included the comparison of bill of lading quantities with quantities actually received at port of discharge. Furthermore, this quantitative analysis was supplemented with the review of invoiced quantities and proof of payment, which were also assessed in light of the quantities established as per bill of lading and actual quantities landed at port of discharge.

1.5.13 In addition to the above analysis, the nine diesel case studies were subjected to a further level of review, which narrowly focused on barge transfers. This secondary review entailed the additional analysis of 21 files specifically relating to barge transfers, with audit exercises undertaken in this regard essentially entailing the review of relevant contracts, comparison of quantities transferred, subsequent analysis of arising discrepancies and corrective action taken thereafter, as well as the review of corresponding payments.

1.5.14 The above detailed case study approach brings to a conclusion the first component of this audit's methodology, which corresponds to the overall analysis of actual fuel procurement undertaken by Enemalta. The subsequent second component of the audit methodology in turn relates to the hedging review undertaken by the NAO audit team.

1.5.15 At a general level of classification, NAO's focus on Enemalta Corporation's hedging activity centred on two major aspects, that is, the hedging of fuel requirements and the hedging of foreign currency. At a strategic level, these two aspects are effectively attended to by the RMC, and therefore, the review of meeting minutes was an integral first step in developing a clear understanding of Enemalta's hedging activity.

1.5.16 Concurrent to this analysis of RMC data was the undertaking of detailed research around the central topic of derivatives. This essentially entailed a comprehensive literature review, which was carried out in order to delve deeper into the subject matter at hand. Specifically, attention was directed at familiarisation with the areas of oil trading, currency denomination, uses of derivative instruments together with their advantages and disadvantages, while simultaneously evaluating the applicability of these instruments with respect to hedging activities carried out by Enemalta Corporation.

- 1.5.17 Similar to the review of actual fuel procurement, the audit team gathered ample information through a series of meetings with key Enemalta officials from the Finance Division. As indicated earlier, NAO was continuously assisted by its externally appointed consultants, who assisted the audit team in the analysis of information obtained through the aforementioned meetings and other voluminous data.
- 1.5.18 Further to the above, NAO's comprehensive review of RMC meetings allowed the audit team to verify whether decisions taken during these meetings were actually adhered to, and what action was taken when adherence was not possible. This exercise allowed the audit team to draw insightful analysis on the effectiveness of Enemalta Corporation's RMC.
- 1.5.19 NAO undertook various tests on the data provided by Enemalta to analyse the Corporation's performance with respect to hedging. Data analysed in this regard included expected exposure-related data, as well as hedge coverage records. NAO's analysis also entailed the review of quotations requested from suppliers, correspondence between Committee members and hedging counterparties, as well as in-house reports delivered relating to market forecasts. Finally, the audit team analysed information relating to all hedging contracts entered into by the Corporation, together with corresponding invoices and settlements, as well as transaction listings.
- 1.5.20 The review of Enemalta's planning function, which is in NAO's view, the first stage of the hedging of fuel and foreign exchange (forex) process, involved the detailed analysis of expected exposure-related data. Equally important in this regard was the review of the percentage hedge coverage in relation to Enemalta's forecasted expected exposure calculations. In NAO's view, this analysis was considered as indicative of the level of coordination between the Corporation's fuel procurement function and its hedging arm. NAO's review of the RMC's planning function was supplemented through the review of the

various in-house hedging-related reports, addressing market forecasts, which were regularly put forward for the Committee's consideration.

1.5.21 Following testing carried out in relation to the planning process, NAO also reviewed the means by which the RMC sourced quotations from Enemalta's suppliers. NAO considered this exercise as central to the verification of whether the RMC operated in a manner that was cognisant of the principles of good governance.

1.5.22 In seeking to determine Enemalta's performance with respect to fuel and forex hedging, NAO analysed the gains and losses experienced by the Corporation as a result of its hedging activity. Verification of data provided by Enemalta in this regard was detailed and extensive, and centred on the vetting of all hedging contracts-related data. It is important to note that with respect to gains and losses, NAO took into consideration all contracts that matured during the period 2008 up to 2011. In effect, this meant that hedging contracts undertaken in 2007, which matured in 2008, were in fact included in this audit review, whereas contracts entered into in 2011, yet which matured in 2012 were scoped out of this audit.

1.5.23 Hence, in the case of fuel hedging, NAO embarked on an extensive exercise involving the correlation of figures provided by Enemalta to the individual settlements in the transaction listings, on a month-by-month basis. In addition, fuel contracts and settlement invoices issued by various suppliers were collected as documentary evidence and duly reviewed. In the case of foreign exchange hedging, a similar exercise was carried out, essentially involving the collection of issued invoices corresponding to each deal closed between Enemalta and the respective counterparties. It is pertinent to state that besides the analysis of foreign exchange hedging contracts, NAO also reviewed a number of foreign exchange settlements that were not hedged, but concluded at spot rates. Data was received from various sources from

within the Corporation, and the audit team considered this as instrumental in ensuring completeness and accuracy of the material reviewed.

1.6 Structure of the Report

1.6.1 The remainder of the report is structured around the following key areas, with Chapters 2 and 4 subsequently followed by a series of corresponding conclusions and recommendations relating to the content addressed:

a. Chapter 2 – Fuel Procurement under Review

This chapter provides a holistic overview of the procedures and mechanisms that were employed by Enemalta Corporation with respect to its fuel procurement requirements. The impact and relevance of the Corporation's Fuel Procurement Policy was assessed, particularly in view of the role and functions assumed by the FPC in attending to this core business function. Further to the above contextualisation, NAO also reviewed the tender process, largely, yet not exclusively, basing its analysis on the Corporation's aforementioned policy. Another pivotal element of NAO's verification entailed the review of quantity and quality-related considerations pertinent to the shipment and delivery of fuels to Malta. A number of issues emerging with respect to the storage of the various fuels procured by the Corporation were also briefly addressed. Finally, the procedural review of fuel procurement undertaken by Enemalta came to an end with NAO's review of the payment process, as well as an overview of the Corporation's internal reporting arrangements.

b. Chapter 3 – Understanding Derivatives

This chapter introduces the concept of hedging and establishes the context within which such financial instruments bear relevance to the

overall objectives of this audit. A basic overview of the four main types of derivatives is subsequently presented and encompasses forward, futures, swap and option contracts. Further to this brief analysis of hedging instruments, attention is then directed at the particular nuances that characterise the derivative markets, that is, the financial environment within which such contracts are traded. In addition, this chapter presents a succinct outline of the various uses of derivatives, and how hedging conceptually mitigates undesirable risk. Finally, a short synopsis of the most salient and intrinsically relevant aspects of the oil market and its denomination are put forward.

c. Chapter 4 – Hedging Undertaken by Enemalta Corporation

This final chapter focuses on hedging activities undertaken by Enemalta Corporation. Attention was initially directed at how the regulatory framework, that is, the Corporation's hedging policy, interacts and relates to Enemalta's hedging strategy. Intricately linked to this policy and strategic overview, were issues of governance and accountability, which mostly centred on the RMC's modus operandi and its establishment of hedging targets. In addition, NAO delved into various hedging-related Committee issues, including its management of changes in strategy, and its relationship with externally sourced technical consultants, among others. Further to the above, the various hedging agreements entered into by RMC were analysed by the audit team. Finally, this review of Enemalta's hedging activity was concluded by means of a review of the Corporation's expected exposure, as well as the due verification of its bottom line, that is, the gains and losses registered with respect to hedging undertaken.

d. **Appendix A – Sample FPC Minutes**

This appendix provides samples of the FPC minutes indicative of the gradual evolution and improvement of record-keeping practices within this Committee.

e. **Appendix B – Analysis of Fuel Quantity Delivered against Bill of Lading and Outturn Reports**

Appendix B serves to compare the quantities established in the Bill of Lading against the quantities recorded in the Outturn Report of each selected case study.

f. **Appendix C – Detailed Analysis of Availability of Quality Certificates**

This appendix provides a detailed analysis of the quality certification retrieved from sample shipment files analysed by the audit team, effectively indicating whether quality certification was found with respect to port of loading and port of discharge.

g. **Appendix D – List of Institute of Petroleum Test Methods and Equivalencies to Other Standards**

The Institute of Petroleum (IP) publishes a list intended at establishing inter-standard and test method equivalency, thereby delineating which standards and test methods, issued by other bodies, correspond with those issued by the IP. In its analysis and review of quality certification processes at Enemalta, NAO utilised this list published by the IP in determining equivalency with other such standards.

h. Appendix E – Risk Management Committee Procedures

The Risk Management Committee Procedures document, reproduced in its entirety in Appendix E, effectively serves as the Corporation's hedging policy, thereby regulating hedging activity undertaken.

i. Appendix F – Correspondence between the then Minister for Infrastructure, Transport & Communications with Chairman, Enemalta Corporation

Appendix F presents correspondence dated 10 November 2009, between the then Minister of Infrastructure, Transport and Communications and the Chairman of Enemalta relating to the Corporation's hedging strategy.

j. References

Finally, a selection of the documents utilised and consulted throughout the various stages of this audit, are presented for ease of reference.

Chapter 2: Fuel Procurement under Review

This chapter provides a holistic overview of the procedures and mechanisms that were employed by Enemalta Corporation with respect to its fuel procurement requirements. The impact and relevance of the Corporation's Fuel Procurement Policy was assessed, particularly in view of the role and functions assumed by the FPC in attending to this core business function. Further to the above contextualisation, NAO also reviewed the tender process, largely basing its analysis on the Corporation's aforementioned policy. Another pivotal element of NAO's verification entailed the review of quantity and quality-related considerations pertinent to the shipment and delivery of fuels to Malta. A number of issues emerging with respect to the storage of the various fuels procured by the Corporation were also briefly addressed. Finally, the procedural review of fuel procurement undertaken by Enemalta came to an end with NAO's review of the payment process, as well as an overview of the Corporation's internal reporting arrangements.

2.1 The Fuel Procurement Policy and Fuel Procurement Committee

2.1.1 At a strategic level, Enemalta's Fuel Procurement Policy governs the Corporation's fuel procurement function, while simultaneously regulating the operations of the FPC. This policy document was first published on 26 January 2011, with subsequent modifications and updates instituted in the ensuing months. As part of this audit, NAO reviewed version 2.0 of this policy document, which was modified on 26 July 2011, that is, one month after parliamentary sitting 373 (dated 27 June 2011).

2.1.2 It is pertinent to note that prior to the formulation of the above-referred Fuel Procurement Policy (version 1.0 dated 26 January 2011), Enemalta's fuel procurement function was carried out in what could be termed as a policy

vacuum. NAO requests for documents, guidelines, or policies equivalent to the one currently in effect were replied to in the negative by Enemalta Corporation, not for lack of cooperation, but simply due to the inexistence of such documentation.

2.1.3 This policy document is structured under two main headings, the first focusing on the FPC, and the second on the Tendering Procedure. The former is addressed in this section of the chapter, while the latter is delved into in the ensuing section. The relevance and importance of this policy is self-evident, particularly in light of the fact that Enemalta Corporation is authorised to procure fuel through methods other than the Public Procurement Regulations, as per Article 35 of the Enemalta Act.

2.1.4 It is against this context, and to fulfil the central function of fuel procurement, that Enemalta Corporation set up the FPC through a Board of Directors resolution. Members of this Committee are directly appointed by the Corporation's Board of Directors. The FPC is chaired by the Chairman of Enemalta Corporation and its members include the CFO, the CCO, the Risk Manager, the Financial Controller (Petroleum Division) and the Manager (Petroleum Division). The Risk Manager also fulfils the role of Secretary of the Committee, with the Financial Controller (Petroleum Division) acting as Secretary to the Committee in the absence of the Risk Manager.

2.1.5 As part of its audit fieldwork, NAO sought to determine who the members of the said Committee were. When Enemalta was asked for a full list of the FPC members corresponding to the audit period 2008 to 2011, the Corporation provided NAO with a series of designations relating to each of the years under review. The level of detail insofar as identification of individual Committee members was sparse for Committees constituted prior to May 2011. Data provided with respect to the pre-May 2011 period was limited, in the sense that individuals corresponding to the particular designations

appointed to the Committee were not identified, except in a few cases. NAO noted that no formal record of who formed part of the FPC was forwarded to it, and the information gleaned in this regard was largely based on what one of the Committee's longest serving members recalled.

2.1.6 On the other hand, appointed Committee members corresponding to the post-May 2011 period were all identified and data provided to NAO in this respect was well documented.

2.1.7 As a matter of procedure, the FPC is convened by the Chairman when action relating to an invitation to tender for fuel necessitates such an intervention. In case the Chairman is not available to chair the meeting, this responsibility may be delegated to the Chief Executive Officer (CEO) who is entrusted with chairing the meeting on his/her behalf. The quorum required for a meeting to take place is that of five Committee Members, one of which must be the Chairman or CEO.

2.1.8 A total of 27 FPC meetings were held between February 2008 and December 2011 (which corresponds to the set audit period), whereby 29 contracts were awarded, as per Table 4. In total, five meetings were held in 2008 and in 2009, nine meetings were held in 2010 and a further eight meetings were held in 2011.

2.1.9 As rendered evident in Table 4, the FPC assumed responsibility for the purchase of a number of different types of fuel, including, biodiesel, diesel, fuel oil, gasoil, Jet A1 and unleaded petrol. It is important to note that avgas was not procured through the Committee, but separately managed by the Petroleum Division. For the purposes of this audit, the review of avgas procurement mechanisms was not deemed to form part of the audit scope. Notwithstanding the scoping out of this aspect of avgas-related procurement analysis, NAO did in fact review the relevant procedures that come into effect

from the shipment of fuel stage onwards. This analysis is presented in subsequent sections of this chapter.

Table 4: Chronological Overview of FPC Meetings 2008-2011

Year	Date of Meeting	Type of Fuel for which Contract was Awarded
2008	25 February 2008	Fuel Oil
	27 February 2008	Diesel & Gasoil
	06 May 2008	Light Heating Oil
	26 May 2008	Gasoline
	25 June 2008	Jet A1
2009	22 January 2009	Gasoline
	05 May 2009	Fuel Oil
	18 May 2009	Jet A1
	18 May 2009	Gasoil
	07 July 2009	Diesel
	25 September 2009	Gasoline
2010	15 January 2010	Fuel Oil
	23 April 2010	Fuel Oil
	14 May 2010	Diesel
	02 June 2010	Unleaded Petrol
	03 June 2010	Gasoil
	20 July 2010	Jet A1
	22 October 2010	Diesel
	19 November 2010	Biodiesel
	23 November 2010	Fuel Oil
2011	18 January 2011	Gasoline
	18 January 2011	Jet A1
	12 May 2011	Diesel
	05 July 2011	Biodiesel
	12 July 2011	Gasoil
	10 August 2011	Unleaded Petrol
	07 October 2011	Jet A1
	14 December 2011	Diesel
22 December 2011	Fuel Oil	

Notes:

1. The diesel and gasoil contract awarded during the FPC meeting dated 27 February 2008 was in actual fact one contract awarded for the simultaneous supply of two different types of fuel.
2. The terms 'Gasoline' and 'Unleaded Petrol' are synonyms, and have been reproduced as sourced in their corresponding original documentation.

2.1.10 The minutes of all FPC meetings presented in Table 4 were analysed by the NAO audit team. Several significant and critical shortcomings were noted while analysing these minutes, most specifically with reference to those

meetings held in 2008 and 2009, where NAO's concern intensifies. Minutes taken during meetings held in 2008 and 2009 were lacking the most rudimentary level of detail, were mostly handwritten and with no summary of the meeting discussions and decisions taken. To this effect, no records of formal meeting documents were found. These minutes also lacked a basic record of names of Committee members present during the respective meetings, or members absent from the same. The majority of these minutes were not signed by those members present during the meeting. This extremely poor form, in terms of record keeping, rendered it impossible for NAO to effectively audit what actually happened during these meetings, making it difficult to deduce what was discussed and ultimately decided upon. A random sample of such minutes has been reproduced in Appendix A.1 for ease of reference.

2.1.11 Between mid-2009 and mid-2011, minutes of the FPC meetings were kept in a different format. A table was used to summarise the bids received and due for adjudication. This table included the following details: quantity offered, origin of the fuel, quantity measure, quality, laytime, inspection costs, price base, premium/discount, payment terms and surety requirement. NAO noted that although this manner of record keeping represented a marked improvement over the previous years, these minutes still lacked details such as the basis upon which decisions were made as well as a list reconciling which Committee members were present and which were absent. Despite the fact that these minutes were duly signed by those present, the signatures were not followed by a clear identification of the persons signing the document, and therefore, once again, one cannot deduce which Committee members were in fact present. A random sample of FPC meeting minutes corresponding to this period is reproduced in Appendix A.2 for ease of reference.

2.1.12 A significant positive improvement was witnessed by NAO from mid-2011 onwards, as the audit team reviewed appropriately signed minutes duly maintained in files relating to tenders adjudicated from the afore-indicated date onwards. Details corresponding to the decision-making process, together with a record of the final decision taken, as well as quotations received, were all accordingly filed with respect to each meeting.

2.1.13 Further to the analysis of the various FPC meeting minutes, NAO also undertook an in-depth analytical review of the bids submitted and duly adjudicated by the aforementioned Committee. Essentially, NAO analysed the:

- a. Completeness of recording of submitted bids as represented in the FPC minutes;
- b. Basis for selection of bids for further negotiation; and
- c. Conformity of negotiated and agreed upon prices with the eventually signed contract for the provision of fuel.

2.1.14 With respect to the first point, that is, the completeness of recording of submitted bids as represented in the FPC minutes, and on the basis of information retrieved in files provided by Enemalta, NAO's analysis indicates that all tender bids submitted were duly recorded as received and subsequently adjudicated. NAO considers it important to state that the aforementioned analysis was limited in terms of validity, that is, this Office was not able to triangulate information provided by the Corporation with other sources, thereby ensuring completeness of records.

2.1.15 As indicated in the preceding text, the basis of tender adjudication by the FPC is based on a number of factors; however, NAO considers the most critical

and determining in eventual selection to undoubtedly be the premium¹ paid over and above (or in certain circumstances, under) the Platts price. Platts is a provider of petrochemical market information, and a source of benchmark price assessments utilised when trading in the commodity markets. The following tables present an overview of the bids received with respect to tenders issued for the procurement of fuel, categorised on a year-by-year basis. All bids received in this respect are listed, and also included are details regarding the negotiated price finally arrived at.

2.1.16 The above approach was essential, in the sense that the audit team was provided with severely limited information with respect to the tender submissions and subsequent adjudication. In the absence of such information, NAO reviewed primary documentation, that is, submitted tender bids. As stated earlier, focus in this regard was directed towards the premium or discount offered in relation to the Platts price, and NAO's analysis in this regard centred on whether the FPC selected the bid with the lowest premium for eventual negotiation. It was not possible for the audit team to determine the importance, or otherwise, of other factors such as security stock, and multiple pricing options depending on quality specifications, among others, due to the absolute lack of information documenting such a critical decision-making process.

2.1.17 NAO's analysis of tender bids submitted with respect to fuels adjudicated by the FPC during the period 2008 up to 2011 is reproduced in tabular format hereunder. Each of the tables corresponds to the bids adjudicated by the Committee during that particular year (Tables 5, 6, 7 and 8 refer).

¹ The premium represents an additional mark-up (or in certain cases, a discount), submitted by the tendering party, over and above the market-established Platts price.

Table 5: Bids Received and Negotiated by the FPC in 2008

FPC Meeting [Fuel Type]	Bidders	Bidder Price	Negotiated Contract Price
25 February 2008 [Fuel Oil]	Totsa	+2.75 USD/MT (0.7%) / -6.00 USD/MT (1%)	±0.00 USD/MT (0.7%) / -6.50 USD/MT (1%)
	AOT	+10.95 USD/MT (0.7%)	
	Vitol	+21.00 USD/MT (0.7%) or 538 USD/MT (0.7%) / +15.00 USD/MT (1%) or 532 USD/MT (1%)	
	Lia Oil S.A.	No offer submitted	
	BB Energy	No offer submitted	
	Shell Trading Rotterdam B.V.	+12.00 USD/MT (0.7%) / -1.50 USD/MT (1%)	
	Trafigura	+22.75 USD/MT (0.7%) / -3.50 USD/MT (1%)	
27 February 2008 [Diesel]	Totsa	-3.75 USD/MT (Option 1) & +9.00 USD/MT (Option 2)	-5.85 USD/MT
	BB Energy	+6.50 USD/MT	
	ERG Raffinerie Mediterranee S.p.A	+2.00 USD/MT (Option 1) & +8.00 USD/MT (Option 2)	
27 February 2008 [Gasoil]	Totsa	-3.50 USD/MT	-5.85 USD/MT
	BB Energy	+6.50 USD/MT	
	ERG Raffinerie Mediterranee S.p.A	-2.00 USD/MT	
06 May 2008 [Light Heating Oil]	Fairdeal S.A.	+11.75 USD/MT (Option 1) & +25.75 USD/MT (Option 2)	Contract was not available for review
	AOT Trading	+17.00 USD/MT	
	Rixo International Trading	85.8% Platts (Option 1) & 84.8% (Option 2)	
26 May 2008 [Gasoline]	Lukoil	+44.80 USD/MT	
	BB Energy	No offer submitted	
	Totsa	+20.80 USD/MT	+20.50 USD/MT
25 June 2008 [Jet A1]	Litasco	Various (Note below table refers)	
	BP Oil International Ltd	+19.65 USD/MT	
	MOCH S.A.	+12.00 USD/MT	
	Global Integrated Solutions Ltd	Bid not quoted	
	Totsa	+36.75 USD/MT	+35.50 USD/MT
	BB Energy	No offer submitted	

Notes:

Litasco's bid for the Jet A1 tender reviewed at the FPC meeting dated 25 June 2008 was as follows:

Option 1 – July 2008 +45.25 USD/MT, September 2008 +41.00 USD/MT & November 2008 +39.25 USD/MT

Option 2 – July 2008 +62.75 USD/MT, August 2008 +62.75 USD/MT, September 2008 +58.50 USD/MT, October 2008 +58.50 USD/MT, November 2008 +56.75 USD/MT, December 2008 +62.75 USD/MT & February 2009 +62.75 USD/MT

Table 6: Bids Received and Negotiated by the FPC in 2009

FPC Meeting [Fuel Type]	Bidders	Bidder Price	Negotiated Contract Price
22 January 2009 [Gasoline]	Kolmar Group AG	+43.00 USD/MT	
	BB Energy	+35.75 USD/MT (Option 1) & +25.15 USD/MT (Option 2)	
	Fairdeal S.A.	+19.30 USD/MT (Cargoes 1 & 6) & +22.10 USD/MT (Cargoes 2 – 5)	
	BP Oil International Ltd	+32.00 USD/MT	
	Totsa	+22.50 USD/MT	+21.90 USD/MT
05 May 2009 [Fuel Oil]	Jackson Oil (Vilma Oil SL)	+16.50 USD/MT (0.7%) & +9.50 USD/MT (1%)	
	Petrobras	-1.021 USD/MT (0.7%) or 340.70 USD/MT (0.7%) / +7.08 USD/MT (1%) or 348.70 USD/MT (1%)	
	Totsa	+2.50 USD/MT (0.7%) or 370.50 USD/MT (0.7%) / -5.25 USD/MT (1%) or 362.25 USD/MT (Note below table refers)	-6.00 USD/MT
	BP Oil International Ltd	+43.50 USD/MT (0.7%) (Option 1) or +58.90 USD/MT (Option 2) / +7.63 USD/MT (1%)	
	AOT	+9.50 USD/MT (0.7%) / -1.50 USD/MT (1%) (Note below table refers)	
	Vitol	+22.15 USD/MT (0.7%) / +8.15 USD/MT (1%)	
	Lia Oil S.A.	No offer submitted	
	BB Energy	No offer submitted	
	Trafigura	+6.50 USD/MT (0.7%) (Option 1) or +11.50 USD/MT (0.7%) (Option 2) / -0.50 USD/MT (1%)	
18 May 2009 [Jet A1]	BB Energy	+10.70 USD/MT (Option 1) or +9.40 USD/MT (Option 2)	+9.40 USD/MT
	BP Oil International Ltd	No offer submitted	
	Vitol	+27.35 USD/MT	
	Baraca International Corporation	No offer submitted	
	RBS Sempra Energy Europe	No offer submitted	
	FAL Oil Co Ltd	+17.98 USD/MT (Option 1) or +9.98 USD/MT (Option 2)	
	Totsa	+21.25 USD/MT	
18 May 2009 [Gasoil]	BB Energy	+4.50 USD/MT	
	RBS Sempra Energy Europe	No offer submitted	
	Baraca International Corporation	-20.00 USD/MT	
	FAL Oil Co Ltd	+3.98 USD/MT	

	Totsa	-6.05 USD/MT	-7.55 USD/MT
07 July 2009 [Diesel]	Totsa	-5.70 USD/MT (Option 1) or +8.00 USD/MT (Option 2)	-6.00 USD/MT
	Lia Oil S.A.	+0.50 USD/MT	
	City Trade & investments S.A.	+21.50 USD/MT	
	BB Energy	-3.10 USD/MT (Option 1) or -5.10 USD/MT (Option 2)	
	Saras Spa	-3.00 USD/MT	
25 September 2009 [Gasoline]	Petrodeal	+15.80 USD/MT (Cargoes 1 – 4) & +16.90 USD/MT (Cargoes 5 – 6)	+16.10 USD/MT
	BB Energy	+22.90 USD/MT	
	Trafigura	+57.00 USD/MT	
	MOCOH S.A.	+23.00 USD/MT	
	Totsa	+16.99 USD/MT	
	Lukoil	+22.50 USD/MT (Option 1) or +19.50 USD/MT (Option 2)	

Notes:

Totsa's bid for the Fuel Oil tender reviewed at the FPC meeting dated 05 May 2009 incorporated the following prices as per the addendum to the original submission, that is, +46.25 USD/MT (0.7%) or a fixed price of 409.75 USD/MT (0.7%).

AOT's bid for the Fuel Oil tender reviewed at the FPC meeting dated 05 May 2009 incorporated provisions for deliveries scheduled between 1st December and 31st March, that is, the price would move to +1.00 USD/MT (1%) if a different pour point is required during the aforementioned period.

Table 7: Bids Received and Negotiated by the FPC in 2010

FPC Meeting [Fuel Type]	Bidders	Bidder Price	Negotiated Contract Price
15 January 2010 [Fuel Oil]	Baraca International Corporation	No offer submitted	
	BB Energy	No offer submitted	
	AOT Trading AG	+52.65 USD/MT (0.7%) / +58.65 USD/MT (0.5%)	
	Vitol	+25.50 USD/MT	
	Totsa	+15.50 USD/MT (0.7%) / +52.00 USD/MT (0.5%)	
	Petrobras	+5.00 USD/MT (0.7%)	+4.15 USD/MT
	Lia Oil S.A.	No offer submitted	
	Trafigura	+17.95 USD/MT (0.7%) / +34.95 USD/MT (0.5%)	
	Shell Trading Rotterdam B.V.	+6.50 USD/MT (0.7%) / +19.50 USD/MT (0.5%)	
23 April 2010 [Fuel Oil]	Totsa	+46.25 USD/MT (Option 1) or +16.25 USD/MT (Option 2)	
	Vitol	+16.87 USD/MT	
	BB Energy	No offer submitted	
	Petrobras	+7.65 USD/MT	
	Trafigura	+19.95 USD/MT (Option 1) or +4.85 USD/MT (Option 2)	+4.85 USD/MT
	Lia Oil S.A.	+15.00 USD/MT	
	Shell Trading Rotterdam B.V.	+7.25 USD/MT (Note below table refers)	
14 May 2010 [Diesel]	BB Energy	-6.10 USD/MT (Option 1) or -8.10 USD/MT (Option 2)	-8.50 USD/MT
	Totsa	-5.70 USD/MT	
	Litasco	-2.25 USD/MT	
	Lia Oil S.A.	+10.00 USD/MT	
	Petrodeal	+10.90 USD/MT (Option 1) or +17.60 USD/MT (Option 2)	
	Baraca International Corporation	No offer submitted	
	City Trade & Investments S.A.	+25.25 USD/MT	
02 June 2010 [Unleaded]	Litasco	+15.85 USD/MT	
	Global Energy Trading S.A.	+25.50 USD/MT	
	Petrodeal	+15.20 USD/MT	
	BB Energy	+11.35 USD/MT	
	Totsa	+1.99 USD/MT (Option 1) or +8.88 USD/MT (Option 2)	+8.40 USD/MT
03 June 2010 [Gasoil]	Lia Oil S.A.	+5.75 USD/MT	
	BB Energy	+5.40 USD/MT	
	Totsa	-7.55 USD/MT	-7.45 USD/MT
	Petrodeal	+16.55 USD/MT	

	City Trade & Investments S.A.	+4.85 USD/MT	
	Baraca International Corporation	No offer submitted	
20 July 2010 [Jet A1]	Totsa	+24.50 USD/MT	
	BB Energy	+16.40 USD/MT (Option 1) or +14.40 USD/MT (Option 2)	+14.00 USD/MT
	Baikal Business Company Ltd	-5.00 USD/MT	
	Petrodeal	+24.95 USD/MT (Option 1) or +32.25 USD/MT (Option 2)	
22 October 2010 [Diesel]	Totsa	-4.55 USD/MT	-5.25 USD/MT
	BB Energy	+1.45 USD/MT	
	Petrodeal	+18.75 USD/MT	
	M&J International Trading Co Ltd	+36.00 USD/MT	
	Paz Ashdod Refinery	No offer submitted	
19 November 2010 [Biodiesel]	Fuel Serve Ltd	Could not be determined	
	Edible Oil Refining Company Ltd	1.076 Euro/Litre (Note below table refers)	
	Hemok Polska	+0.5122 Euro/Litre (Option 1) or +0.4692 Euro/Litre (Option 2) or +0.8955 Euro/Litre (Option 3)	+0.8935 Euro/Litre
	BB Energy	No offer submitted	
	Mission Biotechnologies	+570 Euro/1,000 Litres	
	ADM International Sarl	+0.185 Euro/Litre	
23 November 2010 [Fuel Oil]	Trafigura	+10.25 USD/MT (0.7%) (Option 1) or +10.25 USD/MT (0.7%) (Option 2) or +8.25 USD/MT (0.7%) (Option 3) or +8.25 USD/MT (0.7%) (Option 4) / +36.50 USD/MT (0.5%) (Option 1) or +35.50 USD/MT (0.5%) (Option 2)	+5.50 USD/MT
	BB Energy	No offer submitted	
	Petrobras	No offer submitted	
	Shell Trading Rotterdam B.V.	+10.00 USD/MT (0.7%) / +45.00 USD/MT (0.5%) (Cargoes 1 – 6) & +55.00 USD/MT (Remaining Cargoes)	

Notes:

Shell's bid for the Fuel Oil tender reviewed at the FPC meeting dated 23 April 2010 was not considered as an eligible submission for adjudication by the Committee as the bid was received once the established deadline for tender submissions had already passed.

Edible Oil Refining Company Ltd's bid for the Biodiesel tender reviewed at the FPC meeting dated 19 November 2010 was not considered as an eligible submission for adjudication by the Committee as the bid was received once the established deadline for tender submissions had already passed.

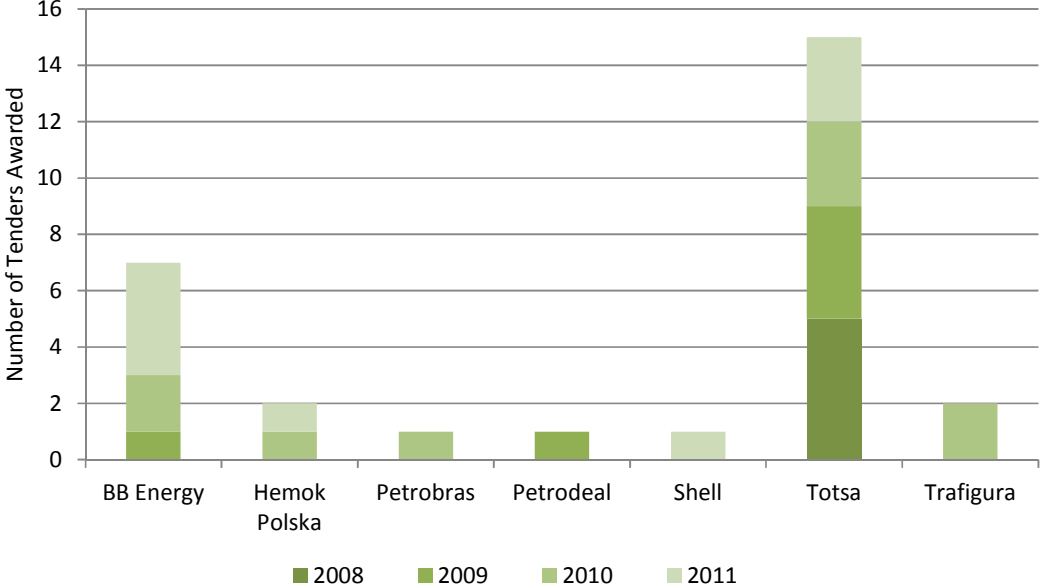
Table 8: Bids Received and Negotiated by the FPC in 2011

FPC Meeting [Fuel Type]	Bidders	Bidder Price	Negotiated Contract Price
18 January 2011 [Unleaded Petrol]	BB Energy	+11.85 USD/MT	+11.45 USD/MT
	BP Oil International Ltd	+27.50 USD/MT	
	Gunvortrade	+15.75 USD/MT	
	Petrodeal	+18.75 USD/MT	
	Sargas	+24.50 USD/MT	
	Morgan Stanley	+23.98 USD/MT	
18 January 2011 [Jet A1]	City Trade and Investment	+24.00 USD/MT	
	Oil Refineries Ltd	+32.00 USD/MT	
	BB Energy	+16.90 USD/MT	+14.00 USD/MT
12 May 2011 [Diesel]	Totsa	-5.70 USD/MT	-6.00 USD/MT
	BB Energy	+3.40 USD/MT	
05 July 2011 [Biodiesel]	BB Energy	No offer submitted	
	Edible Oil Refining Co. Ltd	+1.227 Euro/Litre	
	Hemok Polska	+1.110 Euro/Litre	+1.099 Euro/Litre
12 July 2011 [Gasoil]	BB Energy	No offer submitted	
	Fairdeal Traders SA	No offer submitted	
	MPM Services Ltd	660 USD/MT	
	Totsa	-3.00 USD/MT & -5.00 USD/MT	-5.00 USD/MT
10 August 2011 [Unleaded Petrol]	BB Energy	+15.45 USD/MT	+14.75 USD/MT
	Totsa	+27.00 USD/MT	
07 October 2011 [Jet A1]	BB Energy	+20.95 USD/MT	+20.50 USD/MT
14 December 2011 [Diesel]	MPM Capital Investments Ltd	+38.00 USD/MT	
	Totsa	+1.98 USD/MT	+1.68 USD/MT
	BB Energy Trading	+18.90 USD/MT	
22 December 2011 [Heavy Fuel Oil]	BB Energy	No offer submitted	
	Trafigura	+58.00 USD/MT	
	AOT	+31.95 USD/MT (FOB) & +39.95 USD/MT (CIF)	
	Glencore	No offer submitted	
	Petrodeal	+58.00 USD/MT	
	Totsa	+75.00 USD/MT	
	Shell Trading Rotterdam B.V.	+26.00 USD/MT	+24.00 USD/MT

2.1.18 As rendered evident in Tables 5, 6, 7, and 8, NAO's prima facie analysis of the outcomes of tender adjudication process indicates that in the majority of cases, the FPC chose to negotiate and eventually award the tender to the bidder submitting the most favourable premium. This was the case with

respect to 25 out of the 30 tenders reviewed. Once again, NAO reiterates that this assertion is heavily conditioned by the aforementioned severe limitations in terms of information relating to the decision-making process employed by the Committee with respect to tenders adjudicated in the pre-May 2011 audit period.

Figure 3: Overview of Selected Bidders



Note: The total number of selected bidders presented in Figure 3 is that of 29, which is one short of the 30 tenders reviewed in total. This is attributable to the light heating oil tender awarded on 6 May 2008, the contract of which was not available for review.

2.1.19 Figure 3 presents an overview of the selected bids by the FPC with respect to the audit period 2008 to 2011. Immediately apparent is the fact that Totsa and BB Energy were awarded tenders the highest number of times, with the latter being awarded a total of seven tenders over this four year audit period, and Totsa awarded a total of 15 tenders over the same period.

2.1.20 As stated above, 25 out of the 30 tenders reviewed exhibited congruence in terms of negotiations being undertaken by the FPC with what appeared (given the absence of any information or record available to aid the audit team to understand the Committee’s decision-making process) to be the

most favourable bid. Nonetheless, NAO noted one instance, relating to the FPC meeting dated 22 January 2009, where the original bid submitted by Totsa with respect to the supply of gasoline was extremely close, in terms of premium, to the bid submitted by Fairdeal S.A. (Table 6 refers). Although the bid submitted by Fairdeal appears to have initially been more favourable, the FPC chose to negotiate with Totsa, eventually closing at a rate close to Fairdeal's original submission. No record detailing or explaining this course of action was made available to NAO, barring a brief explanation submitted by Enemalta regarding credit terms. Enemalta stated that Totsa offered an additional 30-day credit period, that is 60 days in total, albeit against an interest rate charge, whereas Fairdeal quoted payment terms of 30 days.

2.1.21 The first instance when the selected tender bid was, prima facie, and based on the premium variable only, not the most favourable, relates to the FPC meeting held on 25 June 2008. Here the Jet A1 fuel tender was again awarded to Totsa, despite the fact that BP Oil and MOCH S.A. had submitted what appear to have been more favourable bids. Once again, NAO was not able to determine the basis of the Committee's selection, given that no record of the Committee's discussions or workings were retained on file.

2.1.22 When queries were raised with the Corporation in respect to the above, Enemalta stated that the offers submitted by BP Oil and MOCH S.A. quoted a pricing basis on the average of the Cost Insurance Freight Northwest Europe (CIF NWE) Jet A1 quotations, whereas Totsa offered pricing based on the average of the Free On Board Mediterranean (FOB MED) Jet A1 quotations. According to statements made by Enemalta, at the time, the price differential between the FOB MED and CIF NWE quotations stood at \$38/MT (the FOB MED quotation being cheaper than the CIF NWE). This, was in Enemalta's view, a possible explanation as to why the FPC considered the Totsa offer as more attractive than the other received bids. However, NAO's review of

relevant documents did not indicate any workings or calculations in line with the above justifications put forward by Enemalta.

2.1.23 Similar instances arise with respect to the FPC meetings dated 18 May 2009, 20 July 2010 and 19 November 2010. In the 2009 case, Totsa was awarded a tender for the supply of gasoil, when Baraca International Corporation had submitted a far more favourable bid. The integrity and validity of this bid might have been a concern to the Committee given the significant variance from all other bids; however, no record of such concern, or explanations indicating why this bid was not to be considered were retrieved on file.

2.1.24 Notwithstanding the above, when further queries were raised, Enemalta stated that Baraca International Corporation made reference to D2-Gas Oil, L-O,2-62 Gost 305-82, which was a Russian specification that was unknown to the Corporation, and did not fit the mandatory product specifications established through this particular tender. Furthermore, Enemalta stated that no other details were provided in relation to the other important required mandatory clauses.

2.1.25 Similar concerns abound with respect to the July 2010 case, in which circumstance the accepted bid by BB Energy was not the most favourable. In this case, Baikal Business Company Limited submitted a bid with a far more favourable premium, once again, significantly lower than all other bids received. Doubts regarding the validity of such a bid, or explanations attesting to why such a bid was not favourably considered were not retrieved on file, and the only note to this effect stated, "*No specific details were given as required by issued tender.*" In effect, review of the tender document indicated that the majority of its text was in the Russian language, except for details relating to the quantity to be supplied, payment terms and the Platts discount. The Hemok Polska November 2010 case, vis-à-vis ADM International Sarl followed similar patterns.

2.1.26 When further queries were raised with respect to the July 2010 Baikal Business Company Limited case, Enemalta stated that this tender was issued for the supply of Jet A1 and the provision of security stock. Enemalta claimed that the tender bid submitted by Baikal Business Company Limited made no reference to security stock and did not provide the required EU origin declaration. Furthermore, the Corporation stated that the product specifications being offered could not be verified, and that all of the above were in breach of the mandatory requirements as stipulated in the tender.

2.1.27 With regard to the last verificatory process associated with the analysis of submitted tender bids, such an exercise was only possible with respect to tenders adjudicated post-May 2011. In the case of these seven tenders, NAO confirms that the negotiated prices tally with the agreed-upon prices of the eventually signed contract for the provision of fuel.

2.2 The Tender Process

Brief Introduction

2.2.1 As indicated in the preceding section of this chapter, the Fuel Procurement Policy also addresses policy-related and procedural considerations vis-à-vis the tender process at Enemalta. In seeking to establish a sound and fair basis of Enemalta's performance with respect to its tendering function, the NAO audit team benchmarked such a function against the Corporation's Fuel Procurement Policy. In other words, further to NAO's review of the award of tender bids addressed in the preceding section, this Office also sought to determine whether Enemalta adhered to its own policy.

2.2.2 Given that the Fuel Procurement Policy was formally documented early in 2011, the applicability to contracts issued following this date is self-evident.

However, in the absence of any other indicators, and on the basis of the policy's address of the most fundamental stages of tendering, the NAO audit team considered the retrospective application of the said policy as a sound measure of performance.

2.2.3 NAO's ensuing analysis is structured around the five sub-steps established in the Fuel Procurement Policy, which in their entirety constitute the tendering procedure. These five sub-steps are represented by the:

- a. Invitation to Tender (ITT);
- b. Tender Submission;
- c. Tender Evaluation;
- d. Notification of Award; and
- e. Publication of Results.

2.2.4 Feeding into the first of the above listed sub-steps is Enemalta's forecasting function with respect to its fuel requirements, which is effectively managed by the Corporation's Shipping Section. To this end, the Shipping Section prepares a timetable of fuel deliveries in anticipation of arising and envisaged requirements. NAO was informed that, barring exceptional circumstances, there was only an approximate variation of five per cent in demand and consumption on an annualised basis, and therefore the amount of fuel needed was more or less predictable, with projections subsequently arrived at with considerable accuracy. Operating in this manner, once a contract neared its eventual closure, the FPC was convened to commence working towards another tender.

2.2.5 At a general level of analysis, NAO noted that a number of contracts for the purchase of fuel were extended in terms of timeframes for the delivery of

fuel, beyond the conditions of the originally agreed-upon tender. When queried by NAO, Enemalta stated that the contract for the delivery of fuel establishes a specific quantity that is to be delivered over an agreed-upon timeframe. Furthermore, Enemalta clarified that on occasion, such timeframes were adjusted, due to various reasons, such as, shipping-related issues and ullages². These delays resulted in the contractually established quantity not being delivered in the period outlined by the contract. Under such circumstances, deliveries were carried forward throughout the weeks following contract expiry.

Table 9: Adherence of Tender Process to Fuel Procurement Policy

Policy Tender Process as per Fuel Procurement		2008-2010			2011		
		Yes	No	Could not verify	Yes	No	Could not verify
Invitation to Tender							
1	ITT sent to list of suppliers by email	20			3		6
2	Printout of email and attached ITT	20			9		
3	Closing date set by Manager (Petroleum Division)	18		2	8		1
4	Copies of delivery receipts, out-of-office replies and delivery failures	4		16	2	7	
5	Forwarding of emails in case of out-of-office replies			20	2	4	3
Tender Submission							
6	Emails sent on dedicated email address			20			9
Tender Evaluation							
7	Evaluation ideally to be concluded in one session			20	7		2
8	Dedicated email address password request submitted to MITA			20	5		4
9	Access to mailbox and opening of tender submissions			20	5		4
10	Acceptance of eligible tender submissions			20			9
11	Evaluation of eligible tender submissions	19		1	9		
12	Ranking of compliant bids			20		7	2
13	Negotiation of most favourable bid/s			20	7		2
Notification of Award							
14	Notification of award to winning bidder			20			9
15	Notification to unsuccessful bidders			20	4	5	
16	MITA instructed to reset mailbox password			20	3	6	
17	Proposed contract sent to successful bidder			20			9

² Ullage refers to the the unfilled space available in tanks.

2.2.6 Findings relating to NAO's verification of compliance to Enemalta's Fuel Procurement Policy are summarily presented in Table 9, which is organised in a dichotomous manner, thereby delineating tenders issued prior to the formalisation of the aforementioned policy and those issued post fact. Instances of adherence, or otherwise, of the 29 reviewed tenders issued between 2008 and 2011 are presented against the structure utilised in Enemalta's policy document.

Invitation to Tender

2.2.7 Commencement of the tender process proper was set off through the issuance of an ITT, which as stipulated in the Enemalta's Fuel Procurement Policy, was restrictively circulated to suppliers listed in a specific mailing list held by the Corporation. When queried with respect to inclusion, or otherwise, in this supplier mailing list, Enemalta stated that this list had been compiled throughout the years and included potential suppliers for all types of fuels. Any supplier may register for eventual inclusion in this mailing list by sending a request to Enemalta Corporation. As a matter of procedure, Enemalta stated that all such requests were then forwarded to the attention of the FPC.

2.2.8 Moreover, Enemalta claimed that the mailing list may be reviewed from time to time, in order to keep the list as updated as possible. In fact, NAO was advised that this exercise had been carried out in mid-2012, whereby the Procurement Division, which is responsible for keeping the mailing list updated, filtered out inactive accounts on this mailing list. To this end, an email was sent to every supplier on the list to verify whether they intended to remain on the Corporation's mailing list, or otherwise.

2.2.9 Furthermore, suppliers who indicated their intention of forming part of this mailing list were also asked to comply with Enemalta's Fuel Procurement Policy in terms of documentation that was to be submitted. As per the Fuel Procurement Policy, registration on the suppliers' mailing list involved sending an application, including a corporate profile of the organisation together with, at least, two references of reputable organisations to whom the potential supplier had supplied fuel in the 24 months immediately preceding the registration application.

2.2.10 In cases whereby other organisations, acting as agents and intermediaries, were interested in receiving the ITT in order to contact other operators interested in submitting a bid, the procedure was the same – in that they would need to apply to Enemalta Corporation, giving a detailed description of their activities and a list of potential contacts. Such organisations cannot submit a bid directly since the bid needs to be made by or on behalf of a commercial operator. Therefore, the commercial operator eventually submitting the bid, or on behalf of whom the bid will be made, needs to be approved as per above procedure. Acceptance or otherwise of the registration application is given by the FPC based on the credibility of the information submitted in the application and based on subsequent checks carried out by the Committee.

2.2.11 The ITT, which is sent to suppliers on the mailing list as per above procedure, is prepared by the Manager of the Petroleum Division – assisted by the Electricity Division in the case of fuel quality and delivery schedules with regard to fuels intended for Enemalta's power stations – and sent out by the Procurement Department through a specific email address. The closing date of the ITT is set by the Manager of the Petroleum Division, after due consultation with the Chairman, in order to ensure that the FPC may be convened on the stipulated closing date of the ITT, which needs to be not less than two weeks and not longer than four weeks from the ITT date. All copies

of the delivery receipts and any out-of-office replies or delivery failures that are received in reply to the email sent by the Procurement Manager are to be printed and copies of all emails are to be filed at the Procurement Section and at the Chairman's Office.

2.2.12 The NAO has reviewed Enemalta's conformity with this procedure, and in all cases, the ITT sent to suppliers was found on file, together with an indication of the addressees to which the ITT was sent. In a small minority of cases, the closing date for tender submission was set at less than two weeks and more than four weeks from the ITT date, which was contrary to that established in the Corporation's Fuel Procurement Policy. Furthermore, in a number of cases, no copies of delivery receipts, out of office replies and delivery failures were retrieved from their relevant file. Although the policy states that in case of receipt of out of office replies, the ITT should be forwarded to other email addresses, this could not be verified by NAO with respect to the majority of cases.

Tender Submission

2.2.13 On the ITT, suppliers are instructed to submit their offers by email to a generic email address dedicated to the FPC. According to the Fuel Procurement Policy, this mailbox, registered on the Chairman's address as a secondary username, is by default set with an expired password, and no account holder is able to log onto this account before the password is changed by the Malta Information Technology Agency (MITA).

2.2.14 Accessing the submitted tender bids in view of eventual evaluation is only rendered possible once the password of the aforementioned generic email account is reset. To this end, a request for password reset is sent directly to the MITA Call Centre by email. MITA, in turn, provides a temporary password,

which is immediately changed by the Committee. After changing the password, the mailbox can be accessed through webmail.

2.2.15 In light of the importance assumed by this critical step in the process, which effectively ascertains the integrity, or otherwise, of submitted bids through the generic mailbox, NAO sought to independently verify whether the Committee's generic mailbox password was in fact reset immediately prior to the scheduling of a FPC meeting. To this end, NAO requested MITA to provide it with a record of all incidents logged by its Call Centre, whereby requests were made by Enemalta's Chairman to reset the password corresponding to the FPC's generic mail account.

2.2.16 MITA confirmed that this generic mail account was created in April 2011, and therefore, NAO's analysis in this respect corresponds to the period April 2011 up till December 2011. Throughout this period, the FPC met seven times. From data provided by MITA, NAO reconciled requests submitted by Enemalta with respect to this generic mail account to actual FPC meetings on three out of the possible seven instances. These three instances corresponded to the Committee meetings dated 10 August 2011, 14 December 2011 and 22 December 2011.

2.2.17 With respect to the remaining four Committee meetings, NAO's analysis of MITA Call Centre data indicated that no calls were logged on the specific dates of these meetings. The following brief accounts provide further details in this respect:

a. FPC meeting dated 12 May 2011

Two calls were logged on 9 May 2011, which was a full three days prior to the above-captioned meeting. These calls were recorded as being of a generic nature, and therefore, the audit team could not establish a direct link between such incidents and the eventual

Committee meeting held on 12 May 2011. With respect to closure of the account, an incident was logged on 13 May 2011; however, the nature of this call was unrelated to the reset of the generic mail account password.

b. FPC meeting dated 5 July 2011

Analysis of MITA data indicated that a call was in fact received on 4 July 2011, which was subsequently classified as 'password related issues'. In the eventuality that such a call corresponds to the above-indicated Committee meeting, this was effected a day earlier than stipulated by the policy. Furthermore, no calls were registered by the MITA Call Centre with respect to the reset of this account's password prior to the 12 July 2011 meeting.

c. FPC meeting dated 12 July 2011

As indicated above, no requests for the reset of the generic mail account password were received by MITA following the 5 July 2011 meeting. A call was in fact logged on 13 July 2011, again termed as 'password related issues', which NAO considers as corresponding to the reset of the generic mail account password.

d. FPC meeting dated 7 October 2011

With respect to this last Committee meeting, the call received by MITA immediately preceding this was dated 15 September 2011, which is well off the scheduled meeting date and unrelated to the password resetting issue. Moreover, the first call logged after the convening of this meeting was dated 12 October 2011, and was once again unrelated to the password reset issue.

2.2.18 The above-detailed further analysis of these four FPC meetings indicates that the Committee did not adhere to the procedures established by virtue of its Fuel Procurement Policy.

Tender Evaluation

2.2.19 According to the Fuel Procurement Policy, during the Committee meeting, the Chairman accesses the mailbox using the newly assigned password in the presence of all Committee members and declares tender submission as officially closed. Following NAO's review of FPC meeting minutes, this Office noted that such a procedure was documented (a note to this effect was presented in the meeting minutes) on five particular instances, that is, on the meetings dated 12 July 2011, 10 August 2011, 7 October 2011, 14 December 2011 and 22 December 2011. The remaining two meeting minutes reviewed by NAO and corresponding to the post-policy implementation period (dated April 2011 with respect to this particular aspect of the generic mailbox) had no documented record of such access, rendering the Office's verificatory exercise not possible.

2.2.20 Further review of FPC meeting files resulted in the identification of documentary evidence attesting to the fact that members of the Committee did instruct the MITA Call Centre to disable the generic mail account on three separate instances. These instances corresponded to the meetings dated 12 July 2011, 10 August 2011 and 14 December 2011. While the latter two cases reconcile with other evidence gathered in this respect, the 12 July 2011 case remains somewhat anomalous in terms of the sequence of events that took place. This may very well correspond with the call logged by MITA on 13 July 2011.

2.2.21 In fact, in February 2011, a mailbox proposal from MITA was received, following Enemalta's request to create a generic mailbox for the exclusive use of oil purchases. In this proposal, MITA noted that this solution poses a number of risks, including congestion of the mailbox to maximum capacity by malicious perpetrators, emailed bids not delivered to the mailbox because they are tagged as spam, emails that are automatically deleted due to their

quarantine status and classified as such on the basis of the type of file attached, as well as the possibility that the bidding time window during which access to the mailbox is barred exceeds five calendar days. Considering such drawbacks, MITA suggested that an e-bidding or e-auctioning system might address Enemalta Corporation's requirements better. However, to date, this has not been implemented. When NAO raised this issue with Enemalta, it was advised that Enemalta are planning to test the Department of Contract's e-bidding system on the procurement of other items before considering using the system for the procurement of fuel.

2.2.22 In its analysis of FPC meeting minutes, NAO noted that in one particular case, there was a signed note on file indicating that an extraordinary fuel procurement meeting was held to discuss an offer not originally received in the generic mailbox. The Committee met in urgency after it transpired that an offer by a particular bidder was sent to the Committee but was not vetted at the originally convened and corresponding meeting. An internal IT investigation concluded that this was due to the fact that the email was sent with a sensitivity flag set to private, thereby only allowing the actual owner of the inbox to view the email.

2.2.23 Once the Committee convenes, all submitted bids are opened and all documents are printed. The emails containing tender submissions are then archived according to the type of fuel being purchased and date of closure. All emails received are then deleted from the inbox. Only offers received by the declared closing time and before the opening time of the evaluation session as declared by the Chairman are accepted and deemed eligible for further evaluation.

2.2.24 Enemalta's Fuel Procurement Policy clearly states that each offer received should be evaluated in terms of its administrative and technical suitability. Furthermore, the Corporation's policy elaborates as to how compliant bids

should be ranked. Against this context, evaluation takes the form of a negotiated procedure, whereby the Committee further negotiates the most favourable offer received. This process of negotiation is carried out during the FPC meeting, contacting the preferred supplier (by virtue of submission of the most favourable offer) by phone.

2.2.25 As indicated earlier in this chapter, the FPC, as guided by the Fuel Procurement Policy, utilised a standard adjudication sheet during the period mid-2009 until mid-2011, which is reproduced in Appendix A.2 for ease of reference. From mid-2011 onwards, a differently formatted adjudication sheet was used by the FPC, again reproduced as per Appendix A.3. NAO's review of Committee meeting minutes and subsequent confirmation through in-depth interviews with Committee members indicated that bids adjudicated by the Committee were not ranked, and that once the preferred bidder/s were identified, a telephone conversation was held with the relevant bidder/s so as to further negotiate the price.

2.2.26 As per the Fuel Procurement Policy, the Committee reserves the right to clarify with the bidders any bid, in part or in whole, in order to be able to verify the compliance of the bid and/or in order to be able to reduce the price offered, particularly if this was not clear from the original submission. Interviewed FPC members indicated that clarifications were verbally addressed, by phone, and the bidders' responses were noted in the meeting minutes and thenceforth reckoned as forming part of the bid. Once again, given the dearth of information available, it was not possible for NAO to verify adherence to this approach. However, as exemplified in the preceding section, this Office did encounter instances when bids were very close in terms of pricing, or other instances when rejected bids appear to have been more favourable than those subsequently negotiated. Under such circumstances, no evidence was provided that indicates whether the FPC had

in fact verified compliance of submitted bids, or sought clarifications to this effect.

2.2.27 Barring the FPC meetings held post-May 2011, NAO noted that the decision-making process employed in actual tender bid adjudication was not formally documented. In addition, telephone conversations, key in the process of further negotiating submitted bids, were not recorded or represented in summary format in the relevant meeting minutes. The implication of such shortcomings in terms of record-keeping and documentation vis-à-vis the tender evaluation process is straightforward. Essentially, given the complete absence of recorded data (examples of such FPC meeting minutes are provided in Appendix A.1 and Appendix A.2), NAO's analysis of the evaluation process is severely constrained.

2.2.28 All printed documentation, together with the adjudication sheets and other working documents used by the Committee during the evaluation are sealed in an envelope and filed at the Chairman's Office. In the majority of cases (barring FPC meetings held post-May 2011), NAO could not verify whether evaluation was concluded in one session, since no documentation was available to confirm this. The implication of such a scenario is the risk posed with respect to the integrity of the procurement process.

Notification of Award

2.2.29 The winning bidder is immediately notified of the tender award by telephone. Before the Committee meeting is adjourned, an email is sent out to each unsuccessful bidder by the Secretary of the FPC. Given that the Fuel Procurement Policy was not in force prior to mid-2011, and that no related or supporting documentation relating to this stage of the tender process could be retrieved from the information provided to NAO, it was not possible for

this Office to verify this particular stage of the tender process. However, with respect to the post-policy period, that is, from mid-2011 onwards, relevant documentation detailing the notification of unsuccessful bidders was found in four out of a possible nine cases.

2.2.30 At the end of each meeting, the Fuel Procurement Policy states that MITA is to be notified to reset the password for the generic mailbox, thereby prohibiting access. This is noted in meeting minutes corresponding to meetings held from mid-2011 onwards, which is a matter that has already been addressed by NAO in the preceding text.

2.2.31 Enemalta's policy stipulates that after the meeting, and within one week from the tender closing date, the Manager of the Petroleum Division is to initiate correspondence with the successful bidder in order to conclude the contract based on the tender conditions negotiated during the committee meeting. In all cases, no record of such correspondence was found by NAO in the relevant files provided by Enemalta, and therefore, adherence to this procedural sub-step could not be verified.

2.2.32 Further to the above, Enemalta stated that sale contracts corresponding to its purchase of fuel were drafted by its suppliers and not by the Corporation itself. The role of the Manager of the Petroleum Division was therefore limited to the sending of requests for the submission of a draft supply contract for Enemalta's consideration. The Corporation stated that such emails, draft contracts and amended draft contracts were not registered on the corresponding shipping file, and it was only the agreed-upon contract that was recorded on file.

Tender Results

2.2.33 When queried with respect to the publication of tender results, Enemalta informed NAO that it is the FPC's policy that bids received together with the price at which the tender was concluded should not be published due to the commercial sensitivity of such data. NAO considers this approach to be objectionable and not in line with the expected standards and values of transparency, openness and overall good governance one would expect from a publicly owned corporation.

2.3 Standard Operating Procedures

2.3.1 While the above-discussed Fuel Procurement Policy governs the actual procurement of fuel undertaken by Enemalta, once this process is complete, it is the SOPs that effectively regulate actual delivery and related quality control requirements.

2.3.2 As indicated earlier in this report, the fuel procurement process is effectively managed by the Finance, Commercial and Petroleum Divisions within Enemalta, and it is against this context that the SOPs are defined. These Procedures were published in October 2011 by the Corporation's Finance Department, essentially listing all of the Department's key processes, following guidelines stipulated by the International Organisation for Standardisation (ISO), more specifically, ISO 9001/2000.

2.3.3 ISO 9001/2000 specifies requirements for a quality management system, whereby an organisation needs to demonstrate its ability to consistently provide products or services that meet customer and applicable regulatory requirements, while simultaneously addressing efforts at enhancing customer satisfaction through the effective application of appropriately

designed systems. These systems are to include processes for continuous improvement and the assurance of conformity to customer and applicable regulatory requirements.

2.3.4 The SOPs Manual was intended as a means of establishing a quality management system for the Finance Department, geared at attending to the coordinating functions carried out by the Electricity and Petroleum Divisions in the delivery of fuel. In essence, the SOPs were designed to ensure that processes and procedures carried out by the Department conform to the functions of the Department itself, as well as to the relevant regulatory requirements and standards. The Manual depicts Policy Specifications (documents outlining the direction to be taken by the Department), Procedural Specifications (documents supporting the policies outlined by defining the methods to be used by responsible officers of the Department) and Detail Specifications (providing the specific directions and process to accomplish the particular tasks identified).

2.4 Shipments and Delivery to Malta

Brief Introduction

2.4.1 The Electricity Division within Enemalta is responsible for the procurement of fuel intended for use by the Marsa and Delimara Power Stations. The two types of fuel procured by Enemalta Corporation and utilised by the Power Stations for the generation of electricity are low sulphur fuel oil and gasoil. On the other hand, the Petroleum Division coordinates procurement for the supply of avgas, Jet A1, diesel, biodiesel and unleaded petrol. Avgas and jet A1 fuels are aviation fuels and are therefore used by the airline industry, while diesel, biodiesel and unleaded petrol are sold to petrol stations.

- 2.4.2 The actual supply of fuel is carried out as per specifically established contractual terms, which is an aspect of fuel provision that is agreed upon after the tender is awarded. Each contract includes various conditions, including credit terms, commencement of credit period, schedule of deliveries and pricing terms. Contracts are in the majority of cases assigned for a six-month, eight-month or a one-year period.
- 2.4.3 The estimated amounts of fuel required are provided by the Marsa and Delimara Power Station Managers to the Shipping Officer, who is the contact person for both power stations. Every Monday, the Shipping Officer is forwarded a report indicating the amount of fuel utilised in the previous week and the anticipated amount of fuel that is to be utilised in the following week by each Power Station. This weekly report is referred to as the Monday Stock Position Report. With this information in hand, the Shipping Officer is able to anticipate when there will be enough space in the storage tanks to receive the amount of fuel projected in the next consignment and accordingly informs the supplier with a tentative time window as well as the quantity needed for the next delivery.
- 2.4.4 Stock movements, including consumption and supply, are recorded in a spreadsheet, which is maintained by the Shipping Officer, the Finance Risk Management Section housed at the Marsa Head Office, as well as the Finance Section within the Petroleum Division. These three Enemalta officials/sections are in effect responsible for the authorisation of payments.
- 2.4.5 As stated earlier, the schedule of fuel consignments is agreed upon during contract negotiations. Scheduled dates are recorded in a spreadsheet and when fuel is actually received, the spreadsheet is then updated with details such as:
- a. Bill of Lading date, which is the date when fuel was loaded onto the vessel;

- b. Outturn details, which is used to calculate the bill of lading quantity, especially in cases where unloading takes place at both power stations;
- c. Notice of Readiness, which is given by the vessel master once the consigning vessel is ready to unload fuel;
- d. Load port, which is the port where fuel was loaded onto the vessel; and
- e. Discharge port, which is the destination of the vessel.

2.4.6 In addressing the shipment and delivery of fuel to Malta, and Enemalta's responsibilities in this respect, NAO adopted a case-study approach. Essentially, 61 vessel files were reviewed as part of this analytical exercise. The major aspects assessed in this regard included correspondence between Enemalta Corporation and fuel suppliers with respect to logistical arrangements, a review of the loading and unloading processes corresponding to the selected sample, coupled with the analysis of relevant documentation, as well as the detailed vetting of associated quality certification, among others. Further details relating to sample selection are presented under section 1.5 of the preceding chapter.

2.4.7 In addition to the above-referred 61 vessel files, 21 files were reviewed as part of NAO's barge transfer analysis. The selection of barge transfers reviewed by this Office corresponded to the relevant diesel vessel files forming part of the original 61 case studies sampled in this respect. In other words, diesel shipments forming part of NAO's original sample were subsequently subjected to a further level of analysis, which narrowly focused on barge transfers. In essence, audit exercises undertaken in respect of this secondary level of review entailed the review of relevant contracts, comparison of quantities transferred, subsequent analysis of arising discrepancies and corrective action taken thereafter, as well as the vetting of corresponding payments. The main audit findings identified in this regard are presented in depth of detail in section 2.5.

Logistical Coordination: Loading, Unloading and Related Documentation

- 2.4.8 The first step in the logistical coordination of fuel shipments delivered to Enemalta Corporation is instigated by the Shipping Officer, who is tasked with anticipating when the next consignment of fuel is required. As a matter of procedure, the Shipping Officer provides the supplier with a tentative time window within which to effect delivery, while simultaneously indicating quantity requirements. Communication between both parties ensues, until both parties confirm the time window and quantity to be delivered.
- 2.4.9 In the analysis of vessel files undertaken by NAO, there were instances where the time window had to be adjusted due to unforeseen circumstances, such as delays. Various types of delays were noted in the case studies reviewed, including delays at load port, delays due to bad weather, as well as berthing problems due to other ships in port. Correspondence relating to such delays was found in the vessel files that were analysed.
- 2.4.10 NAO's further review of correspondence relating to this first step of the fuel delivery process identified a number of cases where communication through telephone conversations was not subsequently confirmed in writing and accordingly documented in the file. This was the case in nine out of the 61 vessel files reviewed, and issues identified in this respect related to changes in quantities to be delivered, delays in delivery and pricing.
- 2.4.11 One particular instance where a decision was taken but not formally documented related to a case (CS4A) where due to low stock levels, Enemalta had to accept a delivery consisting of lower quality fuel oil (1 per cent sulphur instead of 0.7 per cent). In this respect, Enemalta stated that the primary function of generation was to produce electricity at the least possible cost, while ensuring consistency with legal obligations. The Corporation further claimed that if fuel stock levels were low, fuel outside of established specification would be used if that was all that was available. From NAO's

review of corresponding documentation, it was indicated that approval for the acceptance of this lower quality fuel was sought from a higher authority. However, NAO noted that written authorisation to this effect was not available on file, and Enemalta stated that such confirmation was obtained by means of a telephone conversation.

2.4.12 At the loading stage of the shipment process, an independent inspector is appointed at loading port to supervise the loading of fuel, in order to subsequently provide an objective report on this process. The loaded fuel is subject to a quality analysis, based on the parameters as outlined in the contract. A Certificate of Quality is issued following this analysis. Further information and a more in-depth analytical review of this aspect of shipping is provided in the ensuing section.

2.4.13 Once the vessel is loaded, a Bill of Lading is issued. This is a legal document involving the shipper of a particular good and the carrier, detailing the type, quantity and destination of the good being carried. The Bill of Lading also serves as a receipt of shipment when the good is delivered to the predetermined destination. This document must accompany the shipped goods, irrespective of the form of transportation, and must be signed by an authorised representative of the carrier, the shipping party and the receiver.

2.4.14 NAO noted that in certain instances, there was an agreement with the supplier to have a notional Bill of Lading, apart from the official Bill of Lading. When NAO queried this, it was informed that the issuance of a notional Bill of Lading related to payment terms. In such cases, contractually established payment terms stipulated that the payment due date was to be calculated and based upon 30 calendar days from the date of the Bill of Lading. Generally, a notional Bill of Lading would be issued in cases where, due to unforeseen circumstances, a planned shipment would not arrive within the forecasted time window, thereby impacting upon Enemalta's financial position. Under such circumstances, the notional Bill of Lading would provide

the Corporation with an opportunity to adjust to the changing circumstances in line with its overall financial commitments. NAO opines that such arrangements bear the risk of incurring higher or lower costs, effectively depending on Platts price fluctuations for that particular month.

2.4.15 With respect to the vessel files reviewed by NAO, the corresponding Bill of Lading documents analysed provided details pertaining to the type of fuel loaded, as well as quantity measurement. The quantity documented on the Bill of Lading is considered to be final and binding. Therefore, if fuel discharged in Malta is found to be less than that documented on the Bill of Lading, an insurance claim can be submitted by Enemalta Corporation. As per international standards relating to this practice, a 0.5 per cent variance error is deemed an acceptable margin of variation, in which case no form of recourse is instigated. When recorded variations exceed the 0.5 per cent threshold in terms of quantity declared on the Bill of Lading, as compared to quantity declared at port of discharge, an insurance claim can be raised.

2.4.16 A Cargo Manifest document outlining the name of the vessel carrying the fuel, nationality, master name, load port and discharge port, sailing date, consignor and consignee, as well as a description of the cargo, bill of lading details and quantity of fuel loaded is also presented to Enemalta with the rest of the formal documents submitted as already indicated above.

2.4.17 Ullage before and after loading are recorded on board the vessel at load port and workings as per the ship's calibration table can lead to a quantification of fuel loaded. A Certificate of Quantity is issued, illustrating the quantity of fuel loaded in metric tons (air), cubic metres (at 15 degrees Celsius) and US Barrels. The quantity declared as issued from the shore tank at load port is also declared on the Bill of Lading.

2.4.18 A few hours before unloading the fuel in Malta, a sample of fuel is taken from each of the tanks that is to be filled. In order to establish the amount of fuel already stored in these tanks, measurement through dip tape is undertaken

by Enemalta officials in the presence of the appointed independent inspectors and Department of Customs officials. Once this initial measurement is completed, the corresponding tank valves are sealed by Department of Customs officials.

2.4.19 Upon arrival of the vessel in Malta, the Notice of Readiness is submitted by the vessel master. This notice, indicating the date and time, shows that the vessel has arrived in port and is ready to commence discharging. There is a specified amount of laytime allowed, during which discharging has to take place, otherwise a demurrage claim may be incurred. Demurrage claims relate to the detention of a ship, in this case effecting discharge of fuel, beyond the time allowed for unloading.

2.4.20 As a matter of standard procedure, Enemalta established demurrage calculations with respect to the shipments received. In the corresponding review carried out by NAO, these demurrage calculations were noted in vessel files selected as the audit sample. NAO noted that demurrage was incurred on seven instances out of the 61 case studies reviewed, at a total cost incurred by Enemalta of approximately €136,700. A breakdown of these costs is outlined in Table 10.

Table 10: Overview of Demurrage Incurred

Fuel Type	Case Study Reference	Vessel File Reference	Total Demurrage Incurred (USD)
Fuel Oil	3	HO/V7/10	34,000.00
Unleaded Gasoline	33	V09/09	12,594.40
Jet A1	35	V58/09	11,250.00
Diesel	36	V06/09	29,455.24
Diesel	37	V56/09	14,520.83
Diesel	42	V07/08	6,897.92
Gasoil	48	V03/09	27,983.26
Total demurrage costs			136,701.65

2.4.21 NAO noted that in various shipments, Letters of Protest were presented. The reasons corresponding to these Letters of Protest included the following:

- a. Delays in berthing;

- b. Delays in submission of the Notice of Readiness;
- c. Reduction of discharging rate as per shore request;
- d. Reduction of discharging rate due to high back pressure;
- e. Cargo calculation made without presentation of the Certificate of Quality;
- f. Slow discharging rate;
- g. Stoppage/delays in cargo operations;
- h. Delays in awaiting pilot for departure;
- i. Delays in shifting the vessel;
- j. Delays in start of discharge;
- k. Quantity-related discrepancies between ships figures and Bill of Lading;
- l. Stops/delays arising due to shore-related reasons;
- m. Port clearance not granted on arrival; and
- n. Number of shore lines connected.

2.4.22 When NAO queried the relevance and bearing of these documents in the reviewed vessel files, Enemalta explained that Letters of Protest can be issued by the shipping party as well as by Enemalta, depending on the specific circumstances prevalent in each shipment. Ordinarily, these are issued in order to safeguard interests should potential demurrage claims arise.

2.4.23 To this effect, Enemalta instructs loading masters to present a protest whenever they encounter a delay due to factors within the shipping party's responsibility, so that if a demurrage claim arises, Enemalta could use the relevant Letter of Protest to minimise, or even cancel the claim. On the other hand, protests issued against Enemalta are usually always in relation to delays in berthing due to daylight restriction, low discharging rates and stoppages, among others. From NAO's review of sampled shipment files, in the majority of instances, letters of protest were in fact raised by suppliers against the Corporation.

- 2.4.24 In instances where deliveries are scheduled for both power stations, the fuel tanker first needs to unload at Marsa Power Station and then at Delimara Power Station, due to considerations relating to sea depth. In these cases, NAO noted that separate Notices of Readiness, Time Logs and Cargo Receipts are issued, but filed in the same vessel file.
- 2.4.25 NAO also noted instances when not all fuel was to be discharged to Enemalta as only part of the shipment was intended for delivery to the Corporation. Therefore, in such cases, calculations relating to the relative apportionment of delivered fuel stock were established.
- 2.4.26 On arrival of the fuel at discharge port, Enemalta and Customs representatives, as well as an independent inspector are present to inspect and supervise the process. Ullage on board is recorded in order to calculate and compare the quantity delivered with the original Bill of Lading. Quantities discharged are countersigned by all parties present and documented in the Outturn report. Further details relating to the analysis undertaken by NAO in this respect are presented at a later stage in this section of the audit report.
- 2.4.27 In ensuring the integrity of fuel stock, the seal that was previously referred to is broken prior to commencement of discharge into the Enemalta storage tanks, while another seal is instated after the tank is filled with the fuel received. As a standard matter of procedure, the delivered fuel is left to settle for 24 to 48 hours. Once this settling period is complete, each tank is drained from the water content that settles at the bottom of the tank. A sample is taken once again, together with the level and oil temperature of each tank. All this is carried out in the presence of the independently appointed inspectors, as well as Department of Customs and Enemalta officials.
- 2.4.28 The independent inspectors and Enemalta officials take dip readings and compare results. Three dip readings are taken if the two sets of readings agree within the 0.001 range, while five dip readings are taken in instances

when the two sets of readings agree within the 0.003 range. Such measures at ensuring consistency in terms of quantity measurement are critically important in arriving at accurate readings, as this process is affected by numerous environment factors. For example, different fuel temperatures within the same tank result in changes of density, which subsequently influence volumetric recording.

2.4.29 Once this quantity-related verification is completed, the independent inspector submits a report to Enemalta, which is subsequently confirmed by the latter. A copy of this report is also sent to the Shipping Officer and the respective Station Manager, who is tasked with verifying the contents of the report. Finally, the report is sent to the Enemalta Regulatory Office, for future reference during the emissions reporting-related annual audit, referred to in greater detail in section 1.3.

2.4.30 At this stage of the process, the independent inspector issues a report, which includes outturn details corresponding to each tank where fuel was discharged, as well as a quantity comparison table outlining the difference between Bill of Lading figures and total outturn in each tank.

2.4.31 A Cargo Receipt is also exchanged between Enemalta and the vessel master, in order to certify that the cargo, as described in the Bill of Lading, was received by Enemalta and indicating where the fuel was unloaded.

2.4.32 Following the completion of fuel discharge, Enemalta representatives, as well as the independent inspector, visually check that all fuel was in fact discharged from the vessel. Subsequently, the independent inspector issues a shore tank report. This report includes detailed information, including quantity of fuel, volume, density and metric tons in each shore tank before and after discharge. The equipment used to collect this information is also outlined in the report.

- 2.4.33 As mentioned in the preceding paragraphs, a Time Log document is kept to outline the timing of various steps and procedures, including, among others, the time when the Notice of Readiness was tendered, vessel arrival, timing of boarding by pilot, timing of boarding by inspectors, commencement of inspection, hose connection time, discharge commencement and discharge completion.
- 2.4.34 As part of the audit work undertaken, NAO reviewed the 61 vessel files selected as its audit sample, and vetted for procedural and quantity-related consistency. With respect to the former, that is, the ensuring of procedural consistency, NAO's analysis of documentation indicated that records kept were complete, barring exceptional and minor circumstances addressed in the above text. Record-keeping in this respect was of a good standard and documents were well organised according to their specific vessel file.
- 2.4.35 NAO further analysed the consistency of fuel quantity delivered and registered through the various official documents associated with this shipment process. In undertaking this analysis, NAO compared the quantities established in the Bill of Lading against the quantities recorded in the Outturn Report of each selected case study. The detailed results of this analysis are presented in tabular format in Appendix B.
- 2.4.36 The aforementioned analysis undertaken by NAO indicated that in the majority of cases, 52 out of a total of 61, the discrepancies arising with respect to quantities established through the relevant Bill of Lading, compared against the respective Outturn Report, were in fact minor, that is, under the 0.5 per cent threshold. Further details regarding the nine cases in which major quantity-related discrepancies were noted are addressed at a later stage in this section.
- 2.4.37 In reference to the above exercise, a number of limitations constrained NAO's review and reconciliation of quantities delivered. One such limitation related to the fact that, in certain cases, more than one Bill of Lading was

appended to the shipment, which was essentially due to two main reasons. The first instance relates to cases where more than one transfer may have taken place with respect to the delivery of Enemalta's requested fuel parcel, such as a transfer from a local supplier's storage being coupled with the normal vessel delivery. On the other hand, the second instance relates to fuel shipments corresponding to the same delivery loaded from different sources or refineries.

2.4.38 Another important consideration that must be made with respect to the data presented in Appendix B relates to the fact that the quantities presented are not necessarily indicative of fuel ordered and received by Enemalta. In cases where the entire shipment was intended for Enemalta, it was possible for the audit team to verify whether the quantity as per Bill of Lading reconciled with the quantity delivered.

2.4.39 In cases where only part cargo was destined for Enemalta, such review was not entirely possible. This was due to the fact that in some instances, documents intended at verifying fuel received, reconciled the fuel quantity in its entirety, and not the fuel portion specifically dedicated for Enemalta. Under such circumstances, NAO noted a number of cases where part of the shipment was intended for the supplier's local storage, and therefore, Enemalta only received part of the cargo indicated in the appended table. In reference to such instances, apportionment of the Bill of Lading was required.

2.4.40 In order for the audit team to carry out such verification, it would have demanded the review of stock control mechanisms and procedures in place at the Corporation. This was not part of the audit scope and therefore further verification of these specific cases was not possible. Other limitations relevant to this analysis included issues relating to sample selection. NAO's sample selection targeted numerous shipments corresponding to various contracts, but was not geared towards assessing all shipments within these contracts. Therefore, the fact that contracts were not reviewed in their

entirety precluded NAO from reconciling overall volumes of quantities delivered. Such methodological considerations were intended, as selecting an audit sample on the basis of the entire review of contract quantities delivered would have, once again, necessitated the review of stock control issues, which were, a priori, scoped out of this audit.

2.4.41 When queries were raised by NAO with respect to these quantity-related variations, Enemalta indicated that a number of factors lead to such discrepancies in measurement. The applicability of the ensuing errors is highly contingent on the type of fuel concerned. These factors include the following:

a. **Human Error**

Human error can occur if tank dip measurements are not taken accurately. Standard tables are used for conversion purposes, and to this end, tank density as well as temperature are required in order to perform these calculations. Volume and density change according to temperature; colder temperatures result in reduced volumetric readings, while higher temperatures result in a larger volume than originally recorded.

b. **Tank Calibration Table**

If the tank's calibration table is not accurate, it may lead to discrepancies in readings. Such discrepancies arise due to imperfections in the tank, which subsequently render the calibration table inaccurate.

c. **Temperature measurement**

The dipping hatch is positioned at one side of the tank. This may give rise to possible quantity-related discrepancies, specifically when the sun faces the side of the tank wherefrom measurement is taken. Under such circumstances, the temperature of fuel measured through the dipping hatch is not necessarily representative of the whole tank.

d. **Distance from Pipeline to the Fuel Un/Loading Dolphin**

The tanks at Has-Saptan were built by the British Services in the 1960s for military use, and were not intended for the commercial function they fulfil at the present date. Bearing this in mind, the considerable distance between the Has-Saptan installation and the fuel un/loading dolphin at Birżebbuġa results in temperature variations across the length of the pipeline, the extent of which cannot be quantified by Enemalta.

e. **Air Pockets in Tank**

While unloading of fuel is being carried out, air pockets may form in the pipeline. In order to confirm whether such air pockets are in effect present, or otherwise, a pipeline displacement is performed when loading the barge. A small quantity of fuel is unloaded from the tank onto the barge, and a measurement of what was received onboard the barge is taken through a dipping procedure. This is subsequently compared to what was discharged from the tank, and it is through this procedure that confirmation, as to whether or not air pockets were present in the pipeline, may be arrived at.

In addition, at the end of each unloading operation the ship operates stripping pumps to ensure that all fuel in the cargo tanks was discharged. This process introduces pockets of air into the pipeline, which are then displaced in the next fuel transfer operation. The pipeline displacement procedure is intended to eliminate any errors in quantification due to the presence of such air pockets.

f. **Barge Errors**

The utilisation of barge transfers presents a greater possibility of registering errors in readings taken onboard. Enemalta stated that since barges are always at sea, their calibration table is continuously changing due to changes in tank shape, which are brought about by

movements at sea and bad weather. Furthermore, some barges have tanks on the side of the barge, while others have tanks that are situated in the middle of the vessel. This implies that temperatures may vary between tanks on the same barge.

2.4.42 Elements of the aforementioned discrepancies may be somewhat mitigated by means of the Vessel Experience Factor³. This Factor is arrived at through review of details of the last ten loadings onboard the vessel, more specifically, through analysis of the difference between the Bill of Lading and the readings taken onboard the vessel.

2.4.43 As indicated in the preceding text, instances of major quantity-related discrepancies, that is, variations between Bills of Lading and Outturn Reports above the 0.5 per cent threshold, were addressed through insurance claims. NAO further analysed instances of discrepancies exceeding this threshold in order to ascertain whether the relevant insurance claims were duly raised. The cases where such a discrepancy was registered are presented in Table 11.

Table 11: Analysis of Insurance Claims

Case Study Reference	Vessel File Reference	Type of Fuel	Percentage Discrepancy	Insurance Claimed (Yes / No)
V44/10	11	Avgas	-0.77	Yes
V28/10	12	Avgas	-0.79	Yes
V04/11	13	Avgas	-1.36	Yes
V35/11	14	Avgas	-1.68	Yes
V62/09	38	Avgas	-2.09	Yes
V28/09	39	Avgas	-1.75	Yes
V60/08	45	Unleaded	-0.53	Yes
V908	46	Unleaded	-0.79	Yes
V31/08	47	Avgas	-2.75	Yes

³ The vessel experience factor is, in essence, the historical difference in ship and shore figures for a given ship over an established period, which is typically based on the previous 10 loadings. In effect, the vessel experience factor indicates the ship's calibration error.

2.4.44 As evidenced in Table 11, insurance claims mostly arose in avgas-related cases. From the sample case studies analysed by NAO, it was noted that in the case of avgas, insurance was claimed in all of the sampled cases. When queried about this, Enemalta explained that avgas is a very volatile fuel and evaporates quickly. Enemalta envisaged that most of the losses occurred during the discharge process, since the fuel is transported to Malta by means of a road-tanker. The actual delivery and discharge of avgas is carried out by gravity, using long hoses feeding into trailer tanks at Luqa. The hoses used cannot be drained directly into the trailer tanks and have to be drained into a tray, the contents of which are then downgraded to motor gasoline.

Quality Analysis

2.4.45 The quality of fuels received in Malta is an integrally important aspect of the shipment process. Quality testing is routinely performed on the fuel delivered with every shipment.

2.4.46 Initial tests are carried out at load port, which is the port where fuel is loaded prior to onward transmission to Malta. At this stage of testing, independent inspectors issue a quality certificate, which encompasses the assessment of various parameters against set specifications. As indicated in the preceding text, the quality certificate, together with other official shipment-related documents, are presented upon delivery of fuel. Enemalta officials indicated that in some cases, this certificate was sent to the Corporation prior to actual shipment delivery, whereas in other cases, this was received once the shipment had arrived in Malta, together with other documents.

2.4.47 Upon arrival in Malta, there are instances when, subject to Enemalta's discretion, local inspectors appointed by the Corporation carry out testing again. The firm tasked with carrying out such local quality testing in the case of all shipment files reviewed by NAO was Saybolt Malta Ltd. Another quality certificate is issued at this stage of the process. Once again, readings on the

various parameters indicated through tender specifications are established, and on occasion, attention is drawn to cases of parameters being outside of prescribed specifications.

2.4.48 Following the submission of the aforementioned Quality Certificate, generated at load port, it is Enemalta's responsibility to ensure that the delivered fuel complies with established specifications, and take corrective action when necessary. In addition to the testing of conformity with established parameters, the contract for supply of fuel also establishes the particular test methods that are to be utilised in arriving at such results. It is important to note that the quality certificate issued at load port is considered to be the legally binding document with respect to quality certification.

2.4.49 In view of the above, the audit team reviewed the Quality Certificates pertaining to the shipments selected as part of the sample, and subsequently analysed these certificates. All Quality Certificates that were available on file for these sample shipments were checked and compared with the specifications and test methods established as per corresponding contract. As indicated, these Enemalta files generally contained two types of Quality Certificates – one certificate based on analysis carried out at load port and another certificate based on analysis carried out at port of discharge, that is, in Malta.

2.4.50 While analysing vessel files, NAO noted that there were cases where quality certificates were available for load and discharge port, while other vessel files only had one Quality Certificate, pertaining to either load port or discharge port. At a general level of analysis, from the 61 shipments reviewed by NAO, 35 shipments had Quality Certificates for load and discharging ports, 17 shipments had Quality Certificates for port of loading only, while the remaining seven only had the discharge port report. Of significant concern to NAO in this respect were the two vessel files reviewed that had no Quality Certification documented on file. Table 12 presents a general overview of

such Quality Certificate submissions, while further details are put forward in Appendix C.

Table 12: General Analysis of Availability of Quality Certificates

Availability of Quality Certificate	Number of Shipments
Loading and Discharging Port	35
Loading Port Only	17
Discharging Port Only	7
None	2

- 2.4.51 As indicated earlier, Quality Certification at discharge port is at the discretion of Enemalta, as the load port Quality Certificate is considered to be legally binding in this respect. This factor accounts for the instances when only load port Quality Certification was found by NAO.

- 2.4.52 On the other hand, various circumstances account for missing quality certification at load port, but available certification at port of discharge. One such scenario where quality certification was only available at discharge port is that relating to the blending of fuel oil, sourced from different storage tanks.

- 2.4.53 NAO subsequently asked Enemalta to further clarify this discrepancy with regard to the procedure related to quality testing undertaken on arrival of fuel in Malta. Enemalta explained that in the case of fuels that were stored in tanks corresponding to an existent storage agreement, quality testing was not performed again prior to transferring the fuel from supplier tanks to Enemalta’s possession, and the Quality Certificates used were those taken at load port. These certificates were not filed in their corresponding vessel files, but maintained at the respective storage installations.

- 2.4.54 NAO were advised that prior to storage agreements, Enemalta purchased diesel and jet fuel in large quantities, in order to save on shipping costs and improve their per unit ton rate. However, Enemalta stated that this arrangement posed difficulties with respect to the Corporation’s cashflow, as there was significant delay between cash outflow due to the purchase of

stock and cash inflow following its corresponding sale to third parties. It was in this context that Enemalta opted to offer storage facilities to suppliers at no extra cost, and in turn purchase the stored fuel product on a monthly basis in the quantities required, instead of outright purchase in large quantities. The fuel products are initially stored at Ħas-Saptan and subsequently transferred by barge from Ħas-Saptan to Birżebbuġa in the case of diesel, and pumped through the pipeline from Ħas-Saptan to the airport in the case of jet fuel. Further details with regard to these procedures are presented in the ensuing section of this chapter.

Quality Analysis: Appointment of Inspectors

- 2.4.55 Quality-related clauses regulating the provision of fuel are included within the individual contracts for supply. Such clauses state that quality tests are to be witnessed and confirmed by an independent inspector at a predetermined port (often the loading port) and according to established payment terms. In this context, and as per established convention, the quality declared at load port is considered to be binding.
- 2.4.56 Enemalta informed NAO that the process related to the appointment and confirmation of inspectors was ordinarily initiated by the supplier, through the nomination of inspectors submitted by means of email to the Petroleum Division. The Petroleum Division would, in turn, indicate their acceptance, or otherwise, of the nominated inspector. Ordinarily, under circumstances when suppliers are nominating the same inspectors for subsequent deliveries, and the Petroleum Division would not have objected to such an appointment in the first instance, the Petroleum Division would simply be informed as to who the selected inspectors are.
- 2.4.57 A number of issues emerged following NAO's analysis of clauses relating to the appointment of the aforementioned inspectors. First and foremost, NAO noted that no documentation relating to the appointment and confirmation of inspectors was found in the sample vessel files reviewed.

2.4.58 Second, NAO noted that contractual clauses establishing the nomination procedure for the independent inspectors varied. In the majority of contracts, the relevant clauses stipulate the appointment of a 'mutually agreed independent inspector'. Under such circumstances, the seller and Enemalta would equally share associated costs and, in so doing, the latter-referred Corporation would be entitled to receive reports directly from the appointed inspector. However, in the case of a number of contracts, NAO noted that the corresponding clauses were somewhat different, stating that the seller alone was to nominate the independent inspectors. When queried about this, Enemalta indicated that if the expense of inspection at load port was to be borne by the supplier, then they would have the right to nominate inspectors without consulting Enemalta. Enemalta further clarified that such a scenario was frequently the case with storage contracts.

2.4.59 In the case of biodiesel, quality certification is based on a sample lifted at load port, which is analysed at a laboratory chosen by the supplier, with corresponding expenses borne by the supplier. Further to this inspection at load port, inspection associated with disport are borne by Enemalta, and under such circumstances, a sample (taken at port of discharge) is sent abroad for quality testing. This arrangement is a matter of agreement at contract stage between seller and buyer. Enemalta stated that given the fact that no local facilities provide such testing services and the considerable expense associated with each instance of testing, the Corporation limits testing to one shipment per contract.

2.4.60 With regard to jet fuel contracts, NAO noted that in one particular contract, the relevant quality-related clauses stated that before each delivery, the supplier was to nominate the refinery of origin, which was then subject to Enemalta's approval. Enemalta indicated that the refinery of origin was important in the case of Jet A1 fuels only, as the correspondingly established specifications necessitate the facility of tracing the origins of delivered fuel. In

this context, NAO is concerned with the fact that such a clause was not incorporated into other jet fuel contracts.

2.4.61 In response to NAO's above assertions, Enemalta stated that the provision of the Quality Certificate issued by the refinery of origin was ascertained by virtue of its ISO 9001:2008 certification. Enemalta claimed that the quality assurance records, maintained in separate files where the fuel is in fact received, and regulated by ISO certification, justified the omission of the aforementioned contractual clauses. Given the ISO certification regulating this aspect of Enemalta's operations, NAO did not deem it necessary to further delve into this matter.

Quality Analysis: Test Methods

2.4.62 NAO analysed the various parameters that specify the quality of the fuel being purchased, as well as the test methods by which these parameters were to be measured according to the contract of supply. These test methods, as per contract of supply, were then compared to the test methods listed in the Quality Certificates depicting the results of the laboratory analysis carried out by independent inspectors.

2.4.63 After carrying out this exercise, NAO identified a number of anomalies, which could be generally categorised as follows:

- a. Standards and test methods used to measure particular parameters were different from those quoted in the corresponding specification sheets established as per contract of supply;
- b. Incorrectly quoted standards largely attributed to typographical errors;
- c. Test method references quoted on Quality Certificates not corresponding to any existent test method; and

- d. Test method references quoted on Quality Certificates not corresponding to any existent test method but to a fuel specification.

2.4.64 In light of the above, NAO carried out an exercise to analyse the aforementioned technical anomalies, as well as to confirm, or otherwise, the appropriateness of the alternative test methods used.

Different Standards and Test Methods Used

2.4.65 Based on the aforementioned analysis, it emerged that in a number of cases, different standards and test methods to those quoted in the corresponding specification sheet, established as per contract of supply, were noted. In effect, although the standards and test methods did differ from those formally established, the employed standards and methods discussed hereunder did in fact correspond to the actual parameters under scrutiny.

2.4.66 By means of background, the test methods referred to in the various Quality Certificates, analysed as part of this audit, corresponded to the following organisations, that is, the:

- a. American Society for Testing Materials (ASTM);
- b. European Standards (EN);
- c. Institute of Petroleum (IP);
- d. ISO; and
- e. British Standards Institution (BS).

2.4.67 The ASTM, EN, IP, ISO and BS all issue their relevant standards and test methods. Therefore, in the context of this analysis, understanding and establishing the equivalence between the variously employed standards and test methods corresponding to given parameters assumes paramount

importance, for it is only through the determination of such equivalence that the quality control process can be truly ascertained.

2.4.68 To this end, the IP publishes a list intended at establishing inter-standard and test method equivalency, thereby delineating which ASTM, EN, ISO and BS standards and test methods correspond with those issued by the IP. In its analysis and review of quality certification processes at Enemalta, NAO utilised this list published by the IP (Appendix D refers) in determining equivalency with other ASTM, EN, ISO and BS standards.

2.4.69 NAO noted that in order to determine whether the utilised test methods and standards were in fact equivalent with those stated in the contract specifications, one would need to carry out an in-depth review of each standard. This analytical process was not deemed feasible by the audit team, and, moreover, was not within the scope of this audit.

2.4.70 From the 61 vessel files reviewed by the audit team, statements, records, or notes of verifications intended at determining the equivalency, or otherwise, of test methods and standards differing to those established as per contract specifications (nonetheless addressing the same parameters) were not found in any of the files. A summary of these discrepancies is presented in Table 13. Multiple discrepancies were regularly noted across numerous files, yet are simply recorded as one distinct entry in the referred table.

Table 13: Discrepancies in Standards and Test Methods addressing Corresponding Properties

Property	Test Method as per Established Contract Specifications	Test Method as per Quality Certificate
Density	D1298	D4052-09 D4052/96(02) ISO 12185 EN ISO 3675 IP365 ISO12185
Density	EN ISO 3675:1998 EN ISO 12185	D4052-09
Sulphur	D1552	D2622-10 D4294 EN ISO 8754 D2622 D2622-08 IP336/95/XRF IP336
Sulphur	EN ISO 14596:1998 EN ISO 8754:1995 EN 24260:1994	D2622-10 ISO 20846
Sulphur	EN ISO 20846 EN ISO 20847 EN ISO 20884	D2622-10
Sulphur	D129	EN ISO 8754 D2622 D4294 IP336
Carbon Residue	EN ISO 10370:1993	D4530

Carbon Residue	D524	D189+converted
Water by Distillation	D95	IP074
Nickel	D5863/B	UNI EN 13131:01 IP470 IP 501 ICP AES/XRF
Vanadium	D5863/A	EN 13131
Vanadium	D5863/B	IP470 UNI EN 13131:01 IP 501 ICP AES
Sodium	D5863/B	IP288 IP470 D1318 IP 501 ICP AES/AAS
Conradson Carbon	D524	D189 IP13/94 IP13 ISO6615 D4530 ISO10370
Net Calorific Value	D240	D4868
Viscosity	D445	D7042 IP71 ISO3104
Pour Point	D97	ISO3016 IP 15 D5950
Flash Point	D93	ISO2719 IP34 (B) IP034
Flash Point	EN22719:1993	D93/A-02
Ash	D482	IP4 ISO6245 IP004
Sediment by Extraction	D473	IP53 ISO3735
Total Sediment	IP375	ISO10307-1
Asphaltene	IP143	D6560
Oxidation Stability	EN ISO 12205:1995	D2274
Oxidation Stability	EN ISO 7536	D525
Lubricity	ISO 12156-1:2001	D6079
Polycyclic Aromatic Hydrocarbons	IP391:1995	EN12916
MON	EN ISO 5163	D2700 EN ISO 25163
RON	EN ISO 5164	D2699 EN ISO 25164
Gross Calorific Value	D240	D4868
Cetane Index	EN ISO 4264:1995	D4737
Cetane Index	D976	EN ISO 4264 D4737
Copper Corrosion	EN ISO 2160:1998	D130
Distillation	EN ISO 3405:2000	D86
Gum Content	EN ISO 6246	D381
Lead Content	EN 237:1996	D3237
Oxygenates Content	EN1601:1997 prEN 13132:1998	D5599 EN14517 EN1601
Olefins	D1319:1995	EN14517
Olefins	prEN14517	EN15553
Aromatics	D1319:1995	EN14517
Aromatics	prEN14517	EN15553
Benzene	EN12177:1998 EN238:1996	EN14517

2.4.71 When confronted with the above discrepancy in terms of testing methods established as per contract specifications and those reported in the quality certificate, Enemalta stated that there are various test methods that address the same parameter. Furthermore, Enemalta claimed that most laboratories

only offer one set of test methods. In addition, whenever the Corporation had to contest a particular result with a supplier about a given parameter, Enemalta was never challenged with respect to the utilisation of alternative test methods.

- 2.4.72 Notwithstanding the above, NAO still contends and deems relevant the fact that such equivalence checks are not included as a matter of procedure with every fuel consignment received.

Typographical and Other Errors

- 2.4.73 In contrast with the preceding section of the audit report, this categorisation of discrepancies, which encompasses typographical errors and other erroneously referenced test methods and standards, focuses on instances when properties originally intended for testing were not in effect tested.

- 2.4.74 NAO's review of discrepancies arising with respect to various Quality Certificates indicates errors originating from Enemalta's establishment of contract specifications and others originating from the independent inspectors intervention in performing tests. Table 14 provides an overview of such discrepancies, indicating the source of the error by means of the red shading. Red shading under the column 'Test Method as per Contract Specifications' underscores an error originating from Enemalta's establishment of contract specification. On the other hand, red shading under the column 'Test Method as per Analysis Report' implies an error originating from the independent inspectors intervention in performing tests.

- 2.4.75 As rendered amply evident in Table 14, numerous supplier-side errors emerged following NAO's analysis of corresponding Quality Certificates. Properties that appear to have been erroneously tested for include density, carbon, water by distillation, net calorific value, flash point and ash. NAO's main concern with respect to this scenario relates to the fact that Enemalta

raised no queries, or at least, no queries were retrieved from the analysed vessel files, regarding instances of clear incongruence in terms of quality control. This, in turn, raises the question as to whether submitted Quality Certificates are in fact vetted for compliance purposes.

2.4.76 The alternative side to the above-presented scenario, that is, in circumstances when the error originates from Enemalta’s establishment of contractual specifications, also raises notable concern. Such circumstances arose with respect to the testing of aluminium and silicon, flash point as well as distillation. Here NAO’s concern gravitates around the fact that no queries were raised by suppliers, who nonetheless proceeded in administering other test methods to those erroneously specified in Enemalta contract specifications.

Table 14: List of Test Method Incongruence between Contractual Specifications and Analysis Reports

Property	Test Method as per Contract Specifications	Test Method as per Analysis Report	Comments
Density	ASTM D1298	ASTM D1250	ASTM D1250 is the ‘Standard Guide for Use of the Petroleum Measurement Tables’. This is not a test method and should therefore not have been accepted. The ASTM D1298 corresponds to the ‘Standard Test Method for Density, Relative Density, or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method’.
Carbon	ASTM D5291	ASTM D5191	ASTM D5191 is the ‘Standard Test Method for Vapor Pressure of Petroleum Products (Mini Method)’. This should have read ASTM D5291, which is the ‘Standard Test Method for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Petroleum Products and Lubricants’.
Water by Distillation	ASTM D95	ASTM D86	ASTM D86 is the ‘Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure.’ This refers to the determination of the boiling range of a petroleum product by performing a simple batch distillation, hence not of water.
Water by Distillation	ASTM D95	UNI EN ISO 3405	UNI EN ISO 3405 is ‘Prodotti petroliferi – Determinazione delle caratteristiche di distillazione a pressione atmosferica.’ This refers to the determination of the boiling range of a petroleum product by performing a simple batch distillation, hence not of water.
Water by	ASTM D95	ISO 37433	The ISO 37433 does not refer to any actual

Distillation			standard, while the ASTM D95 refers to the 'Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation'.
Net Calorific Value	ASTM D240	BS 2869	BS 2869 is 'Fuel oils for agricultural, domestic and industrial engines and boilers specification.' This is a fuel specification and not a test method, and therefore should not have been accepted.
Net Calorific Value	ASTM D240	ISO 8217	ISO 8217 is 'Petroleum Products – Fuels (Class F) – Specifications of marine fuels.' This is a fuel specification and not a test method and therefore should not have been accepted.
Aluminium & Silicon	IP337	IP377 IP501 IP470 ISO10478	IP337 is 'Composition of non-associated natural gas.' This was listed in the contract specifications in various contracts and is clearly wrong. It should have read IP377, which test method corresponds to 'Petroleum products – Determination of aluminium and silicon in fuel oils – Inductively coupled plasma emission and atomic absorption spectroscopy methods'.
Flash Point	ASTM D53	ASTM D93 EN ISO 22719	ASTM D53 was used for rubber belting and has been withdrawn. This should have read ASTM D93, which corresponds to the 'Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester'.
Flash Point	ISO 22719	ASTM D93/A-02	ISO 22719 refers to 'Water Quality – Determination of total alkalinity in sea water using high precision potentiometric titration.' This should have read ISO 2719, which refers to the 'Determination of flash point – Pensky-Martens closed cup method'.
Flash Point	ASTM D53	EN ISO 22719	ISO 22719 refers to 'Water Quality – Determination of total alkalinity in sea water using high precision potentiometric titration.' This should have read ISO 2719, which refers to the 'Determination of flash point – Pensky-Martens closed cup method'.
Ash	ASTM D482	ISO 8245	ISO 8245 is 'Water quality – Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC).' This should have read ISO 6245, which refers to 'Petroleum products – Determination of ash'.
Distillation	ASTM D88	EN ISO 3405	ASTM D88 is the 'Standard Test Method for Saybolt Viscosity.' This standard is unrelated to distillation and should have read D86, which corresponds to the 'Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure'.

Note: The red shading indicates whether the error originated from Enemalta's establishment of contractual specifications, or from the independent inspectors' intervention in performing tests.

Quality Analysis: Specification-related Issues

Missing Values, Borderline Values and Values Outside of Specifications

- 2.4.77 NAO is fully aware and acknowledging of the fact that due to uncertainties in the measurement of fuel properties, it is generally accepted that care must be exercised when checking compliance with product specifications. When accepting a product, the supplier wants a low risk of false rejection, while the purchaser wants a low risk of false acceptance.
- 2.4.78 In the industry, it is common practice to reject a product with a five per cent chance of a false rejection. A standard that provides an objective methodology for resolving disputes between buyers and suppliers over compliance with product specifications has been issued by the ASTM (ASTM D3244 - 07a), while IP 367 is a similar standard issued by the IP.
- 2.4.79 NAO noted and was duly concerned by the fact that a number of the reports were not complete in terms of testing all parameters indicated as per established contractual specifications. In the case of the 61 vessel files reviewed, and excluding those cases where no Quality Certificate was provided at loading port and discharge port, NAO noted numerous instances of missing test results corresponding to specific parameters. This appears to indicate that the independently appointed laboratories were ignoring the specifications in the contract and simply carrying out their own standard test procedures.
- 2.4.80 In addition to the cases of outright missing property specification tests, NAO's analysis of the Quality Certificates indicated a number of test results that were on the border of acceptable parameters, and at times, other results that were outside established limits when compared to the parameters listed in the contract of supply.

2.4.81 Further to the above, NAO carried out in-depth analysis of instances when test results recorded on received Quality Certificates were missing, or borderline with established parameters or outright out-of-spec. A record of analytical work undertaken is presented hereunder, and organised according to the type of fuel oil reviewed:

- a. Low Sulphur Fuel Oil (Table 15 refers);
- b. Fuel Oil (Table 16 refers);
- c. Diesel (Table 17 refers);
- d. Unleaded Petrol (Table 18 refers);
- e. Bio-Diesel (Table 19 refers);
- f. Gasoil (Table 20 refers);
- g. Jet Fuel (Table 21 refers); and
- h. Avgas (Table 22 refers).

2.4.82 NAO's key concern with respect to specification-related issues emanating from the analysis of sampled low sulphur fuel oil shipments mostly corresponds to the various instances of missing test results, pivotal in endorsing, or otherwise, the quality of purchased fuel (Table 15 refers). In this regard, NAO contends that although some of these shortcomings correspond to minor parameters, if Enemalta specified limits to which these had to comply, then it has the right to require evidence that the fuel supplied is in fact within specification.

2.4.83 Axiomatically, audit concern further intensifies in cases of missing test results corresponding to parameters deemed critically important in the quality control process, such as is the case with the net heating value. This is an extremely important parameter because it is what one is in effect paying for, and its absence is in NAO's opinion highly unusual. When further queries

were raised by NAO with regard to the absence of this critically important parameter, Enemalta stated that the result corresponding to this parameter may be arrived at through the use of an established formula. The formula draws upon a number of other parameters, including density, ash, water content and sulphur content. Readings corresponding to all of these parameters were noted within the relevant Quality Certificate.

2.4.84 While not doubting the veracity of Enemalta’s assertions, NAO contends that if the Corporation asked for this critically important parameter to be determined according to an ASTM test, then it should expect to be provided with the result of that test using the agreed upon standard and test method, and not have to rely on the formula.

Table 15: Specification-related Issues corresponding to Low Sulphur Fuel Oil Shipments

Low Sulphur Fuel Oil	
Property	NAO Comments and Analysis
Mercury	The specifications for shipments HO/V9/11 (CS9) and HO/V20/11 (CS7) required that the quantity of mercury present had to be reported upon. In the case of the former referred shipment, the corresponding vessel file only contained the Saybolt Malta report. In the latter case, the report commissioned at port of loading, as well as that of the Saybolt Malta report only addresses the carbon parameter. None of these reports specifically relates to the measurement of mercury content.
Net Heating Value	Net heating value is synonymous with net calorific value. In the case of shipment HO/V6/10I (CS4A), this result seems to be missing from the Saybolt report corresponding to this specific shipment, when all the other Saybolt reports that are on file for that contract report it.
Nitrogen	The specifications for shipment HO/V20/11 (CS7) require that the nitrogen content be reported upon; yet this is missing from the report. Furthermore, the specifications for shipment HO/V6/10I (CS4A) provide two options: (i) a maximum of 0.4 per cent, or (ii) to report. Nonetheless, the laboratory report for this consignment does not include any measurement corresponding to the nitrogen parameter.
Various	Similar to the above, NAO noted a number of other missing test results for low sulphur fuel oil, namely stability, chromium, aluminium and silicon corresponding to shipment HO/V20/11 (CS7), as well as sediments by extraction, stability, asphaltenes, hot filtration test (HFT), nickel, and sodium corresponding to shipment HO/V6/10I (CS4A).

2.4.85 In its analysis of specification-related issues corresponding to fuel oil shipments, NAO noted a number of issues of varying degrees of concern (Table 16 refers). Minor issues included a number of reporting and test

method inaccuracies emerging from the analysis of Quality Certificates, specifically with respect to the sediment by extraction and Conradson carbon properties. Other anomalies included parameter readings falling outside of established specifications, such as was the case with the density result of shipment V8/09 (CS60) (albeit reported within specification limit in other Saybolt reports), as well as the case of outright missing specification results with respect to stability.

2.4.86 A secondary, yet insightful observation emerges with respect to testing practices employed at port of loading. Discrepancies in terms of parameter limits, as well as with respect to test methods, is, in NAO’s opinion, indicative of such laboratories being unaware of Enemalta specifications, or alternatively, outright ignoring them. In this context, specific reference is made to the measurement of sodium in shipments V25/08 (CS55) and V62/08 (CS61), which was out of established specification limits in both instances. In this respect, NAO is of the considered opinion that a non-conformity corresponding to a parameter of relatively minor importance such as this would not necessarily have warranted an outright rejection of the consignment, but it would have warranted, at least, the submission of a formal complaint from Enemalta to the supplier.

Table 16: Specification-related Issues corresponding to Fuel Oil Shipments

Fuel Oil	
Property	NAO Comments and Analysis
Sodium	In shipment V25/08 (CS55), the value for sodium is reported to be 49.6 parts per million (ppm), when the specifications call for a maximum of 40 ppm. NAO interestingly noted that according to the testing laboratory, the limit for this particular parameter was incorrectly set at a maximum of 80 ppm. In shipment V62/08 (CS61), the test result is 45 ppm, again outside the established limit. Also deemed relevant in this regard is the fact that the laboratory used a different test method (ASTM D1318) from the one specified in the contractually defined specifications (ASTM D5863).
Sediment by Extraction	NAO noted a number of inaccuracies with respect to the ‘sediment by extraction’ parameter tests corresponding to shipment V25/08 (CS55). One lab report provides a reading for ‘water’ content at a maximum of 0.3 per cent, while subsequently and erroneously stating that the specification limit is of 0.5 per cent, when it in fact should read 1 per cent. The report further gives a value for ‘water and sediment’ of 0.373 per cent, once again stating that the limit is 1 per cent. However, upon further analysis, NAO

	noted that the specifications do not establish a limit for 'water and sediment', but separately for water (1.0) and for sediment (0.15). (Note that test method D95 is for water and D473 is for sediment.) Another report corresponding to this same shipment and parameter provides a water content reading of 0.4 as well as a water and sediment reading of 0.8, with respective stated limits of 0.5 and 1.0.
Conradson carbon	With respect to shipment V25/08 (CS55), NAO's initial analysis of this property indicated that this specification was not tested for; however, upon further verification, NAO did in fact note that the lab report presents results for carbon residue, which are in effect equivalent. The test result of 12.2 per cent is well within the specified limits of a maximum of 15 per cent. Of relevance in this case is the fact that the specifications quoted test method ASTM D524, whereas the laboratory report quotes test methods EN ISO 10370 and ASTM D4530.
Stability & HFT	NAO's initial analysis with respect to shipment V8/09 (CS60) indicated that there were two properties missing, namely, stability and HFT. However, further review of quality control documentation indicated that the test report by Saybolt (Malta) provides a value of 0.01 for Hot Filtration Potential, which is the same as HFT. The two reports at loading do not give HFT, but give values for the total sediment. Nevertheless, stability is missing from all quality control reports.
Density	The contract governing shipment V8/09 (CS60) specifies a density at 15°C of a maximum of 0.998 (as per test method D1298). The Saybolt (Malta) report gives a measured value of 0.9695 (test method D4052) while erroneously stating that the specification is set at a maximum of 0.995. The test report provided by Murco Petroleum provides a test reading of 1.0017 (test method ISO12185), which is axiomatically out of spec. Furthermore, NAO noted that this report has space for two signatures (for Murco Petroleum and the Independent Inspector), but only one signatory on behalf of Murco Petroleum has in fact signed the report; there is no signature from the Independent Inspector. A third report by Pembroke Refinery Laboratory gives a density of 0.9910 (test method IP365/D4052), while once again erroneously stating that the limit is 1.010. Finally, a fourth report provided by Intertek gives a density measurement of 0.9748 (test method IP365).
Stability	There are no measured values for this in any of the consignments as per corresponding NAO analysis, notwithstanding that it is included in the contract specifications.

2.4.87 NAO concerns relating to specification-based issues corresponding to the reviewed diesel shipments mainly relates to the fatty acid methyl esters (FAME) property (Table 17 refers). EN590, which is the European Standard for diesel, allows the addition of up to seven per cent of FAME⁴, and therefore, NAO is somewhat unclear in its understanding as to what benefit Enemalta perceives in setting the limit at zero per cent. In fact, it is interesting to note

⁴ EN590 (2004) established a FAME limit at the five per cent mark, whereas, its subsequent revision, EN590 (2009), set the FAME limit at seven per cent.

that the lab reports for both shipments list the limit at a maximum of five per cent.

2.4.88 NAO sought further clarifications from Enemalta in this respect and the latter stated that when the Corporation purchases biodiesel, it does so separately from diesel purchases. Enemalta would then proceed with adding the FAME component itself, and it is in this respect that the Corporation stated the importance of ensuring that the five per cent (now seven per cent) FAME is not exceeded. It is in this context that Enemalta established a zero content FAME as part of its requirements. The rationale behind all of the above essentially relates to the fact that the biodiesel added to diesel must come from a sustainable source, so that it can then be claimed by the MRA as an energy product that is suitable to be considered as coming from a renewable source. To this end, Enemalta stated that the biodiesel imported is always accompanied by a certificate verifying that it is in fact coming from a sustainable source. On the other FAME content in diesel would not carry such certification.

Table 17: Specification-related Issues corresponding to Diesel Shipments

Diesel	
Property	NAO Comments and Analysis
FAME	According to the established Enemalta specifications, diesel should be supplied according to EN590 and that, in this respect, should not contain any quantity of FAME. According to reviewed lab reports, the diesel in shipment V56/10 (CS18) contained less than 0.05 per cent FAME, and in shipment V14/10 (CS31) the FAME reading was that of 0.09 per cent. For shipment V56/09 (CS37), the report at loading gives a measurement of 0 per cent FAME, while the Saybolt Malta report quantifies this property at less than 1.7 per cent.
Colour	The specifications state that the fuel should be “undyed”. Therefore, NAO bears no concern that the Saybolt did not list the colour in its test report for shipment V14/10/10 (CS31). On the other hand, the test report at loading for shipment V56/09 (CS37) gives the colour as L1.5.

2.4.89 Minor concerns emerge with respect to NAO’s analysis of specification-related issues corresponding to the sampled unleaded petrol shipments. These concerns are presented in further detail in Table 18, and essentially relate to the testing of colour, as well as Research Octane Number (RON) and

Motor Octane Number (MON) readings. In the former case, although it would have made for completeness had colour been reported upon, this is not much of a shortcoming since checking for colour by visual inspection could have easily been carried out by the Enemalta personnel unloading the fuel.

Table 18: Specification-related Issues corresponding to Unleaded Petrol Shipments

Unleaded Petrol	
Property	NAO Comments and Analysis
Colour	The Enemalta-set specifications require that the petrol is “undyed” and that the method of test should be by visual inspection. The lab reports for shipments V55/10 (CS20), V1/11 (CS19), V39/11 (CS21), V10/10 (CS22), V09/09 (CS32), and V9/08 (CS46) do not report on colour.
RON	The Saybolt Malta lab reports for shipment V1/11 (CS19) give values of RON of 94.6, 94.7, 94.7 and 94.8, whereas the lab report at loading establishes measurement at 95.3. The specifications require a 95.0 minimum. Although the Saybolt Malta reports show that RON is outside the limits, one of the Saybolt reports states that the addition of 60 ppm of MMT would raise the RON to 95.6, thereby bringing it within specification. For the shipment V09/09 (CS22), the Saybolt Malta reports give 94.2 and 94.1 RON readings, while the lab report at loading gives readings of 95.0. Again, this shipment was out of the established specifications.
MON	In near identical circumstances described above with respect to the RON property, the Saybolt Malta lab reports for shipment V1/11 (CS19) give values of MON at 84.5, 84.5, 84.3 and 84.5 whereas the lab report at loading establishes measurement at 85.0. The specifications require a minimum of 85.0. Although the Saybolt Malta reports show that MON is outside the contractually established limits, one of the Saybolt reports indicates that the addition of 60 ppm of MMT would raise the MON reading to 84.8. With regard to shipment V09/09 (CS22), the Saybolt Malta report measures MON at 84.6, while the lab report at loading contrarily puts it within limits established as per contractual specifications, at 85.1.

2.4.90 In the latter case, that is, with respect to RON and MON readings, NAO noted that Quality Certificates drawn up by independent inspectors at loading port were at the limit of the contractually established parameters for this property. However, at port of discharge, the readings clearly emerge as out of established specification limits. The review of correspondence from relevant files indicates that Enemalta was well aware of this anomalous situation, and was in fact attending to its rectification through contact with the supplier. To this end, additional comments submitted by Saybolt with respect to RON and MON clearly indicate that these properties’ out-of-spec

status could be rectified in a straightforward manner, essentially through the addition of a minute quantity of methylcyclopentadienyl manganese tricarbonyl (MMT). This, therefore, does not give rise to any great concern.

2.4.91 In the analysis of biodiesel quality-related contractual clauses, NAO noted variations in the timeframes permitted for quality testing to be carried out. In a contract dated 13 January 2011, it was stated that the sampling date shall not be more than 7 days before the date of delivery of the fuel. However, in another contract dated 4 August 2011, it was stated that the sampling date shall not be more than 28 days before the date of arrival at port of discharge. NAO queried the difference in clauses pertaining to the two aforementioned contracts, which were signed a few months apart.

2.4.92 Enemalta explained that biodiesel is a rather unstable fuel when compared to the other mineral fuels, essentially due to the fact that there is the possibility of the fuel degrading while in storage. In the case of the first contract dated January 2011, Enemalta claimed that it was overly cautious when requesting that the fuel be analysed not more than seven days before its arrival in Malta. Furthermore, Enemalta stated that experience from this first contract indicated that the fuel was not as unstable as originally anticipated, and after consulting with local inspectors, Enemalta was advised that a one month timeframe would be sufficient. Hence, the period was extended from seven days to 28 days, thereby allowing the fuel to be tested before shipment to Malta.

2.4.93 In addition to the above, NAO had one significant concern with regard to the analysis of specification-related issues corresponding to sampled biodiesel shipments. As indicated in Table 19, lab reports indicating the percentage composition of FAME corresponding to shipments V10/11 (CS15) and V47/11 (CS23) were originally understood to be missing by NAO. However, when further queries were raised by the audit team with respect to this parameter, Enemalta stated that FAME for shipment V10/11 (CS15) was reported as

‘Ester content’, while that for V47/11 (CS23) was reported as ‘Estergehalt’. Enemalta claimed that both instances reported above were within established parameter specifications. NAO rechecked available Quality Certificates, which were in Polish (and not translated within Enemalta’s files) and confirmed Enemalta’s assertion with respect to the two aforementioned shipments, albeit in the case of V10/11 (CS15), the parameter was reported as ‘Estergehalt’ and not ‘Ester content’.

Table 19: Specification-related Issues corresponding to Biodiesel Shipments

Biodiesel	
Property	NAO Comments and Analysis
FAME	This parameter was originally identified as missing with respect to the lab reports corresponding to shipments V10/11 (CS15) and V47/11 (CS23). However, further clarifications provided by Enemalta indicated that this property was in fact reported as ‘Ester content’ in the case of shipment V10/11 (CS15), and ‘Estergehalt’ in the case of shipment V47/11 (CS23). NAO therefore retains no concern in this respect.

2.4.94 In the case of gasoil shipments (Table 20 refers), specification-related issues emerging in this respect frequently correspond to various instances of missing property results, most notably at port of discharge. Another concern of note to NAO relates to the distillation property results in the cases of shipments V40/08 (CS59) and V17/08(CS57), which are out of established contractual specification limits. However, NAO’s greatest concern with regard to gasoil shipment specification checks relates to the testing of the gross calorific value and net calorific value parameters. Relevant readings for these parameters, in the case of shipment V17/08 (CS57), could not be retrieved from documentation available in Enemalta’s files, and it is here that NAO’s concern intensifies, as the absence of results corresponding to this critically important parameter undermines efforts at establishing what one is effectively paying for. After further queries were raised by NAO, Enemalta stated that information relating to this critical parameter was available; however, this Office still contends that such documentation should have been maintained in the corresponding vessel file, primarily for quality control purposes, but also for proper record-keeping.

Table 20: Specification-related Issues corresponding to Gasoil Shipments

Gasoil	
Property	NAO Comments and Analysis
Gross calorific value and net calorific value	An analysis undertaken by NAO indicated that measurements of these properties were missing in shipments HO/V2/10 (CS1) and V17/08 (CS57). The Saybolt Malta report for shipment HO/V2/10 (CS1) gave values for these parameters, with the gross calorific value above the minimum required by the specifications and the net calorific value only reported, as required by the specifications. The report at loading does not give values for these properties. Corresponding readings for these parameters in the case of shipment V17/08 (CS57) could not be retrieved from provided documentation.
Various	For shipment HO/V2/10 (CS1), the specifications call for a maximum density of 0.860. The lab report at loading gives a value for density (as tested) of 0.8544, which is compliant with established specifications. However, it is missing from the Saybolt Malta report, which incidentally is missing many other parameters.
Cetane index	An analysis undertaken by NAO indicated that measurement of this property is missing in the reports for shipments HO/V2/10 (CS1) and V40/08 (CS59). For the former, the lab report at point of origin gives the cetane index as 47, which is above the minimum of 45 required by the specifications. For the latter, the lab report at port of loading gives a value of 50. In both cases, it is missing from the Malta report.
Distillation	For shipment V40/08 (CS59), the distillation recovered at 350°C is reported at 86 per cent in one report at loading, and at 87.6 per cent in a second report at loading, when the specifications state a maximum limit of 85 per cent. This is not reported in the Malta report. For shipment V17/08 (CS57), there is only the report at loading and this gives a test result of 86 per cent.
Various	As per NAO analysis, the following properties are missing in the port of discharge lab reports for shipment HO/V2/10 (CS1): (i) density, (ii) cetane, (iii) sulphur, (iv) flashpoint, (v) pour point, (vi) odour, (vii) distillation, (viii) water and sediment, (ix) viscosity, (x) carbon residue, (xi) carbon content. Results for these parameters can be found in the report at loading, except for odour, which in any case does not feature in the specifications, and carbon content.
Various	As per NAO analysis, the following properties are missing in the port of discharge lab reports for shipment V40/08 (CS59): (i) cetane, (ii) flashpoint, (iii) pour point, (iv) colour, (v) distillation, (vi) water and sediment, (vii) viscosity, (viii) carbon residue, (ix) filterable dirt, (x) hydrogen, (xi) cold filter plugging point (CFPP). All these properties, except hydrogen, are reported in the report at loading. Note that water and sediment is reported as Bottom Sediment and Water (BSW) and filterable dirt as particulate matter.
Various	As per NAO analysis, the following properties are missing in the one report available (at port of loading) for shipment V17/08(CS57): (i) net calorific value, (ii) distillation, initial boiling point, (iii) filterable dirt, and (iv) gross calorific value.

2.4.95 The Aviation Section within Enemalta adheres to strict international controls and standards given its ISO 9000 certification. In its review of Jet A1 fuel shipments, NAO noted that on a number of occasions, product specifications were not attached to the relevant contracts. When such specifications were

requested by NAO, Enemalta provided the Aviation Fuel Quality Requirements for Jointly Operated Systems dated May 2012 and issued by the Joint Inspection Group for Jet Fuel. When queries were raised with respect to the older versions of these specifications, Enemalta stated that records of such specifications were not kept, and once such outdated versions were superseded, these were in turn destroyed. Online searches carried out by NAO resulted in the retrieval of the May 2011 version of these specifications, which were subsequently compared to those of 2012. No significant changes were noted in this respect. Therefore, in instances when product specifications relating to Jet A1 fuel shipments received between 2008 and 2011 were missing, NAO utilised the May 2012 specifications.

2.4.96 Nonetheless, from NAO's analysis of specification-related issues corresponding to jet fuel shipments (Table 21 refers), it is clear that these shipments were out of the contractually established specification limits for electrical conductivity. It is important for jet fuel to be slightly electrically conductive, thereby allowing for the dissipation of any static charge that may accumulate. The fact that Enemalta accepted these shipments suggests that this is a property that can be easily corrected through the addition of static dissipater additive. From the analysed relevant documentation, NAO considered it appropriate to raise further queries with respect to this parameter with Enemalta.

2.4.97 To this end, Enemalta confirmed that conductivity in Jet A1 fuel is achieved by adding the anti-static additive Stadis 450, for which there is a maximum limit of 5mg/ltr. Given that the conductivity levels of Jet A1 degrade over time, and that this fuel was intended for storage at Ħas-Saptan, Enemalta agreed with its supplier to source the additive in drums rather than mix it directly with the fuel on the delivering vessel. Hence, the additive was to be injected by Enemalta upon transferring the fuel to Birżebbuġa. This was done to minimise the possibility of having a fuel that was already supplemented

with the maximum amount of 5mg/ltr of additive and the conductivity dropping to below 50pS/m.

Table 21: Specification-related Issues corresponding to Jet Fuel Shipments

Jet Fuel			
Property	NAO Comments and Analysis		
Electrical conductivity	The specifications call for a value in the range of 50 pS/m to 600 pS/m. The following are the discrepancies noted by NAO:		
	Shipment	Value Reported	Notes
	V21/09 (CS35)	30	40 in another certificate
	V13/10 (CS24)	3	-
	V54/10 (CS25)	23	8 in another certificate
	V06/11 (CS26)	6	45 in another certificate
	V58/09 (CS34)	40	21 in another certificate
Doctor test	NAO's analysis indicates that two shipments, namely shipment V05/08 (CS40) and shipment V21/09 (CS35) had results corresponding to their respective doctor tests reported as positive rather than the desired negative. Somewhat incongruent is the fact that these Quality Certificates (reporting a positive doctor test) report very low levels of mercaptans and total sulphur.		

2.4.98 Incongruent results relating to the doctor test emerge with respect to two shipments of jet fuel, that is, V05/08 (CS40) and V21/09 (CS35). ASTM D4952, which is the standard used in carrying out the doctor test describes its significance as follows, "(Sulphur) present as mercaptans or as hydrogen sulfide in distillate fuels and solvents can attack many metallic and non-metallic materials in fuel and other distribution systems. A negative result in the doctor test ensures that the concentration of these compounds is insufficient to cause such problems in normal use." The incongruence in this respect emerges in the sense that the above indicated two shipments provided positive results with regard to the doctor test (an undesirable result), yet had very low levels of mercaptans and total sulphur.

2.4.99 When this issue was further addressed by NAO, Enemalta indicated that Note 7 of the 'Aviation Fuel Quality Requirements For Jointly Operated Systems' states that the, "*The Doctor Test is an alternative requirement to the Sulphur Mercaptan Content. In the event of conflict between the Sulphur Mercaptan*

and Doctor Test results, the Sulphur Mercaptan result shall prevail.” Given that the sulphur mercaptan content was within the established parameters, NAO’s concern in this respect was addressed.

2.4.100 A similar situation to that indicated with respect to Jet A1 fuel was identified by NAO in its analysis of avgas product specifications. The most recent version of specifications available was that which came into force in 2011. As in the case of Jet A1, NAO was advised that superseded specifications were, as a matter of procedure, destroyed. Therefore, NAO’s analysis of shipment specifications dated between 2008 and 2011 was made against this most recent version.

2.4.101 A common concern frequently referenced in the preceding analysis corresponding to other fuels re-emerges with respect to specification-related issues for avgas shipments (Table 22 refers). This essentially related to numerous instances where specifications that should be tested by independently engaged laboratories for quality control purposes were not in fact tested. Here specific reference is made to shipments V28/10 (CS12), V44/10 (CS11), V4/11 (CS13) and V35/11 (CS14).

2.4.102 Further queries raised by NAO with respect to the various missing parameter results indicated in Table 22 were addressed by Enemalta. The Corporation provided additional readings corresponding to the parameters reported as missing by NAO, which were not originally maintained in the corresponding vessel files.

Table 22: Specification-related Issues corresponding to Avgas Shipments

Avgas		NAO Comments and Analysis
Property		
Various		With respect to shipments V28/10 (CS12), V44/10 (CS11) and V35/11(CS14), the following properties, included in the list of specifications due for testing, were in fact missing from the lab reports: (i) knock value rich mixture, (ii) dye content, (iii) freezing point, (iv) sulphur, (v) net heat of combustion (vi) oxidation stability and (vii) water reactions volume change.
Knock value rich mixture		The knock value rich mixture property is missing from the lab reports corresponding to shipment V4/11 (CS13).

2.5 Storage Facilities and Procedures

2.5.1 Storage facilities for fuel utilised for electricity generation purposes are found at the Delimara and Marsa Power Stations. In essence, these storage facilities include the following:

- a. Delimara Power Station – seven tanks in total:
 - Four tanks for gasoil, with a capacity of approximately 6,700 MT each;
 - Two tanks for low sulphur fuel oil, with a capacity of approximately 25,000 MT each; and
 - An additional tank for low sulphur fuel oil, with a capacity of approximately 5,600 MT.
- b. Marsa Power Station – seven tanks in total:
 - Four tanks for low sulphur fuel oil, with a capacity of approximately 3,800 MT each;
 - An additional two tanks for low sulphur fuel oil, with a capacity of 9,000 MT each; and
 - One tank for gasoil, with a capacity of approximately 1,200 MT.

2.5.2 The minimum level of stock that can be held at the Delimara Power Station is approximately 3,000 MT, although this can be stretched to 2,000 MT should circumstances so warrant. Although storage is not considered a problem at the Delimara Power Station, NAO were informed that the main drawback in this respect relates to the fact that there are only three tanks allocated for heavy fuel oil. This implies that only one tank is in service at any one time, while the other two are either full, or empty and therefore awaiting delivery. This situation poses some level of difficulty with respect to the scheduling of maintenance.

2.5.3 In the case of the Marsa Power Station, there are two tanks in service at any one point in time. The tanks that are in service cannot be restocked should a consignment of fuel be delivered, so the maximum number of tanks that can be stocked at any one time is effectively four.

2.5.4 In addition to the above storage facilities, Enemalta also has access to two MOBC storage tanks, each bearing a capacity of 10,000 MT. These tanks are utilised for the storage of low sulphur fuel oil, and such use is against payment.

2.5.5 Whereas the delivery of fuel relating to the generation of electricity terminates with the actual transfer of fuel at the Marsa and Delimara Power Stations, the situation with respect to fuels managed by the Petroleum Division proceeds further. Hereunder is a brief overview of the installations available for the storage of the various fuels coordinated by the Petroleum Division, together with an analysis of the specific procedures entailed for each of the fuels received:

a. 31st March 1979 at Birżebbuġa

This installation, originally built by The Royal Dutch Shell Company in the early 1900s, is the only site operated by the Petroleum Division that was built by a commercial company. It houses eight vertical fixed roof storage tanks, which are used for the storage of gasoline (five tanks), automotive diesel (two tanks) and Jet A1 (one tank). Another very small vertical fixed roof storage tank is used for domestic kerosene, which product is actually transferred from the Jet A1 tank. This installation is equipped with a four-lane road-tanker loading area, where road-tankers are loaded with fuels for onward delivery to the petrol stations. The Jet A1 is pumped to Wied Dalam installation for onward delivery to the airport.

b. Aviation Installation at Malta International Airport

This is a small installation built towards the end of the main runway and which serves the purpose of loading the aircraft refueling trucks with Jet A1. It receives fuel on a daily basis from Wied Dalam installation.

c. Has-Saptan Underground Installation

This is the largest installation operated by the Petroleum Division. Built by the British Forces in the late 1950s and early 1960s, it is situated in the limits of Għaxaq, just outside the airport perimeter. It is an underground installation made up of a total of 16 horizontal tanks and five pump-rooms. This installation is connected to a fuel un/loading dolphin in Marsaxlokk harbour and to Ras Hanzir Installation by pipelines laid in tunnels. Originally, this installation, which was used to bunker NATO's Fleet in the Mediterranean, was used to store thin fuel oil, gasoil, low flash point Jet fuel, Jet A1 and avgas. Today, the installation is used to store gasoil (six tanks), automotive diesel (three tanks), Jet A1 (five tanks), and gasoline (two tanks).

d. Ras Hanzir Underground Installation

This is another underground installation that was built under the Corradino heights in the Grand Harbour to serve as a bunker station for the ships operated by the Royal Navy. It is the oldest installation operated by the Petroleum Division and was built in the 1930s. Ten tanks excavated into the rocks make up this installation and were originally used to store thin fuel oil and gasoil. Today, all tanks have been converted to store gasoil. These tanks are rented out to third parties for the storage of gasoil.

e. Wied Dalam Depot

This installation, built by the British Royal Air Force in the late 1950s, consists of twelve cylindrical tanks resting on concrete saddles and housed in chambers excavated into the valley side. This installation is dedicated to jet A1 only and serves as the main storage facility for the airport. In fact, it is directly connected by pipeline to the airport storage facility.

2.5.6 In certain circumstances, the storage of fuel assumes a different perspective, in the sense that fuel is stored in fulfilment of a storage agreement. At a conceptual level, storage agreements entered into by Enemalta Corporation involve the provision of storage facilities to third party suppliers at no cost, while the suppliers, in turn, are responsible for providing security stock in line with provisions already addressed in Chapter 1.

2.5.7 Storage of the aforementioned security stock at no cost is provided for EN590 diesel and Jet A1. Enemalta enters into such arrangements with third party suppliers with whom the Corporation has a supply contract. On the other hand, storage of gasoil 0.1, which is used for bunker operations is in fact rented at a cost to its third party supplier. These types of fuel are located at Has-Saptan.

2.5.8 When NAO queried this practice of offering storage in tanks to suppliers at no cost, Enemalta replied that this facility of offering storage in tanks at no cost in return for security stocks was found to be more cost-effective than actually purchasing the stock to be used for security purposes. In the case of the other fuel categories, Enemalta Corporation requests suppliers to hold stock for them in storage facilities in Malta or Italy, since Italy is the only EU member state with whom Malta has a bilateral agreement for the holding of security stock.

2.5.9 In this context, suppliers are requested to issue a declaration at the end of each month regarding the quantity of security stock held. This is similar to the practice employed in the case of diesel and Jet A1, except that the storage of fuel held abroad is not the property of Enemalta Corporation.

2.5.10 As indicated earlier, the following text provides a detailed account of the transfer of fuels managed by the Petroleum Division to their respective installations, once these are unloaded. The fuels reviewed in this context include:

- a. Diesel 10 ppm;
- b. Avgas;
- c. Jet A1;
- d. Unleaded petrol;
- e. Biodiesel; and
- f. Gasoil 0.1.

Diesel 10 ppm

2.5.11 In the case of diesel, Enemalta has in place a supply contract, as well as a storage contract with the same supplier. As per EU regulations, diesel has to be blended with biodiesel and is then sold to petrol stations. Requirements specify that approximately five per cent of biodiesel is to be blended with diesel (EN590 specifies a maximum of seven per cent). Delving further into this issue, NAO was advised by Enemalta that after blending with biodiesel, final blend quality testing was not carried out.

2.5.12 Procedures relating to the transfer of diesel upon arrival in Malta are as follows – the tanker arrives at the Enemalta fuel un/loading dolphin in Birżebbuġa. The supplier assumes responsibility for importation of this fuel product and incurs all expenses with respect to the purchase of this stock. In the interim period, the supplier holds this stock at Has-Saptan, and when the

need arises, the amount of diesel required by Enemalta is accordingly transferred. Stock is moved from the Ħas-Saptan installation back to the fuel un/loading dolphin, and subsequently moved to Birżebbuġa via barge transfers. Enemalta indicated to NAO that these barge transfers were carried out three to four times monthly. In instances when a minor portion of the sold stock remains on balance, this is kept at the Ħas-Saptan installation and transferred to Enemalta in the ensuing delivery.

2.5.13 In the case of diesel barge transfers, NAO was informed that quality testing is performed prior to the first trip by barge. The first foot of the barge is filled with fuel, and a sample is then taken to check for traces of sulphur, which might be left over on the barge from previous gasoil transfers. Loading on the barge is suspended until the sample is checked at the laboratory. A certificate is issued at this stage of the process. From the relevant vessel files reviewed, NAO could not trace these certificates in their corresponding vessel file; however, in some cases, such certificates were retrieved in the relevant barge.

2.5.14 As part of its review, NAO adopted a two-pronged approach in the analysis of diesel barge transfers. The first aspect of such an analysis focused on the contractual undertakings entered into by Enemalta Corporation in this respect, while the second element of review honed in on the costs associated with such transfers. As stated earlier, a total of 21 diesel barge transfer files were analysed, which in turn corresponded to the diesel shipments reviewed in terms of the overall case study approach adopted.

2.5.15 The first aspect of this audit exercise entailed a general level analysis of the contracts awarded for barge transfers between the period 2008 and 2011. An overview of these contracts and subsequent contract extensions is provided in Table 23.

Table 23: Overview of Diesel Barge Transfer Contracts

Contract Duration		Contract Type	Supplier	Date of contract
From	To			
08 January 2008	07 July 2008	Contract	Island Bunker Oils Ltd	08 January 2008
08 July 2008	07 January 2009	Extension	Island Bunker Oils Ltd	
08 January 2009	07 July 2009	Extension	Island Bunker Oils Ltd	13 January 2009 with revision on 11 February 2009
08 July 2009	07 January 2010	Extension	Island Bunker Oils Ltd	16 November 2009
07 January 2010	07 April 2010	Extension	Island Bunker Oils Ltd	18 December 2009
08 April 2010	03 August 2010	No contract in force		
04 August 2010	One-off contract for transfer of 84 hours		Bunker Supplies Malta Ltd	04 August 2010
24 September 2010	31 December 2010	Extension	Island Bunker Oils Ltd	24 September 2010
01 January 2011	31 March 2011	Extension	Island Bunker Oils Ltd	22 December 2010
01 April 2011	06 March 2012	No contract in force		

2.5.16 NAO's analysis, as rendered evident in Table 23, amply illustrates poor contract management practices with respect to the administration of the diesel barge transfer contract. Specific reference in this regard is hereby made to the considerably lengthy period of time within which the same contract, awarded to Island Bunker Oils Ltd, was successively extended.

2.5.17 Originally, this first contract, corresponding to tender E/P/T/3/2007 was awarded to Island Bunker Oils Ltd on 8 January 2008, for a period of six months, with a further six-month extension option. The rate established for the transport of diesel and kerosene was that of €4.78/MT, while that for fuel oil was set at €5.59/MT. The six-month extension option was in fact called; yet NAO also noted that this contract was subsequently extended for an additional twenty six-month period against an increase in the established per metric ton rate of €1.77 (€1.50 and 18 per cent VAT).

2.5.18 The terms stipulated in the contractual extension, referred to in the preceding paragraph, related to an extra payment for fuel transportation to eight Enemalta tanks. NAO raised further queries with Enemalta in this respect, which in turn stated that as from January 2009, the maximum sulphur content in the EN590 specifications was reduced from 50 ppm to 10

ppm. Enemalta stated that in light of this downward revision in terms of the allowable level of sulphur, the risk of contamination of a transferred batch of EN590 diesel was rendered more probable.

2.5.19 This situation was further compounded by the fact that these barges were ordinarily utilised for bunkering purposes, and bunker fuels transported for this purpose normally included 1,000 ppm gasoil. Therefore, Enemalta stated that prior to barge utilisation for the transport of EN590 diesel, it was imperative that the cargo tanks be thoroughly cleansed, thereby rendering them ready for receipt of EN590 diesel without the risk of contamination.

2.5.20 According to Enemalta, the additional €1.50/MT (€1.77/MT when factoring in VAT) was requested by Island Bunkers to cover this extra cost. Enemalta stated that Island Bunker Oils Ltd could either clean its cargo tanks once, and subsequently reserve usage of these tanks solely for the Corporation's purposes, or else use the barge for bunkering and then wash the tanks each time it was going to perform a diesel transfer. Furthermore, the Corporation stated that before this reduction in diesel sulphur content, the draining of the cargo tanks from gasoil was enough to assure that the sulphur content in the diesel being loaded onto the barge would not be put out of specification, whereas following the revision of specifications, such procedures allegedly no longer sufficed.

2.5.21 With the first contract awarded to Island Bunker Oils effectively covering the period January 2008 up to March 2011, the only disruptions to this serially extended contract were two in total. The first corresponds to the period April 2010 up to August 2010, in which case NAO was not provided with any documentation indicating contractual service arrangements for this period. The second disruption in this respect corresponds to a one-off contract awarded to Bunker Supplies Malta Ltd, which represented nothing more than an interim arrangement amounting to a total of 84 hours of service. In addition to the above, another considerable period, ranging from April 2011

up to March 2012, was also not accounted for in terms of documentation rendered available by Enemalta.

2.5.22 When faced with the above findings, NAO raised further queries regarding the methodology employed by the Corporation in sourcing its barge transfer service requirements. Enemalta explained that the appointment of the subcontractor to effect such barge transfers was ordinarily addressed by the Corporation through the issuance of a public tender. However, Enemalta further explained that due to what it termed as the imminent privatisation of this function, the Corporation considered it to be more appropriate to extend the existing contract rather than issue a new tender. In addition, there were other times when the Corporation considered it most appropriate to issue an ad hoc call for quotations corresponding to the equivalent of only one month's service (reference was hereby being made to the one-off 84-hour contract awarded to Bunker Supplies Malta Ltd). The intention behind such a short-term solution was the bridging of a gap between the expiration of a contract and the award of a new one.

2.5.23 NAO has notable reservations with respect to the reasons put forward by Enemalta in favour of extending such contracts. Reference to the privatisation of the Petroleum Division was first documented in Enemalta Corporation's 2006 Annual Report, and subsequently made reference to in the Annual Reports of 2008, 2009 and 2010, and therefore, its influence in conditioning Enemalta's decision to extend such contracts on an ad hoc basis is somewhat tenuous. Moreover, this situation is further compounded by the fact that the agreement signed with these two suppliers did in fact include a clause accounting for the eventuality of privatisation, reproduced herewith for ease of reference, *"If a new tender is awarded and should the privatisation of the Petroleum Division take place during this six-month period, the Corporation reserves the right to terminate (the) contract accordingly."*

- 2.5.24 In response to the above-referred concerns put forward by NAO, Enemalta stated that it had attempted to issue a tender for the 'Transportation of petroleum products in bulk by sea' on May 2011. Tender P/T/4/2010 was drafted by Enemalta and submitted for the Department of Contract's (DoC) review on 20 May 2011. DoC approval for publication was received by Enemalta on 8 August 2011, and the tender was subsequently published on 16 September 2011, with 8 November 2011 set as the closing date for submission of bids. The General Contracts Committee recommendation for award was received by Enemalta on 13 February 2012, and in fact, the tender was awarded on 7 March 2012.
- 2.5.25 According to Enemalta, in parallel to the above developments, the Corporation issued another tender, entitled 'Transportation of EN590 Diesel in bulk by sea', bearing reference P/T/3001/2011. Enemalta stated that the issue of this second tender was due to the considerable duration experienced with respect to the processing of P/T/4/2010. In fact, P/T/3001/2011 was published on 8 July 2011, set with a closing date scheduled on 20 July 2011. However, an objection was received by the DoC from Island Bunker Oils Ltd, which in turn stalled the award of this tender. The Public Contracts Review Board convened a public hearing on 11 May 2012 to discuss the objection at hand, and ultimately decided against the appellant on 28 May 2012. Ultimately, this tender was not awarded, as tender P/T/4/2010 came into effect in April 2012.
- 2.5.26 As indicated earlier, the second aspect of NAO's diesel barge transfer analysis entailed the review of 21 files, which corresponded to eight case studies in total. NAO's analysis indicated the notably significant cost involved in such transactions, with these reviewed eight cases amounting to approximately €820,000. NAO verified all invoices forming part of these 21 files and in fact reviewed a total of 40 invoices as part of this exercise. Table 24 summarily presents the costs incurred by Enemalta with respect to these eight case studies.

Table 24: Overview of Barge Transfer Files Reviewed

Case Study Reference	Vessel File Reference	Period of Transfer	Transferred Quantity (MT)	Invoice Total	Surcharge Total	Total Paid
42	V07/08	February 2008 – April 2008	21,573	€103,088	€0	€103,088
43	V21/08	May 2008 – July 2008	27,112	€129,587	€0	€129,587
44	V52/08	November 2008 – December 2008	13,566	€64,846	€0	€64,846
36	V06/09	March 2009 – June 2009	26,648	€127,375	€47,166	€174,541
37	V56/09	December 2009 – February 2010	16,773	€80,177	€29,689	€109,865
31	V14/10	March 2010 – May 2010	25,116	€120,052	€44,454	€164,507
16	V02/11	February 2011 – February 2011	4,940	€32,354	€0	€32,354
17	V45/11	November 2011 – November 2011	6,832	€44,748	€0	€44,748

2.5.27 As part of the above-indicated verification process, the audit team analysed the quantity transferred as declared per Bill of Lading against the total quantity received by Enemalta. This, in turn, allowed NAO to establish the percentage discrepancy registered in terms of diesel received. NAO noted that percentage discrepancies arising with respect to the eight case studies reviewed were minimal, recording negligible gains and losses ranging from +0.38 per cent to -0.42 per cent. Queries were raised with Enemalta in relation to possible substantial losses that could occur, whereby NAO sought to establish whether barge transfers were covered by insurance, and what threshold of discrepancy was allowable in terms of potential losses or gains registered during such transfers. Enemalta confirmed that transfers between Enemalta installations are covered by its Public and Products Liability Insurance, as well as its Industrial All Risk Policy. Furthermore, the Corporation stated that the 0.5 per cent excess applicable on imports under the Marine Cargo Policy did not apply under such circumstances.

2.5.28 The remaining diesel located in the Has-Saptan tanks, which is in effect property of the supplier serves the aforementioned purpose of security stock. However, despite the security stock considerations, the stock owned by the

supplier, over and above such obligations, can also be sold to third parties. In such cases, the supplier is obliged to inform Enemalta, since the Corporation is the ultimate recognised customs warehouse, and under such circumstances, a throughput fee is charged to the supplier. Furthermore, such third party transfers also require the involvement of the Department of Customs and independent inspectors.

Avgas

2.5.29 Procedures relating to aviation fuels are regulated by ISO 9002 standards. This category of fuels includes Jet A1 and avgas, with the latter referred fuel used by light aircraft such as micro-lights and training school aircraft. Aviation sales relating to these types of fuels are housed at the Aviation Section within Luqa Airport. Enemalta Corporation also has an office at the Malta International Airport, which is open round the clock.

2.5.30 In the period covered by this audit, that is, 2008 to 2011, avgas was bought from Ente Nazionale Idrocarburi (ENI), through a direct order agreement with the supplier. When NAO queried this with Enemalta, it was informed that avgas is bought on a direct order basis due to the fact that ENI is the sole company that stores and supplies avgas 100 LL in the vicinity of Malta. Also contributing to the option for resorting to direct orders is the fact that avgas is transported by means of road tankers, thereby rendering location and proximity to Malta critically important factors in the procurement process, in order to minimise transport costs. As stated earlier, the procurement of this fuel was not coordinated and managed by the FPC, but separately attended to by the Petroleum Division.

2.5.31 Transport arrangements are coordinated by the supplier, and to this end, avgas is delivered to Malta by means of a road tanker bearing a capacity of 40,000 litres, onboard a cargo vessel. Prior to loading, the road tanker, which is specifically dedicated to the transportation of aviation fuels, needs to be

prepared and cleaned following a set of procedures. Once loading is completed, the vehicle is closed and sealed in the presence of the loadport inspector, who subsequently declares the cleaning procedure used.

2.5.32 As per Enemalta procedures, on arrival in Malta, the local independent inspector and Department of Customs representative inspect the seals. If any seals are found to be broken, the Department of Customs instigates corrective action, and the fuel is not used until recertification testing indicates that it is suitable and fit for aviation-related use.

2.5.33 The vehicle transporting the fuel is then driven to Enemalta Corporation's Luqa Airport Service Station (LASS) under Department of Customs escort. On arrival at the airport, Enemalta aviation staff verifies the state of the seals and checks the corresponding documentation. This correspondence includes a declaration relating to the last cargo carried.

2.5.34 Once confirmation is obtained that all is satisfactory, the fuel is discharged into the airport storage. The product is transferred from one road tanker to another by means of a vacuum pump into two road tankers utilised to store avgas. The transfer process takes 30 minutes and after the inlet valves are closed, the quantity of fuel within the tanks can be recorded by means of dip measurement. Water and sediment are drained, and subsequently followed up by control checks. Once samples and density prove to be within parameters, the fuel is released for aviation-related use.

2.5.35 In the case of avgas, quality certification is regulated and controlled by virtue of the 'Airport Quality Control and Operating Manuel', issued by Enemalta Corporation's Aviation Section. This document outlines how avgas can be released for use if it passes the control check, which includes a visual test, together with an assessment of density. These tests are recorded on form EP.AV.QM.6, which is retained at LASS. Only in the case of a control check failure will a certificate of analysis be necessary.

2.5.36 From the sample case studies analysed by NAO, there was one particular instance (CS47) where no seals were found in the hatches, or the discharge valves, the implication of which could have been possible tampering in terms of quantity and quality of the delivered fuel. A series of correspondence was found in the particular vessel file, whereby Enemalta advised the supplier about the situation, and notified them that discharging was not taking place until the supplier followed on the refinery. The supplier reported back stating that an unfortunate coincidence of events may have caused this oversight, which NAO notes, involved the depot's staff, the driver who did not verify, as well as loading port authorities. The supplier advised Enemalta to take samples and analyse the product prior to discharging the truck. In this particular case, there was a major difference in quantity of 2.75 per cent and insurance was subsequently claimed, while quality-related concerns did not materialise.

Jet A1

2.5.37 Similar to avgas, Jet A1 is another aviation fuel, which in this case is utilised in the airline industry. With respect to Jet A1 fuel, and as was the case with diesel, Enemalta has a supply and storage contract with its supplier. Jet A1 is received at Has-Saptan under a storage agreement and at no storage-related cost incurred by the supplier. Once again, the stock maintained in this respect is also declared as security stock.

2.5.38 The product arrives at Has-Saptan through the same procedure as already explained in the case of diesel. However, when Enemalta needs to transfer Jet A1 fuel, this is transferred through a dedicated pipeline from Has-Saptan to Birżebbuġa instead of a barge transfer. At this stage, full Directorate of Engine Research and Development (DERD) analysis is carried out and when the results confirm that the product is fit for aviation use, it is transferred to the Wied Dalam Intermediate Depot, which is used for jet fuel storage. From

Wied Dalam, the product is then transferred via a dedicated pipeline directly to the airport when required, for use by airlines.

- 2.5.39 The Petroleum Division's stock filing system related to movements of Jet A1 in relation to the Birżebbuġa to Wied Dalam transfer, as well as the Wied Dalam to LASS transfer are recorded with the stock controller at the above-indicated Division. Transfers and sales within LASS are recorded by the stock controller on LASS stock sheets. Documents related to these transfers were not filed in the vessel files reviewed by NAO, and essentially, were not considered as falling within the audit scope.
- 2.5.40 Corresponding Quality Certificates are received with the vessel carrying the fuel when it arrives in Malta. Preliminary analysis is carried out on a composite sample taken from each vessel tank by the locally nominated independent inspectors. If the product is found to be within the required standards, Enemalta issues instructions to commence discharging.
- 2.5.41 Full DERD analysis is carried out on each receiving tank in Has-Saptan to ensure that the product is fit for aviation-related use. A second full DERD analysis is carried out when the product is subsequently transferred to Birżebbuġa. Both tests are carried out locally by the independent inspectors. Relative documents pertaining to the tests carried out can be found in a separate quality control filing system, not within the sample vessel files analysed by NAO.
- 2.5.42 Critically important in the assurance of quality control with respect to the integrity of Jet A1 fuel is the ISO standard certification that Enemalta Corporation abides by in this respect. Enemalta's operations in this regard are audited on an annual basis in order to ensure conformity with the ISO 9001:2008 standard on jet operations. A manual of procedures related to this standard is also kept at the Petroleum Division.

Unleaded Petrol

- 2.5.43 In the case of unleaded petrol, the vessel unloads directly at the 31st March Installation at Birżebbuġa. Enemalta assumes direct responsibility for the purchase of this fuel product, which is then stored in specific tanks at the Birżebbuġa Installation. From these tanks, unleaded petrol is loaded onto road tankers for onward distribution to the various petrol stations following requests raised.
- 2.5.44 With respect to quality control, in addition to the Quality Certificate issued at loading port, another Quality Certificate is issued locally. This latter-referred Quality Certificate goes beyond the obligatory quality control measures, and is instigated by Enemalta so as to ascertain the integrity of the fuel received.

Biodiesel

- 2.5.45 Enemalta Corporation commenced procurement and importation of biodiesel in January 2011. This product is imported in Malta by means of flexi tanks, stored within a container, and bearing a capacity of 21,000 to 23,000 litres each. The locally appointed agents, acting on behalf of the supplier, ordinarily attend to the logistical coordination relating to the transport of biodiesel orders. On arrival, the container is weighed on Enemalta's weighbridge prior to the commencement of discharge, and weighed once again when emptied. The difference in weight is used to verify and confirm the total quantity of fuel received, which is then worked out at the agreed density to arrive at the litres in the receiving tank. Complementing the above-described procedure is the dip measurement of tanks where the product is received, which is carried out prior to, as well as post unloading.
- 2.5.46 Enemalta Corporation followed the above procedures in the case of the first and third biodiesel contracts (dated 19 November 2010 and 27 February 2012, respectively) entered into. While analysing Enemalta files, NAO noted

that in the case of the second contract related to biodiesel, a different procedure was envisaged, whereby it was planned that the supplier would send the product to the locally appointed agent who acted as an intermediary. The product would then be stored in an intermediate storage facility and Enemalta would initiate transfer of the product when necessary. The advantage anticipated by Enemalta with this arrangement was that any delays arising with respect to the delivery of the required biodiesel would be eliminated, as the fuel would notionally already be in Malta.

2.5.47 From NAO's review, it emerged that Enemalta took up all biodiesel stock on the same day as delivery to the intermediate storage. The anticipated advantage did not materialise, as the delivery to the intermediate storage facility was also subject to delays, hence Enemalta's immediate transfer of stock upon arrival. Given that the utilisation of intermediate storage did not provide Enemalta with the required level of security with respect to timely stock delivery, the Corporation reverted to its original procedures, as was in fact employed in the case of the first contract.

2.5.48 In the case of biodiesel, and as indicated in the preceding section of this audit report, quality analysis is carried out prior to the local receipt of the product, with the Certificate of Quality having to be dated within 28 days prior to delivery. Enemalta stated that biodiesel is not tested again for quality, since there are no local facilities that could provide such testing services, and also due to the fact that if the sample were to be shipped to the Netherlands, this would be against considerable expense.

Gasoil 0.1

2.5.49 This fuel is a type of diesel with high sulphur content, which is ordinarily used for industrial purposes, electricity generation through power stations, and bunkering. Storage of gasoil is located at the installations of Has-Saptan and Ras Hanżir, which are subsequently rented to third parties against payment.

In turn, when Enemalta requires gasoil, such fuel may be obtained, against payment, from these storage tanks.

- 2.5.50 When the vessel arrives in Malta to unload Gasoil 0.1 at Delimara Power Station, it first unloads part of the cargo at the Has-Saptan storage facility through the fuel un/loading dolphin, and then proceeds to discharge the agreed-upon quantity purchased by Enemalta at the Delimara Power Station. The portion of the received gasoil stored at the Has-Saptan storage facility is then released to various bunker operators in Malta.
- 2.5.51 As a matter of standard procedure, and as already outlined in the preceding section of this chapter, the Quality Certificate is received together with the shipping documents delivered onboard the vessel. When the vessel does not unload at Delimara Power Station, no Quality Certificate is received, since this implies that the transported stock would not be intended for resale to Enemalta, but for other third parties.
- 2.5.52 When queried with respect to the possible mixture of gasoil intended for use by Enemalta Corporation and that intended for sale to other third parties, Enemalta stated that it was aware of the quality of fuel received by the third party storage tank operator. Moreover, NAO was informed that if Enemalta purchases a parcel of Gasoil 0.1 from this consignment, then a formal request for the Quality Certificate would be raised accordingly.
- 2.5.53 Further to the above, Enemalta has a tank at Ras Hanzir allotted to Heating Gas Oil (HGO). HGO is gasoil 0.1, marked blue and having two fiscal markers, solvent yellow 124 and a national marker supplied by the Department of Customs, which results in green gasoil. The Department of Customs has a scheme of tax rebates on gasoil used for heating purposes. Therefore, in order to avoid abuse, gasoil is marked as already indicated, and referred to as HGO.

2.6 The Payment Process

- 2.6.1 When the vessel is due to arrive at discharge port, Enemalta's Shipping Officer requests a payment undertaking. This document states that the Corporation has entered into an agreement to purchase fuel from the supplier, making direct reference to the relevant sales contract. Information such as the supplier's bank contact details, quantity delivered and discharge port is included in this payment-undertaking document.
- 2.6.2 Once invoices are received, these are processed for eventual payment to the relevant supplier. Details such as the amount due and other voyage-related statistics (vessel name, Bill of Lading date, type of delivery, load port and discharge port) are inputted in a spreadsheet, while the Shipping Officer and the Finance Division verify the quantities and rates quoted on the invoice.
- 2.6.3 The invoiced quantity is based on the quantity established as per Bill of Lading. As stated earlier, in a number of case studies, there were instances where more than one Bill of Lading was applicable, and in others, the Bill of Lading included quantities which were not delivered to Enemalta but to the supplier's storage tanks. In such instances, apportionment of the Bill of Lading was required.
- 2.6.4 For each payment, the audit team verified that the invoiced quantity was in fact based on the quantity as per Bill of Lading (or apportioned Bill of Lading where applicable). Assuming that the apportionment carried out by Enemalta was accurate (as verifying such an assumption would entail the detailed review of the Corporation's stock control function), NAO confirms that the invoiced quantities did in fact reconcile with the quantities established as per Bill of Lading in all sampled case studies.
- 2.6.5 NAO verified all invoices related to the shipments pertaining to the sampled 61 case studies. This exercise involved a matching process, whereby each

payment was allocated to its relevant contract, and subsequently, the contract terms and credit period were noted for each invoice.

2.6.6 Key in NAO's analysis of the payment process was the verification undertaken with respect to the establishment of the fuel unit price, which is integral in determining the accuracy of payments undertaken by Enemalta. Fuel unit price is generally based on three factors, that is, the average Platts price, the applicable premium or discount, and density. This latter factor is only applicable in the case of diesel, jet A1 and unleaded petrol.

2.6.7 The first factor referred to in the preceding paragraph, and bearing direct influence on the establishment of unit price is the monthly average Platts price. The type of average Platts price used varies, and in effect depends on the relevant contract terms in force. In a large number of cases, the average Platts price relating to the month of delivery was used. In other cases analysed by NAO, one of the contract terms specified that the supplier had a choice as to whether to use the average Platts price of the month of delivery, or the average Platts price of the previous month. However, contract terms stipulated that Enemalta had to be notified of the supplier's selection with respect to the rate-determining option by the 25th or 26th of the month. Further to the above, Enemalta stated that use of this clause was discontinued after 2010. The Corporation's representatives claimed that this rate-establishment option was removed from contracts in order for Enemalta to register a greater degree of stability, deemed to be of critical importance for hedging-related purposes.

2.6.8 The average Platts price used also depended on another factor, that is, whether the average high quotations or the average mean quotations were to be used. Platts prices varied according to the type of fuel being purchased, so in the case of Enemalta, the following Platts prices were used:

- a. Gasoil 0.1 per cent for gasoil shipments;
- b. Fuel Oil 1.0 per cent for fuel oil shipments;

- c. 10 ppm ultra-low-sulphur diesel (or diesel 50 ppm in a few cases) for diesel shipments;
- d. premium unleaded 10 ppm (or premium gasoline 50 ppm in a few cases) for unleaded petrol shipments; and
- e. Jet FOB Med (Italy) for jet fuel shipments.

2.6.9 Primary data obtained with respect to NAO's verification of Platts prices was retrieved from three sources. First, and most importantly, were the actual Platts prices provided by Enemalta. This data was then compared to the various workings undertaken by Enemalta prior to payment, as well as to the actual rates (part of the unit price) indicated on the suppliers' invoices.

2.6.10 The second factor determining the establishment of unit price was the premium, or discount, factored into such amounts. This variable was sourced from the corresponding contract, and subsequently verified against Enemalta's workings undertaken prior to payment, as well as the actual invoice.

2.6.11 Finally, the third factor of interest in this respect is density, which only applied in the case of diesel, unleaded and jet fuel shipments. Here, specific reference is made to escalation and de-escalation clauses factored into the contractual agreement. Although payments are effected in terms of metric tonnes, the unit price applied incorporates a correction factor that accounts for variations arising due to the product's actual density. Actual density can be calculated from the Bill of Lading, by dividing the quantity quoted in metric tonnes (in air) by the quantity quoted in cubic metres (at 15°C). NAO reviewed the workings undertaken by Enemalta in terms of the aforementioned density-related correction factor.

2.6.12 In order to arrive at the final per metric tonne price for these fuels, Enemalta and its corresponding supplier calculate the Platts price, the premium or discount applicable, and multiply the result by the standard density. The standard density for these fuels is as follows:

- a. Gasoline Unleaded - 0.755kg/ltr;
- b. Jet A1 Fuel - 0.800kg/ltr; and
- c. Gasoil EN590 (Diesel) - 0.845kg/ltr.

2.6.13 The result of the above calculation is then divided by the actual density (in air), and it is in this manner that the final unit price is arrived at. As part of the review of Enemalta's payment process, NAO verified such workings by recalculating all of the above steps, essential in establishing the final unit price. In essence, NAO's verification resulted in complete reconciliation, indicating that Enemalta accurately established and checked submitted invoices. NAO has no concern in this regard.

2.6.14 In the case of avgas and biodiesel payments, a different procedure was undertaken with respect to the payment process. For avgas shipments, a different formula was used and in the case of biodiesel shipments, payments were based on a fixed price per litre, which was agreed upon at contract stage. NAO's review of workings undertaken by Enemalta in reference to the payment of avgas and biodiesel invoices resulted in complete reconciliation, and therefore, no concerns are held in this respect.

2.6.15 Once the unit price was established as factually accurate, NAO proceeded in its verification of the payment of relevant invoices. Essentially, this stage of NAO's analysis entailed the vetting of the actual invoiced amount, which involved the comparison of quantities established as per Bill of Lading, against quantities indicated in the corresponding invoice, multiplied by the unit price. NAO had no concerns in this respect, as all invoices were in fact reconciled.

2.6.16 This was subsequently followed up by NAO's reconciliation of invoiced amounts against proof of payment amounts. NAO noted that payments were effected in US Dollar, except in the case of avgas and biodiesel, which were paid in Euro. In relation to this analysis, NAO noted that there were a small

number of instances when the proof of payment available in vessel files also included payments for other invoices. Therefore, given the fact that NAO did not review the entire population of invoices relating to the overall contract (but limited its attention to individual shipments forming part of larger contracts), it was not always possible for NAO to identify the amount for which that particular payment was made.

2.6.17 Credit terms may vary from supplier to supplier, depending on the conditions stipulated in the agreed upon contract. While some suppliers calculate credit terms from the Bill of Lading date, others utilise the transfer date, Notice of Readiness date or final invoice date as the effective commencement of the credit period. NAO's analysis with respect to the credit terms set in the 29 contracts reviewed is presented in Table 25.

Table 25: Overview of Contractual Credit Terms

Contract	Bill of Lading / Notice of Readiness / Other	Credit Period
Unleaded Gasoline [October 2007 – June 2008]	Bill of Lading	30 calendar days
Jet A1 [January 2008 – June 2008]	Delivery date	25 calendar days
Diesel [April 2008 – March 2009]	Bill of Lading	30 calendar days
Light Heating Oil [April 2008 – March 2009]	Bill of Lading	30 calendar days
Fuel Oil [May 2008 - April 2009]	Bill of Lading	30 calendar days
Avgas [May 2008 – December 2009]	Date of invoice	30 calendar days
Unleaded Gasoline [July 2008 – February 2009]	Bill of Lading	30 calendar days
Jet A1 [July 2008 – February 2009]	Notice of Readiness	30 calendar days
Unleaded Gasoline [March 2009 – October 2009]	Bill of Lading	30 calendar days
Fuel Oil [June 2009 – June 2010]	Bill of Lading	30 calendar days
Jet A1 [July 2009 - August 2010]	Receipt of final invoice	3 bank working days
Diesel [August 2009 – March 2010]	Bill of Lading	30 calendar days
Gasoil [August 2009 – August 2010]	Bill of Lading	30 calendar days
Unleaded Gasoline [November 2009 - June 2010]	Bill of Lading	30 calendar days
Low Sulphur Fuel Oil [February 2010]	Notice of Readiness	30 calendar days
Avgas [April 2010 – April 2011]	Date of invoice	30 calendar days
Avgas [April 2011 – December 2011]	Date of invoice	30 calendar days
Diesel [June 2010 - December 2010]	Nominated start of drawdown date	30 calendar days
Unleaded Gasoline [June 2010 – January 2011]	Notice of Readiness	30 calendar days
Gasoil [July 2010 – May 2011]	Bill of Lading	30 calendar days
Fuel Oil [August 2010 - January 2011]	Notice of Readiness	30 NY banking days
Jet A1 [September 2010 - February 2011]	Agreed stock transfer date	30 calendar days
Diesel [1 December 2010 - 30 June 2011]	Transfer date	30 calendar days
Fuel Oil [January 2011 - February 2012]	Notice of Readiness	60 NY banking days
Biodiesel [February 2011 - July 2011]	Invoice date	30 calendar days
Unleaded Gasoline [February 2011 - August 2011]	Bill of Lading	30 calendar days

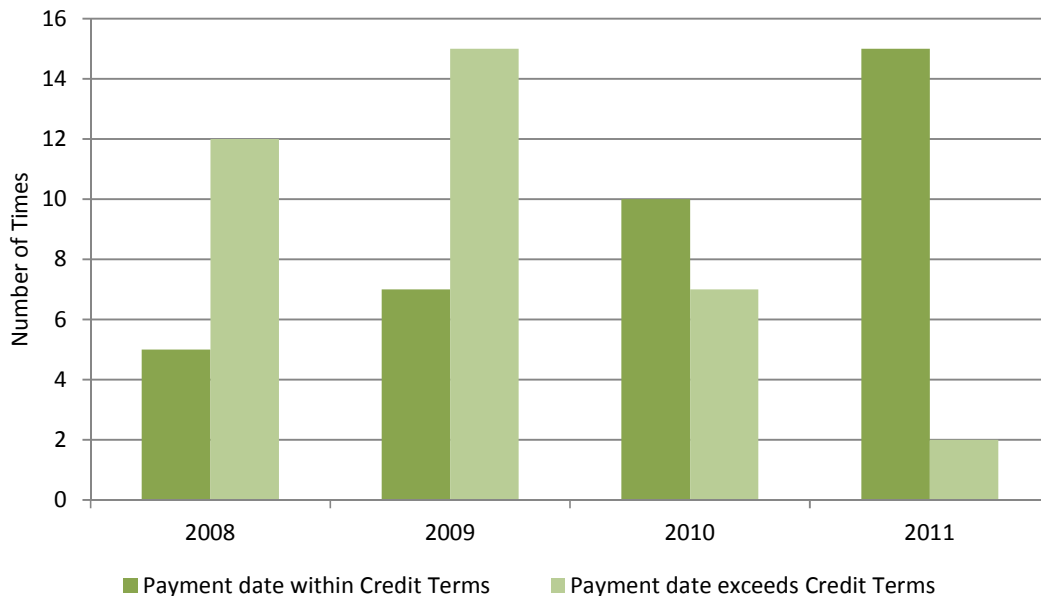
Jet A1 [March 2011 - October 2011]	Agreed stock transfer date	30 calendar days
Diesel [June 2011 – December 2011]	Transfer date	30 calendar days
Gasoil [August 2011 – July 2012]	Final invoice date	2 NY working days
Unleaded Gasoline [September 2011 – April 2012]	Notice of Readiness	30 calendar days
Biodiesel [September 2011 – February 2012]	Takeover date	14 calendar days
Jet A1 [November 2011 - April 2012]	Transfer date	30 calendar days
Fuel Oil [January 2012 - February 2012]	Mixed ¹	3 or 5 days ¹
Diesel [January 2012 – June 2012]	Transfer date	30 calendar days
Avgas [December 2011 – June 2012]	Date of invoice	30 calendar days

Notes

1. With specific reference made to the Fuel Oil contract valid from January 2012 up to February 2012, credit terms stipulated that payment was to be effected by the Corporation within three days of completion of discharge, or five days of tendering Notice of Readiness at discharge port, whichever was in fact the earlier.

2.6.18 NAO’s analysis of credit term utilisation is presented in Figure 4, whereby 61 shipments were vetted in total. The audit team verified whether payment per shipment was effected within the stipulated credit terms established as per contractual details (Table 25 refers). At a general level of analysis, it is immediately apparent that payments exceeded credit terms most frequently during 2008 and 2009. The situation appears to have been somewhat mitigated in 2010, and was further improved upon in 2011.

Figure 4: Analysis of Credit Term Utilisation



2.6.19 In the case of the 36 payments that exceeded credit terms, the average time taken to effect payment beyond the stipulated credit period was that of 28 days. Barring the case of a particular avgas shipment (CS38), which was eventually paid in excess of 200 days beyond the established credit period, the exclusion of this outlier results in a revised average time taken of 23 days over and above the credit period. On the other hand, 37 payments effected within the stipulated credit period were carried out, on average, eight days prior to the expiry of credit terms. It is important to note that the 36 and 37 payments referred to above, 73 in total, correspond to the 61 shipments; however, in the case of certain shipments, more than one payment was processed by Enemalta.

2.6.20 In addition, the proof of payment also included interest payments in certain instances. NAO's analysis of invoices pertaining to the sampled case studies for the period 2008 to 2011, brought to the fore various instances, mainly in 2008 and 2009, where interest was incurred due to late payments. This in fact corresponds to the data presented in Figure 4. When queries were raised by NAO as to why such interest was incurred on late payments, Enemalta stated that certain contracts stipulated that the Corporation could opt for extended credit. In such cases, the agreement indicated the terms for this extended credit. When this option was taken, extra credit interest was paid by Enemalta. Notwithstanding the above clarification put forward by Enemalta, NAO did not further delve into this area as it was considered to be tangential to the original audit objectives.

2.7 Reporting

2.7.1 This section provides an overview of Enemalta's internal reporting arrangements between the various Divisions and Departments involved in the fuel procurement process. Certain reporting arrangements play a pivotal and direct role in the procurement process, while others bear indirect relevance. A degree of overlap with stock control issues is present in this

respect, as this function axiomatically feeds into the procurement process. Nonetheless, this audit did not delve into the control of stock following its procurement, but restricted its interest in this function as the mechanism providing feedback to the overall procurement process. At a general level of understanding, the reporting arrangements serve as a feedback mechanism for the overall procurement process, providing stock-related information that serves to trigger the reorder of required fuel.

2.7.2 With the above objective in mind, NAO's understanding of the reporting arrangements in place commenced with a review of the spreadsheets that are created on a monthly basis, in order to keep track of stock movements. Transferred and received quantities with respect to each type of fuel are recorded in the aforementioned spreadsheet. NAO did not review the stock movements per se, but focused its attention on the management systems in place that control this function and eventually trigger the procurement process. As stated earlier, for the purpose of this audit, stock reconciliation was not performed by NAO.

2.7.3 Fuel tanks are dipped on a daily basis and corresponding records are accordingly kept. A stock position report is compiled every Monday by the Power Station Managers, and this is subsequently sent to the Shipping Officer. This report contains the following data:

- a. Consumption of fuel oil during the preceding week;
- b. Fuel consignments received;
- c. Daily consumption levels;
- d. Estimated consumption for that week; and
- e. Number of days of usable stock left.

2.7.4 A stock position report is also compiled and sent to the Shipping Officer on a monthly basis. This report presents a more accurate record of consumption-

related data than the weekly stock position report. The Monthly Stock Position report includes the following data:

- a. Dip measurement as at start of month for each tank;
- b. Shipments throughout the month;
- c. Dip measurement as at end of month for each tank; and
- d. Consumption during that month.

2.7.5 This monthly report portrays the amount of fuel used during that month, the opening stock, as well as pumpable stock, which is fuel that is stored in the tanks and that can actually be used. Various measures intended at safeguarding and ensuring the accuracy of dip measurements taken are attended to by Enemalta in this stock control process. For example, the tape used in dip measurement is calibrated and certified, while attention is also directed to the fact that temperatures may vary within the various sections of the tank (which would warrant corrective action in this respect).

2.7.6 Through the Weekly and Monthly Stock Position reports, the Shipping Officer can anticipate and order shipments. A spreadsheet is used for stock control record keeping purposes. In attending to this function, the Enemalta Shipping Officer keeps track of numerous factors that may influence the stock delivery process and therefore condition the optimum timing and scheduling of stock reorder. Among such considerations is the fact that consumption at the power stations depends on weather conditions and scheduled maintenance works. Weather conditions may also contribute to delays in fuel delivery. Furthermore, if maintenance work is scheduled at one particular power station, then the load is accordingly shifted to the other power station, which has subsequent ramifications on available stock levels.

- 2.7.7 Apart from the Shipping Officer, the Monthly Stock Position report is also sent to the Enemalta Regulatory Office and Finance Division. This report also serves as a means to check the month's peak storage for insurance purposes.
- 2.7.8 A stock take of all fuels in all tanks is carried out by a third party on an annual basis. This is then sent to Enemalta's Regulatory Affairs Division. The Regulatory Office receives this data in view of the CO₂ generation EU Directive, which was discussed in greater detail in the first chapter of this report. The aforementioned audit serves to review and verify all documentation relating to fuel consignments and fuel consumption in each tank. In recent years, Bureau Veritas have carried out the independent audit. A certificate is then given to Enemalta, with findings being reported to the EU Commission, the Malta Environment and Planning Authority, as well as the MRA. This audit exercise is also utilised by Enemalta as an annual stock take, carried out every January.
- 2.7.9 In the analysis undertaken of the various internal reports utilised in supporting the procurement function, NAO noted that Microsoft Excel spreadsheets were maintained for record keeping purposes. Of particular concern to NAO in this respect is the fact that such databases were accessed by various Enemalta officials, which in the Office's opinion, increases the risk of human error and difficulties relating to version control. Furthermore, NAO noted that the information management system in place does not cater for an audit trail function, which poses some element of risk with respect to ascertaining the integrity of recorded data.

2.8 Conclusions

The Fuel Procurement Policy and Fuel Procurement Committee

- 2.8.1 From an essentially strategic perspective, NAO's primary concern with respect to the operations of the FPC centres on the fact that no policy framework was in place during the period 2008 up to end 2010. Prior to the formulation of the Corporation's Fuel Procurement Policy in January 2011, Enemalta's fuel procurement function was effectively operating in a policy vacuum. The implications of such a shortcoming are, in NAO's opinion, immediately apparent, undermining the fundamental principles of good governance.
- 2.8.2 Such shortcomings in terms of good governance were brought to the fore in NAO's review of who the members of the said Committee were. Of concern to NAO, in this respect, were the instances of poor record-keeping, manifested by, what this Office considers to be, one of Enemalta's key strategic Committees. Once again, NAO considers this situation as indicative of the significant shortcomings in terms of the Corporation's adherence to the principles of good governance, accountability and transparency.
- 2.8.3 NAO noted that this situation persisted throughout the period 2008 up to May 2011, as the identification of members forming part of the FPC was thereafter rendered a straightforward endeavour through the appropriate methods of documenting such matters. This notable improvement in terms of record-keeping and documentation of decisions taken closely coincides with the commencement of this audit.
- 2.8.4 As stated above, NAO's concerns relating to the operations of the FPC intensify with respect to meetings held in 2008 and 2009. Corresponding FPC meeting minutes reviewed by NAO lacked the most rudimentary level of

detail and bore no information relating to meeting discussions and decisions taken. Besides being handwritten and mostly undecipherable, these minutes also lacked a basic record of Committee members present. NAO fails to comprehend how decisions worth hundreds of millions of Euro could have been subject to this abysmal level of record-keeping and documentation, in blatant violation of the principles of management, good governance, accountability and transparency.

2.8.5 In light of the above, NAO noted an element of improvement with respect to record-keeping practices and documentation-retention procedures employed by the Committee. Such improvements were implemented in a stage-based manner, with the first minor amelioration taking place from mid 2009 up to mid 2011. Despite the above termed improvement, weaknesses in terms of records kept, prevailed at this stage, as these minutes still lacked the necessary details accounting for the basis upon which decisions were taken, as well as difficulties in reconciling which Committee members were present during such meetings.

2.8.6 Real and tangible progress was subsequently registered from mid 2011 onwards, and this scenario, here defined as the second improvement to the Committee's modus operandi, represents a positive sense of progress that is hereby being acknowledged by this Office. NAO deems positive the much revised and improved quality of records and documents maintained in this respect, which clearly listed the Committee members in attendance, quotations received and decisions taken, among other notable areas of improvement.

2.8.7 The above-discussed implications associated with the systems of poor record-keeping and documentation that characterise and pervade the operations of the FPC prior to May 2011 rendered it impossible for the NAO to effectively audit the decision-making process employed by the Committee in adjudicated tender bids received and evaluated. The implications of such

severe limitations in the availability of records documenting the FPC's decision-making process are brought to the fore in those instances when the Committee awarded tenders to bidders who (based on severely limited information at the NAO's disposal) did not submit the most favourable offer. The lack of any information justifying such decisions render the proper audit of this process an impossible task, thereby fundamentally undermining the principles of good governance, accountability and transparency that are meant to characterise the operations of such a Committee.

The Tender Process

- 2.8.8 This second analytic perspective adopted with respect to the tender process, following NAO's above-documented analysis of the operations of the FPC, centres on the Committee's adherence to tender-related procedures outlined in the Fuel Procurement Policy. At a general level of analysis, NAO considers adherence to the Policy as satisfactory, and an overall record of progress was registered with respect to the Committee's pre-policy modus operandi.
- 2.8.9 NAO's concern with regard to the first stage of the tender process, that is, the invitation to tender stage, is of a minor nature, once again relating to the retention of documents. This Office considers it pertinent to note that such information is in fact maintained in other files by Enemalta. Nonetheless, NAO considers it more appropriate, in terms of completeness of records kept, if all relevant information was to be maintained under one coordinated registry system.
- 2.8.10 With respect to the second stage of the tender process, that is, the tender submission phase, NAO's concern centres on the activation of the FPC's generic mail account. This Office's review of data supplied by MITA indicated that on four instances out of a possible seven, the Committee failed to adhere to the Fuel Procurement Policy guidelines on this particular stage of the tender process, which stipulated the timely reset of the generic mail

account password prior to the convening of FPC meetings. Under the assumption that MITA's data is accurate and complete, NAO's concern in this regard relates to the fact that such failures in terms of adherence to the aforementioned Policy raises doubts as to the integrity of submitted bids.

2.8.11 NAO considers the current system in place, involving the use of a generic mail account, as one subject to numerous inherent flaws and risks. Apart from risks indicated by MITA, which include failure in delivery due to email bids being tagged as spam and automatic deletions of emails due to their quarantine status, classified as such on the basis of the type of file attached, NAO noted other more pertinent concerns. These risks essentially relate to possible instances where access to the generic mail account may be inappropriately requested and subsequently granted. The risk associated with change of password requests being made in advance of FPC meetings is self-evident, with access to sensitive information submitted by bidding parties possibly jeopardised and inappropriately utilised to the detriment of Enemalta Corporation.

2.8.12 As indicated in the preceding text, integral components of the tender evaluation process were the retention of documentation and recording of decision-making processes, which were subject to considerable improvement following revisions instituted in May 2011. However, NAO considers certain aspects of this improved process as warranting further review and possible amelioration. Central to this concern is the latter part of the process, which essentially entails the negotiation of submitted tender bids, conducted over the phone. The lack in terms of systems that allow for the recording of such conversations is an area of significant concern to NAO, as the lack of verifiable data in this respect draws attention towards possible weaknesses in terms of accountability, transparency and good governance.

2.8.13 NAO considers it necessary for the FPC to strengthen the notification of award stage. Weaknesses identified by NAO in this respect are threefold. The first relates to the Committee's non-adherence to policy guidelines

stipulating the notification of unsuccessful bidders. Second, NAO deems it necessary for the Committee to identify possible areas of improvement in this respect and devise corresponding means of redress. An example of a possible avenue for amelioration in this regard includes the submission of formal correspondence to the winning bidder, instead of the present practice of informing the successful bidder over the phone. NAO considers the documentation of this sub-step as an important aspect in ensuring completeness of records kept. Finally, and in line with the above point, copies of correspondence between Enemalta and the successful bidder, as well as copies of the signed contract retained on file, would complete the loop and ensure that all information is maintained in a standardised, organised and transparent manner.

2.8.14 NAO is somewhat concerned with the approach adopted by the Enemalta FPC in its decision not to render public its concluded tender awards. NAO is of the considered opinion that the publication of such information would serve to ameliorate concerns relating to the transparency of Enemalta's fuel procurement, which, given the entity's public ownership, trumps concerns relating to the sensitivity of commercial information.

Standard Operating Procedures

2.8.15 NAO commends the system of SOPs as published by the Corporation's Finance Department in October 2011. This Office opines that these procedures positively contribute to the assurance of a robust quality management system geared in attending to the coordination of functions with respect to the Electricity and Petroleum Divisions, leading to the eventual delivery of fuel. NAO considers the depth of detail and comprehensiveness that characterises the Finance Department's SOPs Manual as a clear instance of good practice and an overall positive contributor to ensuring good governance within Enemalta.

Shipments and Delivery to Malta

- 2.8.16** NAO's concerns with respect to Enemalta's logistical coordination of fuel shipments are twofold. This Office's first concern in this regard relates to the issue of business continuity, with vitally important operational knowledge and critical logistical coordination responsibilities poorly assigned and inappropriately spread, thereby failing to mitigate the risks associated with loss of key personnel.
- 2.8.17** Second, and bearing direct relevance to the aforementioned logistical scheduling of shipments, is the IT system utilised by Enemalta in coordinating this key function. NAO is somewhat concerned by the fact that stock movements, including consumption and supply, were recorded by means of a simple spreadsheet, which in this Office's opinion, lacks the necessary fundamental safeguards and controls, key in ensuring the integrity of data. Specific concerns emerging in this respect relate to poor document/version control, notably accentuated by the spreadsheet's multiple users, as well as the absence of an effective audit trail.
- 2.8.18** In relation to the above, NAO's concern with respect to the logistical coordination of fuel shipments centres on the need for more comprehensive record-keeping, which in this Office's view would facilitate the better management of the shipment coordination process. Here, specific reference is made to telephone conversations between Enemalta and its suppliers, where key logistical issues, such as changes in quantity to be delivered, delays in delivery and pricing, were discussed, yet not formally documented. This shortcoming is perhaps most accentuated with respect to CS4A, in which case Enemalta stated that due to low levels of stock, a delivery consisting of lower quality fuel oil was accepted, with no written approval traced in relevant files authorising the approval of such deviations from agreed standards.

- 2.8.19 NAO considers it important for Enemalta to protect its interests in relation to costs associated and incurred by the Corporation on delays arising with respect to discharge. This Office deems the issuance of such letters of protest as essential in mitigating counterclaims relating to delays due to daylight restrictions, low discharging rates and stoppages, among others.
- 2.8.20 This Office did not identify any areas of significant concern with respect to adherence to procedural consistency. NAO's analysis of documentation in this respect indicated that records kept were, in their majority, complete, barring exceptional and minor circumstances specifically relating to procedural-related adjustments made over the phone. The audit team noted that record-keeping in this respect was of a good standard and documents were well organised according to their specific vessel file.
- 2.8.21 Although NAO did not delve into the specific reconciliation of stock received (due to the fact that the Corporation's stock control function was outside of the audit scope), one notable shortcoming identified by this Office was the lack of necessary documentation detailing the relevant apportionment of the Bill of Lading, when circumstances so warranted. NAO considers the retention of such an official record, documenting the portion of stock received by Enemalta, as well as the remaining portion corresponding to third parties received through this same shipment, as a critically important aspect of appropriate record-keeping with respect to fuel receipts.
- 2.8.22 NAO reckons that Enemalta's follow-up of instances of major quantity discrepancies has been consistent, raising the necessary claims when variations exceeded the 0.5 per cent threshold, and therefore, this Office bears no concern in this regard. Explanations put forward by the Corporation with respect to the repeated occurrence of major quantity discrepancies, vis-à-vis avgas, appear to be plausible and justifiable, and NAO's concern in this respect is once again mitigated by the fact that losses were in fact claimed.

- 2.8.23 Further to the review of quantity-related considerations, NAO also analysed quality-related issues emanating from the shipment files reviewed. The first point of significant concern drawn by NAO in this respect relates to the two shipment files that bore no quality certification records. NAO's contention in this regard is self-evident, with key information, represented by the relevant quality certification, absent in the quality control process. In light of such absent documentation, NAO was unable to determine on what grounds the Corporation accepted such shipments.
- 2.8.24 NAO's concerns relating to the appointment of independent inspectors are twofold, effectively conditioned by other shortcomings emerging with respect to Enemalta's management of its fuel quality control function. The first relates to the fact that no documentation relating to the appointment and confirmation of inspectors was retrieved in the sample vessel files reviewed. This Office considers such information as essential in the Corporation's subsequent analysis and review of inspectors' performance, particularly in cases where the quality certification process was not of the expected standard.
- 2.8.25 Second, in light of the somewhat anomalous quality certification results presented in a number of cases, NAO has an element of doubt with respect to the integrity of the appointment of independent inspectors by the Corporation's third-party suppliers. Here, specific reference is made to instances when the expense at load port was to be borne by the supplier, and therefore, it was within the supplier's right to nominate inspectors without consulting the Corporation.
- 2.8.26 With respect to the quality control process, and in specific reference to instances of incongruence between employed standards and test methods, albeit addressing the same parameter, NAO is somewhat concerned with the absence of any documentation indicating equivalency checks. The fact that the parameter was measured against a recognised standard is, in Enemalta's

favour, a measure of assurance. However, from a quality control point of view, a note should have been placed in the relevant files, stating whether the value of the parameter was acceptable in terms of the specifications, even though the parameter had been measured according to a different standard.

2.8.27 On the other hand, other instances of incongruence between test methods established as per contractual specifications, and those presented in the various analysis reports reviewed by this Office, were not in fact addressing the same parameter. It is in this context that NAO's concern intensifies, as such occurrences are clearly indicative of a system fraught with gaps and weaknesses in terms of quality control. Such shortcomings are immediately evident in the case of supplier-side errors (where various properties were erroneously tested for, instead of those originally stipulated in the contract specifications), with the implications of such quality control failings being that Enemalta was not vetting the submitted Quality Certificates. The absence of any queries regarding clear instances of incongruence in terms of quality control leads NAO to this conclusion.

2.8.28 Furthermore, a number of other instances of incongruence were not supplier driven, but instead, originated from Enemalta's establishment of contractual specifications. Here NAO's concern gravitates around the fact that no queries were raised by suppliers, who nonetheless proceeded in administering other test methods to those erroneously specified in Enemalta's contract specifications. This Office contends that such instances were indicative of the Corporation's shortcomings with respect to the establishment of quality-related contractual specifications.

2.8.29 Another issue of significant concern to NAO, with respect to quality analysis, related to the frequent occurrence of missing test results, that is, when actual testing of all parameters stipulated as per contractual specifications was not carried out. NAO opines that audit evidence analysed in this regard indicates that the independently appointed laboratories were ignoring the

specifications established as per contractual terms, and were simply carrying out their own standard test procedures.

2.8.30 Once again, NAO's concern with regard to borderline and out-of-spec results raises numerous important questions. The first, which has already been indicated in the preceding text, relates to whether Enemalta is in effect checking the Quality Certificates it receives, and subsequently formally recording such verifications. Secondly, NAO is also concerned with whether Enemalta is instituting the necessary corrective action when missing property test results are received, and what corrective action is taken in instances of out-of-spec results. Furthermore, NAO considers it imperative to support quality control processes and corresponding procedures for redress with an effective policy, which clearly establishes requirements for testing and inspection at port of loading and port of discharge.

Storage Facilities and Procedures

2.8.31 One general point noted by NAO with respect to the various fuel transfers managed by Enemalta relates to the notable divergences arising in relation to the filing and retention of relevant information. Cases in point include the Quality Certificates corresponding to the various barge transfers commissioned by the Corporation, as well as the jet A1 DERD analysis reports, which would certainly contribute to the completeness of record keeping and uniformity in document retention procedures employed, were such data to be maintained in a standardised manner.

2.8.32 NAO's principal concern emerging in relation to the transfer of diesel centres on the poor contract management practices exhibited by Enemalta. Such shortcomings were rendered amply evident through the series of contractual extensions directly conceded to Island Bunker Oils Ltd, which at best, may be considered as representing an affront to the principles of good governance. This already highly tenuous situation is further exacerbated by the

considerable increase in the rate payable to the contractor. The revision in rate, irrespective of excuses regarding the cleansing of barges put forward by Enemalta on behalf of Island Bunker Oils Ltd is, in NAO's view, unacceptable justification for bypassing the most fundamental principles of good practice with respect to procurement. This conclusion can be readily applied to the period 2008 up to mid 2011, at which point the Corporation took appropriate action in issuing the relevant call for tenders.

2.8.33 Other explanations put forward by Enemalta, such as the imminent privatisation and lack of materiality, were also deemed weak and unacceptable justifications by NAO. In the case of the latter factor, that is, lack of materiality, the sixteen-month period reviewed by this Office resulted in a net expense of approximately €820,000 which, transposed on a monthly basis, results in an incurred cost of circa €51,000 per month, without Enemalta considering it necessary to issue a call for tender from 2008 to mid 2011.

2.8.34 Similar concern emerges with respect to the imminent privatisation of the Petroleum Division, which was first documented in the Corporation's 2006 Annual Report, and deemed imminent ever since insofar as contract management is concerned. Aggravating this situation is the fact that contractual safeguards and provisions to this effect were already catered for by the original barge transfer contract.

2.8.35 NAO's concern with regard to diesel transfers crystallises around the fact that no documentation, indicating how barge services were being sourced, was provided to this Office with respect to two considerably lengthy stretches of time. In NAO's view, Enemalta's failure to provide the relevant contractual extensions, if any were in fact drawn, is a clear symptom of a poorly managed function, which was ultimately to the Corporation's detriment.

2.8.36 Given the overall setup of the FPC, which is evidently geared towards the purchase of the vast majority of Enemalta's fuel requirements, NAO considers it appropriate to review the possibility of incorporating the purchase of avgas under its remit.

The Payment Process

2.8.37 No concerns emerge with regard to NAO's review of the payment process undertaken by Enemalta in relation to the sampled case studies. This aspect of the fuel procurement process is, in NAO's opinion, well managed and emerges as one of the most positive elements of this audit review. Full reconciliation in terms of fuel quantities received, unit price establishment, and verification of invoice accuracy vis-à-vis its corresponding proof of payment certification, among others, are all considered as valid indicators of good practice registered by the Corporation in this respect.

Reporting

2.8.38 NAO's final concern with respect to Enemalta's internal reporting arrangements in relation to the procurement of fuel mirrors points made in the preceding text, with specific reference hereby made to clause 2.8.17. The need for a tailor-made IT system, replete with an effective audit trail function, should address NAO concerns relating to poor document/version control, as well as other issues emerging given the present system's multiple users and its basic functionality. Other general concerns relating to the Corporation's internal reporting processes centre on the need to more rigorously document and record key decisions taken.

2.9 Recommendations

The Fuel Procurement Policy and Fuel Procurement Committee

2.9.1 Enemalta should strive to ensure that the FPC observes the highest standards insofar as record-keeping and documentation of its various decision-making processes are concerned. To this end, NAO recommends that updated policy frameworks and relevant standard operational procedures be devised and implemented where gaps in the Corporation's governance structures and systems emerge.

2.9.2 NAO commends the notable improvements registered with respect to the FPC's record-keeping practices, particularly as evidenced in meeting minutes corresponding to the period May 2011 onwards. This Office opines that no effort should be spared at ensuring that such progress is maintained and further improved upon. NAO considers the recording and documentation of more detailed workings utilised in the comparative analysis undertaken by the Committee in its comparison and contrasting of submitted tender bids as one such possible avenue of further improvement. Such efforts would ensure that the principles of good governance, accountability and transparency are adhered to.

The Tender Process

2.9.3 NAO commends Enemalta's implementation and application of the Fuel Procurement Policy, and considers this measure to have had an overall positive impact on the fuel procurement process. Nonetheless, the FPC should not rest on its laurels, and should instead, strive to ensure sustained adherence to this policy, while simultaneously exploring innovative avenues for further improvement.

- 2.9.4 In the context of procedures in place relating to the activation of the FPC's generic mail account, NAO recommends the strictest level of adherence to mechanisms established as per Fuel Procurement Policy. This Office considers such safeguards as an essential assurance ascertaining that the integrity of submitted tender bids has not been breached, and therefore, compliance with Enemalta's appropriately established procedures is considered to be of paramount importance.
- 2.9.5 With respect to tender evaluation issues, NAO is of the opinion that the FPC should consider exploring the possibility of investing in a specific and tailor-made electronic bidding system, as was in fact proposed by MITA. Such a purposely commissioned system may be designed in a manner so as to counter the risks posed by the presently in use mechanism employed in the receipt and evaluation of submitted tender bids.
- 2.9.6 NAO strongly recommends the recording of telephone conversations between FPC members and tendering parties in view of negotiating submitted tender bids. Such recordings should comprehensively complement the already in place detailed minute taking of all important decisions and actions taken by the FPC, which this Office considers to be a vitally important aspect in ensuring appropriate and necessary levels of accountability, transparency and overall good governance.
- 2.9.7 Finally, NAO recommends that Enemalta gives serious consideration to the publication of its tender results, which in this Office's view would act as a further safeguard with respect to the integrity and transparency of the tender process.

Standard Operating Procedures

- 2.9.8 NAO encourages Enemalta to maintain its system of SOPs employed, ensuring that such procedures are continuously updated in line with evolving work

practices. Moreover, NAO is of the considered opinion that Enemalta should further promote the standardisation of other aspects of its operations through similarly documented SOPs manuals.

Shipments and Delivery to Malta

2.9.9 In reference to Enemalta's logistical coordination of fuel shipments, NAO's corresponding recommendations are twofold. First, NAO encourages Enemalta to review its logistical coordination of operations from a business continuity perspective and ensure that plans are devised so as to appropriately mitigate the risks associated with the loss of key personnel. Second, NAO recommends that Enemalta explores the possible development of an IT system custom designed to suit its specific needs. This Office opines that the introduction of such a system would provide added safeguards with respect to overall data integrity, while simultaneously serving to modernise the Corporation's stock control function.

2.9.10 NAO recommends that Enemalta should strive to record changes relating to planned and scheduled deliveries of its fuel consignments in a more formal manner. The documentation of changes concerning the quantity of fuel to be delivered, delays in delivery and pricing are, in NAO's opinion, essential aspects of the logistical coordination of fuel shipment delivery, and certainly merit that formal records of such adjustments be retained in file. Equally important is the documentation of cases similar to that of CS4A, where the absence of required authorisation detracts from the process' expected standards of accountability and good governance.

2.9.11 This Office considers the anticipation and mitigation of demurrage claims through relevant letters of protest as a commendable practice and, to this end, encourages Enemalta to maintain such practices.

- 2.9.12 An additional positive aspect emerging from NAO's analysis of Enemalta's adherence to established procedures was the good standard of record-keeping and documentation maintained by the Corporation with respect to the vessel files analysed. It is in this regard that NAO commends such a good practice and encourages its sustained upkeep. Similarly positive was Enemalta's address of major quantity-related discrepancies, necessitating the raising of insurance claims. Here too, NAO commends Enemalta's consistent recourse to corrective action.
- 2.9.13 NAO recommends that Enemalta takes the necessary measures with respect to the recording of apportioned fuel stock in corresponding vessel files, when circumstances so warrant. This Office considers the inclusion of such documents as an integral measure in ensuring that information retained on file is complete, and therefore, assuring and contributing to the sound management of the overall procurement process.
- 2.9.14 With reference to Enemalta's quality control processes, NAO considers the most fundamental element of assurance in this respect to be the receipt and retention of corresponding Quality Certificates. In this context, NAO strongly recommends that Enemalta spares no effort in ensuring that quality certification is duly provided by its various third-party suppliers.
- 2.9.15 In light of overall shortcomings noted by NAO with respect to Enemalta's fuel quality control function, this Office recommends that more comprehensive documentation relating to the appointment and confirmation of independent inspectors be recorded on file. Such records may aid Enemalta in the management of incidents relating to quality control non-conformities.
- 2.9.16 Further to the above, it is NAO's considered opinion that Enemalta should strive to be involved in the appointment of independent inspectors tasked with the quality certification of purchased fuel, particularly in instances when previous Quality Certificates submitted by supplier appointed inspectors gave rise to notable doubt as to the integrity of the quality control process. NAO is

aware that involvement in the appointment of independent inspectors implies additional costs being incurred by the Corporation, however, this Office is of the opinion that such costs are more than offset if this involvement contributes to the safeguarding of the reliability and validity of quality control mechanisms.

2.9.17 With reference to the review of submitted Quality Certificates, NAO recommends that equivalency checks should be formally recorded in the vessel file, duly signed and stamped by responsible officials, thereby ensuring a more robust and complete quality control process. To this end, NAO recommends that Enemalta introduce a simple checklist system, a sample template of which is reproduced hereunder (Figure 5 refers). Such a system would ensure formalisation of the quality control process and rapidly indicate cases of non-adherence to established test methods and standards, while duly affording the possibility of providing relevant justifications when equivalence considerations so warrant.

Figure 5: Sample Template of Quality Checklist System

Property	As per Established Contractual Specifications		At Port of Loading		At Port of Discharge		Remarks
	Value-range	Test Method	Value-range	Test Method	Value-range	Test Method	
Consignment Accepted / Rejected				Accepted []		Rejected []	
Further Action to be Taken							
Name of Inspector			Signature			Date	

2.9.18 In addition, NAO recommends that instances of incongruence between test methods established as per contractual specifications, and those presented in the various Quality Certificates reviewed should be appropriately addressed. In cases where such shortcomings emanate from the poor drafting of quality-related contractual specifications by Enemalta, systems intended at ensuring the desired level of integrity should be introduced. A second level of review and scrutiny should render immediately apparent the various instances of quality control related oversight.

2.9.19 Further to the above, NAO considers it essential for Enemalta to review and improve its vetting of quality control certificates submitted by suppliers following their consignment of fuel purchases. Cases of blatant incongruence that passed through Enemalta's quality control function undetected are indicative of a system that is somewhat ineffective in identifying parameters that merit further review and queries to be raised. Parallels may be similarly drawn to instances when Quality Certificates featured missing test results, which subsequently raises concern as to whether the independently appointed laboratories were ignoring the specifications established as per contractual terms. NAO's recommendation in light of such circumstances is straightforward, strongly urging Enemalta to more attentively vet quality-related submissions, raising clarifications where deemed necessary and instigating follow-up actions when required.

Storage Facilities and Procedures

2.9.20 In line with other recommendations already put forward relating to Enemalta's documentation and retention of information, NAO encourages the Corporation to review its filing and registry functions. NAO considers it essential for such reviews to contribute towards the completeness of record-keeping and uniformity in document retention procedures employed, thereby ultimately ensuring that such data is maintained in a standardised manner.

- 2.9.21 Perhaps the most pertinent application of this recommendation is in the context of the two considerably lengthy stretches of time, corresponding to which Enemalta failed to provide relevant contractual documentation outlining how barge transfer services were in effect sourced. To this end, NAO strongly recommends that relevant documentation, detailing Enemalta's management of this function, be appropriately recorded and retained.
- 2.9.22 NAO urges Enemalta to ensure that contract management shortcomings with respect to diesel barge transfers, particularly as experienced from 2008 up to mid 2011 are not repeated. Enemalta's failure to ensure adherence to the principles of good governance, and its ineffective management with respect to the sourcing of barge transfer services throughout the aforementioned period is of grave concern. It is in this context that NAO opines that the management of this procurement process would more appropriately fit under the responsibility of the FPC, and therefore recommends the Committee's absorption of this function.
- 2.9.23 In addition to the above, NAO recommends that barge transfers be rendered subject to the same insurance coverage as applicable in the case of other fuels procured by the Corporation. Such safeguards would mitigate the risks of major quantity discrepancies.

The Payment Process

- 2.9.24 NAO commends the good practices employed by Enemalta with regard to the payment stage of the fuel procurement process, and encourages the Corporation to maintain such standards.

Reporting

- 2.9.25 Finally, in line with the recommendation put forward in clause 2.9.9, NAO is of the opinion that Enemalta's internal reporting functions can be further

improved through the introduction of additional safeguards with respect to overall data integrity. In addition, NAO considers the implementation of information management protocols, possibly through the roll-out of a customised IT system, as conducive towards the more effective management of key business functions.

Chapter 3: Understanding Derivatives

This chapter introduces the concept of hedging and establishes the context within which such financial instruments bear relevance to the overall objectives of this audit. A basic overview of the four main types of derivatives is subsequently presented and encompasses forward, futures, swap and option contracts. Further to this brief analysis of hedging instruments, attention is then directed at the particular nuances that characterise the derivative markets, that is, the financial environment within which such contracts are traded. In addition, this chapter presents a succinct outline of the various uses of derivatives, and how hedging conceptually mitigates undesirable risk. Finally, a short synopsis of the most salient and intrinsically relevant aspects of the oil market and its denomination are put forward.

3.1 Introduction and Relevance

3.1.1 As indicated in section 1.1 of this report, the indicative terms of reference upon which this audit is based refer to the utilisation of alternative procurement mechanisms, hereby understood as alluding to hedging. The analysis of the application of such financial instruments by Enemalta Corporation, particularly in view of its fuel procurement commitments, was subsequently formally incorporated by NAO to form part of the overall audit objectives.

3.1.2 This chapter seeks to facilitate the understanding of audit findings, conclusions and recommendations arrived at by NAO with respect to the aforementioned audit objective. It does so by seeking to familiarise readers of this report with frequently utilised hedging-related terminology, as well as the basic concepts underpinning this notably complex financial subject

matter. Such a review is intended to provide readers with the theoretical contextualisation necessary in building background understanding.

3.1.3 The walkthrough approach adopted in this theoretical review commences with an overview on derivatives which, simply put, are a form of financial contract. These contracts derive their value from the behaviour of another variable, hence the term 'derivative'.

3.1.4 Various types of derivatives exist, each utilised to address the different needs and requirements of the parties involved in the financial contract. These include forward, futures, swap and option contracts. Subsequent to the review of these derivative instruments, NAO also presents the environment within which they are traded, that is, the financial markets.

3.1.5 The respective counterparties involved in the corresponding agreement determine the intended use of the financial derivative instrument applied. These uses include, but are not limited to, risk modification, speculation, arbitrage, spreading, the decrease of financing costs and hedging. The latter use is most applicable to the context of Enemalta, as the Corporation's main aim in this respect is that of providing maximum possible protection for risk. To this end, NAO undertook an in-depth analysis of the theoretical underpinnings of hedging, to serve as context for the eventual analysis of Enemalta's related activity.

3.1.6 Finally, all of the above takes place within the context of the oil price denomination and the oil market, which were summarily explored in relation to Enemalta Corporation hedging functions. As indicated in the preceding text, all of the background information presented in this chapter directly relates to Enemalta's fuel and foreign currency hedging activity.

3.2 An Overview of Derivatives

- 3.2.1 As indicated in the preceding text, the term ‘derivative’ is the generic reference utilised for a specific type of financial contract. The value of a derivative contract changes in response to the change in an ‘underlying’, which is a specified interest rate, financial instrument price, commodity price, foreign exchange rate, index of prices or rates, credit rating or credit index, or – subject to certain criteria being met – other variables. Derivatives were first introduced into business, albeit in a more rudimentary manner, as a necessary tool for merchants to manage their risks. Subsequently, these instruments were applied to modern finance in order to manage interest rate risks, currency risks, commodity risks, equity risks, counterparty risks, as well as other specialised risks.
- 3.2.2 Any underlying variable may be traded at what is termed as ‘spot’ (that is, at the cash market), which refers to the current market. However, these assets or commodities (the underlying variables) may also be traded at future prices in the forward market. In this context, any contract, where the delivery or settlement is later in time than that which is normal for the market, is deemed to constitute a forward contract. To this end, derivatives were designed in order to mitigate risks that arise when trading in the forward market.
- 3.2.3 Applied to the context of Enemalta, the Corporation is constantly in a position where it is aware that future purchases of fuel (incidentally denominated in USD) will take place. Therefore, assuming there is an expectation of a given number of barrels required by Enemalta in each month for the forthcoming year, then the Corporation would be exposed to movements in the price of oil, as well as the exchange rate of USD against EUR. It is this type of risk that one would seek to mitigate, among others, through the use of derivative contracts.

3.2.4 In practice, firms may also apply on-balance-sheet approaches in order to manage their financial risks. An example would be to apply the matching principle in order to reduce these risks. However, such an approach is costly and to some extent inflexible to continuous changing market circumstances. Hence, the alternative to this situation is the use of off-balance-sheet instruments, or as they are also referred to, derivatives, that is, forwards, futures, swaps and options, or combinations thereof. The principal risks that these instruments are designed to manage is the price risk⁵ and market risk⁶ of the underlying variable. This underlier is the basis of any derivative contract.

3.2.4 The different derivative instruments, mentioned previously, that are traded in financial markets are referred to as the risk management product set since their main function is that of transferring risk. Market participants can exchange risks and reduce exposure to undesirable economic factors by engaging in the appropriate trade of derivative instruments. The instruments employed to manage these risks can be classified in two major categories, that is, terminal instruments (incorporating forwards, futures and swaps) and options.

3.2.5 The key distinction between these various terminal products is in the way these different instruments handle counterparty risk⁷. However, there is no difference in terms of their economic effects, since their respective gains or losses are uniformly and directly related to potential fluctuations in the underlying asset price. With respect to forward and swap contracts, each party is directly assuming the counterparty risk, while conversely, in the case of futures contracts, such risks are collateralised. This essentially implies that an intermediary institution, referred to as a clearinghouse, acts as guarantor.

⁵ Price risk refers to the risk associated with a change in the value of a single underlying variable or a portfolio.

⁶ Market risk refers to the possibility that the price of the underlying variables will vary over time due to factors that affect the overall performance of the financial markets.

⁷ Counterparty risk refers to the risk faced by each contracting party insofar as the corresponding counterparty will not honour its contractual obligations. This risk is also referred to as default risk.

3.2.6 Notably distinct from terminal instruments, options have a non-linear function in relation to the underlying asset price. Such a non-linear function implies that the positions of the two sides to the option transaction are different from one another. On one hand, the option buyer has counterparty risk with the option seller, while on the other hand, the seller bears no risk with respect to the buyer. This ensues because, with options, the buyer will only apply the right to exercise the option if the transaction is deemed advantageous.

3.2.7 A more detailed explanation on each derivative instrument is provided hereunder.

Forward Contract

3.2.8 The forward contract is a commercial agreement entered into between two parties, to buy and sell at a price negotiated today, but which has the delivery or settlement of the contract deferred until some mutually agreed upon date in the future. This contract must specify the type, quality, and quantity of the asset to be delivered, and where delivery should take place. The forward contract binds the buyer, (referred to as the long position⁸ holder) to buy a specified asset, on an agreed upon date set in the future, at a price set at the time the contract was originally entered into. Meanwhile, the seller (referred to as the short position⁹ holder) is entrusted to deliver.

3.2.9 When the contract reaches maturity, if the market price is above the contracted price, the following scenario unfolds - the buyer gains, while the seller registers a loss. On the other hand, if the market price is below the contracted price, the opposite scenario comes into effect, with the long and short positions inverted in terms of gains and losses. As outlined earlier, the major problem with forward contracts is that they are liable to default, which

⁸ Long position refers to the purchase of a security.

⁹ Short position refers to the sale of a security.

means that the other party may not honour its obligation on the contract at maturity.

Futures Contract

3.2.10 Utilised as a means of managing risk, the futures contract has the same characteristics as a forward. However, the principal difference in this respect relates to the fact that such contracts are standardised in order to facilitate trade, and are, in fact, traded on a stock exchange. The futures contract utilises the services of a clearinghouse as an intermediary, standing between the two parties and agreeing to honour all transactions undertaken in this context. In this manner, counterparty risk is intermediated and virtually eliminated. In addition, counterparty risk is generally eliminated by having the contract marked to market on a daily basis. The mark-to-market¹⁰ process implies that losses and gains on a particular contract are debited or credited to the parties concerned. Hence, a futures contract can be compared to a series of one-day forward contracts, where the contract is settled each day, and a new contract entered into for the ensuing day at the new price. In addition, buyers and sellers are required to submit a futures margin¹¹ to ensure that they can fulfil their contractual obligations.

3.2.11 Apart from acting as the counterparty to all transactions that are effected on the exchange, the clearinghouse's function results in the reduction of transaction costs incurred with respect to futures contracts. Furthermore, liquidity for these instruments is also ascertained through the standardisation of contracts and transactions, exemplified by fixed tradable amounts and

¹⁰ Mark-to-market represents a measure of the fair value of accounts that can change over time, such as with assets and liabilities. This measure entails the recording of security's value in order to reflect its current market value, rather than its book value.

¹¹ Futures margin refers to the funds that one must put forward to control a futures contract. Such a margin includes an 'initial futures margin', which represents the funds required to open position on a futures contract; 'margin maintenance', which corresponds to the allocation of funds required in order to bring the margin back to the initial margin level in cases where a loss has been registered on a futures position; and a 'margin call', which takes place when the value of a futures contract account falls below the maintenance level.

delivery dates, among others. Given the fact that the clearinghouse is the counterparty to all transactions undertaken in such a scenario, it is relatively straightforward for a futures position to be closed, since the exchange (the clearinghouse) would be in the ideal position to assist in the matching of demand and supply for the particular product being traded.

Swap Contract

3.2.12 The swap contract is an agreement entered into between two parties with the intention of swapping or exchanging two different sets of future periodic cash flows at specified time intervals, based on a preset formula. The calculation used to determine the cash flow that is to be traded requires a future interest rate value, an exchange rate, or another type of market variable. In effect, the swap is a single contractual obligation, and its pricing mechanism is structured to achieve a level series of fixed (or floating) payments over the life of the swap. Therefore, at a conceptual level, the swap contract may be compared to a package of forward contracts.

3.2.13 It is important to note that similar to forwards, swap contracts are entered into between two parties outside of any established trading facility, and are therefore exposed to credit risk. The most common type of swap contract is the interest-rate swap. This is an exchange of payments determined by two different interest rates, where one party often binds itself to pay a fixed rate of interest, while the other settles at a rate based on an agreed upon index or reference rate. Another type of swap contract is the cross-currency swap, which is similar to the interest-rate swap, yet bears distinction in terms of the involvement of exchange between two different currencies.

Option Contract

3.2.14 While terminal instruments create a two-sided commitment, which the parties are required to honour, options are distinctly different in this regard.

Option contracts give the option buyer (or holder) the right, but not the obligation, to buy or sell the underlier at a set-price at, or before, a specific date. While the holder has the right to complete the contract or not, the option seller (or writer) is obliged to complete the contract if the holder so determines. The style of the option refers to when the option is exercisable. A European-style option can be exercised only at maturity, while an American-style option can be exercised anytime until expiration date.

3.2.15 The most basic types of options fall into two categories: call options and put options. In the case of a call option, the option buyer has the right to buy at a set price, while with a put option, the option buyer has the right to sell at the established price. It is important to note that the holder will only exercise the option if it leads to a perceived gain, and has every right not to exercise such an option if this course of action is deemed unfavourable. On the other hand, as in fact indicated earlier, the option seller is required to adhere and act according to the terms of the contract if the option contract is exercised. This implies that the option holder is assuming the writer's credit risk, but not vice versa.

3.2.16 In distinct contrast with terminal instruments, calls and puts offer an asymmetric or non-linear payoff between the option and the underlying asset. The fact that options only offer protection against undesirable movements in the value of the underlying asset substantiates their classification as a form of insurance. Hence, in order to enter into an option contract, the writer receives an upfront payment from the buyer, known as a premium, which in effect corresponds to the risk of the option being exercised. Options are said to be:

- a. In-the-money – when the option has intrinsic value¹²;

¹² The intrinsic value of an option is its positive value if such an option were immediately exercised. For calls, it is the difference between the underlying price and the strike price when this is positive, or zero. For puts, it is the difference between the strike price and the underlying price when this is positive, or zero.

- b. At-the-money – when the underlying price and strike price¹³ are equal; and
- c. Out-of-the-money – when the option has no intrinsic value.

Summary

3.2.17 It is fundamental to point out that the major difference between the above-described terminal products does not relate to their characteristics, as, in all cases, there is a linear payoff between the value of the underlying asset and the position in the instrument. In this respect, the main difference relates to the amount of default risk that is being assumed by market participants. Whereas futures make use of credit-enhancement methods to eliminate counterparty risk, forward and swap contracts are obligations carried directly between counterparties and, as a result, credit risk exists. On the other hand, options have a non-linear payoff profile and provide a single anticipated position on the future value of the underlying asset.

3.3 Derivative Markets

3.3.1 Derivatives are traded in two major types of financial markets: exchange-traded and over-the-counter (OTC) markets. It is simple to note that exchange-traded instruments are bought and sold through an organised exchange, where products are standardised in order to facilitate trading between market participants. Standardisation implies that trading must be carried out in a fixed number of units of the underlier, contracts mature at fixed dates, and delivery of the underlier is preset by the exchange. Axiomatically, the price at which the option is traded is the only feature that will vary in exchange-traded instruments. The exchange controls how trading is organised between the various market participants, who all have to be registered with the same exchange, while also regulating their activities.

¹³ Strike price refers to the price at which an option contract may be exercised.

Transactions are executed either on the trading floor, or through screen-based trading systems.

3.3.2 On the other hand, OTC markets involve bilateral transactions, negotiated directly between market participants. Since these products involve customised agreements between two parties, non-standard products are also traded, which resultantly enhances the level of flexibility afforded to all traders. In contrast to exchange-traded instruments, OTC markets' transactions are subject to credit risk, since contracts are directly agreed upon between the two parties. OTC trades are mainly carried out over the phone, and in most cases, a financial institution is on one side of the transaction. In addition, since contracts are customised, parties may find it difficult to annul a contract, or enter into an opposing position so as to neutralise the effect of the contract, after it has been agreed upon.

3.4 Uses of Derivatives

3.4.1 Market participants use derivative instruments in a variety of manners, each intended for carrying out particular financial activities. The different uses include, among others:

a. Risk Modification

The ability to modify risk is the principal justification for the existence of derivatives. Risk modification does not only necessarily involve the intended reduction of risk, but could equally be applied to circumstances effectively entailing the assumption of more risk.

b. Hedging

One particular manner by which the aforementioned risk modification may be achieved is by means of hedging. The intention behind hedging may be the elimination of all risk; however, in reality this may not always be possible. A perfect hedge eliminates all risk, but at times, the fit might not be so exact and the hedge will resultantly be imperfect. Nonetheless,

the objective when using derivative instruments for hedging is to achieve the maximum protection corresponding to the source of risk, albeit, under such circumstances, some element of residual risk will normally persist.

c. Speculation

Speculation is risk modification intended to capitalise on advantage from exposure to a particular risk. Although derivative markets are devised to handle risks, they still allow speculators to benefit from assuming further risk.

d. Arbitrage

The introduction of derivative markets contributed to the exploitation of more pricing relationships by arbitrageurs. Arbitrage operations are carried out to take advantage of price anomalies between products, particularly when prices deviate from their correct relationships.

e. Spreading

Spreading involves exploiting or confining the impact of price variations between two assets. This practice can be used either for speculative purposes or for risk management.

f. Decreasing Financing Costs

Derivatives can also help firms decrease their cost of financing. To this end, and by means of example, multinational corporations may seek to raise finance in the cheapest market, without being exposed to exchange rate risk.

3.5 Hedging

3.5.1 As outlined above, hedging is the process of removing undesirable risks. The basic principle of hedging is to match two opposing sensitivities in such a way that value changes on both sides of the created position cancel each other

out. In other words, what is determined to represent unacceptable exposure to risk, is matched to the hedging instrument in such a way that the two sensitivities set off.

3.5.2 As referred to earlier, a hedging position that eliminates exposure in its entirety is considered to represent a perfect hedge. However, the main difficulty with respect to hedging arises when the two positions do not vary in value in precisely the same manner, leading to an imperfect association, or correlation, of price behaviour. Such a scenario is referred to as an imperfect hedge, where nonetheless, it is the intended target of the market maker to address maximum possible exposure. The risk that remains due to an imperfect hedge is referred to as basis risk, correlation risk or spread risk. In this regard, a partial hedge will reduce, but does not seek to eliminate, all of the risk exposure.

3.5.3 Setting up a hedge under a risk-management objective is a method commonly employed for controlling risk sensitivity. It is in this context that the organisation's risk strategy assumes prime importance, as it effectively determines the hedging-related objectives targeted by the same organisation, which subsequently correspond to the costs and benefits associated with any risk-reducing measures. For a hedge to be deemed cost-benefit effective, it has to eliminate a considerable part of the change in value of the underlying position, while simultaneously achieving such goals at a lower cost than other available options. In order to eliminate as large a part of the variation as possible, the hedge must closely match the asset. In order to be cost-effective, off-balance-sheet instruments are to be used, since they are better suited than on-balance-sheet hedges to reach this same objective.

3.5.4 It is within this context, and against this theoretical backdrop, that hedging activity undertaken by Enemalta is best understood. The Corporation's *raison d'être*, as the Government entity tasked with the provision and distribution of energy and fuels, bears as its corollary in this respect, the responsibility of ensuring the maximum protection for risk. Therefore, barring the exceptional

application with respect to crack spread (dealt with in further detail in section 3.6), the use of derivatives by Enemalta is, in the main, logically and agreeably restricted to hedging. Other possible intended manners of utilisation of derivative instruments do not correspond with the Corporation's wider strategic objectives and have correctly been deemed as unfeasible and unviable.

3.6 The Oil Market

3.6.1 Oil is a vital source of energy and an essential commodity and will likely remain so for many decades to come, even under the spectrum of growth in alternative energy sources. Oil trading is internationally quoted in terms of 'dollars per barrel' (\$/bbl), where the standard 'barrel' holds 42 US gallons, equivalent to 158.9873 litres (taken as 159 litres) of unrefined oil.

3.6.2 The distinction between crude (unrefined) and refined oil is an important one. Crude oil is the naturally occurring flammable liquid found deep down beneath the earth's surface, especially in rock deposits. It contains a mixture of hydrocarbons, each with different boiling points. Refined oil is what is obtained after crude oil has gone through a process of fractional distillation, or other similar procedures that reduce the original crude form to simpler hydrocarbons, which can be obtained in a fractional distillation column at different stages depending on the temperature of each constituent hydrocarbon.

3.6.3 In addition, notable price differences exist between the different types of oil, as some oils are more desirable than others. The International Crude Oil Market Handbook (as cited in The World Bank Group, 2005) states that there are approximately 161 different crude oils that are being traded internationally. These crude oils vary in terms of characteristics, quality, and market penetration. West Texas Intermediate (WTI) and Brent are two such types of crude oil, which are traded or whose prices are reflected in other

types of crude oil. The discrepancies in prices of these two crude oils are generally related to their quality; however, at times, other factors influence this price relationship.

3.6.4 The WTI crude oil is of very high quality and is excellent for refining a larger portion of gasoline. Its American Petroleum Institute (API) gravity is 39.6 degrees, making it a light crude oil, and it only contains approximately 0.24 percent of sulphur, making it a sweet crude oil. This combination of characteristics, together with its location, makes it an ideal crude oil to be refined in the United States, being the largest gasoline consuming country in the world. Most WTI crude oil gets refined in the Midwest region of the country, with some more refined within the Gulf Coast region. It is the major benchmark of crude oil in the Americas.

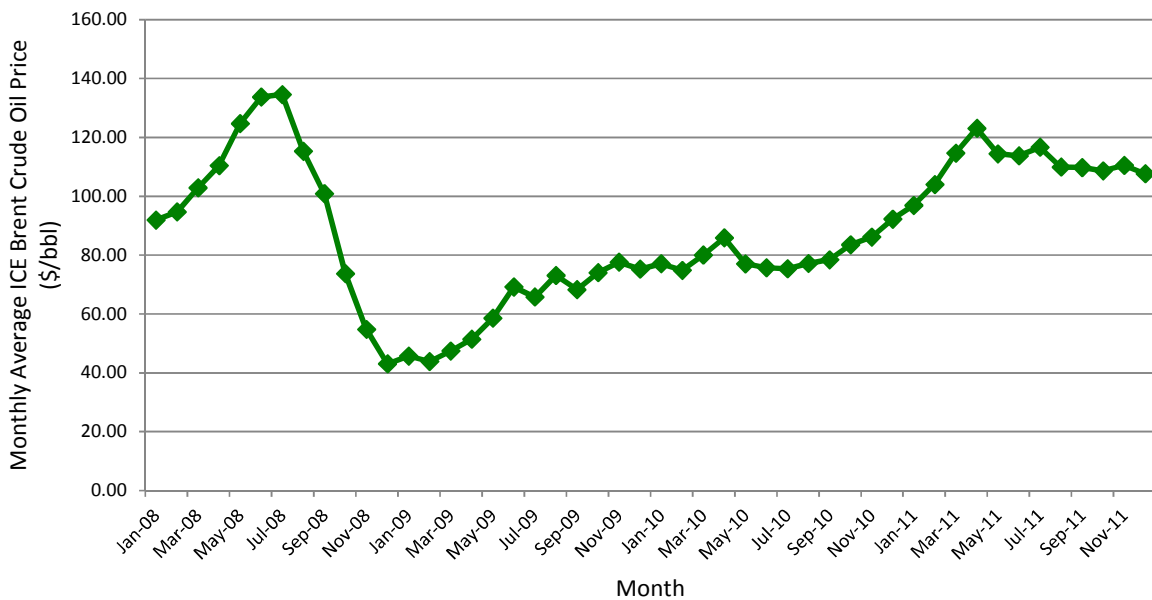
3.6.5 Brent blend is a combination of crude oil from 15 different oil fields in the Brent and Ninian systems located in the North Sea. Its API gravity is 38.3 degrees, and contains about 0.37 per cent of sulphur. Brent is also a light and sweet crude oil but slightly less so than WTI. Brent blend is ideal for making gasoline and middle distillates, both of which are consumed in large quantities in northwest Europe, where Brent blend crude oil is typically refined. However, if the arbitrage between Brent and other crude oils, including WTI, is favourable for export, Brent has, as a result, been at times refined in the United States or the Mediterranean region. Against this context, Brent blend is in fact the major benchmark for other crude oils in Europe or Africa, including Malta.

3.6.6 The volatility of the price of oil has been relatively high over the years. In 1972, the price of crude oil was set at \$3/bbl, but the start of the Yom Kippur war in October 1973 triggered a considerable price increase to \$12/bbl. The Arab oil embargo, which roughly coincided with the above quoted period also contributed to this increase. Although there were small oscillations between 1974 and 1978, the price of oil increased rapidly in the beginning of the 1980s, essentially due to the Iranian revolution as well as the Iran-Iraq war.

Subsequently, the high oil prices and the recessions experienced in many economies at the time led to a sharp decrease in the demand for oil, and consequently, its price started to decrease. The period between the 1990s and early 2000s witnessed other notable events that ultimately contributed to a substantial increase in the price of oil. These occurrences included the Gulf War in 1990; the substantial reduction in production by the Organisation of the Petroleum Exporting Countries in March 1999; the September 11 attacks in 2001; as well as the invasion of Iraq in 2003.

3.6.7 During 2003, the price rose above \$30, reached \$60 by August 2005, and peaked at the high level of \$147.30 in July 2008. Commentators attributed these price increases to many factors, including the falling value of the US dollar, tension in the Middle East, coupled with oil price speculation. Geopolitical events and natural disasters indirectly related to the global oil market also had strong effects on oil price fluctuations, including among others the North Korean missile tests, the 2006 conflict between Israel and Lebanon, worries over Iranian nuclear plants in 2006 and Hurricane Katrina. However, by 2008, such pressures appear to have had an insignificant impact on oil prices given the onset of the global recession. The recession caused demand for energy to shrink in late 2008, with oil prices correspondingly falling from the July 2008 high of \$147 to a December 2008 low of \$32. Oil prices stabilised by October 2009 and established an effective trading range between \$60 and \$80. However, during 2011, oil prices again exceeded the \$100 dollar mark. An overview of the monthly average Intercontinental Exchange (ICE) Brent crude oil Platts prices corresponding to the period 2008 up to 2011 are represented in Figure 6 for ease of reference.

Figure 6: Monthly Average ICE Brent Crude Oil Platts Prices from 2008 to 2011



3.6.8 Taking into consideration the impact on industry and the high volatility in oil prices, it is in the evident interest of organisations involved in the purchasing of oil in large quantities to seek to eliminate or limit exposure to risk. For this reason, hedging against oil price fluctuations has become a necessity for countries and corporations alike. Professionals operating in this field value the importance of hedging, and it is against the above-described economic and geopolitical context that risk is averted through the use of derivative investments, intended at improving one's financial position while preventing substantial losses.

3.6.9 Keeping the volatility of oil prices in mind, and the fact that Malta does not have any direct access to this valuable resource, the Maltese industry has to resultantly rely on the importation of this commodity for the continuous provision of services within its internal market. This situation effectively implies that Malta bears heavy exposure to the risk associated with the price of oil, since a change in the price of oil would contingently give rise to undesirable economic ramifications.

3.6.10 Responsibility for addressing this risk falls squarely within Enemalta’s remit, and it is within this context that the management of this vital function assumes critical importance. Enemalta’s attention in this regard crystallises around the use of hedging instruments key in the mitigation of this element of risk exposure vis-à-vis fluctuating oil prices. At a conceptual and strategic level of understanding, the hedging of oil prices affords Enemalta a degree of stability with respect to future price variations while simultaneously alleviating exposure to commodity risk. An effectively structured hedging programme (further details in this respect are delved into in the ensuing chapter) would notionally protect Enemalta from experiencing sharp shocks through fluctuations in international oil prices.

3.6.11 At this stage, NAO considers it important to clarify why the Corporation undertakes hedging with respect to crude oil, while in fact purchasing other types of fuel products. As outlined earlier in the report, most notably in Chapters 1 and 2, Enemalta procures the following types of fuels: fuel oil, gasoil, diesel, unleaded petrol, biodiesel, jet A1 and avgas. From this list of products purchased by Enemalta, fuel oil and gasoil are utilised by the Marsa and Delimara Power Stations for electricity generation purposes, and it is in this respect that the Corporation plans its hedging exposure. In fact, as rendered evident in Table 1, fuel oil and gasoil account for approximately 72 per cent of fuel purchased by the Corporation, and hence Enemalta’s establishment of its corresponding expected exposure with respect to hedging.

3.6.12 However, as stated in the preceding paragraph, Enemalta did not directly hedge on fuel oil or gasoil, but instead undertook hedging on ICE Brent crude oil. Enemalta concluded hedges on crude oil and not directly on its underlying products, that is, fuel oil and gasoil, because the fuel market is not considered to be as liquid as the crude market, and therefore, an element of liquidity premium exists in trading directly on fuel oil. In addition, the Corporation commented that when the need to realign Enemalta’s hedged

position to changing market trends arose, the lack of liquidity could have raised difficulties in unwinding the previously concluded trades.

3.6.13 The dichotomous divide that exists between the hedging undertaken by Enemalta on crude oil, as opposed to the Corporation's subsequent purchase of fuel oil or gasoil, results in imperfect hedging, which subsequently gives rise to basis risk¹⁴. Due to the emergence of this basis risk, Enemalta could mitigate its position on the crude hedging portfolio by in turn hedging on the spread between the price of fuel oil and ICE Brent crude oil when deemed opportune. The spread referred to above is more precisely termed as fuel oil crack spread. According to Enemalta, ICE Brent crude and the fuel oil crack spread generally move against each other, and in view of this, the RMC undertook separated hedges with respect to these two components. In addition, Enemalta commented that the relationship between crude oil and fuel oil is typically characterised by a ratio of 6.35bbls/MT, and this was typically used by intermediaries when providing the Corporation with crack indications.

3.6.14 Furthermore it was noted that rates for cracks are quoted in the negative, since they essentially represent the difference in price between ICE Brent crude oil (which is quoted in barrels) and fuel oil (which is quoted in metric tonnes), quoted in terms of a common unit, that is, \$/bbl. The reason why the crack spread is quoted in the negative is a straightforward one, that is, when the fuel oil price/MT is converted into a price/bbl, the price would be lower than the quoted crude oil price/bbl, and therefore, the difference (spread) between the two commodities is quoted in the negative.

3.6.15 From NAO's review of the RMC minutes, and as subsequently confirmed in meetings with the Corporation's officials, this Office noted that hedging on the crack spread was initiated by the Committee in 2010 and was only carried out with respect to fuel oil. The reason why hedging on the crack spread was

¹⁴ Basis risk refers to the risk that offsetting investments in a hedging strategy will not experience price changes in entirely opposite directions from one another.

restricted to fuel oil relates to the fact that this particular fuel accounted for an approximate average of 62 per cent of the Corporation's fuel requirements (Table 1 refers), and it is in this context that Enemalta focused its crack spread only on fuel oil.

3.6.16 In addition to the above, Enemalta carried out limited hedging on other products. However, NAO scoped out the audit of hedging on such products, including petrol and diesel components from its audit focus. Hedging on these latter-referred products, corresponding to an approximate average of 17 per cent of fuels procured by the Corporation (with the remaining 11 per cent accounting for jet A1 and avgas, which were never hedged for by Enemalta), was at some stage in the audit period carried out by Enemalta. However, such hedging transactions only took place in April 2008, and it was on this basis that the NAO decided to scope such transactions out of its audit focus. When further queries were raised by NAO as to the distinction between product hedges and hedging activity undertaken with respect to crude oil and forex, Enemalta commented that the same hedging instruments and strategies may be utilised, and that no strict distinction was made between one and the other. Enemalta further stated that at present, the Corporation follows a non-hedging policy with respect to petrol and diesel products, yet claimed that this policy position is subject to revision should circumstances so warrant.

3.6.17 Moreover, Enemalta indicated that the decision not to hedge any exposure regarding product hedges was in effect conditioned by the Ministerial direction given to the Corporation. Enemalta referred NAO to the Malta Council for Economic and Social Development meeting held in January 2011, under which circumstances, the then Minister Fenech, at the time responsible for Enemalta, provided a detailed explanation as to why such product hedges were not to be undertaken by the Corporation. Enemalta stated that the direction provided by the then Minister Fenech was based on the premise that product prices fluctuate from month to month, and

therefore, hedging will compound the risk associated with such movements in price. NAO maintains an element of reservation with respect to this line of thought, as a similar argument could equally be put forward with respect to crude oil and forex hedges undertaken by Enemalta at the time of this statement. An additional consideration put forward against product hedges relates to the issue of privatisation of the Petroleum Division, already referred to in Chapter 2 of this report. This too is a contentious point, as hedging activity with respect to petrol and diesel could have been adjusted to suit the short-term timeframes appropriate under such circumstances.

3.7 Oil Denomination

3.7.1 The dollar is the world's dominant reserve currency and the currency in which oil is priced. In Bonboit's work (as cited in Aquilina, 2005, p. 40), the author states that,

"...the US dollar has been used in this context because it proved to be a relatively stable and a safe harbour currency. The United States has a major share of world trade and financial assets, and so certain commodities, in particular oil (i.e. petrodollar), are denominated in it. The net result of this is a large diversified demand for US dollars."

3.7.2 Enemalta has to trade and procure oil in dollars, which are subsequently converted to Euro. Consequently, forex risk arises due to fluctuations in the exchange rate. Forex risk is understood as the risk related to when the value, or exchange rate, of one currency in relation to another experiences change over time in response to market forces. As the value of the two currencies changes in relation to one another, the value of their corresponding cash flow, in terms of the other currency, will also change.

3.7.3 This exchange rate risk is most obvious when there is a conversion of an actual cash flow, more precisely referred to as transaction exposure. This risk

arises when accounting items are converted from one currency to another, which happens when foreign subsidiaries are consolidated with a parent company whose reporting currency is different (this is referred to as translation exposure). There is a third kind of currency risk, known as economic exposure, which arises when the value of a currency deviates significantly from its purchasing power parity over time.

- 3.7.4 This scenario effectively obliges Enemalta to also hedge its exposure towards fluctuations in the EUR/USD rate, and therefore, it is imperative for Enemalta to hedge foreign currency in addition to oil prices.

Chapter 4: Hedging Undertaken by Enemalta Corporation

This final chapter focuses on hedging activities undertaken by Enemalta Corporation. Attention was initially directed at how the regulatory framework, that is, the Corporation's hedging policy, interacts and relates to Enemalta's hedging strategy. Intricately linked to this policy and strategic overview were issues of governance and accountability, which mostly centred on the RMC's modus operandi and its establishment of hedging targets. In addition, NAO delved into various hedging-related Committee issues, including its management of changes in strategy, and its relationship with externally sourced technical consultants, among others. Further to the above, the various hedging agreements entered into by RMC were analysed by the audit team. Finally, this review of Enemalta's hedging activity was concluded by means of a review of the Corporation's expected exposure, as well as the due verification of its bottom line, that is, the gains and losses registered with respect to hedging undertaken.

4.1 Hedging Policy and Strategy

4.1.1 This initial section of the report focuses on policy and strategy-related considerations with respect to hedging activity undertaken by Enemalta Corporation. These two critically important aspects, conceptually serve as the Corporation's foundation in establishing effective management control of the organisation's hedging function.

Hedging Policy

4.1.2 A sound hedging policy is imperative for any organisation operating in the forward market. The inverse scenario, notionally characterised by a poor hedging strategy, would by implication be associated with the lack of a sound risk management policy. NAO considers an appropriately formulated hedging

policy as key in providing the structure and framework within which effective hedging strategies may subsequently be designed and implemented. Furthermore, a hedging policy should provide the parameters that help set the context against which an organisation's general strategic orientation is then geared.

4.1.3 In NAO's view, certain aspects relating to the undertaking of hedging activity are considered as integrally important elements in the formulation of a comprehensive policy. The inclusion of such elements in an organisation's hedging policy would effectively facilitate the strategic management and subsequent execution of established hedging targets and goals. Hereunder are some aspects that NAO considers as critically important in the framing of a robust hedging policy:

- a. The establishment of a decision-making mechanism;
- b. Governance and accountability considerations;
- c. The level of tolerable risk and corresponding corrective action in case of variations;
- d. Hedging instruments to be utilised; and
- e. The monitoring of market developments.

4.1.4 In view of the above, NAO submitted a request to Enemalta for the provision of its hedging policy and any other related documentation with respect to the regulation of the Corporation's hedging activity. To this end, NAO was provided with a document entitled 'Risk Management Committee Procedures', presented in Appendix E for ease of reference.

4.1.5 The introductory section of these procedures outlines the scope of this document, which essentially entails the formalisation of the hedging procedures that Enemalta Corporation adopts with respect to the purchase of oil and US Dollar through the forward method. This document also provides some background information relating to how and why these

guidelines were introduced. In this respect, NAO noted that this document was not dated, and therefore establishing its effective period of applicability was not possible.

4.1.6 The advent of these procedures can be traced back to a policy paper submitted by the Fuel Procurement Advisory Committee to the Corporation's Board of Directors. This policy paper featured a number of hedging-related recommendations that drove forward the idea of Enemalta implementing a hedging programme to mitigate the risk associated with any large scale unpredictable events that generally have far reaching and substantial ramifications in market prices. Another important element put forward by the Fuel Procurement Advisory Committee was that Enemalta's fuel procurement policy should provide the Corporation with the required level of flexibility, key in countering extreme short-term volatility, while simultaneously providing an element of protection from unforeseeable major events.

4.1.7 Based on these recommendations, the RMC was set up in April 2006. The procedures specifically state that the RMC was intended to meet on a regular basis, and the members of this Committee were the following:

- a. The Chairman of the Corporation, who was to serve the role of Chairman of the RMC;
- b. A Board Director;
- c. The CEO;
- d. The CFO;
- e. The Financial Risk Manager;
- f. A Central Bank of Malta (CBM) Representative; and
- g. The Financial Controller (Petroleum Division), who is also Secretary of the Committee.

4.1.8 NAO's review of the RMC minutes relating to meetings held between 2008 and 2011 indicates that attendance for such meetings was positive in the

sense that all appointed Committee members attended on a very regular basis.

4.1.9 In view of the above, NAO requested a formal description of each of the members' roles in the RMC to be provided by Enemalta. However, the Corporation replied that at the time the audit was carried out, the Committee members all fulfilled a collective role. In fact, Enemalta further stated that the RMC members did not hold a letter of appointment formally listing the responsibilities that were to be assumed by each member, and therefore no official description of the members' roles within the context of the RMC existed. Enemalta claimed that the Committee Secretary's role is different to that of the other RMC members, owing to the fact that this member's duty is that of recording Committee minutes. Despite this difference in the specific tasks assigned to this role, NAO still stands by its previously made assertion that no RMC members (including the Committee Secretary) have a formally defined role.

4.1.10 According to information supplied by Enemalta, the only exception to the above is that of the CBM representative, who is the only member of the RMC to have been appointed to this Committee by virtue of a formal letter of appointment. Furthermore, as per information made available to NAO, the CBM representative is the only RMC member who was paid for his contributions to the Committee. In view of this role, Enemalta provided a letter of appointment of the CBM representative for a one-year period ranging between 25 April 2006 and 25 April 2007, in addition to a further request for remuneration submitted by the representative for the period between December 2008 and December 2010. Remuneration due in this respect was that of LM750 (€1,750) per annum, which was agreed to in the original agreement covering the period 2006 to 2007.

4.1.11 The RMC's main objective, as outlined in the RMC Procedures document is that of enhancing and structuring Enemalta's risk management function,

while simultaneously ensuring that prudence is exerted in order to mitigate the Corporation's financial risks, mainly with respect to market risks relating to oil commodities and forex.

4.1.12 In addition, the RMC Procedures also delve into the Corporation's decision to commence hedging of its market exposure through the use of swap instruments, rather than the previously used collars, with the latter instrument deemed to be more complex. In fact, justification for this change in instrument use was put down as follows in the RMC Procedures, "*...swaps have proven to provide an element of stability in devising EMC's tariff model; also by locking-in prices through swaps, EMC gains greater control over its inherent variable fuel costs; as opposed to collars, EMC also achieves complete price protection from any increase in crude oil prices.*" The strategic decision to change the derivative instrument used is addressed in further detail in section 4.3.

4.1.13 The last section of the RMC Procedures document outlines the modus operandi that was to be adhered to during RMC meetings. As a matter of standard practice, the procedure that was planned for in this respect commenced with the approval of minutes of the previous meeting, followed by a discussion on matters arising. In addition, any hedges executed in line with the decisions taken during the previous meeting were to be communicated to the rest of the Committee, and an updated position report was to be subsequently presented accounting for such changes in the Corporation's market exposure. Finally, an overview of recent market developments and how different market variables affected oil and forex prices were presented to the Committee. It is in this context that the RMC would then proceed to discuss the various market outlooks and price forecasts published by intermediary banks.

4.1.14 Following the evaluation of all information presented to the RMC, the Procedures state that the Committee proceeds in setting appropriate hedging targets in line with the Corporation's overall hedging programme. Once

hedging targets are agreed upon by the RMC, the Committee Secretary circulates an email, detailing the various decisions taken, to all Committee members, while the Chairman subsequently seeks the necessary clearance prior to executing such deals. When the required clearance with respect to the established targets is attained, market prices are then closely monitored, and orders placed with different intermediaries.

4.1.15 NAO considers the guidelines provided in the three-page document entitled RMC Procedures as a procedure-based brief, rather than an actual policy against which subsequent hedging strategies could be designed. In NAO's opinion, this document reflected the various decisions taken and strategic considerations deemed relevant to hedging-related operations along the years.

4.1.16 In addition, NAO is of the opinion that the reasons put forward by Enemalta as justification for the change in the derivative instrument employed, would more appropriately form part of the Corporation's hedging strategy, rather than its hedging policy. This decision to switch the derivative instrument used was taken in October 2009, and further supports NAO's understanding that the Corporation's hedging policy should provide a generic framework applicable irrespective of the hedging instrument used. This was evidently not the case with respect to the RMC Procedures document. As indicated earlier in this section of the audit report, further details regarding this change in the derivative instrument used are provided in section 4.3.

4.1.17 In view of all of the above, NAO is of the considered opinion that a more comprehensive hedging policy should be established by the Corporation, following due coordination with Government, which would effectively set the parameters against which the RMC subsequently sets its strategic goals and orientation.

Hedging Strategy

4.1.18 The preceding text presents a detailed account of the various deficiencies identified by NAO with respect to Enemalta's hedging policy. Similar concerns arise with respect to the documentation, or absence thereof, of the Corporation's hedging strategies. The ensuing review outlines NAO's concerns with respect to the implications of the electricity tariff on Enemalta's hedging strategy. These concerns, bearing key strategic importance to the Corporation, concentrate around two major elements, the first relating to governance issues, and the second relating to the rationale employed with respect to hedging activity undertaken by Enemalta vis-à-vis the set tariff.

4.1.19 NAO's review of the RMC meeting minutes corresponding to the 2008 to 2011 period indicated significant overlap between hedging policy and hedging strategy. While the setting of the Corporation's hedging policy should, in NAO's opinion, be subject to coordination between Government and Enemalta, the setting of hedging strategy should fall under the responsibility of the RMC. In this sense, the RMC's role is that of actuating the Corporation's hedging strategy as defined by the parameters set through its hedging policy. In effect, NAO noted inconsistencies in eliciting who was ultimately responsible for setting Enemalta's hedging policy and strategy, with the apparent overlap between Ministry and Corporation input on the matters obfuscating an already complex state of affairs.

4.1.20 During NAO's review of the RMC minutes, the audit team noted that the Ministry was at particular times directly involved in hedging-related decisions taken. One such case relates to the RMC meeting dated 10 November 2009, where the then Minister Gatt unequivocally stated that, *"...I would like to make clear that the direction to go for tariff stability in 2010 is a ministerial direction and therefore I assume responsibility for any variances between the actual market price and the SWAP price in 2010."*

- 4.1.21 In addition to the above-quoted example, NAO's main issue with respect to the level of direct involvement exerted by the then Minister Gatt relates to how the establishment of electricity tariffs impacted upon Enemalta's hedging strategy. In truth, the impact of the introduction of electricity tariffs on the Corporation's hedging strategy had been anticipated and discussed at RMC level during the meeting dated 18 November 2008; however the Committee's position was uncertain, expressing the need for further clarification on the matter. The issue relating to ministerial intervention on Enemalta's hedging strategy, vis-à-vis the setting of electricity tariffs, is addressed in further detail hereunder.
- 4.1.22 The fuel surcharge mechanism was introduced in January 2005. This mechanism included surcharge calculations that were based on the fluctuations registered with respect to fuel and gasoil prices over pre-determined thresholds. This system, based on surcharge calculations, was maintained from 2005 up to 2008, at which point such a system was replaced with the new electricity tariffs that were established.
- 4.1.23 In October 2008, KPMG were commissioned to develop financial model applications that could be used in assisting the tariff revision process. Later in October 2008, the then Ministry for Infrastructure, Transport and Communications (MITC) published a report on its website entitled 'New Electricity Tariffs', which was essentially based on the previously referred to KPMG report. Subsequently, in November 2008, Enemalta Corporation published a second report by KPMG, which included some additional revisions to the cost and tariff calculations. In November 2008, Government, with the approval of MITC and MRA, presented Legal Notice 330 of 2008, entitled Electricity Supply (Amendment) (No. 2) Regulations (2008, Cap. 272). These main sources of information served as the basis of review for another report commissioned by MRA to Deloitte. This report, entitled 'High-Level Review of Proposed Changes to Utility Retail Tariffs' was issued on 6 January 2009.

4.1.24 In February 2009, KPMG were once again commissioned by Enemalta to assist it in the revision of the proposed electricity tariffs and document the decisions taken in connection with the Corporation's proposals to the MRA for the revision of these same tariffs. This documentation process was concluded by KPMG on behalf of Enemalta on 23 March 2009. Following the receipt of KPMG's Enemalta report, Deloitte was in turn commissioned by the MRA to provide assistance with respect to the review of the Corporation's request for a revision of its electricity tariffs, while simultaneously taking into account the previous reports issued by KPMG on this matter. To this end, Deloitte submitted its report to MRA dated 4 May 2009, thereby providing the Authority with additional analytical information and analysis.

4.1.25 Subsequently, on 5 May 2009, the MRA issued a report entitled, 'Review of Proposed Electricity Tariffs: Summary of Review Process and Conclusions'. This report prepared by the MRA was carried out in response to Enemalta's request for the approval of the proposed electricity retail tariffs, originally put forward by the Corporation in the updated KPMG report dated 23 March 2009. MRA's review and approval process essentially entailed the due consideration of the KPMG report as well as the comparative analysis of the main differences and changes that emerged between the first and second tariff revision reports prepared by Deloitte.

4.1.26 In a letter dated 6 November 2009, Enemalta Corporation requested MRA to undertake another revision of the then in effect electricity tariffs. From their end, MRA responded in a letter dated 7 December 2009, stating that prior to proceeding with its decision, the Corporation should carry out the necessary changes in its proposal to address issues indicated by MRA, specifically in relation to calculations presented. Consequently, Enemalta Corporation provided its reactions in a letter dated 9 December 2009, and presented another report, commissioned to KPMG, dated 10 December 2009. In this report, KPMG explored and developed a revised electricity tariff scenario based on: (1) an updated consumer profile for Residential, Domestic and

Non-Residential accounts; and (2) the Corporation's cost base for the 12-month period January to December 2010. This KPMG report set the key tariff drivers, that is, crude oil and the Dollar to Euro exchange rate at \$81.80 and 1.49, respectively.

4.1.27 Eventually, another document entitled 'Proposed Electricity Tariffs: Summary of Review Process and Conclusions' was presented by MRA on 12 December 2009, thereby approving the proposed electricity retail tariffs put forward by Enemalta Corporation in the final updated KPMG report submitted two days earlier, that is, 10 December 2009. As indicated in the summary of the MRA 12 December 2009 report, Enemalta's proposed tariffs corresponding to the January 2010 period were a result of the increase in international oil prices that occurred subsequent to the tariff revision originally effected in April 2009. On the same day, that is, 12 December 2009, a letter of confirmation from the Chairman of MRA was sent to the then Minister Pullicino, responsible for the Ministry for Resources and Rural Affairs, duly informing him that the Authority had approved the tariffs in concern. Finally, on 14 December 2009, Minister Pullicino's approval was then granted and Enemalta Corporation subsequently informed.

4.1.28 NAO's concern with respect to all of the above is that although Enemalta was still awaiting MRA approval with respect to the setting of the tariff, Minister Gatt had already established the Corporation's hedging targets based on these same tariffs that were as yet unapproved. The decision to set Enemalta's hedging targets had effectively already been taken some weeks earlier, in an email dated 10 November 2009, presented in Appendix F for ease of reference.

4.1.29 In this context, the then Minister Gatt indicated the parameters within which the RMC was to operate. These parameters included a benchmark price of crude set at \$81.80 for calendar year 2010, which corresponded to one of the key tariff drivers outlined in revisions that had already been carried out, and

which was in line with Government's priority, that is, price stability. In addition, Minister Gatt advised the RMC that stability within the tariff parameter was probably the most single important element in this respect, and that this strategy should not only address the Corporation's first quarter requirements, but consider calendar year 2010 in its entirety.

4.1.30 Furthermore, and as already referred to in clause 4.1.20, in a separate email dated 10 November 2009, Minister Gatt commented that the direction to go for tariff stability in 2010 was indeed a ministerial direction, and that he assumed any responsibility for any variances between the actual market price and the swap price for 2010. This effectively implied that the RMC was advised to close anything available below the benchmark price set for crude oil, that is, \$81.80. Given that no tariff revisions were undertaken during 2011, the same parameters that were set out for 2010 (\$81.80 for crude oil and \$1.49/€1 for the currency exchange rate) were applied as a benchmark throughout 2011.

4.2 Governance and Accountability

4.2.1 At a general level of understanding, NAO believes that governance and accountability are matters that merit inclusion, whether explicitly addressed, or implicitly alluded to, in the RMC's hedging policy. In essence, and as already referred to in the preceding section, RMC's hedging policy should conceptually clearly establish and delineate who is authorised to conclude hedging deals on its behalf, and the mechanisms in place key in addressing instances of variations from RMC established targets.

4.2.2 To this end, the ensuing section focuses on corporate governance considerations in respect of the RMC. Matters addressed in this regard include the scheduling of the Committee's meetings, as well as how variations experienced with respect to the targeted hedging prices and volumes were processed by the RMC.

Frequency of RMC Meetings

4.2.3 The RMC Procedures document broadly states that Enemalta's RMC should schedule meetings on a regular basis. The regularity of such meetings serves to ensure that hedging targets set are continuously monitored, reviewed and adjusted according to market externalities. To this end, NAO reviewed all RMC minutes of meetings corresponding to the audit period 2008 to 2011. At a general level of analysis, NAO noted that, at times, the expected level of regularity of such RMC meetings was not adhered to. Table 26 indicates the number of meetings held by the RMC during the period under review, the actual dates when such meetings were scheduled, as well as the interim period between one meeting and another.

Table 26: Details regarding the Scheduling of RMC Meetings

Year	Number of Risk Management Committee Meetings	Risk Management Committee Meeting Dates	Interim Period (calendar days)
2008	11	15/01/2008	-
		12/02/2008	28
		18/03/2008	35
		22/04/2008	35
		27/05/2008	35
		25/06/2008	29
		29/07/2008	34
		26/09/2008	59
		21/10/2008	25
		18/11/2008	28
		16/12/2008	28
2009	3	20/10/2009	308
		30/10/2009	10
		10/11/2009	11
2010	7	22/02/2010	104
		09/04/2010	46
		18/05/2010	39
		04/08/2010	78
		23/09/2010	50
		18/10/2010	25
		04/11/2010	17
2011	7	25/01/2011	82
		10/03/2011	44
		27/04/2011	48
		09/08/2011	104
		12/08/2011	3
		01/11/2011	81
		19/12/2011	48

- 4.2.4 A quick review of Table 26 immediately renders apparent the significant decrease in the number of meetings held in 2009, the reduced frequency of which is further accentuated when comparisons are drawn to 2008, 2010 and 2011. The most notable period of RMC inactivity corresponds to the first meeting scheduled in 2009, dated 20 October 2009, which was effectively convened approximately ten months after its preceding meeting, dated 16 December 2008.
- 4.2.5 The repercussions of such a prolonged period of RMC inactivity are explicitly stated in the October 2009 meeting, where it is stated that fuel prices more than doubled throughout 2009 (following the sharp decrease registered in late 2008, early 2009), and yet, no crude oil hedging was undertaken by Enemalta during this interim period. NAO sought further clarification regarding why the RMC was not convened during this substantially lengthy period of low oil prices and high volatility. In this respect, Enemalta replied that the RMC was averse to engaging in any hedging activity due to the substantial losses it had incurred from hedges carried out in 2008. Enemalta further stated that at one point, hedging had become such a convoluted and problematic issue, that the Corporation was considering ceasing all hedging activity outright. According to Enemalta, this situation was further compounded by the Corporation's extremely poor mark-to-market position, which subsequently impacted upon the availability of credit for hedging purposes. This latter point, regarding Enemalta's credit limits is addressed in section 4.3.
- 4.2.6 NAO sought further clarification from Enemalta with respect to whether the aforementioned period of inactivity was intended, or whether inaction on the part of the RMC was merely circumstantial. NAO's review of relevant documentation indicated no formal record of a decision taken by the RMC, or the Corporation's management, in this regard. Additional queries addressed to Enemalta in this respect proved inconclusive, with the Corporation reiterating that this period of inactivity could possibly be attributed to various

factors, including possible advice to this effect provided by the Corporation's board, outright ministerial direction, and inaction due to the extreme uncertainty of the market.

4.2.7 Although the previous paragraph makes reference to the longest period at a stretch of RMC inactivity, there were other instances when no meeting was convened for approximately two or three months. One particular case noted by NAO was the period between the meeting dated 29 July 2008, which was interestingly characterised by a period of high volatility in the oil market. When further queries were raised by NAO in this respect, Enemalta claimed that whenever it was not possible to convene RMC meetings, the Committee would resort to communicating its proposals through a series of emails. However, requests submitted by NAO for the provision of such emails were not entertained.

4.2.8 A similar case to the above relates to the interim period between the meetings of 10 November 2009 and 22 February 2010. Once again, when queries relating to this delay were put to Enemalta, the Corporation replied that, with respect to forex market fluctuations, the Committee was kept abreast of developments by means of emails sent by the RMC's CBM representative. In effect and according to documents made available to the NAO, such updates effectively referred to some emails exchanged between 6 December 2009 and 10 December 2009.

4.2.9 Another notable delay was experienced with respect to the meetings convened on 18/05/2010 and subsequently followed up on 04 August 2010. When queries were raised by the NAO audit team, Enemalta stated that the RMC had clearly set targets (as established in the meeting dated 18 May 2010), which were being duly monitored throughout this period, and therefore, convening additional meetings was not deemed necessary. In fact, by 25 May 2010, all of the RMC's established targets relating to the meeting of 18 May 2010 were executed as originally planned. In view of the above, NAO reviewed Enemalta's hedged position with respect to 2011, and it

transpires that the Corporation had in fact hedged 63 per cent (70.75 per cent for Q1 and Q2 of 2011, and 55.39 per cent for Q3 and Q4 of 2011) of total exposure with respect to crude oil by 25 May 2010.

4.2.10 NAO also noted delays in two other periods, particularly those corresponding to the RMC meetings of 04 November 2010 up to 25 January 2011, and 12 August 2011 up to 01 November 2011. With respect to the latter case, Enemalta stated that despite the delay between the August 2011 meeting and that of November 2011, the RMC nonetheless closely monitored its established targets. In fact, Enemalta argued that some of the planned hedging deals were executed before the 01 November 2011 RMC meeting, others were still being monitored, while one order was cancelled by the Committee. NAO reviewed fuel price market fluctuations corresponding to Q4 of 2011 (as 2012 was not within the audit scope) and confirmed that it was not possible for the RMC to reach the targets it had set.

4.2.11 Finally, NAO noted another discrepancy between the meeting held on 27 April 2011, and the subsequent meeting to this, held on 09 August 2011. The audit team positively noted that further to the April 2011 meeting, the RMC documented additional hedging-related action taken in the interim period. The same applies to the period between the meeting held on 04 August 2010, which was then followed by another meeting on 23 September 2010. Once again, additional hedging-related documentation was recorded and appended to the RMC meeting minutes reviewed by NAO.

Implications on Hedging Targets: Price and Volume Considerations

4.2.12 Another important aspect relating to the governance of the RMC relates to the mechanisms regulating instances when hedging targets set by the Committee were not attained, in terms of both price and volume. Enemalta stated that when such instances arose, it was normal practice for the RMC to reintroduce the issue of unmet targets into the agenda of subsequent

meetings. However, in a number of cases, NAO's analysis of RMC meetings indicated otherwise, that is, that unmet targets were not subsequently brought up for the Committee's attention and intervention. Hereunder are a selection of such instances.

4.2.13 NAO noted various instances where targets decided upon in particular RMC meetings were not adhered to, and deals bearing notable variations from those originally set by the Committee were instead concluded. For example, a number of hedging-related decisions taken in the 22 April 2008 RMC meeting do not fully correspond to the deals that the Committee reports as concluded in its 27 May 2008 meeting. The zero cost collars¹⁵ concluded for crude oil on 7 May 2008 and 16 May 2008 varied from the RMC established targets set in the 22 April 2008 meeting (while the deals concluded on 25 April 2008 and 1 May 2008 do in fact correspond to the RMC agreed targets).

4.2.14 When further queries were raised by NAO with respect to the RMC's approval of the above quoted changes in terms of volumes and ceilings of concluded trades, Enemalta stated that no documentation was available. Additionally, Enemalta stated that the RMC's change in strategy coincides with the dramatic surge in oil prices experienced during the month of May 2008, when the price of crude oil hit historically high levels. Notwithstanding the above, NAO's contention in this respect relates to the lack of documentation

¹⁵ Zero cost collars are used when the price of a commodity is subject to fluctuation. This hedge maintains some flexibility while still keeping risk and hedging costs under control. In the case of Enemalta, an example of a zero cost collar is the purchase of a call option and the sale of a put option. The purchase of the call will cap the outlay if the underlying option increases in price, in exchange for the foregoing of part of the benefit of price decreases. The call and put boundaries set a range in which the market price of the commodity can float freely, and in which no settlement payments are made. In this way, the highest and the lowest price at which one can purchase oil are established. Such options are only utilised if the market price should fall below or increase above the prices stipulated by the set boundaries (price cap and floor).

illustrating RMC's endorsement and approval of variations from the originally established hedging targets.

4.2.15 Following this, in the RMC meeting of 25 June 2008, the Committee decided to restructure the Corporation's hedged position with respect to crude oil by replacing the existent hedge agreements with new collars of \$145-\$120. However, the deals concluded on 7 July 2008 resulted in collars with a buy call of \$165/bbl (instead of the originally agreed \$145) and a sell put of \$130/bbl (instead of the originally agreed \$120). Further requests for documentation, indicative of the RMC's approval of variations from the established targets were not available. The only written confirmation provided by Enemalta in this respect was email correspondence between the former Chairman of the RMC and the then CFO indicating the conclusion of such transactions. The RMC was subsequently informed of this *fait accompli* in the meeting dated 29 July 2008. In NAO's opinion, this state of affairs, with particular reference hereby made to the correspondence between the then Chairman of the RMC and the former CFO, indicates that the latter-mentioned Enemalta official concluded deals without consulting the RMC.

4.2.16 In support of the above line of thought, relating to the then CFO's lack of consultation with the RMC, a member of the Committee in the aforementioned 2008 period indicated that all available email correspondence (within which the Enemalta official was copied) exchanged at the time was forwarded to the NAO for its subsequent review. This RMC member did not rule out the possibility of the then CFO submitting correspondence directly to the Chairman and CEO, thereby excluding this Committee member from the communication loop. Furthermore, the interviewed Committee member stated that, *"one can safely say that once the Chief Financial Officer informed the Chairman and Chief Executive Officer of any trades concluded, then it is their responsibility to inform the rest of the RMC, although this is subject to different interpretations."* NAO reiterates that although the concluded trades were eventually reported and recorded in

the minutes of the 29 July 2008 meeting, such a statement (above quote refers) further affirms NAO's observation that such hedging deals appear to have been decided and concluded single-handedly, without the due involvement of the RMC.

4.2.17 In view of the above, the interviewed RMC member further indicated that, in 2009, the Committee instigated a notable effort intended at addressing the inclusion of all RMC members within the decision-making process. NAO confirms the veracity of such an assertion (despite the fact that the Committee's first meeting in 2009 took place very late in the year, that is on 20 October 2009), noting the considerable improvement in terms of correspondence relating to RMC hedging activities circulated among all of the Committee's members, particularly in 2010 and 2011.

4.2.18 NAO noted another case of incongruence between hedging targets set and the corresponding hedging deals concluded with respect to the RMC meetings of 29 July 2008 and 26 September 2008. Queries raised by the NAO in this respect were submitted to Enemalta, and the Corporation subsequently provided a number of emails exchanged between certain members of the RMC during August 2008. NAO's concern in this regard relates to the fact that changes in hedging-related targets established by the RMC were adjusted by a subset of this Committee. Furthermore, although an extent of variation from set targets is acknowledged as an inevitable factor emerging in the conclusion of hedging transactions, the absence of an appropriately structured hedging policy, contributes to the failure in providing adequate parameters determining the acceptability, or otherwise, of such variations, thereby affording guidance to the RMC.

4.2.19 During the RMC meeting of 21 October 2008, the Committee decided to purchase USD 5 million for each quarter in 2009 at a spot rate of USD 1.33 to 1.35, or better. However, in the following meeting dated 18 November 2008, the RMC reported that the four hedges of USD 5 million each (one per

quarter in 2009) were concluded when the spot rate reached 1.32. The forward rates provided in this respect varied from 1.3051 to 1.3146. When queries regarding the discrepancy in established forex hedging targets and concluded deals were raised by NAO, Enemalta replied that shortly after the 21 October 2008 meeting, the dollar started strengthening considerably, and therefore the Committee took the opportunity to lock-in at \$1.32 in view of this market correction. By the time the Committee met again on 18 November 2008, the forex rate had reached \$1.2635 and never rebounded back to over \$1.33.

4.2.20 NAO's concern further intensifies with respect to a number of forex hedging transactions that were undertaken by Enemalta during the ten-month period of RMC inactivity. In the RMC meeting dated 16 December 2008, the Committee decided to purchase \$5 million for December 2009, a further \$5 million corresponding to January 2010, together with an additional \$2.5 million for February and May 2010, respectively, at \$1.37 to \$1.40 spot, or better. In sum, the agreed hedged deals should have amounted to a total of \$15 million. However, in NAO's review of the list of contracts undertaken with respect to forex hedging provided by Enemalta, it was noted that in the interim period (that is, between the aforementioned RMC meeting dated 16 December 2008 and the following Committee meeting held on 20 October 2009), contracts worth in excess of \$70 million were entered into. Of paramount concern to NAO in this regard is the fact that such transactions were undertaken without any clear indication provided as to who was responsible for authorising such deals, given the Committee's evident inactivity, which subsequently raises notable concern with respect to the RMC's overall adherence to the principles of good governance and accountability.

4.2.21 NAO considers it important to reiterate and ensure clarity with respect to the focus of its principal concern. This Office understands that crude oil and forex markets are extremely volatile, and that shifts in markets may quickly render

favourable situations unfavourable, and vice-versa. However, what NAO considers unacceptable is the fact that no formal documentation recording departures from RMC agreed targets was registered in the multiple cases referred to in this section.

4.2.22 Another instance of hedge volume incongruence emerged with respect to the RMC 20 October 2009 meeting, in which case NAO analysed the forex forward hedges for 2010. During this meeting, the RMC established the following forex forward hedge target volumes: \$30 million for Q1, \$35 million for Q2, \$37.5 million for Q3 and another \$37.5 million with respect to Q4. Ten days later, in the subsequent RMC meeting dated 30 October 2009, a report on concluded forex hedges was presented to the Committee detailing the following quarterly amounts (with approved amounts as per preceding 20 October 2009 RMC meeting represented in brackets): \$42 million for Q1 (\$30 million), \$47 million for Q2 (\$35 million), \$48.9 million for Q3 (\$37.5 million) and \$47.9 million in relation to Q4 (\$37.5 million).

4.2.23 Queries raised by NAO in this respect elicited the response from Enemalta that such volumetric revisions were due to changes in the scheduling of shipments. Enemalta stated that such purchases increased the quarterly coverage to 75 per cent for Q1 and Q2, and 50 per cent for Q3 and Q4. More apparent as motivating the RMC's decision to increase its forex hedged exposure was the EUR/USD rate at the time, particularly when contextualised against the key tariff driver highlighted earlier. Although NAO considers the emails provided in this respect as accounting for the above-quoted volumetric changes, this Office's concern more specifically gravitates towards two issues. First, NAO contends that changes in the scheduling of shipments would not have necessitated an across the board surge in USD hedge exposure, but merely increased some quarters and correspondingly decreased others. This is evidently not applicable to the above case. Second, the documentation made available to NAO (although allowing reconciliation in terms of hedged volumes) raises governance and accountability concerns,

as no records were provided detailing who and how this \$45.8 million increase in hedge volumes were decided upon, and merely presents the increased hedge scenario as a fait accompli.

4.2.24 In continuation with the above, NAO queried whether Enemalta's decision to hedge such substantial USD volumes (\$185.8 million) within a notably short period of time was consistent with the Corporation's risk-averse policy. In response to NAO queries, Enemalta stated that the policy does not specify limits with respect to permissible hedge volumes vis-à-vis the identified requirements. Enemalta argued that, if the Committee believes that a window of opportunity exists in the market (which the Corporation claims was clearly the case in this particular occasion, in fact verified as true by NAO, with hedges concluded at EUR/USD forward rates ranging from 1.4812 to 1.5013), then the RMC should seek to benefit from such opportunities. In addition, Enemalta stated that the element of risk should not be linked to the volumes of hedges undertaken, but to the price at which such deals are executed. Another influential factor conditioning the significant aforementioned hedging activity was the perceived need for certainty and stability in view of the existing exposure, thereby mitigating risks prior to the tariff review.

4.2.25 Another case of interest to NAO was that relating to the 10 November 2009 meeting, in which case the RMC decided that if ICE Brent crude moved under the \$81.70/bbl mark, hedges for 50 per cent of Q1 2010 requirements would be undertaken. Additionally, the RMC decided to follow suit with Q2, Q3 and Q4 2010, setting a trigger at \$81.80/bbl, and agreed to reschedule another meeting if such levels were reached. However, in the ensuing RMC meeting dated 22 February 2010, the Committee was presented with a situation where all of the Corporation's requirements (100 per cent instead of the agreed 50 per cent per quarter) were hedged for 2010 with respect to crude oil, coupled with an additional hedge of 15 per cent corresponding to 2011.

4.2.26 Following queries raised by NAO, Enemalta provided email correspondence accounting for how the targets that the RMC had originally set had in fact been amended. Here specific reference is made to the emails sent by the then Minister Gatt already referred to section 4.1. Further to the issue of 'Ministerial direction', which was amply discussed in the preceding section, and given that the deals closed were favourable (that is, below the established tariff), here NAO's concern gravitates once again around the issue of inadequate documentation. The supporting documentation utilised in concluding such deals and made available to NAO for this Office's verification was not complete. The matter of incomplete information, and requests for its rectification were directly put to Enemalta, however, the Corporation confirmed that there were no other workings available. While the crude oil hedges concluded following the 10 November 2009 RMC meeting represent the Corporation's full requirements for 2010 (as was in fact presented in the 22 February 2010 RMC meeting), the documentation made available to NAO by Enemalta corresponding to the conclusion of deals in the interim period only accounts for 56.25 per cent of the concluded volumes.

4.2.27 In NAO's opinion, the above scenario gives rise to concerns relating to the good governance and accountability of the RMC. Email correspondence analysed by NAO in relation to the above circumstances indicated that not all RMC members were included in communication bearing direct relevance to the Committee. In response to queries raised by NAO in this regard, Enemalta stated that these hedging transactions were approved by the then Chairman and CEO, following consultation with RMC members, and after being advised by the then Minister Gatt. The Corporation was unable to provide any proof that all of the RMC members were in fact consulted throughout this process, and it is within this context that NAO's concern intensifies.

4.2.28 During the RMC meeting held on 04 August 2010, the Committee decided to establish a trigger with respect to its 2011 forex requirements, which was eventually set at \$1.345/€1 (spot) for 80 per cent of total requirements.

However, follow-up decisions taken by the RMC Committee on 12 August 2010 and 24 August 2010 represented notable variations from the original forex target originally established in the 04 August 2010 RMC meeting. When queried as to the departure from the originally planned course of action, Enemalta stated that the dollar started to strengthen considerably, and therefore, the RMC considered the revision and alignment of its previously set target and trigger levels to be more in line with prevalent market conditions at the time, as a sensible course of action. The Corporation declared that these targets were intended to be stop-loss positions, and in support of such an assertion, Enemalta provided email threads presenting justification for this change. NAO considers these emails as supportive proof of the above stated, while commending the fact that all members of the RMC were duly informed of these decisions. Another important and positive aspect relating to this particular case was the fact that the RMC's forex consultant was in complete agreement with this decision.

4.2.29 During NAO's review of the RMC minutes corresponding to the follow-up decisions of 12 August 2010 and 24 August 2010, the Office encountered considerable difficulty in reconciling the USD amounts hedged for 2011. Initial analysis of documentation provided by Enemalta indicated that the USD hedged volumes for 2011 (relating to the 12 August 2010 and 24 August 2010 follow-up decisions) were as follows: \$29.7 million for Q1, \$29.7 million for Q2, \$14.7 million for Q3 and \$13.9 million for Q4. However, these figures were not in agreement with hedging volumes indicated in the appendices of the RMC meeting minutes dated 23 September 2010. The amounts indicated here were as follows (with originally approved amounts as per follow-up meetings represented in brackets): \$44.7 million for Q1 (\$29.7 million), \$44.7 million for Q2 (\$29.7 million), \$29.7 million for Q3 (\$14.7 million) and \$28.9 million for Q4 (\$13.9 million). NAO's review of the RMC minutes corresponding to meeting 04/08/2010, and the two subsequent follow-up decisions did not account for the discrepancies noted in terms of volume differences registered in the 23 September 2010 RMC meeting.

4.2.30 When queries were raised by NAO with respect to these discrepancies, Enemalta provided email correspondence indicating the amendment of triggers. Once again, this correspondence did not allow the NAO to reconcile variations, and it was only after reiterating the Office's request for the umpteenth time that Enemalta provided another email dated 16 August 2010, which effectively accounted for the additional \$15 million hedged per quarter in 2011. NAO's concern in this respect relates to the fact that key documentation necessary in reconciling hedged volumes of USD amounting to \$148 million were not found in the corresponding RMC meeting files.

4.2.31 A similar situation arose with respect to the RMC meetings dated 23 September 2010 and 18 October 2010, with notable discrepancies emerging in relation to USD hedged deals for 2011. In the latter-referred meeting, the RMC indicated that the Corporation's expected exposure for every quarter in 2011 was that of \$73,164,600. To this end the RMC's stated hedged position as at 18 October 2010 was as follows (with approved amounts as per preceding 23 September 2010 RMC meeting represented in brackets): \$67.2 million for Q1 (\$44.7 million), \$67.2 million for Q2 (\$44.7 million), \$52.2 million for Q3 (\$29.7 million) and \$51.4 million for Q4 (\$28.9 million). NAO's review of the RMC minutes corresponding to the meetings dated 23 September 2010 and 18 October 2010 did not account for the discrepancies noted in terms of hedged volume differences.

4.2.32 Once again, Enemalta only provided the necessary documentation accounting for such variations after several attempts were made by the NAO to reconcile these hedges. Three emails circulated among all members of the RMC in October 2010 accounted for such discrepancies. Notwithstanding the above, NAO's concern in this respect relates to the poor record-keeping practices employed by the RMC, particularly significant when one considers that the hedging discrepancies initially not found on file by the NAO accounted for \$90 million.

4.2.33 Further discrepancies were noted by NAO in the ensuing meetings. Comparisons drawn by the audit team with respect to the USD hedged position in RMC meetings dated 18 October 2010 and 25 January 2011 ambiguously indicated that although no extra hedges were carried out during this period, the average rates hedged-at for all four quarters were amended. In response to queries raised by NAO in this respect, Enemalta stated that the correct forex position table was the one presented in the meeting dated 25 January 2011, that is, where an average rate of \$1.3184 was quoted. Enemalta claimed that a typographical error recorded in the rate of one particular trade, which subsequently recurred throughout the whole year, could have led to the discrepancy in the average rates for all the quarters illustrated in the table corresponding to the 18 October 2010 RMC meeting.

4.2.34 An additional discrepancy was noted by NAO with regard to the expected exposure for USD in 2011, specific reference hereby being made to the RMC meetings held on 18 October 2010, 25 January 2011 and 10 March 2011. NAO noted that the expected exposure increased from \$73,164,600 per quarter in the 18 October 2010 RMC meeting, to \$80,554,500 per quarter as recorded in the 10 March 2011 RMC meeting. Annualised, this variation accounted for an increase of \$29,559,600 in USD exposure. NAO raised the matter with Enemalta, contending that this significant variation was indicative of poor planning. Enemalta's response in this respect was twofold, stating that expected exposure was adjusted due to changes in the schedule of shipments in relation to previous expectations, as well as due to movements in fuel prices, which in turn inflated the Corporation's USD requirements.

4.2.35 In view of the first factor referred to in the preceding paragraph, that is, the change in the schedule of shipments, Enemalta indicated that the Corporation's USD exposure estimate methodology was recalculated factoring in seasonality, which therefore led to an increased exposure in all four quarters. In addition, Enemalta stated that the application of the principle of seasonality rectified various long and short positions that the

Corporation had previously experienced. Although NAO's initial review of the application of this principle was somewhat perplexing, given the fact that an increase in expected exposure was uniformly applied to all quarters in 2011, this was in fact later rectified through the subsequent appropriate adoption of the principle (increase in Q3 2011 and decrease in Q1, Q2 and Q4). Expected exposure calculations are further delved into in section 4.5.

4.2.36 An additional increase in expected exposure was also noted by the NAO in Q1 of 2011, which was this time implemented with 21 days left until the end of the quarter. NAO finds such an increase in expected exposure, amounting to \$7,389,900, unacceptable, particularly given the timeframe left for closure of the quarter. In response to queries raised by NAO, Enemalta defended its hedging operations by stating that in this case, the Q1 2011 exposure was not in fact reflecting the balance for that particular quarter, and that estimates for January and February were still being included. Enemalta claimed that data was presented in this manner so as to present the annual hedged scenario, and at the time, no further hedges were being considered for Q1 2011. This latter point regarding the conclusion of additional hedges in Q1 2011 was verified by the NAO, and the veracity of this statement is hereby confirmed. The Corporation provided further justification in this respect, again quoting the factoring in of the principle of seasonality. NAO's key concern in this respect again relates to the fact that such variances were not appropriately and comprehensively documented in the corresponding RMC minutes.

4.3 Planning and Projections

4.3.1 This section delves into the planning and projection functions associated with the hedging of crude oil and forex. Specific instances that bore direct impact on the RMC's planning of hedging activity were the iterative changes to the Corporation's hedging strategy implemented by the Committee. Other

aspects addressed in this respect include the use of consultants within the context of the Committee, together with other hedging-related planning issues emerging in relation to crude oil and forex hedging activities. Contextualising all of the above are the wider financial considerations that overshadow Enemalta, and here NAO's attention focused on how credit limits were effectively constrained by the Corporation's financial situation. This latter-referred issue is addressed next.

Credit Limits

4.3.2 The Annual Report and Financial Statements as at 31 December 2011 (Enemalta Corporation, 2013) are a reflection of the deteriorating financial situation Enemalta Corporation finds itself in. Taking for example external borrowings, these increased from €678.4 million as at 31 December 2010, to €702 million as at 31 December 2011. Moreover, borrowing costs incurred during 2011 amounted to €7.3 million, which represent an increase of €2.3 million when compared to 2010 figures. During this same two-year period, financing costs, which represent the cost of borrowings utilised to finance specific capital projects, remained largely constant, standing at €16.2 million in 2010, and subsequently increasing to €16.6 million in 2011.

4.3.3 In addition, the current ratio (current assets over current liabilities) for Enemalta decreased from 0.94 in 2010 to 0.93 in 2011, which may in part be indicative of the Corporation's difficulties in meeting its short-term obligations. Furthermore, while the Corporation registered a profit of €21.6 million in 2010, the income statement reported a loss of €8.8 million for 2011. NAO's analysis of the profits and losses registered by Enemalta in 2010 and 2011, respectively, indicated that one of the main contributors in this regard was the loss or gain on fair value reported with respect to derivative instruments (foreign exchange forward contracts) as reported on the income statement. While in 2010 a gain of approximately €16 million was reported,

the inverse situation materialised in 2011, when a loss of approximately €7.9 million was registered by the Corporation.

4.3.4 The statement of cash flows also provides clear insight into the Corporation's concerning financial situation. The net movement in cash and cash equivalents for 2010 was registered at an outlay of €12.5 million, which, however, was mainly due to the purchase of property, plant and equipment amounting to €177.1 million. On the other hand, in 2011 the net movement in cash and cash equivalents resulted in a surplus of €17.9 million. It is, however, important to contextualise the increase registered in cash and cash equivalents from 2010 to 2011 against the backdrop of a significant reduction in the purchase of property, plant and equipment, which stood at €69 million in 2011 (as compared to the €177.1 million in 2010). The cash and cash equivalents balances at end of year were closed at negative €102.6 million and negative €84.6 million, for 2010 and 2011 respectively.

4.3.5 Further evidence, of Enemalta's weakening state of affairs, were the developments in connection with the Corporation's going concern assumption, presented in the notes to the financial statements. The following excerpt precisely captures this situation, "*...the Corporation has kept the Government of Malta, as sole owner and shareholder, fully informed about its deteriorating financial position*" (Enemalta Corporation, 2013, p. 14). Furthermore, Enemalta (Enemalta Corporation, 2013, p. 14) stated that,

"...the Corporation's directors felt that they were unable to prepare these financial statements on a going concern basis unless an irrevocable letter of support was obtained from Government committing financial support to the Corporation in meeting its present and forecasted financial commitments, including those related to capital expenditure and to the crystallisation of any of the guarantees given to the Corporation, such that the Corporation will at all times be in a

position to meet its liabilities as and when they fall due. In addition the Corporation has held back from making certain payments to Government in order to see it through its cash flow difficulties in 2012.”

- 4.3.6 This brief overview of Enemalta’s financial situation sets the context for the Corporation’s difficulties in operating within the market, as its poor financial situation effectively hinders and conditions the planning as well as execution of intended courses of action. Axiomatically, these financial constraints also bear direct impact on the Corporation’s hedging activities. It is in this respect that the issue of credit limits posed by the various investment banks/oil companies that Enemalta conducts its business with continuously surfaced during discussions and interviews carried out by NAO with the Corporation’s officials.
- 4.3.7 Enemalta’s officials continuously remarked that credit limits were a persistent issue for the Corporation with respect to undertaken hedging activity, and this situation was further exacerbated following the collapse of Lehman Brothers, which went bankrupt in late 2008. Furthermore, Enemalta stated that credit limits posed by investment banks/oil companies were also dependent upon the mark-to-market position at the time, and were notably tighter when the tenor¹⁶ proposed was beyond a year. A case in point bearing direct reference to the above was that of the RMC meeting dated 01 November 2011, when the Committee was looking into hedging crude oil for 2013.
- 4.3.8 Moreover, it was pointed out that credit limits were always imposed by Enemalta’s intermediaries due to the financial losses incurred by the Corporation over the past ten years. Compounding this bleak situation were the credit ratings given by Standard & Poor’s on the Corporation’s capacity to

¹⁶ The tenor represents the amount of time left for the repayment of a loan or contract, or the initial term length of a loan. Tenor can be expressed in years, months or days.

meet its financial commitments. As outlined above, the Corporation's financial statements were a clear indicator of Enemalta's extremely weak balance sheet, operating solely on the backing of Government support. To this end, Enemalta indicated that counterparties generally asked for a letter of comfort signed by Government, in order to open credit for the Corporation; however, Enemalta further commented on the fact that this too was at times insufficient in addressing credit limit constraints. The Corporation substantiated the above statement by providing email correspondence with Barclays Capital officials, highlighting the fact that the Corporation had exhausted its credit limits with the aforementioned bank.

Change in Strategy

4.3.9 Strategic planning within the context of Enemalta's hedging activity would conceptually involve determining the Corporation's long-term goals and objectives, while simultaneously designing courses of action and allocating the necessary resources in attending to such goals. In other words, NAO's understanding of Enemalta's strategic planning function is that of a critical management activity that is intricately utilised in the establishment and eventual attainment of organisational priorities. An undoubtedly essential aspect of the Corporation's strategic planning centres on the mechanisms utilised in determining progress registered and subsequently adjusting Enemalta's tactical response to a changing environment cognisant of the constant movement in market factors. Generally, such decisions are documented in a strategic plan; however, as amply elaborated upon in section 4.1, the Corporation's formal documentation of its policy, and more importantly in this case, its strategy, were not duly formulated and expressed in one coherent document.

4.3.10 In the period audited by NAO, that is, from 2008 to 2011, the first strategic change noted by the Office was registered in the RMC meeting dated 12

February 2008. Here, the RMC agreed to stop its practice of paying premiums on hedging contracts undertaken by the Corporation, and instead, the Committee decided to focus on the utilisation of zero cost collars with lower floors. NAO requested information together with supporting documentation utilised by the RMC with respect to this strategic change; however no information was provided and this Office's requests were to no avail. The only information available to NAO in this respect came from interviews held with Enemalta key personnel, and in this context, the Corporation explained that the move from premium collars to zero cost collars was agreed by the RMC in order to forgo the hefty premium costs that were previously incurred under such hedging arrangements. In addition, the interviewed Enemalta officials stated that the implication of this switch in hedging instruments implied having to accept less favourable cap and floor levels. However, at the time, there was a strong bullish¹⁷ market sentiment, and therefore, forgoing the premium and opting for a less favourable collar spread (that is, higher calls and floor levels) was considered sensible by the then RMC.

4.3.11 Another adjustment to the Corporation's hedging strategy was noted by NAO with respect to the RMC meeting held on 22 April 2008. In this case, the RMC commented as follows, "*...it is the view of the Committee to hedge for H2 '08 [the second half of calendar year 2008] to cover the risk of higher prices using simple instruments (swaps and zero cost collars).*" In effect, this decision by the RMC encompassed the incorporation of swaps with the already in use zero cost collars as an additional hedging instrument. Once again, NAO raised requests with Enemalta for the provision of supporting documentation utilised by RMC in justifying why and what the Corporation would stand to gain through the use of the so referred 'simple instruments'.

4.3.12 NAO raised such requests for further clarification as the aforementioned RMC meeting minutes lacked appropriate explanations regarding the different

¹⁷ A financial market described as bullish is one in which prices are rising or expected to rise. This is in contrast to bearish markets, where prices are falling or expected to decrease.

derivative instruments at the Committee's disposal. Replies provided by Enemalta in this respect consisted of theoretical descriptions relating to a number of derivative instruments utilised by the Corporation with respect to crude oil hedging, including call options, zero premium collars and swaps, coupled with the conceptual benefits and risks emanating from the possible utilisation of such instruments. However, no detailed calculations, analyses or estimates were provided by Enemalta, as to how the application of these instruments would impact the Corporation's hedging activity.

4.3.13 Another example where NAO noted lack of documentation appended to the RMC minutes was with respect to the meeting dated 25 June 2008. In this case, Enemalta was assessing the possibility of cashing in the hedges in place at the time and repositioning through the execution of new hedges. NAO noted that given the increase experienced on the crude oil price at the time, this proposed restructuring exercise represented a sensibly thought out course of action, since previously hedged collars could have been cashed at very good market prices. In addition, the Corporation's decision to restructure its hedged position made sound business sense, as the price of oil did in fact increase once again between June and July. Furthermore, NAO concludes that such a decision bore consistency with Enemalta's risk-averse approach.

4.3.14 Notwithstanding NAO's support of proposed hedging action taken by Enemalta with respect to the sale of its collars and the restructuring of its hedging arrangements, the RMC's available workings and supporting documentation with respect to this proposed restructuring is very poor and represents an area that merits significant attention and improvement. Ultimately, NAO's review of subsequent RMC meeting minutes and corresponding documentation indicated that the above-referred restructuring was not carried out, and somewhat perplexing to NAO is the fact that explanations and justifications as to why no action was taken in this regard were not documented or provided by the Corporation.

4.3.15 When the crude oil market then drastically dropped after July 2008, eventually reaching low points by the end of the year, in September 2008, the RMC once again considered it necessary to restructure its hedged position. In fact, in the RMC meeting dated 26 September 2008, the Corporation's CFO commented that, "...the downside risk seems now more realistic than the upward risk, following the decrease in crude prices to below USD 100/bbl. So, maybe restructuring the present hedges to push the downside further makes sense." In effect, the RMC meeting dated 21 October 2008 reports that the Committee, "Sold caps \$90 and \$93 of Cal [calendar year] 2009 to lower the floor of \$130 to \$105 at a cost of \$465,000." From analysis of correspondence between the then CFO and Goldman Sachs representatives, it emerged that the Committee was considering further restructuring of its hedged position for the year 2009.

4.3.16 NAO's review of supporting documentation relating to the exploration of manners by which the Corporation's hedged position could be restructured indicated the substantial costs involved in such an exercise, with relevant costs ranging from \$1.8 million to \$10.1 million per hedge. In light of all of the above, the RMC meeting dated 18 November 2008 indicates that no such restructuring was followed through, due to the fact that the then CFO considered such an exercise as unfeasible. Although this situation may be viewed as unusual, given the previously proposed restructuring, NAO considers Enemalta's decision to try to realign its collars closer to the market scenario at that particular point in time as sensible and constituting good business sense.

4.3.17 However, once again, the issue of inadequate and poor documentation resurfaces, with NAO's review of the corresponding RMC meeting minutes lacking explanations and reproductions of the calculations and computations deemed necessary in carrying out such a restructuring exercise. Furthermore, given the importance of such a decision, NAO raised the issue of absent supporting documentation in relation to this restructuring exercise with

Enemalta, thereby exploring the possibility of such records being misplaced. However, no information deemed relevant to this exercise, barring some email communication between the then CFO and officers from Goldman Sachs (dated October and November 2008), was provided by the Corporation.

4.3.18 During the meeting held on 20 October 2009, after a substantially long period of RMC inactivity, a further strategic change was noted by NAO. In this particular RMC meeting, the Chief Finance Officer suggested that it was more appropriate for the Committee to hedge using swaps rather than collars. To this end, NAO requested Enemalta to provide it with all of the relevant documentation relating to the basis of this key strategic decision. In response, Enemalta provided NAO with detailed presentations outlining different situations under the collars and swaps structures, which was in this Office's view considered to be ample proof that the Corporation had in fact carried out the necessary scenario planning.

4.3.19 As a result of this, in the subsequent RMC meeting held on 30 October 2009, the Committee set triggers at various price levels (with different corresponding volume levels) for the year 2010, with regard to crude oil hedging. NAO considers that this planning of corresponding action with respect to crude oil for an array of scenarios (negative and positive) is reasonable and practical, since at the time, considerable market uncertainty was being experienced. However, such examples of what NAO considers to be good planning were rendered conspicuously incongruent by other practices employed by the RMC, such as was the case with the following RMC meeting dated 10 November 2009, where the Committee was directed to close anything below the key tariff driver of \$81.80/bbl. This issue has already been dealt with in section 4.1 and as reiterated hereunder, a number of decisions taken by the RMC were heavily dependent on the setting of the tariff.

4.3.20 Enemalta Corporation further explained that the main reason to switch to simple instruments was primarily due to the setting of the tariff, since,

according to the RMC, the swap model, rather than collars, facilitated the mechanism of regulating the tariff. This was expounded upon in the Director's report in the 2010 Annual Report and Financial Statements 2009 (Enemalta Corporation, 2011). This report outlines that during 2009, Enemalta hedged its fuel exposure using zero cost collar structures; however, rather than adopting the same hedging structures in 2010, the Corporation hedged all of its fuel exposure using a swap structure, since the latter were considered to be the least complex hedging instrument. According to the aforementioned report, Enemalta claimed that this swap structure has proven to provide an element of stability in devising the tariff model.

4.3.21 The Corporation further stated that by locking in prices through swaps, Enemalta achieved complete protection from any increase in crude oil prices. According to Enemalta, such protection was afforded by swaps as this derivative instrument provides the best defence against high market volatility, while simultaneously acknowledging that it also carries its own risks. Furthermore, the Corporation reiterated that, when it comes to call options, the upfront premium paid against the option was always considered risky, both from a corporate governance point of view, as well as from a political perspective.

4.3.22 With respect to forex hedging, one clear example of strategic change was that noted by NAO with respect to RMC meetings scheduled between 25 January 2011 and 10 March 2011. In the 25 January 2011 RMC meeting, forex targets were revised downwards in terms of margins, but were widened once again in the subsequent Committee meeting dated 10 March 2011. In both cases, Enemalta provided documents attached to other emails prepared by the CBM consultant justifying the intended courses of action. Finally, NAO considers it important to highlight good practices exhibited by the RMC with respect to forex hedging, and here, specific reference is made to the detailed forex hedging report attached to the vast majority of the RMC meeting minutes covering the period 2008 to 2011.

Management of the Consultant's Role

4.3.23 In seeking to source expert technical advice relating to the hedging of crude oil and forex, the RMC utilised the services of independent consultants. Bearing direct relevance to the utilisation and role played by consultants in this respect were issues already raised by NAO in the address of the Committee's hedging policy. Here specific reference was made to the fact that such consultants did not have a clearly defined role in terms of their respective engagements with the RMC. In addition to shortcomings with respect to role delineation and formalisation, NAO also evaluated how the use of technical experts was of benefit to the Corporation and what was their impact on the decisions taken by the RMC.

4.3.24 As regards the four years under audit review, a consultant with respect to forex hedging was consistently present in all RMC meetings. NAO noted significant consistency in the approach adopted by the RMC with respect to this aspect of consultancy, particularly exemplified by the CBM representative's reports submitted and referred to in the preceding section of this chapter. In light of the above, this Office has no concern in this respect.

4.3.25 On the other hand, with regard to fuel-related hedging, a technical expert only formed part of the RMC in 2008. Moreover, officials from Enemalta commented that they were well aware of the sensitive role fulfilled by market experts or consultants sitting on the RMC. According to the Corporation, Enemalta had relied on one key expert in the past, who drove the process in relation to crude oil hedging in the context of the RMC. However, following discussions in 2010 and 2011, the Committee took steps to limit its reliance on any one particular consultant or expert, and instead opted to employ a system of rotating expert advice provided to the RMC on a regular basis. Interviewed Enemalta officials commented that this change in

approach, recommended by the CFO and the Financial Risk Manager, proved to be a paradigm shift with regard to the risk associated with reliance on particular experts.

4.3.26 This difference in approach with respect to the RMC's utilisation of external fuel and forex consultants was the focus of further NAO analysis, essentially seeking to establish what factors influenced the Committee's governance of these two key support functions. Further queries were raised by NAO with regard to the absence of a specifically designated consultant whose area of expertise was that of fuel hedging, barring the brief attachment in 2008 as already referred to above. Given the RMC's absence of a technical expert with respect to fuel hedging, NAO queried whether such technical forecasts were still being carried out. Enemalta replied in the affirmative and commented that during RMC meetings, an in-house presentation mainly corresponding to fuel hedging was delivered to the rest of the Committee, as a matter of standard procedure. All presentations prepared in connection with RMC meetings held from December 2008 to end 2011 were reviewed by NAO.

4.3.27 By means of background, such presentations primarily focused on market performance and trends, an overview of the extensive market research submitted by various reputable investment banks, as well as commodity price forecasts. According to the Corporation, this information provided the RMC with an element of contextual background, effectively seeking to capture the market sentiment at that particular point in time. Such presentations were subsequently complemented and further corroborated by third parties (deemed to be oil market experts by the Corporation) who were in turn summoned to a conference call with the Committee, thereby intended to provide further insight with respect to market developments.

4.3.28 NAO's review and analysis of the aforementioned presentations indicated that such reports were considered by this Office to be comprehensive and

well prepared. These presentations included views on possible ICE Brent crude oil hedges put forward for consideration of the RMC coupled with indicative quotes or proposals. In addition, such presentations also incorporated an account of existent hedges in place, a historical overview of ICE Brent market fluctuations, a report on hedging settlements, review of the Corporation's mark-to-market positions as well as price outlooks and forecasts in view of possible future hedging activity.

4.3.29 On the other hand, views compiled with respect to forex trading included a summary of the Corporation's USD hedged position, as well as an overview of the EUR/USD trend. Furthermore, views on crack spreads, carbon trading and other matters arising were also addressed by means of these in-house presentations.

4.3.30 A comparative analysis was undertaken by NAO with respect to these presentations. This Office noted a marked improvement when reviewing presentations compiled towards the end of 2008 and throughout 2009, when compared to those put forward with respect to RMC meetings held in 2011. This improvement was most pronounced with respect to the depth of detail delved into with regard to the latter-referred period.

4.3.31 Notwithstanding the above-referred notable improvements, NAO maintains a certain element of reservation with respect to the RMC's practice of utilising the input of oil market experts summoned by the RMC. Generally described, these independent experts were high-ranking advisors representing internationally reputable investment banks. Here NAO's concern centres on the possibility of these ad hoc consultants providing advice that is somewhat biased, possibly influenced by their organisation's own interests.

4.3.32 It is in this respect that NAO queries addressed to Enemalta sought clarification on whether Enemalta was aware of this possible risk posed by the advice provided by these consultants, whose objectivity or otherwise,

might have been conditioned by interests other than Enemalta's, and what counter measures were instituted in this respect. Enemalta stated that it was well aware of this risk, and acknowledged that at times, oil market experts summoned may have been biased in their comments towards the Corporation. Moreover, Enemalta provided an example in which case experts from a particular investment bank exhibited a consistent tendency of adopting a bullish outlook with respect to crude oil, in order to persuade organisations to hedge at high levels. However, according to the Corporation, subjectivity is countered by changing experts on a regular basis.

4.3.33 In addition, Enemalta reiterated the fact that feedback regarding market outlooks, sourced from five different banks, was also presented during the RMC, utilised as a means of supplementing the decision-making process and balancing potentially subjective advice. Enemalta stated that the RMC is then ultimately responsible for the evaluation of these different outlooks provided.

Adherence to Consultant's Advice

4.3.34 The role and function of consultants operating within the context of the RMC is of critical importance in terms of the provision of expert advice that serves to ensure the effectiveness of the aforementioned Committee. Notwithstanding the above, the consultant's role is ultimately advisory in nature, and the RMC is by no means obliged to adhere to such advice in a strict and rigid manner. Against this backdrop, NAO reviewed and evaluated instances when the RMC undertook different courses of action to those proposed by its respective consultants. In carrying out such a review, NAO was cognisant of the fact that the benefit of hindsight was not a luxury afforded to the Committee at the various instances when it decided to act differently to that proposed by its consultants. It is for this reason that NAO's focus did not centre on the disagreement in hedging action undertaken per

se, but more precisely attended to the basis of RMC's counterarguments and counterproposals in arriving at different plans of action.

4.3.35 The first instance of disagreement emerging with respect to advice provided by the consultant and subsequent action taken by the RMC was noted by NAO in the review of the RMC minutes corresponding to the meeting dated 21 October 2008. In this case, the fuel hedging consultant clearly stated that, *"...in such a market it would be very speculative to enter into swaps or collars."* Notwithstanding the consultant's advice, detailed review of the RMC minutes indicates that the Committee was of an altogether different understanding, as it in fact proposed additional collars.

4.3.36 When queries were raised with respect to this matter, Enemalta explained that the Committee had in fact discussed the consultant's suggestion; however, the RMC decided to opt for a different solution to that proposed by its consultant. Interviewed Enemalta officials specified that entering into 'call options', as was in fact implied by the consultant, would have meant paying premiums in advance in order to lock-in a ceiling. As indicated earlier by NAO, the Corporation was adverse to the payment of premiums and therefore opted to exclude such a strategy from its range of options, thereby disregarding the advice provided by its consultant. Against this context, Enemalta remarked that the selection of derivative instruments with respect to hedging was a highly subjective matter, with no hard and fast rules applicable to all circumstances.

4.3.37 In principle, NAO agrees with Enemalta's comments regarding the subjectivity of interpretation and understanding of what hedging-related course of action would best suit the Corporation's needs, and once again acknowledges the Committee's remit to act independently of its consultants' advice. However, what NAO's concern does in fact centre on is the fact that no explanations or counterarguments were documented within the corresponding RMC minutes, stating why the consultant's advice was not heeded.

4.3.38 Another instance when the consultant's advice was not adopted to by the Committee was with respect to the RMC meeting dated 16 December 2008, where the fuel consultant commented that, *"...it is quite possible that the prices seen last week turn out to be a low point and will not be repeated in the foreseeable future."* In support of this argument, the consultant further stated that Goldman Sachs lowered their price estimates to \$45/bbl, while the US Energy Information Administration predicted a price of \$51/bbl. In addition, and in stark contrast to the case elaborated upon in the preceding paragraphs, the consultant adopted a notably different position when declaring that, *"...it is recommendable that tighter collars or even swaps could be the best way forward, given the market conditions and possible supply imbalances."*

4.3.39 When further questions were raised by NAO in this respect, Enemalta emphasised that the consultant's report stated that the contango¹⁸ in the market was still quite steep, although on the decline. While NAO acknowledges the fact that various scenarios and circumstances could have conditioned RMC's decision-making at the time, this Office is concerned with the fact that despite the consultant's advice, and the limited hedge cover on crude oil for 2009 (48 per cent), it was decided that no more hedges were to be undertaken, without any clear explanations forthcoming. Moreover, and it is here that NAO's concern gravely intensifies, subsequent to this RMC meeting held on 16 December 2008, the Committee then reconvened approximately ten months later, that is, in October 2009. Needless to say, the favourable opportunities presented by the market, and amply captured by the consultant's above quoted advice, were not capitalised upon.

4.3.40 Apart from issues concerning consultancy advice afforded with respect to fuel hedging, NAO also noted another issue of interest relating to the forex consultant's input into the hedging process. In the RMC meeting dated 04

¹⁸ Contango refers to a situation where the price of a forward or futures contract is trading above the expected spot price at contract maturity.

August 2010, the CBM representative, that is, the Committee's forex consultant, stated that, "...waiting to see whether the EUR/USD would test the 1.35 level could prove costly indeed as at present level it is still somewhat doubtful whether the EUR/USD pair would effectively hit that level." In stating the above, the CBM representative was essentially implying that the forex market was encountering resistance in moving beyond the \$1.35 mark, and if the market were to break this technical level, then the EUR/USD rate would subsequently be expected to appreciate further. In the strictest sense of the word, the RMC did in fact apply the consultant's advice, as the RMC set a trigger for 2011 at \$1.345/€1 (spot) for 80 per cent of the Corporation's US dollar requirements. However, in NAO's opinion, the downward revision of the RMC-set trigger represented the slimmest of margins when compared to the originally indicated \$1.35 mark. In fact, eight days later the rate went below the \$1.30 level and hedges were subsequently concluded at forward rates between \$1.25 and \$1.29.

4.3.41 NAO reiterated its concern to Enemalta regarding the above issue, and in this context, the Corporation defended its decision by stating that it heeded to and agreed with the forex consultant's recommendation. In this respect, Enemalta claimed that they too were of the opinion that the \$1.35 level would not be exceeded, and in fact agreed on targeting a lower level, that is, \$1.345, when the spot rate at the time stood at the \$1.32 mark. The Corporation restated that the forex consultant was not in favour of waiting to see whether the \$1.35 level would eventually be exceeded, as this could have proved to be costly, thereby accounting for why Enemalta opted for establishing a rate a few pips below the \$1.35 level (that is, \$1.345). Notwithstanding Enemalta's clarifications, NAO contends that, although the Corporation effected a marginal downward revision in its trigger rate (from \$1.35 to \$1.345), it in fact did not follow the course of action recommended by its forex consultant. This subsequently resulted in less favourable deals than had originally been planned and rendered possible by virtue of market fluctuations.

Hedging-related Planning Issues

4.3.42 This final section with respect to hedging-related planning and projections addresses a number of key issues identified by NAO. Specific reference is made to particular occasions when the RMC failed to capitalise on favourable market opportunities, in addition to other instances reflecting shortcomings in terms of its overall planning function.

4.3.43 During the routine USD overview provided by the CBM representative in the RMC meeting held on 29 July 2008, the following comment was put forward, *"...the EUR/USD rate reached a record low on 15 July 2008 at USD 1.6038/EUR. It will probably fluctuate within the \$1.55-\$1.63 range in the coming weeks."* Although the dollar was clearly weak, and notwithstanding the fact that the advantageous rate registered at the time could have positively contributed to Enemalta's operations, the RMC decided to bide its time, and close all hedging requirements for 2008 only if the spot rate reached USD 1.58 or better. In addition to this, the RMC also planned to close 50 per cent of Q1 2009 if the rate reached USD 1.60, or better. However, these targets were subsequently not reached by the RMC, as the dollar started to strengthen further. When NAO raised further queries as to why the RMC did not conclude any hedges when the USD reached record lows, the interviewed Enemalta officials commented that, *"...with the benefit of hindsight this decision could appear awkward; however one needs to put into perspective the volatility and uncertainty in the market that the RMC faced at the time."*

4.3.44 With respect to the above, NAO's concerns centre on understanding the rationale employed by the RMC in deciding not to hedge, despite the near ideal market conditions, particularly accentuated in light of the recommendations put forward by its expert consultant. In addition, NAO reiterates an earlier made point relating to the fact that counterarguments justifying the chosen course of action, and why the RMC's course of action

was considered to be more favourable than that originally recommended by its expert consultant, should have been prepared and presented by the Committee and subsequently documented in corresponding minutes.

4.3.45 Another hedging-related planning issue emerged with respect to the fuel market, with specific reference hereby being made to the RMC meeting dated 18 November 2008. During this meeting, the fuel consultant stated that the, *“...market continued to fall sharply from the \$70/bbl level it was around last meeting to between \$50-\$55 this week.”* Notwithstanding the above-indicated discernible fall in crude oil prices, the RMC maintained that no hedging on crude oil should be carried out at this particular time. This evidently ambiguous situation drew NAO’s attention, particularly when one considers the fact that this instance of inaction effectively implied that no hedging was being carried out when crude oil prices almost reached record lows.

4.3.46 When further queries were raised by NAO with respect to this issue, Enemalta defended its operations by emphasising that at this stage, the RMC was primarily focused on the restructuring of its hedged position, in other words, reducing its existent collar floors, given that the persisting low levels of oil price were in effect creating increased downside risk. As indicated earlier in this chapter, the aforementioned restructuring exercise was corroborated with documented email communication, in which the then CFO requested quotes from Goldman Sachs’ representatives. However, as already indicated, this restructuring never went through, as the relevant costs quoted in order for Enemalta to restructure its hedged position proved to be substantial, effectively ranging from \$1.8 million to \$10.1 million per hedge. Moreover, Enemalta indicated that due to the mark-to-market losses being incurred on the Corporation’s outstanding hedged positions at the time, no credit lines were deemed open for trade with respect to 2010 by any of the Corporation’s intermediaries. While this Office understands and acknowledges Enemalta’s weak financial position, and bears in mind the

weak mark-to-market position characteristic of the Corporation at the time, NAO still finds great difficulty in understanding why the Corporation was looking for open credit lines with respect to 2010 (keeping in view that such discussions took place during the RMC meeting dated 18 November 2008), when 2009 was only 48 per cent hedged.

4.3.47 NAO here considers it important to reiterate the context within which such RMC meetings took place, as it is the contextual setting that in fact accentuates Enemalta's shortcomings in this respect. Further to the RMC meetings held during end 2008, crude oil prices reached record lows; however, this opportunity was not capitalised upon by the Committee, which instead opted not to reconvene for a period of ten consecutive months. In addition, the aforementioned average hedged position of 48 per cent corresponding to 2009 remained invariably stable across the year, with no additional hedges undertaken. By implication, during the interim ten-month period characterised by the RMC's inactivity, no hedging transactions with respect to crude oil were carried out, and according to Enemalta, only spot prices were used for the purchase of fuel products. Undoubtedly of interest in this respect is the fact that while all crude oil hedging came to a definitive standstill during this ten-month period of RMC inactivity, forex hedging was still carried out. Enemalta undertook in excess of \$70 million worth of forex hedges during this period.

4.3.48 Another important aspect noted by NAO in its review of hedging-related documentation, and bearing clear relevance to the hedge planning function, were instances when Enemalta was found to be in long or short positions with respect to its USD requirements. In a document appended to the RMC meeting minutes dated 27 April 2011, it was quoted that, "...*March 2011 forward contracts with a value of USD 22 million were swapped to H2/2011 [second half of calendar year 2011] increasing the hedged volume by (\$)3.7 million in each month.*" NAO sought an explanation with regard to this matter, since such a revision in terms of USD requirements was indicative of

poor planning undertaken by the RMC, resulting in the Corporation being long on USD in Q1 2011.

4.3.49 In its reply to the above queries raised by NAO, Enemalta stated that during the month of March 2011, the Corporation had no fuel payments to honour, since the forecasted shipments originally planned for this particular month were in fact rescheduled. Notwithstanding this rescheduling, Enemalta reiterated that the forward contracts that were originally allocated to the month of March 2011, based on earlier established payment estimates, still had to be utilised by the Corporation prior to its end of month expiry. In effect, such a course of action was determined by the nature of the forward contract, the transaction corresponding to which must be exercised by its respective date of maturity. Given that these forward contracts were not going to be utilised by Enemalta against particular payments settled in March 2011, and were in fact subsequently intended for utilisation in the second half of the year, these forward contracts were sold in a back-to-back manner, and purchased afresh by the Corporation.

4.3.50 According to Enemalta, it is important to understand that the above transaction consisted of two lags. The first lag corresponded to the spot rate at which Enemalta was selling its dollar position (as at March 2011), while the second lag relates to the forward rates at which the Corporation was to utilise its dollars in the future, in this case during the second half of 2011. Therefore, this transaction entailed the Corporation selling back the positions it had originally purchased for the month of March on a spot basis (thereby corresponding to the first lag), and subsequently agreeing upon a second future lag when the required dollars were to be repurchased. In light of the above, the interviewed Enemalta officials indicated that this transaction was a purely operational one, which was mainly driven by the Corporation's cash flow considerations. Notable in this case is the fact that the RMC was informed about this decision in the subsequent meeting, whereby the

Corporation's CFO explained the underlying reasons for undertaking this transaction to the rest of the Committee's members.

4.3.51 NAO considered the above case as indicative of poor planning undertaken by the RMC, and in a similar manner, requested additional information from Enemalta with respect to cases when the Corporation found itself long or short on its USD requirements. NAO's specific interest in this regard centred on the factors that contributed to this situation, in addition to the implications and risks associated with such circumstances. Enemalta's response with respect to instances when the Corporation was short or long were, in the Corporation's view, triggered by variances experienced in the scheduling of shipments, or resulting from significant variations in fuel prices, as well as changes in credit terms offered by suppliers. The latter factor was specifically the case with respect to the long position recorded in March 2011. In fact, Enemalta further remarked that it does not lock-in 100 per cent of its estimated long-term USD requirements, leaving a small buffer in case the aforementioned variations materialise. The Corporation's perspective on short positions was that such scenarios arose when part of Enemalta's exposure was left unhedged, most frequently due to less favourable exchange rates, and in such cases, the USD requirements were bought at the prevalent spot rate.

4.3.52 On the other hand, in cases when the Corporation found itself in long positions, as exemplified through the above-described case, the corrective mechanism employed under such circumstances would ordinarily involve the then unnecessary forward contracts being swapped and rolled-over into future months. According to the Corporation, the implications of swapping long positions can bear positive results, particularly so if the rate that was originally locked-in was more favourable than the rates being traded at the time, that is, the spot rate. In addition, Enemalta indicated that it favours rolling-over of its forward contracts due to the Corporation's severe cash flow constraints. Furthermore, when queries were raised by NAO as to whether

such instances gave rise to higher transaction costs, Enemalta indicated that the costs incurred in this respect were the margins charged by banks at the point of transaction, which, in Enemalta's opinion, were minor compared to the cash flow gain associated with the transaction per se.

4.3.53 NAO is of the opinion that such an argument warrants further scrutiny. Specifically, on the understanding that the long position arises due to delays in shipment, rather than as a result of having over-hedged, then it is not clear why being in a long position could, or should, bear positive or negative results for the Corporation. The implication of being long in USD – which implies that the USD was bought earlier than the payment to a supplier needs to be made – is that the Corporation will be exposed to additional exchange rate movements occurring between the maturity of the original forward contract, and the eventual buy back of USD at a future date when the supplier is paid.

4.3.54 Moreover, NAO also analysed if there were any operating limits established by means of the Corporation's hedging policy, which would therefore regulate the address of arising long or short positions in the forex market. Interviewed Enemalta officials indicated that the RMC tried to limit instances contributing to long and short positions. To this end, the Corporation limited short positions by restricting entry into the market only when prevalent circumstances were in fact deemed opportune. On the other hand, long positions have been Enemalta's major concern, with the Corporation actively trying to mitigate such occurrences with a view towards eventually reducing the instances when it ended up being long on its USD requirements. According to Enemalta, situations characterised by their high market volatility, further increased the difficulties associated with limiting the development of long and short positions.

4.4 Analysis of Hedging Agreements: Quotations Received and Contractual Perspectives

4.4.1 This penultimate aspect of NAO's analysis with respect to the Corporation's hedging activity focuses on two key aspects central in the review of Enemalta's various hedging agreements. The first relates to the review of crude oil and forex hedging contracts entered into by the Corporation, and in this context, NAO's main interest was that of ascertaining the completeness and validity of data reviewed. Secondly, NAO's attention shifted towards the analysis of quotations requested, received and adjudicated by the RMC. Further details in relation to both aspects ensue.

Review of Contracts

4.4.2 Subsequent to the in-depth analysis of RMC minutes, and in order to ascertain completeness in terms of NAO's overall review of the hedging process, the audit team shifted its focus upon the Corporation's hedging contracts. This analytical exercise essentially entailed the review of multiple aspects relating to hedging contracts undertaken by Enemalta with respect to crude oil and forex for the period under review, that is, corresponding to 2008 up to 2011. NAO notes that the aforementioned task was an onerous endeavour. This was particularly the case with respect to the review of records relating to the above-stipulated hedging contracts, as well as in relation to the analysis of gains and losses registered per contract, which in sum, was detailed and extensive.

4.4.3 With regard to crude oil hedging, NAO requested Enemalta to provide copies of all hedging contracts entered into by the Corporation with the various investment banks/oil companies it carries out such business with. The review of this primary data allowed the audit team to verify the completeness of data represented in the Corporation's hedging-related record sheets. All crude oil hedging contracts corresponding to the period 2008 to 2011 were

scrutinised by the audit team, thereby ensuring the accuracy, or otherwise, of the variables presented in these contracts. The variables analysed in this respect included the hedging counterparty, the derivative instrument used, the commodity hedged, the commodity reference price, trade date, effective date, termination date, and notional quantity (in total and per calculation period), among others.

4.4.4 In addition, other variables based on the derivative instrument used were evaluated. For example, in the case of zero cost collars, the cap level, that is, the strike price at which Enemalta bought the call option, as well as the related floor level, that is, the strike price at which the Corporation sold the put option were analysed. On the other hand, with respect to swaps, the fixed price traded together with the specified settlement price were analysed. To this end, and in light of all of the above, NAO confirms that all crude oil hedging contracts corresponded to the entries prepared by Enemalta, and therefore, this Office considers crude oil hedging-related data provided by the Corporation in this respect to be complete and accurate.

4.4.5 In addition, NAO embarked on an extensive exercise involving the correlation of hedging-related figures provided by Enemalta to the individual settlements in the transaction listings, on a month-by-month basis with respect to the various investment banks/oil companies. Furthermore, NAO ensured that an invoice issued by the involved investment bank/oil company backed each individual monthly settlement in the transaction listings. NAO positively notes that all settlements precisely corresponded to the transaction listings retrieved from the Corporation's accounting system.

4.4.6 This Office also highlights the fact that the monthly ICE Brent crude oil prices, upon which settlements were subsequently calculated, were also examined, and apart from very slight variations (when compared to the correspondingly quoted Platts prices), such figures corresponded to the prices independently reconciled by the audit team. Moreover, NAO noted that in instances when the Corporation registered a loss on particular hedges, such losses and their

subsequent implication on the additional outlay of USD were not considered as forming part of Enemalta's expected hedge exposure.

4.4.7 On the other hand, with respect to forex hedging, records provided by Enemalta were verified and validated by NAO through the review of primary documentation, that is, by analysing all corresponding invoices presented by the various investment banks/oil companies. The variables checked by the audit team with regard to the invoices provided by Enemalta included trade date, forward date (or maturity date), amount hedged (that is Euro sold and USD bought by Enemalta) as well as the forward currency rate used. The vast majority of invoices provided by Enemalta corresponded to the records presented by the Corporation with respect to forex hedging undertaken from 2008 to 2011. It is important to note that while the 2008 and 2009 forex hedging was carried out at the Petroleum Division in Birżebbuġa, corporate responsibility for this function was redesigned thereafter, and in fact, for the years 2010 and 2011, forex hedging was carried out by the Finance Section at the Marsa Power Station.

4.4.8 NAO's concern in this respect centred on the large number of invoices retrieved from records kept at the Petroleum Division, which did not form part of the original compilation of data provided by the Corporation. NAO's analysis of such information, and subsequent confirmations by Enemalta attesting to this, indicated that these records possibly referred to the spot transactions effected by the Corporation during the 2008 and 2009 period. Such a trend is clearly indicative of the fact that Enemalta Corporation was, in fact, short in terms of its US dollar requirements on various instances.

4.4.9 NAO requested additional information in reference to such instances; however, the Petroleum Division's Financial Controller confirmed that spot purchases were recorded in the Division's daily cash flow file, which had a dedicated sheet for each day, and therefore, the required data was not aggregated in one sheet. Retrieving the required information was not

considered a feasible exercise by the NAO audit team given the manner and format in which such data was maintained with respect to 2008 and 2009 transactions. On the other hand, for the years 2010 and 2011, Enemalta provided NAO with a sheet recording the amount of spot transactions carried out by the Corporation.

Quotations

4.4.10 In addition to the review of hedging contracts, NAO's analysis also addressed requests for quotations put forward by Enemalta with respect to its crude oil and forex hedging arrangements. Further to the above, NAO also sought to determine and understand the approaches employed by Enemalta in the identification of its hedging partners. Such analysis also encompassed the review of systems utilised with respect to the retention of requested quotations, mechanisms employed in the comparison of provided rates, as well as considerations emerging with respect to the eventual selection of the chosen hedging intermediary and details pertaining to the concluded deals. When queries were raised by NAO in reference to the above, Enemalta commented that although the Corporation is largely driven to operate around constraints imposed by its credit limits, quotations were nonetheless requested. It is in this context that NAO considered this matter as warranting further review.

4.4.11 From the review of contracts carried out with respect to forex hedges, NAO noted that Enemalta mainly chose to deal with Volksbank, especially in the period 2008 up to 2009. Furthermore, Enemalta commented that Volksbank had always been highly competitive and very aggressive in terms of pricing, which according to the Corporation accounts for why several trades were in fact executed with this bank. In addition, Enemalta remarked that in the past, the Corporation experienced credit restrictions in its dealings with Volksbank, mainly in terms of the trading period, especially when the tenor requested was beyond a year. Prior to 2010, Enemalta mainly traded its forex

requirements with local banks (thereby including Volksbank); however, due to credit restrictions, the Corporation eventually commenced the negotiation of trading agreements with foreign banks, such as Barclays and Nomura. This change in approach allowed Enemalta to further diversify its position while simultaneously providing the Corporation with the opportunity to seek alternative pricing vis-à-vis what was being locally offered.

4.4.12 The above statements made by Enemalta were subsequently confirmed by NAO, noting that while the majority of hedges carried out in 2008 and 2009 were closed with Volksbank, a small number of other deals were in fact concluded with the Hongkong and Shanghai Banking Corporation (HSBC), Banif Financial Group, Bank of Valletta (BOV), as well as Goldman Sachs. NAO also confirmed statements made by Enemalta with respect to 2010 and 2011, in which case the Corporation supplemented its list of local banks, which it traded with, with other foreign banks. In this case, forex hedges were more evenly distributed between Volksbank, Banif, BOV, HSBC, Barclays and Nomura.

4.4.13 With reference to crude oil hedging, NAO noted that Enemalta's main trade partner was Goldman Sachs, especially throughout 2008, when the vast majority of deals were concluded with this firm, and only a minority concluded with Barclays Capital (deals that were in fact settled with Mitsui in 2008 had been agreed upon in 2007). During the period 2009 up to 2011, deals were concluded with Goldman Sachs, Barclays Capital and British Petroleum. In view of the above, Enemalta declared that with respect to oil hedging, Goldman Sachs were the most aggressive, offering the Corporation the most favourable hedging deals while simultaneously providing more flexibility in terms of credit lines. That said, and as indicated above, Enemalta entered into other International Swaps and Derivatives Association agreements with other investment banks/oil companies from 2009 up to 2011. According to Enemalta, such a manoeuvre, which involved trading with firms such as British Petroleum, was devised so as to expand the

Corporation's portfolio of counterparties and ultimately put itself in a better position to lock-in at more competitive levels. Furthermore, the Corporation stated that during 2010, trade with British Petroleum notably increased, thereby countering the Corporation's reliance on Goldman Sachs.

4.4.14 NAO acknowledges and finds plausible the diverse explanations put forward by Enemalta with respect to its selection of hedging partners. Moreover, while bearing in mind the limited timeframes within which hedging operations must be executed, this Office nevertheless sought to review and analyse the quotations submitted and comparisons drawn between offers posted by counterparties with respect to crude oil and forex hedging. To this end, Enemalta provided a number of email exchanges, dated 2008, mainly between the Corporation's then CFO and officials from Mitsui, Barclays and Goldman Sachs corresponding to indications on Brent crude zero cost collars and reference swap prices. Other emails included a detailed list of indicative prices in relation to different cap and floor levels, with respect to the proposed 2008 restructuring addressed earlier in this report.

4.4.15 Various points emerged following NAO's analysis of quotations provided by Enemalta. First, NAO noted that all the hedging-related quotations provided by Enemalta exclusively corresponded to crude oil hedging, and no quotations with respect to forex hedging were in fact provided by the Corporation. More specifically, and as indicated above, all email communication provided by Enemalta corresponded to the crude oil hedging undertaken by the Corporation during 2008. In this respect, NAO noted that Enemalta did not employ a systematic approach in its endeavours at sourcing quotations from investment banks/oil companies, but merely adopted an ad hoc manner. As already stated in the above text, the indicative quotes provided by Enemalta were only based on email correspondence exchanged between the Corporation's then CFO and officials from investment banks/oil companies, and it is in this respect that NAO considers this process to be ineffectively managed and lacking in terms of transparency.

4.5 An Analysis of Enemalta's Expected Exposure and Gains/Losses Registered

4.5.1 This final aspect of NAO's review shifts analytic focus on Enemalta's computation of its expected exposure, that is, how the Corporation establishes the volume of fuel to be procured, and how this in turn relates to hedge coverage. Essentially, the ensuing section assumes pivotal importance, in the sense that a link is established between actual fuel procurement, as discussed in Chapter 2, and hedging activity, as discussed throughout this Chapter.

4.5.2 Various issues bear direct relevance and impact upon this link, including the system of conversions utilised by Enemalta in transforming fuel oil procurement requirements into crude oil hedging expected exposure. Finally, this section of the audit report draws to an end with a comprehensive review of the gains and losses registered by Enemalta Corporation with respect to its hedging activity undertaken from 2008 up to 2011.

Expected Exposure

4.5.3 Enemalta's planning capabilities were subjected to further NAO scrutiny, more specifically in terms of their evaluation and establishment of the relationship between the expected exposure of fuel oil and gasoil purchased, vis-à-vis crude oil and forex hedging. In discussing Enemalta's expected exposure, it is imperative to note that the Corporation has the option not to lock-in its entire anticipated exposure (100 per cent) with respect to crude oil and forex hedging, and hence, purchase its remaining requirements at spot prices.

4.5.4 According to Enemalta, its expected exposure with respect to crude oil for the period 2008 to 2009, was based and calculated on the Corporation's need for fuel oil. However, in 2010 and 2011, the Corporation's gasoil requirements were also incorporated into Enemalta's exposure.

4.5.5 As indicated in the preceding text, an essential element in establishing the Corporation's expected exposure is the conversion of fuel oil and gasoil, recorded in metric tonnes, to crude oil, which is reported in barrels. Although gasoil requirements have a different conversion rate to that of fuel oil, Enemalta assumed and applied a similar rate due to the fact that according to the Corporation, low quantities of this product were purchased, and any differences arising in this respect would have been immaterial. Further to the above, Enemalta remarked that, in theory, a conversion rate of 7.46 was to be applied with respect to gasoil.

4.5.6 In addition, and as was already outlined in Chapter 3, Enemalta commented that the required fuel oil, denoted in metric tonnes, was converted to barrels of crude oil at a rate of 6.35. However, NAO's analysis of data corresponding to the years 2008 and 2009 indicated that the conversion rate utilised was in fact set at 6.7, while for 2010 and 2011, a rate of 6.33 was used. When NAO raised queries regarding this discrepancy in the conversion rate utilised, Enemalta commented that this conversion was more of a rule of thumb, which is, in this Office's view, a somewhat contentious assertion given that such conversion rates should presumably exhibit a certain element of consistency. Apart from other information provided by Enemalta, which is to be presented in the ensuing text, NAO used the various conversion rates submitted by the Corporation to compile the data presented in Table 27. Such rates were essential in populating the aforementioned table, as information maintained by Enemalta with respect to 2008 and 2009 was recorded differently when compared to data retained for 2010 and 2011.

4.5.7 The expected exposure and the respective hedge percentages relating to crude oil for the years 2008 up to 2011 are outlined in Table 27. The table summarily illustrates, on a quarterly basis, the assumed fuel deliveries in metric tonnes coupled with the associated assumed crude oil in barrels. In addition, the hedged volume, in metric tonnes and in barrels (crude oil), is represented together with the average hedged percentage per quarter. In the

last column the implemented conversion from metric tonnes to barrels or vice versa, is provided for ease of reference.

Table 27: Hedging per Quarter in terms of Barrels and Metric Tonnes

Quarter	Assumed Fuel Deliveries (MT)	Assumed Crude Oil (bbls)	Hedged Volume (MT)	Hedged Volume (bbls)	Hedged %	Conversion Rate (MT/bbls)
Q1 2008	150,000	1,005,000	143,284	960,000	95.52	6.70
Q2 2008	150,000	1,005,000	107,463	720,000	71.64	6.70
Q3 2008	150,000	1,005,000	132,537	888,000	88.36	6.70
Q4 2008	150,000	1,005,000	132,537	888,000	88.36	6.70
Q1 2009	150,000	1,005,000	85,970	576,000	57.31	6.70
Q2 2009	150,000	1,005,000	85,970	576,000	57.31	6.70
Q3 2009	150,000	1,005,000	57,313	384,000	38.21	6.70
Q4 2009	150,000	1,005,000	57,313	384,000	38.21	6.70
Q1 2010	148,373	939,198	164,929	1,044,000	111.16	6.33
Q2 2010	148,373	939,198	164,929	1,044,000	111.16	6.33
Q3 2010	148,373	939,198	163,452	1,034,649	110.16	6.33
Q4 2010	148,373	939,198	163,372	1,034,142	110.11	6.33
Q1 2011	145,024	918,000	102,607	649,500	70.75	6.33
Q2 2011	145,024	918,000	102,607	649,500	70.75	6.33
Q3 2011	145,024	918,000	85,229	539,500	58.77	6.33
Q4 2011	145,024	918,000	95,024	601,500	65.52	6.33

4.5.8 In reference to Table 27, NAO considers it necessary to point out that a number of assumptions were utilised in the compilation of data, which are expounded upon in further detail hereunder. One such assumption has already been indicated above, that is, with respect to the conversion rate utilised. Although Enemalta indicated that a rate of 6.35 is ordinarily employed in such conversions, different rates were in practice employed by the Corporation. The assumption made by NAO in this respect is that Enemalta utilisation of diverse conversion rates is in fact correct. Furthermore, no conversion rate was indicated in the Enemalta reports corresponding to 2010, hence, NAO assumed that a similar rate used for 2011 (that is, 6.33) was applicable in this case too. Moreover, total assumed crude oil in barrels for 2010 and 2011 was calculated on the basis of the tariff rates set for these respective periods, which is a matter that has already been commented about at considerable length in section 4.2.

- 4.5.9 Further to the above, the 2010 data provided by Enemalta did not incorporate a zero cost collar of \$125-\$75 for the calendar year 2010. This zero cost collar was for 32,000 barrels per month, accounting for 384,000 barrels on an annual basis. Although this missing hedge did not result in a significant impact in settlement terms, NAO nonetheless considered it appropriate for such an agreement to be incorporated in its subsequent analysis.
- 4.5.10 A number of issues emerged from the analysis carried out by NAO with respect to crude oil. According to the assumed consumption registered by Enemalta in 2008, the Corporation had an average hedge coverage of 85.97 per cent, which in NAO's view, implies that the Corporation was well protected. On the other hand, in 2009, Enemalta only had 47.76 per cent of its requirements hedged. As outlined earlier in the preceding sections of this audit report, this period of low hedge coverage coincided with the stretch of ten consecutive months within which the RMC failed to schedule meetings. In addition to 2009, low hedge coverage with respect to crude oil was registered in 2011, where an average total hedged coverage of 66.45 per cent was recorded.
- 4.5.11 With regard to the decision taken by the RMC not to hedge and maintain the 66.45 per cent cover over the expected exposure of crude in 2011, NAO is of the opinion that this decision might not have represented the ideal way forward, and that the Corporation should have reacted by increasing its hedge coverage. NAO's understanding of this situation is that throughout 2011, Enemalta was somewhat inconsistent in their hedging strategy, indicated in terms of the uncertainty exhibited with respect to what approach they should adopt. This uncertainty related to the ambiguity manifested with respect to the Committee's adopted hedging strategy, which fluctuated between defending the tariff and operating as a profit-driven organisation. Although Enemalta consistently stated that its hedging strategy focused on the defence of the established tariff, NAO considers the 33.55 per cent of the

Corporation's position on crude left unhedged as grossly incongruent with such a strategic alignment. Moreover, NAO considers the absence of explanations justifying why the RMC decided to leave a substantial percentage of its expected exposure unhedged, and instead purchase at spot price as a notable shortcoming, which should have ideally been documented in the RMC minutes.

4.5.12 In relation to the above analysis, NAO's main concern emerges with respect to crude oil hedging undertaken by the RMC in 2010. According to information provided by Enemalta, and subsequent analysis carried out by NAO, it resulted that the Corporation was over-hedged in respect to the corresponding assumed delivery of fuel oil and gasoil, and registered an average rate of 110.65 per cent in 2010. NAO considers such an over-hedged scenario as bearing additional implicit risk, which in addition, is inconsistent with Enemalta's risk-averseness approach towards hedging.

4.5.13 Enemalta disagreed with NAO's analysis when stating that the Corporation registered an over-hedged positions in terms of its crude oil hedging in 2010. The Corporation's specific point of contention in this respect centred on the zero cost collar referred to in clause 4.5.9. Enemalta stated that when the new tariff was being devised, the Corporation was instructed to exclude this collar structure from the tariff computation, primarily on the basis that it was expected to yield a neutral settlement, which was what actually transpired (apart from the minor loss of approximately \$5,000). Despite the Corporation's contention in this respect, NAO maintains its position that the aforementioned zero cost collar should be factored into Enemalta's hedge coverage, as such a hedge still bore an element of risk, which could have materialised had the price of crude oil regularly gone below the \$75 mark during 2010.

4.5.14 NAO also considered it essential to compare the assumed fuel oil and gasoil deliveries (which were subsequently converted into barrels for hedging purposes) to the actual oil deliveries in the period under review, that is, from

2008 to 2011. Given that Enemalta confirmed that gasoil was not taken into consideration with respect to hedging prior to 2010, NAO decided to eliminate such product purchases from the following analytical review. The above-described analysis is summarily presented in Table 28, which also interestingly delves into the hedged volume percentages with respect to fuel oil purchased and assumed fuel oil delivery.

Table 28: Comparison between Actual and Assumed Fuel Oil and Gasoil Deliveries

Year	2008	2009	2010	2011
Fuel Oil (MT)	722,136	506,102	511,965	544,750
Gasoil (MT)	-	-	98,608	74,215
Total Oil Purchased (MT)	722,136	506,102	610,573	618,965
Assumed Oil Deliveries (MT)	600,000	600,000	593,490	580,096
Total Hedged Volume (MT)	515,821	286,566	656,681	385,467
Hedged Volume % with respect to Oil Purchased	71.43	56.62	107.55	62.28
Hedged Volume % with respect to Assumed Delivery	85.97	47.76	110.65	66.45

4.5.15 NAO interestingly notes that certain discrepancies arise when comparing the hedged volume percentages with respect to fuel oil purchased against the corresponding annual percentages relating to assumed delivery. At a basic level of analysis, it is immediately apparent that the hedged volume percentage with respect to assumed delivery was in effect greater than the corresponding fuel oil purchased percentage in the case of 2008, 2010 and 2011. However, NAO notes that comparisons drawn with respect to 2008 must be appropriately contextualised, as the 722,136 metric tonnes reported in Table 28, in effect correspond to an extended reporting period, which was of 15 months instead of the customary calendar period.

4.5.16 In light of the figures provided in Table 28, Enemalta commented that predicting actual consumption behaviour presents an element of difficulty, which as a result, gives rise to variations. In turn, these variations impact upon the Corporation's hedged volume percentage with respect to assumed delivery (based on estimated consumption). For example, Enemalta stated

that in 2010, consumption dropped by 2.53 per cent over 2009, whereas, in 2011, consumption surged by 3.07 per cent over 2010.

4.5.17 In contrast to the above analysis presented with respect to 2008, 2010 and 2011, NAO's review of 2009 results indicated that Enemalta, in effect, covered more of its exposure in relation to assumed fuel deliveries. In this case, the latter-referred hedged volume percentage stood at 47.76 per cent, which is evidently less than the 56.62 per cent hedged volume percentage with respect to fuel oil purchased. Contrasting the above scenario are the hedged volume percentage discrepancies emerging with respect to 2010 and 2011. In this case, the hedged volume percentage with respect to assumed delivery exceeded that for oil purchased, registered at 107.55 per cent and 62.28 per cent for 2010 and 2011, respectively. NAO's concern in this respect relates to the incongruence arising in terms of the above-quoted hedged volume percentages.

4.5.18 In addition to evaluations on crude oil hedging, NAO also undertook an extensive review of forex hedging expected exposure. At a general level of analysis, such a review resulted in various concerns emerging with respect to the accuracy and completeness of Enemalta's record of such estimates. Apart from the list of contracts identified and addressed in section 4.4, NAO also reviewed documentary evidence attesting to the Corporation's relevant analysis undertaken in conjunction with the compilation of its expected exposure with respect to forex hedging. Most importantly, NAO noted that these records were all provided by Enemalta, and the following analysis was completely based on information rendered available by the Corporation.

4.5.19 The first issue of note in this regard was the level of complexity associated with the analysis of expected exposure-related information, especially with respect to the period 2008 to 2009. NAO was provided with various versions of the same data records, which hindered the audit team in its endeavours in trying to establish the Corporation's estimated position at any one point in

time (most important in this context is Enemalta’s position at the beginning of the year). Given the above limitations, NAO opted to base its analysis on Enemalta’s position as at end of year, as was in fact reported in one of the source documents provided by the Corporation. Subsequent to this, NAO also reviewed the Corporation’s expected exposure positions for 2010 and 2011, and it must be noted that for this period, when compared to previous years, calculations per month, quarter and year were clearly outlined.

4.5.20 Table 29 provides a synopsis of the analysis carried out by NAO, based on the information provided by Enemalta. Summarily, this table provides a quarter-based overview of Enemalta’s forex exposure and its corresponding hedging undertaken, which all lead to the establishment of hedged percentage volumes with respect to expected exposure and actual/estimate exposure.

Table 29: Quarterly Overview of Forex Exposure, Hedging Undertaken and Hedged Percentage Volumes

Month	Expected MT	Expected Exposure USD	Actual / Estimate MT	Actual / Estimate Exposure USD	Forwards USD	Forwards EUR	Hedged % Over Expected Exposure USD	Hedged % Over Actual / Estimate Exposure USD
Q1 2008	150,000	64,680,000	126,100	62,540,161	61,100,000	42,642,893	94.47	97.70
Q2 2008	150,000	64,680,000	131,423	64,433,543	41,500,000	29,184,807	64.16	64.41
Q3 2008	150,000	64,680,000	165,000	80,850,000	30,000,000	21,320,363	46.38	37.11
Q4 2008	150,000	64,680,000	116,050	66,375,720	20,000,000	13,707,888	30.92	30.13
Q1 2009	150,000	64,680,000	146,776	67,053,506	25,000,000	17,431,349	38.65	37.28
Q2 2009	150,000	64,680,000	165,000	80,850,000	25,000,000	17,448,503	38.65	30.92
Q3 2009	150,000	64,680,000	165,000	80,850,000	25,000,000	17,316,603	38.65	30.92
Q4 2009	150,000	64,680,000	165,000	80,850,000	30,000,000	20,822,200	46.38	37.11
Q1 2010	156,000	81,240,000	123,000	65,070,000	49,500,000	33,395,788	60.93	76.07
Q2 2010	144,000	72,960,000	111,000	56,790,000	49,500,000	33,215,434	67.85	87.16
Q3 2010	156,000	81,240,000	123,000	65,070,000	48,900,000	32,791,397	60.19	75.15
Q4 2010	144,000	72,960,000	111,000	56,790,000	82,900,000	57,129,802	113.62	145.98
Q1 2011	135,626	77,638,558	74,026	41,693,930	44,800,000	34,109,048	57.70	107.45
Q2 2011	135,626	77,638,558	140,358	93,903,087	100,200,000	73,964,737	129.06	106.71
Q3 2011	147,355	86,879,426	138,000	103,468,916	95,600,000	69,570,814	110.04	92.39
Q4 2011	135,626	77,638,558	131,000	100,000,000	109,500,000	79,140,514	141.04	109.50

4.5.21 Information gathered from meetings held with Enemalta officials indicated that forex hedging was limited to fuel oil and gasoil requirements only. This

assertion was corroborated by data retrieved from Enemalta's expected exposure records, which confirmed that forex hedging was in fact limited to fuel oil and gasoil requirements. However, following the vetting of additional documentation supplied by the Corporation, NAO noted that other products (such as, diesel, Jet A1 and unleaded petrol) were being settled through forward contracts undertaken in 2008 and 2009. Notwithstanding the above, NAO limited its analysis of expected exposure to fuel oil and gasoil.

4.5.22 In order to calculate the expected exposure (columns 2 and 3 of Table 29 refer) Enemalta estimated the price of fuel oil at 490USD/MT and the price of gasoil at 690USD/MT. The respective expected metric tonnes per month, in correlation to the expected exposure in USD, were calculated upon these estimates. For 2008 and 2009, the expected metric tonnes per month was estimated at 50,000 MT (150,000 MT per quarter), and the respective expected exposure in USD terms was calculated at \$21,560,000 (\$64,680,000 per quarter). NAO noted that the expected exposure in USD was calculated on the basis of an expected delivery of 44,000 metric tonnes per month (\$21,560,000 against 490USD/MT), which was inconsistent with the expected metric tonnes set at 50,000. In light of the above, NAO based its subsequent hedged cover percentage analysis upon expected exposure in USD terms, and not in metric tonne terms.

4.5.23 For the period 2008 to 2009, NAO noted that there was no direct reference made to the Corporation's different exposure with respect to fuel oil and gasoil; however, from 2010 onwards, a different method of calculation, factoring in gasoil, was introduced. For 2010, the expected exposure was calculated on the basis of 44,000 MT per month for fuel oil (at an expected exposure in USD of \$21,560,000) and 12,000 MT on a bi-monthly basis for gasoil (at a price of \$8,280,000). Such calculations indicated that the estimated prices for fuel oil and gasoil, respectively set at 490USD/MT and 690USD/MT, were being maintained for 2010.

4.5.24 Whereas 2010 was characterised by estimated price stability, the same cannot be applied to 2011, in which case, fuel oil and gasoil prices were amended, taking into consideration the Corporation's hedged and unhedged positions with respect to oil purchased. This resulted in different figures being registered with respect to expected exposure in metric tonnes and USD terms. Such revisions included an expected exposure of 41,299 MT (on a monthly basis) and 11,729 MT (on five months out of the calendar year) for fuel oil and gasoil, respectively, as well as an expected exposure in USD amounting to \$22,799,230 (in the case of fuel oil) and \$9,240,868 (with respect to gasoil). The aforementioned changes to the Corporation's expected exposure were in fact reflected in Table 29, as NAO accumulated the quantities of fuel oil and gasoil thereby providing a single figure for each quarter.

4.5.25 Further to the expected exposure, Enemalta provided the actual/estimate metric tonnes and actual/estimate exposure in USD (columns 4 and 5 of Table 29 refer). NAO found difficulty in understanding the terminology employed by Enemalta with respect to the 'actual/estimate' classification of metric tonnes and USD, failing to grasp how actual payment of fuel and USD obligations could be simultaneously termed as estimate. In light of the ambiguity of this term, this Office believes that this categorisation in fact referred to actual payments made by Enemalta with respect to shipments arrived, as opposed to the expected exposure, which refers to a monthly averaged position, and therefore proceeded to treat this variable in such a manner.

4.5.26 Moreover, basing its workings on expected exposure-related documentation provided by Enemalta, NAO took into consideration and calculated the forward agreements in USD entered into by the Corporation, together with their equivalents in Euro. This analysis aided NAO in its efforts at determining Enemalta's hedged percentages with respect to its expected exposure and actual/estimate exposure. In addition, such a review was regarded as pivotal

by NAO, since it served to identify the different systems utilised by Enemalta, throughout two distinct periods, in its calculation of hedged proportions. NAO noted that on one hand, in the period 2008 to 2009, the hedged proportion was based on forward contracts as a percentage of actual/estimate exposure; whereas, on the other hand, in 2010 to 2011, the forward contracts were taken as a percentage of expected exposure.

4.5.27 Table 30 presents a detailed comparison of hedged percentages corresponding to various factors, namely, with respect to oil purchased by the Corporation, expected exposure in USD, as well as actual/estimate exposure in USD. Essentially, NAO sought to reconcile the various sources of data provided by Enemalta with a view to accurately establish the Corporation's hedged volume coverage. The first variation noted in this regard was that between the hedged volume percentage with respect to expected exposure and the hedged volume percentage with respect to the actual/estimate exposure in USD. In NAO's view, such variations are understandable as the expected exposure is just an approximation created by Enemalta, and further to this, unplanned variances in the arrival of shipments were a regular occurrence, which in effect contributed to this discrepancy.

4.5.28 Notwithstanding the above, NAO's main concern revolves around the variations arising between the hedged volume percentage with respect to actual/estimate exposure in USD and the hedged volume percentage with respect to oil purchased in Euro terms (as sourced from the Corporation's various Annual Reports). Although NAO understands that small variations may arise, the significant discrepancies that emerged in view of this analysis are of great concern. As rendered evident in Table 30, in 2010 alone, the hedged volume percentage discrepancy evaluated ranged from 68.28 per cent with respect to oil purchased to 96.09 per cent relating to actual/estimate exposure in USD. A similar scenario pans out in 2011, where a hedged volume percentage difference of between 83.33 per cent and

104.01 registered with regard to oil purchased and actual/estimate exposure in USD, respectively.

Table 30: Comparison of Forex Hedged Volume Percentages

Year	2008	2009	2010	2011
Fuel Oil (EUR)	219,552,950	131,284,475	185,295,180	259,646,880
Gasoil (EUR)	46,849,779	32,021,784	43,970,032	48,495,314
Total Oil Purchased (EUR)	266,402,729	163,306,259	229,265,212	308,142,194
Total Hedged Volume (EUR)	106,855,951	73,018,655	156,532,421	256,785,113
Hedged Volume % with respect to Oil Purchased in EUR	40.11	44.71	68.28	83.33
Hedged Volume % with respect to Expected Exposure in USD	58.98	40.58	75.65	109.46
Hedged Volume % with respect to Actual/Estimate Exposure in USD	57.34	34.06	96.09	104.01

4.5.29 In addition to the above, NAO is also concerned about the discrepancies noted between the list of forex hedging contracts entered into by Enemalta as compared to the Corporation's expected exposure records. NAO logically assumed that comparisons between the Corporation's total hedged volume in USD and EUR (as sourced from Enemalta's expected exposure data sheet) should have closely corresponded with the list of forex hedging contracts similarly provided by Enemalta.

4.5.30 In the case of 2010, the discrepancy was deemed understandable by NAO, since the list of contracts sheet also included spot transactions, which amounted to approximately \$36 million (equivalent to an approximate €27 million). However, similar justifications cannot be put forward with respect to 2011, for according to Enemalta, spot transactions only amounted to \$1.7 million (€1.2 million), while the corresponding discrepancy identified in Table 31 amounted to an approximate \$50 million. Similar concerns emerge with respect to 2008 and 2009, in which case, the discrepancies registered were also significant, and impossible for this Office to reconcile.

4.5.31 NAO also explored the possibility that the records sheet submitted by Enemalta with respect to 2008 and 2009 factored in spot transactions. However, as indicated earlier, Enemalta reconfirmed that spot purchases for this period were recorded in the Corporation's daily cash flow file, which

consisted of a separate sheet for each day. Enemalta further explained that the files which recorded the forward deals were necessary for the end of year audit and therefore, only forward deals were included in the aforementioned 2008 and 2009 documentation submitted for NAO's review.

Table 31: Comparative Reconciliation of Forward Contracts

		2008	2009	2010	2011
Forward Contracts as per Records Sheet	USD	198,800,000 (382,900,000)	151,050,000 (223,822,937)	272,804,988	401,238,863
	EUR	141,459,555 (262,860,513)	104,816,735 (154,196,175)	188,648,482	294,374,414
Forward Contracts as per Exposure Sheet	USD	152,600,000	105,000,000	230,800,000	350,100,000
	EUR	106,855,951	73,018,655	156,532,421	256,785,113

Note: The figures represented in brackets in the above table are inclusive of forward contracts utilised with respect to diesel, Jet A1 and unleaded petrol.

Gains and Losses Registered with respect to Hedging

4.5.32 The final, and perhaps most important aspect of NAO's analysis of Enemalta's hedging activity, centres on the gains and losses registered by the Corporation with respect to hedging in correspondence to the period under review. This analytical review of results attained with respect to hedging is addressed in the ensuing paragraphs and tables, in which case, NAO verified the Corporation's performance with respect to crude oil and forex hedging. It is important to note that with respect to gains and losses, NAO took into consideration all contracts that matured during the period 2008 up to 2011. In effect, this meant that hedging contracts undertaken in 2007, which matured in 2008, were in fact included in this audit review, whereas contracts entered into in 2011, yet which matured in 2012 were scoped out of this audit.

4.5.33 NAO deems it pertinent to indicate that figures presented in its analysis might not precisely correspond with data presented in the Annual Financial Statements, essentially due to the accounting rules prescribed by

International Accounting Standards (IAS) 39. Specifically, the reports provided by Enemalta, and utilised in NAO's review, included the realised gains and losses arising on each derivative contract. In other words, this data entailed the reported actual cash flows that the Corporation received or paid upon maturity of each contract, as verified by this Office in the testing carried out with respect to cash settlements against transaction listings and invoices.

4.5.34 IAS 39 requires that all derivative contracts are measured at each reporting date at their fair value, which at any given point in time comprises unrealised gains or losses. In crude terms, the fair value at which the derivatives must be accounted for represents an approximate value at which a derivative contract can be exited at the reporting date itself. This represents the best estimate, as at the reporting date, of the present value of future cash flows arising from the contractual terms of the derivative. Needless to say, market developments dictate that the eventual cash flows will differ from expectations. These movements in expectations are captured, in accordance with IAS 39, through a mechanism whereby the unrealised gains and losses are updated periodically (at least at each reporting date), and are reversed in their entirety upon maturity of a derivative contract. At this stage, the realised gain or loss (which should correspond to the reports provided by Enemalta) is recognised in the accounting records.

4.5.35 Therefore, out of necessity, differences arise between the accounting results (which not only include realised gains and losses, but also movements in unrealised gains and losses) and the reports given by Enemalta (which only include realised gains and losses). It should, however, be borne in mind that, on any given contract, the movements in unrealised gains and losses will net-off to zero if one considers the entire duration of the contract, such that the ultimate net result accounted for under IAS 39 is equal to the realised gains or losses. The difference from the reports provided by Enemalta is simply a timing difference, that is, timing of when the respective gains or losses are recognised in the income statement.

4.5.36 Critically important in this respect is the association of the gains and losses registered by Enemalta through its hedging activity, with the theoretical background presented by NAO in clause 3.5.1. This latter-referred clause essentially states that the basic principle of hedging was the matching of two opposing sensitivities, undertaken in such a manner so that value changes on both sides of the created position cancel out one another. Hence, losses registered on derivative contracts were a direct result of the price of oil having decreased to below expected levels, which implies that the Corporation purchased oil at spot prices that were at low levels. On the other hand, gains registered on derivative contracts were a reflection of the Corporation having purchased oil at spot prices that were at high levels. Each of these gains and losses should have, in theory, offset one another to the extent of the notional amount of derivatives undertaken.

4.5.37 As background to the gains and losses registered by Enemalta with respect to crude oil hedging, NAO deemed it important to illustrate the Platts prices for ICE Brent crude for the period under review, thereby contextualising the settlements paid or received. Following this Office’s review, NAO confirms that the differences in the list of crude oil prices presented in Table 32, as compared with the average monthly prices quoted in Enemalta’s settlement records, were minor and insignificant.

Table 32: Monthly Average ICE Brent Crude Oil Platts Prices

Year 2008	ICE Brent Crude (\$/bbl)	Year 2009	ICE Brent Crude (\$/bbl)	Year 2010	ICE Brent Crude (\$/bbl)	Year 2011	ICE Brent Crude (\$/bbl)
Jan	91.91	Jan	45.71	Jan	77.05	Jan	96.89
Feb	94.67	Feb	43.86	Feb	74.84	Feb	104.01
Mar	102.87	Mar	47.42	Mar	80.00	Mar	114.67
Apr	110.43	Apr	51.39	Apr	85.86	Apr	123.07
May	124.68	May	58.59	May	77.03	May	114.44
Jun	133.74	Jun	69.20	Jun	75.70	Jun	113.72
Jul	134.56	Jul	65.75	Jul	75.35	Jul	116.66
Aug	115.29	Aug	73.07	Aug	77.15	Aug	109.91
Sep	100.87	Sep	68.26	Sep	78.44	Sep	109.77
Oct	73.68	Oct	74.01	Oct	83.52	Oct	108.67
Nov	54.75	Nov	77.62	Nov	86.16	Nov	110.48
Dec	43.05	Dec	75.24	Dec	92.25	Dec	107.65

4.5.38 Further to the hedging analysis already presented in section 4.4, which encompassed the review of settlements effected with respect to crude oil, the following review outlines the gains and losses registered by Enemalta in summary format. In this context, NAO deems it necessary to reiterate that audit analysis entailed the detailed review and vetting of each individual settlement effected by Enemalta during the period 2008 to 2011. In addition to the above, NAO considered it appropriate to incorporate gains and losses registered by Enemalta on the crack spread with respect to fuel oil, to its corresponding gains and losses recorded on crude oil hedging. In effect, the Corporation only undertook two crack spread hedges, one for Q2, Q3 and Q4 of calendar year 2011, and another for Q1 and Q2 of calendar year 2011.

4.5.39 A comparison of gains and losses calculated by the NAO audit team, to corresponding figures presented in the Corporation's annual reports, resulted in certain discrepancies. As indicated above, NAO's review entailed the analysis of each settlement, duly verified against corresponding invoices, in addition to the review of the conversion in Euro terms in the transaction listings. NAO considers the discrepancy registered in 2008 as attributable to the extended reporting period, which was established at a 15-month interval according to the Corporation's 2009 Annual Report, and was therefore deemed not to be of concern. Similarly not of concern were the discrepancies registered with respect to 2010 and 2011, which proved to be immaterial in nature. However, NAO was somewhat concerned at the discrepancies that arose with respect to 2009, as the loss presented by Enemalta in its annual report (€49,503,000) was approximately €1.6 million more than the loss arrived at following NAO's calculations (€47,948,265).

4.5.40 Enemalta confirmed that the realised results for derivatives maturing in 2009 were in fact €47.9 million, as identified by NAO. According to the Corporation, the discrepancy of approximately €1.6 million related to various transactions which had previously been recognised by Enemalta in its hedging reserve, and which related to losses on derivative contracts that had yet to be

recycled from the hedging reserve to the Corporation's income statement in accordance with IAS 39. The discrepancy was in fact identified by the Corporation during its preparation of the financial statements for 2009. Enemalta noted that the ageing of the discrepancies was such that it was not considered practical or feasible for the Corporation to identify the individual transactions that had given rise to the discrepancies. However, the Corporation did ascertain that the total amount of the discrepancy was €1.6 million, as well as ascertaining that the position reported as at the end of 2009 was correct.

4.5.41 Enemalta proceeded in stating that accordingly, the amount of €1.6 million was transferred out of the reserve and recognised in the income statement in 2009. The Corporation argued, that in determining this approach, due consideration was given to materiality, as well as to the IAS 8 criteria, which determine those instances when an entity should restate its prior year financial statements. In this light, the Corporation determined that the amount involved was not material, and neither did it satisfy the IAS 8 criteria of necessitating retrospective restatement. It is in this context that the Corporation therefore believes that the corrective accounting entry recorded in 2009 was appropriate, and was fully compliant with the requirements established in IAS 8.

4.5.42 NAO's workings with respect to the above are presented in tabular format in Tables 33 and 34, which respectively address USD and EUR crude oil hedging settlements for the years 2008 through to 2011.

Table 33: Crude Oil Hedging Settlements in USD

Year	Goldman Sachs	BP	Barclays	Mitsui	Settlement in USD
2008	(3,092,412)	0	0	6,577,420	3,485,008
2009	(54,665,056)	0	(10,024,672)	0	(64,689,728)
2010	(4,195,313)	(2,034,311)	2,001,104	0	(4,228,520)
2011	41,715,125	26,970,461	6,223,406	0	74,908,992
Total	(20,237,656)	24,936,150	(1,800,161)	6,577,420	9,475,753

Table 34: Crude Oil Hedging Settlements in EUR

Year	Goldman Sachs	BP	Barclays	Mitsui	Settlement in EUR
2008	(5,998,398)	0	0	4,300,197	(1,698,201)
2009	(40,366,538)	0	(7,581,726)	0	(47,948,265)
2010	(3,230,333)	(1,512,411)	1,546,625	0	(3,196,119)
2011	30,066,708	19,180,726	4,339,581	0	53,587,014
Total	(19,528,562)	17,668,315	(1,695,521)	4,300,197	744,430

4.5.43 An interesting point, which certainly merits attention, emerges in the analysis of the Corporation's 2008 annual settlements, as aptly captured when comparing Table 33 with Table 34. While the total settlement in USD terms yielded a positive return of approximately \$3.5 million, when converted to Euro, these results accounted for an overall negative settlement of approximately €1.7 million. This anomalous situation in the EUR/USD exchange rate is attributable to Goldman Sachs settlements effected throughout 2008. NAO's analysis indicated that such an occurrence was due to variations in the EUR/USD exchange rate, which at the time had monthly averages that ranged from over 1.57 to close to 1.27. Such an anomaly did not arise in the case of Mitsui, due to the fact that settlements between Enemalta Corporation and Mitsui were limited to Q1 of 2008, which therefore limited the extent of variations experienced in terms of EUR/USD exchange rates.

4.5.44 In reference to 2009, immediately evident are the substantial losses registered by the Corporation with respect to the hedging agreements it entered into. The overall loss registered as a result of hedging activity undertaken by the Corporation in this year alone stood at approximately €48 million. Although a loss was again registered in 2010, its extent was mitigated when comparisons are drawn with the preceding year, with a net outlay settlement of approximately €3.2 million. Finally, NAO positively notes the substantial gains registered by the Corporation in 2011, with final annual settlement calculated at approximately €53.6 million.

4.5.45 In contrast to the above, forex hedging yielded positive results between 2008 and 2010, amounting to an approximate total of €26.7 million, while a loss of approximately €8.1 million was registered in 2011. Table 35, which summarily outlines Enemalta’s gains and losses on forex hedging, was arrived at by the NAO audit team on the basis of records provided by Enemalta. A similar situation relating to emerging discrepancies arises once again with respect to the comparison of NAO workings with the Corporation’s annual report data. Notwithstanding these discrepancies NAO considers its calculations to be valid and reliable representations of Enemalta’s performance with respect to forex hedging and bases its following analysis upon such results.

Table 35: Gains and Losses on Forex Hedging

Year	Gains/Losses on Hedging Contracts
2008	696,115
2009	8,246,516
2010	17,786,836
2011	(8,129,656)
Total	18,599,811

Note: In the case of 2008 and 2009, the indicated gains are inclusive of forward contracts utilised with respect to diesel, Jet A1 and unleaded petrol.

4.5.46 With reference to the above analysis, NAO notes that the 2010 and 2011 forex hedging-related gains and losses registered by the Corporation were inclusive of spot transactions carried out within this same period. In light of the above, it is important to note that spot transactions relating to 2008 and 2009 were recorded in a daily cash flow file that had a sheet for each day, and were not in fact aggregated into one sheet. In this respect, and as already indicated earlier in this report, Enemalta confirmed that spot transactions were not incorporated into the reported 2008 and 2009 figures; however, NAO maintains some reservations in this respect.

4.6 Conclusions

Hedging Policy and Strategy

- 4.6.1 NAO's primary concern with respect to Enemalta's hedging policy essentially relates to the absence of an appropriate policy framework against which the Corporation may subsequently set its strategic orientation. NAO considers the guidelines provided in the three-page document entitled 'RMC Procedures' as a procedure-based brief, rather than an actual policy document, as was in fact claimed by Enemalta. Integral aspects appear to be absent from the Corporation's hedging policy, hence its inadequateness in NAO's views.
- 4.6.2 Although the RMC Procedures do make specific reference to the members forming part of this Committee, NAO was not provided with the formal description of roles that each member fulfils within the RMC. NAO is somewhat concerned at Enemalta's response regarding the collective roles and responsibilities assumed by the RMC members. Furthermore, besides the issue of ambiguity relating to the precise roles fulfilled by RMC members, the only documentation provided with respect to the CBM Representative was an expired letter of appointment corresponding to the period 25 April 2006 to 25 April 2007. In sum, NAO's predominant concern in this regard centres around the lack of accountability with respect to decisions and actions taken by the RMC in its management of Enemalta's hedging function.
- 4.6.3 NAO noted that the Corporation's hedging policy and its hedging strategies are in effect one and the same. In truth, such a state of affairs is not ideal, and NAO considers the overlap between hedging policy and hedging strategy as counterproductive in terms of the Corporation's governance structures.

4.6.4 In effect, NAO noted inconsistencies in eliciting who was ultimately responsible for the setting of Enemalta's hedging policy and strategy, with the apparent overlap between the Ministry's and Corporation's input on the matters obfuscating an already complex state of affairs. NAO's concern in this respect further intensifies with regard to instances when Ministerial interventions directly impacted on the setting of the RMC's hedging strategies. NAO considers such interventions as undue interference by the then Minister responsible for Enemalta, particularly when stating that he was to assume responsibility for any variances between the actual market price and hedged swap price for 2010. This, in NAO's opinion, goes against the fundamental principles of good governance.

4.6.5 In NAO's opinion, Enemalta's adopted hedging strategy relating to the defence of the set tariff (more precisely, the key indicators which feed into the tariff) is a contentious position. This Office supports the notion that working at securing hedges below the established tariff effectively constitutes working towards a false target. NAO considers it the ultimate responsibility of the RMC to seek to profit from all market scenarios, irrespective of their relative relation to the established tariff. Prematurely locking in to hedging arrangements, merely on the basis of concluded deals being below the set tariff, may represent a less than ideal hedging strategy being employed by the RMC. Testament to this are the hedging-related results corresponding to 2010, in which case locking in prices under the established tariff resulted in losses in eight out of twelve months, since the crude oil average spot price was below the locked-in hedge price.

Governance and Accountability

4.6.6 NAO's main concern with respect to the scheduled frequency of RMC meetings relates to the prolonged period of inactivity registered in 2009. The implications of such inactivity are immediately apparent, with various opportunities of favourable market conditions not capitalised upon, and

other circumstances characterised by their negative implication on Enemalta not reacted to. Resultantly, in NAO's opinion, Enemalta deviates from its risk-averse approach, given its exposure to spot purchases heavily conditioned by market fluctuations, and under such a scenario, can be classified as a risk-taker in its approach.

- 4.6.7 The relation of the RMC's prolonged inactivity to matters of governance and accountability is fundamental, essentially revolving around the issue of who was ultimately responsible for not convening such meetings. No documentation, meeting minute, email or record was provided to the NAO justifying the ten-month lull in RMC activity, which in this Office's view, constitutes a significant shortcoming on behalf of the Corporation's management.
- 4.6.8 NAO's concern further intensifies with respect to a number of forex hedging transactions that were undertaken by Enemalta during this ten-month period of RMC inactivity. Of paramount concern to NAO in this regard is the fact that such transactions were undertaken without any clear indication provided as to who was responsible for authorising such deals, given the Committee's evident inactivity, which subsequently raises notable concern with respect to the RMC's overall adherence to the principles of good governance and accountability.
- 4.6.9 In addition to the above-referred period of inactivity, the RMC's operations were characterised by numerous other instances of notable delay. On occasion, periods of RMC inactivity were complemented by email correspondence exchanged between all RMC members, and NAO commends such a practice. However, a recurring trend in this respect was the RMC's failure to adequately record hedging-related developments between one meeting and the next, which as a result impinge on the governance of the hedging process.

4.6.10 NAO's primary concern with respect to the RMC's governance structure, as well as the mechanisms intended at ensuring its accountability, centres on the absence of key documentation, particularly so in cases of discrepancies arising between hedged volumes and hedged prices vis-à-vis the Committee's established targets. The absence of appropriately maintained records, most notably the case with the RMC minutes, renders the process of identifying who was involved in particular decisions, and on what basis such decisions were made, an unachievable and impossible task. This Office's concerns, regarding inadequate record-keeping, further intensify when one considers the materiality of hedging decisions taken by the RMC, which in turn accentuates the importance of rigorous and robust recording of Committee proceedings.

4.6.11 In addition to the above, the absence of appropriate documentation in terms of RMC minutes and supporting data, was further convoluted by the Committee's reported collective role. This notion of collective responsibility, without the identification of individually defined functions and roles for each of the RMC members, clearly compounded the establishment of accountability.

4.6.12 An equally important issue of concern identified by NAO with respect to governance and accountability relates to instances when the RMC was informed of hedging-related decisions as a *fait accompli*. By means of example, reference is hereby made to the RMC meeting dated 29 July 2008, in which case, and according to information made available to this Office, the then CFO concluded deals without the involvement of the RMC. Such a scenario bears a twofold impact. The first is the undermining of the functions and responsibilities of the RMC, while the second relates to the fact that such hedging deals were not regulated by an established hedging policy. The Office opines that operating in the detached manner exemplified above poses considerable risk to the system of checks and balances in effect provided by the existence of the Committee and its corresponding policy framework.

4.6.13 NAO acknowledges the importance of ensuring an adequate balance between adopting a flexible approach towards hedging, responsive to possibly volatile market conditions, versus adherence to the principles of good governance and accountability. This Office is aware of the fact that a cumbersome management system may shackle the RMC's effectiveness, and a slow reaction to changing market circumstances may quickly render favourable situations suddenly unfavourable. However, the Office considers it imperative to frame such flexibility within the contextual parameters (including price and volume considerations) set out by the Corporation's hedging policy.

4.6.14 Notwithstanding all of the above, certain instances of good practice exhibited by the RMC do emerge. NAO noted an improvement in terms of the overall internal coordination of the RMC, particularly so in 2010 and 2011, in which case, the Committee demonstrates considerable improvement in terms of correspondence relating to hedging activities being circulated among all of its members. Another evident instance of good practice relates to the follow-up decisions dated August 2010, which were comprehensively detailed with respect to the factors conditioning deviation from originally planned targets, utilised the Committee's forex consultant's expertise, and were subject to scrutiny by all of the RMC members given their due involvement.

Planning and Projections

4.6.15 Key to understanding Enemalta's hedging strategy and operations for the audit period 2008 to 2011, is the contextual setting within which such activity took place. A centrally determining factor bearing direct influence in this respect was the Corporation's poor credit limits. Such limits were conditioned by Enemalta's weak financial situation, which in turn negatively affected the Corporation's operations within the market. NAO noted how Enemalta's poor financial situation effectively hinders and conditions the planning, as well as

the execution of intended courses of action, which ultimately bear direct impact on the Corporation's hedging activities.

4.6.16 NAO has three main concerns regarding the various changes in strategy implemented by the RMC with respect to the hedging undertaken by the Corporation. First, NAO's concern centres on the lack of appropriate documentation recorded and retained by the RMC with respect to two shifts in strategy advocated by the same Committee, that is, the termination of payment of premiums, as well as the introduction of swaps to complement the use of collars. In this regard, NAO's focus specifically centres on the fact that no detailed calculations, analysis or estimates were provided by Enemalta, which would notionally determine how the application of these hedging-related measures could have impacted upon the Corporation's hedging activity.

4.6.17 NAO's second concern in this regard emanates from a course of action that this Office initially considered as representing good practice. The RMC's decision to hedge using swaps instead of collars was supported with detailed presentations outlining different scenarios under the collars and swaps structures, and it is in this context that this Office considered such preparatory work as sufficient proof that the Corporation had in fact carried out the necessary scenario planning. Yet, RMC's sound planning, exemplified in the Committee meetings held throughout October 2009, was quickly undermined early in November 2009. Here, the RMC was directed to close hedging deals below the key tariff driver of \$81.80/bbl, effectively rendering futile all of the well-devised scenarios evaluated by the Committee.

4.6.18 The third concern arising in this respect relates to the restructuring of the Corporation's hedged position, which was a situation that emerged on two separate instances. NAO considered the realignment of the Corporation's collars closer to the market scenario at these particular points in time as constituting sensible judgement and a sound business strategy, most notably

in view of the intended mitigation of upside and downside risk respectively associated with each of these circumstances. However, the issue of inadequate and poor documentation resurfaces, with NAO's review of the corresponding RMC meeting minutes lacking explanations and reproductions of the calculations and computations deemed necessary in carrying out such a restructuring exercise.

4.6.19 In addition to the above three concerns, clear instances of good practice emerge with respect to forex hedging-related strategic revisions. NAO noted that such instances were appropriately documented, precisely delineating the intended course of action that was to be pursued by the Committee, and coupled with corresponding justifications supporting the proposed corrective measures.

4.6.20 The role and relevance of independent consultants appended to the RMC to aid the Committee in the decision-making processes associated with forex and fuel hedging was deemed to be of central importance by NAO. With respect to forex consultancy, this function remained largely consistent in nature throughout the four-year audit period under scrutiny. On the other hand, the fuel consultancy role was subject to a shift in approach instigated by the RMC, effectively transitioning from a system characterised by one fixed consultant forming part of all Committee meetings in 2008, to a rotational approach involving the sourcing of input from numerous consultants during 2010 and 2011. NAO considers it pertinent to note that all of the above-described changes must be contextualised against the fact that such consultants did not have a clearly defined role in terms of their respective engagements with the RMC, which is a point already emphasised by this Office in the preceding text.

4.6.21 As indicated above, NAO's analysis of the performance of the RMC's forex consultant is unequivocally positive. The consistently effective advice provided to the Committee by the CBM representative was a notable good

practice, particularly exemplified by the in-depth reports prepared in this respect.

4.6.22 In stark contrast to the above positive opinion relating to the advice provided by the RMC's forex consultant, is this Office's perspective on the specialist input afforded by the Committee's fuel consultants, which was considered to be inadequate. NAO opines that this inadequacy, in terms of technical input relating to fuel hedging, was somewhat mitigated by the in-house presentations delivered by members of the RMC. These presentations addressed and encompassed multiple aspects of interest, including indicative quotes or proposals on ICE Brent hedges, existent hedges in place, and a review of the Corporation's mark-to-market position, among others. Moreover, the Office noted a marked improvement when reviewing presentations compiled towards the end of 2008 and throughout 2009, when compared to those put forward with respect to RMC meetings held in 2011.

4.6.23 Despite the positive considerations indicated with reference to the in-house presentations prepared for the RMC, NAO's overall impression of the level of technical input feeding into this Committee with regard to fuel hedging is one best termed as inadequate. In NAO's opinion, the source of this perceived weakness is the rotational system employed by the RMC with respect to its fuel consultants. This Office opines that the advice provided by the consultants engaged by the RMC on an ad hoc and rotational basis may be biased, possibly influenced by their respective organisation's own interests. Notwithstanding the above assertions, NAO acknowledges Enemalta's awareness of the potential subjective bias that forms an intrinsic element of the respective consultants' input, and is cognisant of the fact that the rotational system itself was designed in such a manner so as to offset subjective biases against one another. Nonetheless, it is NAO's considered opinion that the present system utilised in sourcing fuel hedging-related technical input for the RMC's perusal remains somewhat limited and not to the expected standard given the materiality of crude oil hedges.

4.6.24 Another salient point emerging with respect to the relationship between the RMC and its consultants relates to the former's adherence, or otherwise, with advice provided by the latter. NAO's concern in this regard centres on instances of disagreement between the two parties on what course of action would best accomplish the RMC's set objectives. While fully acknowledging the Committee's remit to act independently of its consultant's advice, NAO's point of contention specifically relates to the fact that no explanations or counterarguments were provided by the RMC on a number of occasions when the Committee chose to disregard its consultants' expert advice. A case in point, exemplifying NAO's concern, was when fuel prices reached record lows towards the end of 2008, and despite advice to this effect being provided by the Committee's fuel consultant, no hedging action was taken.

4.6.25 In sum, NAO is of the considered opinion that, in the vast majority of cases relating to currency hedging advice provided by the RMC's forex consultant, the Committee actively embraced recommendations put forward by the CBM representative. This Office considers the advice provided by the RMC's forex consultant to have served an integral and essentially important role in aiding the Committee's attainment of its strategic and operational goals. On the other hand, with regard to advice provided by the fuel consultant, NAO's audit opinion is somewhat limited by the fact that this specifically designated oil market hedging expert only formed part of the RMC in 2008, and therefore an objective measure of performance was not entirely possible.

4.6.26 Finally, attention is directed towards other instances when the RMC failed to capitalise on favourable market conditions, with specific reference hereby directed towards the RMC meeting dated 29 July 2008 insofar as forex hedging is concerned, and the RMC meeting dated 18 November 2008 in relation to crude oil hedging. NAO's contention in this regard is with respect to the rationale employed by the RMC in deciding not to hedge, despite the near ideal market conditions, and further accentuated when seen in light of the respective recommendations put forward by its forex and fuel

consultants. In addition, NAO reiterates an earlier-made point relating to the fact that counterarguments justifying the chosen course of action, and why the RMC's course of action was considered to be more favourable than that originally recommended by its expert consultants, were conspicuously absent from reviewed RMC minutes and related documentation. In NAO's view, such documentation, supporting the alternative course of action considered more appropriate by the Committee would conceptually be considered essential in arriving at an informed decision, which ultimately led to no hedging activity being concluded by the RMC.

4.6.27 In addition to the above issues, NAO's main concern with respect to hedge planning emanates from the scenario recorded in the RMC meetings held towards the end of 2008, which then further developed during 2009. NAO emphasises the poor performance of the RMC with respect to planning towards the end of 2008. This situation was accentuated by two factors, the first being the Committee's limited hedged cover of 48 per cent for 2009, while the second relates to the fact that the fuel consultant had indicated that market prices had fallen sharply. NAO opines that the gravity of this issue is rendered all the more significant when contextualised against the fact that the RMC subsequently failed to meet for a period of ten months. While this in itself is a clear instance of poor governance, NAO finds great difficulty in reconciling how the Committee undertook in excess of \$70 million worth of forex hedges in this same ten-month period of RMC inactivity.

4.6.28 In NAO's opinion, at a theoretical level of understanding, by default, Enemalta should be short on its USD requirements. This must be seen as the Corporation's natural position, since it is consistently purchasing, and therefore paying its suppliers in USD, while its cash collections from customers are received in the local currency, that is, the Euro. On the other hand, in cases where Enemalta was long on USD, this implies that the Corporation did not undertake its planning operations with due diligence. The subsequent implication of Enemalta's long and short positions is that of risk,

with the gains or losses associated with these types of transactions denoting unnecessary risk with respect to the Corporation. Although NAO understands and acknowledges that exceptional circumstances beyond Enemalta's direct control might arise and subsequently distort the RMC's planned schedule of payments, such as a late shipment, the Committee should spare no effort at ensuring that maturity is synchronised with the payment for shipment of fuels received.

Analysis of Hedging Agreements: Quotations Received and Contractual Perspectives

4.6.29 No concerns emerge with respect to NAO's review of crude oil hedging contract data. NAO confirms that all crude oil hedging contracts corresponded to the entries prepared by Enemalta, and therefore, this Office considers crude oil hedging-related contractual data provided by the Corporation to be complete and accurate. Furthermore, NAO positively notes that all settlements precisely corresponded to the transaction listings retrieved from the Corporation's accounting system. Similarly positive was the fact that the monthly ICE Brent crude oil prices, upon which settlements were subsequently calculated, corresponded to the prices independently reconciled by the audit team (when compared to the correspondingly quoted Platts prices), apart from some very slight variations.

4.6.30 On the other hand, with regard to forex hedging, the vast majority of invoices provided by Enemalta corresponded to the records presented by the Corporation with respect to forex hedging undertaken from 2008 to 2011. Notwithstanding the above, NAO's concern in relation to this aspect of hedging centred on the large number of invoices retrieved from records kept at the Petroleum Division, which did not form part of the original compilation of data provided by the Corporation. NAO's analysis of such information indicated that these records possibly referred to the spot transactions

effected by Enemalta during 2008 and 2009, which therefore implies that the Corporation was short in terms of its USD requirements on various instances.

4.6.31 NAO's main concern emerging from its analysis of hedging agreements relates to quotations received. This Office considers the limited information provided in this respect as poor evidence of the actual quotations sourced by the RMC. With regard to crude oil hedging, quotations that were provided narrowly and exclusively corresponded to Committee activity registered in 2008, with no evidence put forward in relation to the other years under audit review. In its review of the limited information made available by Enemalta in this respect, NAO noted that the Corporation did not employ a systematic approach in its endeavours at sourcing quotations from investment banks/oil companies. NAO's concern further intensifies with regard to forex hedging, in which case no quotations were made available by the Corporation for this Office's review.

4.6.32 NAO is of the considered opinion that Enemalta Corporation does not have the required system in place to record the quotations requested, key in assessing prices provided, and accounting for the rationale upon which the final decision to hedge is based. In addition, since there is no structured system for the evaluation of quotes submitted by the Corporation's diverse suppliers, hedging deals are resultantly not concluded on the basis of established criteria, which would at a conceptual and notional level provide the Corporation with the necessary explanations for selecting one particular hedge agreement over another. Finally, NAO opines that the lack of an appropriately managed and systematic process with respect to hedging deals on crude oil and forex may hinder transparency as regards this critical function.

Results Attained by Enemalta Corporation

4.6.33 At a general level of analysis with respect to crude oil hedging, NAO's initial concern in this regard relates to the lack of uniformity in terms of the recording of data. One such example, testament to this inconsistency, was the utilisation of different conversion rates employed in establishing equivalence between metric tonnes and barrels of crude oil hedges. Despite the above minor limitation, NAO nonetheless encountered no significant difficulties in its evaluation and analysis of Enemalta's expected exposure with respect to crude oil hedging.

4.6.34 NAO's main concern with respect to Enemalta's hedge coverage is twofold. Barring 2008, when the Corporation's hedged volume percentage was adequate and well-aligned with its requirements, the years 2009, 2010 and 2011, provide a somewhat contrasting scenario. This Office's first concern in this respect relates to instances when the Corporation had a low hedge coverage, most notably in 2009, yet also the case in 2011. NAO considers such periods as inconsistent with Enemalta's stated risk-averse approach towards hedging, leaving the Corporation exposed to price surges in the crude oil market.

4.6.35 The second concern emerging in this regard relates to 2010, in which case Enemalta was effectively over-hedged. Interestingly, the Corporation claimed that its hedge coverage fully addressed its crude oil requirements in their entirety, and to this effect, it was instructed to exclude this collar structure from the tariff computation, primarily on the basis that it was expected to yield a neutral settlement. However, following inclusion of the zero cost collar previously unaccounted for in Enemalta's expected exposure database, this position changed to one that was, in effect, over-hedged. Again, NAO's concern in this respect is that the Corporation's over-hedging of its requirements bears no consistency with its stated risk-averse approach.

- 4.6.36 The above concerns tie in with issues already identified by NAO in relation to the Corporation's wider hedging strategy, specifically addressed in clause 4.6.5. NAO's point of contention in this regard relates to the ambiguity exhibited by the RMC in its implementation of a consistent hedging strategy, in effect fluctuating between the defence of the set tariff, against operating as a profit-driven organisation.
- 4.6.37 NAO's primary concern with regard to forex exposure relates to shortcomings identified in relation to the completeness and organisation of data. Various examples of such weaknesses emerged in NAO's analysis of data, which included the employment of different methodologies in seeking to establish the same result, ambiguous terminology such as the 'actual/estimate exposure', as well as an apparent lack of consistency with respect to which products were to be settled by means of forward contracts undertaken.
- 4.6.38 Further to the above, NAO's main concern with respect to forex exposure revolves around the variations arising between the hedged volume percentage with respect to actual/estimate exposure in USD, and the hedged volume percentage with respect to oil purchased in Euro terms (as sourced from the Corporation's various Annual Reports). Although NAO understands that small variations may arise, the significant discrepancies that emerged in view of this analysis are of great concern. Given the aforementioned discrepancies, it was not possible for NAO to arrive at a definite audit opinion with respect to the adequacy of the Corporation's forex hedged coverage. NAO considers the above-described discrepancies and variations as possibly linked to gaps in coordination between the Corporation's fuel procurement arm and its hedging function.
- 4.6.39 Another concern with respect to forex hedging contracts centres on the discrepancies noted between the forward contracts provided as per records sheet and those recorded as per exposure sheet. NAO noted that these two sources of data should have reconciled, and not resulted in the significant discrepancies identified by this Office. Parallels may be drawn to concerns

already discussed in clause 4.6.37, with NAO noting evident shortcomings with respect to the accuracy of retained data.

4.6.40 In sum of all of the above, Enemalta's crude oil hedging activity with respect to the period 2008 up to 2011 resulted in a net gain of approximately €744,000, while corresponding forex hedging activity similarly resulted in a gain of approximately €18.6 million.

4.7 Recommendations

Hedging Policy and Strategy

4.7.1 In line with conclusions drawn by this Office regarding the inadequacy of Enemalta's hedging policy, NAO is of the considered opinion that a comprehensive policy governing hedging at a Corporation such as Enemalta should include, among others, the following components:

- a. A framework governing the regulation of meetings of the RMC along with an operating mechanism that is to come into effect during periods of inactivity;
- b. Mechanisms intended at ensuring appropriate levels of governance and accountability, while simultaneously providing the necessary levels of flexibility with respect to hedging manoeuvres;
- c. A mechanism delineating levels of tolerable risk, which would effectively establish what variations (between hedging targets set and market fluctuations) are considered acceptable and others that trigger corresponding corrective measures, in effect indicating the Corporation's risk appetite;
- d. Establishment of the range of hedging instruments available for utilisation by the RMC, which also reflects Enemalta's risk appetite; and

- e. The introduction of monitoring and feedback mechanisms that ultimately loop back to the RMC, particularly relevant in instances when further developments arise with respect to established hedging targets.

4.7.2 NAO strongly recommends the formalisation of the individual roles fulfilled by members appointed to the RMC. Such role descriptions should indicate the specific functions and responsibilities pertaining to each of the Committee's members, which would ultimately ensure the necessary application of the essentially important principles of accountability. Accountability in this regard is highly context-dependent, as the outcome of hedging undertaken may never be within the complete control of the RMC, given the volatility of the markets within which it operates and the numerous extraneous factors influencing it. Therefore, NAO does not here refer to accountability in terms of hedging-related results attained, but to accountability in terms of the management of this key function.

4.7.3 The setting of Enemalta's hedging policy and hedging strategies are, in NAO's opinion, two distinct matters. In NAO's view, a sound hedging policy should set the parameters within which the RMC subsequently sets its strategic goals and orientation. While the coordination of such a policy should undoubtedly involve Government and Enemalta, the setting of hedging strategies should fall under the responsibility of the RMC. In this sense, the RMC's hedging strategies should outline how plans to achieve established targets may be attained by operating within the boundaries set out by the previously referred policy.

4.7.4 As outlined earlier, Ministerial coordination is an important aspect that should be considered in the setting of the Corporation's hedging policy; however, intervention at the strategic level is unwarranted and should be avoided. NAO considers the responsibility for the setting of the hedging strategy to fall within the exclusive remit of the RMC, and therefore

recommends that such a situation be reflected through appropriate documentation in the Corporation's hedging policy.

- 4.7.5 The indecisiveness noted by NAO with respect to the Corporation's defence of the set tariff (more precisely, the key indicators which feed into the tariff), as opposed to opting for market optimisation, directly impacted upon Enemalta's hedging strategy. Furthermore, failure in adhering to one strategic target resulted in an approach towards hedging characterised by its lack of consistency and clarity of focus. Hence, NAO opines that Enemalta should base its hedging strategies on market factors, bearing in mind the Corporation's internal exigencies, irrespective of the established tariff.

Governance and Accountability

- 4.7.6 As indicated in the preceding text, NAO considers it essential for the Corporation's hedging policy to include provisions that establish a structure and mechanism regulating the frequency and continuity of RMC meetings. Such provisions would effectively ensure that instances of prolonged inactivity and notable delay are averted, thereby safeguarding governance and accountability considerations. NAO considers it critically important for Enemalta to institute a documented mechanism that is to come into effect during periods of RMC inactivity. This Office opines that such a mechanism assists the regulation and recording of email communication between all RMC members, identifies who is responsible for shouldering decisions taken, as well as indicates who and in what way subsequent monitoring of hedging-related developments is to be carried out.

- 4.7.7 NAO strongly recommends that documentation maintained by the RMC more comprehensively represents and provides a detailed account of all aspects of the Committee's activity. In NAO's opinion, such detailed minutes and supporting documents should contribute towards ensuring the integrity and

safeguarding of the principles of good governance, while simultaneously holding to account the Committee and all of its individual members. In this Office's view, the recommendation relating to the identified shortcoming in terms of record-keeping merits further attention in circumstances when RMC established targets are not met and corrective action is subsequently instigated. Documentation of such deviations from the Committee's originally set course of action assumes pivotal and paramount importance.

4.7.8 Building upon the preceding recommendation, NAO reiterates its views on how the roles occupied by the various members of the RMC should be formally and clearly defined. NAO considers the establishment of individual roles (as framed in clause 4.7.2, with reference there made to its inclusion within the Corporation's hedging policy), as conducive towards ensuring the upholding of the fundamentally important principles of good governance and accountability.

4.7.9 Further to the recommendation made with respect to the required improvement in terms of documentation and record-keeping, NAO urges Enemalta to incorporate mechanisms regulating the management of hedge-related variations within its hedging policy. In this regard, NAO recommends the establishment and delineation of who is authorised to conclude hedging-related deals on the Corporation's behalf, and what authorisation is required under such circumstances. Key to ensuring the desired level of effectiveness of this policy is the segmentation of processes and procedures associated with the established limits and values of the hedge deals in concern. To this effect, and by means of example, the CFO's authorisation may be sufficient in concluding deals of an X per cent variation over and above RMC approved targets, while it would then be necessary to attain the CEO's approval for the conclusion of deals of a Y per cent variation over and the above RMC approved targets.

4.7.10 In reference to the above, NAO considers the hedging policy as instrumental in ensuring the application of the principles of good governance. In NAO's

opinion, the retention of appropriate records of decisions taken, coupled with the parameters within which RMC's functions are to be executed, effectively holds the Committee's members accountable for their actions. Moreover, when all of the above is framed against the system of checks and balances provided by the RMC's policy, the integrity of management control over this critical function is assured.

4.7.11 NAO commends the RMC's notable improvement in terms of its overall internal coordination, particularly so in 2010 and 2011, in which case the Committee demonstrates considerable improvement in terms of correspondence relating to hedging activities circulated among all of its members. Other instances of good practices, identified in clause 4.6.14, are in this Office's opinion, encouraging signs of improvement.

Planning and Projections

4.7.12 NAO's primary recommendation with respect to the RMC's planning function relates to the lack of documentation persistently emerging throughout this Office's analysis of the Committee's meeting minutes and supporting records. In this respect, NAO's recommendation is straightforward, urging the RMC to retain appropriate records of the Committee's activity, more specifically so in instances of strategic relevance and importance. In addition, NAO recommends that Enemalta explores the possible introduction of a sound document management system, which would aid the completeness of the record-keeping process and ensure continuity in cases of changes to key personnel.

4.7.13 In synchronisation with the above, NAO recommends that RMC should spare no effort in ensuring that key strategic decisions are appropriately supported by detailed calculations, analysis and estimates. Here, specific reference is directed towards the instance when the RMC introduced the use of swaps to

complement collars, as well as the exercises intended at restructuring the Corporation's hedged position. Such supporting data should also be rigorously documented, thereby ensuring that all of the Committee's members have duly honoured the principles of good governance and accountability.

4.7.14 NAO recognises the good practices employed by the RMC in shifting from collars to swaps, amply evident of the necessary scenario planning undertaken by the Committee in relation to this important strategic realignment. This level of preparation is deemed commendable by the NAO and is the standard that is to be adhered to in future instances of strategic repositioning.

4.7.15 However, notwithstanding the above, NAO reiterates its firm belief that Ministerial intervention at the strategic level is unwarranted and should be averted. Here specific reference is made to the chain of events that developed in late 2009, where the RMC was directed to close hedging deals below the key tariff driver of \$81.80/bbl, effectively rendering futile all of the above-referred and well-developed scenario planning undertaken by the Committee. As stated earlier, NAO considers the responsibility for the establishment of the Corporation's hedging strategy to form part of the exclusive remit of the RMC, and therefore recommends that such a situation be reflected through appropriate documentation in the Corporation's hedging policy.

4.7.16 In contrast to the shortcomings associated with fuel hedging, NAO's attention with respect to forex-related hedging strategy revisions centres on the consistent good practices that emerge in this regard. NAO commends the modus operandi employed by the RMC and its forex consultant in this respect, with strategic plans of action clearly documented and corresponding justifications supporting such proposed corrective measures consistently provided.

- 4.7.17 NAO also commends the manner by which the RMC utilised the expertise brought to the Committee by its forex consultant. This function has remained largely consistent and NAO recommends that this operational arrangement be maintained given its overall positive effect on the RMC's performance. Similarly positive were NAO's views on the Committee's utilisation of the various in-house presentations prepared and delivered by members of the RMC. NAO commends this support provided to the RMC with respect to its fuel hedging responsibilities and considers this input to have mitigated other shortcomings identified by this Office in this regard.
- 4.7.18 NAO recommends that the RMC revises and revisits its management of the fuel consultant's role within the ambit of the Committee. In this Office's considered opinion, the rotational system that is employed by the RMC with respect to fuel consultants is somewhat flawed, characterised by its axiomatic instances of subjective bias. Within this context, NAO recommends that RMC's choice of fuel consultants should be grounded on the principle of independence, that is, reflected in the provision of objective advice, not constrained by possible conflicts of interest.
- 4.7.19 Further to the above, NAO encourages Enemalta to explore and consider other practices employed by firms similar to the Corporation with respect to the engagement of third parties intended at providing fuel hedging-related advice. The challenge faced by Enemalta in this respect is that of devising systems that are geared towards the attainment of results, while simultaneously ensuring that the principles of good governance, accountability and transparency are unequivocally ascertained.
- 4.7.20 NAO acknowledges the importance of providing the RMC with a framework of operational independence, and recommends that such independence should continue to be exercised by the Committee. However, NAO strongly recommends that instances when the RMC disagrees with advice put forward by its respective consultants should be clearly documented, with such

documentation encompassing explanations, justifications and counterarguments supporting why the Committee considers alternative courses of action in a more favourable light to possible options put forward by its experts. This Office considers adherence to this recommendation as a matter of notable importance, notionally safeguarding and promoting a more complete sense of accountability throughout the Committee's undertakings.

4.7.21 In addition to all of the above, NAO recommends the strengthening of the RMC's planning procedures through a twofold approach. At a basic level of understanding, such strengthening could be further ensured through the regularity of Committee meetings. Second, NAO strongly recommends that no hedging transactions are concluded outside of the RMC, as was the case with respect to over \$70 million worth of forex hedges undertaken during 2009.

4.7.22 Finally, NAO recommends that the RMC should plan its currency hedging requirements with due diligence, thereby minimising instances when the Corporation is short or long on its USD needs. If the market presents opportunities deemed favourable with respect to Enemalta, then the Corporation's short position should be largely mitigated. On the other hand, with respect to instances when the Corporation was long, such circumstances could be mitigated through the synchronisation of contract maturity with the payment of shipments for fuels received.

Analysis of Hedging Agreements: Quotations Received and Contractual Perspectives

4.7.23 NAO considers the absence of appropriately sourced quotations as a major and significant weakness characterising the RMC-driven hedging process. To this end, NAO urges Enemalta to adopt a systematic approach in the sourcing of quotations with respect to its crude oil and forex hedging requirements. Such measures must become part of the standard procedures employed by

the RMC in attending to its hedging function, particularly so when one considers the materiality of hedging contracts entered into by the Corporation. This recommended course of action will undoubtedly contribute towards the Committee's improvement in terms of the transparency and accountability of its hedging operations, while simultaneously ensuring an overall acceptable standard in terms of good governance.

4.7.24 Further to the above, NAO strongly recommends that all telephone conversations carried out by Enemalta officials with third parties, in relation to the execution of agreed hedge targets, should be recorded. This is now a standard practice implemented across industry, and considered integrally important and necessary by NAO in order to ensure the desired levels of integrity, transparency and accountability.

Results Attained by Enemalta Corporation

4.7.25 NAO recommends that Enemalta more appropriately maintains records of expected exposure data corresponding to hedging contracts concluded (particularly so in terms of forex hedging), while ensuring consistency in its analysis and subsequent reporting function. This Office understands that fluctuations arising due to market factors are beyond the Corporation's direct control; however, change in methodologies employed should be rigorously documented and explanations accordingly provided.

4.7.26 In line with the recommendation already put forward at clause 4.7.5, NAO once again reiterates its opinion that Enemalta should clearly establish its strategic objectives, fundamental in aiding the Corporation to become more profitable. NAO considers the adherence to the market optimisation strategy as the way forward for the Corporation, and it is in this context that adherence to the hedging strategy must be consistently ensured.

- 4.7.27 Critically important in the attainment of the Corporation's wider strategic goals is the need to strengthen the link between Enemalta's fuel procurement arm and its hedging function. In NAO's view, such coordination should mitigate the significant discrepancies in the analysis carried out by this Office with respect to the Corporation's expected exposure, and therefore, ultimately contribute to the reduction of long and short positions.
- 4.7.28 NAO recommends that Enemalta should regularly analyse the actual purchase of oil or USD at spot prices, which essentially represents the ultimate cost to Enemalta had no hedging been undertaken, and compare such figures to the purchases of oil or USD at hedged rates. This could be particularly useful in cases where premiums are to be paid or hedge restructuring costs are to be incurred. Specifically, such a cost-benefit analysis could be prepared by the Corporation as a matter of standard procedure, and presented to the RMC during its meetings, as it provides the Committee members with a more comprehensive understanding of the result of hedging activities undertaken. Such an analysis could in fact be extended to also factor in the coverage of the hedging activity, and the financial effect of hedging less than the Corporation's entire forecasted purchases.
- 4.7.29 Finally, setting aside specific periods where substantial losses were incurred, NAO commends the positive performance registered by Enemalta with respect to crude oil and forex hedging undertaken throughout the period under review, that is, 2008 up to 2011. Nonetheless, NAO is of the opinion that should its above recommendations be implemented by the Corporation, more windows of opportunity could be capitalised upon.

Appendix A – Sample FPC Minutes

Appendix A.1 FPC Meeting Minutes dated 26 May 2008
[Page 1 of 1]

Gasoline
26/05/08

④

No Stock

Ad of month on
10 days

① Larkill
CIE + \$44.80
Ad high
Credit 30 days
Ad of month on
10 days

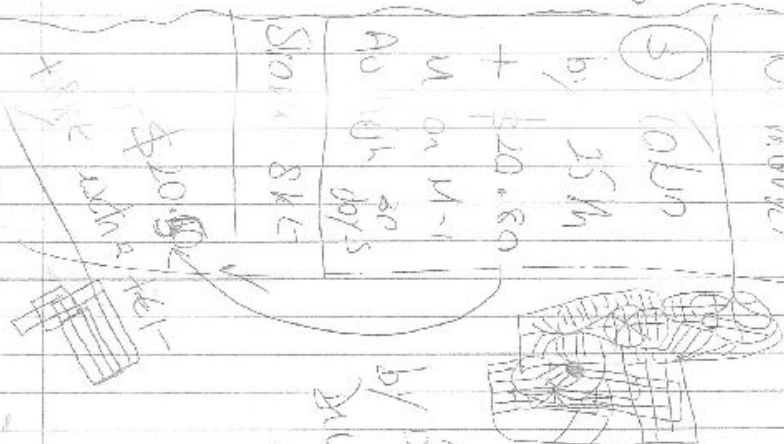
② Energy
by M. Dave

③ 10 Jun
by 25 M
+ \$20.80
Ad on M-1
Ad 10 days

Stock 8 x 4

\$20.80

by 25 M
by 25 M



Appendix A.2 FPC Meeting Minutes dated 18 May 2009
 [Page 1 of 1]

Jed final 18/05/09

FUEL PROCUREMENT COMMITTEE MEETING
 Offer received for the procurement of JET A1 July 2009 - August 2010

Date: 18/05/2009

Option (1) - 94000 MT +/- 40% in 4 lots Option (2) - 12 cargoes of 7000 MT +/- 40%

Option (3) - 94000 MT +/- 40% in 4 lots Option (4) - 12 cargoes of 7000 MT +/- 40%

Option (5) - 94000 MT +/- 40% in 4 lots Option (6) - 12 cargoes of 7000 MT +/- 40%

Option (7) - 94000 MT +/- 40% in 4 lots Option (8) - 12 cargoes of 7000 MT +/- 40%

Option (9) - 94000 MT +/- 40% in 4 lots Option (10) - 12 cargoes of 7000 MT +/- 40%

Ref. No.	Supplier	Qty Offered	Option (1)	Option (2)	Option (3)	Option (4)	Option (5)	Option (6)	Option (7)	Option (8)	Option (9)	Option (10)
		Avail. Terms - Net	Yes/No	VOL/FAIR	Ag per ton/mt / Hr	Avail. / 56 hrs/wk	Avail. / 56 hrs/wk	Avail. / 56 hrs/wk	Avail. / 56 hrs/wk	Avail. / 56 hrs/wk	Avail. / 56 hrs/wk	Avail. / 56 hrs/wk
①	B&E	-	-	-	-	-	-	-	-	-	-	-
②	B&E	-	-	-	-	-	-	-	-	-	-	-
③	Vitol	-	-	-	-	-	-	-	-	-	-	-
④	Banabaha	-	-	-	-	-	-	-	-	-	-	-
⑤	RS Sampora	-	-	-	-	-	-	-	-	-	-	-
⑥	FAL	-	-	-	-	-	-	-	-	-	-	-
⑦	Totisa	-	-	-	-	-	-	-	-	-	-	-

Appendix A.3 FPC Meeting Minutes dated 10 August 2011
[Page 1 of 3]

Premium Unleaded Gasoline Fuel Procurement – 10 August 2011

Fuel Procurement Minutes - Tender for the Purchase of Premium Unleaded Gasoline

Date: 10 August 2011

Time: 14.30 – 17.00

Attendees: Mr. William Spiteri Bailey (Chairman)
Mr. David Xuereb (Deputy Chairman)
Ing. Karl Camilleri (CEO)
Mr. Antoine Galea (CFO)
Ing. Allan Micallef (COO)
Mr. Godfrey Scicluna (FC, Petroleum)
Ing. Philip Borg (Manager, Petroleum)
Ms. Janice Mercieca (Financial Risk Manager)

Held at Chairman's Office, Administration Building, Enemalta Corporation

At 14.39 the Chairman accessed the fuel procurement email account to retrieve the submitted bids.

The existing contract details were revisited by Ing. Philip Borg as follows:

1. Existing Unleaded Gasoline Contract

Present Supplier: BB Energy
Price base: CIF Med High Premium Unleaded 10ppm average of the B/L month plus a premium of \$11.45/MT
Security Stock: \$3.00/MT stored in Italy – 12,000 MT/month
Credit Terms: 30 calendar days from Bill of Lading date on Open Account.

2. Details of Unleaded Gasoline Tender Issued

Ing. Philip Borg provided the Committee with an overview of the clauses listed in the issued tender as follows:

Quantity: 7,800 MT +/- 10% x 6 (TOTAL 43,800 MT +/- 10%)
Duration of Contract: September 2011 – April 2012 (8 months)
Security Stocks: Malta/Italy – 14,000 MT/month
Price: Based on Platts European Marketscan for Premium Unleaded 10 ppm CIF Med quotes average of the agreed month of delivery US\$ / MT in air
Payment terms: At least 30 calendar days after the delivering vessel's NOR date at Malta on an Open Account
Origin: EU Qualified
Fuel offered to be REACH Registered



Appendix A.3 FPC Meeting Minutes dated 10 August 2011
[Page 2 of 3]



Premium Unleaded Gasoline Fuel Procurement – 30 August 2011

3. Submissions

The Committee received the following submissions:

Tenderer 1 – BB Energy Trading Ltd

Tenderer adhered to all of the specified non-negotiable clauses

Offered Price: The monthly average of the HIGH quotations plus a premium of **USD 15.45/MT** in AIR on an escalation/de-escalation basis - based on a density of 0.755kg/liter

Security Stock: **USD 3.50/MT**

When combining both the premium and the security stock price, the all-in offer is calculated at **USD 24.40/MT**

Tenderer 2 – TOTSA

Tenderer adhered to all of the specified non-negotiable clauses

Offered Price: The monthly average of the HIGH quotations plus a premium of **USD 27.00/MT** in AIR on an escalation/de-escalation basis - based on a density of 0.755kg/liter

Security Stocks: **USD 2.00/MT**

When combining both the premium and the security stock price, the all-in offer is calculated at **USD 32.11/MT**

4. Negotiations

BB Energy - Chairman contacted Mr Apostolopoulou of BB Energy to discuss their submitted offer and at the outset proposed the same level of premium and security stock fee as per existing contract, that is, USD 11.45/MT and USD 3.50/MT respectively. Mr Apostolopoulou claimed that given the increase in costs, this is not possible, however he added that he will discuss internally the possibility of any price improvements, both on the premium and security stocks, and get back to us.

Meanwhile, Chairman contacted Mr Padovano of Totsa and asked if there is possibility for any price improvements; however Mr Padovano replied that it is very difficult for him to better his initial offer and therefore that was the best price he could offer us.

Within a few minutes Mr Apostolopoulou of BB Energy called back confirming that with respect to the stock tickets there is difficulty on improving, explaining that the security stock fees offered are reflecting the prices being quoted for the stipulated period. With respect to the premium, Mr Apostolopoulou proposed an improvement of \$0.50c to \$ 14.95/MT. In return

Appendix A.3 FPC Meeting Minutes dated 10 August 2011
[Page 3 of 3]

Premium Unleaded Gasoline Fuel Procurement – 10 August 2011

Chairman proposed a further improvement to \$14.50/MT. Premium was finally agreed at \$14.75.

5. Awarded Tenderer

Tender was awarded to BB Energy primarily taking into consideration that their offer was more competitive than that offered by Tulsa, even prior to negotiations with BB Energy.

Once deal was concluded, an email was sent from the fuel procurement email account informing Tulsa that they were not successful. Another email was sent to Mitts to temporarily disable the email address password until next tender.



Handwritten signatures and initials, including a large signature on the right and several smaller ones below it.

Appendix B – Analysis of Fuel Quantity Delivered against Bill of Lading and Outturn Reports

Table 36: Quantity Discrepancy Analysis

Case Study Reference	Vessel File Reference	Type of Fuel	Supplier	Bill of Lading Quantity	Outturn Report Quantity	Discrepancy in Metric Tonnes / Litres	Percentage Discrepancy
HO/V2/2010	1*	Gasoil	Totsa	29,956.70 MT	29,915.19 MT	-41.508	-0.139
HO/V3/2010	2	Low Sulphur Fuel Oil	Trafigura	25,251.78 MT	25,254.68 MT	2.905	0.012
HO/V7/2010	3*	Low Sulphur Fuel Oil	Trafigura	28,999.81 MT	29,069.47 MT	69.665	0.24
HO/V6/2010/I	4A	Low Sulphur Fuel Oil	Trafigura	1,999.68 MT	1,990.94 MT	-8.745	-0.437
HO/V6/2010/II	4B	Low Sulphur Fuel Oil	Trafigura	27,993.12 MT	28,012.30 MT	19.186	0.069
HO/V5/2010	5	Gasoil	Totsa	12,002.82 MT	11,962.36 MT	-40.456	-0.337
HO/V12/2011	6*	Gasoil	Totsa	30,106.61 MT	30,034.78 MT	-71.826	-0.239
HO/V20/2011	7	Low Sulphur Fuel Oil	Trafigura	9,932.95 MT	9,939.57 MT	6.616	0.067
HO/V7/2011/I	8A*	Gasoil	Totsa	30,583.19 MT	30,440.08 MT	-143.111	-0.468
HO/V7/2011/II	8B	Gasoil	Totsa	402.261 MT	402.869 MT	0.608	0.151
HO/V9/2011	9	Low Sulphur Fuel Oil	Trafigura	32,034.83 MT	31,972.34 MT	-62.494	-0.195
HO/V1/2011	10	Low Sulphur Fuel Oil	Trafigura	28,982.56 MT	28,900.10 MT	-82.465	-0.285
V.44/10	11	Avgas	ENI	28.3 MT	28.082 MT	-0.218	-0.77
V.28/10	12	Avgas	ENI	27.47 MT	27.252 MT	-0.218	-0.794
V.04/11	13	Avgas	ENI	28.62 MT	28.23 MT	-0.39	-1.363
V.35/11	14	Avgas	ENI	28 MT	27.53 MT	-0.47	-1.679
V.10/11	15	Bio diesel	Hemok	106.64 litres	108.84 litres	2.2	2.063
V.02/11	16	Diesel	Totsa	7,000.00 MT	7,000.00 MT	0	0
V.45/11	17	Diesel	Totsa	6,831.85 MT	6,857.98 MT	26.132	0.383
V.56/10	18	Diesel	BB Energy	7,000.00 MT	7,000.00 MT	0	0
V.1/11	19	Unleaded	Totsa	8,453.28 MT	8,417.22 MT	-36.064	-0.427
V.55/10	20	Unleaded	Totsa	6,137.70 MT	6,112.18 MT	-25.514	-0.416
V.39/11	21	Unleaded	BB Energy	7,454.94 MT	7,425.58 MT	-29.365	-0.394
V.10/10	22	Unleaded	Petrodeal	7,643.06 MT	7,643.88 MT	0.816	0.011

Case Study Reference	Vessel File Reference	Type of Fuel	Supplier	Bill of Lading Quantity	Outturn Report Quantity	Discrepancy in Metric Tons / Litres	Percentage Discrepancy
V.47/11	23	Biodiesel	Hemok	340,312 litres	341,591 litres	1,279	0.376
V.13/10	24	Jet A1	BB Energy	7,487.18 MT	7,487.18 MT	0	0
V.54/10	25	Jet A1	BB Energy	6,379.57 MT	6,379.57 MT	0	0
V.06/11	26	Jet A1	BB Energy	7,435.58 MT	7,421.48 MT	-14.104	-0.19
V.46/11	27	Jet A1	BB Energy	7,000.00 MT	7,000.00 MT	0	0
V.14/10	31*	Diesel	Totsa	24,651.13 MT	24,643.13 MT	-7.997	-0.032
V.09/09	32	Unleaded	Totsa	8,247.10 MT	8,244.50 MT	-2.6	-0.032
V.51/09	33	Unleaded	Petrodeal Ltd	7,999.75 MT	7,984.98 MT	-14.771	-0.185
V.58/09	34	Jet A1	BB Energy Ltd	6,669.62 MT	6,665.56 MT	-4.067	-0.061
V.21/09	35	Jet A1	Totsa	25,034.02 MT	24,986.87 MT	-47.148	-0.188
V.6/09	36*	Diesel EN590 10 ppm	Totsa	22,231.06 MT	22,241.10 MT	10.039	0.045
V.56/09	37	Diesel EN590 10 ppm	Totsa	18,986.15 MT	18,999.44 MT	13.288	0.07
V.62/09	38	Avgas	ENI	28.65 MT	28.051 MT	-0.599	-2.091
V.28/09	39	Avgas	ENI	28.012 MT	27.523 MT	-0.489	-1.746
V.05/08	40	Jet A1	Litasco	7,698.55 MT	7,698.90 MT	0.349	0.005
V.26/08	41*	Jet A1	Litasco	6,297.31 MT	6,297.31 MT	0	0
V.7/08	42*	Diesel (gasoil 50 ppm)	Totsa	28,961.38 MT	28,897.51 MT	-63.877	-0.221
V.21/08	43	Diesel	Totsa	18,063.85 MT	18,018.68 MT	-45.169	-0.25
V.52/08	44(i)	Diesel	Totsa	11,983.59 MT	11,974.03 MT	-9.561	-0.08
V.52/08	44(ii)	Diesel	Totsa	12,058.05 MT	12,030.32 MT	-27.731	-0.23
V.60/08	45	Unleaded	Totsa	7,485.41 MT	7,445.65 MT	-39.76	-0.531
V9.08	46	Unleaded	Totsa	7,795.44 MT	7,733.93 MT	-61.509	-0.789
V.31/08	47	Avgas		26.86 MT	26.121 MT	-0.739	-2.751
V03.09	48*	Gasoil 0.1%	Totsa	37,974.70 MT	37,818.95 MT	-155.744	-0.41
V26/09	49*	Gasoil	Totsa	11,932.63 MT	11,929.23 MT	-3.405	-0.029
V08/09/A	50	Fuel Oil 0.7%	Totsa	21,284.02 MT	21,327.74 MT	43.725	0.205
V13/09	51*	Fuel Oil	Totsa	29,985.44 MT	30,042.54 MT	57.1	0.19
V32/09	52*	Fuel Oil	Totsa	22,775.60 MT	22,772.87 MT	-2.731	-0.012
V43/09	53*	Fuel Oil 1%	Totsa	17,974.49 MT	17,914.43 MT	-60.065	-0.334

Case Study Reference	Vessel File Reference	Type of Fuel	Supplier	Bill of Lading Quantity	Outturn Report Quantity	Discrepancy in Metric Tons / Litres	Percentage Discrepancy
V59/08	54*	Fuel Oil	Totsa	27,365.57 MT	27,342.52 MT	-23.047	-0.084
V25/08	55*	Fuel Oil 0.7%	Totsa	28,358.28 MT	28,394.99 MT	36.712	0.129
V17/08	57*	Gasoil	Totsa	28,874.46 MT	28,801.18 MT	-73.275	-0.254
V24/08	58*	Fuel Oil	Totsa	5,267.85 MT (26,921.29 MT)	5,259.62 MT	-8.23	-0.156
V40/08	59	Gasoil	Totsa	12,000.00 MT	11,989.68 MT	-10.319	-0.086
V8/09	60	Fuel Oil 1%	Totsa	13,186.28 MT	13,234.83 MT	48.548	0.368
V62/08	61	Fuel Oil 0.7%	Totsa	19,916.90 MT	20,016.68 MT	99.778	0.501
V62/08/A	62	Fuel Oil 1%	Totsa	18,449.76 MT	18,410.53 MT	-39.226	-0.213
V59/08/A	63	Fuel Oil 0.7%	Totsa	14,949.92 MT	15,002.77 MT	52.852	0.354

Notes:

1. NAO's above presented analysis was based on the overall quantities of fuel stock delivered as per shipment analysed. As indicated in text (2.4.37), it was not possible for this Office to verify the quantities discrepancies on an apportioned basis, which would have more accurately reflected the actual fuel stock procured and received by the Corporation. The reason why NAO could not carry out such verifications was due to the fact that the corresponding Bills of Lading were not apportioned. Workings relating to such apportionments were forwarded by Enemalta, and no major apportioned quantity discrepancies emerged in this respect. However, given that such data was provided by Enemalta, NAO considered it more appropriate to retain its analytical focus on emerging quantity discrepancies at the level of the overall shipment, in which case, verification against other independent sources of data was possible.
2. The only exception to the scenario presented in the note above is the case of shipment V24/08, where NAO did not have the overall outturn report for the whole shipment, and therefore, reconciliation of stock was based on the apportioned amounts.
3. All shipments that were apportioned in this manner are marked with an * adjacent to the corresponding case study reference.

Appendix C – Detailed Analysis of Availability of Quality Certificates

Fuel Type	Shipment / Case Study Reference	Supplier	Availability of Loading Port Report	Availability of Discharge Port Report
Fuel Oil	HO/V9/11 - CS9	Trafigura	No	Yes
Fuel Oil	HO/V20/11 - CS7	Trafigura	Yes	Yes
Fuel Oil	HO/V3/2010 - CS2	Trafigura	No	Yes
Fuel Oil	HO/V6/10 I - CS4A	Trafigura	No	Yes
Fuel Oil	HO/V6/10 II - CS4B	Trafigura	No	Yes
Fuel Oil	HO/V7/2010 - CS3	Trafigura	No	Yes
Fuel Oil	HO/V1/11 - CS10	Trafigura	No	Yes
Fuel Oil	V32/09 - CS52	Totsa	Yes	Yes
Fuel Oil	V43/09 - CS53	Totsa	Yes	Yes
Fuel Oil	V25/08 - CS55	Totsa	Yes	No
Fuel Oil	V62/08 - CS61	Totsa	Yes	No
Fuel Oil	V59/08A - CS63	Totsa	Yes	No
Fuel Oil	V8/09 - CS60	Totsa	Yes	Yes
Fuel Oil	V13/09 - CS51	Totsa	Yes	No
Fuel Oil	V24/08 - CS58	Totsa	Yes	Yes
Fuel Oil	V59/08 - CS54	Totsa	Yes	No
Fuel Oil	V62/08A - CS62	Totsa	Yes	No
Fuel Oil	V08/09 8A - CS50	Totsa	Yes	No
Diesel	V56/10 - CS18	BB Energy	Yes	Yes
Diesel	V52/08 - CS44	Totsa	Yes	Yes
Diesel	V21/08 - CS43	Totsa	Yes	Yes
Diesel	V6/09 CS36	Totsa	Yes	Yes
Diesel	V7/08 - CS42	Totsa	Yes	Yes
Diesel	V14/10 - CS31	Totsa	Yes	Yes
Diesel	V56/09 - CS37	Totsa	Yes	Yes
Diesel	V45/11 - CS17	Totsa	Yes	Yes
Diesel	V2/11 - CS16	Totsa	Yes	Yes
Unleaded	V55/10 - CS20	Totsa	Yes	Yes
Unleaded	V1/11 - CS19	Totsa	Yes	Yes
Unleaded	V60/08 - CS45	Totsa	Yes	Yes
Unleaded	V39/11 - CS21	BB Energy	Yes	Yes
Unleaded	V51/09 - CS33	Petrodeal	Yes	Yes
Unleaded	V10/10 - CS22	Petrodeal	Yes	Yes
Unleaded	V09/09 - CS32	Totsa	Yes	Yes
Unleaded	V9/08 - CS46	Totsa	Yes	Yes
Biodiesel	V10/11 - CS15	Hemok	Yes	No
Biodiesel	V47/11 - CS23	Hemok	Yes	No
Avgas	V31/08 - CS47	ENI	Yes	Yes
Avgas	V28/10 - CS12	ENI	Yes	No
Avgas	V44/10 - CS11	ENI	Yes	No
Avgas	V4/11 - CS13	ENI	Yes	No
Avgas	V35/2011 - CS14	ENI	Yes	Yes

Fuel Type	Shipment / Case Study Reference	Supplier	Availability of Loading Port Report	Availability of Discharge Port Report
Gasoil	HO/V2/2010 - CS1	Totsa	Yes	Yes
Gasoil	HO/V7/2011 - CS8A	Totsa	Yes	No
Gasoil	HO/V7/2011 II - CS8B	Totsa	Yes	No
Gasoil	HO/V5/2010 - CS5	Totsa	No	Yes
Gasoil	HO/V12/2011 - CS6	Totsa	Yes	No
Gasoil	V40/08 - CS59	Totsa	Yes	Yes
Gasoil	V03/09 - CS48	Totsa	Yes	Yes
Gasoil	V17/08 - CS57	Totsa	Yes	No
Jet A1	V21/09 - CS35	Totsa	Yes	Yes
Jet A1	V05/08 - CS40	Litasco	Yes	Yes
Jet A1	V13/10 - CS24	BB Energy	Yes	Yes
Jet A1	V54/10 - CS25	BB Energy	Yes	Yes
Jet A1	V06/11 - CS26	BB Energy	Yes	Yes
Jet A1	V58/09 - CS34	BB Energy	Yes	Yes
Jet A1	V26/08 - CS41	Litasco	Yes	Yes
Jet A1	V46/11 - CS27	BB Energy	Yes	Yes
Avgas	V62/09 - CS38	ENI	Yes	No
Avgas	V28/09 - CS39	ENI	No	No
Gasoil	V26/09 - CS49	Totsa	No	No

Appendix D – List of Institute of Petroleum Test Methods and Equivalencies to Other Standards

List of IP Test Methods, Panels Responsible for Them and Corresponding BS 2000, EN, ISO and ASTM Methods [Page 1 of 11]

LIST OF IP TEST METHODS, PANELS RESPONSIBLE FOR THEM AND CORRESPONDING BS 2000, EN, ISO AND ASTM METHODS

(e) Published as single BS 2000 Parts

(*) Joint IP/ASTM method

(a) Published by ASTM

IP Reference	Method Title	Panel	BS 2000	EN	ISO	ASTM D
Appendix A			0.1:99			
Appendix B			0.2:96			
Appendix I			0.4:96			
1/94(04)	Acidity	ST-C-4	1:95			
2/98(04)*	Aniline and mixed aniline point	ST-B-10	2:98		2977:97	611-01
3	obsolete					
4/05*	Ash	ST-G-3	4:02	ISO 6245:02	6245:01	482-03
5	obsolete					
6	superseded by IP 143					
7	superseded by IP 143					
8	obsolete					
9	superseded by IP 129, 130					
10/94(03)	Kerosine 24 h burning	ST-B-10	10:95			
11	obsolete					
12/79(01)	Specific energy	ST-B-2	12:93			
13/94(03)	Conradson carbon residue	ST-B-10	13:94		6615:93	
14/94(04)*	Ramsbottom carbon residue	ST-C-4	14:94		4262:93	524-03
15/95(04)*	Pour point	ST-C-4	15:95		3016:94	97-02
16/08*	Freezing point of aviation fuels	ST-B-7				2386-05
17/03	Colour Lovibond Tintometer	ST-B-10				
18	obsolete					
19/03	Demulsibility characteristics of lubricating oil	ST-C-4	19:03			
20	superseded by IP 295					
21	obsolete					
22	obsolete					
23/2000*	Gasoline engine crankcase oil fuel dilution	ST-C-4				322-97(02)
24	obsolete					
25	obsolete					
26	superseded by IP 123					
27	superseded by IP 525					
28	superseded by IP 123					
29	superseded by IP 123					
30/07	Doctor test	ST-B-10				
31	superseded by IP 132					
32	obsolete					
33	obsolete					
34/03*	Pensky-Martens closed flash point	ST-B-4	34:02	ISO 2719:02	2719:02	93-02
35/63(01)	Pensky-Martens open flash and fire point	ST-B-4	35:93			
36/02	Cleveland open flash and fire point	ST-B-4	36:02	ISO 2592:01	2592:00	
37/04	Acidity and alkalinity of lubricating grease	ST-C-6				
38	obsolete					
39	obsolete					
40/97(04)	Oxidation stability of gasoline induction period	ST-B-8	40:96	ISO 7536:96	7536:94	525-01
41/99*	Cetane number engine	ST-B-1	41:98	ISO 5165:98	5165:98	613-01
42	obsolete					
43	superseded by IP 150					
44	superseded by IP 236					
45	superseded by IP 506	ST-E				

List of IP Test Methods, Panels Responsible for Them and Corresponding BS 2000, EN, ISO and ASTM Methods [Page 2 of 11]

LIST OF IP TEST METHODS, PANELS RESPONSIBLE AND CORRESPONDING BS 2000, EN, ISO AND ASTM METHODS

IP Reference	Method Title	Panel	BS 2000	EN	ISO	ASTM D
46	<i>obsolete</i>					
47/07e	Solubility of bituminous binders	ST-E	47:07	12592:07		
48/97(04)	Oxidation characteristics of lubricating oil	ST-C-2	48:97			
49/07e	Needle penetration of bituminous material	ST-E	49:07	1426:07		
50/88(07)*	Cone penetration of lubricating grease	ST-C-6	50:93			217-02
51	<i>obsolete</i>					
52	<i>superseded by IP 136</i>					
53/2000*	Sediment by extraction	ST-B-3	53:99	ISO 3735:99	3735:99	473-02
54	<i>obsolete</i>					
55/77(01)*	Melting point of wax	ST-C-7				87-87(99)
56	<i>obsolete</i>					
57/95(03)*	Smoke point	ST-B-10	57:95		3014:93	1322-97(02)
58/07e	Softening point of bitumen ring and ball	ST-E	58:07	1427:07		
59	<i>obsolete</i>					
60	<i>obsolete</i>					
61/99(08)*	Sulfur high pressure combustion	ST-G-5	61:99			129-00
62	<i>superseded by IP 107</i>					
63	<i>obsolete</i>					
64	<i>superseded by IP 154</i>					
65	<i>obsolete</i>					
66	<i>superseded by IP 61</i>					
67	<i>obsolete</i>					
68	<i>obsolete</i>					
69/01(08)	Reid vapour pressure	ST-B-9	69:01		3007:99	
70	<i>obsolete</i>					
71 511/97*	Kinematic viscosity and calculation of dynamic viscosity	ST-C-3	71:96 <i>sect 1</i>	ISO 3104:96	3104:94	445-03
71 5 2/95(04)*	Kinematic viscometers specifications	ST-C-3	71:95 <i>sect 2</i>		3105:94	446-00
72	<i>superseded by IP 502</i>					
73	<i>superseded by IP 226</i>					
74/2000*	Water by distillation petroleum products	ST-B-3	74:00		3733:99	95-99
75	<i>obsolete</i>					
76/70(04)*	Congealing point of waxes and petrolatum	ST-C-7	76:93			938-92(98)
77/72(04)	Salt content crude oil and products	ST-G-3				
78	<i>obsolete</i>					
79	<i>obsolete</i>					
80/07e	Fraass breaking point of bitumen	ST-E	80:07	12593:07		
81	<i>obsolete</i>					
82	<i>obsolete</i>					
83	<i>obsolete</i>					
84	<i>obsolete</i>	ST-G-2				
85	<i>obsolete</i>					
86	<i>obsolete</i>					
87	<i>obsolete</i>					
88	<i>obsolete</i>					
89	<i>obsolete</i>					
90	<i>obsolete</i>					
91/00e	Residue on sieving bitumen emulsions	ST-E-4	91:00	1429:99		
92	<i>obsolete</i>					
93	<i>obsolete</i>					
94	<i>obsolete</i>					
95	<i>obsolete</i>					
96	<i>obsolete</i>					
97	<i>superseded by IP 131</i>					
98	<i>obsolete</i>					
99	<i>superseded by IP 136</i>					

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100	<i>superseded by IP 213</i>					
101	<i>obsolete</i>					
102	<i>obsolete</i>					
103/88(01)	Hydrogen sulphide in LPG and light distillates	ST-G-5				
104	<i>obsolete</i>					
105	<i>obsolete</i>					
106	<i>obsolete</i>					
107/86(01)*	Lamp sulphur	ST-G-5	107:93			1266-98(03)
108	<i>obsolete</i>					
109	<i>obsolete</i>					
110/82(01)	Barium content of lubricating oil gravimetric	ST-G-3				
111/82(01)	Calcium content of lubricating oil volumetric	ST-G-3				
112/05	Copper corrosion grease	ST-C-6	112:05			
113	<i>obsolete</i>					
114	<i>obsolete</i>					
115	<i>superseded by IP 149</i>					
116	<i>obsolete</i>					
117/82(01)	Zinc content of lubricating oil gravimetric	ST-G-3				
118	<i>obsolete</i>					
119/96(08)*	Supercharge knock rating	ST-B-1				909-01
120	<i>obsolete</i>					
121/05	Grease oil separation	ST-C-6	121:05			
122	<i>obsolete</i>					
123/01	Distillation of petroleum products	ST-B-9	123:01	ISO 3405:00	3405:00	
124	<i>obsolete</i>					
125/08	Cast iron corrosion petroleum products	ST-C-5				
126	<i>superseded by IP 237</i>					
127	<i>obsolete</i>					
128	<i>obsolete</i>					
129/03	Bromine number colour indicator titration	ST-G-2	129:03			
130/98(04)*	Bromine number electrometric titration	ST-G-2	130:98		3839:96	1159-01
131/99*	Gum content of light and middle distillate fuels	ST-B-8	131:98	ISO 6246:97	6246:95	
132/96(04)*	Dropping point of grease	ST-C-6	132:96		2176:95	566-02
133/79(01)*	Drop melting point of wax and petroleum	ST-C-7	133:93			127-87(99)
134	<i>obsolete</i>					
135/06*	Rust preventing characteristics of steam turbine oil	ST-C-4				665-02
136	Saponification number colour indicator titration	ST-G-2	136:98 51		6293-1:96	94-02
51/98(06)*						
136	Saponification number potentiometric titration	ST-G-2	136:99 52		6293-2:98	94-02
52/99(06)*						
137/82(04)	Oil content of water mix metalworking fluids	ST-C-5	137:93			
138/02(08)*	Oxidation stability of aviation fuel	ST-B-8	138:02			873-02
139/98(04)*	Acid or base number colour indicator titration	ST-C-4	139:98		6618:96	974-02
140	<i>obsolete</i>					
141	<i>obsolete</i>					
142/85(04)*	Oxidation stability of lubricating grease	ST-C-6	142:93			942-02
143/04*	Asphaltenes (heptane insolubles)	ST-B-5	143:04			6560-00
144	<i>obsolete</i>					
145	<i>obsolete</i>					
146/06*	Foaming characteristics of lubricating oils	ST-C-4				892-06
147	<i>obsolete</i>					
148	<i>obsolete</i>					
149/93(03)*	Phosphorus in lubricating oils and additives	ST-G-3	149:93		4265:86	4047-00
150	<i>superseded by IP 236</i>					
151	<i>obsolete</i>					
152	<i>obsolete</i>					

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153	<i>obsolete</i>					
154/2000*	Copper corrosion	ST-B-10	154:99	ISO 2160:98	2160:98	130-94(00)
155	<i>obsolete</i>					
156/08	Hydrocarbon types by FIA	ST-G-2	156:07	EN 15553:07		
157/96(06)	Oxidation stability of inhibited mineral oils (TOST test)	ST-C-2				
158/69(01)*	Oil content of waxes gravimetric	ST-C-7				721-02
159	<i>obsolete</i>					
160/99*	Hydrometer density	Density	160:98	ISO 3675:98	3675:98	1298-99
161	<i>superseded by IP 410</i>					
162	<i>obsolete</i>					
163/96(03)	Sulphated ash of lubricating oils and additives	ST-G-3	163:96		3987:94	
164	<i>obsolete</i>					
165	<i>obsolete</i>					
166	<i>obsolete</i>					
167	<i>obsolete</i>					
168/08	Rolling bearing performance of lubricating grease	ST-C-6				
169	<i>superseded by IP 264</i>					
170/99	Abel flash point	ST-B-4	170:98	ISO13736:97	13736:97	
171	<i>obsolete</i>					
172	<i>superseded by IP 237</i>					
173	<i>obsolete</i>					
174	<i>obsolete</i>					
177/96(04)*	Weak and strong acid number potentiometric titration	ST-C-4				664-01
178	<i>obsolete</i>					
179/79(04)*	Cone penetration of petrolatum	ST-C-7	179:93			937-97(02)
180	<i>obsolete</i>					
181	<i>obsolete</i>					
182/06	Inorganic acidity colour indicator titration	ST-C-4	182:06			
183/08	Evaporation loss of lubricating grease	ST-C-6				
184	<i>superseded by IP 264</i>					
185/65(04)*	Odour of petroleum wax	ST-C-7				1833-87(99)
186/93(04)	Low temperature torque of lubricating grease	ST-C-6				
187	<i>obsolete</i>					
188	<i>obsolete</i>					
189/05	Pyknometer density	Density	189/190:04	ISO 3838:04	3838:04	
190/05	Pyknometer density	Density	189/190:04	ISO 3838:04	3838:04	
191	<i>incorporated into IP 123 as Group 0</i>					
192	<i>superseded by IP 160</i>					
193	<i>obsolete</i>					
194	<i>obsolete</i>					
195/98(04)*	Distillation volatile organic liquids	ST-B-9	195:98			1078-01
196/97(04)*	ASTM colour	ST-B-10	196:97		2049:96	1500-02
197	<i>obsolete</i>					
198	<i>obsolete</i>					
199	<i>obsolete</i>					
200/08*	Petroleum measurement tables (published separately)					1250-07
212/92(04)	Viscosity of bitumen road emulsions	ST-E-4				
213/82(04)	Neutralization value of bitumen colour indicator titration	ST-E	213:93			
214	<i>obsolete</i>					
215/08	Water washout characteristics of lubricating grease	ST-C-6				
216/05*	Particulate contaminant of aviation turbine fuels	ST-B- 11				2276-00
217	<i>obsolete</i>					

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218	<i>obsolete</i>					
219/94(04)	Cloud point	ST-B-7	219-94	23015-94	3015-92	
220/07	Rust prevention characteristics of lubricating greases	ST-C-6				
221	<i>obsolete</i>					
222/07e	Absolute viscosity of bitumen capillary viscometer	ST-E	222:07	12596:07		
223/68(04)	Ash of petroleum products containing mineral matter	ST-E	223:93			
224/02	Lead content of light petroleum distillates	ST-G-3				
225/76(03)	Copper in light petroleum distillates spectrophotometric	ST-G-3				
226/04*	Calculation of viscosity index	ST-B-2	226:02		2909:02	2270-93(98)
227	<i>obsolete</i>					
228/72(04)	Lead content of gasoline x-ray spectrometry	ST-G-3				
229/93(04)	Oxidation stability of steam turbine oils	ST-C-2				
230	<i>obsolete</i>					
231/69(01)	Engine cleanliness	ST				
232	<i>obsolete</i>					
233	<i>obsolete</i>					
234	<i>obsolete</i>					
235/86(04)	Pressure hydrometer density	Density				
236/06*	Motor octane number	ST-B-1	236:05	ISO 5163:05	5163:05	2700-01
237/06*	Research octane number	ST-B-1	237:05	ISO 5164:05	5164:05	2699-01
238/82(88)a	LPG motor octane number	ST-B-1				
239/07	Extreme pressure/antiwear properties of lubricants and greases four ball	ST-C-1				
240/84(04)	Extreme pressure properties of lubricants Timken	ST-C-1				
241	<i>obsolete</i>					
242/83(01)	Sulphur flask combustion	ST-G-5				
243/94(04)	Sulfur Wickbold combustion	ST-G-5	243:94	24260:94	4260:87	
244/71(04)	Chlorine flask combustion	ST-G-3				
245/81(04)	Phosphorus flask combustion	ST-G-3				
247/69(01)	Engine cleanliness and wear	ST				
248	<i>obsolete</i>					
249/79(04)	Bingham pycnometer density	Density				
250	<i>obsolete</i>					
261	<i>obsolete</i>					
262	<i>obsolete</i>					
263/70(04)	Stability of water mix metal working fluids	ST-C-5				
264/72(07)*	LPG and propylene concentrates GC	ST-G-6				2163-91(96)
265/01(04)	Salts content of crude oils conductivity	ST-G-3				
266	<i>obsolete</i>					
267	<i>obsolete</i>					
268	<i>obsolete</i>					
269	<i>obsolete</i>					
270/96(04)	Lead content of Gasoline ICI	ST-G-3	270:96	ISO 3830:95	3830:93	
271/70(04)	Barium in lubricating oil additive concentrates acid oxidation	ST-G-3				
272/2000	Mercaptan sulfur and H ₂ S in LPG electrometric titration	ST-G-5	272:00			
273	<i>obsolete</i>					
274/06*	Electrical conductivity of aviation and distillate fuels	ST-B-8				2624-02
275	<i>obsolete</i>					
276/95(04)*	Base number perchloric acid potentiometric titration	ST-C-4	276:96		3771:94	2896-01
277	<i>obsolete</i>					

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IP Reference	Method Title	Panel	BS 2000	EN	ISO	ASTM D
278	<i>obsolete</i>					
280/99	Oxidation stability of inhibited mineral turbine Oils	ST-C-2	280:99		7624:97	
281	<i>obsolete</i>					
282	<i>obsolete</i>					
283	<i>obsolete</i>					
284/04	Saponifiable and unsaponifiable matter in oils, fats and waxes	ST-G-2	284:04			
285/79(04)	Nickel and vanadium spectrophotometric	ST-G-3				
286	<i>obsolete</i>					
287/08	Rust prevention characteristics of water mix metal working fluids	ST-C-5				
288	<i>obsolete</i>					
289/06	Water reaction of aviation fuels	ST-B-11				
290	<i>obsolete</i>					
291/00e	Water by distillation bitumen emulsions	ST-E-4	291:00	1428:99		
292/00e	Particle charge of bitumen emulsions	ST-E-4	292:00	1430:99		
293	<i>obsolete</i>					
294	<i>obsolete</i>					
295/83(05)	Electric strength of insulating oils	ST-C-4				
296	<i>obsolete</i>					
297	<i>obsolete</i>					
298/92(06)	Quinizarin extraction spectrophotometric	ST-G-2				
299/03*	Bromine index electrometric titration	ST-G-2				2710-99
300	<i>obsolete</i>					
301	<i>This number not used</i>					
302	<i>This number not used</i>					
303 Part 1/01	<i>Replaced by IP 523</i>	ST-B-4				
303 Part 2/01	<i>Replaced by IP 524</i>	ST-B-4				
304 Part 1	<i>Replaced by IP 492</i>					
304 Part 2	<i>Replaced by IP 491</i>					
305	<i>obsolete</i>					
306/94(04)	Oxidation stability of straight mineral oil	ST-C-2	306:94			
307	<i>obsolete</i>					
308/85(04)	Ba, Ca, Mg and Zn in unused lubricating oils AAS	ST-G-3				
309/99	CFPP of diesel and domestic heating fuels	ST-B-7	309:98	116:97		
310/84(04)*	Quarter and half cone penetration of grease	ST-C-6				1403-02
311/74(04)	Thermal stability of water mix metal working fluids	ST-C-5				
312/74(04)	Frothing characteristics of water mix metal working fluids	ST-C-5				
313/01	Air release value of hydraulic, turbine and lubricating oils	ST-C-4	313:01			3427-02
314	<i>obsolete</i>					
315/98(04)*	Copper corrosion electrical insulating oils	ST-C-4	315:98		5662:97	1275-96a
316/93(05)	Solids in used engine oils	ST-C-4				
317/95(02)*	LPG residue at 38 °C	ST-B-5	317:95			2158-02
318/75(04)	Characterization of pollutants GC	ST-G-6				
319/07e	Kinematic viscosity of bitumens	ST-E	319:07	12595:07		
320	<i>obsolete</i>					
321	<i>obsolete</i>					
322	<i>obsolete</i>					
323/08*	JFTOT thermal oxidation stability of gas turbine fuels	ST-B-8				3241-07
324	<i>obsolete</i>					
325	<i>obsolete</i>					
326/05	Extreme pressure properties of grease Timken	ST-C-1				2509-03
327	<i>obsolete</i>					

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328	obsolete					
329	obsolete					
330	obsolete					
331	obsolete					
332	obsolete					
333	obsolete					
334	obsolete use CEC L-07-A					
335	obsolete					
336/04	Sulfur by EDXRF	ST-G-5	336:03	ISO 8754:03	8754:03	
337/78(04)	Composition of non-associated natural gas	ST-G-6				
338	obsolete					
339	obsolete					
342/2000*	Mercaptan sulfur in distillate fuels potentiometric	ST-G-5	342:00		3012:99	3227-02
343/01(06)	24MGB in AVTUR HPLC	ST-G-2				
344/88(04)	Light hydrocarbons in stabilized crude oils GC	ST-G-6				
345	obsolete					
346/92(04)	PCAs in petroleum fractions	ST-G-2	346:96			
350	obsolete					
351	obsolete					
352/2007	Lead content gasoline EDXRF	ST-G-3				
354/06*	Acidity of AVTUR colour indicator titration	ST-B-11				3242-01
355/01	Calculation of net specific energy of AVTUR	ST-B-2	355:01		15911:00	
356/99*	Water in crude oil potentiometric Karl Fischer	ST-B-3	356:99		10336:97	4377-00
357	obsolete					
358/97(03)	Water by distillation crude oils	ST- B-3	358:97	ISO 9029:95	9029:90	
359	obsolete					
360/96a*	RDN and MON on-line analysers	ST-B-1				2885-95(99)
361/82(88)a*	DON	ST-B-1				
362/93(03)	Lead content of gasoline AAS	ST-G-3				
363	obsolete					
364	obsolete					
365/97(04)	Oscillating U-tube density	Density	365:96	ISO12185:96	12185:96	
366	obsolete					
367/07	Application of precision data	ST	367:06	ISO4259:06	4259:06	
368/01(06)	Hydrocarbon types in lubricating oil basestocks HPLC	ST-G-2				
369/84(06)*	Composition of oil soluble petroleum sulphonates LC	ST-G-2				3712-91(00)
370	obsolete					
371/85(04)	Drop point of petrolatum	ST-C-7				
372/85(03)	Carbon number distribution of paraffin wax GC	ST-G-6				
373/99	Sulphur microcoulometry	ST-G-5				
374/01(06)	Coumarin fluorimetric and HPLC	ST-G-2				
375/99*	Sediment in residual fuel oils and distillate blends filtration	ST-B-5	375:99		10307-1:93 + TC1:97	4870-99
376/86(04)	Needle penetration of petroleum wax	ST-C-7				
377/95(03)	Al and Si in fuel oil ICPE5 and AAS	ST-G-3	377:95		10478:94	
378/87(01)*	Storage stability at 43 °C of distillate fuel	ST-B-5				4625-92(98)
379/88(01)*	Organically bound trace nitrogen	ST-G-5				4629-02
380/08	Calculation of cetane index	ST-B-2	380:07	ISO 4264:07	4264:07	
381/97(04)*	Estimation of net specific energy of aviation fuels	ST-B-2	381:97		3648:94	4529-02
382/88(03)	C number distribution of PNA GC	ST-G-6				
383	obsolete					
384	obsolete					

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385/99	Viable aerobic microbial content of fuels and fuel components	Micro-biology				
386/99*	Water in crude oil coulometric Karl Fischer	ST-B-3	386:99		10337:97	4928-00
387/97(04)	Filter blocking tendency of gas oils and distillate diesel fuels	ST-B-5				
388/97(04)*	Oxidation stability of middle-distillate fuels	ST-B-5	388:96	ISO12205:96	12205:95	2274-03
389/93(04)	WATof middle distillate fuels DTA or DSC	ST-G-9				
390/94(04)	Thermal and chemical ageing of residual fuel Oils	ST-B-5	390:94		10307-2:93	
391/01	Aromatic hydrocarbon types in diesel fuels and distillates HPLC	ST-G-2	391:06	12916: 06		
392/90(08)	Aromatic hydrogen and carbon contents NMR	ST-G-2				
393/96(04)	Volatility of automotive lubricating oils	ST-G-9				
394/08	Air saturated vapour pressure	ST-B-9	394:07	13016-1:07		
395/98(04)*	Valve freeze dryness of propane	ST-B-5	395:97	ISO13758:96	13758:96	2713-91(01)
396/02	Automatic dropping point of lubricating grease	ST-C-6				
397	obsolete					
398/96(04)	Carbon residue (micro method)	ST-B-10	398:96	ISO10370:95	10370:93	
399/94(04)	Hydrogen sulfide content of fuel oils	ST-G-5				
400/01	Base number conductimetric titration	ST-C-4				
401/95(04)	Hydrogen sulfide in LPG lead acetate	ST-G-5	401:95	ISO 8819:95	8819:93	
402	obsolete					
403	obsolete					
404	obsolete					
405/94(03)	Propane and butane analysis by GC	ST-G-6	405:94	27941:93	7941:88	
406/06*	Boiling range of products GC method	ST-G-6				2887-02
407/95(04)	Ba, Ca, P, S and Zn by WDXRF	ST-G-3				
408/98(03)	Oxygenates and total oxygen in unleaded petrol GC, O-FID	ST-G-6	408:97	1601:97		
409/08	Absolute vapour pressure of gasoline at 40 °C and 100 °C	ST-B-9	409:07	13016-2:07		
410/99(08)	Gauge vapour pressure of LPG	ST-B-9	410:98	ISO 4256:98	4256:96	
411/99(07)	Copper corrosion LPG	ST-B-10	411:98	ISO 6251:98	6251:96	
412/96(04)	Water separability of petroleum oils and synthetic fluids	ST-C-4	412:96		6614:94	
413/96(03)	Low levels V flameless AAS	ST-G-3	413:96		8691:94	
414/96(04)	Cooling characteristics industrial quenching oils	ST-C-5	414:96		9950:95	
415/00*	Particulate content of middle distillate fuels laboratory filtration	ST-B-5				6217-98(03)
416/96(04)	Sulfate and nitrate in diesel particulate filters	ST-G-10				
417/96(04)	Base number potentiometric titration	ST-C-4				
418/96(04)	Relative volatility of automotive lubricating oils	ST-G-9				
419/03	SFPP of distillate fuels	ST-B-7				
420	Superseded by IP 432					
421/05	NOACK evaporative tester	ST-C-4				
422/96(04)	Filter flow of aviation turbine fuels	ST-B-7				
423/99*	Particulate contaminant of AVTUR laboratory filtration	ST-B-11				5452-00
424/96(04)	FSII in AVTUR by HPLC	ST-G-2				
425/01(07)	Benzene content GC	ST-G-6	425:00	12177:00		
426/98(04)	Oil content of effluent water	ST-G-2				
427/97(04)	Oily residues high-temperature	ST-B-5	427:96	ISO13757:96	13757:96	
428/06	Low lead content of petrol AAS	ST-G-3	428:04	237:04		
429/04	Benzene content of petrol IR	ST-G-6	429:04	238:03		
430/98(04)	Alkyl nitrate in diesel fuels	ST-G-2	430:97	ISO13759:96	13759:96	
431/98(04)	Acid number semi-micro colour indicator titration	ST-C-4	431:98		7537:97	
432/00	LPG calculated density and vapour pressure	ST-B-2	432:99	ISO8973:99	8973:97	
433/00	Vanadium and nickel content WDXRF	ST-G-3	433:99	ISO14597:99	14597:97	
434	Replaced by IP 528	ST-B-7				

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435/08*	Freezing point of aviation turbine fuels automatic phase transition	ST-B-7				5972-05
436/01*	Aromatic in aviation fuels and distillates HPLC RI	ST-G-2				6379-99
437/98(04)	Elements in unused lubricating oils and additive packages ICPAES	ST-G-3				
438/01	Water content products coulometric Karl Fischer	ST-B-3	438:01	ISO12937:00	12937:00	
439/01	Water content products potentiometric Karl Fischer	ST-B-3	439:01		6296:00	
440/99	Contamination in middle distillates	ST-B-5	440:98	12662:98		
441/99(04)*	Pour point of crude oils	ST-B-7				5853-95(00)
442/99	Fuel and oil-derived hydrocarbons in diesel particulates GC	ST-G-10				
443/99	SDF of diesel particulates soxhlet extraction gravimetric	ST-G-10				
444/03*	Cloud point automatic stepped cooling	ST-B-7				5771-02
445/03*	Cloud point automatic linear cooling rate	ST-B-7				5772-02
446/03*	Cloud point automatic constant cooling rate	ST-B-7				5773-02
447/08	Sulphur content WDXRF	ST-G-5	447:07	ISO14596:07	14596:07	
448/52	<i>now only published as BS ISO 13357:2</i>	ST-C-4				
449/00	Acid number non-aqueous potentiometric titration	ST-C-4	449:98	12634:98		
450/00	Lubricity of diesel fuel HFRR	ST	450:00		(12156)	
451/00(05)	Aromatic carbon content of lubricant mineral base oils IR	ST-G-2				
452	<i>obsolete</i>					
453/00*	High temperature foaming characteristics of lubricating oils	ST-C-4				6082-01
454/00	Phosphorus in gasoline spectrophotometric	ST-G-3	454:00			
455/01	Manganese in gasoline AAS	ST-G-3	455:01			
456/00	Potassium in gasoline AAS	ST-G-3	456:00			
457/00e	Bitumen characterisation of perceptible properties	ST-E	457:00	1425:99		
458/00e	Recovered binder and oil from bitumen emulsions by distillation	ST-E	458:00	1431:99		
459 Part 1/07e	Bitumen paraffin wax content by distillation	ST-E	459:07 Part 1	12606-1:07		
459 Part 2/00e	Bitumen paraffin wax content by extraction	ST-E	459:00 Part 2	12606-2:99		
460 Part 1/07e	Bitumen resistance to hardening RTFOT	ST-E	460:07 Part 1	12607-1:07		
460 Part 2/07e	Bitumen resistance to hardening TFOT	ST-E	460:07 Part 2	12607-2:07		
460 Part 3/07e	Bitumen resistance to hardening RFT	ST-E	460:07 Part 3	12607-3:07		
461/07e	Bitumen preparation of test samples	ST-E	461:07	12594:07		
462-1/01	PCBs separation by GC ECD	ST-G	462.1:01	12766-1:00		
462-2/02	PCBs and related products	ST-G	462.2:01	12766-2:01		
462-3/08	PCBs and related products, determination and quantification	ST-G	462.3:04 IC.I	12766-3:04 IC.I		
463/02*	Potential instability of middle distillates	ST-B-5				6748-02
464/01	Sodium by AAS	ST-G-3	464:01	241: 00		
465/01	Nickel and vanadium by AAS	ST-G-3	465:01	13131:00		
466/01(07)	Oxygenates and organically bound oxygen GC	ST-G-6	466:01	13132:00		
467/01*	High temperature stability of middle distillate fuels	ST-B-5				6468-99
468	<i>obsolete</i>					
469/01(06)	Saturated, aromatic and polar compounds TLC FID	ST-G-2				
470/05	Metals in fuel oil by AAS	ST-G-3				
471/06	Water content of fuel oil Karl Fischer potentiometric	ST-B-3				
472/02	Fungal fragments content of fuels boiling below 390 °C	Microbiology				
473/02	Composition of LP GC	ST-G-6				
474/05	Bitumen sampling	PTI/13/-3	474:04	58:04		

List of IP Test Methods, Panels Responsible for Them and Corresponding BS 2000, EN, ISO and ASTM Methods [Page 10 of 11]

LIST OF IP TEST METHODS, PANELS RESPONSIBLE AND CORRESPONDING BS 2000, EN, ISO AND ASTM METHODS

IP Reference	Method Title	Panel	BS 2000	EN	ISO	ASTM D
475/05	Manual sampling	PTI/13/-/3	475:04	ISO 3170:04	3170:04	
476/02	Automatic pipeline sampling	PTI/13/-/3	476:02	ISO 3171:99	3171:88	
477/02	Liquefied petroleum gas sampling	PTI/13/-/3	477:01	ISO 4257:01	4257:01	
478/02	Copper in AVTUR	ST-G-3				
479/02	Wet and dry oil density	Density				
480/02	Boiling range distribution of distillates and lubricants GC	ST-G-6	480:06	15199-1:06		
481/03	Air saturated vapour pressure (ASVP) of crude oil	ST-B-9				
482/02	HiRETS thermal stability of AVTUR	ST-B-8				
483/02	Sediment in crude oil membrane filtration	ST-B-3				
484/03e	Efflux time of bitumen emulsions	ST-E	484:03	12846:02		
485/03e	Settling tendency of bitumen emulsions	ST-E	485:03	12847:02		
486/03e	Mixing stability with cement of bitumen emulsions	ST-E	486:03	12848:02		
487/03e	Penetration power of bitumen emulsions	ST-E	487:03	12849:02		
488/03e	pH bitumen emulsions	ST-E	488:03	12850:02		
489/03	Low lead in gasolines WDXRF	ST-G-3	489:02	13723:02		
490/05	Sulfur petroleum products UV	ST-G-5	490:04	ISO 20846:04	20846:04	
491/03	Flash/no flash closed cup equilibrium	ST-B-4	491:02	ISO 1516:02	1516:02	
492/03	Flash point closed cup equilibrium	ST-B-4	492:02	ISO 1523:02	1523:02	
493/03e	Recovery of binder from bitumen emulsions by evaporation	ST-E	493:02	13074:02		
494/03e	Breaking behaviour cationic bitumen emulsions mineral filler	ST-E	494:02	13075-1:02		
495/03e	Breaking behaviour cationic bitumen emulsions fines mixing time	ST-E	495:02	13075-2:02		
496/05	Sulfur in automotive fuels EDXRF	ST-G-5	496:04	ISO 20847:04	20847:04	
497/05	Sulfur in automotive fuels WDXRF	ST-G-5	497:04	ISO 20884:04	20884:04	
498/08	Derived cetane number IQT	ST-B-13	498:07	15195:07		
499/03	Aromatic carbon 13C NMR spectroscopy	ST-G-2				
500/03	Phosphorus in residual fuels UV	ST-G-3				
501/05	Al, Si, V, Ni, Fe, Na, Ca, Zn and P in residual fuel oil ICPEs	ST-G-3				
502/03e	Viscosity of cutback and fluxed bitumens	ST-E	502:02	13357:02		
503/04	Chlorine and bromine WDXRF	ST-G-3	503:04		15597:01	
504/04e	Staining tendency of bitumen	ST-E	504:03	13301:03		
505/04e	Viscosity of bitumen rotating spindle	ST-E	505:03	13302:03		
506/04e	Loss on heating bitumen	ST-E	506:03	13303:03		
507/07	SIMDIST residues	ST-G-6	507:06	15199-2:06		
508/04	Fuel quality monitoring	ST	508:03	14274:03		
509/04	Sampling for fuel quality monitoring	ST	509:03	14275:03		
510/04	Organic halogens	ST-G-5	510:03	14077:03		
511/04	Carbonyls in dilute exhaust	ST-G-10				
512/04	Test portion preparation - N ₂ purge		512:04	ISO 20764:03	20764:03	
513/04e	Bitumen dynamic viscosity cone and plate	ST-E	513:04	13702-1:03		
514/04e	Bitumen dynamic viscosity coaxial cylinders	ST-E	514:03	13702-2:03		
515/04e	Bitumen deformation energy	ST-E	515:03	13703:03		
516/04e	Bitumen elastic recovery	ST-E	516:03	13398:03		
517/04e	Bitumen storage stability	ST-E	517:03	13399:03		
518/04e	Bitumen polymer dispersion	ST-E	518:03	13632:03		
519/04e	Bitumen tensile properties	ST-E	519:03	13587:03		
520/04e	Bitumen force ductility	ST-E	520:03	13589:03		
521/05e	Bitumen emulsion adhesivity water immersion	ST-E	521:04	13614:04		
522/05e	Bitumen cohesion pendulum test	ST-E	522:04	13588:04		
523/05	Flash point rapid equilibrium	ST-B-4	523:04	ISO 3679:04	3679:04	
524/05	Flash/no flash rapid equilibrium	ST-B-4	524:04	ISO 3680:04	3680:04	
525/05e	Cutback bitumen distillation	ST-E	525:04	13358:04		

List of IP Test Methods, Panels Responsible for Them and Corresponding BS 2000, EN, ISO and ASTM Methods [Page 11 of 11]

LIST OF IP TEST METHODS, PANELS RESPONSIBLE AND CORRESPONDING BS 2000, EN, ISO AND ASTM METHODS

IP Reference	Method Title	Panel	BS 2000	EN	ISO	ASTM D
526/05	Hydrocarbon types and oxygenates MDGC	ST-G-6	526:04	14517:04		
527/05	Grease cold temperature cone penetration	ST-C-6	527:04		13737:04	
528/08*	AVTUR freezing point fibre optic	ST-B-7				7154-05
529/08*	AVTUR freezing point automatic laser	ST-B-7				7153-05
530/06	Density of grease	ST-C-6				
531/07*	Sulfur content proportional counting EDXRF	ST-G-5				7212-06
532/07*	Sulfur content polarized XRF	ST-G-5				7220-06
533/05e	Bitumen flexural creep, bending beam rheometer	ST-E	533:05	14471:05		
534/06	Flash point small scale ramp	ST-B-4				
535/05e	Bitumen accelerated ageing, pressure vessel	ST-E	535:05	14769:05		
536/05e	Bitumen shear, modular and phase angle	ST-E	536:05	14770:05		
537/06	Purity of heptane and methylcyclohexane GC	ST-G-6				
538/08	Total acidity of ethanol	ST-G-2	538:07	15491:07		
539/08	Water content of ethanol	ST-B-3	539:07	15489:07		
540/08	Gum content of AVTUR	ST-B-8				
541/06	Ignition quality of marine fuel oils (FIA)	ST-B-14				
542/06e	Stabilisation of binder	ST-E	542:06	14895:06		
543/06	Dynamic viscosity	ST-C-3				
544/07	Metal corrosion grease	ST-C-6				
545/07	Crude oil boiling range GC	ST-G-6				
546/07e	Bitumen viscosity rotating spindle	ST-E	546:06	14896:06		
547/07	FAME Ca K Mg and Na	ST-G-3	547:06	14538:06		
548/07*	Aromatics in distillates HPLC	ST-G-2				6591-00
549/07e	Bitumen density	ST-E	549:07	15326:07		
550	<i>not yet published</i>					
551/07e	Bitumen ageing RCAT	ST-E	551:07	15323:07		
552/08	Ethanol chloride	ST-G-3	552:07	15484:07		
553/08	Ethanol sulfur WDXRF	ST-G-5	553:07	15485:07		
554/08	Ethanol sulfur UV	ST-G-5	554:07	15486:07		
555/08	Ethanol phosphorus	ST-G-3	555:07	15487:07		
556/08	Ethanol copper	ST-G-3	556:07	15488:07		
557/08	Ethanol pHc	ST-G-2	557:07	15490:07		
558/07*	X-ray code of practice	ST-G-3				7343-07
559/08	Hand held density meter	Density				
560/08	Metals in used greases WDXRF	ST-G-3				
561/08	Metals in used greases ICP-AES	ST-G-3				
562/08	Metalworking fluids foam test	ST-C-5				
563	<i>not yet published</i>					
564/08	AVTUR cleanliness LAPC	ST-B-11				
565/08	AVTUR cleanliness PAPC	ST-B-11				

Appendix E – Risk Management Committee Procedures

Risk Management Committee Procedures [Page 1 of 3]



Risk Management Committee Procedures

Scope

The scope of this write-up is to document the hedging procedure Enemalta Corporation (EMC) adopts to buy oil and U.S. Dollars (USD) in the forward method.

Background

A set of hedging recommendations were presented to the Board of Directors in a policy paper submitted by the Fuel Procurement Advisory Committee (FPAC), whereby it was suggested that Enemalta Corporation (EMC) should seek to implement a forward purchasing programme to guard against any large scale unpredictable events which generally translate into sharp shocks in prices.

FPAC's recommendations state that EMC's fuel procurement policy should be based on the fundamental principle of being flexible. This helps smoothen out, as much as possible, some of the extreme short term volatility. FPAC also recommends that EMC should seriously consider some catastrophe buffer as protection from any unforeseeable major events.

Following these recommendations, a Risk Management Committee (RMC) was set up in April 2006, which meets on a regular basis. The RMC as currently constituted, is made up as follows: The Chairman of this Committee is the Chairman of the Corporation. The other members on this committee are a Board Director, the Chief Executive Officer, the Chief Financial Officer, the Financial Risk Manager, a Central Bank Representative and the Financial Controller (Petroleum Division), who is also the Secretary to the committee.

The committee's main goal is to enhance and structure EMC's own risk management function and take some prudent measures in order to mitigate the corporation's financial risks, mainly

the market risks related to oil commodities and foreign exchange. Hedges are executed through the use of derivative instruments such as SWAP structures. Swaps are considered to be the least complex hedging instruments amongst the other structures. Over the past months EMC has adopted a policy to hedge its market exposure using Swap instruments rather than other complex structures such as Collars. This is primarily due to the fact that Swaps have proven to provide an element of stability in devising EMC's tariff model; also by locking-in prices through Swaps, EMC gains greater control over its inherent variable fuel costs; as opposed to Collars, EMC also achieves complete price protection from any increase in crude oil prices.

Risk Management Committee Procedures

The main items on the meeting Agenda are the Approval of Minutes of the previous meeting, Matters arising, Market Overview, Hedging Programme Discussions and other matters.

Following approval of the minutes taken during the previous RMC meeting, matters arising are discussed. Any hedges executed in line with the decisions taken during previous meeting, are communicated to the committee. In view of this, an updated position report is presented.

An overview of the market developments is then presented, including a complete assessment of the different significant variables and fundamentals affecting the markets. Various graphical analyses are also presented in order to provide a better understanding of market performance. The various market outlooks and price forecasts published by various esteemed intermediary banks are also discussed.

On the basis of this detailed overview, the hedging programme is then discussed, whereby various recommendations are put forward and ultimately the appropriate hedging targets are agreed upon by the committee. The agreed hedging volumes represent a fraction of the corporation's requirements.

The Chairman concludes the meeting by summarising the main items which were discussed during the meeting, including the decisions taken. Following the meeting, the Committee

Risk Management Committee Procedures [Page 3 of 3]

Secretary circulates an e-mail with the decisions taken, to all committee members. The Chairman then gets the necessary clearance prior to executing deals.

Once the go ahead is provided in view of the established targets, market prices are then closely monitored. There are also instances when orders are placed with the different intermediaries given that markets, in particular the foreign exchange markets, trade round the clock, and therefore this gives us more flexibility in attaining the agreed targets.

In the eventuality that a deal is executed, the counterparty sends confirmation documents indicating the trade details, which are then checked, signed and returned.

Appendix F – Correspondence between the then Minister for Infrastructure, Transport & Communications with Chairman, Enemalta Corporation

APPENDIX A

From: "Gatt Austin at MITC" <austin.gatt@gov.mt>
Date: Tue, 10 Nov 2009 10:30:33 +0100
To: Ing. Alex Tranter<ajtranter@gmail.com>
Cc: Carabott Pierre at MITC<pierre.carabott@gov.mt>; Delia Emanuel at MITC<emmanuel.j.delia@gov.mt>; Fenech Tonio at MFEI<tonio.fenech@gov.mt>; Camilleri Alfred at MFEI<alfred.camilleri@gov.mt>; Camilleri Karl at Enemalta<karl.camilleri@enemalta.com.mt>; Galea Antoine S at Enemalta<antoine.s.galea@enemalta.com.mt>
Subject: RE: Re : Hedging

Alex

Further to the below, I would like to make clear that the direction to go for tariff stability in 2010 is a ministerial direction and therefore I assume responsibility for any variances between the actual market price and the SWAP price in 2010.

Austin

From: Gatt Austin at MITC
Sent: 10 November 2009 07:57
To: Ing. Alex Tranter
Cc: Carabott Pierre at MITC; Delia Emanuel at MITC; Fenech Tonio at MFEI; Camilleri Alfred at MFEI
Subject: RE: Re : Hedging

Alex

I think that the Risk Committee should keep in mind the following parameters:

1. we have gone for a tariff revision with a benchmark price of crude at \$81.8 for calendar 2010;
2. the direction from Government is price stability as much as possible for calendar 2010;
3. I would advise that stability within the tariff parameter is probably the most single important element;
4. the committee should not look simply at Q1/2010 but should be looking at calendar 2010.

Regarding the letter of comfort, I would not wait till we commit but if there is anything to change please consult Alfred Camilleri immediately (He is being copied).

Austin

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