



Partners for Water and Sanitation

Note on project reports

The following report has been prepared by Partners for Water and Sanitation in response to a project Terms of Reference.

The content of the report is based on the opinion of the author(s) and does not necessarily represent the opinions of the wider PfWS partnership, or the project funders.

Any extracts from the report should only be used with prior permission of the report author(s).



PAWS VISIT REPORT

Ethiopia

April 2008

43Eth: Twinning Support to Water Works Design and Supervision Enterprise

DATES OF VISIT: 14 – 18 April 2008

VISIT TEAM: David Rathmell BEng CEng MICE FCIWEM
PAWS Independent Consultant

Ato Melkamu Jaleta
In Country Manager

DISTRIBUTION: Rebecca Scott
Stuart H Campbell
Ato Melkamu Jaleta
Ato Negash Gemtessa
Ato Bekele Gadissa
H.E Ato Adugna Jabessa



Contents

1. Executive Summary
2. Background to Visit
3. Key Objectives of Support Visit
4. Meeting Schedule
5. Stakeholders
6. Summary of Meetings
7. Review of BPR Proposals
8. Recommendations arising from Support Visit

Appendix 1: Summary of Visit Reports and Reference Documents

Appendix 2: Briefing Notes

- No 1 – Role of the Quality Manager
- No 2 – Proposals for a Joint Review Board
- No 3 – Benefits of ISO 9001 Quality Management Certification for an Organisation with particular reference to WWDSE.
- No 4 – Benefits of using NEC3 Contracts.
- No 5 – Proposal for a Pre-Certification Audit

Appendix 3: Abbreviations used in the Report and Briefing Notes



1.0 Executive Summary

An excellent visit with positive outcomes was achieved. The new in country manager proved to be a real asset both with his connections and his understanding of the key issues. I am very much more confident that the momentum we generated can be maintained.

Next steps are:

WWDSE issue enquiries for pre-certification auditing services by end of April.

WWDSE evaluate offers and place order by end of May

WWDSE commence pre certification processes in June

Target date for ISO 9001 Certification set at March 09

Twinning Visit to take place June - August 08

Follow up NEC 2 day workshop in Addis to be planned for September with author and NEC expert.

First Joint Review Board Meeting could coincide with workshop in September.

Recommendations

The appropriate use of Primavera must be evaluated during the imminent Exchange Visit as a high priority

With reference to the Joint Board consideration should be given to finalising the Board membership, Chairman, what planning software to use for the Master programme, frequency of meetings and role of PAWS.

The relative roles of the Service Delivery Improvement Department and the Quality Control Dept should be reviewed to ensure the right skill mix and assigned responsibilities for delivery of a Total Quality Management System. It is anticipated that the selected local Quality Consultant will also have input into this key aspect of the organisation.



2.0 Background to Visit

The Water Works Design and Supervision Enterprise (WWDSE) was established under the Council of Ministers regulation No. 42/1998 in October 1998 to work as a public Enterprise. This proclamation was amended in August 2004 to accommodate the ever expanding duties and responsibilities of the Enterprise.

A high level Board of Management appointed by the government controls the overall activities of the Enterprise. A General Manager heads the Enterprise. The General Manager reports to the Board of Management that in turn reports to the supervising authority, which is the Ministry of Water Resources (MoWR)

The first visit to the Design and Supervision Enterprise by the author took place in July 2006. The original terms of reference reflect the Design Enterprises' goal to become a "Reputed International Consultant". In order to move towards this objective PAWS have been assisting WWDSE in its understanding of Quality Management Systems and good business practice drawing on experience gained from the UK construction industry. From the start it was agreed that WWDSE should seek ISO 9001:2000 certification. The Design Enterprise has just completed an 18 month process of Business Process Re-engineering. This is commented upon more fully in Section 6 and its likely impact upon the attainment of ISO 9001.

PAWS is also working with the Water Works Construction Enterprise (WWCE) to improve its contract management practices. Improved communication strategies are a major key to improved business practices in both Enterprises. A 3 month exchange visit for four engineers (two from each Enterprise) is due to start at the end of May 08. This is designed to show construction management practice in a UK setting.

Visit Reports and Briefing Notes are listed in Section 9 of this report for completeness.

3.0 Key Objectives

The recent support visit to the Design Enterprise between 14 – 18th April focused on the three key objectives set out below.

- a) To identify and recommend suitably qualified and capable local quality management consultants that can assist the Design Enterprise in achieving ISO 9001 certification.
- b) To discuss and agree with the Design Enterprise a schedule for seeking ISO 9001 certification.
- c) To obtain agreement in principle to the concept of setting up a tripartite review board in order to foster good communication and understanding between the MoWR, WWDSE and WWCE.

4.0 Meeting Schedule

Date	Company	Purpose of Meeting	Attendees
Mon 14 th April	QSAE	Initial enquiry to check their qualifications and suitability for undertaking pre-certification audits and providing consultancy support in Quality Management Systems	Ato Mesfin T/Haimanot Ato Melkamu Jaleta Mr David Rathmell
Mon 14 th April	WWDSE	Review of key objectives for support visit	Ato Negash Gemtessa Ato Melkamu Jaleta Mr David Rathmell
Tues 15 th April	AJB Institute of Quality Management	Initial enquiry to check their qualifications and suitability for undertaking pre-certification audits and providing consultancy support in Quality Management Systems	Ato Jemberu Bekele Ato Admassu Tsegaye Ato Melkamu Jaleta Mr David Rathmell Ato Russom G/Egziabher
Tues 15 th April	WWDSE	Report to General manger on findings form AJB visit	Ato Negash Gemtessa Mr David Rathmell Ato Russom G/Egziabher
Tues 15 th April	WWDSE	Discussion with Ato Russom G/Egziabher on his role as Quality Control Department Head	Mr David Rathmell Ato Russom G/Egziabher
Tues 15 th April	Integrated Quality Solutions	Initial enquiry to check their qualifications and suitability for undertaking pre-certification audits and providing consultancy support in Quality Management Systems	Ato Tadele Kumie Ato Melkamu Jaleta Mr David Rathmell
Weds 16 th April	MoWR	To present the case for a tripartite Joint Review Board to oversee the federal water investment programme	H.E Ato Adugna Jabessa Ato Melkamu Jaleta Mr David Rathmell
Weds 16 th April	MoWR	To give an update on support provided by PAWS to WWDSE and progress to date	Weizero Martha Solomon Ato Melkamu Jaleta Mr David Rathmell
Thurs 17 th April	WWDSE	To present findings, give feedback to the Management Team and agree a schedule for seeking ISO 9001 certification	Ato Negash Gemtessa Ato Tesfaye Kidane Ato Mekuria H/Yohannes Ato Mesfin Ato Russom G/Egziabher Ato Melkamu Jaleta Mr David Rathmell
Thurs 17 th April	WWDSE	Discussion with Ato Mekuria H/Yohannes on his role as Head of Service Delivery Improvement Department.	Ato Mekuria H/Yohannes Mr David Rathmell
Thurs 17 th April	WWCE	Brief meeting to discuss take up of Primavera, Review Board issues and proposed Exchange Visit	Ato Bekele Gadissa Ato Melkamu Jaleta Mr David Rathmell

5.0 Stakeholders

Name	Organisation	Position
Ato Adugna Jabessa	Ministry of Water Resources	State Minister
Weizero Martha Solomon (MS)	Ministry of Water Resources	Head of Policy Development Cooperation and External Relation Dept.
Ato Negash Gemtessa (NG)	Water Works Design and Supervision Enterprise (WWDSE)	General Manager
Ato Tesfaye Kidane (TK)	WWDSE	Deputy General Manager, Business Planning and Resource Management
Ato Mekuria H/Yohannes (M H/Y)	WWDSE	Head of Service Delivery Improvement Dept.
Ato Russom G/Egziabher (R G/E)	WWDSE	Head of Quality Control Dept.
Ato Bekele Gadissa (BG)	Water Works Construction Enterprise (WWCE)	General Manager
Ato Melkamu Jaleta (MJ)	PAWS	In country Manager
Rebecca Scott (RS)	PAWS	Project Manager, WEDC
Robert David Rathmell (DR)	PAWS	Independent Consultant
Stuart H Campbell (SC)	North Midland Construction PLC	Executive Director Business Development



6.0 Summary of Meetings

6.1 Ato Negash Gemtessa – 3.0 pm 14 April

DR explained in detail how a **precertification audit** would be conducted and the need for a local certified company to carry out this process. This is discussed in detail in Briefing note no 3 - "Benefits of ISO 9001 Quality Management Certification for an Organisation with particular reference to WWDSE". The process would typically take 3 – 6 months.

NG said that their new fiscal year started in July 2008 and agreed that it would be good to include Budgets in the upcoming fiscal year for local consultancy services.

DR then outlined his three key objectives for his visit. These are:

- Find a suitably qualified Quality Consultant to recommend
- Agree a schedule for achieving certification
- Promote the Review Board concept.

The discussion then turned to the issue of the **Review Board**. Current practice is for the Ministry to call a tripartite meeting at approximately twelve month intervals where both WWDSE and WWCE are required to give a progress report on the water investment programme. This is a customer driven meeting with the MoWR dictating progress.

It was agreed that what is required is a two way dialogue in order to achieve a better understanding of each others needs. Client and service provider engaging in discussions to their mutual benefit. This would foster better working relationships and create more of a teamwork approach. Regular meetings should also give the MoWR more confidence that planned programmes can be achieved and warn them well in advance of any projects likely to be delayed and reasons why. A key outcome from regular review meetings would be an agreed master programme and meeting minutes. Briefing Note No. 2 deals more fully with the Joint Review Board Concept. (See attached)

DR explained the concept of Risk Management workshops before undertaking large projects. These identify all foreseeable risks and allocate risk before commencement. Employer's risks typically arise due to planning issues, project approvals and site hand over dates. These are scheduled and recorded in an agreed risk log before project commencement.

A brief discussion then followed on Forms of Contract. NG said that generally contractors do not like FIDIC as Consultants use the power of the Engineer like a big stick. Consultants invariably delay making decisions and approving drawings. Contractors and Consultants are always at odds. Despite the intent that the Engineer



should be impartial, the perception is that if the Engineer supports the contractors case then he must be taking a bribe. FIDIC is therefore open to corruption.

DR handed to NG a copy of the **NEC3 Form of Contract and Guidance Notes**. It is intended after the Exchange Visit that an NEC3 workshop should be held in Addis to a wider audience to promote its benefits and explain its usage. It is hoped that it might then be used on a pilot scheme to test its use and see if a partnering approach could be facilitated. Briefing note No. 4 deals with the Benefits of NEC3 contracts. (See attached)

6.2 Local Quality Management Consultants

Visits were made to three prospective local companies.

- Quality Standards Authority of Ethiopia 10.30 am 14 April
- AJB Institute of Quality Management 8.30 am 15 April
- Integrated Quality Solutions 3.0 pm 15 April

Findings and recommendations are dealt with fully in Briefing note No. 5 Proposals for a Pre Certification Audit (see attached)

6.3 Feedback to General Manager – 10.30 am 15 April

DR and RE gave feedback to NG on their visit to AJB. NG agreed that an enquiry should be sent to AJB for precertification proposals.

6.4 Ato Russom G/Egziabher - 11.0am 15 April

DR asked RE to explain his role as **Head of the Quality Control Department**. RE reports directly to the General Manager.

RE explained that the Service Delivery Improvement Dept is currently preparing **Business Process Re-engineering (BPR) Reports**. Draft reports are available for all core processes dated March 2008. Support processes will be available in two weeks time. It is intended to submit the full BPR report to the Board for approval mid May. The Chairman of the Board is the State Minister of MoWR. Board Approval would also be required for appointment of a precertification consultant.

Although both enterprises are answerable to the MoWR, it is noted that WWDSE and WWCE have different Board Chairmen. WWCE report to the board of management that is chaired by the Minister of the Ministry of Mines and Energy.

R G/E explained that their customer base includes:

- Ministry of Water Resources (MoWR)
- Regional Government



- Military Departments for Borehole investigations at remote camps
- Mining undertakings e.g. Ethiopian Mineral Development SC

DR examined the recent report for Kenticha Tailing Dam and Water Reservoir Design Final Report December 2007. It incorporates a new approvals sheet showing checker and approver plus an accompanying album of drawings.

A new drawing title block showing revision status has also been adopted with drawing registers now maintained by dept heads.

The Bill of Quantities was prepared in accordance with CESMM.

R G/E duties as Head of Quality Control are:

- Adoption of standard design principles
- Ensuring that design departments are adopting standard designs
- Sourcing technical publications and other standard documents
- Compilation of other manuals
 - E.g. compaction testing
 - Rules for use of CESMM
 - Standard drawing production notation

He is assisted by two engineers and one editor in his duties.

The adoption of standard designs is of huge strategic benefit and must not be underestimated. It ensures that safe and tested designs based upon experience are used, there is less likelihood of design mistakes and potential to save time as engineers do not need to go back to first principles every time. However it is taking approx 70% of the Quality Dept resource. The other 30% is spent on document compilation.

Currently these initiatives to generate and ensure the adoption of standard designs do not cover Hydrology, Hydrogeology, Agriculture, Environment and Socio Economic Depts. The principle role of the Quality Control Dept may be summarised as establishing Process Controls and Design Guidelines.

These duties are very time consuming and are not part of the Quality Management Role as defined in ISO 9001. This is discussed more fully in section 6.

6.5 H.E Ato Adugna Jabessa, State Minister for Water, MoWR – 2.0pm 16 April

MJ introduced the nature of the PAWS support visit to the State Minister and the author as an independent consultant from the UK. He outlined the proposal for a **Joint Review Board** and said that Briefing Note No 2 dealt with this suggestion more fully. A copy had been forwarded to the State Minister prior to the meeting.



DR explained more fully the concept of regular review meetings to monitor progress on delivery of the federal water investment programme. He said in his opinion it would improve working relationships and encourage a better understanding by all parties involved of the issues concerned. The basis of the programme discussions would be an agreed overall master programme showing all planned future projects and progress on current projects at both design and construction stages.

This proposal was agreed in principle by the State Minister but he said the Briefing Note required some clarification. He asked who would chair the Joint Review meeting. It was agreed the Chairperson should be a senior person from the MoWR and someone with a good understanding of the federal water investment programme.

He asked if other Stakeholders should be involved i.e. the four main regions with a vested interest in the water programme – to be reviewed further.

He asked what new input PAWS would provide to ensure that the joint review meeting was not simply a talking shop and repeated mistakes from the past. The State Minister said he knew all four people proposed in the Briefing Note and felt strongly that some new input was required. He said that PAWS should be represented and asked if PAWS could commit to a six monthly meeting? In response DR said that he could commit to a six monthly review for the foreseeable future. DR also said that the proposed programme review would only work if a master programme of projects was compiled based on suitable planning software e.g. Primavera P3.

The State Minister asked if the Ministry of Finance should be represented – to be decided later.

6.6 Weizero Martha Solomon – 5.30pm 16 April

MJ/DR outlined the goals for the support visit and the progress achieved.

MS said she was pleased with the close working relationship that had developed between PAWS and the Design Enterprise and thanked DR for his personal involvement.

MS suggested that the **Review Board** should be chaired by the State Minister and also attended by the Chief Engineer and the Adviser. She felt strongly that the meeting should be clearly focused as a tripartite meeting between MoWR, WWDSE and WWCE. She thought the regions might be involved at a later date when the joint review board was established.

The **Twinning Exchange Visit** was due to start on April 26 for 12 weeks. However the WWCE have not yet put forward any CV's. MS agreed to talk to BG the following day as she agreed it was imperative to take full advantage of this initiative. It is then proposed to follow up the exchange visit with an NEC3 workshop in Addis.

6.7 Review Meeting with WWDSE Top Management – 9.0am 17 April

i) Pre Certification Audit

DR presented Briefing Note No 5 outlining visits to local Quality Management Consultants and his recommendations for selection and appointment of a suitable consultant to undertake a pre certification audit. Consultants visited were:

- AJB Institute of Quality Management
- Integrated Quality Solutions PLC
- Quality Standards Authority of Ethiopia

Quality consultants should preferably be IRCA registered and should present their registration certificate with their proposal. Company certification was a bonus but not essential.

The following schedule for achieving ISO 9001 certification was agreed:

- Issue enquiries for pre certification audit proposals before the end of April 08
- Evaluate offers and place an order before the end of May 08
- Start systems gap analysis in June (budgetary allowance available from 07/08 fiscal year)
- Target date for ISO 9001 certification March 09 – agreed earliest possible date and whilst tight is achievable depending upon resource commitment from WWDSE.

MY presented an enquiry specification for local Quality Management Consultancy services prepared in Feb 08. He said that he had already identified 5 suitable local consultants. DR said he would review the document with MY after the meeting.

ii) Quality Management System

DR stated that a **Quality Manual** would be required as the basis of the Quality Management System. This would comprise a Quality Policy, Business Process Map, List of Procedures and the flowcharted procedures themselves. The Quality Policy, process map with company profile are invaluable tools in responding to initial tender enquiries from new customers to illustrate the companies strategy and key areas of delivery.

The work undertaken by departments in compiling the BPR documents would be most helpful as many of the required flowcharts have already been drafted. Stretch objectives could form the basis of Business Objectives required by the Quality Standard. These aspects are further discussed in section 6.0.



iii) Review Board

A brief overview of the concept of the tripartite Joint Review Board was given. It would comprise the MoWR, WWDSE and WWCE chaired by a senior figure from the MoWR. This principle is agreed with the State Minister.

Board Members:

State minister – Chairman
Chief Engineer – MoWR
Adviser - MoWR
General Manager – WWDSE
General Manager – WWCE
PAWS representative
Other members for consideration:
Ministry of Finance
Regional representation as required

Frequency – three monthly/six monthly - to be agreed

Inputs:

- MoWR twelve month look ahead programme for water investment projects
- WWDSE programme of all MoWR projects showing design status
- WWCE programme of all MoWR project showing construction status

Outputs

- Updated master programme showing all current and future programmes
- Meeting minutes

iv) Twinning Visit

- Dates to be finalised when CV's are submitted to PAWS
- CV's to be provided by end of week commencing 18 April

v) NEC3 Workshop

To be held in Addis as soon after the exchange visit as possible. Purpose is to introduce NEC3 to a wider audience.

6.8 Mekuria Habte-Yohannes – 12.15pm 17 April

DR asked M H/Y to explain his duties and responsibilities as Head of the Service Delivery Improvement Dept. M H/Y said his duties comprised:



- Team Leader for the BPR Design Team
- Information Technology (IT) – Computer Services
- Training – plans and organising training for individuals
- System improvements for the entire organisation
- Customer complaints

System improvements and customer complaints are the responsibility of the Quality Manager or Management Representative as defined in the ISO 9001 Standard. In fact the key driver in the ISO 9001 Standard is the need for improvement.

M H/Y informed the author that the four delegates on the ISOQAR Lead Auditor training last February had been Neme Sorie, Zelalem (Design), Temesgan (Irrigation) and himself. Gakii Consulting had assisted ISOQAR in delivering the Lead Auditor course. It is worth noting that Gakii Consulting are one of the five local Quality Management Consultants identified by M H/Y for possible precertification audit services.

DR and M H/Y discussed the concept of Process owners and the need to have a process based organisation rather than a function based company. M H/Y demonstrated a good understanding of the role of Process Owner and the need for Heads of Departments as champions in their specialist field to drive change rather than it to be imposed from outside their department. From this discussion and knowing that M H/Y had attended the Lead Auditor course the author concluded that M H/Y is ideally suited to work with the selected Quality Consultant in carrying out the intended gap analysis of the company's systems. In fact from the author's observations the Quality Control Department is really a subset of the Service Delivery Improvement department. This is discussed further in Section 7.0

DR/M H/Y also discussed Primavera training. This would be provided by Construction Solutions Ltd and individuals have been selected for Primavera training e.g. Mohammed Ibrahim Head of Construction Supervision.

7.0 Review of BPR Proposals

The author has reviewed the draft BPR documents listed in Appendix 1. These were handed to him by the Managing Director during his visit. In reviewing these reports the following matters are discussed below:

- General overview of the purpose of Business Process Re-engineering
- Current shortfalls identified in Design Enterprise Business Practice and the authors proposals for focusing on key areas for improvement
- System processes and the need to satisfy all aspects of the ISO standard
- The need for Business Objectives



7.1 General Overview of BPR Reports

The BPR Process is a genuine attempt by the Design Enterprise to look at what it does, identify areas of shortfall and set itself realistic targets for improvement. This is a most commendable process and in no way hinders or prevents the objective of seeking ISO 9001 certification. Indeed it should be complimentary as many of the aims and objectives are shared goals.

The BPR Project began shortly after the authors visit to the Design Enterprise in July 2006 and draft reports are now just being finalised. The process has therefore taken approximately 21 months which is typical for a company of this size and complexity. The author's own company Earth Tech Engineering went through a similar process from September 2004 until retiring in November 2006. The implementation of restructuring proposals using Six Sigma techniques was still ongoing when he left the company.

7.2 Current shortfalls in Design Enterprise Business Practice

Reviewing the BPR TO-BE Processes Draft Report Volume 3 Part 1 Study Process (Ref. Appendix 1: Item 6) the author has noted a number of identified major shortfalls. Amongst those listed in the report on page 6 are:

- Lack of study guidelines, standards and manuals
- Staff competency
- Poor working environment
- Inefficient support services
- Lack of centralized database
- High staff turnover
- Lack of dependable drilling rigs
- Bureaucratic admin and financial systems
- Centralized decision making
- Lack of knowledge transfer
- Lack of cost benefit analysis on project completion

These are undoubtedly all valid but for any organisation to tackle all issues at one time is to invite disaster. It is probably better to address 2 or 3 key issues. From the authors knowledge of the Design Enterprise and reading the BPR reports I would challenge the three essential elements of any project time, cost and quality.

Time needs to be managed using good planning tools. Microsoft Office is not really powerful enough to manage large scale projects. Hence PAWS have recommended that the Enterprises take a hard look at Primavera and apply it on a trial basis to at least one project. It is hoped that the Exchange visit will demonstrate to the Enterprise Engineers the ability of Primavera to pre-plan and maintain good control over both



design and construction activities. Weekly team meetings are then used to monitor progress and keep all staff engaged in the project on course.

Cost needs to be monitored closely at all stages of project delivery. UK firms use cost reporting systems based usually on time sheet systems and project codes so that all hours expended are accountable and offset against an agreed budget. Plant and materials are also charged to the project to build up the overall cost. This process starts at design stage so that management can keep track of actual spend against forecast spend.

Quality depends upon competent staff, good systems and experienced leadership. Competent staff should be addressed by HR setting minimum skill and qualification levels for technical posts and reinforcing these by annual performance assessments.

Good systems are the bedrock of the organisation and will be put in place bit by bit as Quality Management Systems are set up. However this is not an excuse for imposing beauracratc systems which add non value steps.

Management at Project level is vested in the **Project Manager** (possibly Team Leader in the Enterprise). This person should be empowered to make all decisions affecting the project. The Project Manager or Team Leader should be a most experienced senior individual with good technical, interpersonal communication, commercial awareness and negotiating skills. Time spent in Project Management training is probably the most rewarding investment that the Design Enterprise could make at present.

7.3 System Processes

3 Core processes and 5 Support processes have been identified by the BPR Design Team. (Ref. Appendix 1 Item 6: Business Process Re-engineering (BPR) TO – BE PROCESSES Draft Report Volume 3 Part 1 Study Processes Pages1 and 2)

Core Processes:

- Study
- Design
- Construction Supervision and Contract Administration

Support processes:

- Financial Management
- Human Resources Management
- Maintenance Management
- Procure Management
- Planning and Management Review Processes



The author has reviewed the flowcharted procedures included in the BPR reports. A lot of procedures have already been drafted and no doubt there are more of which the author is not aware. The purpose of Procedures is to write down “what we do” so that all users work to common standards of delivery and achieve consistent outputs. There are some notable omissions from the BPR flowcharts. No inputs or outputs are shown. Inputs generally show source of data and outputs are the documents produced by the work activities. Also the ISO standard requires roles and responsibilities are defined and communicated. A good place to do this is on the flowcharts by showing initials above each work activity box.

The procedures listed in the BPR reports will not be sufficient by themselves to satisfy the requirements of the ISO standard. There are six mandatory procedures required by the Standard. These are:

- 4.2.3 – Control of Documents
- 4.2.4 – Control of Records
- 8.2.2 – Internal Audit
- 8.3 – Control of Non Conforming Product
- 8.5.2 – Corrective Action
- 8.5.3 – Preventive Action – may be interpreted as Risk Management

Other procedures are also beneficial in a service organisation such as the Design Enterprise. These should include:

- 7.3.1 Design Planning
- 7.3.2 Design and development inputs
- 7.3.3 Design and development outputs
- 7.3.4 Design and development review
- 7.3.5 Design and development verification
- 7.3.6 Design and development validation
- 7.3.7 Control of design and development changes

These are generic procedures and should apply irrespective of the design subject. It may be that the functional design flowcharts in the BPR reports already satisfy some of these requirements such as Design Planning. However the author has seen no evidence to suggest that Design Checking or Control of Design Changes have been dealt with.

Other procedures would also be required for Clause 7.6 Control of Measuring Devices e.g. Laboratory Services and surveying equipment, Clause 8.2.1 Customer Satisfaction etc. The appointed Local Quality Management Consultant will be better placed to advice on a full list of requirements once the gap analysis is complete.

7.4 Business Objectives

On a positive note the preparatory work done on stretch objectives will be of great benefit in helping the Design Enterprise to set Business Objectives for the organisation as required by Clause 5.4.1 of the Standard. It should be noted that Business Objectives are the same as Quality Objectives. They shall be measurable and consistent with the Quality Policy. The Desired Outcomes and Stretched Objectives listed in Table 7.1 on Page 15 of Business Process Re-engineering (BPR) TO – BE Processes Draft Report Volume 3 Part 1 Study Processes addressing many of the issues identified by the author on his first visit in July 2006 e.g.

- Calibration testing for laboratory, surveying and other measurement equipment
- Centralized data management system on local network
- Purchase of technical documents and reference books
- Customer complaint handling procedure
- Implementation of total Quality Management System to eliminate rework at all levels of the organisation.

This is most encouraging as it is easier to help an organisation that sees the need and wants to improve itself.

8.0 Recommendations arising from Support Visit

General

The overall impression formed by the author after relatively brief meetings with Russom and Mekuria is that many of the recommendations since his first and subsequent visit have been acted upon. The evidence from the BPR reports is that the Design Enterprise genuinely wishes to improve its service delivery. The three objectives set for the visit were achieved i.e.

- Recommendations made for selecting local Quality Management Consultants
- A target date was agreed for seeking ISO 9001 Certification
- Approval in principle was obtained from the Ministry for a tripartite Joint Review Board

Pre certification Audit Proposals

The Design Enterprise will issue enquiries before the end of April. A broad mix of offers may well be received including awareness training of all staff, internal auditor training, management training, gap analysis, consultancy advice on document drafting and even procedure drafting itself.

The consultant must not undertake the actual drafting of documents as in the authors experience this is counter productive. The best people to draft procedures are the



Heads of Department (Process Owners) and their staff who are in the best position to know how they do things. Secondly the consultant cannot undertake the compilation of the Quality Manual and System and then organise the ISO 9001 Certification audit. The Quality Management System will have no credibility with Design Enterprise staff and the certification body is liable to accusations of having a vested interest.

The author will happily review the offers received for Pre Certification audits and make recommendations if these are forwarded to him in the UK.

Organisation Structure

Having had discussions with both Ato Russom, Head of the Quality Control Department and Ato Mekuria, Head of the Service Delivery Improvement Department my observations are that the structure is not right. As discussed previously in Section 5.4 and 5.8 the roles of these two departments are both valid but not correctly understood.

Quality Control is the bed rock of the Quality Management System but cannot by itself produce the desired improvements. Quality Control is weighed down with minutiae detail and cannot see the big picture. A manager needs to be in post who can work with top management to set policy and strategy. In my opinion the Service Delivery Improvement Department is best placed to put in place the required systems for **Quality Management**. This will involve setting up stretch objectives and driving for continuous improvement. Systems auditing could also be an integral function of this department.

It is not clear to me if the Quality Manager role has really been grasped and who is fulfilling that position. I recommend the structure is reviewed before the final BPR reports are issued to the Board for approval. This is a key position and must not be underestimated.

Joint Review Board

The concept was accepted in principle by the Ministry which was very pleasing. There are a number of issues to be resolved and in order not to lose the momentum we need to capitalize on setting up this Joint Board. Issues to be determined are discussed in Section 5.7 iii). These are finalizing the Board membership, Chairman, what planning software to use for the Master programme, frequency of meetings and role of PAWS. The author could commit to a six monthly review meeting for the immediate future but not indefinitely. If the meetings were held more frequently say three monthly then the PAWS in country manager would attend alternate meetings.

The participation of the regions is to be reviewed but initially it is recommended that the tripartite meeting should focus on the MoWR, WWDSE and WWCE.



Primavera Planning Software

The take up of Primavera software is currently not happening and that is disappointing. This must be reviewed after the exchange visit when the Enterprise engineers have had chance to see it in use and understand its benefits.

The author has observed that the Process Descriptions detailed in the BPR Reports are written in the form of Work Breakdown Structures (WBS) and are ideal for populating a programme. The separate activities and estimated times would create a high level programme. Further detail could be developed for study and design outputs. What the Process Description cannot show in its present format is the interaction and dependability of activities. A high level overview programme would give a much clearer picture of overall time with hold points and likely clashes or resource constraints.

Signed

David Rathmell
PAWS Independent Consultant

Date 30 May 2008



Appendix 1

Summary of Visit Reports and Reference Documents

Item	Report Title / Date	Author
1	Visit Report to WWDSE July 2006	David Rathmell
2	Visit Report to WWCE 7 – 11 August 2006	Stuart H Campbell
3	Workshop Report with WWDSE / WWCE 27 – 28 February 2007	David Rathmell
4	Concept Proposal June 2007	David Rathmell Stuart H Campbell Rebecca Scott
5	Ethiopia Visit to Water Aid and Project Partners 15 – 21 August 2007	Rebecca Scott
6	Business Process Re-engineering (BPR) TO – BE PROCESSES Draft Report Volume 3 Part 1 Study Processes	Mekuria H/Yohannes and BPR Design Team March 2008 Addis Ababa
7	Business Process Re-engineering (BPR) TO – BE PROCESSES Draft Report Volume 3 Part 2 Design Process	Ditto Above
8	Business Process Re-engineering (BPR) TO – BE PROCESSES Draft Report Volume 3 Part 3 Construction Supervision and Contract Administration Process	Ditto Above



Appendix 2

Briefing Notes

No 1 – Role of the Quality Manager

No 2 – Proposals for a Joint Review Board

No 3 – Benefits of ISO 9001 Quality Management Certification for an Organisation with particular reference to WWDSE.

No 4 – Benefits of using NEC3 Contracts.

No 5 – Proposal for a Pre-Certification Audit



Briefing Note No 1 – Role of the Quality Manager

1.0 Introduction

This explanatory note sets out the key duties, responsibilities, skills and attributes of the Quality Manager in an organisation. These are the views of the author gained from working for a number of years in that role with a large Engineering Design and Build Contractor in the UK. They do not represent the official view of any Chartered Institution or Trade Organisation. They are offered as a guide to the Water Works Design and Supervision Enterprise (WWDSE), Addis Ababa, Ethiopia in the hope that this note will be helpful in selecting the right person to fulfil this role.

The International Quality Standard ISO 9001:2000 (Clause 5.5.2) requires that senior management in an organisation shall appoint a member of management with key responsibilities. This person is called the Management Representative in the standard. Their duties are defined in the Standard and may be summarised as:

1. Establishing, implementing and maintaining the quality management system to cover all processes
2. Reporting to senior management on the performance of the quality management system
3. Promoting the awareness of customer requirements throughout the organisation

The Quality Management System covers all aspects of the organisations business. In the case of WWDSE this would include Surveying, Feasibility, Design, Planning, Laboratory Service, Contract Supervision, Administration and Finance, Computer Services, Human Resources etc. It follows that the person chosen to fill this role should have the following skills and attributes:

2.0 Skills and Attributes

- have a good understanding of all processes involved. He or she must fully understand from the beginning to the end how the original customer brief progresses from feasibility to design and ultimately into construction. They must also have a good understanding of all the support processes which underpin the main processes.
- understand fully all the requirements of the ISO 9001:2000 standard and the implications this has for their organisation – The five day Lead Auditor training course is the best preparation to ensure the standards requirements are understood.
- be comfortable with and able to influence the decision making process at senior management level.



- be able to communicate at all levels in the organisation from senior management down to the least technical person
- be a good listener and able to weigh different ideas and opinions
- be a person of integrity, trust and utterly beyond reproach
- be diligent and a person who is particular at attending to detail
- be a good implementer
- be the key contact with the external accreditation body

3.0 Duties and Responsibilities

3.1 Establish the QMS

- Must comprise a Quality policy and Quality Manual
- Full list or schedule of procedures – note there are six mandatory procedures required by the standard:
 - 4.2.3 – Control of Documents
 - 4.2.4 – Control of Records
 - 8.2.2 – Internal Audit
 - 8.3 – Control of Non Conforming Product
 - 8.5.2 – Corrective Action
 - 8.5.3 – Preventive Action
- Set up measurable Business Objectives
- Work with process owners to map all current practice. This is known as Process mapping – write down either in text or using visual diagrams “what we do”

3.2 Implement the QMS

Launch and provide training for staff as required

3.3 Maintain the QMS

- Develop an annual audit programme of all processes
- Train internal auditors
- Monitor audit findings and take corrective action as required
- Update the QMS with new or improved procedures as required

3.4 Report on QMS

- Report on a regular basis to senior management on the status of QMS
- Recommend areas for improvement
- Arrange a formal annual Management Review with senior management summarising as set out by Clause 5.6 of the standard

3.5 Achieve and maintain external certification of the QMS

- Six monthly surveillance visits from the external accreditation body
- Three yearly certificate renewal visits



3.6 Business Objectives

Set up systems for monitoring business objectives and progress against agreed departmental targets

3.7 Customer Satisfaction

Proactively seek customer feedback and develop customer satisfaction records.

The Quality Manager is the custodian of the Quality Management System and is responsible to the Senior Management for ensuring it is certified by an external accreditation body. This certification is maintained by external audits usually on a six monthly basis. The external audit may identify issues for improvement or deficiencies with the ISO standard. Any non conformances must be dealt with as soon as possible to ensure that on subsequent visits these do not escalate into a major non conformance and ultimate suspension of the certificate.

However the Quality Manager does not own the processes and is not held personally responsible for operational implementation. That is the responsibility of the individual process owners who are usually Heads of Departments. It is their responsibility to map their own process and say what they do and who does what. This is best done by process mapping using internationally recognised standard symbols. Visual diagrams work supplemented by explanatory notes where required. I have found that Visio 2000 software is the best tool for this task although it can be done more simplistically with MS Word and text boxes.

The most difficult part of the Quality Management role is that it can be seen as a means to simply maintain the status quo. The Quality Manager will not have the ear of senior management if he or she only reports on statistical non-compliances and audit findings. The quality manager must also be wholly engaged in the drive for improvement and change in the organisation. This is a difficult balance to maintain but the ISO Standard has a thread of continual improvement running through it.

In my view the Quality Manager at WWDSE should therefore be a senior manager working alongside the department responsible for implementing Business Process Re-engineering. They should both have a direct report to the Managing Director.

4.0 Summary

In summary the key attributes of the Quality Manager should be

- Integrity and good communication skills
- Able to motivate others
- A passion for consistent quality and customer service
- Self belief and inner drive for improvement



David Rathmell

PAWS Consultant
BEng C Eng MICE FCIWEM

Definitions:

Quality Management System (QMS) – Organisation’s documentation which essentially explains how they do things in meeting the requirements of the Standard

Standard – ISO 9001:2000 – “Quality Management System- Requirements”

Process - a process is a series of inter related activities. E.g. Design may be considered as a process since it combines many discrete activities

Organisation – any company or business utilising resources to provide either a manufactured product or service



Briefing Note 2 – Proposals for a Joint Review Board

Introduction

This briefing note sets out the purpose, and main benefits which would arise from establishing a Joint Review Board. These are the views of the author gained from working for a number of years in the UK Water Sector with a large Engineering Design and Build Contractor. They do not represent the official view of any Chartered Institution or Trade Organisation. They are offered as a guide to the Ministry of Water Resources, the Water Works Design and Supervision Enterprise (WWDSE) and the Construction Enterprise (WWCE) Addis Ababa, Ethiopia in the hope that this proposal will be helpful in promoting a greater understanding of the needs of all parties and in the delivery of the federal water resources development programme.

Mission Statement

The establishment of a Joint Review Board is a strategic initiative to assist in the management of the federal water resources 3 year development programme.

Purpose of the Joint Review Board

The purpose of the Joint Review Board is to review all current and planned projects for progress against target dates for completion and forecast outturn costs. It should be understood that this is a high level programme review and not intended to delve into minutiae detail.

Parties involved in the Review Process

It is proposed that the main parties to the Joint Review Board should comprise senior management from the following organisations:

- Weizero Martha Solomon - Ministry of Water Resources (MoWR)
- Ato Nagesh Gemtessa - Water Works Design and Supervision Enterprise
- Ato Bekele Gadissa - Water Works Construction Enterprise
- Ato Melkamu Jaleta - Partners in Water and Sanitation (PAWS) advisory role

Frequency of the Joint Review Board

A quarterly Review Meeting should be held. Any greater frequency would be burdensome and would probably not reflect any significant changes from the last review.



How the Review Process would work

The MoWR would present an advance programme of all planned projects showing timescale with a brief description of the project. This would indicate size, scale of the works and location.

WWDSE would schedule out all ongoing live projects with a baseline showing the feasibility, design and construction phases. This Baseline Programme would then be used to monitor actual progress against the original planned timescale. Future planned projects would be added to the programme of ongoing live projects to produce a Master Programme

Either MS Projects or Primavera P3 could be used for this purpose. However it should be noted that adoption of the same programming software by both Enterprises would be crucial to achieving the best results with minimal effort.

In advance of each Joint Review Board the Master Programme would be updated to show the current situation for each project. This would be prepared by the Design and Supervision Enterprise with input from the Construction Enterprise. Actual progress to date would then be compared to the Baseline Programme to forecast realistic completion dates.

Benefits of the Review Process.

All parties involved in delivering the federal water resources development programme would have a better understanding of the overall big picture and a realistic assessment of progress. The process would be twofold.

1. Assessment of future planned projects
2. Assessment of live current projects

This high level programme planning would feed down into project planning as it would demand accurate three monthly updates on progress. This is a key area identified in previous PAWS recommendations. It would also improve communications at Ministerial and managerial levels so that a mutual sense of commitment to the development programme and trust in each others desire to succeed would result.

Benefits for Future Planned Projects

The review process would alert the enterprises to potential new schemes. This would offer an opportunity to smooth out peaks and troughs so that the workload is more evenly matched to available resources. In so doing the expectations of all parties to the development programme would be managed so that a realistic and achievable forward looking programme would result.



Benefits for current live projects

Provide a realistic assessment of actual progress to date

Highlight resourcing issues

Alert the Construction Enterprise to imminent new starts reaching the end of the design phase

PAWS Advisory Role

The role of Paws would be advisory to all parties and would seek to be impartial at all times. PAWS consultants and the in country manager would not seek to influence any of the organisations involved in the decision making process. They would be an interested third party only available to assist in the use and awareness of the programming software. In its application and how to obtain the best results. They would also offer advice as appropriate based upon their wider knowledge gained from working within the UK Water Sector.

David Rathmell

PAWS Consultant
BEng C Eng MICE FCIWEM

Key terms

Joint Review Board

Master Programme

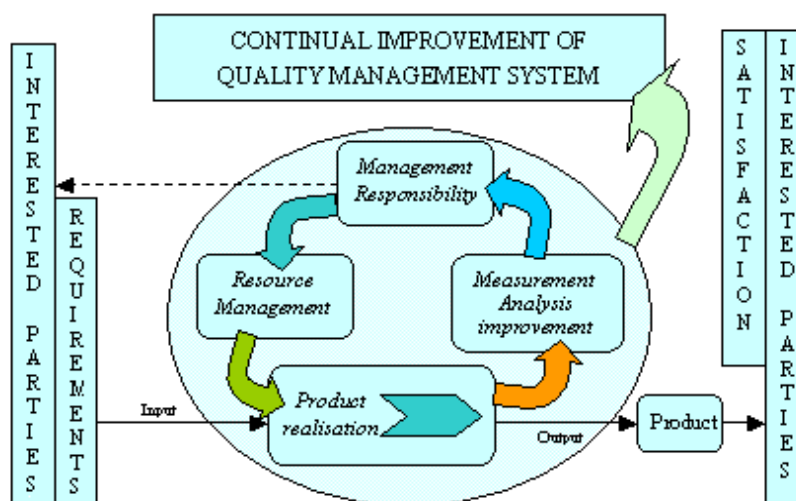
Baseline Programme

Briefing Note 3 – Benefits of ISO 9001 Quality Management Certification for an Organisation with particular reference to WWDSE.

1.0 Introduction

This briefing note sets out the purpose, and key benefits which should arise from obtaining ISO 9001 certification. On my first visit to the Design Enterprise I was told by the Managing Director that his vision for the company was to become a Reputed International Consulting firm. In order to achieve that objective in my opinion it is essential for the Enterprise to seek an internationally recognised standard of performance. ISO 9001 is the appropriate standard as the first step towards achieving the vision. It provides a framework which allows management to monitor and improve performance in any area.

ISO 9001 is by far the world's most established quality framework, currently being used by over 750000 organisations in 161 countries. It sets the standard for management systems in general. It helps all kinds of organisations to succeed through improved customer satisfaction, staff motivation and continual improvement. It is best understood by the diagram below reproduced from the quality standard.



The views expressed in this Briefing Note are compiled by the author gained from working for a number of years in the UK Water Sector with a large Engineering Design and Build Contractor. They do not represent the official view of any Chartered Institution or Trade Organisation. They are offered as a guide to the Ministry of Water Resources, the Water Works Design and Supervision Enterprise (WWDSE) and the Water Works



Construction Enterprise (WWCE) Addis Ababa, Ethiopia in the hope that this proposal will be helpful to the Enterprises in seeking to achieve their vision of becoming internationally recognised companies.

2.0 International Standard and its adoption in Ethiopia

ISO 9001:2000 “Quality Management Systems- Requirements” is an internationally recognised standard. It has been widely adopted throughout Europe, United States, South America, India, China, Middle East, Australia and South Africa. In Ethiopia ISO 9001 certification has been obtained by the following companies:-

- Dashen Brewery Share Company
- Metahara Sugar Company
- Ethio – Leather Industry plc
- Ethiopian Steel plc
- Ethiopian Pulp and Paper Share Company.

The Quality Standards Authority of Ethiopia (QSAE) based in Addis Ababa is providing training and assistance in ISO 9001 Quality Management Systems. At the time of the authors first visit to Ethiopia in July 2006 the QSAE was not accredited by the International Standards Committee for the certification of companies within Ethiopia. They are located at Near AMCE (Bole to Megenagna Road), P.O. Box 2310, Addis Ababa, Ethiopia. Certification of Ethiopian countries has been carried out by UK based ISO accreditation bodies to date.

In their paper “**Promoting Quality and Service Excellence to Enhance Export Performance in Africa with a Focus on Ethiopia**” the authors Tigineh Mersha, PhD University of Baltimore, USA and Berhanu Mengistu, PhD Old Dominion University USA address the need for national recognition of the benefits of ISO certification in global markets. They state:

“This paper proposes two inter-related approaches to enhance quality and service excellence that will have a positive impact on Ethiopia’s export performance. The first is the establishment of a national quality award program through a joint public-private partnership to draw national attention regarding the implications of quality improvement across the nation. The second approach is the creation of an enabling environment for export oriented Ethiopian enterprises to actively seek and obtain ISO certification for key products. This paper argues that improving product quality and attaining service excellence will help increase access to international markets and strengthen the competitiveness of Ethiopian products in the global market thereby contributing to national development”



3.0 ISO 9000 Series of Standards

ISO 9000 is one of a series of Quality Management System Standards. It helps an organisation to understand their processes for delivering their products and services to their customers. The series consists of:-

ISO 9000 – Fundamentals and Vocabulary: this introduces the user to the concepts behind the management systems and specifies the terminology used.

ISO 9001 – Requirements: this sets out the criteria you will need to meet if you wish to operate in accordance with the standard and gain certification

ISO 9004 – Guidelines for Performance Management: based upon the eight Quality Management Principles, these are designed to be used by senior management as a framework to guide their organisations towards improve performance by considering the needs of all interested parties , not just customers.



4.0 Quality Management Principles

The Quality Standard embodies and encourages good business management practice based upon the following eight principles:

Principle 1 – Customer Focused Organisation

Organisations depend on their customers and therefore should understand current and future customer needs, meet customer requirements and strive to exceed customer expectations.

Principle 2 – Leadership

Leaders establish unity of purpose and direction of the organisation. They should create and maintain the internal environment in which people can become fully involved in achieving the organisations objectives.

Principle 3 – Involvement of People

People at all levels are the essence of an organisation and their full involvement enables their abilities to be used for the organisations benefit.

Principle 4 – Process Approach

A desired result is achieved more efficiently when related resources and activities are managed as a process.

Principle 5 – System Approach to Management

Identifying, understanding and managing a system of interrelated processes for a given objective improves the organisation's effectiveness and efficiency.

Principle 6 – Continual Improvement

Continual Improvement should be a permanent objective of the organisation.

Principle 7 – Factual Approach to Decision Making

Effective decisions are based on the analysis of data and information

Principle 8 – Mutually Beneficial Supplier Relationships

An organisation and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.



5.0 Quality Standard – A Tool for Modern Management

The current ISO 9001 standard was issued in the year 2000 and replaced ISO9001: 1994. This was a standard for “**Quality Systems – A Model for Quality Assurance in Design/Development, Production, Installation and Servicing**”. The emphasis was on Quality Assurance (QA). Its aim was to ensure a consistent and reliable product or service was delivered. Unfortunately it had no requirement for continuous improvement and as a consequence it was possible to satisfy the standard by turning out a consistently poor product which fell short of customers’ requirements.

Quality Assurance has been upgraded to Quality Management in the 2000 Standard. This now requires continual improvement measures as part of an organisation’s Quality Management System QMS and requires proactive initiatives to ensure that customer needs are being met and customer satisfaction is enhanced.

Adoption of the Standard demands that an organisation examines all its processes and captures them in a published QMS. This may take the form of text based procedures or diagrams or a combination. Various software packages are available to aid the production of diagrams. The author prefers MS Visio Professional 2000 as a user friendly software product as it is designed with standard shapes which snap to a grid. Text boxes in MS Word may equally be used although the software is not as easy to configure and changes to published process diagrams require a lot more rework.

Standard international symbols are adopted to ensure wide acceptance of the QMS and easy recognition by new users. A list of standard symbols is included at the end of this briefing note. A QMS may be published in hard copy or electronically. Modern systems are adopting the internet as the ideal means of making their QMS available to all staff. This only requires one controlled master system to be maintained.

The new Standard adopts a **PLAN – DO – CHECK - ACT** Philosophy which underlines all an organisations activities.

PLAN – establish the key objectives and processes required to deliver products and services in accordance with customer requirements.

DO – implement

CHECK – monitor products and services against requirements and report results

ACT – take actions to continually improve performance

This systematic approach will gradually deliver processes which deliver correct results first time. It helps to reduce mistakes, rework or abortive work and highlights inefficient ways of working.



A Quality management system should apply to all activities and processes in an organisation. Processes may be spilt into Primary and Secondary or Support Processes. A **Primary Process** is a process which contributes directly to delivery of the customers requirements.

A **Secondary or Support process** provides internal support to the overall objective of meeting customer requirements but does not directly contribute to the end product or service.

In the case of the Design Enterprise typical processes might be as follows:

Primary Process	Support Process
Hydrogeology and Geotechnical	Finance
Water Resources Studies	Procurement
Agriculture, Environment and Socio Economic	Personnel
Design Departments	Resource Management
Construction Supervision and Administration	Property Administration
Laboratory Services	Computer Services
Surveying and Drafting	Performance Improvement

6.0 Quality Management Champion

The Quality Manager must be a competent, consummate professional with zeal to drive improvement and add value. He/she must not be content with the status quo. This is both a challenging and an exciting role in any company. No longer is the Quality person merely a quality controller responsible for the quality of widgets coming off a production line with endless audit reports and statistics of out of tolerance goods and non conformance reports. Now they must become integrated into the strategy of the organisation. To do that he/she must have charisma and the ability to communicate with senior management – the capability of what you might call director-level contribution to the business.



7.0 Benefits of ISO Certification

Enhanced customer confidence is the major benefit which follows from ISO certification. It confirms to the customer that an organisation is able to deliver a product or service without the trouble and expense of undertaking a detailed assessment of the organisation's capability themselves. They rely on a third party accreditation body to carry out routine systematic audits to show that an organisation is doing what they say they are doing.

It should be stated here that an accreditation body must be completely independent and not under any circumstances have been involved in the development or setting up of the organisation's QMS. They may provide accreditation services only to assist advising an organisation if their QMS will satisfy the requirements of the standard. They must be approved by the national accreditation service. In the UK this is the responsibility of the United Kingdom Accreditation Service UKAS who in turn get their licence to operate from the ISO international standing committee.

Competence is also a major factor. The customer has increased confidence when dealing with an ISO 9001 organisation that management and staff are competent to deliver the product or service. This derives from the standards requirements to put processes in place for the selection, appointment, professional development and regular assessments of all staff. This is based upon skills, qualifications and experience.

Managing for quality is also about performance improvement. The standard requires that demonstrable processes are put in place to deliver improvements in performance and outputs. This has traditionally been done through the audit function and management review but currently the focus is on lean engineering and six sigma. Essentially it is about identifying the value added processes and cutting out waste or needless activities.

Management of risk is also important to good business practice. Managing the known elements is mostly sensible systematic implementation based on good planning. Managing for risk is different altogether as invariably it is the unforeseen surprises which incur time, cost and quality. Processes must be included in the QMS for the management of risk by using risk matrices. These should identify risk ownership early in the project whether it is employer, designer or contractor risk. The likely impact in terms of cost and probability of the risk occurring should be assessed and the mitigation measures which may be required to deal with the occurrence. UK Health and Safety legislation now places a legal obligation on designers to assess and design out if possible all construction risk at the design stage. Hazards remaining which cannot be reasonably foreseen by a responsible contractor must be brought to his attention before work commences.

Management of the supply chain and procurement is also key to managing for quality. Criteria for the selection and approval of suppliers and subcontractors must be



laid down and demonstrably recorded in an audit trail. Records are kept of approved suppliers and subcontractors on a suppliers list. Invitations to tender for subcontracts, supply only or services are drawn from companies registered on the approved supplier list.

An audit trail is kept of all quotations and tenders opened and orders placed. These satisfy both financial and good procurement practice rules. The ISO standard encourages the development of good working relationships with the supply chain to foster mutual trust and integrity so that reliable goods and services are always available to the principal organisation and ultimately to the benefit of the customer.

8.0 Proposed Programme for WWDSE to achieve ISO Certification

8.1 April 2008

PAWS Consultant David Rathmell visits WWDSE office in Addis Ababa and reviews the current situation and implications of BPR process with Ato Gemtessa, Ato Kidane and Ato Jaleta.

Meets independent Quality Consultant and explores the possibility of Gap Analysis being undertaken by local expertise.

Note: A Gap Analysis can be a lengthy process and involve a number of repeat visits. The costs of an independent Quality Consultant would have to be met by the WWDSE. Such a company might be the AJB Institute of Quality Management based in Addis Ababa.

The Quality Standards Authority of Ethiopia (QSAE) might be able to provide this service. Ideally the best solution would be for the accreditation body who will eventually certify the system to undertake the Gap Analysis. This might be ISOQAR or BVQI.

8.2 June 2008

Independent Quality Consultant carries out a Pre Audit or Gap Analysis of all WWDSE systems and processes against the requirements of ISO 9001:2000. An initial visit of 3 – 5 days should enable a gap analysis to be undertaken.

Quality Consultant prepares a report of his findings identifying all non compliant issues to be rectified.

8.3 July – September 2008

WWDSE address the shortcomings found by the independent Quality Consultant and commence development of Quality Management System.

8.4 October 08 – March 09

Further visit(s) are carried out over a period of 3-6 months by the Quality Consultant to satisfy him that all issues have been addressed. WWDSE address any remaining noncompliant issues and complete the Quality Management System.

8.5 April 09

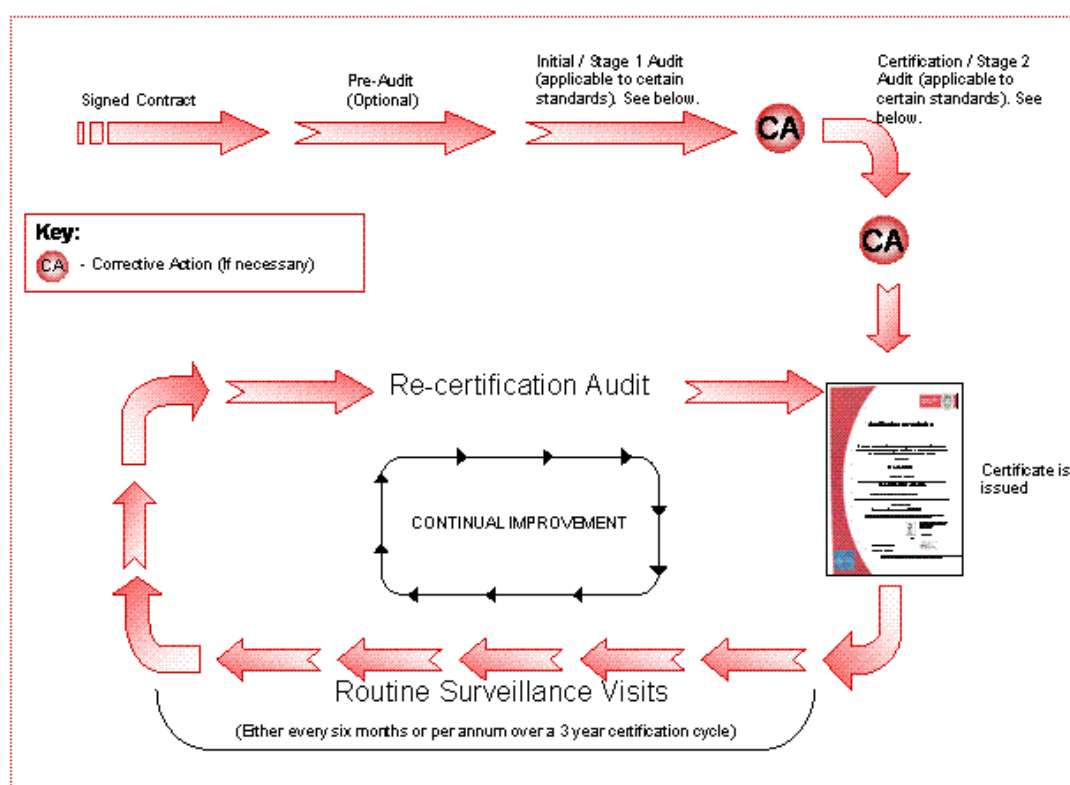
WWDSE launch the fully developed Quality Management System

8.6 April – September 09

WWDSE demonstrate by internal auditing across all departments and disciplines that they do what they say they do.

8.7 October 09

External Certification Body e.g. ISOQAR, BVQI or QSAE are invited to carry out a full audit of the QMS and certify the system.





Please note this timescale is quite lengthy based on the authors own experience. It can be accelerated depending upon the resource and commitment to the process. A key part of the discussion during the authors visit during April 08 would be to discuss the timing and detail for this certification process.

The Pre-Audit included in the certification chart above is the Gap Analysis discussed in Section 8.1

9.0 Achieving the Design Enterprise Vision

If the vision to become a reputed International Consultant and compete outside Ethiopia in the global market place is to be realised then in my opinion the Design Enterprise has to demonstrate a commitment to competence. A key step in this process of delivering a quality service and meeting customer expectations is recognised in the ISO 9001:2000 Quality Management Standard. As stated in the introduction to this Briefing Note the standard is an International standard and recognised by all the leading industrial nations. Indeed in some countries such as the UK it would not be possible to even qualify for an approved supplier list without having first achieved ISO certification.

Perhaps the MoWR should consider raising the bar and give notice that they will only award contracts to companies who are actively seeking or who have achieved ISO 9001 certification. This would ensure that all competition for government contracts was on a level playing field and standards of delivery were more consistent.

10.0 Cost of Quality

There is no question that implementing quality management systems incurs costs in both financial and human resources. Poor quality costs more and is much harder to quantify. In engineering design the consequences of a mistake at the early stages of design can have ultimate cost implications out of all proportion to the cost of putting right the mistake if it had been picked up in the early stages. Mistakes at the early stages of design have increasingly greater impact the longer they are left unresolved. Once construction begins then the consequences of time and cost delays usually bear no resemblance whatsoever to the original mistake which is often quite insignificant in itself.

The overwhelming case therefore for good checking systems during design stages is self evident and warrants the use of quality management systems.

An example from the authors own experience involved yield calculations from upland water sources. These were to be used to supplement lowland water supplies and required comprehensive engineering transfer works involving pipelines and pumping stations.

A graduate hydrologist with a Masters degree did the hydrological calculations and used a planimeter to measure the surface area of the existing upland sources. Unfortunately



a basic error meant he was a factor of 10 out in his area measures and all the yields were consequently overestimated 10 times. Engineering transfer works were designed accordingly and estimates of costs made. These were of course excessively high but no one spotted this until they were submitted to the water company for approval. This was almost twelve months after the initial hydrological calculations. Twelve months engineering design was abortive and design had to be repeated at the consultants cost. This was bad enough but if construction had commenced the repercussions could have been far more severe. The consultant / customer relationship was also affected and probably was a contributory factor in the ultimate loss of what had been a substantial framework agreement for the consultant.

All this might have been avoided if peer checks of the young hydrologists work had been carried out. His initial calculations should have been checked by a competent checker or Head of Department. Subsequently routine checking was extended to include every stage of feasibility and design as part of the company's ongoing Quality Management System rollout.

11.0 Summary

ISO 9001 is an international standard and is applied world wide. It is a performance management standard based upon eight principles of good business management practice. It requires the implementation of a Quality Management system which covers all departments and all work activities. It is not a bolt on accessory but must become an integral part of an organisations culture.

Quality demands a disciplined approach to work activities using the Plan–Do–Check–Act philosophy. Quality requires a champion in senior management who must be able to influence strategy at Director Level. Benefits of quality management are enhanced customer confidence, competence, performance improvement, management of risk and the supply chain.

An outline programme for implementing QMS and achieving ISO certification is included. Seeking ISO 9001 certification is in the author's opinion a key step towards achieving the vision of WWDSE to becoming a reputed International Consultant.

David Rathmell

PAWS Consultant
BEng C Eng MICE FCIWEM

**Key terms:**

Accreditation Body: an organisation approved by the International Standards Committee for certifying individual organisations to the Standard

Certification: the process by which an organisation is audited against requirements of the Standard and if approved then licensed to operate in accordance with the Standard

The Standard: ISO 9001:2000 “Quality Management Systems – Requirements”

QMS: Quality Management System

QA: Quality Assurance

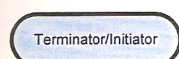
Process: a series of inter related activities.

Primary Process: a process which contributes directly to delivery of the customers requirements.

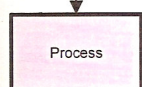
Secondary process: a process which provides internal support to the overall objective of meeting customer needs but does not contribute directly to the end product or service.

Process Symbols

Flowchart symbols to be used to gain conformity of approach



Represents the source of an input or the destination of an output



Represents a process, task or activity



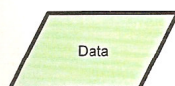
Represents a decision and the possible results are depicted on the output lines

Yes

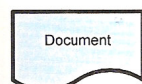
No



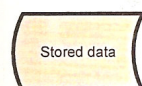
Connector lines show the direction of flow from one shape to another



Represents Input/Output function and any type of Medium or data



Indicates paper documents



Indicates storage of electronic data

The height of the text box and its associated line increases or decreases as you add text. To change the width of the comment, drag the side handle.

For the addition of descriptive comments or explanatory notes as clarification



Represents a junction in the line of flow – an on page reference. The on-line connector indicates the need to consult or inform.



Connector to a new page



Briefing Note No 4 – Benefits of using NEC3 Contracts.

1.0 Introduction

This briefing note sets out the purpose and key benefits which should arise from adopting the NEC 3 family of contracts for the administration of engineering projects. The suggestion of adopting NEC 3 Contracts was made initially by the author at the workshop held in February 2007 in Addis. This was attended by Weizero Martha Solomon, Ato Negash Gemtessa and senior members of the WWDSE management, Ato Bekele Gadissa and senior members of the WWCE management. The proposal of using NEC3 contracts was followed up as firm recommendation in the Concept Proposal submitted by PAWS in June 2007

The views expressed in this Briefing Note are compiled by the author gained from working for a number of years in the UK Water Sector with a large Engineering Design and Build Contractor. They do not represent the official view of any Chartered Institution or Trade Organisation. They are offered as a guide to the Ministry of Water Resources, the Water Works Design and Supervision Enterprise (WWDSE) and the Water Works Construction Enterprise (WWCE) Addis Ababa, Ethiopia in the hope that this proposal will be helpful to the Enterprises in seeking to achieve their vision of becoming internationally recognised companies.

2.0 What is NEC?

The NEC is a legal framework of project management procedures designed to handle all aspects of the management of engineering and construction projects. Pre NEC the 1980's UK construction industry was at the mercy of an adversarial culture often resulting in cost and time overruns. Post NEC the UK construction industry is substantially based upon a partnering culture delivering complex projects to budget and on time.

In the UK the NEC is used across the construction sector in building, civil engineering, utilities and power. Some of the major projects on which NEC has been used include BAA's Heathrow terminal 5, Channel Tunnel rail Link, the Eden project, and the National Health Services ProCure21 hospital building framework. Outside the UK, Eskom in South Africa is a major user. In October 2007 leading United Arab Emirates developer Aldar Properties took the pioneering step of adopting NEC3 to build its vast £7.3 billion Al Raha Beach mixed-use waterfront development near Abu Dhabi. It is believed to be the first time the contract has been used anywhere in the Middle East.



3.0 A Brief History of NEC and its usage in the UK Water Industry.

In 1988, the Institution of Civil Engineers (ICE) began drafting the first NEC document. The task of producing a new set of conditions combined the three key objectives of:

- Flexibility,
- Clarity
- Stimulus to good management.

The first edition was published in March 1993 and was welcomed by many experts and commentators (Sir Michael Latham included) for its modern approach. The subsequent publication of Latham's report of the review of procurement and contractual arrangements in the UK construction industry identified a few areas for improvement. This report, "Constructing the Team" whilst recognising that some changes needed to be made, recommended in the executive summary, that both public and private clients should begin to use the NEC family of contracts. The second edition of the NEC was published in 1995 and is known as the Engineering and Construction Contract (ECC). Not surprisingly, it includes all the recommendations for improvements made by Latham. A third edition was published in June 2005 taking into user feedback over the intervening 10 years. NEC3 has also been brought into line with the UK Government's "Achieving Excellence in Construction" initiative, and as a result the Office of Government Commerce (OGC) is now recommending usage of NEC3 on all public sector construction.

Yorkshire Water has been leaders in the UK Water Industry in promoting the use of NEC Contracts. Yorkshire Water practice is to use NEC3 contracts for projects that are predominantly civil engineering which may include elements of mechanical and electrical engineering. NEC3 is not used in situations where there is a requirement for substantial performance testing. In projects with substantially more M and E work than civil engineering consideration is given to using the Institute of Chemical Engineers Forms of Contract, I Chem. E Red Book and Green Book.



4.0 Ten Reasons to choose the Engineering and Construction Contract for your project.

4.1 Flexibility

NEC is intended

- to be used for engineering and construction work containing any or all of the traditional disciplines such as civil, electrical, mechanical and building work.
- To be used whether the contractor has some design responsibility, full design responsibility or no design responsibility.
- To provide all the normal current options for types of contract such as competitive tender (where the Contractor is committed to his offered process), target contracts, cost reimbursable contracts and management contracts.
- To be used in the United Kingdom and other countries

4.2 Clarity and Simplicity

NEC is clear in its language and does not use subjective judgements like in the opinion ofto the reasonable satisfaction of.....There is also a minimum of legal jargon.

4.3 Matrix of Contracts

The NEC family of documents (ref. section 6.0) allows all parties within a project to work under similar conditions.

4.4 Roles

NEC defines the roles rather than the titles, the roles of Project manager, Contractor and Supervisor are separately identified within the contract, allowing for its use for any type of construction and the Architect/ Engineer is no longer required to be an impartial adjudicator.

4.5 Early Warning

NEC contains express provisions requiring Contractor and Project manager to notify and early warning and if required call a risk reduction meeting when either becomes aware of any matter which could affect price, time or quality.

4.6 Programme

There is a clear and objective requirement for a detailed programme with method statements and regular updates which provides an essential tool for the parties to manage the project and to notify and manage the effect of any problems, delays etc.



4.7 Compensation Events

This procedure requires the Contractor to price the time and cost effect of a change within 21 days and for the Project Manager to respond within 14 days. There is therefore a rolling Final Account with early settlement and no later end of jobs claims for delay and /or disruption. It is also very beneficial for the Contractor in terms of his cash flow.

4.8 Disputes

The contract encourages better relationships and there is far less tendency for disputes because of its provisions. If a dispute should arise there are now clear procedures as to how to deal with it i.e. adjudication, tribunal.

4.9 Partnering

NEC is complementary to the partnering philosophy which has become so beneficial to contracting parties in recent years.

In the year 2000 the author was responsible for establishing a full set of Project Management Procedures that were designed to facilitate the co working of all parties to a new framework agreement with Yorkshire Water. This was the first 5 year period of the UK Water Industry's rolling Asset Management Programme (AMP 1). Project managers from Yorkshire Water together with designers from the authors company Earth Tech Engineering and planners and quantity Surveyors from the contractor Morrison plc collocated in one building. The procedures were designed to allow a smooth transition from design through to construction taking into account the clients approval processes. Naturally there was a them and us culture at first and a lot of suspicion about motives and roles but gradually over a five year period the barriers were broken down and all person involved began to see their roles as part of the larger whole. It encouraged pro active working together and what was best for the project.

It is intended to demonstrate this in practice during the exchange visit to Minworth Water Treatment Plant where staff from Severn Trent Water work side by side with North Midland Construction and their consultants.

4.10 Added Value Benefits

Many clients are saying that they get better quality projects, less delays, improved relationships, and cost savings by using NEC. Contractors and Consultants say they perform better and cash flow is better secured.

Footnote:

Heathrow Terminal 5 has attracted a lot of attention during the opening weeks and baggage handling problems. The editor of New Civil Engineering magazine is at pains to point out that these problems are not an infrastructure failure. He states (NCE 03.04.08) "The problems were not caused by unfinished construction, poor quality,

malfunction or poor design. The building was complete, commissioned and handed-over. There was no critical equipment missing, no non-functioning mechanicals and barely any software glitches. And it didn't leak. To suggest that T5's problems represent another example of the UK construction industry's inability to deliver large scale infrastructure is plain nonsense". The problems arise from "Specifically baggage handlers – unskilled, low paid operatives in a new environment with new equipment and new routines."

5.0 Stimulus to Good Management

Extract from NEC: ECC Guidance Notes

"This is perhaps the most important characteristic of the ECC. Every procedure had been designed so that its implementation should contribute to rather than detract from the effectiveness of management of the work. This aspect of ECC is founded upon the proposition that foresighted, cooperative management of the interactions between the parties can shrink the risks inherent in construction work. Development in project management techniques and their implementation over the past 20 years have moved faster than the evolution of forms of contract. With the ECC, it is now possible to build arrangements for the different parties to contribute to the management of a project upon improved practices and to motivate all parties, by means of the contract, to apply such practices to their work.

In total, the ECC is intended to provide a modern method for employers, designers, contractors and project managers to work collaboratively. It also enables them to achieve their own objectives more consistently than has been possible using older forms of contract. Use of the ECC is intended to lead to a much reduced risk to the employer of cost and time overruns and of poor performance of the completed projects. It should also lead to a much increased likelihood of achieving a profit for the contractor, subcontractor and suppliers.

The two principles on which the ECC is based and which impact upon the objective of stimulating good management are:

Foresight applied collaboratively mitigates problems and shrinks risk, and
Clear vision of function and responsibility helps accountability and motivates people to play their part.

A secondary but important theme is that people will be motivated to play their part in collaborative management if it is in their commercial and professional interest to do so. Reliance need not be placed upon exhortation either within the contractor or outside it.

Uncertainty about what is to be done and about how the unexpected arising in the course of construction will affect what has to be done is inevitable in construction projects. The ECC allocates clearly the risks arising in these ways between the parties.



However its main task is to reduce the incidence of those risks by application of collaborative foresight. In this way, it aims to improve the outcome of projects generally for parties whose interests might seem to be opposed.

The procedures in the ECC are designed to stimulate good management examples of these are the early warning procedure and the way in which compensation events are dealt with. Compensation events are events which may lead to the payment to the contractor being changed or the Completion Date being delayed”.

6.0 Schedule of NEC3 family of Contracts

The core NEC document is the NEC Engineering and Construction Contract (ECC), which is the contract between an Employer and a Contractor. The ECC remains the most widely used NEC document. However, as experience was gained in using the ECC, there arose a demand for other forms of contract using principles identical to those used in the development of the ECC. As a result, the NEC3 suite comprises the 14 contracts. The standard NEC contractual arrangements using the various contracts are shown below:

6.1 Engineering and Construction Contract (ECC) between an employer and a contractor

The main NEC contract, the Engineering and Construction Contract, and its associate subcontract, are based on the employer selecting a contract strategy from six main options:

- Option A – Priced contract with Activity Schedule
- Option B – Priced contract with bill of quantities
- Option C – Target contract with activity schedule
- Option D – Target contract with bill of quantities
- Option E – Cost reimbursable contract
- Option F – Management contract

The contract strategy is then further refined by selecting from up to 20 secondary options depending upon the main options selected.

Options W1/W2	Dispute resolution
Option X1	Price adjustment for inflation
Option X2	Changes in the Law
Option X3	Multiple currency
Option X4	Parent company guarantee
Option X5	Sectional completion
Option X6	Bonus for early completion
Option X7	Delay damages
Option X12	Partnering
Option X13	Performance bond
Option X14	Advance payment to contractor
Option X15	Limitation of contractor's liability
Option X16	Retention
Option X17	Low performance damages
Option X18	Limitation of liability
Option X20	Key performance indicators
Option Y (UK)2	Housing Grants Act
Option Y (UK)3	Rights of Third Parties Act
Option Z	Additional conditions

6.2 Engineering and Construction Subcontract between a contractor and a subcontractor

6.3 Professional Services Contract between an employer or a contractor and a service supplier (not just on an NEC project)

6.4 Adjudicator's Contract between two contracting parties and an adjudicator (not just on an NEC project)

6.5 Engineering and Construction Short Contract between an employer and a contractor for low risk, simple work (not necessarily low value)

6.6 Engineering and Construction Short Subcontract between a contractor and a subcontractor for low risk simple work on ECC or ECSC projects

6.7 Term Service Contract between an employer and a supplier for a period of time rather than a single project.

6.8 Framework Contract between an employer and a number of suppliers for a period of time



7.0 NEC Training

NEC training courses are routinely provided to enable all construction management involved in the selection of the most appropriate form of contract and its administration. The course provider in the UK is

NEC Manager
NEC
1 Heron Quay
London
E14 4JD

Tel: +44 (0)20 7665 2446

Fax: +44 (0)20 7538 2847

Email: info@necontract.com

A typical two day course is described below:

NEC3: Preparing and Managing Engineering and Construction Contracts

This two-day course introduces delegates to the philosophy of the NEC family of contracts and focuses on the provisions of the NEC3 Engineering and Construction Contract (ECC). The course consists of an introduction to ECC together with interactive workshops using a number of case studies to assist understanding covering pre- and post-contract aspects of ECC.

Delegates will gain a detailed knowledge of the key aspects of ECC and an understanding of how the ECC contributes to the effective management of a project to achieve the project objectives using a collaborative approach.

By the end of this 2 day course, you should:

- understand the philosophy of NEC
- develop skills to advise on development of an appropriate contract strategy
- appreciate the use of Contract Data, Works Information and Site Information
- be able to prepare tender documents and appraise tenders

and understand:



- roles and responsibilities of key parties
- important ECC clauses in particular early warning, programme, Risk Register, communications and compensation events
- how to apply ECC in practice and achieve satisfactory solutions to problems

Intended for

This course is highly recommended for all involved in working with the NEC including project managers, contract managers, quantity surveyors, planners, clients, consultants, contractors and their supply chain.

8.0 NEC Stockists

United Kingdom

Thomas Telford Bookshop
Institution of Civil Engineers
One Great George Street
Westminster
London
SW1P 3AA

Tel: +44 (0) 20 7665 2019
Fax: +44 (0) 20 7665 2245
Email: bookshop@ice.org.uk

South Africa

Engineering Contract Strategies
PO Box 95
Sunninghill 2157
South Africa

Tel: +27 (0) 11 803 3008
Fax: +27 (0) 11 803 3009
Email: bairda@iafrica.com (sole agents for NEC documents in Southern Africa)

9.0 Summary

NEC is a modern day family of contracts that encourages the implementation of sound project management principles and practice. It does require users to adopt the required cultural transition. This involves moving away from a reactive and hindsight based decision making and management approach to one that is foresighted based, encouraging a creative environment with pro active and collaborative relationships.



Before any contracts are undertaken using NEC it is essential to first gain some experience of it being used in practice. The twinning exchange visit proposed by Stuart Campbell to take place later this year will provide the ideal opportunity to expose engineers from the Enterprises to its use in the UK. As part of that visit the author understands that some training on NEC will be provided.

Following this exchange visit the use of NEC should be trialled jointly by the Design and Construction Enterprises on one contract to start with. The lessons learned and experience gained can then be rolled out on subsequent contracts.

David Rathmell

PAWS Consultant
BEng C Eng MICE FCIWEM



Briefing Note No. 5 –Proposal for a Pre-Certification Audit

1.0 Introduction

This Briefing Note sets out the need for a pre-certification audit and the steps taken to facilitate this requirement during the author's visit to the Water Works Design and Supervision Enterprise 14th -18th April 2008. The author recommends that a local Quality Management Consultant is engaged for this purpose. The range of services which may be required and ease of access by working in close proximity to a local consultant would be more readily accommodated than by a PAWS consultant visiting from the UK. It would nevertheless be the intention of PAWS that the author should remain in a mentoring and advisory role to give the top management at WWDSE the confidence and continued support which has developed over that last 2 years.

Any views expressed by the author are gained from working for a number of years in the UK Water Sector with a large Engineering Design and Build Contractor. They do not represent the official view of any Chartered Institution or Trade Organisation. They are offered as a guide to the Ministry of Water Resources (MoWR), the Water Works Design and Supervision Enterprise (WWDSE) and the Construction Enterprise (WWCE) in the hope that this proposal will be helpful in promoting a greater understanding of the needs of all parties, working towards the ultimate goal of achieving ISO 9000 certification and in the delivery of the federal water resources development programme.

2.0 Quality Management Consultants visited.

1. Quality and Standards Authority of Ethiopia.
2. AJB Institute of Quality Management
3. Integrated Quality Solutions PLC

2.1 Quality and Standards Authority of Ethiopia (QSAE)

Meeting Monday 14 April 2008

Persons in attendance:

Ato Mesfin T/Haimanot – QSAE Quality Promotion and Training Director
Ato Melkamu Jaleta – PAWS In country Manager
Mr. David Rathmell – PAWS Independent Consultant

Services provided: – QSAE provides the following services:

Developing national standards
Calibration services for instrumentation etc



Training
Product Certification.

They are currently working towards systems management certification with a German accreditation body. By the end of 2008 they anticipate that they will be a certification body in their own right like ISOQAR and BVQi. There will still be a need for a National Accreditation Body to act as the overarching authority in Ethiopia. Ato Mesfia T/Haimanot said that as they are currently seeking certification of their own systems they were not able to undertake pre certification gap analyses for third parties as it would compromise their professional standing.

Nevertheless in the author's opinion they should be sent an enquiry to clarify this situation.

2.2 AJB Institute of Quality Management

Meeting Tuesday 15 April 2008

Persons attending:

Ato Jemberu Bekele (BSC) – AJB Consultancy and Training Manager
Ato Admassu Tsegaye Abebe (MSC) – AJB Marketing Manager
Ato Melkamu Jaleta and the author – PAWS In country Manager
Mr. David Rathmell – PAWS Independent Consultant
Ato Russom G/Egziabher – WWDSE Quality Control Department Head

Ato Jemberu Bekele was employed by QSAE for 10 years and was involved with the certification process for Metahara Sugar Company, a cement company and Harad Brewery.

Ato Jemberu Bekele. Ato Admassu Tsegaye Abebe and the Managing Director Ato Alemna Jaleta are all IRCA (International Register of Chartered Auditors) registered Auditors.

Services provided:

AJB are certified by BVQi for the provision of Consultancy and Training services for:

ISO 9000:2000 Quality Management
ISO 14000:2004 Environmental Management Systems
OHSAS 18001 Occupational Health ANSD Safety System
ISO 22000 Food Safety Management Systems

Their BVQi Certificate No. 192700 is dated 20 April 2006 and is valid for 3 years. BVQi are certified by the United Kingdom Accreditation Service (UKAS) for this purpose.



AJB have 5 permanent employees and 11 outsourced experts at their disposal. They are currently assisting 17 different companies who are actively seeking ISO 9000 certification. These include a metal product company, a can and corking company, a brewery and Universal Consultants. The latter is most interesting as they provide design engineering services for construction in the building and road construction fields. Although smaller than the WWDSE there would be similarities in the type of system and processes involved. AJB have been working with Universal Consultants for 5 months and they are now awaiting the ISO 9000 certification process to be carried out by a German Accreditation body.

AJB can also provide Business Improvement Services including Six Sigma and Kaisen.

Integrated Quality Solutions (I-QUAS) PLC

Meeting Tuesday 15 April 2008

Persons attending:

Ato Tadele Kumie Kassie – I-QUAS Manager
Ato Melkamu Jaleta – PAWS In country Manager
Mr. David Rathmell – PAWS Independent Consultant

Ato Tadele Kumie Kassie is an IRCA Registered Lead Auditor (Certificate No. 01187334 valid until Jan 09). He received his training from ISOQAR in Manchester, UK. He was previously employed by QSAE for 18 years before setting up I-QUAS two years ago. There are 4 permanent employees plus outsourced experts as required.

Services provided:

I-QUAS provide management systems consultancy, training and quality auditing services in the following fields:

ISO 9000:2000 Quality Management
ISO 14000:2004 Environmental Management Systems
HACCP/22000:2005
ISO 17025:2005

Some of the companies in their broad portfolio that they have assisted are:

Ethiopian Airlines
Wonjii/Shoa Sugar factory
Maritime and transit services Enterprise
National Veterinary Institute



Dire Dawa Food Complex SC
Construction Design SC

3.0 Enquiry for Pre Certification Proposals

A written enquiry from the WWDSE General Manager for consultancy and pre-certification audit proposals is required from each of the three local Quality Management consultants. This should be accompanied by sufficient documentation to adequately describe the nature and type of business which the WWDSE undertakes. A pre-certification audit and follow up consultancy and training support will be tailored more carefully to meet the needs of the WWDSE if an adequate description is provided with the enquiry.

As a minimum it is suggested that this should include:

- An up to date company profile
- A current organogram showing all departments
- A description of the Core and Support processes
- An overview for the recent BPR process and its key outcomes.
- An indicative timescale for the required ISO 9001 certification

The offers received should be carefully scrutinised to ensure that they are comparable i.e. the no of man days to carry out the pre-certification audit should be similar and adequate for the purpose. In the authors own opinion for a company of the size and complexity of the WWDSE this would require not less than 10 man days at Head Office in Addis Ababa. Furthermore a site visit may also be required to observe the design/construction interface.

The receipt of written proposals for these services will allow the WWDSE to budget for carrying out these services in the new fiscal year commencing in July 2008.

Offers may include some or all of the following:

An initial gap analysis of all processes to better determine the level of support required

A one day training workshop for Top Management

Awareness Training for staff

Offers to assist in designing documents for flowcharting procedures where the initial gap analysis has shown shortfalls

Internal auditor training 5 day course to enable WWDSE staff to undertake internal systems audits



Consultancy advice on how to undertake a Management Review

Consultancy advice on how to implement Corrective Actions

Undertaking a pre-certification audit to check WWDSE systems for compliance against all the requirements of ISO 9001:2000 Standard. This should be carried out by an independent Lead Auditor not previously engaged with WWDSE in providing consultancy or training support.

Dealing with corrective actions arising from the pre-certification audit

Liaising with the accreditation body for ISO 9001:2000 certifications. This would probably be either a UK or German organisation for the foreseeable future. It is not anticipated that Ethiopia will have its own National Accreditation Service for possibly another 1-2 years.

4.0 Summary

The author has no hesitation in recommending that an invitation to submit proposals for a Pre-Certification Audit and supporting Consultancy and Training services is sent to all three local Quality Management Consultants Visited.

Budgetary provision should be included in the fiscal Year 2008/09.

It is anticipated that if adequate resource and commitment are allocated by the WWDSE to this process then certification to the ISO 9001:2000 standard is possible in a period of 8 – 12 months. This would depend entirely on the priority rating given to this goal by top management. Nevertheless in the author's opinion the work undertaken by BPR will prove to be a good foundation achieving certification and should help considerably to shorten the process.

David Rathmell

PAWS Consultant
BEng C Eng MICE FCIWEM



Appendix 3

Abbreviations used in Visit Reports and Briefing Notes

AMP – Asset Management Programme
BPR - Business Process Re-engineering
BVQI – Bureau Veritas Quality International
CESMM 3 – Civil Engineering Standard Method of Measurement 3rd Edition
CV – Curriculum Vitae
ECSC - Engineering and Construction Short Contract
EEC – Engineering Construction Contract
FIDIC – Federation Internationale des Ingenieurs Conseils (French)
ICHEM E – Institute of Chemical Engineers
IRCA – International Register of Certificated Auditors
ISO – International Organisation for Standardization
MoWR – Ministry of Water Resources
MS Word – Micro Soft Word
NEC3 – New Engineering Contract 3rd Edition 3
PAWS – Partners for Water and Sanitation
QA – Quality Assurance
QMS – Quality Management System
QSAE - Quality Standards Authority of Ethiopia
WBS – Work Breakdown Structure
WEDC – Water Engineering and Development Centre, Loughborough University
WWCE – Water Works Construction Enterprise
WWDSE – Water Works Design and Supervision Enterprise
UKAS – United Kingdom Accreditation Service