



Bitworks Design & Consultancy

Quality Management System

Part 3 - Quality Procedures

This Quality Manual has been issued on the authority of the Senior Partners of Bitworks & Design Consultancy for the use of all staff, subcontractors, clients or regulatory bodies to whom Bitworks & Design Consultancy may be required to provide such information.

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Abstract <p>The Bitworks Design & Consultancy Quality Management System is divided into four parts. This document is Part 3 and describes the Quality Procedures adopted by Bitworks Design & Consultancy.</p> <p>The Work Instructions designed to meet these Quality Procedures are contained in Part 4.</p>		

Name	Function	Level
Mr Ian Bickerton	Quality Manager	Prepare
Mr Mike Down	Senior Partner	Approve

Keywords Approval, Audit, Budget, Change control, Customer feedback, Design control, Distribution, Document, Document control, File number, Filing, Finance, Investment, ISO 9001:2000, Meeting, Policy, Quality Procedure, Quality Management System, Report, Storage, Training.

Approved <div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="text-align: center;"> Mr Mike Down (Senior Partners) </div> <div style="text-align: center;"> Mr Ian Bickerton </div> <div style="text-align: center;"> Date: </div> </div>		
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Amendments

Changes in the organisation of Bitworks Design & Consultancy or the environment in which it operates, may necessitate modifications, amendments, insertions and/or deletions to the overall quality management adopted by Bitworks Design & Consultancy and its associated documentation (e.g. Quality Procedures and Work Instructions). The contents of this Quality Manual may, therefore, be altered on an as required basis. All changes shall be subject to QP 8 - Change Control. Changes shall be deemed operational following approval by the authorised person/persons and published on the Bitworks Website www.bitworks-engineering.co.uk as a single point of reference for customers and employees.

No	Section	Amendment details	Date
01	All	First issue	05.04.03

Distribution List

Printed copies of this Quality Manual will be made available on a temporary basis as and when required. The controlled QMS documents are available in PDF format on the Bitworks Design & Consultancy Website www.bitworks-engineering.co.uk providing one point source for Bitworks Customers and Employees.

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Abbreviations and Acronyms

Abbreviation	Definition
DCS	Document Control Sheet
Bitworks	Bitworks Design & Consultancy
ISO	International Standards Organisation
QM	Quality Manual
QMS	Quality Management System
QP	Quality Procedure
WI	Work Instruction

References

Ref	Abbreviation	Title	Issue date
1.	ISO 9001	Quality Management Systems - Requirements	2000
2.	ISO 10011	Guidelines for auditing quality systems. Part 1 - Auditing.	1990
		Part 2 – Qualification criteria for quality systems auditors.	1991
		Part 3 – Management of audit programmes.	1991

Documentation

Bitworks Design & Consultancy (BITWORKS) has four levels of documentation within their Quality Management System (QMS) which is structured as shown in the table below. This document is Part 3 and describes the Quality Procedures that have been designed to meet Bitworks Quality Processes.

The Work Instructions associated with these Quality Procedures are detailed in Part 4.

Table 1-1: Bitworks Design & Consultancy Quality System – Documentation

Part 1	Quality Manual	The main policy document that establishes the BITWORKS's QMS and how it meets the requirements of ISO 9001:2000.
Part 2	Quality Processes	The Core Business Process plus the Primary and Secondary Supporting Processes that describe the activities required to implement the QMS and to meet the policy requirements made in the Quality Manual.
Part 3	Quality Procedures	A description of the method by which quality system activities are managed.
Part 4	Work Instructions	A description of how a specific task is carried out

Quality Procedures

Quality Procedures (QPs) form the bulk of the QMS and describe how the policy objectives of the Quality Manual (QM) can be met in practice and how their processes are controlled. QPs contain the basic documentation used for planning and controlling all activities that impact on quality.

Each QP is unique and contains details of procedures directly applicable to Bitworks. By design, the QPs conform to the specific requirements contained in ISO 9001:2000, although in reality they often cover more as they are an efficient method of controlling every aspect of Bitworks business.

These documented procedures can be made available and used in either hard copy or electronic format and may be used as separate documents outside the QM in places of work. Printed copies of this Quality Manual will only be made available on a temporary basis as and when required. The controlled QMS documents are available in PDF format on the Bitworks Design & Consultancy Website www.bitworks-engineering.co.uk providing one point source for Bitworks Customers and Employees.

Some procedures (e.g. QP 13 Investments) may contain data or information, the knowledge of which must remain restricted to Bitworks. These procedures are not included in the QM, beyond their title and reference number.

Table 1-2: Quality Procedures

PROCEDURE NO	PROCEDURE TITLE
QP 1	Document Control
QP 2	Document Quality
QP 3	Design Control
QP 4	Document Approval
QP 5	Quality Management System Review
QP 6	Customer Feedback
QP 7	Internal Quality Audits
QP 8	Change Control
QP 9	Meetings and reports
QP 10	Training
QP 11	Production of a Quality Document
QP 12	Budget and Finance
QP 13	Investments

Procedure

The approval procedure for all QPs is as follows:

- The Quality Manager evaluates the requirement for a new QP, researches all available information (e.g. existing work procedures, work practices, standards etc.) and produces an “Initial Draft QP”. This is then circulated, for comment, to selected Bitworks staff who are directly involved in the procedure.
- The Quality Manager evaluates all comments received, co-ordinates all the necessary alterations, amendments, proposed modifications etc. and produces a Draft to the Senior Partners for comment.
- Upon approval (or after modification) by the Senior Partners, the QP is then issued by incorporation into the QMS Part 3, published on the Bitworks Website www.bitworks-engineering.co.uk to become Bitworks policy.

1 QUALITY PROCEDURE 1 - DOCUMENT CONTROL

1.1 Scope

In conformance with the requirements of ISO 9000:2000, document control is essential for the overall efficiency and quality of Bitworks and its documents. QP 1 describes the document control procedures for Bitworks. It details the allocation of document codes and the procedures for distributing these documents. It describes the procedures for translating and electronic filing of these documents, how document changes are managed and the type of word-processing software and other software to be used. It does not, however, include the approval procedures for documents, which are described in QP 4 - Approval Procedures.

Bitworks document control procedures shall apply to all documents which are produced for the Partnership, irrespective of the origin.

1.2 General

- The responsibility for all document control lies with the Senior Partners
- A centralised electronic filing system shall be retained in the Bath & Cheltenham Bitworks Offices
- The term 'document' includes all Bitworks documents, letters, faxes, reports, minutes and contracts etc.

1.3 File numbering system

All Bitworks personnel shall make use of the Partnership filing and numbering system when originating Bitworks documents, particularly where documents are to be distributed externally.

1.4 Document administration number

All documents which are despatched or processed by a Bitworks office shall receive a document administration number. A shared electronic list of document administration numbers shall be maintained at each Bitworks Office. Bitworks documents are electronically stored on one Document Control Computer together with the document administration list. The document administration number combined with the year and office code provides a unique reference number for each Bitworks document. The administration number reverts to "001" at the beginning of each year.

All documents despatched by the Office shall be entered in the "MAIL OUT" letterbook, while all documents received shall be entered in the "MAIL IN" letterbook (for examples see Annexes A and B). The MAIL OUT/IN letterbook's are electronic files resident and maintained on the Document Control Computer.

1.5 Documents produced by Bitworks Design & Consultancy

For all documents **produced** by Bitworks, the file reference number shall be in the footer, to the right, of every page, regardless whether the page is single or double sided. The format of this reference number shall be as follows:

BW_NNN_YY_O_XXXXXXXXXXXXXXXXXX_AA_VV where:

BW	Indicates that the document has been issued by Bitworks Design & Consultancy.
NNN	Is the document administration number, which provides a unique reference for a particular document.
YY	Is the Year Code: last two digits of the year in which the document was written.
O	Is the Office Code, B Bath, C Cheltenham.
XXXXX	Up to 20 character document description.
XX	Is the file reference/subject code (see Annex C).
AA	Is the author's or originator's initials.
VV	Indicates the version number of the document - also see paragraph 1.5.1.1 (Note: For preliminary or draft documents this number will always be "00".).

Example: **BW_003_03_C_QMS-Part3-QP_53_IB_01**, where:

BW	= Bitworks document
003	= Document administration number 003
03	= The year in which the document was issued
C	= Cheltenham Office
QMS-Part3	= Document Description
53	= Quality Policies & Procedures (see Annex C)
IB	= Author's initials (Ian Bickerton)
01	= Version 1

1.5.1 Document changes**1.5.1.1 Version numbering**

To indicate the version of the document 2 digits are included in the document reference number (see paragraph 1.5 above). For preliminary or draft document this number will always be "00".

Example: **BW_003_03_C_QMS-Part3-QP_53_IB_01**, where:

01 = Version 1 of document 003 'QMS-Part 3'

1.5.2 Identification of changes made to a document

Changes to a document can be tracked using the Microsoft Word Compare documents, all earlier document versions will be stored on the Bitworks office Document Control Computer. Documents updated for authorisation should have the 'track changes' enabled to save time on document checking and verification.

1.6 Letters produced by Bitworks Design & Consultancy

For all letters **produced** by Bitworks the reference number shall be in the relevant space on the first page. This number shall be repeated in the footer of every page, to the right, regardless of whether the page is single or double sided. The format of this reference number is similar to the example in 1.5, except that there is no requirement for a year code, office code or version. The description, albeit project or customer identification is optional.

The format then shows as follows: **BW_035_Smiths_IB**

Letters shall also have an optional reference indicating the person/s, who dealt with the letter. This reference will consist of the initials of the Bitworks personnel separated by slashes (.../.../...) and shall be placed underneath the document reference number (on the front page only).

1.7 Faxes and e-mails produced by Bitworks Design & Consultancy

For all faxes, **produced** by Bitworks, the reference number need only be included on the first page of the fax.

The format of this reference number is the same as the example in 1.6.

1.8 Contracts and minutes produced by Bitworks Design & Consultancy

For all contracts and minutes **produced** by Bitworks, the reference number shall be included in the footer of every page, to the right, in small characters regardless whether the page is single or double sided.

The format of this reference number is the same as the example in 1.5.

1.9 Documents received by Bitworks Design & Consultancy

All documents, **received** by Bitworks, shall be entered into the electronic MAIL IN letterbook, only if no originator's reference is available does a Bitworks reference need to be raised. If a Bitworks reference number is required then this should be clearly marked on the left hand side of the document, by hand, as follows:

BW-XX-NNNN-DDMMYY, where:

BW-XX-NNNN is as shown in 1.5 above.

DD Is the day number of the date when the document was received.

MM Is the month number of date when the document was received.

YY Are the last two digits of the year number of the date when the document was received.

Example: **BW-16-114-010403**, where:

16 = Is the document reference code (see Annex C).

1147 = Document administration number 1147
010403 = Received on 01 April 2003

1.10 Document Control Sheet

All documents shall include an Bitworks Document Control Sheet (DCS) as shown in Annex E to this Section. The form has seven separate parts as follows:

1.10.1 Document title

The title of the document should be kept as short as possible.

1.10.2 Version block

The version block indicates the status of the document in terms of the version number (also see 1.5.1.1).

1.10.3 Date

The date that the document was issued.

1.10.4 File number

The file name/number shall be in accordance with 1.5.

1.10.5 Number of pages

Here is shown the total number of pages making up this document, including incorporated annexes, if any.

1.10.6 Abstract

An executive overview of the document, which shall be kept as brief as possible.

1.10.7 Approval control block

The approval control block shows the responsible persons nominated to prepare, review, agree and approve the document (these responsibilities are tabled at Annex B to QP 8).

1.11 Storing files on the Document Control Computer

In order to be able to retrieve stored files from the Bitworks Document Control Computer, each document shall be filed within a specific directory for that contract/project. Each contract/project shall have a single folder, larger contracts may use sub-folders for the various categories within each main project folder such as minutes, correspondence, reports, annexes, etc. The document numbering system shall be used. It is essential that the file reference number, office & date code corresponds with the actual name of the electronic document for easy search and retrieval (see paragraph 1.5).

1.12 Filing of documents (hard copies)

Bitworks in the interests of the environment shall avoid printed documents with the overall objective of operating a paperless office. However, some customers will send hardcopy documents, these will be logged in the Mail In letterbook (included a location record and document holder) and filed by the either the appropriate Program Manager or Senior Partner. It will be their responsibility to either return this document to the customer or destroy the document on completion of the Contract.

1.12.1 File numbering and file cabinets

The document reference number, as described in paragraph 1.5, indicates where the document is to be filed. Where possible, different files concerning one particular contract shall be grouped together. The emphasis on the physical filing structure should be, where possible, project/contract based not subject based.

1.13 Old and obsolete documents

Old and obsolete documents shall be removed from the file cabinet under the supervision of the Office Administrator. All removed documents shall be either returned to the customer or destroyed as appropriate to the security classification.

1.14 Headed Paper

All official Bitworks correspondence shall be printed either on Bitworks letter paper or using a printed Bitworks logo.

1.15 Document distribution

Approved documents, working papers, reports and documents may be freely distributed to all Bitworks personnel as well as any personnel working for and on behalf of Bitworks. These papers shall all be clearly marked with the file reference number, status, originator, date and a distribution statement (e.g. "**not to be distributed outside Bitworks**").

When a document is being sent to someone outside of Bitworks, the document shall be approved by a Senior Partner before dispatch and the cover letter shall include a Senior Partner's signature block shown below:

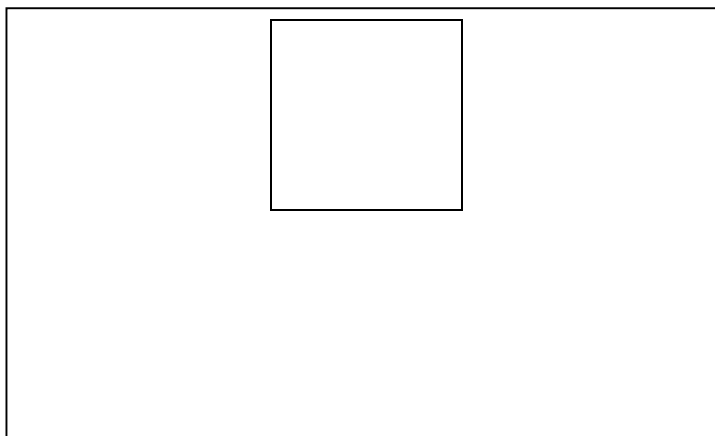


Figure 1-1: Senior Partners's signature block

In some cases a Senior Partner may delegate approval of a specific document or documents to another Bitworks employee (e.g. the Project Manager). The actual signing (i.e. per pro) of the cover letter may also be delegated to a third party.

1.16 Draft documents

All draft versions of documents shall carry the following text on the front cover of the document:

‘This is a draft version and may be used for information purposes only’

Draft documents that do not pass approval shall be removed from circulation.

1.17 Approved documents

All approved documents shall be uniquely numbered (see Section 1.5) and each Bitworks office will keep a register of all issued documents (see Annex F).

When a new version of an approved document is issued, copies of all previous versions shall be destroyed. This shall be covered by a statement in the covering letter to the affect that:

‘On receipt of a new issue number the previous version is to be destroyed’.

Bitworks policy is to strive for the paperless office, keeping hardcopy documents is discouraged should only be held on a temporary basis.

1.18 Internal distribution

The Partnership Administrator is responsible for the distribution of all approved Partnership documents, working papers, reports and documents within Bitworks.

1.19 External distribution

The Senior Partners are jointly responsible for (and shall decide on) the distribution of all approved documents, working papers, reports and documents outside of Bitworks (also see paragraph 1.15).

1.20 Press notices etc.

The Senior Partners shall decide whether Bitworks approved documents, working papers, reports and documents shall be made available to the public. The Senior Partners shall fix the right-of-use fee for these documents, with the Partnership Secretary deciding the copy price.

1.21 Software

1.21.1 Word processing

All Bitworks documents, working papers, and reports shall be produced and stored using Microsoft® Word and stored in the ‘.doc’ format.

1.21.2 Spreadsheets and graphics

Spreadsheets and graphics for Bitworks documents, working papers, reports and documents shall be made using Microsoft® Excel. Use of drawing packages is not restricted and free choice is given to Bitwork's employees, however the graphic file imported into Word should be restricted to either WMF, BMP or JPEG formats.

1.22 Copyright

The following shall be included on the front page of each deliverable:

© 2003 by Bitworks Design & Consultancy, all rights reserved.

Copyright subsists in all Bitworks Design & Consultancy deliverables including magnetic, optical an/or any other soft copy of these deliverables. This document may not be reproduced, in full or in part, without written permission.

QP 1 Annex A - Example of a mail in sheet

Date	Code	From	Subject	Document #	Action (Initials)	Completed (Date)

Code: a letter to describe the document, i.e. F= Fax, M= Minutes, L= Letter, etc.

QP 1 Annex B - Example of a Mail out sheet

Date	Code	To	From	Subject	Document #

Code: a letter to describe the document, i.e. F= Fax, M= Minutes, L= Letter, etc

QP 1 Annex C - Examples of file reference codes

00-09	Administration
01	Accommodation - reservations, etc.
02	Internal quality audits
03	Meetings and reports
04	Office equipment
05	Stationery
06	Travel
07	Subcontractors
10-19	Finance
10	Audits
11	Annual Accounts
12	Budgets
13	Contracts
14	Expenditure
15	Financial Management
16	Insurance
17	Time & Expense sheets
30-39	Public Relations
30	Articles
31	Brochures
32	General
33	Publications and presentations
40-49	Personnel Matters
40	Management
41	Social & Welfare
42	Training
43	Health & Safety
50-59	Quality Management System
50	Quality - General
51	Quality Manual

52	Quality Plans
53	Quality Policies & Procedures
54	Work Instructions
55	Quality Audits
56	ISO 9001:2000
57	Standards

60-69 Environmental

30	Policy
31	Standards
32	ISO 14001:1996

70-79 Fuels

70	Conservation
71	Management
72	Safety
73	Policy

80-89 Projects

80	UIC & railways
81	Military
82	Civilian

90-99 Technical

90	Manuals
91	Reference documents
92	National standards
93	International standards
94	Information Technology
95	Computer Network
96	Telephone Network

QP 1 Annex D - Identification of changes to a document

The SRME of figure 1 comprises of three functional blocks, PC Host Interface, Signal Processing and the Analogue Signal Conditioning circuitry. The diagram shows how the functional blocks communicate, the two Digital Signal Processor's (DSP) have a dedicated serial interface, the Speech Signal is routed through a Analogue Interface Chip to DSP2 and the PC PCI Bus interfaced directly with the DSP1/2 local bus via the PLX 9030 PCI.

QP 1 Annex E - Example of an Bitworks Document Control Sheet

Document Control Sheet

Title	This version	Date
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Abstract

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The Work Instructions designed to meet these Quality Procedures are contained in Part 4.

Name	Function	Level
Mr Ian Bickerton	Quality Manager	Prepare
Mr Mike Down	Senior Partner	Approve

Keywords

Approval, Audit, Budget, Change control, Customer feedback, Design control, Distribution, Document, Document control, File number, Filing, Finance, Investment, ISO 9001:2000, Meeting, Policy, Quality Procedure, Quality Management System, Report, Storage, Training.

Approved

.....
Mr Mike Down **Mr Ian Bickerton** **Date:**
 (Senior Partners)

QP 1 Annex F - Register of documents

Date	Document #	Code	To	Subject

Code: a letter to describe the document, i.e. F= Fax, M= Minutes, L= Letter, etc

2 QUALITY PROCEDURE 2 - DOCUMENT QUALITY

2.1 Scope

In addition to confirming that the technical and operational content of an Bitworks report, document or deliverable is acceptable, it is also important to ensure that these documents are complete, correctly formatted and do not contain any spelling mistakes etc. which could negate (to some extent) the considerable effort afforded in the production of these papers.

QP 2 describes the procedure to be adopted within Bitworks in order to ensure that all documents are of the correct format, content and quality.

This QP is to be read in conjunction with QP 1 - Document Control.

2.2 Document quality procedure

As the production of a document will normally require considerable time and effort, it is important that the documents themselves are of the required quality and reflect this.

Obviously the technical content and accuracy of a document is of the highest priority with technical review a mandatory requirement on all customer documents. However it is also important to ensure that these documents are of the correct format, content and quality. This can only be achieved by monitoring and confirming each stage of the document's production process, from acceptance of a task as a section work package to the actual distribution of the document. In effect, a cradle to grave approach.

The following flowchart and descriptive table shows the various points during the production of a customer document that will require formal approval.

In producing and finalising Bitworks documents, the procedures contained in QP 1 - Document Control shall be observed especially those concerning the layout of documents.

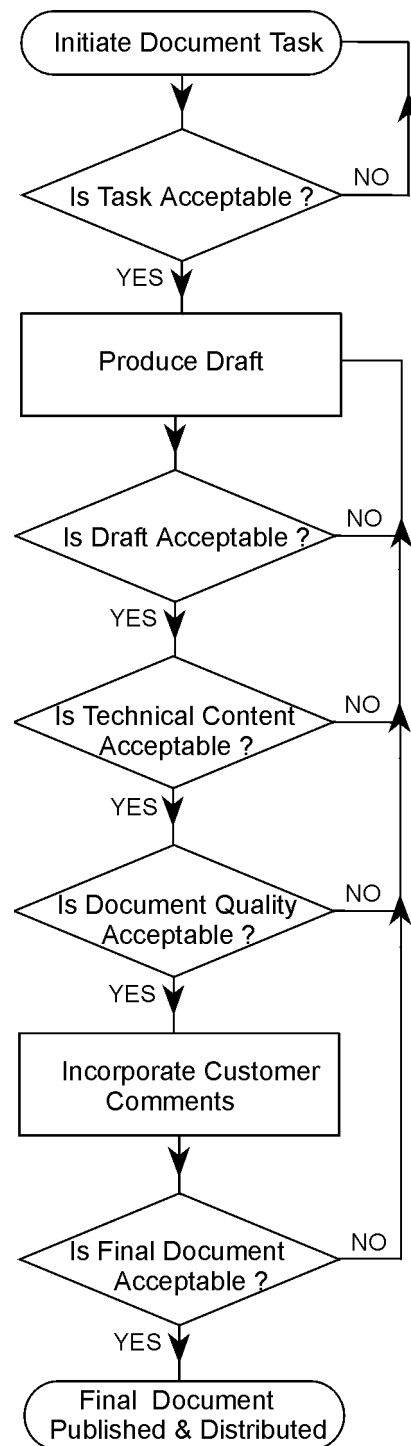


Figure 2-1: QP 2 - Document approval flowchart

Task	Description	Responsibility	Remarks	Signature and Date
(1)	• Task accepted and allocated to a section	Senior Partners	Details of requirements, content, format and time frame received and approved by one or more Senior Partners.	
	• Task accepted by a Project Team. • Work package, time plan, etc. agreed.	Project Manager	Task allocated to Project Team or individual.	
(2)	• Draft document produced	Project Team or individual	Initial draft proposal produced by the Project Team (or individual) in consultation with Senior Partners (if required).	
	• Draft approved	Project Manager	Proposal agreed by Project Manager.	
(3)	• Draft accepted	Project Manager	Draft proposals received by Project Manager and basic content agreed.	
	• Technical content approved	Project Manager	Project Manager evaluates and approves document for: <ul style="list-style-type: none"> • consistency with other technical documents; • overall technical content; • confirmation that all system and safety requirements have been met. 	
(4)	• Quality of the document approved	Project Manager /Quality Manager	Editorial work completed on document to ensure correct cross-references, agreed layout, no obvious spelling mistakes and typographical errors, etc.	
(5)	• Document approved by Senior Partner	Senior Partner	Senior Partners gives final approval to document, confirms that it meets the customer's full requirements and that it is ready for publication.	
(6)	• Document printed (if required)	Partnership Secretary	Partnership Secretary arranges for the document to be published and passed to Quality Manager for final approval prior to distribution.	
	• Printing approved	Project Manager	Project Manager approves final customer document.	
	• Document distributed	Partnership Secretary	Partnership Secretary distributes copies of the document in accordance with the agreed distribution lists.	

3 QUALITY PROCEDURE 3 - DESIGN CONTROL

3.1 Scope

Bitworks Design & Consultancy (Bitworks) has the following specialist areas and expertise:

- Webpage design with database interaction
- PC Application Software with advanced MMI
- Embedded Product Software in ANCI C or Assembler
- Electronic Design, PC Cards – PCI, PMC, migration of ISA to PCI
- Algorithm development and product implementation

In the execution of this work the principles described in ISO 9001:2000 relating to Design Control are vital to the success of the project. The actual Design Control mechanism used for a particular product is very dependent on the customer requirements, the scope of work and the area of work.

3.2 Resourcing

The Senior Partners shall assign project responsibilities to Project Managers. Project Managers, in their turn, are responsible for ensuring completion of these tasks, for assigning the work to suitably trained and experienced specialists and for overseeing and supervision of their work.

3.3 Planning

The Quality Manager is responsible for ensuring that the planning of all interfaces between the different activities is appropriate and that verification points are allocated and taken into account.

The Quality Manager shall approve the planning after each change and, where necessary, liaise with the Senior Partners to ensure that more detailed plans are made in order that interfaces between the development activities are properly handled. The main objective being to see to it that the appropriate information concerning the requirements and specifications already developed and agreed on, are available to all parties - at any stage.

To facilitate this process, the Quality Manager shall use advance design planning and decision techniques as appropriate to the size of the project to control this requirement wherever appropriate.

To ensure overall task effectiveness, a time plan shall be maintained by the Project Manager, throughout each Project's life.

3.4 Input

The input data for each stage of a contract shall (in consultation with the Quality Manager) be identified by the Project Manager, documented as necessary, and agreed with the Senior Partners.

For each contract the same structure shall apply and the Quality Manager is responsible for ensuring that this actually happens.

3.5 Output

All documents shall be presented in the form as described in QP 1.

3.6 Verification

Verification of all Bitworks documents shall be in accordance with (when available) the relevant project or contract specific Quality Plan and shall be documented.

Verification that documents are of the required format, content and quality shall be achieved via the procedures described in QP 1 and QP 2.

Approval shall be in accordance with QP 4.

The Quality Manager will advise the Senior Partners on this subject on an as required basis.

3.7 Changes

All changes that could fundamentally influence the Partnership scope, targets, organisation, budget, overall work breakdown structure, work packages and time plans shall be subject to the formal change control procedures described in QP 8.

4 QUALITY PROCEDURE 4 - DOCUMENT APPROVAL

4.1 Scope

To achieve conformity and inter co-operation, all official Bitworks documents¹, whether these be managerial, quality related, financial or technical, require some form of approval procedure. All official Bitworks documents shall be presented in the form of an official Bitworks document which will require the approval of the Senior Partners. QP 4 details the requirements for Document Approval within Bitworks.

4.2 Approval procedure

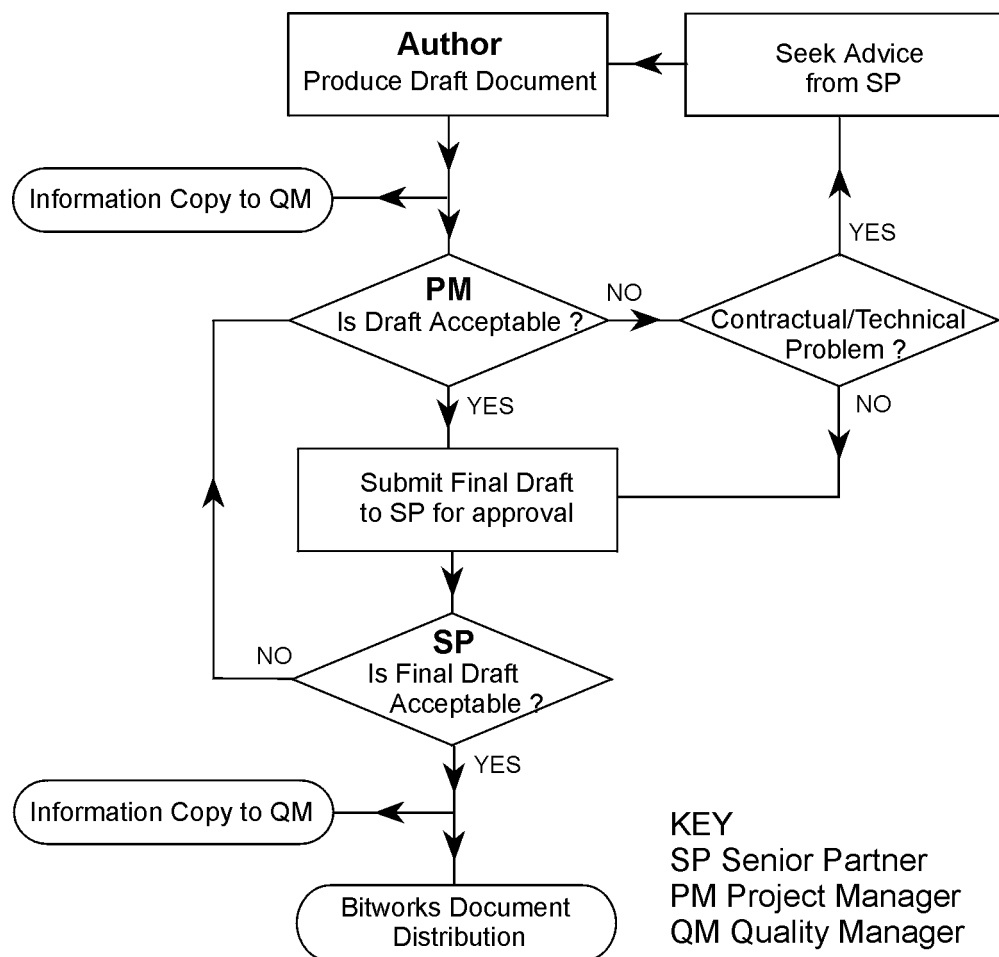


Figure 4-1: QP 4 - Document Approval flowchart

¹ In this instance the term 'document' excludes letters, memos, faxes and e-mails.

4.3 General

4.3.1 Draft documents

For each type of document a number of different individuals and/or functions may be involved during the various stages of their production (i.e. from writing the initial document to final approval of the document). It is the responsibility of the Project Managers to assign suitably qualified persons to complete this work. In doing so, the Project Managers shall ensure that all persons having qualifications related to the specific subject of a draft document shall participate in the preparation and approval stages (for example, the Quality Manager shall participate in all quality related matters).

When the draft document is finalised, it shall first be approved initially by the Project Manager and then by one of the Senior Partners.

Draft documents are only approved when all persons assigned by the Senior Partner agree unanimously. In cases where a decision cannot be taken unanimously, the Senior Partner will be asked for a decision.

If an assigned individual cannot be present, she/he may identify a replacement who, following approval by the Senior Partner, will have the authority to discuss and formally approve the document on her/his behalf.

The order of approval shall be:

- Approve initial document (by the author(s) or their representative)
- Agree contents of the draft document - Project Manager as nominated by the Senior Partners
- Approve the reviewed draft document - Senior Partner

Approvals take place after the individuals representing a specific level have signed the Document Control Sheet. Where a hierarchical approval format has been selected for a document, the highest level document approval cannot be granted before all the lower levels of approval have been given.

4.3.2 Final draft approval

Following the approval procedure outlined above, draft documents then become 'final draft documents' which, then require approval by a Senior Partner.

When the Senior Partner has approved a final draft document, it will then become an official Bitworks document.

The approval procedures for financial transactions are described in QP 12.

4.4 Changing approved documents

Once cleared by Senior Partner any changes to an official Bitworks document shall be subject to the formal Change Control procedure as shown in QP 8.

Approval of a changed document can only take place if all previous documents and reports, on which the current document is based, have been formally approved. Exceptions to this

rule need to be sanctioned by a Senior Partner (in consultation with the Quality Manager and Partnership Secretary).

5 QUALITY PROCEDURE NO 5 - QUALITY MANAGEMENT SYSTEM REVIEW

5.1 Scope

In accordance with the principles of ISO 9001:2000, bi-annual Bitworks QMS reviews are required in order to ensure that:

- Bitworks is effective in attaining its objectives as described in the QM
- the QM remains effective and suitable for the requirements of Bitworks, (in other words that it 'really works' in practice)
- the requirements and rules as described in the QM remain workable and are in accordance, (as far as possible), with the way Bitworks personnel prefer to work - without losing the assurance that Bitworks delivers customer quality
- Bitworks general requirements are met, and that the relevant Quality Procedures are agreed and followed

QP 5 details the requirements for Quality Management System Reviews within Bitworks.

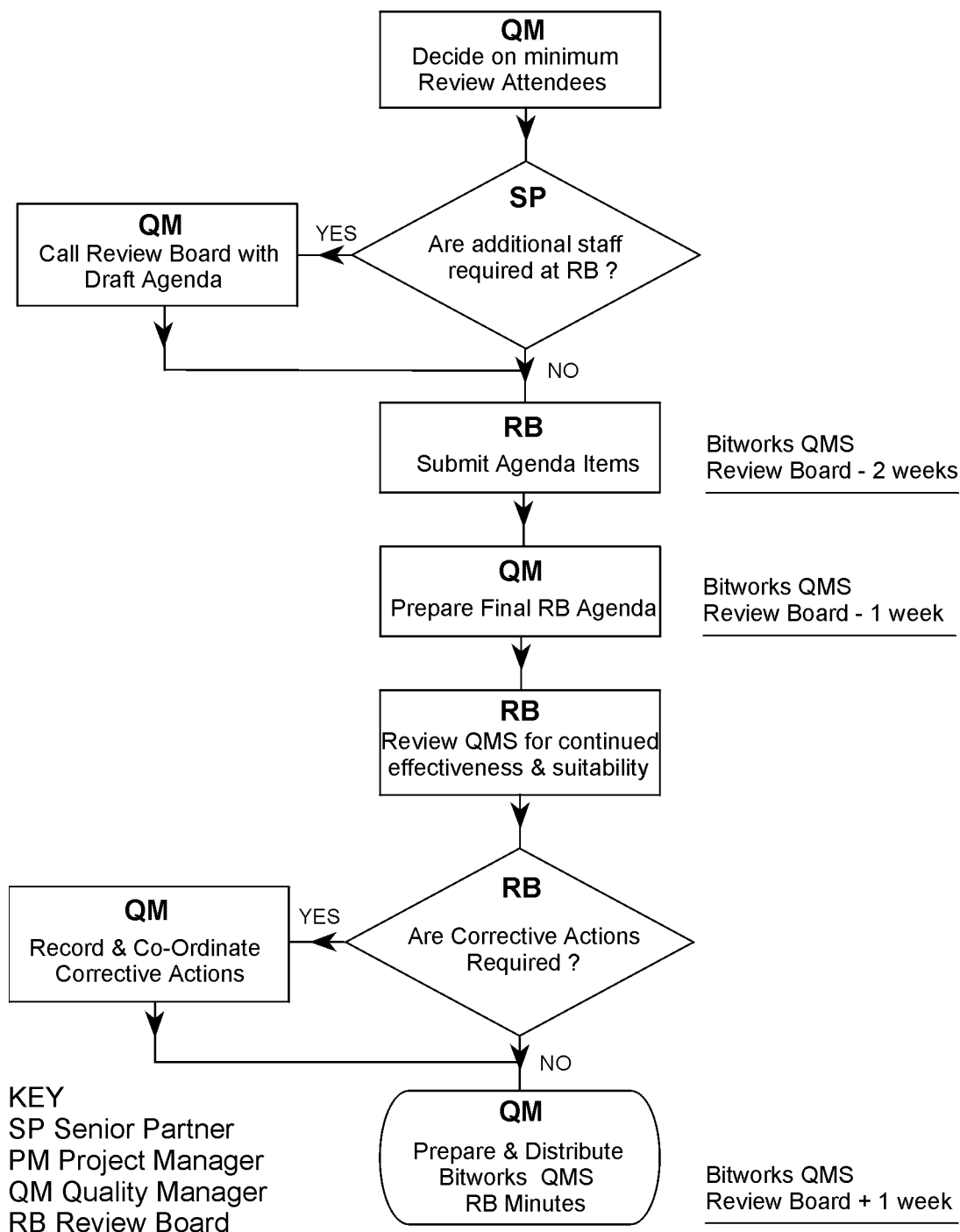


Figure 5-1: QP 5 – Bitworks QMS Review Board flowchart

5.2 Quality Management System review

The initiative to convene the Bitworks Quality Review Board shall be taken by the Quality Manager. She/He shall prepare a draft agenda and provide all relevant documents (e.g. customer feedback, reports of internal audits, results of product reviews, etc.). If necessary the Quality Manager shall draw attention to areas where Customer or Partnership requirements are not being met or where Quality Procedures are not followed. Whenever possible he will provide recommendations for improvements.

If the results of the Quality Review are such that corrective action is necessary, the Review Board shall agree on the corrective actions and suggest appropriate methods for their implementation. The Senior Partners shall be responsible for ensuring the implementation of the agreed corrective actions.

The details of the Quality Review and the agreed corrective actions shall be recorded in minutes and the records shall be maintained in the Bitworks Partnership quality file.

The Quality Review shall cover all activities related to Partnership and quality management as described in the QM, attached Quality Processes, QPs, WIs and Quality Plans.

5.3 Frequency of meetings

The Quality Review Board shall meet every 6 months.

5.4 Review Board members

Permanent members of the Review Board are:

- the Quality Manager (who also acts as Chairman)
- the Partnership Secretary
- one Senior Partner

The exact number of attendees may vary according to the circumstances applicable at that time.

The Quality Manager shall decide on the minimum number of attendees for convening that meeting.

The Senior Partners (in consultation with the Quality Manager) shall decide whether or not it is necessary to invite additional members and if so, who shall be involved.

5.5 Agenda

All members of the Review Board may contribute items for the agenda, but they must be submitted no later than two weeks prior to the actual date of the meeting. Such contributions shall be sent to the Quality Manager.

The Quality Manager shall prepare the agenda in consultation with the Senior Partners and ensure that the relevant information documents are attached to it.

The Quality Manager shall distribute the agenda and attached information documents so that these are in the possession of all members of the Review Board at least one week prior to this meeting.

The agenda for a Review Board shall consist of:

- a review of all actions raised at the previous meetings and progressed at subsequent meetings
- a review of minutes and actions arising from the minutes of the previous meeting
- implementation and continued effectiveness of the QM, Quality Processes, Quality Processes, QPs, WIs and Quality Plans

- results of internal Bitworks audits and details of the corrective actions taken
- previous Bitworks audit results
- previous reports on all major deviations from Bitworks objectives related to time, costs and quality
- previous consequences of changes (objectives, organisation, schedules, etc.)
- previous results of verifications on major Bitworks documents
- previous results of actions agreed at previous meetings
- any negative customer feedback

5.6 Meeting contents

The nature of the Review Board is such that all major issues affecting Bitworks shall be considered as appropriate.

In all cases the target shall be:

- to review if the QMS is still the most effective and suitable way to reach and achieve objectives and to ensure that Bitworks documents comply with the relevant quality and safety standards
- to seek ways of improving Bitworks QMS

5.7 Actions

If the results of the review are such that corrective action is necessary, the Review Board shall:

- consider solutions and agree on the corrective action(s)
- agree on responsibility for the implementation of the corrective action chosen
- agree on a timescale for the implementation and review of corrective action(s) taken

The Quality Review minutes and the agreed corrective actions shall be recorded in the Partnership quality file by the Quality Manager (this would normally be an electronic file of documents).

The Quality Manager shall also be responsible for co-ordinating the completion of all corrective actions agreed by the Quality Review Board.

All actions raised at previous meetings shall be reviewed and progressed at subsequent meetings.

5.8 Meeting records

The Quality Manager is responsible for ensuring that minutes of the meeting are prepared and distributed, promptly.

The minutes shall clearly state:

- actions agreed upon
- the person responsible for implementing these actions (i.e. the Action List)
- the agreed completion date (i.e. the Time Plan)

The minutes of the meeting shall be retained kept in the Bitworks Partnership Quality File.

6 QUALITY PROCEDURE 6 - CUSTOMER FEEDBACK

6.1 Scope

The successful completion of any design, report or specification relies on the customer review of the technical and operational aspects and the contents of reports and specifications.

QP 6 has been designed to ensure that any customer feedback and complaints raised against Bitworks reports, documents or specifications are adequately reviewed, appropriate action is taken and trends analysed.

6.2 Flowchart

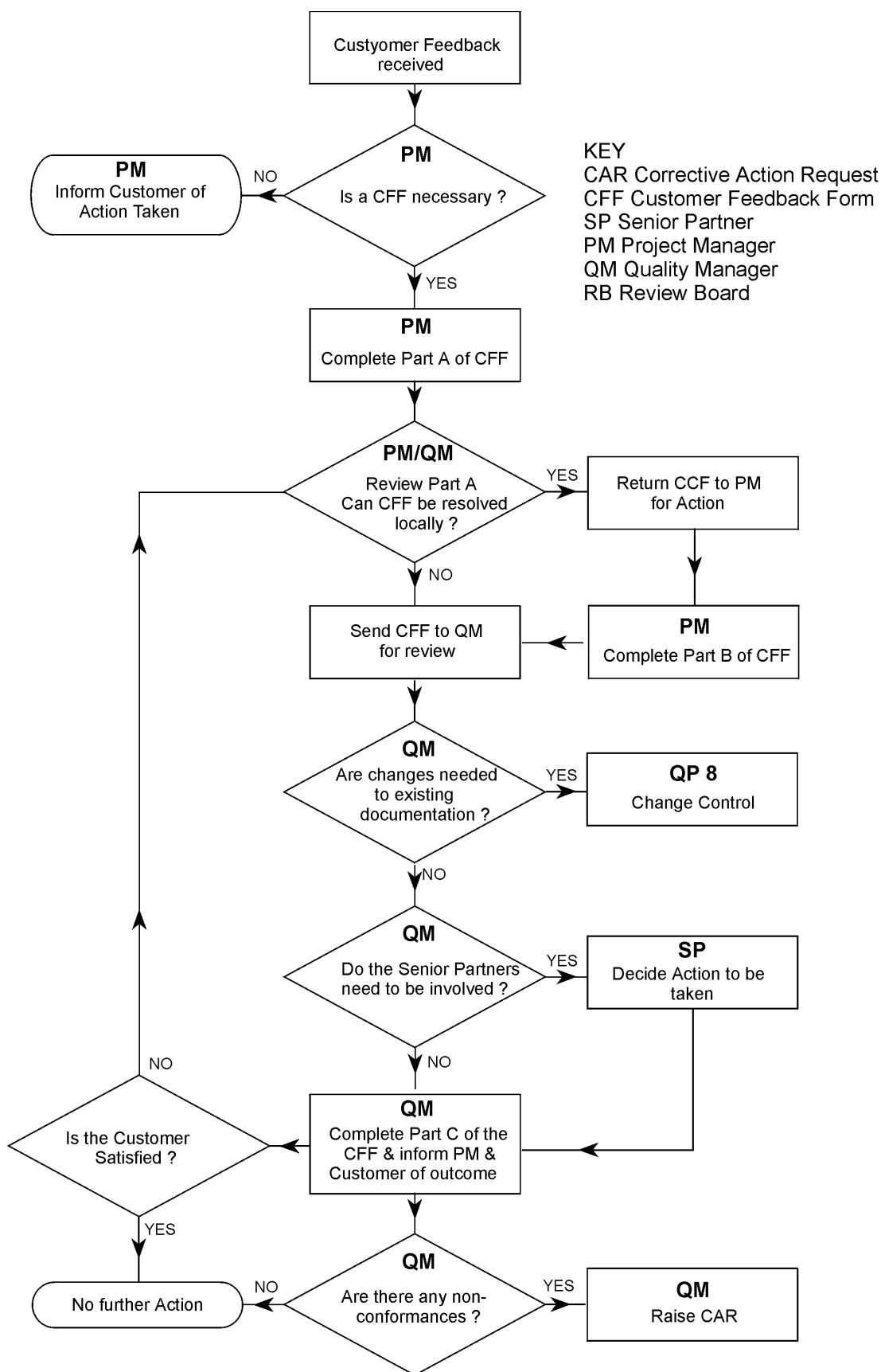


Figure 6-1: QP 6 - Customer feedback flowchart

6.3 Initiation and assessment

All customer feedback including complaints received by the Partnership office shall (following registration) be directed to the appropriate Project Manager for assessment.

Unless the issue raised by the customer is of a minor nature (e.g. a grammatical or typographic error) or a request for information that can be dealt with directly, the Project Manager shall initiate a Customer Feedback Form (see Annex A).

The Project Manager initiating a Customer Feedback Form shall ensure that:

- there is sufficient detail in Part A for the problem to be self-explanatory
- customer details are included
- any related documents are attached

The form shall then be signed, dated and forwarded for review.

6.4 Initial review

The review shall be made either by the initiating Project Manager or referred to another Project Team Member QMS Review meeting for discussion. The review procedure shall ascertain if the problem can be resolved locally and if so, to agree the appropriate action required.

6.5 Local action

If it is agreed that action shall be taken locally, then the Project Manager is responsible for ensuring that it is carried out and the results are detailed in Part B of the Customer Feedback Form. In taking action, full consideration shall be given to the root cause of the problem and how this may be resolved.

This form shall then be signed and dated, with copies being forwarded to the Quality Manager.

If it is agreed that action shall **not** be taken locally, the original CCF shall be forwarded to the Quality Manager. Local recommendations may be made in Part B by the Project Manager if considered necessary and relevant.

6.6 Action taken by the Quality Manager

The Quality Manager shall review all forms received. Where action has been taken locally, the Quality Manager shall check that the action taken:

- is adequate
- has no implications for other sections
- has no implications on the Bitworks QMS

Where action has not been taken locally, the Quality Manager shall review the problem and decide if it necessitates action through a Change Control Procedure (as described in QP 8) or consideration by the Senior Partners.

The Quality Manager shall ensure that at all times the review considers the root cause of the problem and how this may be resolved.

Upon completion of the appropriate action, the Quality Manager shall ensure that Part B and Part C of the form are completed and that the original (or copy) is returned to the Project Manager who initiated the form.

6.7 Analysing non-conformances

The Quality Manager shall regularly review all Customer Feedback Forms to detect any trends that may have a detrimental effect on a project. When such a trend is found, the Quality Manager shall raise a Corrective Action Report for review by the Senior Partners.

6.8 Customer interface

The Quality Manager and/or Project Manager shall ensure that the customer, having made an enquiry, is kept informed of progress. They shall also seek comments from the customer on any action implemented.

6.9 Quality records

To ensure traceability and quality control, all records appertaining to customer feedback (and/or complaints) shall be retained by the Quality Manager in the Bitworks electronic Quality File.

QP 6 Annex A - Customer Feedback Form

CUSTOMER FEEDBACK FORM

Reference #		# Attached Sheets	
Customer			
Related Documents			

Part A

Nature of Feedback/Compliant					
Input		Face to Face/Email/Fax/Letter			
Signed		Name		Date	

Part B

Action to be taken					
Project Manager/					
Review Board #					
Date Action Completed					
Signed		Name		Date	

Part C

Review by Quality Manager					
Refer to Senior Partner ?		Yes/No	Raise CAR	Yes/No	
			CAR #		
Signed		Name		Date	

7 QUALITY PROCEDURE 7 - INTERNAL QUALITY AUDITS

7.1 Scope

Although Quality Management System (QMS) reviews are scheduled every 6 months (see QP 5), other internal quality audits shall be completed as determined by the Quality Manager throughout the Partnership's life cycle.

These quality audits are completed so as to ensure that all activities within Bitworks are carried out according to the requirements, rules and procedures provided in the QM and its associated Quality Processes, QPs, WIs and Quality Plans.

QP 7 details the requirements for internal quality audits within Bitworks and describes the differences between a project quality audit and other internal quality audits.

7.2 Project Quality Audits

7.2.1 Frequency of audits

The Quality Manager will use standard Project Performance Metrics and Customer Feedback as a guide to any project audit activity, basically if the project is meeting the customer requirement within the planned schedule and budget, with favourable customer feedback a project audit is unlikely. This is to allow the focus of Bitworks resource where they are required, providing a timely resolution of any project specific quality problems. These audits will be initiated by the Quality Manager and may be scheduled at key points (i.e. prior to a customer Critical Design Review) in relation to the status and importance of the various activities in the project.

It is the Quality Manager's responsibility to prepare (in consultation with the Project Managers) an audit schedule for the specific projects as and when necessary for Senior Partner approval.

7.2.2 Audit preparation and organisation

The Project Audit Team will consist of one Senior Partner, the Project Manager/Project Team and the Quality Manager (who will normally perform the function of lead auditor - but this need not always be the case).

The Quality Manager shall decide on the minimum number of attendees for convening that meeting and whether it is necessary to invite additional members and if so, who shall be involved. The exact number of attendees may vary according to project circumstances applicable at that time.

In addition to agenda items, the audit team shall review, for adequacy, the specific Project Quality Plan (if raised by the project) together with its associated procedures. They shall resolve all concerns where the Project Quality Plan or the Project's organisation is inadequate or inappropriate to meet Bitworks objectives as stated in the QM.

7.2.3 Agenda

The Quality Manager shall raise an agenda for each project audit which shall include:

- scope and objectives of the audit

- review of all actions raised at previous meetings and progresses at subsequent meetings
- minutes of and actions arising from the last meeting

7.2.4 Actions

If the results of the audit are such that corrective action or actions are necessary, the audit team shall:

- consider solutions and agree on the corrective action(s)
- agree on responsibility for the implementation
- agree on a timescale for the implementation and review of corrective action(s) to be taken

The audit minutes and the agreed corrective actions shall be recorded by the Quality Manager in the Bitworks Partnership quality electronic file and a copy will be held in the Project File.

7.2.5 Meeting records

The Quality Manager is responsible for ensuring that minutes of the meeting are prepared and distributed promptly.

The minutes shall clearly state the:

- actions agreed on
- person responsible for implementing these actions (i.e. the Action List)
- agreed completion date (i.e. the time plan)

The minutes of the meeting shall be kept in the Bitworks Quality File, by the Quality Manager, with an electronic copy being circulated to all members of the audit team.

7.3 Internal quality audits

Internal quality audits are initiated by the Quality Manager and shall be scheduled in relation to the status and importance of the various activities.

When deemed necessary, an internal quality audit may be completed by invited personnel (independent of the activity being audited), such as invited specialists from other ISO 9001:2000 certified companies.

The audits and all agreed corrective actions shall be recorded and these records shall be maintained in the Partnership Quality File by the Quality Manager.

7.3.1 Frequency of audit and audit schedule

Internal quality audits are either scheduled by the Quality Manager or completed at the request of a Senior Partner, Partnership Secretary, or Project Manager.

The Quality Manager shall organise an agenda for each audit which shall include:

- scope and objectives of the audit
- persons having direct responsibilities for the procedure(s) to be audited
- reference documents

- name of lead auditor and name(s) of assigned auditor(s)
- date when audit is to be concluded
- audit report distribution

7.3.2 Audit preparation and organisation

Depending on the complexity and the size of the audit, the Quality Manager may perform the audit himself, or he can assign a lead auditor and a team of auditors.

The lead auditor and the assigned auditor(s):

- shall examine all earlier audit reports on the same subject
- shall prepare an audit check list (containing all of the topics/items to be covered and an audit programme

The lead auditor shall report to the Quality Manager.

7.3.3 Audit execution

All audits shall be completed in accordance with the recommendations of ISO 10011.

An initial meeting between the auditor(s), the auditee(s) and the Quality Manager shall be held. During this meeting:

- a brief summary of the methods and procedures being used to conduct the audit shall be provided
- the method of communication between auditor(s) and auditee(s) shall be agreed
- the audit programme shall be confirmed

The auditor(s) shall collect evidence via interviews, examination of documents and observation of activities. If possible information provided at interviews shall be checked for accuracy by acquiring the same information through independent sources.

If necessary (and required) changes to the audit programme may be made in order to achieve optimum audit objectives.

Auditors shall record all observations on the Audit Observation Sheet (see Annex A).

Auditors shall review the observations and determine which are to be reported as non-conformities.

Auditors shall discuss all observations with the Quality Manager and all observations of non-conformity shall be acknowledged by the manager (e.g. Project Manager) responsible for the activity being audited).

A closing meeting of auditor(s), auditee(s) and Quality Manager shall be held during which:

- audit observations shall be clarified
- the critical significance of observations shall be presented
- conclusions drawn about compliance shall be presented
- system effectiveness in achieving the quality objectives shall be presented

- corrective actions shall be agreed
- the date for completion of the audit report shall be agreed

Minutes of **all** relevant meetings, decisions and agreements shall be attached to the audit report.

7.3.4 Audit report

The lead auditor shall prepare an audit report using the Audit Report Form (see Annex B). The report must be signed by all members of the audit team, plus the Quality Manager, and copies sent to auditee(s) and Senior Partners as required.

Audit reports shall be retained in Bitworks quality files.

7.3.5 Corrective action

After the closing meeting the lead auditor shall prepare a Corrective Action Request (see Annex C) for each agreed corrective action. Corrective Action Requests shall state who is responsible for carrying out the corrective action and the timescale for its completion.

7.3.6 Follow up

The lead auditor is responsible for ensuring that corrective action has been carried out.

The lead auditor shall notify the Quality Manager of the status and/or completion of the corrective actions.

QP 7 Annex A - Audit Observation Sheet

Partnership Activity/ Project to be Audited			
Reason for Audit			
Audit #		Date	
Auditor		Sheet ___ of ____	

Serial #	Observation/Supporting Evidence	Action Required (Yes/No)

Circulation					
Attached Sheets					
Signed		Name		Date	

QP 7 Annex B - Audit Report Form

Partnership Activity/ Project to be Audited		
Audit #		Sheet ___ of ____
Person(s) contacted		
Audit Areas		
Reference Documents		
Summary		

Audit Observation Sheet	Observation #	Comments	Corrective Action Required

Prepared		Name		Date	
Agreed		Name		Date	
Circulation					

QP 7 Annex C - Corrective Action Request

Partnership Activity/ Project to be Audited					
Audit #			Audit Date		
Auditor(s)			Audited		
Reference Documents					
Non-conformance details					
Signed (Auditor)		Name		Date	

Agreed Corrective Action					
Signed (Auditor)		Name		Date	
Agreed Time Limit					
Signed (Auditor)		Name		Date	

Progress	Signed	Date

* Note: Please use one sheet for each corrective action agreed

8 QUALITY PROCEDURE 8 - CHANGE CONTROL

8.1 Scope

When a contract document reaches the stage where the information that it contains is being used (or relied on) by the Partnership, it is imperative that any proposed changes to the original document are not completed without the knowledge of all concerned.

In order to prevent this sort of situation occurring, a decision will be made (by the Senior Partners, endorsed by the Project Managers) that at a particular stage **no** further changes, alterations, modifications, insertions or deletions will be made without the Change Control procedure described below being adopted.

QP 8 details the requirements for Change Control within Bitworks and is a requirement.

8.2 Procedure

All changes to Bitworks documents, procedures and specifications are, in principle, subject to a formal Change Control procedure.

Changes that could fundamentally influence the product specification, scope, targets, organisation, budget, overall work breakdown structure and time schedules, (in addition to changes to approved Bitworks documents and other official documents), will have to be agreed by the Project Managers and approved by the Senior Partners.

Proposals for changes shall be submitted to the Senior Partners, in writing, using the Change Proposal Form shown at Annex A.

The Senior Partners will distribute the proposals for changes to all Project Managers for discussion. The proposal for change will have to be distributed and received by all Project Managers at least four weeks prior to the next Project Managers meeting.

Depending on the importance and impact of the proposed change(s) the Senior Partners can decide to discuss the proposal in a scheduled Project Managers meeting or call a special meeting.

A description of the types of impact and relevant approvals are listed in Table 8-1.

Table 8-1 Types of impact and relevant approvals

Change Classification	Impact Assessment	Final Approval by
A Minor impact: No other Project or area affected. No change in man days, time schedule and costs	No	Senior Partners on advice from the Project Managers
B Medium impact: At least one other Project or area affected. No (or little), change in man days, time schedule and costs	To be decided by the Senior Partners	Project Managers meeting
C Major impact: More than one other Project or area affected. Significant change in man days, time schedule and costs.	Yes	Management Review Board Meeting

8.3 Impact Assessment

Depending on the classification of the proposed change, an 'impact assessment' may be required. The change classification (and, therefore, the need for an impact assessment) will ultimately have to be sanctioned by the Senior Partners. If the time, resources and budget required for an Impact Assessment are expected to be significant, formal approval by the Senior Partners for carrying out this assessment is required. An example of an Impact Assessment Form is included at Annex B.

When the Project Managers have agreed to the proposed change it will be submitted to the Senior Partners for final approval.

The Senior Partners shall be responsible for implementing approved changes and shall make sure that all aspects which are affected by these changes are taken into consideration.

The Partnership Secretary shall be responsible for:

- incorporating the approved changes into existing technical documents
- distributing these documents to the appropriate people
- incorporating the approved changes into existing non-technical documents

QP 8 Annex A - Change Proposal Form

Originator			Section		
File Ref.		Date		Serial #	

Reason and Description of Change			
Area(s) Affected			
Product(s) Affected			
Classification	A / B / C	Impact Assessment Required	Yes/No
Impact Assessment Summary (please include man days, costs and risks)			
Full Impact Assessment attached	Yes/No		

Authorisation / Approval	Function	Name	Date	Signature
Change Preparation				
Classification Approval	Senior Partner			
Recommendation	Project Manager			
Approval	Senior Partner/ Quality Manager			

Other Points	
--------------	--

QP 8 Annex B - Impact Assessment Form

Originator		Change Proposal Serial #	
------------	--	--------------------------	--

Description of Proposed Change	
Impact upon (time, resource, cost & quality)	
Estimated cost of Implementation	
Benefits	
Recommendation	Accept/Reject Change Proposal
Comments	

Signed		Name		Date	
--------	--	------	--	------	--

9 QUALITY PROCEDURE 9 - MEETINGS AND REPORTS

9.1 Scope

QP 9 describes how Bitworks Reviews and Project Manager meetings are convened, the proposed agenda and how minutes should be produced. QP 9 also lays down the guidelines for the reporting procedure adopted by Bitworks.

9.2 Meetings

9.2.1 Bitworks Review Board meetings

Bitworks Review meetings will be called by the Senior Partners as and when necessary in order to discuss partnership strategy, set future targets and to approve final documents.

9.2.2 Project Manager meetings

The Senior Partners shall convene Project Manager meetings to discuss priorities, programme and project delivery.

Normally subcontractors and/or consultants shall only attend these meetings when required either by the Project Manager or the Senior Partners.

9.3 Discussion documents

The dates set for these meetings should allow sufficient time for the documents being discussed to be distributed in far enough in advance of the meeting so as to enable members to consider them beforehand. In practice, this normally means two weeks before the meeting.

9.4 Agenda of meetings

In addition to those items covering specific programme issues or technical aspects/problems, the agenda shall be established by the Partnership Secretary and the Project Managers (in agreement with the Senior Partners) and shall contain the following points:

- approval of the minutes of the previous meeting
- matters arising from the minutes of the last meeting
- status report (verbal or written)
- budget and costs
- date by which the work is to be completed
- decision list and action list
- place and date of the next meeting

9.5 Guidelines for meetings

It is expected that a frank and objective atmosphere should prevail at the Bitworks Review and Project Manager meetings. The emphasis for these meeting is to share problems and get advice, an informal forum to aid the Project Managers to benefit all programmes

The chair of the meeting shall direct the discussions towards a rapid solution of the problem raised without, however, sacrificing the liberty to exchange views, experience and ideas amongst the participants.

9.6 Minutes

The minutes of the Bitworks Review and Project Managers meetings shall be concise and only contain the essential points, the conclusions of the discussions and distribution of tasks between the members (i.e. the Action List).

The minutes shall, special cases excepted, normally only be sent to the Senior Partners, the participants of the meeting and the Quality Manager. The minutes shall always be distributed within two weeks following the actual meeting.

9.7 Reporting

9.7.1 Partnership Status Report

Prior to each meeting a Partnership Status Report shall be written by the Quality Manager. This report will then be presented at the Bitworks Review meeting.

Following approval by the Senior Partners, the Partnership Status Report will then be distributed to the members of The Management Review Board. These reports will contain an update of:

- overall progress against customer milestones
- technical status and risks
- contractual status
- financial status
- outstanding actions

9.7.2 Financial reporting

See QP 12.

10 QUALITY PROCEDURE 10 - TRAINING

10.1 Scope

In conformance with ISO 9001:2000, one of the requirements of a QMS is to ensure that all Bitworks personnel are provided with training that will assist them in acquiring the skills and knowledge to perform effectively and to comply with Bitworks Quality and Safety Management Systems.

QP 10 details the requirements for training within Bitworks.

10.2 Responsibilities

Project Managers are responsible for ensuring that project tasks and activities are only assigned to staff qualified for that particular task or activity. This is on the basis of appropriate education, training and experience, in relation to staffing levels and Bitworks current recruitment policy.

Bitworks management will identify the need for staff training to handle the expected workload where special techniques or items of equipment are involved.

The Senior Partners are responsible for ensuring that appropriate training is carried out so as to ensure that all staff involved are aware of the requirements, rules and procedures to which they are to conform and against which they will be audited.

The Senior Partners are also responsible for ensuring that tasks and activities are only assigned to staff qualified for that particular task or activity and that this is on the basis of appropriate education, training and experience.

10.3 Identification of training needs

A training review may be carried out at any time, as necessitated by any of the following:

- appointment of new personnel
- new equipment, software tools or working practices
- change of duties or responsibilities
- as a result of an audit or management review

10.4 Training review

The Project Manager or Senior Partner undertaking the review shall, with the post holder:

- review training completed since the previous review
- review and reschedule, where necessary, uncompleted training since the previous review
- review the training needs of individual positions
- review and identify current training requirements and ensure that the quality and safety requirements are fully covered
- review and identify career development

- ensure that the results of the review are recorded on the appropriate forms and forwarded to the Quality Manager

10.5 Planning of training requirements

The Senior Partners (with the assistance of the Partnership Secretary and the Quality Manager) shall budget and plan the training programme for all personnel under her/his responsibility. This shall also include any on-the-job training requirements.

10.6 Implementation of training requirements

The Project Manager is responsible for planning specific training requirements in the project team and may either arrange training locally or subcontract formal external courses via the Partnership Secretary.

10.7 Training of new personnel

The Partnership Secretary and Quality Manager shall ensure that all new personnel receive a Bitworks introduction briefing and attain an understanding of the Quality Management System and Quality Procedures directly relating to their areas of work.

10.8 Training of Subcontractors and Consultants

The Project Manager employing subcontractors or consultants is responsible for either ensuring that they are already fully competent or that they can be trained to meet the contracted specification. The manager is also responsible for ensuring that all contracted personnel are made aware and understand the local arrangements for both Quality and Safety.

10.9 Quality Training

The Quality Manager is responsible for providing Induction and Refresher training courses in the Bitworks QMS.

10.9.1 Training courses and records

If external training is required then it shall only be obtained from established and recognised courses for which documented course content is available.

The Partnership Secretary shall retain records of all Bitworks training. This shall include details of attendance, achievements, course content, scope, personnel who provided the training and those who received it.

As part of the induction training all Bitworks personnel shall be familiar with Bitworks QMS as published on the Bitworks website, and demonstrate good knowledge of the Quality Procedures relating to their area of work.

11 QUALITY PROCEDURE NO 11 - PRODUCTION OF A QUALITY DOCUMENT

11.1 Scope

To ensure conformity of all Bitworks documentation it is necessary to establish a process for the production, amendment and cancellation of all Bitworks Quality Processes, QPs and WIs (collectively known as 'quality documents') covering:

- initiation
- review
- authorisation
- issue
- amendment
- cancellation

QP 11 describes the production (and, if required, their eventual cancellation and destruction) of all new or revised Bitworks Quality Documents.

11.2 Production of a quality document

11.2.1 Procedure

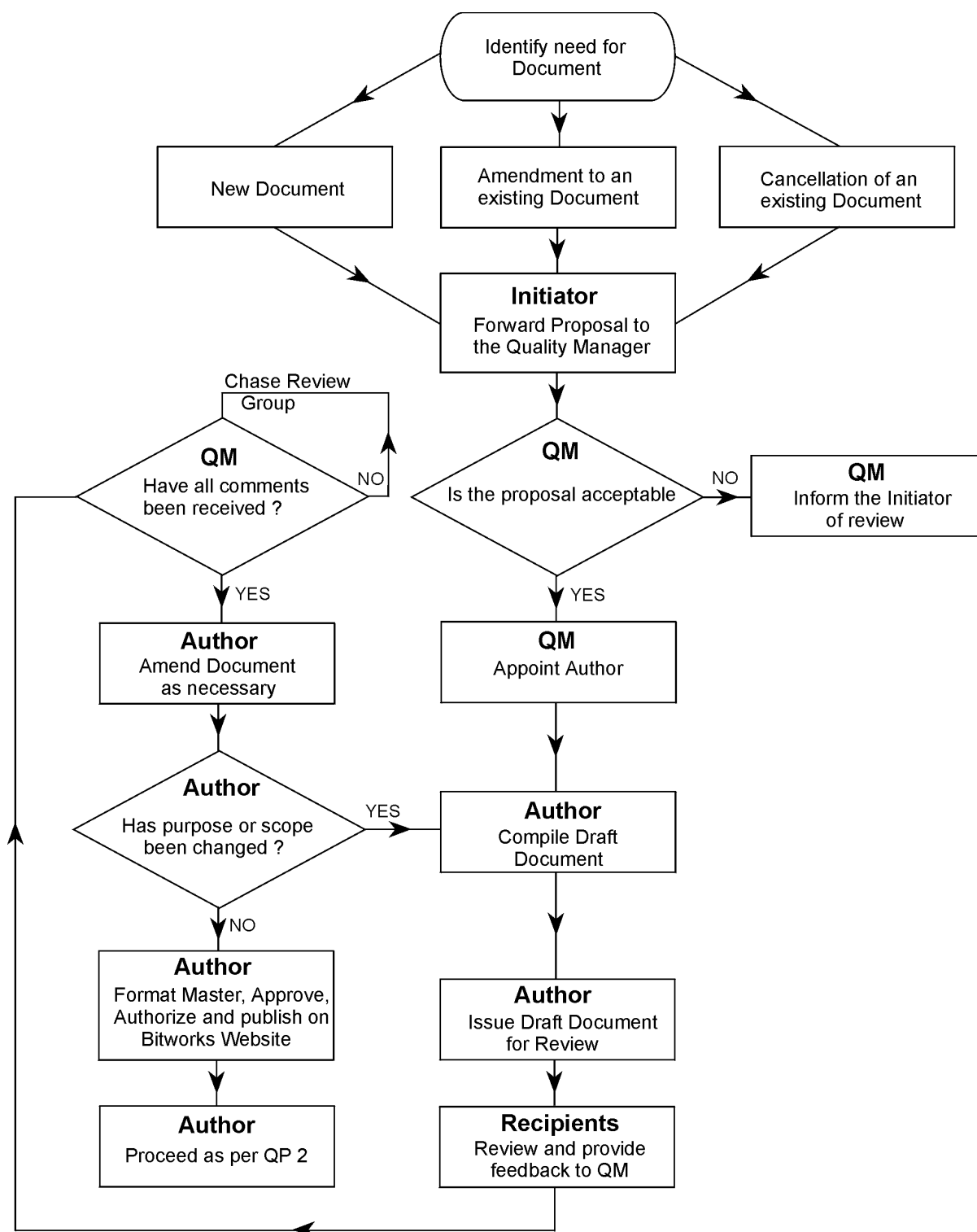


Figure 11-1: QP 11 Production of a quality document flowchart

11.2.2 Initiation of a quality document

A written QP or WI is required for any Bitworks activity where consistency of quality output is likely to be impaired by its absence.

The need for a written quality document and its scope may be identified by:

- an individual
- the results from an internal quality audit
- the results from a Partnership QMS review

Development of a Quality Document shall be agreed and co-ordinated by the Quality Manager who will issue and record a number, title and revision status for each document and maintain a master list.

A Quality Document shall be drafted by the Quality Manager or by an author nominated by the Quality Manager.

The Quality Manager shall record details of the initiator of the proposal and the author of the Quality Document.

11.2.3 Drafting

Drafts shall be prepared in accordance with QP 1 - Document control and QP 2 - Document Quality.

11.3 Quality Procedures

11.3.1 Headings

The following headings are the preferred contents:

- Title Page
- Amendment Sheet
- Contents - if required. (A list of all annexes and attachments must be included in the Contents page)
- Introduction - a concise explanation of the specific objectives of the document together with a definition of the context and boundaries to which the document applies. Any exclusions shall also be identified
- Detail
- Annex(es) - if required

11.3.2 Text

The document should comprise a logical sequence of text which must be easy to:

- read
- understand
- use

- and remember

11.3.3 Flowchart

A flowchart is optional. If used, it shall:

- describe the main tasks
- include decision points and related tasks
- include details of associated QPs and WIs

11.4 Work Instructions

11.4.1 Headings

The following headings are the preferred contents:

- Introduction - a concise explanation of the specific objectives of the document together with a definition of the context and boundaries to which the document applies. Any exclusions shall also be identified
- Flowchart (if required)
- Detail, which must include:
 - the manner of production (and installation) where the absence of such controls would adversely affect quality
 - measurable criteria for workmanship to ensure the required level of quality is being adhered to
 - monitoring and quality control requirements
 - the approval processes by which compliance can be identified
 - who can carry out the procedure (including the minimum training requirements)
- Diagrams and tables (if required)
- Annex(es) - if required

11.5 Review

In accordance with QP 1 - Document Control, each title page of a draft for review shall be endorsed with the issue number.

For control purposes, when a draft quality document is issued for comment, the date entry on the DCS page shall be the date of its production.

The Quality Manager shall circulate the draft quality document to the Senior Partners, the Partnership Secretary and Project Managers for review. This shall be accompanied by a Request for Comments form (see Annex A – this can be issued in electronic form via email with the document/s) which will stipulate the closing date for responses.

On the Request for Comments form, recipients shall:

- enter appropriate comments (using additional sheets, if required)

- sign and date the form
- return the form to the Quality Manager by the due date

Note: If it assists the reviewer, the draft document may be 'marked up' and returned with the covering form.

Upon return of the completed Request for Comments form, the Quality Manager and/or author shall:

- evaluate and assimilate all review remarks
- resolve any document conflict, convening a meeting if necessary. (Note: final arbitration shall always rest with the Quality Manager and shall be documented accordingly)
- incorporate the comments into the revised document, dating affected page(s)
- repeat the review process as necessary for major changes to the document

The Quality Manager shall then (with the assistance of the author - if appointed) complete the review and produce the final document.

11.6 Issue authority

A quality document shall not be published formally on the Bitworks website until the review procedure described above has been satisfactorily completed.

Each quality document shall be issued in accordance with QP 4.

11.7 Amendments to approved documents

Amendments to an approved quality document may arise from:

- an individual applying formally to the Quality Manager (with sufficient information to support the case)
- the results from an internal quality audit
- the results from a Partnership bi-annual QMS review

Each proposed amendment shall be considered in accordance with QP 8.

11.8 Cancellation

Cancellation of a quality document may be proposed by applying formally, (with sufficient background to support the case), to the Quality Manager.

Each proposal for cancellation shall be processed in accordance with QP 8. Cancellation of a quality document shall be approved and authorised in accordance with QP 8.

11.9 Local quality documents

Where the need arises for the provision of specific Project Quality Documents, (e.g. for a contract Quality Plan), the general principles of this procedure shall apply; although the management of its development shall be to meet the customer requirements. The

authorisation of the documents shall be by the Project Manager and its distribution shall be determined locally. Copies of Project Quality Documents and amendments to Project Quality Documents shall be forwarded to the Quality Manager.

If the decision of the review (e.g. during an internal audit) is that the document should be cancelled, then the Quality Manager is responsible for ensuring that all copies of this document (issued and held in the library) are withdrawn and destroyed (also see QP 5 - Quality Management System Review).

11.10 Quality records

To ensure traceability and quality control, the Quality Manager shall retain records of all quality documents (new, revised, amended or destroyed) in the Bitworks electronic Quality Folder.

QP 11 Annex A - Request for Comments form

REQUEST FOR COMMENTS
To
Date
Enclosures
Subject
Return Date
Please review the attached document/s and return your comments by the date specified above.
<div>Comments</div>
Bitworks Project Manager

12 QUALITY PROCEDURE 12 - BUDGET AND FINANCE

12.1 Scope

For all Bitworks contracts, the two main resources required are finance and manpower. QP 12 describes how both of these resources shall be managed within Bitworks.

Total cost management shall be computerised and controlled by the Partnership Secretary.

12.2 Procedure

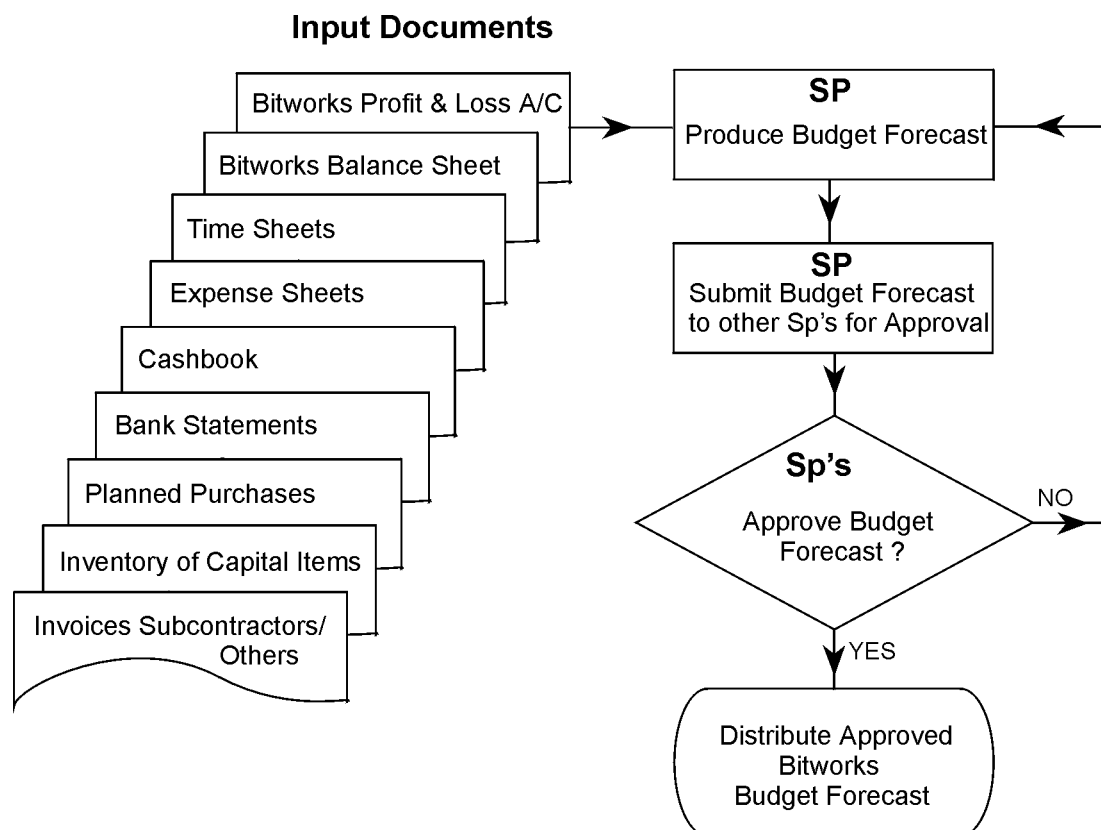


Figure 12-1: QP 12 - Budget and finance flowchart

12.3 Financial management

12.3.1 Delegation of financial authority

Each year the Senior Partners will approve the Bitworks budget, part of this work can be delegated to the Partnership Secretary.

The table at Annex A shows the delegation of authority for signing contracts and initiating orders, accepting deliveries (i.e. approving invoices), authorising payments and signing bank transfers. The amount each person is authorised to sign for is also indicated in this table.

Contracts, material orders or services may only be signed, or ordered, by the persons for whom an amount is listed in the columns "Initiate orders and accept deliveries" or "Sign contracts". In cases where the Senior Partners have to sign, the Project Manager is required to co-sign first. Only one signature is required if the Senior Partner and the Project Manager are one of the same.

Deliveries and invoices may only be accepted and approved by the persons for whom an amount is listed in the column 'Initiate orders and accept deliveries'. In cases where the Senior Partners have to sign, the Project Manager is required to co-sign first. Only one signature is required if the Senior Partner and the Project Manager are one of the same.

In some exceptional circumstances a staff member's signature might be required prior to the Project Manager's signature.

Authorising payment and signing the bank transfers for invoices shall be limited to the persons for whom an amount is listed in the column "Approve payment and sign bank transfer". This action can only be completed after the delivery has been accepted.

12.3.2 Bitworks budget forecast

The Bitworks budget forecast shall consist of detailed financial budget planning for each contract and activity. The budget forecast shall include the following information:

- description
- account
- approved budget for each individual year and grand total
- committed cost for each individual year and grand total
- paid cost up to and including the cut-off date
- result (i.e. difference between committed total and approved budget total)
- forecasted cost for succeeding years

The budget forecast shall provide full details of all planned expenditures related to each contract and activity.

From the Bitworks budget forecast it shall be possible to extract the financial information for any particular year. The Partnership Secretary is responsible for this activity and shall provide details to the Senior Partners.

12.3.3 Comparison of committed costs with approved budget

The Partnership Secretary shall carry out a continuous check on committed costs and the actual expenditures against the approved budget.

The Partnership Secretary shall inform the Project Managers concerned if the total committed costs are higher than the approved budget for their Project.

The Partnership Secretary shall inform the Senior Partners when it becomes likely that the total committed costs will exceed the total approved budget.

12.3.4 Administrating income and expenditure

All income to and expenditure from the Bitworks bank account/s shall be recorded by the Partnership Secretary in the Bitworks cashbook, one will be kept in each Bitworks office. This cashbook can be as simple as filed bank statements and a record of payments in/out from the account.

The Partnership Secretary shall be responsible for the proper administration of the Bitworks bank account. The role of the Partnership Secretary can be delegated to a Senior Partner for Bitworks Offices running their own accounts.

Copies of all transfer orders, bank statements and documents related to the Bitworks bank transfers shall be kept in one binder in the Bitworks office.

12.3.5 Partnership financial audit

The Partnership Secretary shall, when requested, present all the required financial documents to the Partnership Auditor for verification.

12.4 Resource management

All manpower resources (e.g. permanent and part time staff, subcontractors and consultants) require a separate agreement/contract. These shall be initiated by the Partnership Secretary and signed by a Senior Partner.

12.4.1 Contracts with subcontractors and consultants

All subcontractors and/or consultants working for (or on behalf of) Bitworks shall be required to agree to a contract which shall include the following elements:

- detailed task description or Statement of Work
- duration of the contract
- fees
- travel expenses and allowances
- payment conditions
- other terms and conditions

The contract may be extended by mutual arrangement. Normally either party can terminate a contract by giving three months notice.

12.4.2 Other purchases

Requests for the purchase of all other products or services (including major assets such as furniture and computers etc.) shall be submitted in writing, (by the person requiring that product or service), to the Partnership Secretary. The Partnership Secretary shall, prior to requisition, obtain the Senior Partner approval.

The Partnership Secretary or nominated person shall maintain an inventory of all capital items purchased for Bitworks.

12.5 Invoices

The Partnership Secretary or nominated person shall date and sign all invoices received by Bitworks.

12.5.1 Subcontractors' invoices

Subcontractors and consultancies shall submit invoices for the manpower resourcing carried out and travel expenses incurred by their staff, directly to the Partnership Secretary for processing.

The Partnership Secretary shall check these invoices against the agreement/contract previously decided. If inconsistencies are discovered, the Partnership Secretary shall contact the subcontractor/consultant concerned for further clarification.

Following verification by the Partnership Secretary, invoices shall then be sent to the Senior Partners for endorsement.

Payment for invoices shall (following authorisation) be made from the Bitworks bank account by the Partnership Secretary.

12.5.2 Filing of invoices

After payment, all original invoices shall be filed, together with the following documents:

- a copy of the order form or letter (in case of a telephone order, a hand-written note from the initiating person will suffice)
- the original delivery note, signed by the initiator or the person authorised to sign on her/his behalf

QP 12 Annex A - Delegation of Financial and Contractual Authority

Name	Initiate Orders and Accept Deliveries	Sign Ban Transfers and Approve Invoices	Sign Contracts
Bitworks Design & Consultancy	Delivery as Ordered	Payment Authorised	
Senior Partner	unlimited	unlimited	unlimited
Project Manager	4000	4000	20,000
Partnership Secretary	1000	-	-

13 QUALITY PROCEDURE 13 – SOFTWARE ENGINEERING

13.1 Scope

For all Bitworks software contracts, the BS EN ISO 9000-3:1997 Part 3 – Guidelines for the application of ISO 9001 :1994 to the development, supply, installation and maintenance of computer software shall be followed.

For audit purposes, Table 13.1 provides a cross-reference from the Bitworks QMS Parts 1 to 4 to the ISO 9000-3:1997 Part 3 – Guidelines on Software Development. The core software procedures and templates are contained in Bitworks QMS Part 4 - Work Instruction 1 Software Engineering.

Table 13-1: Bitworks QMS to ISO 3000-3 : 1997 Part 3 – Guidelines to Software Development

ISO 3000-3 : 1997 Part 3 Paragraph and Title	Relevant Bitworks QMS Quality Statement, Procedures and Work Instructions
4. Quality System Requirements	
4.1 Management Responsibility	
4.1.1 Quality Policy	Bitworks Quality Policy is stated in the Bitworks Design & Consultancy Quality Management System Part 1 – Quality Manual
4.1.2 Organisation	BW QMS Part 1 QM 1.4 Bitworks Design & Consultancy - organisational chart
4.1.2.1 Responsibility and Authority	BW QMS Part 1 QM 1.4 Bitworks Organisation Chart 1.5 Policy & Objectives
4.1.2.2 Resources	BW QMS Part 3 QP 5 Quality Management System Reviews QP 6 Internal Quality Audits QP 10 Training QP 11 Production of a Quality Document
4.1.2.3 Management Representative	BW QMS Part 1 QM Bitworks Design & Consultancy – Quality Policy Statement from the Senior Partners 1.4 Bitworks Organisation Chart 1.5 Policy & Objectives Details of the Quality Manager's duties and responsibilities are included at Annex A to the QM. BW QMS Part 3 QP 5 Quality Management System Reviews QP 6 Internal Quality Audits
4.1.3 Management review	BW QMS Part 3

	QP 5 Quality Management System Reviews
4.2 Quality System	
4.2.1 Quality System	BW QMS Part 1 QM 2.0 Quality Management System 4.0 Quality Management System (ISO 9001:2000 4) provides cross reference back to ISO 9001 : 2000 Section 4 Annex B - QMS to ISO 9001:200 cross-check
4.2.2 Quality System Procedures	Bitworks Design & Consultancy Quality Management System Part 2 – Quality Processes Part 3 – Quality Procedures Part 4 – Work Instructions
4.2.3 Quality Planning	BW QMS Part 1 QM 1.5 Policy & Objectives 2.0 Quality Management System 2.1 Organisational goals 2.2 Purpose
4.3 Contract Review	
4.3.1 General	BW QMS Part 1 QM 7.2.2 Review of requirements related to the product (ISO 9000:2000 - 7.2.2) BW QMS Part 2 QP 2.0 Core Business Process BW QMS Part 4 WI 1.3 Software Development Plan – Section 1 1.4 Software Requirement Analysis – Section 2 1.4.1 Customer Requirements 1.4.2 Product Specification –Template
4.3.2 Review	BW QMS Part 1 QM 7.2.2 Review of requirements related to the product (ISO 9000:2000 - 7.2.2) BW QMS Part 4 WI 1.3 Software Development Plan – Section 1
4.3.3 Amendment to a Contract	BW QMS Part 3 QP Quality Procedure 8 - Change Control BW QMS Part 4 WI 1.3 Software Development Plan – Section 1 1.4 Software Requirement Analysis – Section 2 Any changes to product requirements and/or contract will be recorded in the Bitworks 'one document'

4.3.4 Records	<p>BW QMS Part 4 WI 1.3 Software Development Plan – Section 1</p> <p>The formal contract review is recorded in the Bitworks ‘one document’ within the Software Development Plan sub section entitled Contract Review.</p>
4.4 Design Control	
4.4.1 General	<p>BW QMS Part 3 QP 3.0 Quality Procedure 3 - Design Control</p>
4.4.2 Design & Development Planning	<p>BW QMS Part 1 QM 7.3.1 Design and development planning (ISO 9001:2000 - 7.3.1)1.5 Quality policy and objectives 2.1 QMS Requirements 2.2 QMS Organisational goals 2.4.3 Quality Procedures 5.4 Planning (ISO 9001:2000 - 5.4) 5.4.2 Quality Management System planning (ISO 9001:2000 - 5.4.2) 7.1 Planning of realisation processes (ISO 9000:2000 - 7.1)</p> <p>BW QMS Part 3 QP 12.3 Financial management</p> <p>BW QMS Part 4 WI 1 1.1 Scope 1.2 Raising the Bitworks Software Project ‘One Document’ 1.3 Software Development Plan – Section 1</p>
4.4.3 Organisation and Technical Interfaces	<p>BW QMS Part 1 QM 1.5.5 Responsibility for contract quality 7.4.1 Purchasing process (ISO 9001:2000 - 7.4.1) Annex A – Bitworks organisation and responsibilities 6. Subcontractors and Consultants</p> <p>BW QMS Part 3 QP 10.8 Training of Subcontractors and Consultants 12.4 Resource management</p> <p>BW QMS Part 4 WI 1 (Software Engineering) 1.3 Scope 1.4 Raising the Bitworks Software Project ‘One Document’ 1.3 Software Development Plan – Section 1</p>

	1.4 Software Requirement Analysis – Section 2
4.4.4 Design Input	<p>BW QMS Part 1 QM</p> <p>7.3.2 Design and development inputs (ISO 9001:2000 7.3.2)</p> <p>7.2.1 Determination of requirements related to the product (ISO 9001:2000 - 7.2.1)</p> <p>7.2.2 Review of requirements related to the product (ISO 9000:2000 - 7.2.2)</p> <p>BW QMS Part 4 WI 1 (Software Engineering)</p> <p>1.3 Software Development Plan – Section 1</p> <p>1.4 Software Requirement Analysis – Section 2</p>
4.4.5 Design Output	<p>BW QMS Part 1 QM</p> <p>7.3.3 Design and development outputs (ISO 9001:2000 - 7.3.3)</p> <p>BW QMS Part 4 WI 1 (Software Engineering)</p> <p>1.3 Software Development Plan – Section 1</p> <p>1.5 Software Design – Section 3</p>
4.4.6 Design Review	<p>BW QMS Part 1 QM</p> <p>7.3.4 Design and development review (ISO 9001:2000 - 7.3.4)</p> <p>BW QMS Part 4 WI 1 (Software Engineering)</p> <p>1.3 Software Development Plan – Section 1</p> <p>Project review requirements are planned and documented in the Software Development Plan, section 1 of the 'one document'.</p>
4.4.7 Design Verification	<p>BW QMS Part 1 QM</p> <p>7.3.5 Design and development verification (ISO 9001:2000 - 7.3.5)</p> <p>BW QMS Part 4 WI 1 (Software Engineering)</p> <p>1.5 Software Design – Section 3</p> <p>1.5.2 Detailed Design – Template</p>
4.4.8 Design Validation	<p>BW QMS Part 1 QM</p> <p>7.3.6 Design and development validation (ISO 9001:2000 - 7.3.6)</p> <p>BW QMS Part 4 WI 1 (Software Engineering)</p> <p>1.5 Software Test and Verification – Section 4</p>
4.4.9 Design Changes	<p>BW QMS Part 1 QM</p> <p>7.3.7 Control of design and development changes (ISO 9001:2000 - 7.3.7)</p>

	BW QMS Part 4 WI 1 (Software Engineering) 1.1 Scope 1.3 Software Development Plan – Section 1
4.5 Document and Data Control	
4.5.1 General	BW QMS Part 3 QP QP 1 Document Control QP 2 Document Quality QP 4 Document Approval QP 8 Change Control
4.5.2 Document and Data Approval and Issue	BW QMS Part 3 QP QP 2 Document Quality QP 4 Document Approval
4.5.3 Document and Data Changes	BW QMS Part 3 QP QP 2 Document Quality QP 8 Change Control
4.6 Purchasing	
4.6.1 General	BW QMS Part 1 QM 7.4 Purchasing (ISO 9001:2000 - 7.4)
4.6.2 Evaluation of Subcontractors	BW QMS Part 1 QM 1.5.5 Responsibility for contract quality 7.4.1 Purchasing process (ISO 9001:2000 - 7.4.1) Annex A – Bitworks organisation and responsibilities 6. Subcontractors and Consultants BW QMS Part 3 QP 10.8 Training of Subcontractors and Consultants 12.4 Resource management 12.4.1 Contracts with subcontractors and consultants
4.6.3 Purchasing Data	BW QMS Part 1 QM 7.4.2 Purchasing information (ISO 9001:2000 - 7.4.2)
4.6.4 Verification of Purchased Product	BW QMS Part 1 QM 7.4.3 Verification of purchased product (ISO 9001:2000 - 7.4.3) 8.2.4 Monitoring and measurement of product (ISO 9001:2000 - 8.2.4)
4.6.4.1 Supplier Verification of Sub-Contractors Premises	BW QMS Part 1 QM 7.4.3 Verification of purchased product (ISO 9001:2000 - 7.4.3)
4.6.4.2 Customer Verification of Subcontracted Product	BW QMS Part 1 QM 7.4.3 Verification of purchased product (ISO

	9001:2000 - 7.4.3)
4.7 Control of Customer Supplied Product	BW QMS Part 1 QM 7.5 Production and service provision (ISO 9001:2000 - 7.5) 7.5.4 Customer property (ISO 9001:2000 - 7.5.4)
4.8 Product Identification and Traceability	BW QMS Part 4 WI 1 (Software Engineering) 1.8 Software Configuration
4.9 Process Control	BW QMS Part 1 QM 6.3 Infrastructure (ISO 9001:2000 - 6.3) 6.4 Work environment (ISO 9001:2000 - 6.4) 7.1 Planning of realisation processes (ISO 9000:2000 – 7.1) 7.5.1 Control of production and service provision (ISO 9001:2000 - 7.5.1) 7.5.2 Validation of processes for production and service provision (ISO 9001:2000 - 7.5.2) 8.2.3 Monitoring and measurement of processes (ISO 9001:2000 - 8.2.3) BW QMS Part 4 WI 1 (Software Engineering)
4.10 Inspection and Testing	
4.10.1 General	BW QMS Part 1 QM 7.5.1 Control of production and service provision (ISO 9001:2000 - 7.5.1) 7.5.3 Identification and traceability (ISO 9001:2000 - 7.5.3) 8.1 General (ISO 9001:2000 - 8.1) 8.2.4 Monitoring and measurement of product (ISO 9001:2000 - 8.2.4)
4.10.2 Receiving Inspection & Testing	BW QMS Part 1 QM 7.4.3 Verification of purchased product (ISO 9001:2000 - 7.4.3) 8.2.4 Monitoring and measurement of product (ISO 9001:2000 - 8.2.4)
4.10.3 In Process Inspection and Testing	BW QMS Part 4 WI 1 (Software Engineering) 1.1 Scope 1.6 Software Test and Verification – Section 4
4.10.4 Final Inspection and Testing	BW QMS Part 4 WI 1 (Software Engineering) 1.1 Scope 1.6 Software Test and Verification – Section 4 1.7 Software Scrutinies
4.10.5 Inspection and Test Records	BW QMS Part 4 WI 1 (Software Engineering) 1.1 Scope 1.6 Software Test and Verification – Section 4 1.7 Software Scrutinies
4.11 Control of Inspection,	

Measuring and Test Equipment	
4.11.1 General	<p>BW QMS Part 1 QM 7.6 Control of monitoring and measuring devices (ISO 9001:2000 - 7.6)</p> <p>BW QMS Part 4 WI 1 (Software Engineering) 1.6 Software Test and Verification – Section 4</p>
4.11.2 Control Procedure	<p>BW QMS Part 1 QM 7.6 Control of monitoring and measuring devices (ISO 9001:2000 - 7.6)</p> <p>BW QMS Part 4 WI 1 (Software Engineering) 1.6 Software Test and Verification – Section 4</p>
4.12 Inspection & Test Status	<p>BW QMS Part 1 QM 7.5.3 Identification and traceability (ISO 9001:2000 - 7.5.3)</p> <p>BW QMS Part 4 WI 1 (Software Engineering) 1.6 Software Test and Verification – Section 4 1.7.1 Software Scrutinies</p>
4.13 Control of Non-Conforming Product	
4.13.1 General	<p>BW QMS Part 1 QM 8.3 Control of non-conforming product (ISO 9001:2000 - 8.3)</p> <p>BW QMS Part 4 WI 1 (Software Engineering) 1.6 Software Test and Verification – Section 4 1.7.1 Software Scrutinies</p>
4.13.2 Review and Disposition of Non-Conforming Product	<p>BW QMS Part 1 QM 8.3 Control of non-conforming product (ISO 9001:2000 - 8.3)</p> <p>BW QMS Part 4 WI 1 (Software Engineering) 1.6 Software Test and Verification – Section 4 1.7.1 Software Scrutinies</p>
4.14 Corrective & Preventive Action	
4.14.1 General	<p>BW QMS Part 1 QM 8.4 Analysis of data (ISO 9001:2000 - 8.4) 8.5.1 Continual improvement (ISO 9001:2000 - 8.5.1) 8.5.2 Corrective action (ISO 9001:2000 - 8.5.2) 8.5.3 Preventive action (ISO 9001:2000 - 8.5.3)</p>
4.14.2 Corrective Action	8.5.2 Corrective action (ISO 9001:2000 - 8.5.2)
4.14.3 Preventive Action	8.5.3 Preventive action (ISO 9001:2000 - 8.5.3)
4.15 Handling, Storage, Packaging, Preservation and Delivery	
4.15.1 General	BW QMS Part 1 QM

	7.5.1 Control of production and service provision (ISO 9001:2000 - 7.5.1) 7.5.5 Preservation of product (ISO 9001:2000 - 7.5.5)
4.15.2 Handling	BW QMS Part 4 WI 1 (Software Engineering) 1.12.1 Software Handling
4.15.3 Storage	BW QMS Part 4 WI 1 (Software Engineering) 1.12.2 Software Storage
4.15.4 Packaging	BW QMS Part 4 WI 1 (Software Engineering) 1.12.3 Software Packaging
4.15.5 Preservation	BW QMS Part 4 WI 1 (Software Engineering) 1.12.4 Software Preservation
4.15.6 Delivery	BW QMS Part 4 WI 1 (Software Engineering) 1.12.5 Software Delivery
4.16 Control of Quality Records	BW QMS Part 1 QM 4.2.4 Control of quality records (ISO 9001:2000 - 4.2.4) BW QMS Part 3 QP 6 Customer Feedback (sub section 6.9) QP 9 Production of a Quality Document (sub-section 11.10)
4.17 Internal Quality Audits	BW QMS Part 1 QM 8.2.2 Internal audit (ISO 9001:2000 - 8.2.2) 8.2.3 Monitoring and measurement of processes (ISO 9001:2000 - 8.2.3) BW QMS Part 3 QP 6 Internal Quality Audits
4.18 Training	BW QMS Part 1 QM 6.2 Human resources (ISO 9001:2000 - 6.2) 6.2.1 General (ISO 9001:2000 - 6.2.1) 6.2.2 Competence, awareness and training (ISO 9001:2000 - 6.2.2) BW QMS Part 3 QP 10 Training
4.19 Servicing	BW QMS Part 1 QM 7.1 Planning of realisation processes (ISO 9000:2000 - 7.1) 7.5.1 Control of production and service provision (ISO 9001:2000 - 7.5.1) BW QMS Part 4 WI 1 (Software Engineering) 1.10 Software Maintenance

4.20 Statistical Techniques	BW QMS Part 1 QM 8.0 Measurement, analysis and improvement (ISO 9001:2000 - 8) 8.1 General (ISO 9001:2000 - 8.1) 8.2.3 Monitoring and measurement of processes (ISO 9001:2000 - 8.2.3) 8.2.4 Monitoring and measurement of product (ISO 9001:2000 - 8.2.4) 8.4 Analysis of data (ISO 9001:2000 - 8.4) BW QMS Part 4 WI 1 (Software Engineering) 1.11 Software Statistical Techniques
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13.2 Procedure

Figure 13.1 provides an overview of the Bitworks Software Development and Maintenance process. Product requirements flow in both directions between the Customer and the Bitworks Project Team. The Software Development process and product life cycle generally moves forward through the Analysis of Requirement working closely with the customer into Design, Code and Test. Moving backward is normally a result of software maintenance, changes to the requirements or design during the course of the project.

The Bitworks Project Manager is responsible for ensuring all the relevant Quality Procedures and Work Instructions are observed, and for the timely delivery to the customer. Software Maintenance is not seen as a separate function, but rather a special case of the Software Development Process.

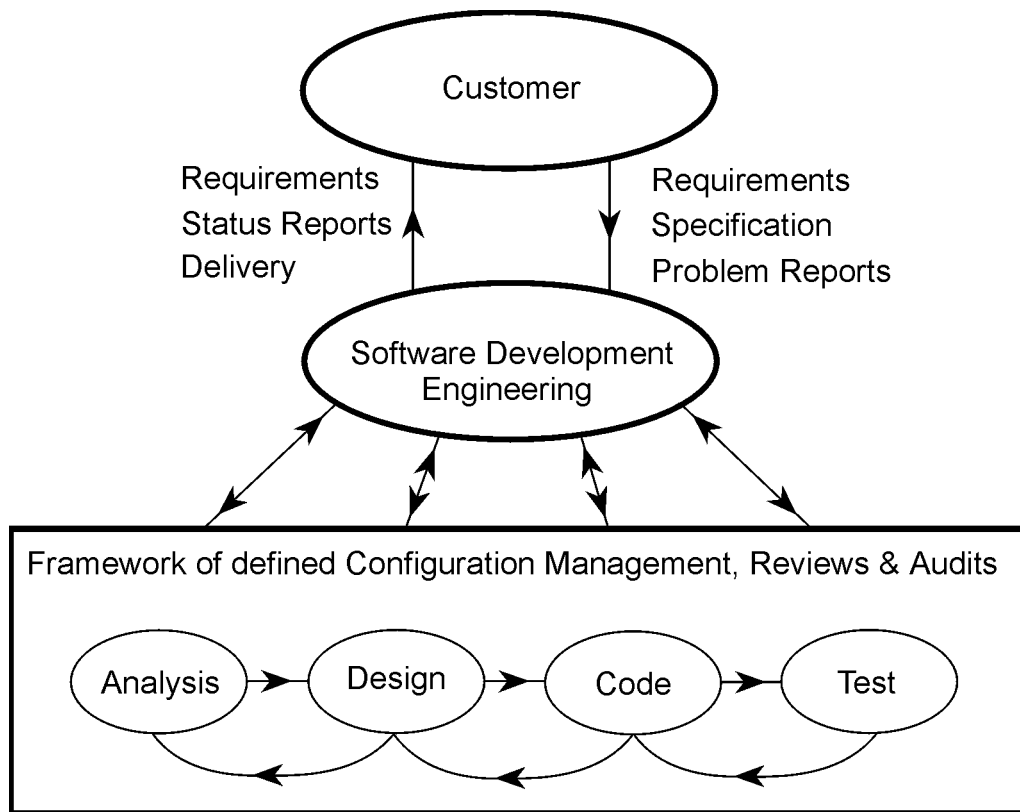


Figure 13-1 : QP 13 - Bitworks Software Development Process

The software procedures are unified into Work Instruction 1 – QMS Part 4 and include specific procedures and templates covering:

- Raising the Bitworks Software Project 'One Document'
- Software Development Plan – Section 1
- Software Requirement Analysis – Section 2
 - Customer Requirements
 - Product Specification -Template
- Software Design – Section 3
 - High-Level Design - Template
 - Detailed Design – Template
- Software Test and Verification – Section 4
 - Software Test Description - Template
 - Software Test Procedure – Template
- Software Coding
- Software Scrutinies
- Software Configuration
- Software Backup
- Software Maintenance
- Software Statistical Techniques
- Software Handling, Storage, Packaging, Preservation and Delivery