



and



BRIEF FOR:

PHASE II

**INTRUSIVE SITE INVESTIGATION
AND RISK ASSESSMENT**

NOVEMBER 2005 VERSION (NEWLANDS PROJECT TEAM)

Disclaimer

This document is provided in order to outline the Forestry Commission's requirements for a Phase II Site investigation and Risk Assessment. The site investigation is to be conducted by the Consultants selected according to current Forestry Commission and European Official Journal of the European Community (OJEC) tendering procedures. The document contains information on the Forestry Commission's favoured land acquisition arrangement, the types of groundwork's likely to be involved in developing the site for community woodland, descriptions of the vegetation types to be established and profiles of the end user groups together with the types of recreational activities considered appropriate to the site. This information shall be used by Consultants to assess the liabilities and risks associated with the development of the site by the Forestry Commission or as further agreed within the Deed of Appointment.

It is the responsibility of the Consultants to ensure that all site inspections, investigations, data collection, assessment and interpretation are conducted in line with all current UK legislation. Statutory and non-statutory guidance including industry good-practice procedures, in respect of health and safety, environmental, planning legislation and any other issues relevant to the investigation, remediation and development of potentially contaminated land.

This brief sets an *outline* requirement for site investigation and is not intended to supplant the professional judgement of the Consultants. It remains the responsibility of the Consultants to design the site investigation to obtain whatever factual evidence is considered necessary for objective technical analysis in order to present an accurate and reliable account of site conditions. The Forestry Commission accepts no responsibility for any loss, cost, liability, injury, damage or expense occasioned directly or indirectly by the Consultants which may arise during or after the investigation or results from insufficient data collection, inappropriate or inaccurate interpretation of any factual evidence or any other negligence on the part of the Consultants.

Brief for a Phase II site investigation on Site X

On land situated off Y Road, Town Z (hereinafter referred to as 'the Site')

Section 1.0 Introduction and Objectives

The North West Development Agency (NWDA) has agreed that the Forestry Commission will lead a programme across the region on reclamation proposals where forestry or community woodlands is the appropriate principal after use. This programme is called 'Newlands'.

The objective of the survey is to design, present, conduct, interpret and report on a site investigation which will:

1. Define the basic geo-environmental conditions of the Site;
2. Confirm whether or not contaminants are present and assess the degree and significance in relation to the site using generic assessment criteria and assumptions;
3. Prove the status of potential pollutant linkages identified in the Phase 1 conceptual model (see Annex 1 'Previous site investigation');

Examine the implications of the full results and analysis on the legal liabilities associated with land acquisition and management requirements in terms of current environmental legislation.

The requirements of the investigation are:

1. **Survey design** - design a Survey with accompanying technical specification and Project execution plan, **as part of the tender**.
2. **Detailed costing** - prepare and present a full costing for the Survey **as part of the tender**, including where necessary the provision of services of specialist third parties, including drilling sub-contractors, plant hire and laboratory testing
3. **Survey conduct** – carry out the site investigation, according to the Project execution plan (including laboratory testing)
4. **Survey interpretation** – evaluate the data collected in the light of the investigation results, revise the 'Conceptual site model' and perform a risk assessment.
5. **Reporting** – present the outputs of the investigation (as detailed in Annex 5).

Section 2.0 Background to proposed development

The Forestry Commission are aiming to obtain the site to establish community woodland and public open space by a 'pie-crust' lease agreement or management agreement. The chosen method will depend on the results of this survey.

Should the Forestry Commission feel that the risks defined by this investigation are acceptable a plan of operations to design out any identified risk and create new accessible public open space will be undertaken by the Forestry Commission.

Section 3.0 The site and additional land areas

The Forestry Commission have been in negotiation with additional land owners since the Phase I investigation was undertaken in 2004. A company called X have agreed in principle to include a parcel of their land in the project. This is shown on the attached site boundary map. Company X have provided the Forestry Commission with a site investigation report that was undertaken on their behalf. This report is will be provided to the Consultants.

Section 4.0 The Scope of Works

The scope of works (herein after referred to as 'the Survey') is for an intrusive survey which shall pertain directly and **only** to:

1. Validation of the Phase 1 conceptual model which hypothesises potential pollutant linkages arising from the possible presence of contamination in, on, over, under or migrating from or through the Site.
2. Providing baseline data on soil and water conditions to characterise the Site prior to the development which may (if required) contribute to the defence of the Forestry Commission or other organisations within the Newlands Delivery Partnership in the event of future claims relating to site damage or adverse environmental impact (insofar as opportunities are presented in the course of Item 1 above).
3. All other works which are necessary in order to achieve the objectives and requirements set out in Section 1.0 and the other sections of this brief.

The investigation shall be confined to within the defined site boundaries.

4.0 Survey Design and Technical Specification

The technical specification to be submitted as part of the tender shall present a fully justified and transparent design, method statement, detailed programme of works and costing for the proposed investigation. The following items shall be clearly identified and addressed in turn:

1. The list of contaminants to be analysed for and assembled according to suites of testing.
2. The criteria to be used for the assessment of results e.g. SGV's within the CLEA software model. This will be produced as a listing for each substance (subdivided according to suites of testing) with the screening criteria guideline value identified. A short justification for selection shall be given.
3. Details of the pollutant linkages which will be evaluated (using the assessment criteria).
4. Full method descriptions of on site intrusive activities and sampling including sampling strategy, analytical suites, and how, where and when the measurements and tests will be conducted together with the frequency and timing of monitoring.
5. A plan showing the proposed distribution of all sample points keyed to indicate the method of assessment e.g. hand auger, trial pits, boreholes, window sampling, the type of sample to be collected, number, depth and frequency. The 'Location of utilities' (Site services plan) will be used as a backcloth with site zones also superimposed from the 'Site zonation plan'.
6. What other information needs to be collected in order to characterise the geo-environmental conditions of the site.
7. The general sampling and decontamination procedures used in the course of the site to minimise the potential for cross-contamination between samples.
8. A Project execution plan including milestones.
9. All individuals or third parties who would contribute to the investigation shall be identified by name and a precise description of their proposed contribution shall be given (to include inputs to design, conduct or preparation of fieldwork or samples, data collection and analysis, and report writing) along with their qualifications and experience. The chain of responsibilities (including third parties) shall be presented diagrammatically.

While the design of the investigation will be the ultimate responsibility of the Consultants the following specific requirements will be met. The Consultants shall allow to collect surface water samples from all flowing watercourses (including those culverted below ground) and open water bodies, Samples will be collected at locations where watercourses enter and exit the site and at confluences between water filled streams, drains and ditches and the outlets of ponds and lagoons. The following suite of analysis will be adopted: COD, dissolved oxygen, pH, EC, nitrate, ammoniacal nitrogen, phosphate, suspended solids, sulphate, chloride and total organic carbon together with the potentially toxic elements included in the suites of analysis proposed for soil leachate samples.

Section 5.0 The Tender Submission

The Consultants shall submit the Survey design and technical specification to the Contract manager for consideration. This shall include a breakdown of the investigation costs in a spreadsheet format. The Tender should be submitted as one hard bound paper copy and one electronic copy in Microsoft Office suite format including paper copies of all full size site plans. The works will be subject to remeasurement and will therefore not be based on a fixed sum. A percentage contingency of the provisional contract sum will be made to allow for unforeseen circumstances and in particular difficult ground conditions. Agreement for drawdown against contingency expenditure is subject to the agreement and approval of the contract manager or his appointed representative.

The tender document will be appraised against the aims and objectives stated in previous sections of this brief

Section 6.0 Project Management

Throughout the duration of the Services, the Consultants shall appoint a Project manager to take on the responsibilities of supervision, organisation and administration,

The Project execution plan will be adopted in order to maintain, to a high standard, control procedures. Particular care and attention shall be given to the following aspects:

- (i) maintaining the master programme and meeting milestones,
- (ii) project administration and organisation (including team structure and allocation of responsibility),
- (iii) site working arrangements (including minimisation of nuisance and disruption to site users and near neighbours),
- (iv) quality control and assurance, (including the chain of custody on perishable samples),
- (v) risk management planning (including appropriate measures to protect health and safety , the environment and the general public),
- (vi) acceptance of the roles and responsibilities to act as Principal Contractor for the Client (Forestry Commission) under, and conduct all site operations in accordance with, the Construction (Design and Management) Regulations, 1994 including the appointment of a Planning Supervisor (if applicable owing to the duration or nature of the works) ,
- (vii) maintenance of a site diary (including recording all relevant data, events and information relevant to claims for payment e.g. drilling standing time). Field logs will not be accepted.
- (viii) develop and maintain effective communication with the Contract manager or their appointed representative,

The Consultants shall refer all enquiries by the general public to the Contract manager or his appointed representative. Copies of a flyer including a short description of the goals of the Newlands Programme and broad purpose of the investigation will be provided for this purpose.

The Contract manager or his appointed representative will ensure that site approval is obtained prior to the start of the site investigation works. Verification of this approval will be provided to the consultant prior to the commencement of the works.

Section 7.0 Reporting Requirements

The reporting requirements are discussed in Annex 5.

Section 8.0 Additional requirements

The Forestry Commission, acting within the Newlands Delivery Partnership intend to carry out a soil resource survey, including soil sampling 'in house' and commission services for chemical and physical

analysis directly with laboratories. The data obtained combined with information extracted from the Phase I investigation will be inputted into the 'roots' software package for analysis (www.roots-software.com).

The Forestry Commission will carry out the soil resource survey and wish for this work to coincide with the on site component of the Consultants' investigation. This is considered advantageous for the following reasons:

- (i) To minimise disturbance of the surface and the length of time over which site investigation takes place for reasons of public perception,
- (ii) To share information,
- (iii) To reduce overall site investigation costs,
- (iv) To take advantage of security arrangements.

The investigation will be undertaken by Nigel Bending (Soil scientist, Forestry Commission) and the overall control of their activities will fall within the remit of the Project manager and the jurisdiction of the Planning supervisor. The location of trial pits and method statements (including COSHH assessments) will be provided for the purpose of compliance with Health and Safety requirements. The Consultants will be required to provide a JCB 3CX or tyred backactor (rubber duck) for use in this investigation and this item is identified within the Schedule of quantities.

9.0 Timescales

The Consultant will have three weeks from the date of receiving this brief to respond with a tender submission. If there are any queries regarding the brief during this period the consultants should contact the Contract Manager or their appointed representative. Contact details are provided in Annex 3.

10.0 Limitations

Due to the nature of the funding of the project the Forestry Commission are unable to undertake the landowners statutory duties in terms of contaminated land. Therefore the key liabilities that the Forestry Commission are concerned with are risks to human health from the top 2m of land. Although it is necessary to collect baseline data from the deeper soils and groundwater the key focus of the investigation should remain in the top 2m of land.

Existing ground and gas monitoring wells may potentially be monitored and could be considered for use as part of the investigation.

There are a number of small stands of Japanese knotweed which should not be disturbed during the course of the investigation.

ANNEXES TO THE PHASE II SITE INVESTIGATION BRIEF:

- Annex 1 - The site and key information to review
- Annex 2 - List of contacts
- Annex 3 - Project management requirements
- Annex 4 - References and sources for FC and other information
- Annex 5 - Reporting requirements

ANNEX 1: THE SITE AND KEY INFORMATION TO REVIEW

Site Details and Location

Records and sources of information on file

ANNEX 2: LIST OF CONTACTS

Lee Dudley of the Forestry Commission will be the Contracts manager. Contact details are as follows:

Name: Mr Lee Dudley

Organisation: Forestry Commission

Job title: Community Forests Team Leader

Address: North West England Forest District, Linmere, Delamere, Northwich, Cheshire, CW8 2JD

Tel: 01606 882167

Fax: 01606 301083

e-mail: Lee.Dudley@forestry.gov.uk

Lucy Chesher of the Forestry Commission will be the Contracts manager appointed representative on site. Contact details are as follows:

Name: Ms Lucy Chesher

Organisation: Forestry Commission

Job title: Environmental Scientist

Address: North West England Forest District, Linmere, Delamere, Northwich, Cheshire, CW8 2JD

Tel: 01606 882167

Fax: 01606 301083

e-mail: Lucy.Chesher@forestry.gov.uk

Nigel Bending of the Forestry Commission will carry out the soil resource survey. Contact details are as follows:

Name: Dr Nigel Bending

Organisation: Forestry Commission

Job title: Soil scientist / Forest foreman

Address: North West England Forest District, Linmere, Delamere, Northwich, Cheshire, CW8 2JD

Tel: 01606 882167

Fax: 01606 301083

e-mail: progest@aol.com

ANNEX 3: PROJECT MANAGEMENT REQUIREMENTS

The Consultant shall assign a Project Manager to be responsible for the administration, management, communication and co-ordination of the Project as set out below.

The Project Manager shall be responsible for producing the following documents which shall be submitted to the FC before the start of any work on the premises of the site under investigation:

1. Project Administration, Organisational Structure and Responsibilities.
This shall provide a complete Project Team organisation structure for the works detailed in the Brief and shall detail the allocation of work between members of the Consultant's Team.
2. Programme execution plan and Milestones.
3. Consultants approach to the site survey work
4. Corporate Health & Safety Management and Plans.
The Consultant shall state and comply with the terms, conditions and provisions of all UK statutes, regulations, acts and good practice guidances relevant to health and safety, the protection of the public and the environment.
5. Site-specific health and safety risk assessment
6. Corporate Quality Assurance Procedures
This shall state any recognised protocols or standards which will be followed during the conduct of works. Specific reference to Environment Agency standards shall be made as appropriate.
7. Any other matters of relevance.

Additional duties and responsibilities shall be as follows:

1. The Project Manager to assign one member of the Consultant's Team to have sole responsibility for Communications and Consultations. This person to:
 - (i) be the contact for all FC and second / third party communications and with responsibility for issuing all necessary progress and update information. If requested to attend meetings additional to the brief by the Contract Manager or his appointed representative expenditure for these meetings will be agreed with the consultant prior to the meeting at the consultants standard day rate.
 - (ii) ensure that all necessary permissions, consents, approvals and access arrangements are obtained as appropriate to the conduct of works. The FC will provide a form letter for the purpose of arranging access.
2. Ensuring that the requirements of the Brief are met in full.
3. Ensuring good professional conduct in accordance with the principles of Corporate Environmental and Social Responsibility, including specifically the avoidance of damage to any part of the site or its contents.
4. The Consultant's Team to operate fully in accordance with Government protocols, standards and requirements and to recognise and conduct activities in such a way as to maintain the statutory responsibilities and reputation of the Forestry Commission with respect to those standards.

ANNEX 4: REFERENCES AND SOURCES FOR FC AND OTHER INFORMATION

Disturbed and contaminated land assessment

- British Standards Institution. 2001. Investigation of potentially contaminated sites - Code of Practice. BS 10175:2001. British Standards Institution, London; 75pp.
- Centre for Research into the Built Environment 1994. Sampling strategies for contaminated land. Department of the Environment Contaminated Land Research Report No. 4, London.
- Department of the Environment 1989a. Mineral Planning Guidance: the reclamation of mineral workings. Mineral Planning Guidance Note 7. HMSO, London.
- DEFRA & Environment Agency. 2002 'The Contaminated Land Exposure Assessment Model (CLEA): R&D Publication. London.
- Environment Agency (2004) Model Procedures for the Management of Land Contamination (CLR 11), ISBN 1844322955

Woodland establishment on disturbed and contaminated land

- Alloway, B.J. 1995. The origin of heavy metals. In: Alloway, B.J (Ed.). Heavy Metals in Soils, 2nd Edition, pp. 29-39. Blackie, London; Wiley, New York.
- Bending, N.A.D. & Moffat, A.J. 1997. Tree Establishment on Landfill Sites: Research and updated guidance. Forestry Commission, Edinburgh.
- Bending, N.A.D., McRae, S.G. and Moffat, A.J. 1999. Soil-forming materials: their use in land reclamation. The Stationery Office, London, 237pp.
- Breckle, S. 1989 Growth under stress: heavy metals. In: Y. Waisel, U. Kafkafi, A. Eshel. The Root System: The Hidden Half. Marcel Dekker Inc. New York.
- Burton, K.W., Morgan, E. & Roig, A. 1986. Interactive effects of cadmium, copper and nickel on the growth of sitka spruce and studies of metal uptake from nutrient solutions. New Phytol. 103: 549-557.
- Davis, R.D. & Carlton-Smith, C.H. 1984. An investigation into the phytotoxicity of zinc, copper and nickel using sewage sludge of controlled metal content. Environmental pollution (Series B), 8, 163-185..
- Dickinson, N.M., Turner, A.P. & Lepp, N.W. 1992a. How do trees and other long-lived plants survive in polluted environments? Functional Ecology 5, 5-11.
- Foy, C., Chaney, R. & White, M. 1978. The physiology of metal toxicity in plants. Ann. Rev. Plant Physiol. Vol. 29: 511-566.
- Hutchings, T.R., Moffat, A.J. and Kemp, R.A. 2001. Effects of rooting and tree growth of selected woodland species on cap integrity in a clay capped landfill site. Waste Management and Research 19, 193-200.
- Hutchings, T.R., Moffat, A.J. and Stubbs, I. 2001. Woodland restoration of contaminated land. In Forest Research Annual Report and Accounts 1999-2000, 30-37. The Stationery Office, Edinburgh.
- Kahle, H. 1993. Response of roots of trees to heavy metals. Environ. Exp. Bot. 33: 99-119.
- Kennedy, F. and Moffat, A.J. 1999. Tree species selection for restored landfills. Waste Planning 33, 7-8.
- Kennedy, F.M., Hutchings, T.R. and Moffat, A.J. 2000. Woodland Establishment on Landfill Sites - Site Monitoring. 3rd annual project report to the D.E.T.R. by Forest Research, Aug 2000. <http://www.planning.detr.gov.uk/welssm/>
- Landberg, T. & Greger, M. 1996. Differences in Uptake and Tolerance to Heavy Metals in Salix from Unpolluted and Polluted areas. Applied Geochemistry. Vol. 11: 175-180.
- Martin, M.H., Duncan, E.M. & Coughtrey, P.J. 1982. The distribution of heavy metals in a contaminated woodland ecosystem. Environmental Pollution (Series B) 3: 147-157.
- Moffat, A. J. and McNeill, J. M. 1994. Reclaiming disturbed land for forestry, HMSO, London.
- Moffat, A.J. 1995. Minimum soil depths for the establishment of woodland on disturbed ground. Arboricultural Journal 19, 19-27.
- Moffat, A.J. 1997. Site preparation - getting it right. In: Recycling land for forestry ed. A. J. Moffat. Forestry Commission Technical Paper 22, Edinburgh, pp. 16-20.
- Moffat, A.J. and Bending, N.A.D. 2000. Replacement of soil and soil-forming materials by loose tipping in reclamation to woodland. Soil Use and Management 16, 75-81.

- Moffat, A.J., & Houston, T.J. 1991. Tree Establishment and growth at Pitsea Landfill Site, Essex, U.K.. Waste Management & Research, 9, 35-46.
- Royal Commission on Environmental Pollution, 1996. Nineteenth Report. Sustainable use of soil. HMSO, London.
- Tiller, K.G. 1989. Heavy metals in soils and their environmental significance. In: Steward, B.A. (ed) Advances in Soil Science Vol 9. Springer Verlag, New York. pp. 113-142.
- Watmough, S. & Dickinson, N. 1995. Dispersal and mobility of heavy metals in relation to tree survival in an aerielly contaminated woodland soil. Environmental Pollution. Vol. 90, No. 2: 135-14

ANNEX 5: REPORTING REQUIREMENTS

The Consultant's contract with the FC under this Phase 2 site investigation brief shall be completed by the issue of:

1. A full and satisfactory final version of the Phase 2 site investigation and risk assessment report, which shall meet the following requirements:
 - (i) The report shall be the work of the Consultant, who will be responsible for the interpretation of results within the contents of the final report. It shall not be left to any third party consultants or contractors working on behalf of the Consultant.
 - (ii) The main report shall be readable as a complete work and shall include all referenced tables, diagrams, illustrations and figures incorporated within the main text of the report.
 - (iii) The report shall include Report Tables. An excel workbook shall be submitted which contains exact copies of all tabular information presented in the report.
 - (iv) Any statements which form or comprise an opinion on, or interpretation of, information by the Consultant shall be fully justified with references cited by author and date within the report and listed in alphabetical order at the end of the report.
 - (v) The format of all contents of the report in both electronic and hard copy, including plans, shall meet FC requirements (see following sections).

The first draft of the Phase II report will be circulated within the FC and to selected third parties for comment and for quality control purposes. The Contracts manager or his appointed representative (Annex 2) will collate responses and forward these to the Consultant.

The Consultant, following guidance by the FC, may then be required to:

1. Conduct any site investigation within the remit of the Phase 2 site investigation brief which has not been completed to the satisfaction of the FC and / or quality control reviewers.
2. Amend the 1st draft to provide the further information or results (provided under Item 1 above), to answer any questions raised and / or to reflect the FC's or third party's comments or review.
3. Issue a second draft report (if necessary)

Following FC formal (written) approval of either the 1st or the 2nd draft report, the Consultant shall then submit the final report.

The following table identifies the versions of and requirements of the draft(s) and final reports which shall be submitted to the FC:

Total copies	Version	Specific requirements	Notes
1 x	CD version Number 1 draft report (1 st)	<ol style="list-style-type: none"> 1. A full 1st draft report in electronic form in Microsoft Office Suite format. 2. The electronic report, tables and drawings shall not be –read or –write protected. 3. Copies of all photographs, diagrams, illustrations and drawings shall also be submitted as .tif or .jpeg files, and each shall be labelled consecutively and according to their contents. 4. All plans and drawings shall be submitted as ArcView GIS or CAD (2000 or later) files. 5. Paper copies of all full size site plans (including Distribution of sampling points and Site zonation plan) 	No parts of the Phase II report including supplementary information is to be submitted solely in paper format.
1 x	Hard copy draft report (1 st)	<ol style="list-style-type: none"> 1. Bound paper hard copy of the full 1st draft report with all plans (full size), appendices and supplementary information shall be provided. 	
1 x	Hard copy draft report (2 nd)	<ol style="list-style-type: none"> 1. Bound paper hard copy of the full 2nd draft report with all plans (full size), appendices and supplementary information provided with revisions and additional information included clearly indicated 	If specifically requested by the FC. The FC will check that the revisions and additional information have been provided.
1 x	CD version Number 1 final report	<ol style="list-style-type: none"> 1. A full final report with all constituent parts including appendices in electronic form in Microsoft Office Suite format. 2. The electronic report, tables and drawings shall not be –read or –write protected. 3. All originals of all photographs and diagrams as .jpeg or .tif files, 4. All plans and drawings as ArcView GIS 3.2 or ArcView 8 and / or CAD (2000 or later) files. 5. Paper copies of all full size site plans (including Distribution of sampling points and Site zonation plan) 	<p>–Read and –write accessible material is required to enable the Forestry Commission to import the information into document and data management systems and decision-support tools.</p> <p>The Forestry Commission undertake to ensure that no unauthorised modification to the technical content or comment of the final version of original documents occurs without the prior written consent of the Consultant. Copies of both write-restricted and accessible files shall be retained to check compliance.</p>
1 x	CD version Number 2 final report	<ol style="list-style-type: none"> 1. All constituent parts of the Phase II report, including documents and plans, as read-only (write-restricted) material for general circulation within the FC. 2. Files shall be condensed to Adobe Acrobat format where possible to facilitate ready e-mail circulation. 3. Paper copies of all full size site plans (including Distribution of sampling points and Site zonation plan) 	
2 x	Hard copy final	<ol style="list-style-type: none"> 1. One bound paper hard copy of the final report including all plans (full size), appendices, documents and supplementary 	

report	information.
	2. One unbound copy of the final report, including all plans (full size), appendices, documents and supplementary information.

The Consultant shall distribute all draft and final reports to the Contract manager who will be responsible for disseminating these.

The Consultant may split the report into separate volumes or documents for ease of handling. Every volume submitted shall have a volume number (as number of total e.g. 1 of 2). The full contents list of all volumes shall be included in each volume.

Every document shall contain a document issue and control sheet.

The Consultant shall confirm that the Forestry Commission is in receipt of complete and satisfactory final Phase II reports (in all specified formats) **before** submitting invoices for the tendered works (unless otherwise formally agreed by the FC).

The FC reserve the right to make the Phase II report available to all parties subsequently concerned with or involved with the site, notably to provide specific information for the conduct of subsequent site investigation or remedial works.

Reporting shall be in (U.K.) English and shall use terminology adopted by the Environment Agency, so as to minimise the potential for misunderstandings due to differing jargon.

All presentations of factual information and all discussions or interpretations pertaining to technical information shall be presented in a logical and consistent manner, using language which is relatively simple to understand by non-specialists.

All technical terms and jargon shall be explained in full in a glossary to the report.

Abbreviations may be used provided that they do not prevent a clear understanding of the contents of the report and if a full list of the abbreviations is presented.

In the report, the Consultant shall proactively demonstrate the application of good practice by:

1. Following a scientific approach to the data collection, reporting and assessment and hence making regular and appropriate reference to supporting documentation, best-practice guides and other information sources.
2. Providing a justification for each and every step, method or line of reasoning taken throughout the investigations, with reference to supporting information or publications.
3. Ensuring clarity, transparency and a clear line of progression from one piece of work to another and between results and recommendations.
4. Rigorous application of methods, techniques and tools.
5. The project manager shall ensure that every individual who completes any work undertaken within the remit of this Phase 2 brief is identified by name and by the nature of their input.
6. Every report or drawing issue shall be checked through, dated and signed off as follows:
 - (i) Prepared by: The originator, primary author or editor or illustrator,
 - (ii) Verified by: The project manager,
 - (iii) Approved by: A company or sectional director.

All individuals or third parties who contribute to the work shall be identified by name and a precise description of their contribution shall be given (to include inputs to design, conduct or preparation of fieldwork or samples, data collection and analysis, also sections of reports authored, contributed to or checked).

The name, address and contact details of all third party consultees, contractors or service providers who make a contribution to the reporting and data submission made by the Consultant shall be presented (including but not limited to site investigation contractors, laboratories, clean-up facility operators etc).

The FC will wish to confirm that the qualifications and experience of the staff and organisations contributing to the work are as detailed in the tender submissions and to review the competence of the project team periodically. The Forestry Commission may also wish and request to raise or discuss specific technical issues with the individual or organisation responsible for conducting a particular part of the work.

Guidance on the content or level of interpretation required within each section of the Phase II report is given in Sections 6-9 inclusive of the brief.

The outline structure of the Phase II report will be as follows. It should be recognised that the range of items included under individual headings are not exhaustive and the omission of specific items identified as required elsewhere within the document shall not be grounds for their omission.

Title page

Document issue and control

Executive summary

Contents page

List of figures, tables, appendices

Glossary of terms

Technical notations (including SI units of measurement)

List of abbreviations

- 1.0 Introduction
- 2.0 Background to site
- 3.0 Objectives of investigation
- 4.0 Survey design
- 5.0 Technical specification
- 6.0 Update of site geo-environmental conditions
- 7.0 Factual review of results
- 8.0 Meaning of results
- 9.0 Methodology of Risk Assessment
- 10.0 Risk assessment
- 11.0 Phase II conceptual model

Recommendations

12.0 Implications of study on land acquisition arrangements, implications of study for Community woodland design and recommendations for further investigation

Conclusions

13.0 Conclusions

References

Acknowledgements

Site plans and drawings (see requirements below)

Appendices (where the quantity of factual information gathered during the studies merits its separate presentation) including:

1. Photographs and any other relevant information e.g. site diary.
2. Borehole Logs
3. Raw analytical data including laboratory certificates (in Microsoft Office format)

4. Statistical analysis and outputs from risk assessment model.
5. Table of people contacted or consulted

The Consultants will provide, if required by the Forestry Commission, their own project files containing correspondence or any other documentary information relating to the site investigation within ten business days of receipt of written request.

Format Of Drawings, Plans And Photographs

These shall be provided in a separate folder, preferably on paper A3 plan, at a recognised scale (preferably 1:500, 1:1250 or 1:2500 or as otherwise specified).

The text in all plans shall be readable and all detail shall be legible at the selected scale.

Each item shall have a consecutive Figure, Plan or Photograph number and a clear, concise title describing the content.

In the instance where the site map and boundary do not meet the above requirements or fit onto a single A3 page, then the following shall be observed:

1. The site map shall be subdivided and each subdivision represented on an A3 paper plan.
2. A further summary paper A3 sized plan shall be included which identifies the area of site covered by each subdivision, with a comprehensive key indicating order and section of site covered.
3. Additional full scale single sheet (A0 to A2) plans at the chosen scale shall also be provided which are not bound to the report.

The format of all drawings shall be as follows:

1. All drawings must include a scale bar and a North point, which should be vertical.
2. All drawings should have clear, crisp defined lines.
3. The FC logo and name should be at the bottom right hand corner of the plan and be in corporate colours and style.
4. The consultant's name and address (which should not be more prominent than FC name and logo), should be included.
5. The drawings shall state the date of the survey and the date of the drawing.
6. The drawings shall present a key for all mapped or illustrated features.
7. Plans and drawings shall be provided in GIS ArcView and / or AutoCAD (2000 or later) format. All CAD plans shall be capable of being downloaded into GIS ArcView without any loss of information, preferably formatted as CAD.dxf files. All CAD Files shall be oriented with the North or the top of the drawing pointing vertically upwards. The Consultant shall liaise with the FC to ensure that the CAD layers are in the same units and co-ordinate system as the FC ArcView data and to identify and enact an origin point on all plans which is referenced to the O.S. National Grid. The CAD operator shall set meters and units and ensure that all geometry information presented in all of the CAD files is maintained relative to the origin point. Where images or diagrams are produced in pagespace, then an additional file shall be added enabling co-ordinates to be assigned to the images for import into ArcView.
8. Plans provided by third party consultees do not need to be presented digitally unless otherwise specified. Maps derived from archival searches may be folded and bound into the report using document wallet holders.
9. National Grid Referencing is preferred above any other form of arbitrary co-ordination system. All National Grid References shall be as accurate as possible and shall be presented as 12 figures in the following format: 2 letters, 10 numbers and with no spaces between the letters or numbers (or numbers replaced by # where less resolution is available), for example: "TQ5428383764" or "TQ542##837##".

10. GIS-based polygons may be used as a basis for identifying common zones or mapped areas within the site provided the centroid is Grid Referenced. Additional point data sources (grid references) may also be provided to locate important corner or boundary markers of the site or of different mapped features.
11. The presentation of information in an electronically format should correspond with the hard copy of the maps presented through ArcView. The location of features e.g. target notes on the plans for example should be shown as themes not as text or label boxes.