In association with:

AECOM VHE Hydrock

CLUSTER GUIDE

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CONTAMINATED LAND: APPLICATIONS IN REAL ENVIRONMENTS

CL:AIRE

Cluster Guide

Developed as Part of -
The Definition of Waste: Development Industry Code of Practice

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Foreword by National Grid

There was a sense of satisfaction in 1997 when former colleagues watched washed sand fall off the back of the soil washing plant during the Basford gasworks project. There was also a sense of frustration that this clean sand could not be moved to another site, nor could we import other contaminated soils for treatment. It defied logic and planted the early seeds of thought that led to the development of the *Cluster* concept – the idea that we could remediate a group of sites using one treatment-hub. What could be simpler…?

Ten years on we have completed a full-scale commercial Cluster involving four former gasworks in NW England. It delivered economies of scale and savings that surpassed expectations. We treated and reused soils that ordinarily would have been sent to landfill due to constraints associated with treating soils on the sites of origin. We had local stakeholder support to operate the treatment hub. It felt like sustainable remediation in action.

Instrumental in this progress has been the development of the Code of Practice. Definition of waste was one of the blockers to *Cluster* and the Code unblocked it whilst representing everything good about cross-sector collaboration and a better regulation initiative involving the Environment Agency.

The remaining blockers presented a number of challenges. For example, which sites to include? How to engage the planning authorities? How to put in place workable contractual arrangements? Our experiences and those of others were well worth sharing.

Therefore I am pleased CL:AIRE has taken the initiative to compile these lessons learnt and share with the wider sector. The diversity and number of professionals involved reflects the knowledge and disciplines needed to make *Cluster* work, and a vote of thanks is extended to them all.

In time the market will define how *Cluster* arrangements will work but we are clear that through a combination of better regulation and innovation, we have lowered our cost base by a step change and potentially reduced our future environmental impacts in the process.

Frank Evans
National Grid

Foreword by AECOM

This Guide will, without a doubt, assist the industry in achieving more easily the reuse/recycling of material, reducing waste and meeting the objectives of the waste hierarchy in a sustainable and legally compliant manner.

It provides clarification and progression of The Definition of Waste Development Industry Code of Practice and gives enhanced understanding of how to operate a Hub and Cluster arrangement effectively, answering many practical questions that can arise as to the legal, planning and contractual complexities of such operations at same time as demonstrating the social, economic and environmental benefits.

I welcome this Guide and appreciate the efforts of all involved in creating such a valuable straightforward companion document to the already widely used Industry Code of Practice.

Claire Dickinson
AECOM

Foreword by Hydrock

Hydrock has long recognised the benefits that cluster facilities can bring both commercially and environmentally, and has put this approach into practice through Two-Site Clusters and our innovative Multi-Site Cluster / Soil Treatment Centre approach.

CL:AIRE is in a unique position to promote the Cluster concept as a significant step forward in options for managing land contamination and development, sustainably and economically. By exploring and identifying issues around roles and responsibilities, planning, remediation technologies and contractual arrangements and overlaying the lessons learnt from previous projects, CL:AIRE has produced a document which will become a useful tool for anyone considering the Cluster approach.

Hydrock is pleased to continue its support of CL:AIRE's work through sponsorship of this document.

Mike Higgins
Hydrock

Foreword by VHE Construction

The second version of the Code of Practice is now established and understood by many involved in development and remediation, including a relatively small number of development teams with specific experience in managing multiple hub and cluster arrangements.

Future developments will increasingly rely on a demonstration of the environmental, social and economic benefits of the sustainable remediation of Brownfield land, with a key element being the demonstrable efficient re-use of both natural and man-made engineering resources.

This easy to read guidance will assist consultants, developers and landowners in considering hub and cluster opportunities as part of the planning process, and in understanding some of the more complex issues in relation to the status of excavated materials, particularly as most cluster arrangements have now been proven by successful and cost effective site implementation.

Steve Stiff
VHE Construction

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* GrantScape
* Homes and Communities Agency (formerly English Partnerships)
* National Grid Property Holdings
* Sheffield City Council
* VHE

The modern regulatory approach adopted by the Environment Agency in recognising the environmental outcomes that will accrue from Cluster projects is commended.

We would also like to take this opportunity to thank Sheffield City Council for the support provided in operating the pilot Cluster.

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The intention is to update this document as necessary. The document control sheet above identifies the date of publication and will subsequently provide a brief description of the changes made since the last revision. Reference should be made to the CL:AIRE website to obtain the most up to date version – www.claire.co.uk

Executive Summary

The Cluster approach is designed to facilitate the remediation and / or development of a number of sites that are located in relative close proximity and share a decontamination / treatment facility located on a single site – the Hub site.

Cluster projects have three guiding principles in that they are:

* Temporary – operate only as long as the sites defined within the Cluster are being remediated / developed
* Local – demonstrably appropriate in terms of geographical distance, relative savings, practical issues etc. for each of the participating sites
* A more sustainable way of developing land

The Cluster concept has been proven at the commercial and full-scale and subsequently at a number of sites since the Definition of Waste: Development Industry Code of Practice was launched in September 2008. The lessons learnt from those projects have been used to develop this guide which will aid others in identifying the various benefits, challenges and solutions in establishing a Cluster and how to make it work effectively.

The guide introduces the terms “Hub site”, “Donor site” and “Receiver site” as a way of identifying and distinguishing whether sites in a Cluster are acting, respectively, as the treatment Hub, donating wastes or materials to be treated / reused or receiving treated materials for use within a development. Sites can act as both Donor and Receiver sites. The concept is schematically illustrated in Figure 1.

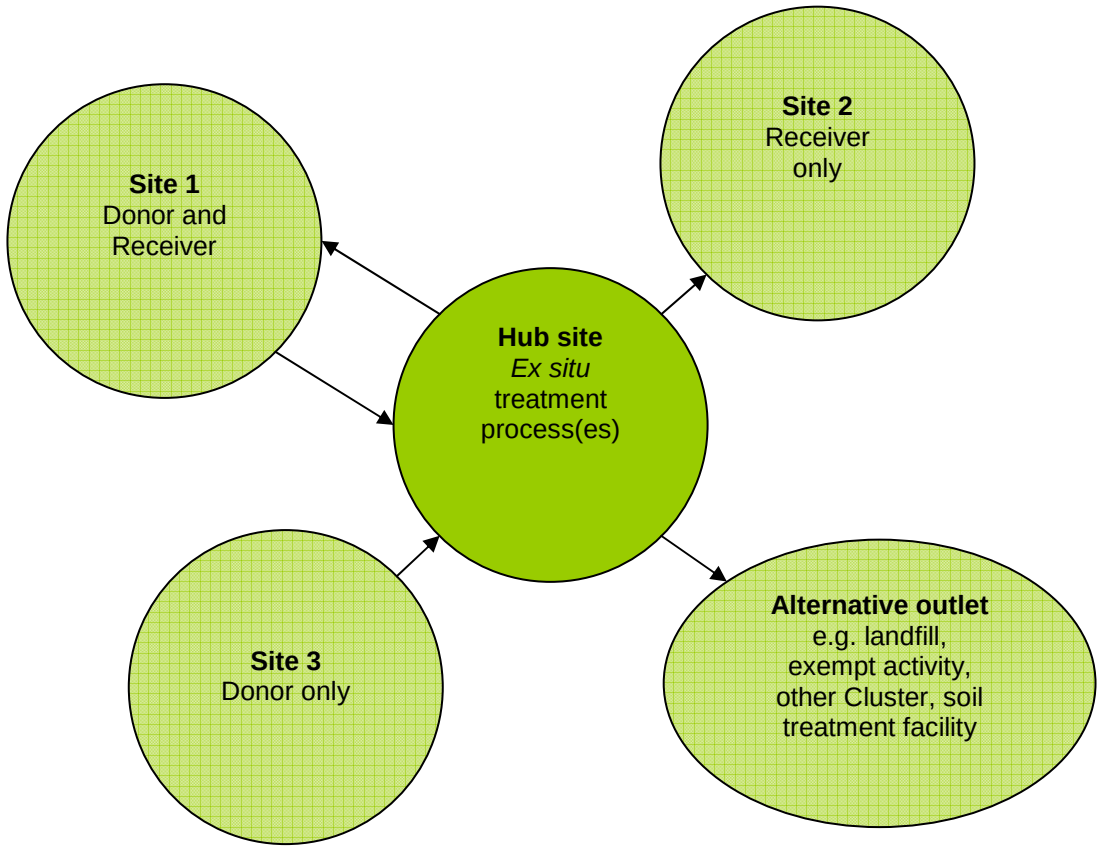

Figure 1 - Generalised schematic of a Cluster project

This guide sets out the various indicative roles and responsibilities of people and organisations within a functioning Cluster. The inter-relationships of different parties and the documentation that has to be produced are illustrated by comparing the documentation associated with a Cluster project and a standalone remediation project, which is not dissimilar.

Stakeholders may benefit from Cluster in different ways as discussed within this document. The main benefiting parties could include:

* Landowners
* Developers
* Contractors
* Consultants
* Local authorities
* Local communities

This guide also identifies the issues associated with the conceptualisation of a project and the considerations that will influence the choice of remediation technology located at the Hub site.

Town and Country Planning issues have been reviewed and different scenarios are illustrated. The need for flexibility in relation to relative timing of import, export and phasing of operations has been highlighted. This is seen as being a particularly important factor if the true sustainable benefits of operating Clusters are to be realised.

Cluster represents a significant step forward in terms of options for managing land contamination and developments. The concept is explicitly covered in “The Definition of Waste: Development Industry Code of Practice (CL:AIRE Version 2 March 2011)” which is freely available at www.claire.co.uk/cop and is referred to as the “CoP” within this document. The CoP provides a mechanism to identify that excavated and treated materials have ceased to be waste and hence can be used at Receiver sites within a Cluster without the need for an Environmental Permit or waste exemption.

The different contractual arrangements that may have to be entered into, dependent on the Cluster make-up are identified and explained, as well as insurance products that are currently available in the market place.

The lessons learnt from previous projects illustrate that whilst all of the pre-operational matters can be largely addressed by good preparation and planning, the true potential of Cluster will rely on all stakeholders recognising the importance of flexibility, particularly in relation to timeframes. Appropriate risk-based decision making will also be critical to unlocking the true potential of the Cluster concept.

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1 Preface

1.1 Purpose

1.0 The purpose of this guide is to:

- Explain the concept of Cluster projects, including the definitions of their component parts;
- Highlight the potential environmental, social and cost benefits of operating a Cluster compared with standalone projects;
- Highlight indicative roles and responsibilities associated with the operation of each component part;
- Provide guidance that can be used by those people considering the establishment of a Cluster project;
- Aid those that operate within a Cluster; and
- Share experiences of the pilot and successfully completed Cluster projects.

1.1 The guide may also be of assistance to planning authorities who may utilise this document in their consideration and determination of individual planning applications; the Cluster concept can offer enhanced sustainability in waste management and as is expected to align with the National Planning Policy Framework, released in March 2012.

1.2 The intention is to review this document to incorporate "lessons learnt" at a later date, as well as continue to verify the actual environmental, social and economic benefits that accrue from a number of operational Clusters.

1.2 Scope and intended audience

1.3 Cluster provides an alternative way of developing and remediating land, to make it more economical to develop with other associated sustainability gains. It provides a different strategy to traditional standalone projects and hence a level of understanding in how standalone projects are taken forward is assumed.

1.4 This guide has been written in relation to the planning and environmental permitting regimes[1] applicable to England and Wales.[2]

1.5 This document will be of interest to landowners, developers, remediation and earthworks contractors, environmental consultants and regulators. Financial and insurance institutions may also find it informative, given the potential cost savings compared with more traditional methods of working.

1.6 This guide is specific to development activities within a Cluster project, including the reuse of treated materials using *ex situ* remediation techniques as well as the reuse of materials that are not affected by contamination.

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[1] Other regulatory regimes will also apply e.g. Health and Safety. However, these are common to standalone projects and hence not detailed in this guide.

[2] The guide builds upon the Definition of Waste: Development Industry Code of Practice (CoP) which in turn was developed having regard to the legal interpretation of waste legislation by the Environment Agency who cover England and Wales only. Other regulators have different interpretations to varying degrees e.g. in Scotland the placement of treated materials is covered under a Mobile Treatment Licence, but this is not the case in England and Wales.

1.7 This guide identifies a variety of issues that need to be considered and provides an overview of the Cluster process. It is not intended to provide a step by step guide to establishing and operating a Cluster project.

1.8 In using this document readers are referred to "Definition of Waste: Development Industry Code of Practice (CL:AIRE Version 2 March 2011)" which is freely available at www.claire.co.uk/cop and is referred to as the "CoP" within this document. Reference to the Environment Agency (EA) Regulatory Position Statement is also required (available from www.environment-agency.gov.uk which is also available via a link from the CL:AIRE website).

2 Introduction

2.1 What is Cluster?

2.0 Cluster is a method for remediating / developing a group of sites that are relatively close to each other and that would be either uneconomic to develop on their own or represent an opportunity to act in a more sustainable manner. For example, the Cluster method could save on costs, and reduce resource consumption and lessen environmental impacts. Further, there is an added advantage of bringing a number of contaminated or derelict sites back into beneficial use with associated community gains.

2.1 The sustainable contribution of any one Cluster is dependent on the interaction of the various indicators that represent the social, environmental and economic costs and benefits viewed across all of the component sites within the defined Cluster.

2.2 Positive indicators of sustainability within a Cluster project could include:

- Environmental:
- Promotes the use of materials in accordance with the waste hierarchy:
    - waste being minimised
    - waste that is produced is recovered and reused; and
    - less waste sent to landfill
- Natural resource consumption will be less, e.g. quarried product and fuel;
- Reduced vehicle emissions and contribution to a reduced carbon footprint of the development process; and
- Pollution of the environment and harm to human health is prevented.

- Social
- Bringing brownfield and contaminated land back in to beneficial use;
- Preserving Greenfield land;
- Creating communities on the developed land;
- Blight issues associated with the use of materials classified as waste on a development site will no longer exist; and
- Reduced vehicle movements (e.g. less congestion, improved air quality and less disturbance).

- Economic
- Lower development costs and providing a more economically viable way of bringing a number of contaminated or derelict sites back into beneficial use[3];
- Lower transport costs as less distance to another development site than landfill;
- Reduced need for importation of other materials, e.g. natural quarried products;

[3] Preliminary cost saving estimates, in the order of one third, calculated for the Neepsend pilot Cluster when compared against Hazardous Waste Landfill transport and disposal.

- Working to the CoP is considered less expensive than applying for, working under, then formally surrendering an Environmental Permit;
- Provides a clear, consistent, systematic and more certain approach utilising documentation normally associated with land development procedures;
- Quicker to marshal information in to a Materials Management Plan (MMP) and have it reviewed by a Qualified Person than applying for a Standard Rules Environmental Permit or Bespoke Environmental Permit;
- Less complex than waste legislation; and
- Lower regulatory costs.

2.2 Cluster case study

2.3 CL:AIRE has produced a Case Study Bulletin on the successful application of a Cluster project CSB 9. This can be freely downloaded from the CL:AIRE website – www.claire.co.uk.

2.4 The Case Study bulletin describes a Cluster arrangement on a former landfill in Coventry. The success of this project is attributed to the careful management and organisation of all the stakeholders, aided by an overriding consensus that the principles of the Cluster arrangement were right and would yield financial and environmental benefits.

2.5 The Cluster of sites in this project consisted of a Hub / Receiver site which required approximately 14,000 m^3 of soils to be imported from a Donor site. An environmental and financial assessment was carried out on the project to compare the costs and benefits of the Cluster approach to landfill disposal and import of fill. Figure 2 illustrates the results and shows that the Cluster arrangement resulted in a significant reduction in the quantity of CO_2 emitted (79%), in kilometres of haulage distance (82%), in litres of fuel used (79%) and a considerable cost saving of £1,490,000 when compared with landfill disposal and independent import of fill.

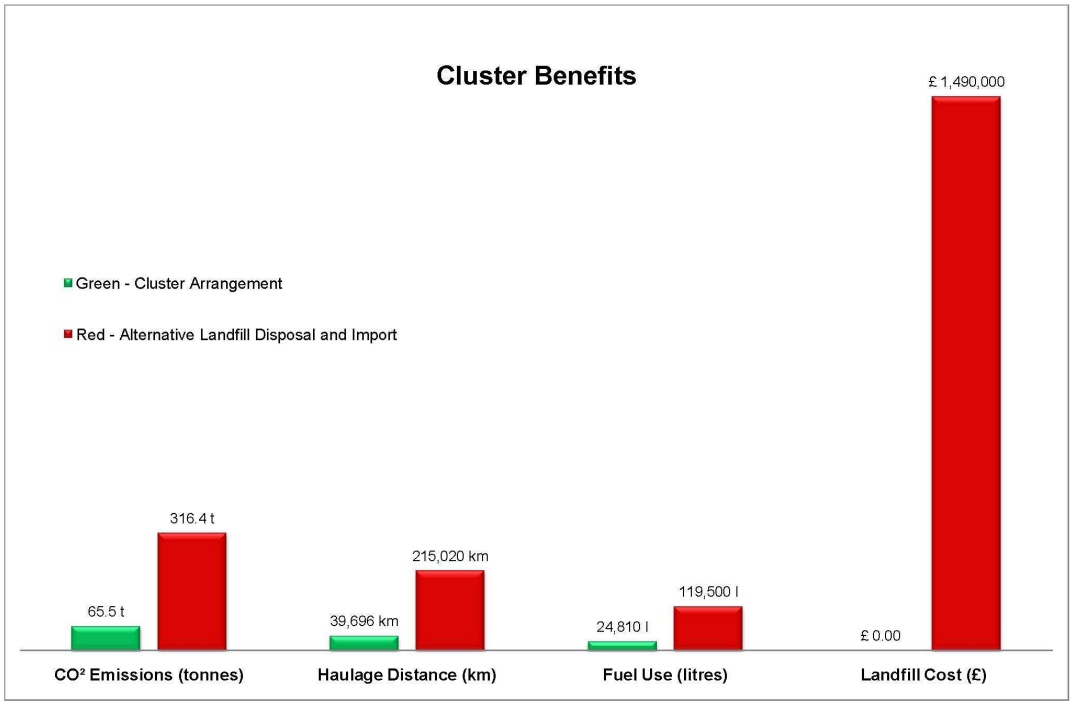


Figure 2. Environmental and financial benefits of the Cluster arrangement, CL:AIRE Case Study Bulletin 9.

2.3 Cluster guiding principles

2.6 Cluster projects have three guiding principles in that they are:

- Temporary – operate only as long as the sites defined within the Cluster are being remediated / developed;
- Local – demonstrably appropriate in terms of geographical distance, relative savings, practical issues etc. for each of the participating sites, and
- Providing a more sustainable way of developing land.

2.7 The concept involves one Hub site to act as a centre[4] for treating contaminated soils and processing other wastes and materials. It is then possible to remediate and develop a number of sites local to the Hub site. Following treatment and processing such materials can then be reused at any one of the sites within the defined Cluster for development purposes e.g. engineered backfill and / or other specified purposes, including the Hub site itself (if appropriate).

2.8 The terms Hub, Donor and Receiver are descriptions of the functions of the sites and it is important to note that any one site may have one or more functions. Definitions of these terms and others used within this guide are detailed in Table 1.

2.9 Flow Diagram 1(see section 2.8) illustrates the pre-operational considerations in establishing a Cluster project.

2.10 It is recognised that additional sites may want to join the Cluster having subsequently identified the benefits that would accrue in participating. New sites need to be formally added to the appropriate documentation and therefore defined within an expanded Cluster, with a pre-defined plan relating to the use of the materials.

There are no specified size criteria in relation to a site or volume of materials treated and reused[5]. There is no prescribed distance between participating sites. There is no specified number of component sites. However, those sites must be defined prior to operating the Cluster. New sites may be added subject to planning permission allowing for it and agreement with the EA. However, the EA may not provide its agreement if the temporary nature of the Cluster project is brought into question by the addition of more sites.

[4] Centre of activities, not necessarily centred geographically

[5] Although it is recognised that the Cluster concept was originally focused on “small” sites, having developed the concept further it is considered that there is no size limit in relation to what sites may benefit from the Cluster approach provided they meet the guiding principles set out in 2.3.

Table 1: Definition of terms

Cluster	A group of sites including a Hub site and one or more sites that use the treatment capacity and capability of the Hub site. Requires EA approval to set up.
Hub site	The site which hosts the treatment plant, which will have an appropriate Environmental Permit / waste exemption that details the proposed activities and wastes to be accepted and planning consent that allows for the treatment of wastes from off site. The Hub site may be contaminated itself or simply be a piece of land used solely to facilitate the Cluster project.
Hub site operator	The organisation that has responsibility for all the operations at the Hub site, invariably a contractor.
Donor site	A site that needs to deal with certain materials within its boundary that are currently: • Not suitable for direct reuse on the site and / or • Considered to represent a potential environmental risk in their current form and / or • Surplus to requirements
Receiver site	A site that needs to import materials which are suitable for use for a defined purpose from the Hub site.
Materials Management Plan	The documented record of how excavated materials, including contaminated soils are characterised, stockpiled, treated and used within a specified location. The MMP Form document is available on the CL:AIRE website www.claire.co.uk.
Tracking System	The means of tracking the movement of materials, including untreated and treated soils between the Donor, Hub and Receiver site(s). The Tracking System is a component part of the Materials Management Plan.
"The four factors" in relation to waste[6]	Information that has to be generated to make the case in relation to specific Cluster projects to demonstrate that: • Materials are not waste in the first instance and • Successfully treated materials have ceased to be waste
"Development"	Development also includes redevelopment, remediation and re-grading

[6] "Definition of Waste: Development Industry Code of Practice" – Protection of human health and protection of the environment; Suitable for use without further treatment, Certainty of use, Quantity of material (See section 2 – Principles for the use of Materials as Non-Waste).

2.4 Who may benefit from a Cluster?

2.11 There are a number of organisations and individuals that can benefit from developing land via the Cluster approach. These include:

i) Landowners / Developers

A single landowner / developer may provide the Hub site and the Donor / Receiver site(s), particularly those with sites with similar contaminant profiles. N.B In implementing the precautionary principle and in aiming for a high level of environmental protection (as set out in the Waste Framework Directive and case law) the EA would expect the use of materials within a Cluster project to maintain or improve the quality of land at any Donor or Receiver site. When considering the importation of foreign materials to a site it is important to ensure that the materials will be used in a way that achieves the same goals as the Waste Framework Directive (See Watch Point 15 of the CoP).

Alternatively, other landowners / developers may consider putting their site forward as a Hub site with a view to developing a commercial short-term venture with a contractor with the permission of the site owners. Owners / developers of other sites may subsequently become part of a larger Cluster, with the treated / processed materials providing a source of imported materials.

ii) Contractors and Consultants[7]

Cluster may represent a method whereby a contractor or consultant can deliver a cost effective solution to remediate and develop a number of sites in the same locality and hence deliver greater value, or further their client's sustainability policies. For contractors it may also represent an opportunity to develop a short-term commercial venture with a landowner.

iii) Local Authorities and Local Communities

Cluster may provide a more effective solution whereby a number of sites in a single local authority boundary, or in partnership with neighbouring local authorities, can be developed. For example, town centre regeneration schemes or Part 2A sites (including those which have Government funding for remediation).

2.5 Cluster models

2.12 There are considered to be three starting scenarios that can lead to the conceptualisation of a Cluster project. These being:

- Group of sites in relative close proximity in need of development and / or remediation
- Potential Hub site identified – other sites then proactively identified
- Standalone operational activity – other sites then identified e.g. large development site, fixed soil treatment facility (STF), large remediation project

2.13 There are various models associated with the Cluster concept, the simplest being a two site Cluster with one acting as a Hub site and the other as a Donor and Receiver site as illustrated in Figure 3.

[7] In this guide reference to contractors includes earthworks and specialist remediation contractors and reference to consultants includes engineering consultants

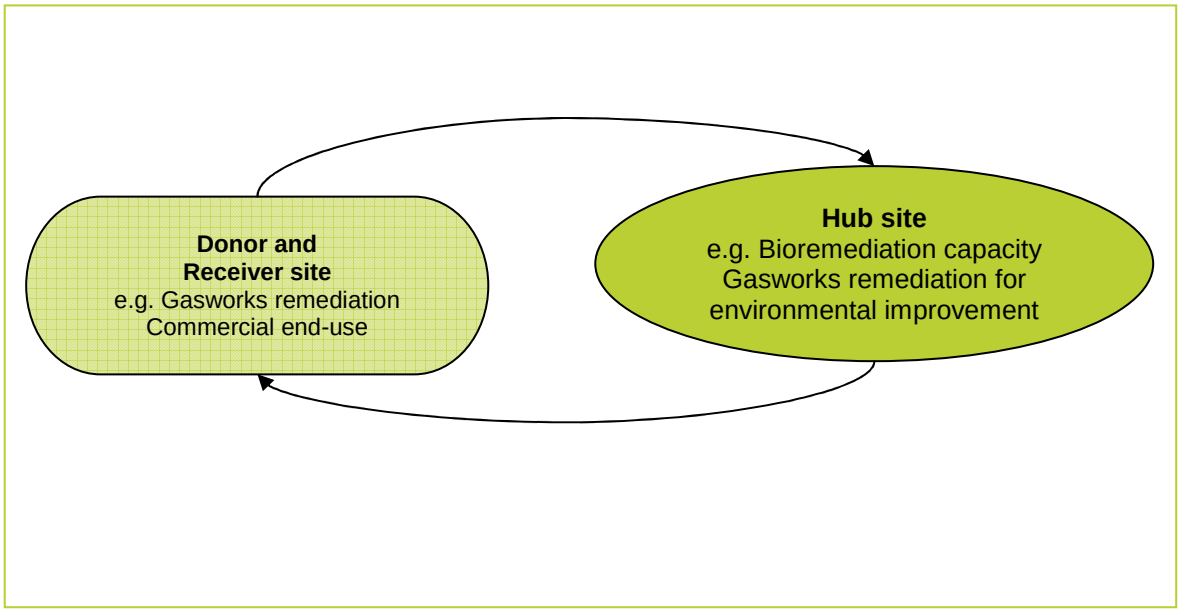


Figure 2: A two site Cluster

Pilot Cluster Project
Figure 3 represents the Cluster project that operated at Neepsend, Sheffield. Here the EA agreed, on a project specific basis, that following successful treatment of gasworks waste by *ex situ* bioremediation, and other factors which are now set out in the Definition of Waste: Development Industry Code of Practice (Version 2, 2011) that the material ceased to be waste at the Hub site. Hence the material was transported and reused at the Donor / Receiver site as non-waste i.e. the Receiving site did not require an Environmental Permit, exemption or enforcement position for the reuse of that material. Additionally the haulier of the treated material did not have to be a registered waste carrier and Duty of Care transfer notes did not have to be completed because the materials had ceased to be waste.

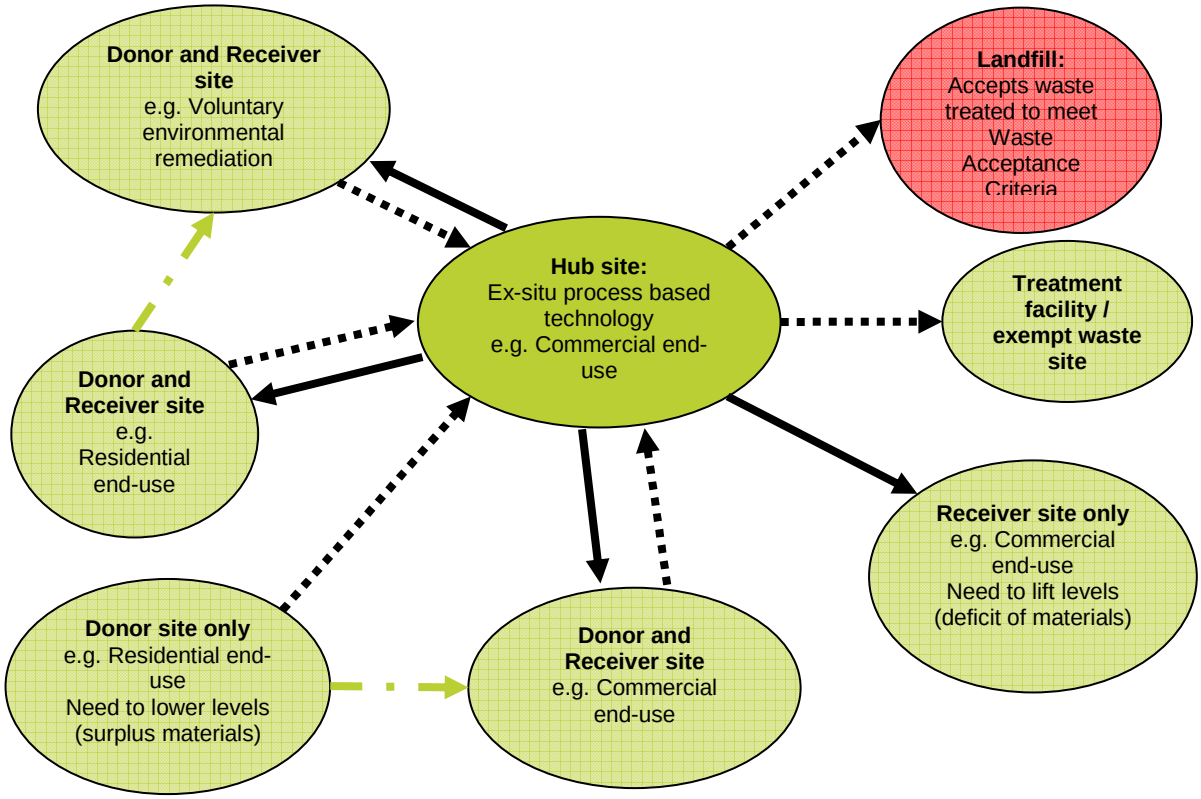
2.14 When operating at its full potential there are multiple options for reuse of materials within a Cluster project. Figure 4 provides one possible scenario for a more complex Cluster. Obviously less complex models may be established.

Most likely models
Figure 3 and Figure 4 are simply two examples of Cluster projects. It is anticipated that the majority of Cluster projects will involve two to three sites initially and more complex Cluster arrangements will emerge as industry and regulators gain experience and realise the true benefits.

2.15 Many factors influence the complexities of establishing and operating a Cluster. However, it is considered that the two main influencing factors are:

- Whether more than one landowner is involved; and
- The number of contaminant profiles that the treatment plant at the Hub site has to treat.

2.16 One landowner involved in a Cluster presents an opportunity for all the contractual issues to be controlled by the same party. Other factors such as the number of consultants, contractors and local authorities involved present an added complexity but are considered to be less significant. Section 4 provides guidance on the contractual relationships between different parties.



Key:
Flow of wastes
Flow of treated materials
Possible direct transfer under certain scenarios
(See Definition of Waste: Development Industry Code of Practice March 2011)

Figure 3: A more complex model - illustrating additional flows of wastes and materials and various end-uses

2.17 With regard to various contaminant profiles the concept of a treatment train comes in to play. It is important to ensure that the correct level of operator capability and expertise will be employed in recognising the different treatment technologies and techniques needed to ensure successful treatment. Appendix A highlights the various considerations in deciding on the most appropriate treatment technology.

2.18 The relationship between the key factors and complexity of operating a Cluster is illustrated in Figure 5.

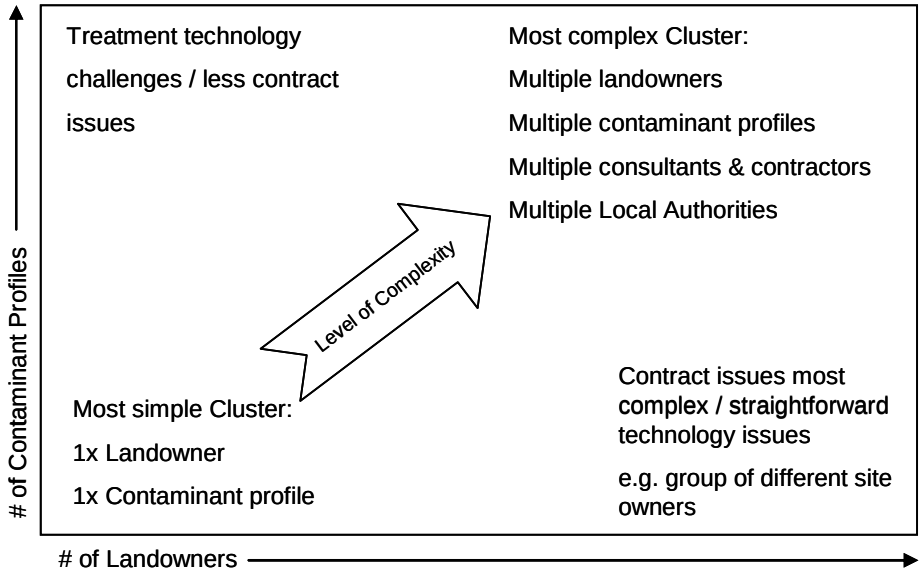


Figure 4: Illustration of increasing Cluster complexities.

2.6 Standalone project versus Cluster approach

2.19 This sub-section provides guidance on the role of various people / organisations within a Cluster project. This is illustrated by a comparison of practices that are normally associated with a single site project, where remediation is taking place, when compared with those associated with operating a Cluster.

2.20 Table 2 provides an illustration of the documentation needed for a standalone project compared against each of the individual sites developed via the Cluster concept.

Table 2: Comparison of documentation

Document	Standalone	Hub site	Donor site	Receiver site
Planning Application (if applicable)	Y	Y	?	?
Remediation Strategy or Design Statement	Y	Y	Y	Y
Environmental Permit	Y	Y	X	X *
Waste Duty of Care / Consignment Note Documentation	Y	Y	Y	X
Materials Management Plan	Y	Y	Y	Y
Site Waste Management Plan[8]	Y	Y	?	?
Health and Safety Plan	Y	Y	Y	Y
Contracts	Y	Y	Y	Y
Verification Report	Y	Y	Y**	Y

Y - Required, X – not required, ? – May, or may not, be applicable depending on the site and its location (England or Wales)
* Scenarios may exist where receiver sites have separate permits or exemptions in place to deal with certain other waste streams not covered by the CoP.
** May not require a Verification Report in its own right, however information from that site will be included with the Verification Report(s) of Hub site and Receiver site(s)

[8] Subject to the value of the project exceeding £300,000

2.7 Standalone project

2.21 A single site project using an *ex situ* treatment technology typically involves the following parties:

- Landowner or developer (who may also be the Client)
- Consultant
- Contractor
- Specialist treatment contractor
- Construction Design and Management co-ordinator (depending on scale of project)
- Local Authority and
- Environment Agency

2.22 Within a single site approach certain key documentation has to be produced. The order in which this is prepared and finalised can vary dependent upon various inter-relationships.

2.23 Table 3 identifies the documentation for a single site remediation project and the person / organisation that would normally be responsible for its production.

Table 3: Single site documentation & person who would normally be responsible for its preparation.

Document	Responsibility
Planning Application (if applicable) e.g. change of use	Landowner (or prepared by their Consultant[9])
Remediation Strategy or Design Statement	Landowner (or prepared by their Consultant)
Environmental Permit application (and associated deployment form if applicable) for treatment of waste	Contractor and / or Specialist Treatment Contractor (or prepared by their Consultant)
Waste Duty of Care / Consignment Note Documentation	Contractor as waste producer. Plus registration as hazardous waste producers premises (if applicable)
Site Waste Management Plans (if project value >£300,000 and located in England)	Client / Principal Contractor
Health and Safety Plan	Contractor / Construction Design and Management Co-ordinator
Form of Contract (see section 4 and Appendix B)	1) Landowner & Consultant 2) Landowner & Contractor 3) Contractor & Specialist Treatment Contractor
Declaration (Reuse on Site of Origin scenario of the CoP)	Qualified Person (registered with CL:AIRE)
Verification Report	Landowner (or prepared by their Consultant)

2.8 Cluster approach

2.24 Table 4 identifies the documentation that is required to operate a Cluster. The main documentation that is required to operate a Cluster, in addition to that required for a traditional standalone remediation project, is amended or bespoke forms of contract between relevant parties.

This guide compares what documentation is required for a standalone project and that needed for a Cluster project. At first glance it looks to be more complicated to establish and operate a Cluster, however there is a need to compare this with the greater number of sites that are developed within a similar timeframe within a Cluster, with cost savings on treatment, and associated sustainability indicators, as opposed to advancing each site individually.

It should be noted that if the component sites progress individually each would need to produce a similar amount of documentation. Utilising the Hub site for treatment and as a source of materials may negate the need for a contract with a landfill and quarry operator.

[9] The role of consultant, contractor and specialist treatment contractor are highlighted as separate roles. However, it is recognised that one company may offer two or more of these services e.g. under a Design and Construct contract and where a contractor has in-house specialists.

Table 4: Cluster documentation and person who would normally prepare it.

Document	Hub site*	Donor	Receiver
Planning Application (if required) - permitting Cluster operation	Landowner (or their Consultant) with input from proposed Hub site operator, as appropriate	Landowner (or their Consultant) with input from proposed Hub site operator, as appropriate	Landowner (or their Consultant) with input from proposed Hub site operator, as appropriate
Remediation Strategy or Design Statement	Consultant	Consultant	Consultant
Environmental Permit	Hub site operator	NA	NA
Waste Duty of Care / Consignment Note Documentation	Hub site operator - Site needs to be authorised to receive the specific waste types e.g. Environmental Permit	Waste Producer - Contractor to point of delivery at Hub site. Plus registration as hazardous waste producers premises (if applicable)	NA
Materials Management Plan[10] demonstrating the "Four factors" of the CoP	Hub site consultant in conjunction with contractor and consultants at Donor and Receiver sites (unless each component site has a individual Materials Management Plan, all of which must dovetail)	Consultant in conjunction with contractor and Hub site operator / consultant	Consultant in conjunction with contractor and Hub site operator / consultant
Tracking System (forms part of the Materials Management Plan)	Hub site operator - monitors movement through treatment process, stockpile locations - ensures Donor and Receiver site are fully characterised and correct materials are received and used in the correct location on the site	Consultant - ensures site is fully characterised and correct wastes are sent to Hub site	Consultant - ensures site is fully characterised and correct materials are received and used in the correct location on the site

[10] See Materials Management Plan Form on CL:AIRE website

Table 4: Cluster documentation and person who would normally prepare it (continued).

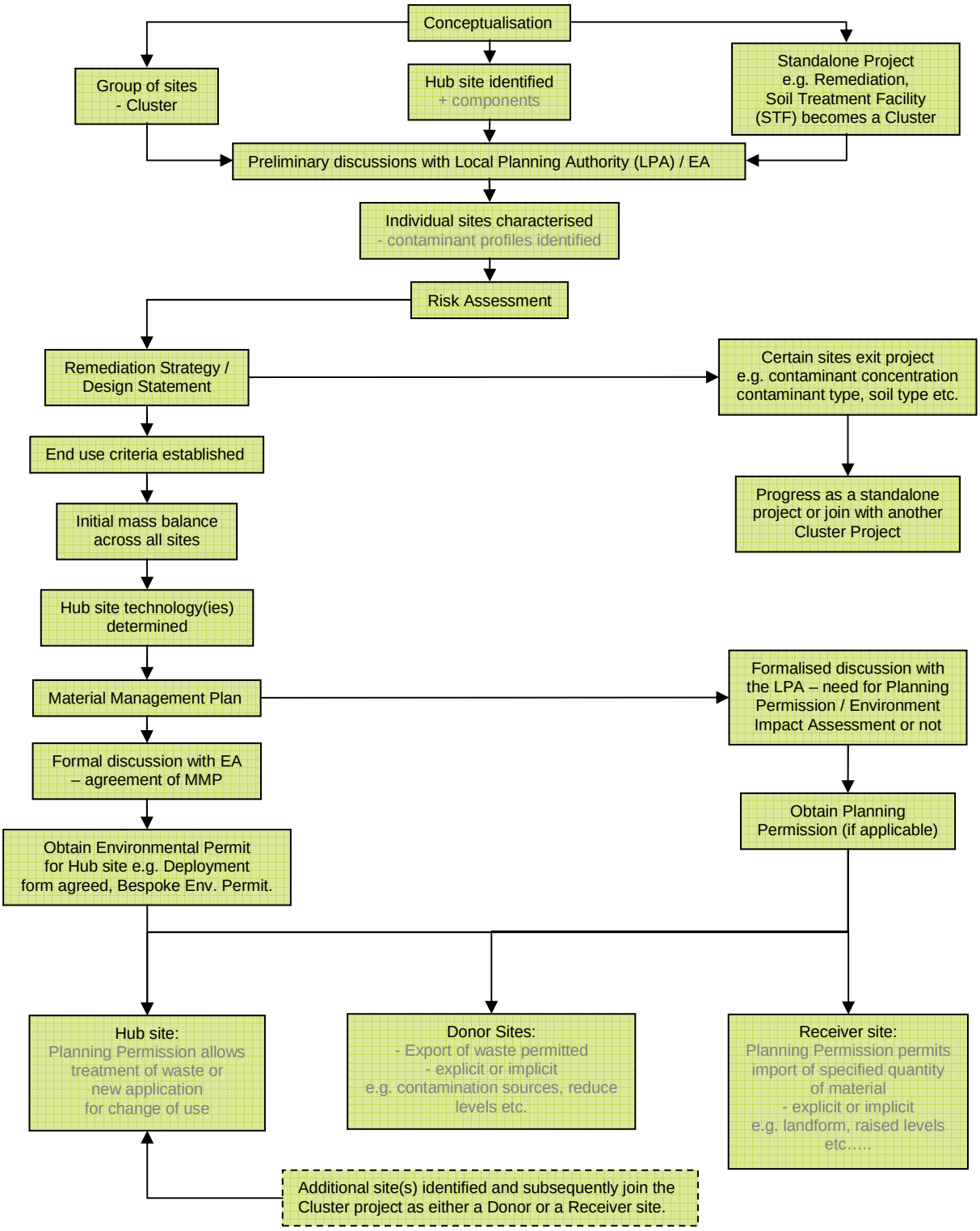
Document	Hub site*	Donor	Receiver
Signed Waste CoP Declaration	Qualified Person (prior to dispatch)	NA (Duty of Care applies)	NA
Site Waste Management Plan (England only)[11]	Dependent on Installation Part[12]], Hub sites could also act as donor-cum-receiver sites.	Client / Main Contractor	Client / Main Contractor
Health and Safety Plan	Contractor / Construction Design & Management Co-ordinator	Contractor / Construction Design & Management Co-ordinator	Contractor / Construction Design & Management Co-ordinator
Contracts	See Section 4 and Appendix B	See Section 4 and Appendix B	See Section 4 and Appendix B
Verification Report	Consultant - Verification Report prepared to demonstrate correct materials have been used in the correct location (provides audit trail) - records any changes in MMP and instigation of any contingency arrangements	Consultant - specific to materials used at the Hub site Consultant - specific section to show where waste and materials went to	Consultant - specific section to show how materials from the Hub site have been used

* Hub site may also act as Receiver site and hence additional documentation from the Receiver site column will be applicable
NA – Not Applicable

[11] The Materials Management Plan may form part of the Site Waste Management Plan on its own if the project relates solely to excavated materials (subject to appropriate topping and tailing and compliance with other requirements of the Regulations), or the Materials Management Plan will form a part of a larger Site Waste Management Plan where the project goes beyond earthworks

[12] Part A installations of the Environmental Permitting Regulations are exempt. Part B installations are not exempt

Flow Diagram 1 - Cluster pre-operational considerations



Note 1 - See Definition of Waste: Development Industry Code of Practice for complete details relating to waste / non-waste status and EA Position Statement

Note 2 - Contracts need to be in place relating to the movement and use of materials at all component sites. Contracts may be co-ordinated by the Hub site operator

Note 3 - All sites may be covered by one insurance policy, if considered appropriate

Note 4 - There may be interaction with other sites e.g. landfill for disposal of treatment residues / surplus materials, alternative treatment

Note 5 - Additional sites may subsequently be added e.g. additional Donor and / or Receiver sites

3 Planning & Waste Related Issues

3.0 In progressing the pilot Cluster projects the main regulatory regimes that required further detailed considerations were the planning and waste related regimes. This section identifies how Cluster projects may fit within the planning system generally and specifically for each component site. It highlights the need for planning flexibility in terms of relative timing of component sites and to allow for sites that are subsequently identified to take advantage of the treatment capability and capacity at the Hub site. A summary of the CoP in how it applies to Cluster projects and other associated waste issues is also provided below.

Early dialogue with the Local Planning Authority and Environment Agency is recommended.
Planning Authority
Is planning permission needed?
Is a change to planning permission needed?
Is an Environmental Impact Assessment needed?
Are there any local policies that support the Cluster approach?
Are there any additional sites that the Authority is aware of that may benefit from such an approach?
What does the Authority see as the main issues to be addressed?
Environment Agency
Cluster project specific agreement that waste would cease to be waste following treatment i.e. agreement to the Materials Management Plan.
The question of whether or not any material is waste has to be made on a case by case basis and therefore at the Cluster Project conceptualisation stage the proposed operator will need to consult with the EA local area office regarding the proposed project and the Standard Rules Mobile Treatment Permit, site based Bespoke Permit or exemption. Subsequently if any new sites are to be added to the Cluster project then further consultation will be required.

3.1 Is new planning permission required?

3.1 Planning permission is required for any 'development'[13]. Development is defined as:

- Operations which constitute a material change of use
- Building
- Engineering or
- Other operations

3.2 The erection of buildings and structures to house treatment facilities may require planning permission[14] and therefore remediation activities may require planning permission in their own right. On the other hand remediation activities may already be a condition of a planning permission for a wider development.

3.3 Whether new planning permission is required for any activity will vary depending on the specific nature of the activity and the existing wording of the current planning permission. Therefore the first stage in considering planning issues is to review the planning history for the sites in question to identify existing permissions that may cover the proposed activities at each of the sites e.g. previously a waste transfer station or materials depot.

Note: The EA can not legally issue an Environmental Permit specific for a site or for a waste management activity, if the planning permission does not allow for it. This is not the case for an Environmental Permit relating to Mobile Plant (the permit is issued prior to the sites being known, where the plant will be deployed). Even with mobile plant the EA will make the LA aware of any deployment which may trigger queries from LA on planning status. It is therefore important that operators have clarified the status in advance.

[13] Under Section 55 of the Town and Country Planning Act 1990

[14] The test of whether planning permission will be required is whether the plant is regarded as a "structure" in planning law. This is a matter of fact or degree, depending on a combination of size, physical attachment to the ground and permanence.

3.2 Is an Environmental Impact Assessment required?

3.4 If new planning permission is needed then an Environmental Impact Assessment[15] may be required for any of the component sites if there are likely to be significant effects on the environment. Therefore early dialogue with the Local Planning Authority is recommended. A screening opinion of the need to carry out an Environmental Impact Assessment should be requested from the Local Planning Authority as soon as possible. If an Environmental Impact Assessment is required then a scoping opinion to identify what issues need to be addressed should be sought from the Local Planning Authority. The benefits of operating a Cluster as opposed to component sites progressing individually should be considered and outlined in the Environmental Impact Assessment, if required.

3.5 Upon the completion of an Environmental Impact Assessment an Environmental Statement is produced. The Environmental Statement is submitted as a supporting document to the planning application.

3.3 Potential Hub site scenarios

3.6 The following scenarios may relate to most potential Hub sites, in that:

- The proposed treatment activities may be covered by an existing planning permission that includes provision of a number of vehicle movements to and from the site[16]
- The proposed treatment activities on the Hub site may take place on 'operational land' belonging to a statutory undertaker, in which case the work may take place as a permitted development[17]
- The treatment activities on the Hub site may be considered to be operations that constitute a material change of use and thus a specific planning permission for the additional activities must be sought

3.4 Planning issues – Donor and Receiver sites

3.7 Donor sites may have similar planning issues to Hub sites which need to be considered. From a Cluster project point of view the most likely issue being vehicle movements to and from the site. It is unlikely that a new permission would be required solely to remove excavated materials from the site e.g. contaminated soils in need of treatment and / or surplus soil.

3.8 The Receiver site is more than likely to require a planning permission that implicitly allows for the importation of material, be this to raise levels on the site or as engineered material. However, the planning controls should be no different than if the development project proceeded as a standalone project.

Identification of additional sites and flexibility in timeframes:
To allow Cluster projects to fulfil their true potential it is important that planning permissions for Hub sites have sufficient latitude within the conditions to allow the introduction of new sites as development opportunities arise.

Cluster arrangements that have Donor and Receiver site locations strictly tied to planning permissions may be difficult to progress given the wide number of factors that have to be aligned in order to run

[15] Schedule 1 or Schedule 2 of the Town and Country Planning (Environmental Impact) Regulations 1999

[16] Under this scenario a case may be made that the existing planning permission is sufficient that the extension of the site to temporarily act as a Hub site for relatively local sites may not constitute a material change of use. The additional environmental impact may be considered similar without making the activity the subject of a planning application in its own right

[17] Under the rights afforded by The Town and Country Planning (General Permitted Development) Order 1995

projects in parallel. For example significant programme slippage at one site may have knock on effects at other sites which under certain circumstances may make the Cluster project unviable, therefore to progress all sites a new site will need to be identified.

This flexibility can be achieved by the planning permission having an explicit reference to the addition of new sites. This is likely to be constrained in some way by the planning authority, for example:

- Not operating beyond a specified date
- Not exceeding the total permitted vehicle movements per day
- The storage capacity of the site not being exceeded
- Environmental control systems being scaled up
- Additional environmental monitoring

3.5 Communication considerations

3.9 Given the logistics involved with the establishment and operation of a Cluster project communication has to be efficient and effective. Communications should identify the environmental, social and economic implications for each of the component sites and be carefully set out against the overall benefits of operating within a Cluster.

As with standalone projects, Cluster projects require careful consideration of communication issues with local stakeholders given the possible local perceptions associated with the concept e.g. the movement and treatment of contaminated soils, therefore early stakeholder communication to explain issues is recommended.

3.10 Communication links need to be established early on and maintained:

- Between Hub, Donor and Receiver site operators, consultants, contractors and landowners
- With professional advisors and funders
- With regulators e.g. Environment Agency, Local Authority
- With external stakeholders

3.11 The target audience may vary and the type of communication and what is communicated may vary also e.g. everyone within a specified distance of the site, type of neighbour (e.g. residential, schools, industrial).

3.6 Communicating with neighbours

3.12 The need for public consultation and / or communication strategies should be assessed on a site specific basis. The degree of public consultation via the planning process may negate the need for additional public consultation. For sites donating materials to the Hub site, communication may not be necessary at all.

3.13 The amount of resource and time to communicate with the general public should not be underestimated.

3.14 Where the decision is made to produce a communication strategy the following issues need to be considered:

- Target audience
- Roles and responsibilities of those involved in its production and implementation e.g. authority to make decisions and resolve issues quickly
- Point of contact and means of making contact
- Engagement with the public both collectively and through one to one meetings (take peoples concerns and suggestions seriously, recognise that perception is real and act on issues promptly)
- Regular updates e.g. site milestones achieved

- Key messages relating to the project, the implications and how issues are to be / are being managed e.g. noise, dust, vehicle routes, congestion, operational hours etc…
- Identification of areas where joint decision making with key people / groups may be beneficial
- Trustworthiness of those involved i.e. will the target audience trust the person that they are dealing with. An open and honest approach is essential
- Technical issues made as simple as possible e.g. pictorial conceptual site models
- Identification of environmental benefits and alternatives
- Plan for information release e.g. to the press, pressure groups, leaflets to surrounding community (be proactive)
- Provision of data and information
- Interaction with local media outlets

3.7 Waste related issues

3.15 This sub-section deals with the following issues and draws from the CoP:
- Duty of Care and / or consignment notes
- Registration of hazardous waste producers premises and
- Waste ceasing to be waste

3.16 Materials sent for treatment at the Hub site are considered to be a waste by the EA and hence waste legislation is applicable to the transportation and treatment of that material. Flow Diagram 2 illustrates the procedures from waste production to the point of ceasing to be waste.

3.8 Hub site permitting

3.17 Every Hub site must operate in accordance with an environmental permit or waste exemption. The purpose of the permit is to enable waste materials to be imported, deposited, stored and treated where necessary. The aim is to recover those materials for reuse within the Cluster project.

3.18 The sort of permit required for the Hub site will vary dependent upon the needs of the Cluster project. The degree of treatment required and the timeframe involved for the materials passing through the Hub site will dictate the most appropriate form of permit or if an exemption would be appropriate.

3.19 Treatment can vary from complex remediation operations such as soil washing, bioremediation or thermal desorption through to very basic assessment or segregating and sorting activities. As a minimum a Hub site must be capable of identifying and assessing materials as suitable for use and the capacity to segregate unsuitable or “off-spec” materials to ensure the quality of the product that is sent to any receiver area / site meets specifications.

3.20 When establishing a Cluster project an operator has to gain approval in principle from the Environment Agency. One of the issues that the EA will examine is the type of permit proposed for the Hub site. Permits can be either standard, bespoke, site based or mobile dependent upon the details of the proposed Cluster project.

Mobile Plant Permits (for the remediation of land and controlled waters):

3.21 Mobile permits are best suited for small Cluster projects or simple site to site transfers with some treatment required. They can be used at Hub / donor or Hub / receiver sites[18] or may be at a central site where the Hub site itself is also scheduled for remediation as part of the

[18] See CoP Appendix 3 relating to Brownfield to Brownfield two site Clusters

Cluster project. Mobile plant permits are generally only suitable for shorter term projects, generally up to twelve months.

Site Based Permits:

3.22 Site based permits are best suited for use at large scale Hub sites, especially those receiving wastes from multiple donor sites and operating over an extended time period. They are also suited for fixed soil treatment facilities which are in effect acting as Hub sites where the nature of the business requires a prolonged period of operation involving the provision of recovered materials to multiple receiver sites.

Exemptions:

3.23 Exemptions are not generally applicable or suited to controlling activities at Hub sites. One exception to this would be T5 (Soil screening) at a Hub / Donor or Hub / Receiver site. This would only be relevant where the treatment / recovery activity is related to physical size / separation of the wastes specified in the exemption. Exemptions are not suitable for treating chemically contaminated soils.

Activities controlled by the Permit:

3.24 Permits should cover all areas proposed for waste reception, suitability assessment, pre and post treatment stockpile areas and any treatment plant areas. In some projects the choice may have been made to have a Recovery Permit so the permit may also cover redeposit / lay down areas. Otherwise the CoP for reuse of soils and excavated materials is appropriate.

3.25 The actual treatment required at any site will relate to the imported materials characteristics and the receiver site requirements, some materials may require simple assessment to meet materials suitability criteria, simple sorting / segregation activities or more complex treatment. The deployed Mobile Permit or Site Based Permit must list all activities proposed in site documentation. The relevant permit must also cover all emissions controls and monitoring that will be required for all zones covered by the permit. These should be for all potential emissions to air, land or water, based on a clear understanding of site activities and use a design based on the Conceptual Site Model concept. This will establish potential sources of emissions, all pathways and possible receptors.

3.26 Table 5 summarises the currently available permitting options with reference to the different scenarios that might exist within a Cluster project.

3.27 Standard permits are those prefixed SR and most have a strict set of rules. For example they cannot be situated within set distances of sensitive receptors, they have limited capacities and they cannot accept / use hazardous wastes. If an operation does not fall entirely within these standard rules then a bespoke permit will be required. The only exception to this would be Mobile Permit SR2008No.27 which has been designed specifically to be compatible with short-term Cluster projects.

Table 5 Permitting options and reference numbers

Hub site Scenario	Potential Permitting Options
Fixed Soil Treatment Facility (FST)	Bespoke Site Based Permit
Conventional Hub site (Treatment Only)	Mobile: SR2008 No.27*
	Site: SR2010 No.12 (<75kT)
	Bespoke Site Based Permit
Hub / Donor Site	Mobile: SR2008 No.27* Mobile: SR2010 No.11 (<75kT)
	Site: SR2010 No.12 (<75kT)
	Bespoke Site Based Permit
Hub / Receiver Site	Mobile SR2008 No.27* Mobile SR2010 No.11 (<75kT)
	Site: SR2010 No.5 (<5kT)+ Site: SR2010 No.7 (<50kT)+ Site: SR2010 No.8 (<100kT)+ Site: SR2010 No.9 (<50kT)+ Site: SR2010 No.10 (<100kT)+ Site: SR2010 No.12 (<75kT)
	Bespoke Site Based Permit
Notes: ** = Permit allows treatment of hazardous materials and does not have limits on the quantity of materials treated per annum.* *kT = thousand tonnes per annum treatment / use limits.* *+ = Restricted treatment capability (only allows for rejection of loads as part of standard waste acceptance procedures)* *Further information on permitting / exemption requirements is available on the EA website.*	

3.9 Duty of Care and / or consignment note

3.28 Wastes that are not classified as hazardous waste which are taken **to the Hub site** must be accompanied by a transfer note under the Duty of Care Regulations. This needs to adequately describe the waste and include the six digit code from the European Waste Catalogue. The waste can only be transported by a registered waste carrier.

3.29 Where the waste is classified as hazardous waste then it must be accompanied **to the Hub site** by a consignment note which, in addition to the European Waste Catalogue code, needs to include the hazardous waste producers premises unique reference number issued by the EA. Prior to transporting hazardous waste the EA needs to be pre-notified of the proposed move. Again, the waste can only be transported by a registered waste carrier.

3.10 Registration of hazardous waste producer premises

3.30 Prior to transport of wastes to the Hub site the producer of the waste (usually the earthworks contractor) is required to classify that waste. If the waste is classified as hazardous waste then the premises needs to be registered with the EA. The EA will then issue a unique reference number that must be quoted on the hazardous waste consignment note that has to be completed prior to dispatching the waste to the Hub site.

3.31 Where the Hub site produces hazardous waste which will be removed from the site then the premises will also need to be registered with the EA.

3.11 Waste ceasing to be waste

3.32 The CoP and EA Position Statement detail when materials are not considered a waste in the first place and when successfully treated materials can cease to be waste. Readers are referred to those documents for detailed consideration of this issue. This section simply attempts to summarise elements of the CoP for a Cluster project.

3.33 In referring to Cluster projects the CoP states:
"The question of whether or not any material is waste has to be made on a case by case basis and therefore at the Cluster project conceptualisation stage the proposed operator will need to consult with the EA local area office regarding the proposed project and the National Permitting Service regarding the Environmental Permit for the Hub site, e.g. Standard Mobile Treatment Permit, Bespoke Mobile Permit or site based Bespoke Permit. Subsequently if new sites are to be added to the Cluster project then further consultation will be required. Any Cluster project may be refused if the EA believes that it represents "sham recovery"." [19]

3.34 It is recommended that discussions, supported by a summary form / submission, at the conceptualisation stage are held with the EA. Subsequently, the EA will only agree to the successfully treated materials being considered non-waste on the production of a Materials Management Plan setting out the specific circumstances of the defined Cluster[20] which may be audited by the EA at some point. Identifying the perceived environmental benefits of operating the Cluster will add further weight to demonstrating the above.

3.35 The Hub site operator is responsible for identifying that the treatment process has the capability and capacity to treat the wastes within the specified time frames, in combination with other waste streams from Donor sites within the defined Cluster. This may involve phased importation of waste to the Hub.

3.36 Phasing the importation of wastes for treatment has recognisable synergies with regard to the blending of waste materials to allow for better treatment e.g. variable water content, particle size distribution, high and low concentrations of contamination[21].

[19] Appendix 3 paragraph A3.4 of the CoP

[20] This has been successfully demonstrated for the Neepsend, Sheffield pilot Cluster operated by National Grid Property as well as a number of projects that have operated under the CoP.

[21] Note – it is an offence to blend / mix hazardous waste and non-hazardous waste to meet the Waste Acceptance Criteria for landfill disposal. Within the proposed operations outlined here the intention is to aid better treatment at the treatment facility – which will normally be permissible under an Environmental Permit

3.37 The Receiver site operator is responsible for determining the actual specification of soil both in terms of site specific chemical thresholds and geotechnical criteria. This must be underpinned by an appropriate risk assessment.

3.38 Article 14 of the Waste Framework Directive requires that measures to be taken to ensure that waste is recovered or disposed of without endangering human health and without using processes or methods which could harm the environment, and in particular:

a) without risk to water, air or soil, or to plants or animals;
b) without causing a nuisance through noise or odours;
c) without adversely affecting the countryside or places of special interest

3.39 In assessing the suitability of materials (and hence waste status) it is necessary to consider the circumstances in which they arise and the circumstances in which they are to be used. When considering the importation of foreign materials to a site it is important to ensure that the materials will be used in a way that achieves the same goals. If materials were imported to a site so that new hazards are created, or existing hazards increased the net effect would be to increase the level of risk posed to human health and the environment at that site. This would be contrary to the objectives of the Waste Framework Directive. It should be remembered that land-use can and does change over time meaning that any new hazards created by importation of materials will have to be dealt with in due course. The net effect is that land quality would have been degraded rather than maintained or enhanced; this is not considered sustainable.

3.40 The differential between the costs of disposal of hazardous vs. non-hazardous materials also make it attractive to criminals to undertake “sham recovery” operations whereby the development itself is secondary to the profits to be made in circumventing legal controls on disposal.

3.41 To this end the following general restrictions are applied to materials to be used under the CoP at any Receiver site:

- The hazards to human health and the environment must not be increased beyond those which already exist at the Receiver site, by importing materials with elevated concentrations of potentially harmful substances.
- The importation of materials at receiver sites must not introduce any new hazards beyond those that already exist at the Receiver site, by importing materials containing new contaminants present at problematic levels. In any case this includes the importation and use of materials containing new contaminants present above hazardous waste threshold.

3.42 The Hub site operator and Receiver site operator (or their consultant) will need to be able to demonstrate:

- The treated material meets the required specification for the Receiver site without further treatment;
- It is certain that the material will be used;
- Excess material will not be taken to a Receiver site; and
- In using those materials pollution of the environment and harm to human health must be prevented.

3.12 Materials management plan

3.43 A Materials Management Plan (see Section 3.2 of the CoP) has to be developed which fully characterises the materials on site and identifies what is proposed for certain materials. The Materials Management Plan includes a Tracking System that clearly shows the flow of wastes, including designated storage areas and the location for reuse of treated materials.

3.44 The following issues must be addressed in a Tracking System, such that:

- Contaminated material that is not suited for the treatment technology at the Hub site is not taken there

- Materials already at the Hub site are not cross contaminated by new contaminants
- Only the correct type and quantity of materials are dispatched from the Hub site and are actually taken to the specified Receiver site
- Contingency arrangements are in place e.g. out of specification materials, return loads, programme slippage etc

3.45 The Tracking System relates to the Donor, Hub and Receiver sites and provides a robust, transparent and auditable system. It is aimed at giving the EA additional confidence that pollution or harm will not be caused (by material potentially being sent to the wrong site), that the material will not be abandoned and only the correct quantity will be dispatched and received.

3.46 Where different waste streams are homogenised or placed together for treatment e.g. in a windrow, the contaminants of concern of each Donor site have to be assessed and the treated material determined suitable for the particular end use at the Receiver site.

3.13 Qualified Person

3.47 The CoP introduced the concept of a Qualified Person with specified attributes and experience[22].

3.48 The Qualified Person signs a Declaration setting out that certain requirements of the CoP have been met. In the case of a Hub-cum-Receiver site the materials must be transferred as waste in full accordance with Duty of Care provisions. In the case of a Hub-cum-Donor site the Declaration must be submitted prior to dispatch to the site where the materials are to be used.

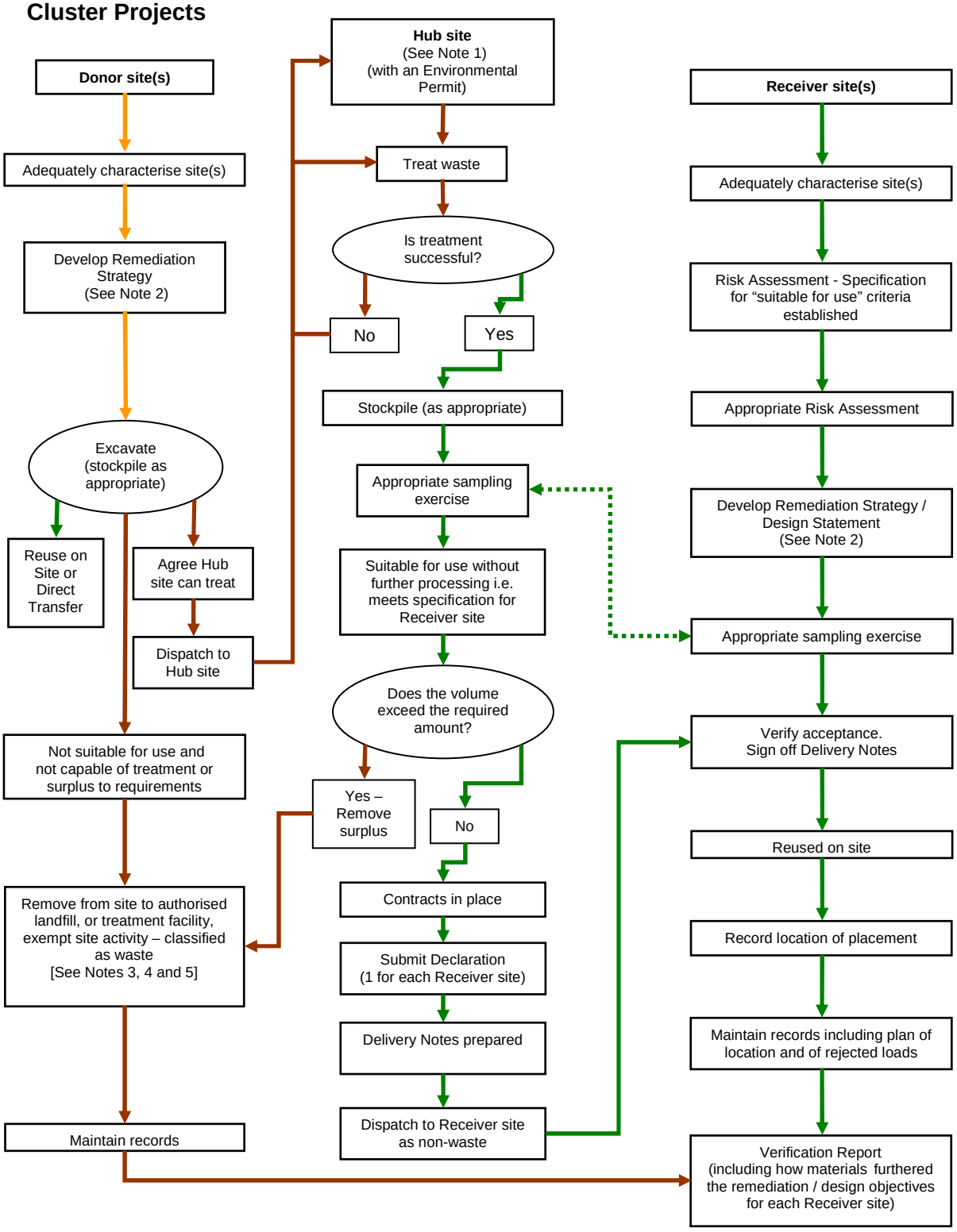
3.49 The Qualified Person also advises the Hub site operator that upon completion of the development at the Receiver site(s) a Verification Report must be completed that clearly sets out how the use of the materials has achieved the objective(s) associated with those materials, or has furthered that objective and that the materials have been used in the correct location.

3.50 The point that the successfully treated materials are considered to no longer be waste is when the materials are on the back of the delivery vehicle and delivery tickets are in the cab i.e. immediately prior to dispatch to the Receiver site. Stockpiles of successfully treated materials are still considered to be waste whilst at the Hub site and continue to be regulated as such under the Environmental Permit (and Deployment Form, as appropriate), or exemption, for that site.

[22] Appendix 6 of the CoP

Flow Diagram 2 – Waste to non-waste status

Cluster Projects



1 Materials Management Plan needs to cover all component sites. It is likely to be produced and co-ordinated by the Hub site operator.
2 Remediation Strategy / Design Statement developed following Desk Top Study, Conceptual Site Model, appropriate Risk Assessment and appraisal of options.
3 Must be able to demonstrate certainty of use along green lines. If the use becomes uncertain material remains waste and will be required to be removed from site or used under an appropriate environmental permit or exemption on Receiver site.
4 For removal from site you will need to consider and comply with Waste Acceptance Criteria, pre-treatment requirements for landfill disposal and acceptance criteria of any other authorised waste facility.
5 In removing waste that is classified as hazardous waste, the premises of production will need to be registered with the EA.

4 Contractual Issues

4.0 This section identifies the various contractual arrangements between different parties associated with each of the component sites within a Cluster. Appendix B provides a summary of potential contractual considerations and Appendix C illustrates different perceived risk scenarios. Appendix D describes certain insurance arrangements that are currently available in the market place that may be appropriate in establishing and operating a Cluster project.

4.1 The contractual arrangements for any defined Cluster may vary. This is dependent upon: the various parties that may join together; their previous experiences; the actual and perceived degrees of risk associated with the activities and the actual Cluster arrangements that are decided upon. Therefore, this section should not be considered to be exhaustive in attempting to explain contractual arrangements.

4.1 Key contractual relationships

4.2 The key generic contract relationships associated with operating any of the various models of a Cluster are those involving the:

* Hub site landowner
* Hub site operator
* Contractor(s) at both the Donor and Receiver sites
* Consultant at the Hub site
* Consultant at the Receiver site
* Landowners of Donor and Receiver sites

Figure 5 illustrates the key generic relationships (see also Appendix B).

4.2 Hub site landowner and operator

4.3 The main contractual relationship the Hub site landowner will have is with the Hub site operator. It is considered that this may take one of two forms. Either:

- A contract to develop the site (including remediation, if appropriate) or
- A short-term lease

4.3 Contract to develop the Hub site

4.4 The most likely contract model will be a treatment contract between the landowner and a treatment contractor acting as Hub site operator, as well as a design appointment between the landowner and a consultant. It is possible that there could be other models e.g. contractor or consultant led design and construct contracts, but the following focuses on the route involving a separate contractor and consultant.

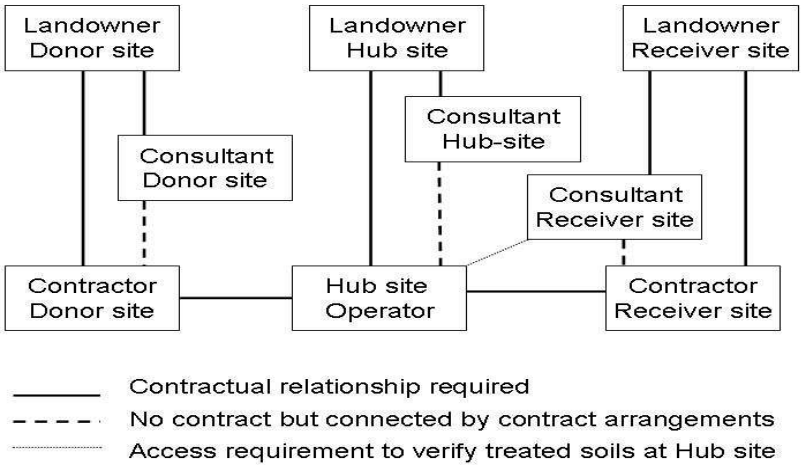


Figure 5: Illustration of the main contractual arrangements in operating a Cluster project.

4.5 The consultant's duties are likely to include preparation of the specification detailing the site specific requirements (including remediation, if appropriate) of the Hub site itself but also including the preparation of the Materials Management Plan.

4.6 Where additional Donor and / or Receiver site(s) are added following the establishment of a Hub site the contract with the Hub site contractor will need to be varied, normally by an instruction from the consultant to include the contractor's obligations in relation to the new site(s). This will allow a specified volume, or weight, of wastes to be treated in accordance with the Environmental Permit conditions and the Materials Management Plan.

4.7 The consultant will normally protect the Hub site landowner's interests given their duties are likely to include verifying that the site is suitable for use at the end of the development / remediation process (any remediation works themselves would be governed by the terms of the treatment contract).

4.8 Sometimes a lease arrangement may be more appropriate:

a) Where the Cluster will operate for a longer period of time than planned remediation or earthwork activities associated with the Hub site itself, or

b) Where a piece of uncontaminated third party land is used to house the Hub

4.9 A third party landowner will need to protect against any perceived risks as they see fit. In addition to normal lease terms, options may include:

* Seeking specialised insurances (see Appendix D)
* A bond to cover the removal of surplus material, and / or
* Tonnage or volume caps

A third party (such as a consultant) may be employed to oversee the leaseholder on behalf of the landowner.

4.4 Joint ventures – Hub site landowner and operator

4.10 A landowner and contractor may form a joint venture to share the risks and the rewards of a Cluster. In such cases it is suggested the landowner and Hub site operator roles are specifically assigned so the contract relationships with other parties at other sites within the Cluster may follow a model consistent with this guide.

4.5 Hub site operator and contractor at Donor and / or Receiver site

4.11 The removal and supply of materials between sites should be under a contract between the Hub site operator and the contractor at the Donor and / or Receiver site, in the same way a contractor may have a contractual relationship with a landfill site operator for waste disposal or a quarry for the supply of material.

4.12 However, in practice the need for entering into a formal contract may depend on whether the sites in question are owned by (a) one landowner or (b) different landowners.

(a) One landowner of all component sites

4.13 Where the landowner of the component sites is the same the contractual relationship between the Hub site operator and other contractor(s) may not need to be formally documented in terms of operating a specific Cluster contract since this can be managed more flexibly by the landowner amending existing contracts. That is not to say that the Tracking System within a Materials Management Plan can be any less robust.

(b) Different landowners of the component sites

4.14 Where the landowner of the Hub site and Donor and / or Receiver site is not the same party then a more specific Cluster contract is needed in respect of materials movement between the sites.

4.15 For a Hub site to be economically viable the price charged will need to cover such things as provision of infrastructure, treatment, stockpiling, transportation and contingency arrangements, which will need to be written in to contracts[23].

4.16 The Hub site operator will have to have an outlet for the treated materials if contingency arrangements are instigated e.g. transport and disposal to a landfill site (including landfill tax). For example, if a Hub site operator agrees to import contaminated soils for treatment for a price that is less than direct disposal at a landfill they are likely to attract a Donor site. However, if the Receiver site operator subsequently decides not to take treated soil, opting for quarried import instead, then the Hub site operator is at risk of making a loss which should be reflected in the contract.

4.17 Table 6 summarises the various scenarios that may be costed to ensure the Hub site operation remains economically viable (the table may not be exhaustive).

[23] Two separate contracts in relation to (i) waste transfer to the Hub site and (ii) treated materials to a Receiver site may not be the most appropriate. A contract covering waste transport, treatment and reuse at the Receiver site may be more desirable (with contingency arrangements specified).

Table 6: Hub site operator contract and cost considerations.

Hub site Operator contracts should include	Acquisition / lease of the land Provision of infrastructure (or repair of existing) Provision of treatment plant Operational costs
Contract with Donor site may cover…	Receive specified quantity of waste within specified timeframe
	Receive specified quantity of waste within specified timeframe. Treat to specification.
	Receive specified quantity of waste within specified timeframe. Treat to specification. Return to Donor–cum-Receiver site
	Receive specified quantity of waste within specified timeframe. Treat to specification. Supply to another Receiver site within specified timeframe
	Receive specified quantity of hazardous waste within specified timeframe. Treat to non-hazardous waste specification. Dispose of at non-hazardous waste landfill
Contract with Receiver site may cover….	Supply specified quantity to specification within specified timeframe
Contingency arrangements with Donor site should include…	Waste not acceptable (quality, quantity and / or time issues) – Not sent to Hub site. Sent to other authorised facility
	Waste not acceptable (quality, quantity and / or time issues) – return to Donor site from Hub site
	Waste not acceptable at Hub site forwarded to alternative authorised facility
Contingency arrangements with Receiver site may cover…	Materials not accepted at Receiver site (quality, quantity and / or timing issues) – return to Hub site
	Materials not accepted at Receiver site (quality, quantity and / or timing issues) – forwarded to alternative authorised facility

4.18 Should the Hub site operator not meet their contractual terms e.g. wastes not treated to specification, not treated in an agreed timescale, then they are likely to be under an obligation to deal with the “semi-treated” materials since the Receiver site may seek alternative import material. Equally, if the Receiver site breaks their contractual terms and does not take the treated materials then contract clauses may allow the Hub site operator the right to claim any increased costs associated with dealing with those treated soils e.g. transport and disposal at a landfill, used at an alternative Receiver site that is further away etc.

4.19 Therefore, the financial viability of Cluster involving different landowners may either involve back-to-back contracts or require a new type of contract to be in place between the Hub site operator and contractor at the Donor / Receiver site.

4.6 Consultant at Donor site

4.20 The role of the consultant at the Donor site is effectively the same as in a standard earthworks / remediation project, including the identification and characterisation of waste suitable for the relevant treatment process at the Hub site. The only significant additional

responsibility will be to work to the Materials Management Plan as it relates to that site and transportation to the Hub site.

4.7 Consultant at Receiver site

4.21 The consultant at a Receiver site will invariably be working to a brief that requires the final site conditions to be suitable for the intended use. This requirement gives the consultant contractual responsibility on behalf of the landowner to ensure that the development works (including remediation, if appropriate) and associated importation of materials e.g. treated soils from the Hub site, are robustly verified.

4.22 Therefore the consultant at a Receiver site will be required to work to a Materials Management Plan that includes confirmation that materials meet the end use specification (at the Hub site), transportation from the Hub site and placement at the Receiver site, in the same way they would verify virgin materials, such as primary aggregates, from a quarry under a standard import contract. It is likely that the consultant will have the job of preparing a Verification Report[24].

4.23 The consultant is unlikely to have a direct contractual relationship with the Hub site operator however there will be a requirement to access the Hub site to undertake sampling.

4.8 Transportation contracts

4.24 The contractor at the Donor site is a waste producer and hence needs to employ a person who is a registered waste carrier to transport waste to the Hub site. Successfully treated materials from the Hub site are transported as non-waste materials under a delivery ticket and therefore do not require a registered waste carrier.

4.25 This may be best managed contractually by a) placing the responsibility for the movement of wastes from the Donor site with the Donor site contractor and b) placing responsibility for the movement of materials from the Hub site to Receiver site with either the Hub site operator or the Receiver site contractor.

4.26 It may be preferable to undertake such movements using a sub-contract with a haulier rather than employing the services of a third party haulier since it keeps overall contractual responsibility for the materials with either the contractor at the Donor and / or Receiver site or the Hub site operator.

4.9 EA requirements

4.27 The EA requires that evidence is provided in relation to the suitable for use criteria, certainty of use and that only the required amount of materials are used on a site. To this end written assurances should be provided, as part of the Materials Management Plan or alternative summary form, that the landowner / client has entered into contractual relationships. These must set out roles and responsibilities and contingency arrangements with the contractors and / or consultants who have responsibility for waste and treated materials.

[24] Although the Qualified Person may also fulfil this role (but acting outside the CoP in this regard)

5 Operational Issues

5.0 This section highlights certain key considerations in operating as a Donor–cum-Receiver site and that of operating as the Hub site. It is not intended to be an exhaustive explanation of how such sites operate.

5.1 Table 7 outlines considerations for a Donor–cum-Receiver site i.e. where a Donor site donates waste for treatment but also receives materials from the Hub site. The site could either receive its own treated material back, or a proportion of it. It could also receive materials treated at the Hub or other materials verified as non-waste by the Hub site operator in accordance with the CoP.

Table 7: Donor-cum-Receiver site operational considerations.

Operation	• End-use criteria / criterion established. • Contaminants of Concern identified. • Confirmation that Hub site is authorised to treat waste types and Contaminants of Concern. • Confirmation that Hub site can treat to end-use criteria / criterion.
Materials	• Quantity of wastes to be removed from site identified e.g. to Hub site or alternative authorised facility (total amount and amount per day). • Quantity of materials to be returned from the Hub site (total amount and amount per day). • Quantity and quality of other materials to be received from the Hub site (total amount and amount per day). • Quantity and quality of other materials to be received from other sites[25] (total amount and amount per day).
Site Specifics	• Slope stability of excavated void. • Water management of excavated void. • Equipment - excavators, lorries, water, bowser, fuel storage, wheel wash, pumps etc… • Site security. • Staffing i.e. appropriately qualified, trained and experienced as appropriate to their role and responsibility. • Services e.g. water, electricity. • Discharge consent, either to surface water or foul sewer (as appropriate or if applicable).
Planning	• Planning Permission restrictions e.g. operational hours, number of vehicles per day. • Vehicle access to the site. • Stockpiles management e.g. surface water runoff, dusts, odours (if applicable), sufficient area and segregation e.g. wastes to be removed, materials awaiting placement.

5.3 Table 8 addresses key operational issues associated with a Hub site.

[25] If the Receiver site operator decides to import wastes then the site, or relevant parts of it, may need to be covered by an Environmental Permit or waste exemption for those wastes

Table 8: Hub site operational considerations.

Operation	• End-use criteria / criterion established for Hub site (if applicable[26]). • Authorised to treat waste types and Contaminants of Concern from Donor sites. • Ability to treat to end-use criteria / criterion of Receiver sites. • Quantity of waste to be accepted at the site (total amount and amount per day). • Quantity and quality of materials to be dispatched to Receiver sites (total amount and amount per day). • Quantity and quality of other materials to be received at the Hub site to be verified as non-waste[27] (total amount and amount per day). • Quantity and quality of other materials to be received from other sites for Hub site development (if applicable)[28] (total amount and amount per day). • Equipment e.g. remediation technology specific, excavators, lorries, water bowser, fuel storage, wheel wash etc…
Materials	• Size of site to house treatment plant and sufficient area for vehicle movement and stockpiling. • Low permeability surface to contain contaminated runoff and strong enough for plant and fully loaded vehicles which transverse it.
Site Specifics	• Site security. • Staffing i.e. appropriately qualified, trained and experienced as appropriate to their role and responsibility. • Services e.g. water, electricity. • Discharge consent, either to surface water or foul sewer (as appropriate).
Planning	• Location relative to other component sites. • Planning Permission restrictions e.g. operational hours, number of vehicles per day. • Vehicle access to the site. • Stockpiles management e.g. surface water runoff, dusts, odours (if applicable to excavated wastes), sufficient area and segregation e.g. wastes to be removed, materials awaiting placement.

[26] The Hub site may not require any form of remediation. Its function may simply be to facilitate the Cluster project operations

[27] In accordance with the CoP

[28] Subject to Environmental Permit and Planning conditions

6 Cluster Closure

6.0 This section describes how a Cluster project may be closed down. There is no right order in which issues should be addressed and the activities mentioned in this section may not be applicable to all Cluster projects, or all component sites within the Cluster. This will depend on how the Cluster project was originally made up and how it may have subsequently evolved with the addition of new sites.

6.1 Sites acting purely as a Donor site may exit the Cluster upon the Hub site receiving wastes for treatment. Other Donor sites may have a deficit of materials and become a Receiver site, receiving materials from the Hub. Some Receiver sites may source their entire material deficit from the Hub site and hence will exit the Cluster following the placement of materials and production of a Verification Report. Other Receiver sites may still have a deficit of materials after the Hub site has completed treatment of all wastes it has received. These sites will continue to operate after the Hub site has ceased treatment activities, receiving materials from alternative sources[29].

6.2 Upon completion of the movement of materials within a Cluster project the following issues may need to be considered:

- Relevant planning conditions have been discharged e.g. contamination dealt with, surplus treated soils removed, final levels achieved
- Lease conditions complied with
- Bond returned, if appropriate
- Hub site Environmental Permit surrendered (provided wastes have been removed, plant decommissioned and any pollution issues adequately dealt with as they arose; this should not be too onerous). Where a standard Mobile Plant Permit, with an associated Deployment Form, has been used there is no need to formally surrender that permit but there is a requirement to inform the EA of demobilisation
- Verification reports completed

Cluster is concerned with the effective movement of materials between sites. It may be that component sites will still require further work to complete the development e.g. planting, additional material requirement, after Cluster specific activities have ceased.

[29] If the Receiver site operator decides to import wastes then the site, or relevant parts of it, may need to be covered by an Environmental Permit or waste exemption for those wastes or further CoP Declaration related to another donor site

Appendix A: Remediation Technologies

A1.0 The Cluster concept requires that materials are moved between sites. Therefore by its nature a Cluster site can only utilise *ex situ* remediation techniques. This section describes the relative advantages and disadvantages associated with certain *ex situ* remediation technologies.

A1.1 Established *ex situ* remediation techniques that can be operated on a Cluster site include:

- Bioremediation
- Stabilisation / Solidification
- Soil Washing
- Thermal Desorption and
- Associated pre-treatment activities - sorting, screening, blending[30].

This is not an exhaustive list of *ex situ* techniques that could be utilised. Early remediation contractor involvement may be advantageous. Laboratory trials are recommended and field trials may be appropriate.

A1.2 In choosing a treatment technology, or combination of technologies in a treatment train, consideration should be given to the end-use scenarios within the various areas of the Receiving sites. Therefore, at the point of conceptualising a Cluster project the following needs to be considered to determine the most appropriate technology or combination of technologies:

- The nature and quantity of contamination (recognising that it may not be feasible or necessary to treat all of the contamination that may arise at every component site)[31]
- The mixture of intended end-uses across the sites and hence various suitable for use criteria
- Timing and phasing issues

A1.3 The operating parameters and applicability of these technologies for differing contaminants and soil types is well documented and therefore is not considered in any detail here.

A1.4 However there are a number of factors that specifically relate to how effectively these technologies can be employed on a Hub site. Table 9 summarises some of the advantages and disadvantages of these different techniques in relation to a Cluster project.

Relative treatment timescales

A1.5 Where time is a constraint the most effective standard[32] Cluster treatment technologies are considered to be soil washing and thermal desorption. This is because they are continuous processes that can release material within minutes of being loaded into the treatment hopper. Following verification, treated soils could be released for dispatch within days[33]. These technologies may present the least contractual risks to the Hub site operator since they are associated with a greater degree of process certainty and rapid turnaround time.

A1.6 Bioremediation and stabilisation / solidification based Cluster projects typically have treatment periods that can take several weeks (although technological advances are reducing this time). Consideration has to be given to how the Donor and / or Receiver site is managed in this

[30] Note – it is an offence to blend / mix hazardous waste and non-hazardous waste to meet the Waste Acceptance Criteria for landfill disposal. Within the proposed operations outlined here the intention is to aid better treatment at the treatment facility – which will normally be permissible under an Environmental Permit

[31] Hence some contaminated wastes may require disposal or treatment at another site, or potentially linked to another defined Cluster.

[32] Standard in that the EA have a Remediation Position Statement for the technology

[33] Given time needed for sampling, analysis and reporting.

interim period, for example, holding an excavation open for a prolonged period of time while soils are in treatment.

A1.7 However, if an exchange of materials is allowed to take place in real time whereby a Donor site provides material for treatment and the same vehicle returns with treated material that originates from another site, then bioremediation and stabilisation / solidification may become a more viable Cluster technology. Such an exchange of material is less complex when dealing with a common contaminant profile. In principle, stabilisation / solidification can be used as part of a materials exchange approach although this presents an added complexity since following stabilisation / solidification treatment, the materials need to be given an opportunity to react and set. Therefore, the logistics of timing, transportation and reinstatement needs additional consideration.

Table 9: Relative comparison of *ex situ* remediation technologies.

Technology	Relative advantages	Relative disadvantages
Bioremediation	* Availability of a number of technology specialists. * Widely available plant / equipment. * Relatively low capital and operating costs.	* Larger space requirement. * Relatively longer project programme – treatment times measured in weeks. * Residential end-use criteria for certain contaminants may be difficult to achieve. * Perceived greater contractual risks for Hub site operator given longer programme relative to Receiver site programmes. * Not effective at treating inorganic contaminants.
Soil Washing	* Relatively small space required for plant set-up. * Quick rate of treatment and delivery of treated soils. * Normally able to deliver residential end-use criteria (depending upon soils). * Less contractual risks for Hub site operator given relative quicker turnaround time. * Capable of treating a wider range of contaminants and can be part of a treatment train.	* Restricted number of technology specialists and plant / equipment. * Higher mobilisation costs. * Ineffective on some silts / clays. * Requirement to send residue fines to landfill / alternative treatment.
Thermal Desorption	* Relatively small space required for plant set-up. * Quicker rate of treatment and delivery of treated soils. * Able to deliver residential end-use criteria for organic contamination. * Less contractual risks for Hub site operator given relative quicker turnaround time.	* Restricted number of technology specialists and plant / equipment. * Higher mobilisation costs. * Higher energy costs. * Not effective at treating inorganic contaminants. * Possible climate change levy.
Stabilisation / Solidification	* Availability of a number of technology specialists. * Widely available plant / equipment. * Permeability and strength of treated product can be designed. * Potential to tailor system for specific contaminants.	* Relatively longer programme - treatment times measured in weeks. * Residential end-use criteria for certain contaminants difficult to achieve. * Perceived greater contractual risks for Hub site operator given longer programme relative to Receiver site programmes. * Often associated with long term monitoring requirements. * Some perceived difficulty in effective treatment of inorganic contaminants.
Pre-treatment – Sorting / Screening / Blending	* Widely available plant / equipment. * Cost effective treatment method.	* Not a treatment technology in its own right and will generate a fraction requiring further treatment and / or disposal. * Can be slow.

Appendix B: Summary of potential contractual needs in a Cluster

Party 1	Party 2	Contract needs
Hub site landowner	Donor / Receiver site landowner	No contractual relationship, unless different landowners join together and instruct their consultants / contractors to operate within specific Cluster project
Hub site landowner	Hub site operator	Either Treatment Contract or Short-term lease
Hub site landowner	Hub site consultant	Standard appointment
Hub site landowner	Donor and / or Receiver consultant	No contractual relationship
Hub site landowner	Donor and / or Receiver contractor	No contractual relationship
Hub site consultant (working for landowner)	Hub site operator	Standard consultant role (although note there is no contract between these two parties – similar situation as with other remediation projects). May write Materials Management Plan and associated Tracking System into the specification to the contractor (assumed to be Hub site operator), or issue as a mid-contract instruction. Issue mid-contract instruction(s) authorising treatment of off-site materials at the Hub site.
Hub site consultant	Donor and / or Receiver consultant	No contractual relationship. Good communications encouraged
Hub site consultant	Donor and / or Receiver contractor	No contractual relationship.
Hub site consultant	Donor and / or Receiver landowner	No contractual relationship.
Hub site operator	Donor and / or Receiver contractor	If different landowners / clients: Accept, treat and return contract (new form of contract specific to Cluster) If same landowner / client, may not be necessary
Hub site operator	Donor and / or Receiver consultant	No contractual relationship but will need to provide access to Hub site and treated materials for verification.
Hub site operator	Donor and / or Receiver landowner	No contractual relationship.
Donor and / or Receiver landowner	Donor and / or Receiver consultant	Standard consultant appointment
Donor and / or Receiver landowner	Donor and / or Receiver contractor	Standard form of contract for treatment activities
Donor and / or Receiver consultant	Donor and / or Receiver contractor	Standard consultant role May write Materials Management Plan and associated Tracking System into the specification to the contractor or issue as a mid-contract instruction.

NB The Qualified Person may be employed by any party involved with the project e.g. the landowner, developer, main contractor, or consultant working on the site of dispatch or site of receipt.

Appendix C: Risk Management

C1.0 It is intended that risks inherent in the Cluster model are managed contractually. The following illustrates some different perceived risk scenarios and how they can be managed (this is not exhaustive):

(i) Responsibility for materials at all stages

Donor site is a waste producer. The landowner of the Donor site has contracts with the Donor site contractor and Donor site consultant under which these parties are responsible for site development (including remediation, as appropriate). Materials in transport will be governed by the arrangements with the sub-contracted haulier. Waste management and treatment activities at the Hub site will be undertaken by the Hub site operator under Form of Contract or lease with the Hub site landowner. Treated materials will be verified at the Hub site (for acceptance at the Receiver site) by the consultant for the Receiver site under contractual appointment to the Receiver site landowner and in compliance with the CoP. Treated materials will be transported to the Receiver site by sub-contracted haulage company.

(ii) Incoming loads to Hub site do not meet acceptance criteria

Acceptance criteria will be stated in the contract between the Hub site operator and contractor at the Donor site (and will normally be referenced in the Environmental Permit conditions for the Hub site). Non-compliant loads would be in breach of contract and the contractor would be penalised in accordance with the contract arrangements. The non-compliant loads will need to be dealt with in accordance with the Environmental Permit and may be returned to the Donor site in agreement with the EA or taken to an alternative authorised facility.

(iii) Hub site operator defaults leaving waste on Hub site

The landowner can use a form of contract to recover costs or through the terms of lease e.g. cash bond, if provided for under the terms of lease. Additionally, the EA or Local Authority may consider enforcement action.

(iv) Hub site operator in breach of Environmental Permit or planning consent such that it impacts on the treatment operation

The permit controls the emissions from the process and the consequence of a breach may be to cease operations temporarily or permanently which would have an affect on timescales.

Batches that do not meet the specification for the Receiver site within the specified timescale will normally have to be dealt with contractually at the Hub site operator's own cost and with no costs recharged to the contractor at the Receiver site.

(v) Treated materials delivered to wrong Receiver site

The material can either be directed to the correct Receiver site or returned to the Hub site. This is a contractual matter between the haulage company and their client (either the Hub site operator or the contractor at the Receiver site).

Alternatively it may be the fault of the Hub site operator dispatching the wrong material or the right material but at the wrong time. In either instance the material would be classified as waste and therefore have the potential to pollute which could result in prosecution under the Waste Framework Directive.

(vi) Treated materials do not meet specification for the Receiver site

Batches that do not meet specification in a certain timescale will be dealt with at the Hub site operator's own cost and with no costs recharged to contractor at the Receiver site, subject to supporting terms and conditions being in place. These materials will then either be used elsewhere within the defined Cluster of sites, given an identifiable need or sent to an authorised facility.

(vii) Post-completion verification issues associated with used materials

Person responsible may be subject to legal action in breach of their warranty or appointment. e.g. consultant responsible for verification, contractor deliberately using wrong materials, Hub site operator providing false or misleading information etc. Additionally EA or Local Authority may take appropriate enforcement action.

Appendix D: Insurance

D1.0 Whilst the contractual arrangements may be able to ensure most, if not all, risks are covered, potential participants within a Cluster may wish to take out specialist insurance cover. Specialist advice should be sought relating to this matter. The following describes how such policies may work and could be suitable for Cluster projects:

Environmental Impairment Liability Insurance

D1.1 Environmental Impairment Liability cover is frequently used as a means of protecting the parties in a transaction involving historic pollution liabilities. Often mainstream insurance policies such as Property and Public Liability do not fully address sudden and unforeseen pollution damage. Unlike Environmental Impairment Liability, they totally exclude cover for historic and "own site" pollution.

D1.2 It may be that owners of small sites may not be large enough to self-insure against pollution risks that may arise e.g. unforeseen contaminants, use of out of specification treated soils.

D1.3 To work effectively, any Environmental Impairment Liability programme for a Cluster project needs to be specific to the project in question and to include all stakeholders, including Donor / Receiver site owners. In addition to Environmental Impairment Liability, parties may need to consider incorporating Contractors Pollution Liability coverage to address new liabilities that may be introduced to the site e.g. as a result of the escape of fuel oils used for contracting plant or the creation of new pathways.

D1.4 The Contractors Pollution Liability element ideally needs to include all contractors at the Hub and the Donor / Receiver sites in order to avoid the risk of costly debates over blame in the event of a leak or spillage leading to a pollution incident or potential harm.

D1.5 It is anticipated that the overall insurance programme would be owned and controlled by the Hub site operator and that it would include cover for the Hub site itself, given that it may be affected by contamination and the fact that it will receive contaminated material from Donor sites. It would have to have the ability to extend if new Donor / Receiver come along.

An Owner Controlled Insurance Programme for all

D1.6 It may be more efficient for the owner or principal contractor to obtain the required cover on a project specific basis in the names of themselves, main contractors, sub-contractors and even professional advisors. This method offers the following benefits:

- Control of the policy – Hub site operators may not be able to dictate the cover their contractors have in place. Issues of cover duplication or gaps and the time taken to check contractor's own cover are avoided by a comprehensive programme for the project as a whole. A contractor's or sub-contractor's own policy may contain restrictive conditions or its limit may have been exhausted by previous claims.
- The most favourable premium terms can be obtained (costs will be lower due to bulk buying and only one policy being issued. In addition, cover overlaps are avoided)
- Selection of Sums Insured and Limits - These can be selected, reviewed and monitored periodically, thus avoiding their erosion or elimination by issues such as inflation over the contract period or the operation of aggregate limits of indemnity
- Determination of the level of self insurance – The owner or principal contractor decides whether or not self insuring all or part of the risk is consistent with their general insurance philosophy. Excesses can be fixed at a level which controls the premium cost and imposes an acceptable level of discipline on the contractors

- Third Party Claims are processed only once - Delays or disputes between individual contractors' and sub contractors' insurance companies are avoided
- Ultimate Insurer Involvement - If one insurer is involved throughout the life of the project they can be sure that the risk meets their requirements

D1.7 Some potential benefits associated with specialist insurance cover are described below:
For the Hub-site owner and operator:

- Long-term protection against liabilities arising from the previous site use
- Cover for new contamination arising from the import of material from Donor sites via the Hub site
- Financial protection from claims arising from Donor, Receiver and neighbouring sites
- A facilitator for onward sale of the site to a developer at the end of its life as a Hub

For Donor and Receiver sites:

- A reason to buy safely into the Cluster concept
- A source of comfort to their funders and potentially to planners
- An option to purchase their own long-term cover at reduced premiums based on insurer familiarity with their sites