

Waste Protocols Project

Contaminated soils

A technical report for producing and using engineering materials derived from the treatment of land affected by contamination

Executive summary

Background

The Waste Protocols Project is a joint Environment Agency and WRAP (Waste & Resources Action Programme) initiative, funded by the Department for Environment, Food and Rural Affairs (Defra) Business Resource Efficiency and Waste (BREW) Programme.

The BREW Waste Protocols Project aims to provide guidance to business, on a number of waste streams, that will:

- define the point of full recovery back into a product or material that can either be reused by the business or industry, or sold into other markets; or
- confirm to the business community what legal obligations remain to control the reuse of treated waste material.

Engineering materials arising from the remedial treatment of land affected by contamination was chosen as one of the waste streams to be addressed by the Waste Protocols Project. A Technical Advisory Group (TAG) was set up to bring together representatives from the Environment Agency, WRAP and industry.

Methodology

The TAG set out to:

- identify markets for the engineering materials derived from the remedial treatment of land affected by contamination;
- identify the current legislative framework;
- establish if standards or specifications exist for each market and all end uses;
- produce a list of definitions so that consistent terminology can be used across markets;
- identify and quantify the relative risk to human health and the environment from using engineering materials derived from remedial treatment of land affected by contamination;
- identify and agree what conditions would need to be met to demonstrate when a product or material from the various treatment technologies is no longer classified as 'waste'; and
- identify and agree what measures would have to be taken to demonstrate that engineering materials derived from remedial treatment of land affected by contamination may be regarded as 'fully recovered'.

Findings

The TAG found that there are four potential markets:

- clay-type materials;
- general fill;
- coarse and fine aggregate; and
- other grade aggregate.

The TAG discussed in detail whether it was possible to develop a Quality Protocol for materials derived from the remediation of land affected by contamination.

The TAG concluded that any generic standard would need to be very tight to make sure that all potential receptors at any site are adequately protected. In most cases this would be impractical and not cost-effective.

The TAG, therefore, agreed that it would be more beneficial to assess the risks from engineering materials on a site-specific basis in accordance with the end user's requirements.

Recommendations

The TAG recommended that rather than developing a Quality Protocol, additional resource should be invested in supplementing guidance for operators involved in developing greenfield and brownfield sites.

As a result, The Waste Protocols Project has supported work that the Environment Agency is carrying out with CL:AIRE (Contaminated Land: Applications in Real Environments) to:

- develop a Code of Practice that sets out the type of evidence that developers need to gather to demonstrate that material has not been discarded or has ceased to be waste following treatment.

The TAG supports this further work by the Environment Agency and CL:AIRE, which is detailed in Appendix D.

The work will result in an updated version of *The Definition of Waste: Developing Greenfield and Brownfield Sites* which is expected later in 2008.

1. Introduction

- 1.1 The Waste Protocols Project is a joint Environment Agency and WRAP (Waste & Resources Action Programme) initiative, funded by the Department for Environment, Food and Rural Affairs (Defra) Business Resource Efficiency and Waste (BREW) Programme.
- 1.2 Uncertainty over the point at which waste has been fully recovered and ceases to be waste within the meaning of Article 1(1)(a) of the EU Waste Framework Directive (WFD) (2006/12/EC) has inhibited the development and marketing of materials produced from waste which could be used beneficially without damaging human health and the environment. In some cases, this uncertainty has also inhibited the recovery and recycling of waste and its diversion from landfill.
- 1.3 Interpretation of EU legislation is ultimately a matter for the European Court of Justice and there is now a substantial body of case law on the interpretation of the definition of waste in Article 1(1)(a) of the WFD. Drawing on the principles established in this case law, it is possible to identify the point at which certain wastes cease to be waste and thus when the WFD's waste management controls no longer apply. This identification is the purpose of the Waste Protocols Project.
- 1.4 More specifically, depending on the circumstances of the waste stream concerned, the project seeks to achieve the following outcomes:
 - to produce a Quality Protocol identifying the point at which waste, having been the subject of a complete recovery operation, may become a non-waste product or material that can be either reused by business or industry, or supplied into other markets, enabling such fully recovered products to be used without the need for waste management controls; and
 - to produce a statement that confirms to the business community what legal obligations they must comply with to use the treated waste material.
- 1.5 Definitions for terms that appear in italics when they are first used in the technical report are provided in Appendix E.
- 1.6 A Technical Advisory Group (TAG) was set up to bring together representatives from the Environment Agency, WRAP, industry and others. Appendix A contains a list of TAG members and Appendix B gives its terms of reference.
- 1.7 The TAG agreed that the scope of a potential Quality Protocol must cover all engineering materials derived from the remedial treatment of land affected by contamination and not be restricted to materials solely produced from the treatment of contaminated land (as defined within Part IIA Environmental Protection Act 1990)¹.
- 1.8 A Quality Protocol aims to set generic criteria which, if met, will mean material can be used on any site.
- 1.9 The TAG focussed on material which was going to be used on a different site from where it was originally produced.
- 1.10 In order for engineering materials derived from land affected by contamination to no longer be seen as 'waste', it must be demonstrated that the material has been fully recovered and that there is no further need for waste management controls.

1 http://www.opsi.gov.uk/acts/acts1995/ukpga_19950025_en_6#pt2-l1g57

- 1.11 To investigate this, the TAG looked at a number of issues to find where the waste:
- has a market and can certainly be used;
 - meets a standard (an agreed specification) and needs no further processing before it can be used; and
 - is capable of being used without undermining the Waste Framework Directive's or Water Framework Directive's aims of protecting human health and the environment.
- 1.12 To answer the three points above, the TAG reviewed:
- the current waste legislative arrangements for dealing with the materials concerned;
 - the potential markets for recovered products arising from remediation (treatment);
 - whether there are standards or specifications for each market;
 - the risk to human health and the environment from using engineering materials derived from land affected by contamination; and
 - whether, for each market, it can be demonstrated that the material has been fully recovered.
- 1.13 The TAG concluded that a Quality Protocol could not be completed for materials derived from the remediation of land affected by contamination. This document summarises the discussions of the TAG and explains why the TAG came to this conclusion.

2. Current legislative position

- 2.1 The treatment of land affected by contamination is mainly regulated under the Environmental Protection Act 1990 and Environmental Permitting (England and Wales) Regulations 2007 (EPR), and requires a valid permit. Before these new regulations were put in place on 6 April 2008, treatment required a valid waste management licence (WML) or mobile treatment licence (MTL).
- 2.2 Mobile plant licences have existed since 1990, and have been able to move across the border and be recognised by either Scottish Environment Protection Agency (SEPA) or the Environment Agency. As EPR applies only to England and Wales in order to minimise the disruption to the operators of mobile plant, the Environment Agency will allow WMLs issued by SEPA to continue to operate in England and Wales until 1 April 2009.
- 2.3 In April 2006, the Environment Agency issued new waste regulatory guidance² on the 'definition of waste for materials arising from the development of greenfield and brownfield sites'.
- 2.4 The Environment Agency, CL:AIRE and industry are working to update the greenfield and brownfield guidance to develop a Code of Practice that sets out the type of evidence that developers need to gather to demonstrate that material has not been discarded or has ceased to be waste following treatment.
- 2.5 The guidance will require that the site where the material will be used is specified and will recognise controls that will still apply, for example a site specific risk assessment.
- 2.6 The TAG's work, therefore, focused on whether a Quality Protocol could be achieved for material produced from the treatment of land affected by contamination on any site.
- 2.7 Any output of the TAG was, therefore, meant to supplement the greenfield and brownfield guidance described above, not to replace or duplicate it.
- 2.8 The TAG only looked at the waste management controls, not regulations enforced by other bodies such as the planning authorities and Health & Safety Executive (HSE).

3. Potential markets for recovered products

- 3.1 A market analysis (see Appendix C) suggested that materials recovered during the treatment of land affected by contamination are currently:
- reused on site (or on other, predetermined, associated sites);
 - used at licensed landfill sites; or
 - disposed of at licensed landfill sites.
- 3.2 The TAG identified the four potential markets below. The appropriate market depends on the input material and the treatment used:
- clay-type materials for use in brick manufacture;
 - general fill for construction works;
 - coarse and fine aggregate for use:
 - in the manufacture of concrete or bituminous products;
 - unbound for use as drainage media or in road construction; and
 - other grade aggregates for use:
 - in pipe bedding or for drainage media.
- 3.3 These markets are currently very restricted. One major factor is that some consider demand is depressed by categorising the products as 'waste' and the regulatory cost this entails, as well as the stigma perceived to be attached to the 'waste' label.
- 3.4 The TAG considered that brick manufacturers might, in principle, be able to use clay and ash material derived from the treatment of land affected by contamination. However, as manufacturers generally require a frequent and regular supply of consistent quality and large quantity material, the TAG believed that there is little potential for significant increases in sales into this market.
- 3.5 The TAG agreed that there is a market available for general fill, coarse and fine aggregates and other grade aggregates. However, whilst this material is classified as waste, and does not meet a consistent specification or standard, it is likely to be mainly used to provide daily cover for landfill.
- 3.6 Whilst removing the 'waste' label may help open up new markets for engineering materials derived from remedial treatment, using recycled rather than virgin materials may be encouraged by:
- the increasing cost of disposal to landfill; and
 - the proximity of many remediation sites to urban development sites (transport costs for recycled materials are cheaper because quarry sites for virgin materials are often far from the market).
- 3.7 The proportion of the total volume of remediation products suitable for higher value applications such as concrete production might be modest, but the absolute amounts could still be sizeable.
- 3.8 Potential customers for such aggregate include:
- companies involved in concrete manufacture (ready-mix or precast products);
 - the bituminous products industry (including road builders); and
 - suppliers of loose bulk materials (for example builders merchants).
- 3.9 Even though there appear to be potential markets for these materials, this does not mean that they are appropriate to use on all sites because of site-specific considerations such as risks from exposure to sensitive receptors.

4. Why a Quality Protocol approach cannot be taken

- 4.1 To move to a point where material produced from the treatment land affected by contamination can cease to be waste there must be certainty that the material:
- has a market and can certainly be used;
 - meets a standard (an agreed specification) and needs no further processing before it can be used; and
 - is capable of being used without undermining the Waste Framework Directive's or Water Framework Directive's aims of protecting human health and the environment.

Each of these requirements are considered below.

4.2 Certainty of use

- 4.2.1 The TAG concluded that there are potential markets for materials derived from the treatment of land affected by contamination (see section 3). This meets the 'certainty of use' requirement.

4.3 Meets a suitable standard or specification

- 4.3.1 The TAG found that engineering specifications³, containing the physical properties needed for intended applications, exist for materials derived from the treatment of land affected by contamination. This satisfies the requirement to meet a suitable standard or specification.

4.4 Harm to human health and the environment

- 4.4.1 The existing engineering specifications do not consider the chemical properties of materials derived from the treatment of land affected by contamination and, therefore, cannot ensure human health and the environment will be adequately protected. This requirement is, therefore, not met by using these engineering specifications.
- 4.5 The lack of any specification for the chemical properties of the material meant that the TAG could not support a generic Quality Protocol. The TAG, therefore, had to assess the potential risk to human health and the environment of using the engineering materials.

- 4.6 The TAG reviewed the treatment process of remediation and its findings are described below.

4.7 Inputs

- 4.7.1 Input material from land affected by contamination can vary widely in chemical composition depending on the site from which it was removed because of previous activities at the site. Materials, therefore, need to be characterised correctly through an initial desk study and site investigation to fully consider previous land uses and the contaminants that are likely to be present.
- 4.7.2 The TAG felt it was likely that each input material may have a unique chemical composition.

4.8 Process

- 4.8.1 The TAG discussed a number of techniques that are used, or could be used, in the treatment of land affected by contamination, including:
- ex-situ bioremediation;
 - soil washing;
 - thermal desorption; and
 - solidification and stabilisation etc.
- 4.8.2 As well as practical reasons such as timescales and sustainability, the most appropriate treatment option depends on:
- the type and composition of input materials; and
 - the receiving site and potential pathways to receptors (such as human health, water and ecology).

4.9 Outputs

- 4.9.1 The type of outputs, which are the treated material from land affected by contamination and the potential markets that those materials may be used in, will depend on:
- the characterisation of the input materials;
 - the treatment technique used and verification that the method used is applied correctly;
 - the characterisation of the output materials; and
 - the characteristics of the receiving site.
- 4.9.2 In order to ensure that the output from any remediation technique is appropriate to use on any site, rather than a specific site, the output must go through an element of quality control such as characterisation to ensure that it meets acceptable threshold levels.
- 4.9.3 The TAG discussed existing standards that could potentially be adopted or adapted for use. However, it was agreed that there are no thresholds available that can adequately protect all potential receptors.

4.10 Conclusions

- 4.10.1 The TAG concluded that in order to ensure that all potential receptors at any receiving site are adequately protected, very tight standards would need to be met for a generic protocol.
- 4.10.2 In most cases this would be impractical and not cost-effective. Therefore, the TAG agreed that it would be more beneficial to assess risks arising from engineering materials on a site-specific basis in accordance with the end user's requirements.
- 4.10.3 The TAG, therefore, recommended that rather than developing a Quality Protocol, the Waste Protocols Project should invest in supplementing guidance for operators involved in developing greenfield and brownfield sites.
- 4.10.4 As a result, the TAG supports the further work that is being carried out by the Environment Agency and CL:AIRE detailed in Appendix D.

5. Findings

- 5.1 The TAG was concerned solely with materials intended for a use that is not specific to an individual site.
- 5.2 The TAG found that there are four key market areas:
- clay-type materials;
 - general fill;
 - coarse and fine aggregate; and
 - other grade aggregates.
- 5.3 The TAG discussed in detail whether it was possible to develop a Quality Protocol for materials produced from the treatment of land affected by contamination.
- 5.4 The TAG concluded that any generic standard would need to be very tight to ensure that all potential receptors at any receiving site are adequately protected. In most cases this would be impractical and not cost-effective.
- 5.5 The TAG, therefore, agreed that it would be more beneficial to assess risks arising from engineering materials on a site-specific basis in accordance with the end user's requirements.

6. Recommendations

- 6.1 The TAG recommended that rather than developing a Quality Protocol, the Waste Protocols Project should invest in supplementing guidance for operators involved in developing greenfield and brownfield sites.
- 6.2 As a result, The Waste Protocols Project has supported work that the Environment Agency is carrying out with CL:AIRE to develop a Code of Practice that sets out the type of evidence that developers need to gather to demonstrate that material has not been discarded or has ceased to be waste following treatment.
- 6.3 The TAG supports this further work by the Environment Agency and CL:AIRE, which is detailed further in Appendix D.
- 6.4 The work will result in an updated version of *The Definition of Waste: Developing Greenfield and Brownfield Sites* which is expected later in 2008.

7. References and bibliography

- Environment Agency, 2007 *Environment Agency Guidance on Low Risk Waste Activities*. October 2007. Version 28. Available from: http://www.environment-agency.gov.uk/commondata/acrobat/low_risk_waste_oct_07_1896068.pdf [Accessed 16 November 2007].
- Environment Agency, 2006. *The Definition of Waste: Developing Greenfield and Brownfield Sites*. Available from: http://www.environment-agency.gov.uk/commondata/acrobat/dowv10506_1386151.pdf [Accessed 16 November 2007].
- Environment Agency, 2006. *Remediation Position Statements*, Version 1. Available from: <http://publications.environment-agency.gov.uk/pdf/PMH00406BKOJ-e-e.pdf> [Accessed 16 November 2007].
- Department for Environment, Food and Rural Affairs (Defra) and Environment Agency, 2004 *Model Procedures for the Management of Land Contamination*. Contaminated Land Report 11 (CLR11). Available from: http://www.environment-agency.gov.uk/commondata/105385/model_procedures_881483.pdf [Accessed 16 November 2007].
- Highways Agency. *Manual of Contract Documents for Highway Works. Volume 1. Specification for Highway Works*. Series 600 Earthworks. Available from: http://www.standardsforhighways.co.uk/mchw/vol1/pdfs/series_0600.pdf [Accessed 16 November 2007].
- WRAP, Highways Agency and Quarry Products Association (QPA), 2005. *The Quality Protocol for the Production of Aggregates from Inert Waste*. Available from: http://www.wrap.org.uk/downloads/0083_Quality_Protocol_A4.a02e3296.pdf [Accessed 16 November 2007].
- Department for Communities and Local Government (DCLG), 2007. *Survey of Arisings and Use of Alternatives to Primary Aggregates in England 2005: Construction, Demolition and Excavation Waste*. London: DCLG. Available from: <http://www.communities.gov.uk/documents/planningandbuilding/pdf/surveyconstruction2005> [Accessed 16 November 2007].
- Department for Trade and Industry, 2006. *DTI Construction Statistics Annual Report 2006*. Available from: <http://www.berr.gov.uk/files/file34487.pdf> [Accessed 16 November 2007].
- Environment Agency, 2004. *Hazardous Waste and Contaminated Soil: What do you need to know about major changes from July 2004*. Available from: http://www.environment-agency.gov.uk/commondata/103599/hwcl_qa_v.1_844475.doc [Accessed 16 November 2007].
- WRAP Microsoft® PowerPoint® presentation on recycled aggregates.
- Barritt, J. *Achieving the Potential of Recycled Aggregates*. Banbury WRAP.
- AggRegain, <http://www.aggregain.org.uk>

Appendix A Technical Advisory Group (TAG) membership

Organisation	Representative	Type of member
BREW Waste Protocols Project Team	Suzanne Laidlaw Michelle Steer Dominic O'Neill Sarah Clayton Mike Sheard Paul Spence	Attending Attending Attending Attending Attending Attending
Contaminated Land: Applications in Real Environments (CL:AIRE)	David Edwards	Attending
Clarks Legal (representing EIC)	Anne Harrison	Correspondence
English Partnerships	Paul Syms	Attending
Environment Agency	Amanda Myers Brian Bone Kathryn Harriss Clare McCallan	Attending Correspondence Correspondence Correspondence
Environment Agency Wales	Rebecca Favager	Correspondence
Ged Duckworth Ltd	Ged Duckworth	Attending
Hydrock Consultants	Mike Higgins	Attending
IEG Technologies UK Ltd	Steve Forster	Attending
National House Building Council (NHBC)	George Fordyce	Correspondence
National Industrial Symbiosis Programme (NISP)	Professor Nizar Ghazireh	Attending
Scott Wilson Ltd	Steve Handsley	Attending
SEPA	John Harris	Correspondence
The Soil and Groundwater Technology Association (SAGTA)	Nigel Wellsbury	Attending
Veolia	Sabrina Rubio	Attending
Waste & Resources Action Programme (WRAP)	John Barritt	Attending

Appendix B Terms of reference

1. Mission statement

To produce a technical report, recognised by (and produced with the support of) industry, that defines when contaminated soils have been reprocessed to such a level that they are considered to be fully recovered and no longer subject to the requirements of the regulatory waste regime.

If this is not achievable, the technical report will provide guidance to business that will:

- define when contaminated soils are recovered to a state where the Environment Agency considers that their use is acceptable in accordance with its low risk regulatory principles; or
- confirm to the business community what legal obligations remain to control the reuse of the treated waste material.

2. Desired outcomes/outputs

The Technical Advisory Group (TAG) will produce a technical report that will identify and establish:

- which end products the Quality Protocol should address;
- whether there are any existing standards and specifications for each end product;
- whether the material can be collected and reprocessed to meet existing standards and specifications;
- where existing standards and specifications do not exist, to identify alternatives and/or to scope out project for producing a new standard or specification;
- what the potential environmental and human health impacts are, and what methods may be used to maintain or reduce those impacts;
- costs and benefits of the different end uses (with the help of the project economist); and
- a standard terminology.

3. Limitations

- The Environment Agency must be satisfied with the TAG's determination of the point at which contaminated soils have been fully recovered.
- If the point of full recovery of contaminated soils cannot be defined or agreed, the TAG will refer this matter to the Environment Agency for it to produce guidance on when waste regulatory controls apply.
- Where specifications and standards do not exist, and are required, financial or time implications may result in delays to the TAG's work.

Appendix C Market analysis for engineering materials produced from the treatment of land affected by contamination

Materials produced from the treatment of land affected by contamination are currently either reused on-site, at other sites or used/disposed of at licensed landfills. Most of the contaminated excavation waste sent to licensed landfills in England in 2005 was disposed of as waste (Table C1).

Table C1: Contaminated engineering waste sent to licensed landfills in England, 2005

Uses/fate	Estimated amount (tonnes)
Engineering	80,000
Capping	0
Waste	980,000
Total	1,060,000

Source: *Survey of Arisings and Use of Alternatives to Primary Aggregates in England 2005: Construction, Demolition and Excavation Waste*, Table 7.1 (<http://www.communities.gov.uk/documents/planningandbuilding/pdf/surveyconstruction2005>)

Some material produced from the treatment of land affected by contamination could potentially be used as an alternative source of aggregates for the construction sector if it was of an acceptable standard for the specific location and use at the final site.

Aggregates can be obtained from primary, recovered or recycled sources. According to AggRegain,⁴ some 65 million tonnes of recycled and recovered aggregates are used in construction. Since 1996, most growth in aggregate demand has been met by increased use of recycled and recovered aggregates,⁵ which have mainly been used as fill material. Their use has been boosted by the escalating Landfill Tax and Aggregates Levy, which apply only to primary aggregates.

End markets for recycled aggregates

Table C2 lists the markets identified by the TAG for the supply of aggregates from material produced from the treatment of land affected by contamination.

Table C2: Potential markets for aggregates from materials produced from the treatment of land affected by contamination

Excavated material	Total market size (tonnes)
Material to be used as a general fill	41.6 million tonnes* of primary aggregates used for general fill.
Coarse and fine aggregates used to produce ready-mix and precast concrete or asphalt	Total of 81.3 million tonnes* primary aggregates used for concrete in 2005, of which around 45 million tonnes were used in ready-mix and 36 million tonnes in precast.**
Clay or ash type material that can be used in brick and block manufacturing	2.6 billion clay bricks were produced in 2005.* Solid bricks weigh around 2,000kg/m ³ .† The size of a standard brick is 215 × 102.5 × 65mm. Therefore one brick weighs 2.86kg or 0.00286 tonnes. So the bricks produced in 2005 weigh a total of 7,436,000 tonnes. Assume need 7,436,000 tonnes of clay.
Other grade aggregates, for example, pipe bedding, drainage media	Primary aggregate sales in 2005 for other graded applications (excluding sub base) were 36.5 million tonnes.*

* DTI Construction Statistics Annual Report 2006 (<http://www.berr.gov.uk/files/file34487.pdf>)

** Total from DTI Construction Statistics Annual Report 2006 and split from QPA data.

† Wikipedia

4 www.aggregain.org.uk

5 *Achieving the Potential of Recycled Aggregates*. Report by John Barritt, WRAP.

At present some excavated material from land affected by contamination is used as fill material but the TAG stated that supply to the market is restricted and virtually none is currently sold into other end markets.

There are a number of potential barriers to the materials being sold in these end markets. These include:

- 1) The material is still classified as waste after it has been through the treatment process and is sold into end markets. This has a negative impact on demand. The companies receiving the material need to comply with waste management regulations such as obtaining environmental permits or exemptions from permitting. In addition, there may also be a stigma associated with the 'waste' label. People are unlikely to buy a house on a site that has had a permit.

Contact with industry representatives⁶ indicated that the waste classification is considered a major barrier. Contractors would certainly use material produced from the treatment of land affected by contamination if the waste classification was removed and the product was competitive on price and met the required specifications.

To a certain extent, there may still be a stigma for a time after the waste classification has been removed. The construction sector is conservative. This may lead to a lag before there is a response in demand. A public procurement project using the material would be a useful way of demonstrating that the material is acceptable.

- 2) It may not be possible to process much of the excavated material to meet the high specifications of some of the end applications (for example concrete production). Although it will be possible to process some of the material to reach the required standard for higher value applications, the quality of the excavated material is likely to be very mixed. A high proportion of the material may only be suitable for the low value applications such as a general fill.⁷

- 3) In some situations, it may not be possible to deliver the material to the market at a competitive price relative to substitutes.

Any future rise in the landfill tax is likely to mean recycled material will become more and more price competitive relative to virgin substitutes.

A key cost in the supply of aggregates to market is haulage, which can be as much as half the total cost. Much of the excavated engineering material produced from the treatment of land affected by contamination will be from brownfield sites in urban areas. At the same time, much of the demand for aggregates for construction will be in urban areas. Excavated material from contaminated land could well have the advantage of lower transport costs than virgin materials as quarry sites are often far from the market.

- 4) Any general lack of demand for aggregates could be a barrier to increased sales of materials from excavated land affected by contamination.

Planned increases in the number of houses built each year should guarantee strong demand for aggregates for the foreseeable future.⁸ Most growth in aggregate demand since the Landfill Tax was introduced has been met from increased use of recycled and secondary aggregates.⁹

A 2001 forecast¹⁰ by the then Office of the Deputy Prime Minister (ODPM) estimated that the total annual market for aggregates in England would be 270 million tonnes by 2016. The ODPM estimated an average annual increase of 1.2 per cent. It also estimated that the market for sand and gravel would be 90 million tonnes and the market for recycled and recovered aggregates would be 70 million tonnes by 2016. At present, 275 million tonnes of aggregates are used each year in the UK as construction material.

⁶ Home Builders Association, Soil and Groundwater Technology Association and the National Building Federation.

⁷ Discussions with the Home Builders Association and the National Building Federation.

⁸ The National Building Federation is planning to build an extra 50,000 homes per year.

⁹ *Achieving the Potential of Recycled Aggregates*. Report by John Barritt, WRAP.

¹⁰ *Consultation Paper – Draft National and Regional Guidelines for Aggregates Provision in England, 2001-2016*, ODPM, 2002.

- 5) Producers who could potentially use recycled and/or virgin material as inputs to production may require a steady supply of consistent quality material. This could be a barrier to using recycled materials.

This is a barrier in the case of brick manufacturers using clay and ash material produced from the treatment of land affected by contamination. There is low potential for significant increases of sales into this market.¹¹

Conclusions

The aggregates market is very large and competitive, and is expected to grow significantly for the foreseeable future. There is no reason why material produced from land affected by contamination will not be used by the construction industry provided:

- it can be processed and delivered to market meeting performance specifications; and
- the waste stigma is removed.

Appendix D Environment Agency's continuing work

In April 2006,¹² the Environment Agency issued new waste management guidance on the definition of waste in the development of greenfield and brownfield sites in England and Wales. This guidance provides clarification on whether excavated materials from the development of land are likely to be considered waste.

In the case of **uncontaminated** materials produced on-site during construction works, the guidance states that the Environment Agency would not generally regard them as being discarded, and therefore not waste, provided:

- they are used on site and are suitable for that use and require no further treatment;
- only the quantity necessary for specified works is used; and
- their use is not a mere possibility but a certainty.

Any decision must not undermine the aim of the Waste Framework Directive, which is to protect human health and the environment against harmful effects caused by the management of waste.

In the case of **contaminated** materials, the guidance states that the Environment Agency accepts that, where treatment is needed in order to render the material suitable for its intended use, this will generally indicate that the material is waste and waste controls will apply to the treatment of the material. Once treated, the material may, in principle, cease to be waste provided that the treatment process has been completed and the recovered material is suitable for its intended use, only the quantity necessary for specified works is used, and is certain to be used without risk to the environment.

If the materials do not have to be treated or contained, they could, in principle, be considered suitable for use in the same way as uncontaminated soils provided that there is no risk of pollution or risks to health or other environmental receptors.

The introduction to the guidance states that further work is needed before industry can take advantage of it, in so far as contaminated materials are concerned.

The Waste Protocols Project has co-funded work that the Environment Agency is carrying out with industry to update the greenfield and brownfield guidance to develop a Code of Practice that sets out the type of evidence that developers need to gather to demonstrate that material has not been discarded or has ceased to be waste following treatment. It is anticipated that this will be available later in 2008.

Appendix E Definitions

Term	Description
CL:AIRE	Contaminated Land: Applications in Real Environments. CL:AIRE is an independent, not-for-profit organisation, established to stimulate the regeneration of contaminated land in the UK by raising awareness of, and confidence in, practical sustainable remediation technologies. ¹³
Clay-type material	Materials that are predominately made up of clay.
Coarse and fine aggregate	Coarse aggregate >40mm, fine aggregate <40mm.
Controlled waste	<p>Any waste subject to the provisions of the Control of Pollution Act 1974 (as amended) and the Environmental Protection Act 1990; its definition being refined and extended by the Controlled Waste Regulations 1992 (as amended).</p> <p>Controlled wastes are commercial and industrial waste (including construction and demolition waste) and household waste. In November 2007 agricultural and mining wastes became classified as commercial and industrial waste respectively and are therefore controlled.</p>
Engineering materials	<p>Materials used for construction purposes. Such as:</p> <ul style="list-style-type: none"> ■ clay-type materials; ■ general fill; ■ coarse and fine aggregate; and ■ other grade aggregate.
Environment Agency	The Environment Agency is the leading public body for protecting and improving the environment in England and Wales. Its job is to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner, healthier world.
General fill	Materials used for infilling voids or to make-up ground level.
Mobile treatment licence	<p>A mobile treatment licence authorises the recovery or disposal of controlled waste using certain types of mobile plant.</p> <p>A licence has conditions to make sure that the authorised activities do not pollute the environment, harm human health or cause serious detriment to local amenities.</p>
Other grade aggregates	Complying with BS-EN 13242.
Permit	<p>Environmental permits or exemptions issued under the Environmental Permitting (England and Wales) Regulations 2007, which came into force on 6 April 2008, or low risk waste activities in accordance with Environment Agency guidance.</p> <p>From 6 April 2008, the following automatically become environmental permits:</p> <ul style="list-style-type: none"> ■ PPC permits issued under the Pollution Prevention and Control (England and Wales) Regulations 2000 (as amended); and ■ Waste Management Licences (WMLs) issued under the Environmental Protection Act 1990 (as amended). <p>Exemptions from the need for a Waste Management Licence, registered under Regulation 18 and Schedule 3 of the Waste Management Licensing Regulations 1994 (as amended) will now come under schedule 3 of the Environmental Permitting (England and Wales) Regulations 2007. Soil treatment plant These sites are more permanent than mobile treatment plants and operate like a transfer station.</p>

Term	Description
Quality Protocol	Defines the point at which waste may become a non-waste product or material that can be either reused by business or industry, or supplied into other markets, meaning recovered products can be used without needing waste regulation controls.
Receptor	A receptor is either: a) a living organism, a group of living organisms, an ecological system or a piece of property that is listed in the Statutory guidance for significant harm and is being or could be harmed by contaminant; or b) controlled waters which are being, or could be, polluted by a contaminant. ¹⁴
Waste	Any material or object which the holder discards, intends to discard, or is required to discard.
Waste management licence	<p>A waste management licence is a legal document issued under section 36 of the Environmental Protection Act 1990 that authorises the deposit, recovery and disposal of controlled waste.</p> <p>A licence has conditions to make sure that the authorised activities do not pollute the environment, harm human health or cause serious detriment to local amenities.</p>
Waste & Resources Action Programme (WRAP)	WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.

While steps have been taken to ensure accuracy, the authors of this report cannot accept responsibility or be held liable to any person for any loss or damage arising out of or in connection with this information being inaccurate, incomplete or misleading. This material is copyrighted. It may be reproduced free of charge subject to the material being accurate and not used in a misleading context. The source of the material must be identified and the copyright status acknowledged. This material must not be used to endorse or used to suggest WRAP's endorsement of a commercial product or service. For more detail, please refer to our Terms & Conditions on our website – www.wrap.org.uk

**Waste & Resources
Action Programme**

April 2008

The Old Academy
21 Horse Fair
Banbury, Oxon
OX16 0AH

Tel: 01295 819 900
Fax: 01295 819 911
E-mail: info@wrap.org.uk
www.wrap.org.uk

Helpline freephone
0800 100 2040



www.environment-agency.gov.uk

Tel: 08708 506 506

E-mail: enquiries@environment-agency.gov.uk

