Quality Guidance Document

For developing a Quality Management System for producing

Recycled aggregates from inert waste

that meet end of waste criteria.

An MPA Guidance Document (December 2025)

Contents:

Foreword 3

1. Introduction 4

2. Producing aggregates from inert waste 8

3 Providing evidence of compliance with the Guidance Document 9

4. Storage and use of recycled aggregates 10

Appendix A - Definitions 11

Appendix B - Approved industry Aggregate Product Standards, End Use Specifications and Factory Production Control 13

Appendix C - Wastes considered to be inert waste for the purpose of this guidance document and to be acceptable for the production of recycled aggregates. 21

Appendix D - Good practice for the transportation, storage and use of recycled aggregates 23

Appendix E - Is a recycled aggregate delivered to a construction site still a waste? 25

Appendix F: Summary of 'end of waste' criteria for recycled aggregates and checklist for confirming compliance 27

Appendix G: Example of Declaration of performance 29

CONFIDENTIAL

Foreword

Waste Framework Directive (WFD) Article 6: End of waste status
Waste materials must have been through a recycling or other recovery operation and meet all the conditions of the end of waste test to be classed as non-waste. Once recycled materials are classed as non-waste, waste controls do not apply to these products. However, further regulatory controls such as Groundwater Regulations may still apply.
Waste which has undergone a recycling or other recovery operation is considered to have ceased to be waste if it complies with the following conditions:

a) The substance or object is used for specific purposes;
b) A market or demand exists for such a substance or object;
c) The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products; and
d) The use of the substance or object will not lead to overall adverse environmental or human health impacts

This guidance document explains how these criteria can be met for the production of recycled aggregates and explains how a factory production control/quality management system may be structured to achieve this.

End of waste for a recycled aggregate is achieved by producers being able to demonstrate that they have the systems, processes, testing and records in place to prove that their aggregates meet these end of waste criteria.

Scope of this Guidance Document
This guidance document only applies to the production of aggregates i.e. a granular material used in construction, produced to an Aggregate Product Standard and processed from inert waste listed in Table C1.

For the avoidance of doubt, clays and soils processed as cohesive fills are not aggregates and such products are not within the scope of this guidance document.

This document is intended for use by MPA Member companies competent in waste management and the production of aggregates. It sets out the acceptable waste input types, methods of production, testing and supply criteria that results in quality recycled aggregates that are no longer a waste.
Key elements of the guidance are:-

- **The exclusion of clays and soils processed as cohesive fills that are not aggregates and such products are not within the scope of this guidance document.**
- **The definitive control of non-suitable materials such as plastics, wood and gypsum.**
- **Aggregate Product Standards apply to recycled aggregate.**
-

Poor quality recycled material that does not meet the requirements of this Quality Guidance are widely available within the UK, but these materials are waste and not product.

Construction companies are advised to use **Appendix E** - Is a recycled aggregate delivered to a construction site still a waste? As part of their procurement process.

CONFIDENTIAL

Objective

The objective of this guidance document is to set out criteria for the production of a product from a specific waste type(s). Materials in conformity to these criteria are considered sufficient to ensure that the recovered product can be regarded as having ceased to be waste and that therefore no longer subject to waste management controls.

In addition, this guidance document indicates how conformity might be demonstrated and points to good practice for transportation, storage and handling of the recovered product.

CONFIDENTIAL

1.0 Introduction

1.1 End of waste criteria relative to recycled aggregates

1.1.1 The substance or object is used for specific purposes

Construction aggregates, which includes aggregates from recycled resources, are produced for use in specific construction applications and defined by national specifications.

1.1.2 A market or demand exists for such a substance or object

The GB average annual market demand for construction aggregates from 2016 to 2020 was 242 million tonnes, of which 32% was met with recycled aggregates, therefore a market and a demand exist.

1.1.3 The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products

Aggregates produced from recycled resources in conformity to a Harmonized Construction Products Regulation Aggregate Product Standard, and in compliance with national construction application specifications, meet the existing legislation and standards applicable to aggregate products. (see item 1.2 below)

1.1.4 Environmental or human health impacts

The use of the substance or object will not lead to overall adverse environmental or human health impacts.

As part of the 2013 review of the aggregates Quality Guidance a Risk Assessment undertaken by the Environment Agency reported that:

> *"The overall conclusion of this work is that chemical substances in recycled aggregates produced from construction waste, in compliance with the QP, pose no greater risk than that of some virgin aggregates.*

Furthermore, the positive environmental benefits of recycling in preventing the need for the extraction of natural materials, the elimination of a loss of resources to landfill, reduced carbon emissions, and recycled aggregates' contribution to the circular economy, should be considered in determining overall environmental and human health impacts (see item 1.3).

1.2 Aggregate Product Standards and End use Specifications

To comply with Construction Products Regulations (CPR) an aggregate producer must conform to all the requirements of the harmonized Aggregate Product Standard appropriate to the end use for which the aggregate is intended.

1.2.1 Aggregate Product Standards

Aggregate Product Standards define how aggregates must be produced. They ensure that all aggregate production controls and testing procedures are the same (harmonized) so that the aggregate characteristics declared by different producers, and in different EU member states, are directly comparable.

Aggregate Product Standards are produced by CEN (European Committee for Standardization) and published (as designated standards) by BSI in the UK. They are harmonized under Construction Products Regulations (CPR) (as amended in the UK) and are mandatory within the European Union (CE Marking) and GB markets (UKCA Marking).

CONFIDENTIAL

Harmonized aggregate product standards establish the minimum quality management procedures required for producing aggregates for use in construction. This is referred to as Factory Production Control.

The CPR stipulates the systems required for conformity assessment to harmonized standards for each product family and this is detailed in each harmonized standard's requirements for Assessment and Verification of Constancy of Performance.

Apart from where there is a 'high safety requirement' e.g. high skid resistance in road surfaces, all unbound construction aggregate uses in civil engineering works, the CPR mandatory requirement is System 4 which is testing by the manufacturer. i.e. no third-party intervention.

The Aggregate Product Standards also detail relevant aggregate testing methods, testing frequencies and how testing results are used to determine classes and categories applied to aggregate products.

Under the Waste Framework Directive, (WFD) Article 6 'End of Waste status': 1(c) an aggregate is required to fulfil the technical requirements for the specific purposes and meet the existing legislation and standards applicable to the product.

Therefore, in the UK, recycled aggregates must be produced to the requirements of the appropriate harmonized Aggregate Product Standard and CPR as it applies in the UK to meet this end of waste criterion. (see Appendix B and Table B1).

1.2.2 **End use specifications**:

Aggregates produced to Aggregate Product Standards may be suitable for a range of applications within construction. The characteristics that make an aggregate suitable for a specific construction application are set by the construction designer's engineering specification.

The end use specification stipulates the relevant Aggregate Product Standard and will use that standard's classes and categories to set the minimum characteristics required from an aggregate to make it suitable for each application.

By working in conformity to an aggregates product standard an aggregate producer is able to demonstrate to a specifier or purchaser that their aggregate is compliant with the specification requirements for an application.

Aggregates within the EU must be CE Marked in conformity with the relevant product standard (UKCA marked in the UK*****), to be legally placed on the market as a product conforming to a harmonized Aggregate Product Standard.

Aggregates not produced to the requirements of the appropriate Aggregate Product Standard will not meet the minimum requirements of an end use specification and will not meet WFD Article 6 1(c) for end of waste status. (see Appendix B and Table B1)
(***CE Marking** continues to be accepted in the UK for the foreseeable future).

CONFIDENTIAL

1.3 **Waste Acceptance Criteria for suitable wastes**

The acceptance and processing of waste suitable for producing recycled aggregates is a waste management process and therefore subject to, and controlled by, Environmental Permitting Regulations through a Permit. Compliance with this Permit is integral to the recycling operation's Quality Management Scheme and part of the Aggregate Product Standard's Factory Production Control.

The 2013 Quality Protocol for aggregates from inert waste, published by the Environment Agency, provided a Table C1 of waste codes, waste descriptions and restrictions, for wastes suitable for processing into aggregates.

The Environment Agency's 2013 Risk Assessment of recycled aggregates concluded that, if compliant with the 2013 Quality Protocol, and as such processed from wastes meeting Table C1, then the WFD Article 6 1(d) was met for end of waste status.

This guidance document includes the same restrictions on suitable wastes in Appendix C Table C1.

1.4 **Non-waste recycled aggregates may become waste again.**

Producers and users of recycled aggregate should note that, even if a recycled aggregate has met end of waste criteria, the aggregate will become waste again, and subject to waste management controls, if at any stage it is discarded, or there is an intention or requirement to discard, for example if it is:

- Disposed of;

  Or

- Stored indefinitely with little prospect of being used. In addition, if a non-waste aggregate is mixed with waste materials, the resulting material will be a waste and subject to waste management controls.

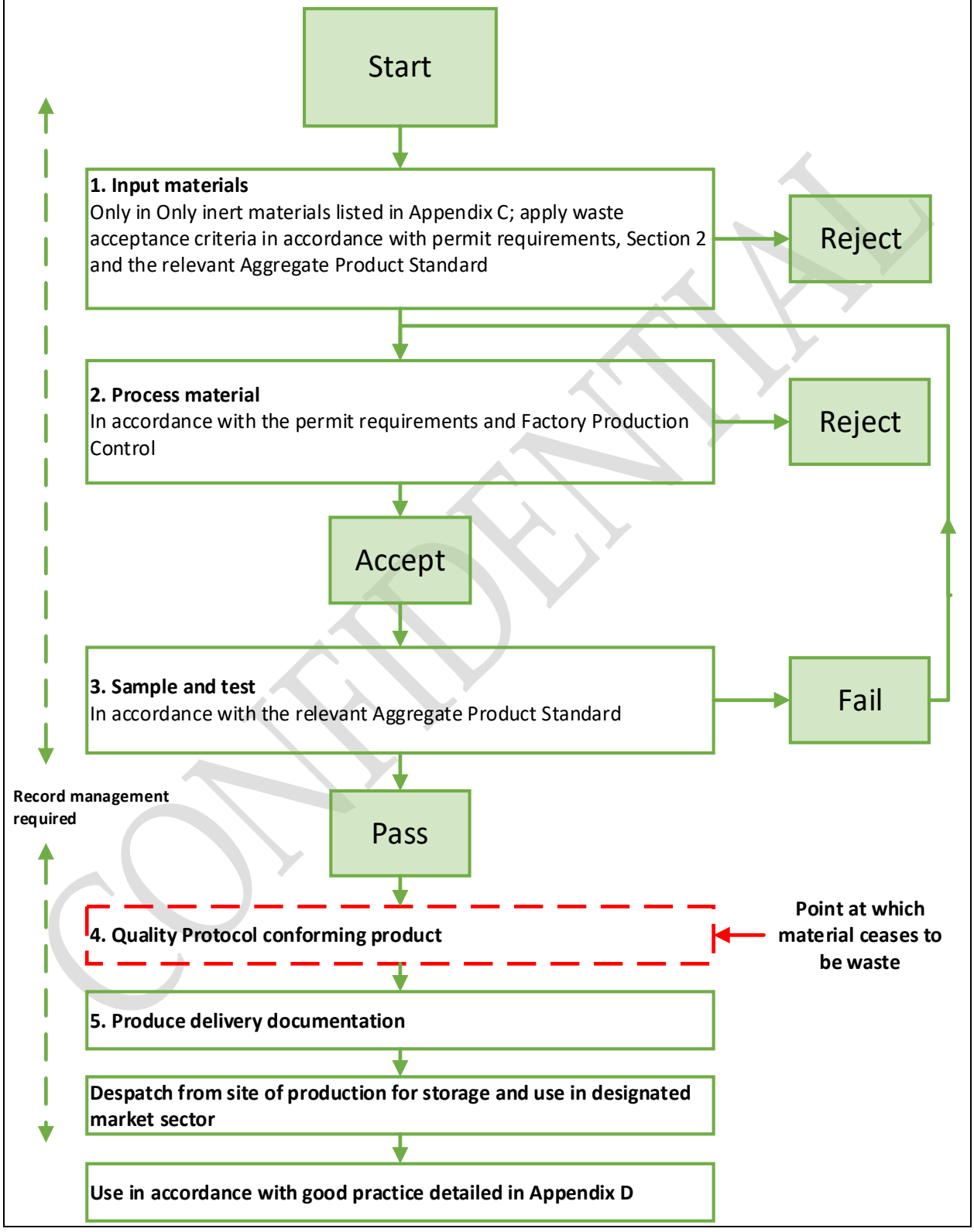
Note: If a non-waste (recovered) aggregate is mixed with another non-waste (recovered) or natural aggregate, the resulting aggregate will not, as a result, be waste.

1.5 **Updating this guidance document**.

MPA will review this document including feedback from users when it considers it appropriate, with a maximum of 5 years. However, it is a recycled aggregate producer's responsibility to take reasonable measures to be aware of changes to end of waste legislation, and to Aggregate Product Standards, to ensure that their Quality Management Scheme is compliant with end of waste criteria.

CONFIDENTIAL

Figure 1: Main stages and control mechanisms of the MPA Quality Guidance



CONFIDENTIAL

2 Producing aggregates from suitable inert waste.

2.1 Regulating the production process.

2.1.1 The process of turning inert waste material into a product is classified as a waste recovery operation and is subject to the waste management controls set out in the Waste Framework Directive and domestic legislation.

This guidance document does not detract from the obligation on producers to hold an environmental permit (including exemptions) that authorizes the storage and processing of inert waste and to comply with its conditions.

2.2 Criteria for producing aggregate that has ceased to be waste.

2.2.1 To comply with this guidance document, aggregate must be produced to a quality management scheme (QMS) that is structured to demonstrate compliance with end of waste criteria as detailed in section 1.0.

This is summarised in the criteria outlined in Sections 2.3 to 2.5. In addition, the material should be destined for use in the designated market sector described in Section 4.

2.3 Input materials

2.3.1 The only acceptable input materials are the inert waste materials detailed in Appendix C.

2.3.2 To ensure that only suitable inert waste is accepted, producers must have waste acceptance criteria within their QMS which meet, as a minimum, the requirements set out in Appendix C.

2.4 Processed in accordance with the relevant harmonized Aggregate Product Standard including a Factory Production Control system.

2.4.1 The producer must comply with all the requirements of a harmonized Aggregate Product Standard (for example, BS EN 13242), appropriate for the use for which the aggregate is destined, at the time it is produced, to comply with this guidance document. Appendix B details the main standards and specifications relating to aggregates at the time of publishing this guidance document.

2.4.2 The specifications (for example, the National Highways Specification for Highway Works (SHW)) summarized in Appendix B have properties selected from the Aggregate Product Standards. The requirements for evaluation of conformity from the relevant standards applies in all cases.

2.4.3 The standards and specifications summarized in Appendix B are subject to review and producers should ensure they work to the latest version. Any changes to the agreed standards and specifications may trigger a review of this guidance document (see Section 1.5).

2.4.4 Producers must set up and produce the aggregate under a QMS which includes the Factory Production Control requirements set out in the relevant Aggregate Product Standard listed in Appendix B.

CONFIDENTIAL

2.5 **Requires no further processing**

2.5.1 The aggregate product must require no further processing to meet end of waste criteria for the use for which it is destined at the time it is produced to comply with this guidance document.

2.5.2 An aggregate product that has ceased to be waste may be mixed with another non-waste aggregate, or separated into constituent products, without impact on its waste status.

3 Providing evidence of compliance with this Guidance Document

3.1 Producers must be able to demonstrate compliance with all the requirements of this guidance document.

3.2 Some of the records detailed below may already be required as part of the producer's environmental permit conditions (waste management license or PPC permit conditions if in Northern Ireland). This guidance document does not affect the obligations on producers to comply with environmental permit conditions (waste management license or PPC permit conditions if in Northern Ireland).

3.3 **Records management**

3.3.1 To be able to demonstrate compliance with the guidance document, producers must maintain delivery documentation for every load of recycled aggregate dispatched.

3.3.2 This delivery documentation must include:

- Date of supply;
- Customer's name and contact details;
- Product description to aggregates product standard and customer specification;
- The name and contact details of the producer, including the address of the site of production;
- Quantity supplied by weight/volume;
  and
- A statement that the product was produced in compliance with this guidance document;
- A hard copy or link to a declaration of performance in line with Appendix J.

Where requested by the purchaser further documentation should also include:

- Test results and procedures in accordance with the standard or specification in Appendix B and for any further tests required to assess suitability for a particular end use;
- Outline details of the QMS including Factory Production Control requirements;
  and
- Information on good practice relating to the storage, transportation and handling of aggregate (as set out in Appendix D).

3.3.3 These requirements are additional to any statutory record-keeping obligations. However, some records may be used to fulfil both a regulatory obligation and evidence of compliance with this guidance document.

3.3.4 For the purposes of this guidance document the producer, should:

- Keep and retain specified records for a minimum of two years or as required by relevant regulation(s) if greater;
  and
- Make them available for inspection by the regulator (if requested).

CONFIDENTIAL

4. Storage and use of recycled aggregates

4.1 As for all aggregate, users of recycled aggregate that conform to this guidance document should take full account of any environmental impact resulting from its use.

4.2 Storage of recycled aggregate

4.2.1 Aggregates produced in conformity with this guidance document, may need to be stored temporarily either prior to delivery to the customer or at the customer's premises. The materials will not be waste at that point, so waste management controls will not apply.

4.2.2 If it appears that the material is being stored indefinitely with no certainty of use, the material will revert to being a waste and waste management controls will apply as specified in Section 1.4.

4.2.3 It is good practice for producers, distributors, and users to follow the guidance details for the transportation, storage, and handling of aggregate, which are included in Appendix D.

4.3 Use of recycled aggregate – designated market sectors

4.3.1 To conform to this guidance document, aggregates must be destined for use in unbound or bound applications in civil engineering and construction (as set out below) and appropriate product descriptions must be used on delivery documentation.

- Unbound – including sub-base, capping, granular fill, pipe bedding and drainage;
- Bound – including hydraulically bound applications, concrete and asphalt.

CONFIDENTIAL

Appendix A - Definitions

In this guidance document, the words and phrases below have the following meanings.

Aggregate:
A granular material used in construction.

(For the avoidance of doubt, clays and soils processed as cohesive fills are not aggregates and not products within the scope of this guidance document)

Aggregate Product Standards:
Aggregate Product Standards are CPR harmonized Aggregate Product Standards referred to in the UK as Designated Standards.

Delivery documentation:
A Record of who the aggregate is supplied to, including the documentation accompanying each load of aggregate. It details the standard to which the product complies and states that the product was produced in compliance with this guidance document.

Designated market sector(s):
The sector(s) listed in Section 4 to which this guidance document applies.

Environment regulator
A national, public body for protecting and improving the environment, including emissions to air, land and water and regulation of major industries including waste management, e.g. The Environment Agency in England, NRW in Wales, SEPA in Scotland and NIEA in Northern Ireland

Environment Agency:
The Environment Agency is the leading public body for protecting and improving the environment in England. 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.

Environmental permit:
Environmental permits issued or exemptions registered under the Environmental Permitting (England and Wales) Regulations 2010.

Factory Production Control:
The aspects of a quality management system for aggregate production, focusing mainly on the production management process, that are mandatory within Aggregate Product Standards, to ensure that product quality is consistently maintained.

Inert:
Waste is inert if (Landfill Directive definition):

a) It does not undergo any significant physical, chemical or biological transformations;
b) It does not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health; and
c) Its total leachability and pollutant content and the ecotoxicity of its leachate are insignificant and, in particular, do not endanger the quality of any surface water or groundwater.

Note – See Appendix C for the description of "inert" in the context of this guidance document.

CONFIDENTIAL

Producers:
The operator(s) undertaking aggregate processing.

Quality Management System:
The recycled aggregate producer's management system controlling all aspects of aggregate production to ensure they are in compliance with a site's Environmental Permit, the relevant Aggregate Product Standard, including Factory Production Control, and meet the requirements of end of waste criteria.

Recycled aggregate:
Aggregate resulting from the processing of inorganic material previously used in construction.

User(s):
User means construction companies, manufacturers, contractors and all those organizations or individuals responsible for the end use of aggregate.

Waste management controls:
Controls under legislation that govern the treatment, handling, containment, transportation storage use and disposal of waste.

CONFIDENTIAL

Appendix B - Approved industry Aggregate Product Standards, End Use Specifications and Factory Production Control

B1 **Approved industry Aggregate Product Standards**

B1.0 As explained in Section 1.2, the producer must comply with all the requirements of an Aggregate Product Standard appropriate to the use for which the aggregate is destined for at the time it is produced to conform to this Guidance Document, and as an element of meeting end of waste criteria.

Table B1 details the Aggregate Product Standards and main end use Specifications relating to aggregates at the time of publishing this Guidance Document.

B1.1 Aggregate Product Standards define how aggregates are produced. They ensure that all aggregate production controls and testing procedures are the same so that the aggregate characteristics declared by different producers are directly comparable.

Aggregate Product Standards are produced by CEN (European Committee for Standardization), published by BSI in the UK and Designated by UK Government. They are harmonized under Construction Products Regulations and are mandatory within the European Union (CE Marking) and GB markets (UKCA Marking).

The product standards establish minimum quality management procedures required for producing aggregates for use in construction. This is referred to as Factory Production Control.

The aggregate product standards also detail relevant aggregate testing methods, testing frequencies and how testing results are used to determine classes and categories applied to aggregate products.

B1.2 The British Standards Institute (BSI) publishes guidance documents that explain how the European Aggregate Product Standards are applied within the UK, the ones relevant to table B1 are:

- PD 6682-1 Aggregates for concrete. Guidance on the use of BS EN 12620
- PD 6682-2 Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas. Guidance on the use of BS EN 13043
- PD 6682-6 Aggregates for unbound and hydraulically bound materials for use in civil engineering works and road construction. Guidance on the use of BS EN 13242

All aggregates PDs and BS EN standards can be purchased from BSI: http://shop.bsigroup.com

Note: In the UK, recycled aggregates not produced to the requirements of the appropriate Aggregate Product Standard will remain waste.

B1.1.1 Example of the structure of Aggregate Product Standard BS EN 13242: Aggregates for unbound use in civil engineering and road construction.

In line with other Aggregate Product Standards, this Standard gives the definition of aggregate as: 'Granular material used in construction. Aggregates may be natural, manufactured or recycled.'

CONFIDENTIAL

The main function of the aggregate is to provide stability and resistance to degradation and fragmentation in unbound construction applications. For this function the shape, surface or grading is more important than the chemical composition, making recycled aggregates 'Articles', and out of scope for REACH regulations.

Aggregate Product Standards define how aggregates are produced and tested to meet this engineering function.

The resources within scope of this Product Standard, and used to produce the aggregate are defined as:

- **Natural aggregate**: Aggregate from mineral sources which have been subject to nothing more than mechanical processing.
- **Manufactured aggregate**: Aggregate of mineral origin resulting from an industrial process involving thermal or other modification.
- **Recycled aggregate**: Aggregate resulting from the processing of inorganic material previously used in construction.

(Note: clays and soils processed as cohesive fills are not aggregates and are not within the scope of Aggregates Product Standards.)

The resource used to produce the aggregate product, be it natural, recycled, or manufactured, is irrelevant, it is the aggregate's ability to meet the characteristics for its engineering application that is the overriding requirement.

The characteristics relative to the aggregates suitability for an engineering function are split into:

- Geometrical requirements: e.g. grading, fines content
- Physical Requirements: e.g. resistance to fragmentation, particle density, water absorption
- Durability Requirements: e.g. resistance to freezing and thawing
- Chemical requirements

Chemical requirements for unbound applications are limited to acid and water-soluble sulfates, as well as total sulfur. These substances can cause reactions with concrete and steel in construction applications and have limiting values within relevant end use specifications.

There are no mandatory harmonized tests for the release of Regulated Dangerous Substances (RDS) from aggregates, so none are included within the Aggregate Product Standards. However, there is an obligation to comply with national requirements for the protection of human health and the environment relating to aggregate use in construction. (Annex ZA of BS EN 13242)

Appendix C of this guidance specifies a detailed Factory Production Control system for aggregates to ensure that they conform to the relevant requirements of this Standard.

CONFIDENTIAL

B2 End use Specifications for aggregates

B2.1 As detailed in Section 1.2.2, aggregates produced to aggregates product standards may be suitable for a range of applications within construction. The characteristics that make an aggregate suitable for a specific construction application are set by the construction designer's engineering specification.

The specification stipulates the relevant Aggregate Product Standard and will use the Standard's classes and categories to set the minimum characteristics required from an aggregate to make it suitable for each application.

For example, from BS EN 13242:

- Geometrical requirements: Grading: Designation d/D: All-in 0/20, GA 85, Fines content: f12
- Physical Requirements: Resistance to fragmentation: Los Angeles coefficient: LA50
- Durability Requirements: Magnesium sulfate soundness: MS35
- Chemical requirements: Total sulfur content: S1
- Classification of Constituents (recycled aggregates): Ra50, Rg25-, X1-, FL ≤ 5 cm3/kg

A producer must be operating in conformity with an Aggregates Product Standard to be able to demonstrate to a specifier or purchaser that their aggregate is compliant with the specification requirements for an application.

Note: **A recycled aggregate not produced to the requirements of the appropriate Aggregate Product Standard will remain waste and will not meet the minimum requirements of an end use specification.**

CONFIDENTIAL

Table B1: Aggregate Product Standards, end use Specifications, and quality controls for the use of aggregates

Product and end use application	Aggregate Product Standard*	End use Specification	Quality controls
1 Unbound recycled aggregate Pipe bedding, Drainage	BS EN 13242: Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction	- National Highways Specification for Highway Works (SHW): Series 500/New SHW 2025 CC500 - Specification for the reinstatement of openings in highways (SROH)	- BS EN 13242: FPC quality management: - Assessment and Verification of Constancy of Performance (AVCP): system 4, i.e. first party testing - SHW: Aggregate properties to BS EN 13242 - SROH: Compliance with SHW
2 Unbound recycled aggregate Granular fill, Capping (Note: cohesive fills are not aggregates, and are out of the scope of this guidance document)		- National Highways Specification for Highway Works: Series 600/New SHW 2025 CC201 Section 6, 7 & CC207 Section 2 - Specification for the reinstatement of openings in highways (SROH) - BS EN 13285: Unbound mixtures: Specifications	- BS EN 13242: FPC quality management: - AVCP: system 4 i.e. first party testing - SHW: Aggregate properties to BS EN 13242 - SROH: Compliance with SHW
3 Unbound recycled aggregate: sub-base		- National Highways Specification for Highway Works: Series 800/ New SHW 2025 CC201 Section 8 & CC207 Section 3 - Specification for the reinstatement of openings in highways (SROH) - BS EN 13285: Unbound mixtures: Specifications	- BS EN 13242: FPC quality management: AVCP: system 4 i.e. first party testing - SHW: Aggregate Properties to BS EN 13242 - SROH: Compliance with SHW
4 Recycled aggregates for concrete	BS EN 12620: Aggregates for concrete	- National Highways Specification for Highway Works: Series 1000/ New SHW 2025 CC201 Section 11 - BS 8500-2: Concrete	- BS EN 12620: FPC quality management: AVCP: system 4 i.e. first party testing - SHW: Conformity to BS EN 12620
5 Recycled aggregates for asphalt	BS EN 13043: Aggregates for bituminous mixtures and surface treatments for roads, airfields and other trafficked areas	- National Highways Specification for Highway Works: Series 900/ New SHW 2025 CC201 Section 10 - Specification for the reinstatement of openings in highways (SROH)	- BS EN 13043: FPC quality management: AVCP: system 4 i.e. first party testing - SHW: Conformity to BS EN 13043
6 Recycled aggregates for hydraulically bound mixtures	BS EN 13242: Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction	- National Highways Specification for Highway Works: Series 800/ New SHW 2025 CC201 Section 9 & CC202 Section 3 - Specification for the reinstatement of openings in highways (SROH) - BS EN 14227-1 to 5 Hydraulically Bound Mixtures: Specifications	- BS EN 13242: FPC quality management: AVCP: system 4 i.e. first party testing - SHW: Conformity to BS EN 13242 - SROH: Compliance with SHW
7 Reclaimed asphalt for use in bituminous mixtures	BS EN 13108-8 Bituminous mixtures – Material specifications – Part 8: Reclaimed asphalt.	- National Highways Specification for Highway Works: Series 900/ New SHW 2025 CC202 Section 7 - BS EN 13108 series of standards Bituminous mixtures – Material specifications	- BS EN 13108-20/21: FPC quality management: AVCP: system 2/4 dependent on application

* BS EN Standards are regularly reviewed, and producers/purchasers should ensure that they work to the latest versions. Relating specifically to the above, work is on-going to combine BS ENs 13242, 12620, 13139 & 13043 into a new EN 17555 parts 1&2.

CONFIDENTIAL

B3 Factory Production Control (FPC)

B3.1 Product Standard requirements for FPC that must be included within a Quality Management System to conform with this Guidance Document

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

All the elements and provisions shall be documented in a systematic manner in the form of written policies and procedures.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting constancy of the performance of the product, shall be defined.

The qualification and competence (e.g. on the basis of education, training, skills, or experience) of personnel performing tasks affecting the assessment and verification of constancy of performance of the product shall be recorded.

Documents defining the factory production control system shall be drawn up and kept up to date. Documentation and procedures should be appropriate to the product and production process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product.

The requirements set out in B3.2 to B3.9 are complementary to the evaluation of conformity requirements of the relevant Aggregate Product Standard, which must be implemented in full.

The FPC is required to include the following quality management requirements set out below, which must be implemented within a quality management system.

B3.2 Waste acceptance criteria

To ensure only inert waste (Appendix C) is accepted, the producer must develop 'acceptance criteria' specific to each site/location. These criteria must be followed at all times.

The acceptance criteria must incorporate all statutory requirements relating to the receipt of incoming waste shall be observed and included in the Acceptance Criteria. These requirements include those arising from an environmental permit, waste management licence or a waste exemption, and the duty of care.

The acceptance criteria must also include:

- A list of the types of waste that are accepted (including waste codes);
- Source/place of origin of the waste;
- Supplier and transporting agent; and
- Method of acceptance.

Every load must be inspected visually, both on initial receipt and after tipping, to ensure compliance with the acceptance criteria.

A procedure for dealing with non-conforming incoming waste must be set up, for example, rejection of loads, quarantine or disposal. Records must be kept of how the procedure has been implemented.

CONFIDENTIAL

B3.3 Production and testing

The manner in which processing equipment is maintained and adjusted during production must be defined.

Input materials must be stocked in a controlled manner in clearly identified locations.
Material taken from stock for processing must be checked for deterioration.
The finished product must be identifiable up to the point of sale.

Procedures must be in place and implemented to maintain the quality of the product during handling, storage, transport and delivery.

Procedures for the use, control, calibration and maintenance of inspection, measuring and test equipment must be setup and followed. Equipment must be uniquely identified.

B3.4 Training

All personnel must be trained on the FPC including:

- Acceptance criteria;
- Procedures for non-compliant input wastes and output products;
- Sampling;
- Testing;
  and
- Inspection.

B3.5 Records

Records of relevant controls and inspections, calibrations, changes and training must be maintained for a suitable period of time. This period must be defined.

A Method Statement of Production (MSP) must be produced and maintained. The MSP represents the recovery process for the incoming waste and it is part of the FPC. It must contain a description or representation of the production process for each product type including:

- Input materials;
- Equipment used; and
- Actions undertaken at each stage from acceptance of waste to allocation to product stockpiles.

The aggregates must be produced to a recognized standard and/or specification. This specification will define the properties and characteristics of the product, as suitable for its application.

B3.6 Documentation

Delivery documentation must:

- Record the type of aggregate product dispatched;
- State the site at which the product was produced;
- State that the aggregate was produced under a quality management scheme conforming to the aggregates guidance document.

If requested, purchasers must be provided with the results from the testing regime undertaken on each product.

Historical records of test results must be kept and/or made available as summary results (for example, a graph of test results over time).

CONFIDENTIAL

B3.7 Testing

Procedures for the use, control, calibration and maintenance of inspection, measuring and test equipment must be set up and followed as below:

- Equipment must be uniquely identified.
- A test plan for production must be defined that includes:
- The type of testing for each product; and
- Sampling and testing frequency (see B3.8 below for information about minimum test frequencies).

Table B2 provides a summary of the frequencies required for the minimum testing requirements set out in the main Aggregate Product Standards.

The test procedures must be appropriate to the end use of the recycled aggregates and testing frequencies must comply with the standards/specifications for the aggregate produced.

Producers must have in place testing procedures to meet the testing requirements for each product. A summary of the frequencies required for the minimum testing requirements within the mainstream standards is provided in Table B2 (below). More detailed testing requirements are defined within the Aggregate Product Standards and specifications.

B3.8 Minimum testing requirements – frequencies

Tables B2 and B4 lists examples of some minimum test frequencies required by common standards and specifications, including the minimum requirements of the FPC for a range of routine tests.

1. Testing frequencies and procedures are initially designed for ensuring consistent production and quality over time. This removes the need for testing all products before dispatch from site.
2. Tests for more variable characteristics are set at one per week of production, a production week may be measured as five days of production in a period no longer than three months.
3. Tests for less variable characteristics are set as one per month of production, a production month may be measured as twenty days of production in a period no longer than six months.
4. Tests for the least variable characteristics are set at one per year of production but to ensure a full testing program a year of production may be taken as the same as a calendar year.

B3.9 Departure from minimum test frequencies

Where materials are known to be marginal or if initial test results show them as such, the frequency of testing should be increased.

The producer must prepare a schedule of test frequencies taking into account the minimum requirements of the relevant FPC. The reasons for reducing test frequencies must be stated in the FPC manual.

CONFIDENTIAL

Table B2: Summary of some testing requirements associated with particular end uses and standards (Note: Testing frequencies should be increased where variability is identified through Factory Production Control and where the measured value is close to the specified limit.)

End use	Standard and Specifications	Test	BS test reference	Minimum test frequency (see B2.8)
All end uses	BS EN 13242	Particle size Distribution Fines Content	EN 933-1	1 per week
	BS EN 12620		EN 933-1	1 per week
		Particle density	EN 1097-6	1 per month
		Resistance to fragmentation (LA)	EN 1097-2	2 per year
		Classification of Constituents (see table B3)	EN 933-11	1 per month
		Water soluble sulfate	EN 1744-1	1 per month
Aggregates for concrete	BS EN 12620	Particle density and water absorption	EN 1097-6	1 per month
		Sulfur containing compounds	EN 1744-1	2 per year
		Chlorides	EN 1744-5	2 per year
		Influence on setting time of cement	EN 1744-6	2 per year

Tests listed are not exhaustive and producers must reference all relevant standards and specifications to ensure their testing program includes all testing requirements.

Table B3: Classification of constituents: testing to BS EN 933-11, classification groups

Code	Constituents
Rc	Concrete, concrete products, mortar, concrete masonry units
Ru	Unbound aggregate, natural stone, hydraulically bound aggregate
Rb	Clay masonry units (i.e. bricks and tiles), calcium silicate masonry units, aerated non-floating concrete
Ra	Bituminous materials
Rg	Glass
FL	Floating material in volume
X	Cohesive (e.g. clay and soil), metals, wood, plastic, rubber, gypsum plaster

Notes: Maximum permitted for constituent **X for unbound applications**: 1% by mass

Specification option range for maximum permitted constituent **FL:** ≤ 0.2 cm^3/kg to ≤ 10.0 cm^3/kg (Note: SHW Series 800 New SHW 2025 CC201 Section 8 specifies FL of ≤ 5.0 cm^3/kg for Types 1,2 and 4 unbound subbase)

CONFIDENTIAL

Table B4: Example of supplementary testing to meet Specification requirements

End Use	Specifications	Test	Test Reference	Minimum test frequency (See section B2.7)
Unbound: Sub-base	SHW Series 800 / New SHW 2025 CC201 Section 8.47	Plasticity of fines	BS 1377: part 2	1 per week or 5000 tonnes*
	SHW Series 800 / New SHW 2025 CC201 Section 6.55	Frost Heave	BS 812: part 124	1 per year

*Suggested frequency in old SHW NG100, NW SHW CC201 Clause 8 for general guidance is only indicative of the frequency that may be appropriate.

CONFIDENTIAL

Appendix C - Wastes considered to be inert waste for the purpose of this guidance document and to be acceptable for the production of recycled aggregates.

General restrictions
This guidance only applies to the production of aggregates (i.e. a granular material used in construction) to an Aggregate Product Standard and processed from inert waste listed in Table C1.

For the avoidance of doubt, clays and soils processed as cohesive fills are not aggregates and not products within the scope of this guidance document.

Table C1 lists all the input materials and their relevant waste classification codes, also referred to as LoW (List of Waste) or EWC (European Waste Catalogue) codes for hazardous and non-hazardous waste. These materials must not contain or be contaminated with dangerous substances, and, subject to the limits and restrictions detailed in the tables, are considered inert and acceptable for the production of recycled aggregate under this guidance document.

Incidental quantities of inert physical contaminants (such as soils, peat, clays, silts, wood, plastics, rubber, metal) may be present within the input material but must be removed during the processing of the waste to comply with the requirements of aggregates product standards, including the Classification of Constituent testing referenced in table B3 of this guidance document.

Table C1: Acceptable inert waste input materials

Wastes from physical and chemical processing of non-metalliferous minerals

Type and exclusions	**Waste code**
Waste gravel and crushed rocks other than those mentioned in 01 04 07 May include excavation from mineral workings.	**01 04 08**
Waste sand and clays Waste sand only. Must not include contaminated sand.	**01 04 09**

Wastes from manufacture of glass and glass products

Type and restrictions	**Waste code**
Waste glass-based fibrous materials Allowed only if: Wastes without organic binders	**10 11 03**

Packaging (including separately collected municipal packaging waste)

Type and restrictions	**Waste code**
Glass packaging	**15 01 07**

CONFIDENTIAL

Construction and demolition waste - concrete, bricks, tiles and ceramics

Type and restrictions	Waste code
Concrete Must not include concrete slurry.	**17 01 01**
Bricks	**17 01 02**
Tiles and ceramics	**17 01 03**
Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	**17 01 07**

Construction and demolition waste - wood, glass and plastic

Type and restrictions	Waste code
Glass Must not include fibreglass or glass fibre.	**17 02 02**

Construction and demolition waste - bituminous mixtures, coal tar and tarred products

Type and restrictions	Waste code
Bituminous mixtures other than those mentioned in 17 03 01	**17 03 02**
Allowed only if: Bituminous mixtures from the repair and refurbishment of the asphalt layers of roads and other paved areas (excluding bituminous mixtures containing coal tar and classified as waste code 17 03 01). Must not include coal tar or tarred products. Must not include freshly mixed bituminous mixtures.	

Construction and demolition waste - soil (including excavated soil from contaminated sites), stones and dredging spoil

Type and restrictions	Waste code
Soil and stones other than those mentioned in 17 05 03 Must not contain any contaminated soil or stone from contaminated sites.	**17 05 04**
Dredging spoil other than those mentioned in 17 05 05 Allowed only if: Inert aggregate from dredgings. Must not contain contaminated dredgings. Must not contain fines.	**17 05 06**
Track ballast other than those mentioned in 17 05 07	**17 05 08**
Allowed only if: Does not contain soil and stones from contaminated sites.	

CONFIDENTIAL

Construction and demolition waste – other construction and demolition wastes

Type and restrictions	Waste code
Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	**17 09 04**
Allowed only if: **The waste is generated from suitable uncontaminated utility trench arisings:** i.e. The waste contains only materials that would be described by entries 17 01 01, 17 03 02 and 17 05 04 in this appendix if the waste was not mixed.	

Wastes from the mechanical treatment of waste not otherwise specified (for example sorting, crushing, compacting, pelletizing)

Type and restrictions	Waste code
Glass Does not include glass from cathode ray tubes.	**19 12 05**
Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11 Allowed only if: The processed waste is uncontaminated aggregates, crushed bricks, tiles, concrete and ceramics and does not contain gypsum from recovered plasterboard and floor screed. **Where there is risk of contamination, the recycled aggregate processor must have procedures within their quality management system to demonstrate how such contamination is evaluated and removed.**	**19 12 12**

Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions

Type and restrictions	Waste code
Glass Must not include fibreglass.	**20 01 02**
Garden and park wastes (including cemetery waste) – soil and stones Must not contain contaminated soil and stones from garden and parks waste.	**20 02 02**

CONFIDENTIAL

Appendix D - Good practice for the transportation, storage and use of recycled aggregates

D1 Pollution prevention and environmental good practice

- Take note of the guidance produced by CIRIA which provides practical advice for minimizing environmental impacts on construction sites. CIRIA, Environmental good practice on site (C741).

  https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductcode=C741&Category=BOOK

D2 Health and safety

- Request Material Safety Data Sheets from your aggregate supplier which detail information to ensure the safe handling, storage and use of aggregate products.

- All applications of aggregates should comply with recommendations from the Health and Safety Executive (HSE) such as using appropriate personal protective equipment (PPE) and dust suppression measures.

D3 Transportation, storage and handling

- Aggregates should be handled and stored to minimize the creation of airborne dust.

- Engineering control measures such as containment, enclosed silos/bins/hoppers, local exhaust ventilation, sprays suppression systems, etc. should be used where there is a risk of airborne dust creation.

- Open conveyor handling systems should be provided with wind boards or other protection to prevent wind-whipping.

- Manual handling of the aggregates should be minimized through the use of mechanical aids wherever possible. Account should be taken of the Manual Handling Regulations and care should be taken when lifting by hand.

- Aggregates are inert, but dust and fine particles should be prevented from entering watercourses and drains. Deposition of dust on vegetation and surrounding property should be avoided by controlling the release of dust at source.

CONFIDENTIAL

Appendix E - Is a recycled aggregate delivered to a construction site still a waste?

Good procurement practice helps ensure that recycled aggregates received at a construction site are not still classed as a waste under Environmental Permitting Regulations.

Quality managed recycled aggregates, produced and tested to a suitable documented quality management scheme (QMS), and demonstrating compliance to the construction site's required aggregate product Specification(s) are most likely to have met 'end of waste' requirements.

Where these criteria are not met the recycled aggregate will remain waste and the receiving site will require an environmental permit or exemption for the use of waste in construction.

Key 'on site' requirements for establishing an aggregate has met 'end of waste'.

1.	The construction site has an approved supplier list for defined aggregate products for on-site construction applications. E.g. 0/31.5 Type 1 subbase, 0/80 Class 6F5 capping layer, 0/20 pipe bedding.
2.	Approved suppliers have provided comprehensive documentation to show compliance with specification performance requirements per product, including operating to a suitable QMS e.g. 'the Guidance Document for aggregates from inert waste[1]'.
3.	Recycled aggregates delivery documentation is retained on site and shows for each load a minimum of: ▪ Details of the product supplied, e.g. 0/31.5 Type 1 subbase ▪ The supplying recycling facility i.e. listed approved supplier facility ▪ Vehicle registration number ▪ Quantity of aggregate delivered ▪ Confirmation that the aggregate was produced to a suitable QMS, e.g. conforming to the requirements of this guidance document (See Appendix G)

Which materials are not recycled aggregates meeting 'end of waste'?

	Status
Materials delivered with a waste transfer note and waste code	Waste
Materials supplied with no delivery documentation	Waste
Materials without an Aggregate Product Standard/specification product description on delivery documentation, i.e. materials are still waste if just described as 'hardcore', 'crushed concrete', 'crushed brick', 'crusher run', 'soil', 'subsoil', 'clay' or no description.	Waste
Cohesive fills to Specification for Highway Works (SHW) Series 600 e.g. Classes 2A, 2B, 2C, 2D, 7A, 7C, 7D. (New 2025 SHW CC601 Class 2, Class 7)	Waste
SHW Series 600/CC201 Clause 6.4 Granular fills Classes 6F1 and 6F2 (These products do not conform to a harmonized Aggregate Product Standard and Construction Products Regulations. SHW prohibits importation of these classes onto a construction site)	Waste
The only product testing results are a grading certificate (particle size distribution)	Waste

When in doubt

Visit the supplying recycled aggregate facility and use the 'Recycled aggregate end of waste checklist'. (Appendix F)

CONFIDENTIAL

Testing option for identifying non-compliant materials.
Contamination from unsuitable wastes is a common problem resulting from the inadequate processing of recycled aggregates and the inclusion of clay or soils.

Where circumstances permit it, and materials delivered to site can be sampled and tested, two tests can be used to determine if this contamination has caused non-compliance with the Aggregate Product Standard and the end use application specification. This non-compliance will also result in the material remaining waste.

Recycled material range	**Test**	**Limits**
0/80mm	BS EN 933-11 Classification of constituents of coarse recycled aggregates	Floating material (FL) ≤ 10cm3/kg or for SHW types 1,2 & 4 unbound subbase ≤ 5cm^3/kg
		Non-floating wood, glass, plastic, metal, clay and soil (Class X) ≤ 1% by mass
0/80mm and 0/4mm	BS 1377-2 Soils in Civil Engineering. Plastic Index	Must be non-plastic to be an aggregate. Plastic materials are cohesive fills, not aggregates.

CONFIDENTIAL

Appendix F - Summary of 'end of waste' criteria for recycled aggregates and checklist for confirming compliance.

Waste which has undergone a recycling or other recovery operation is considered to have ceased to be waste if it complies with the following conditions:

a) The substance or object is used for specific purposes;
b) A market or demand exists for such a substance or object;
c) The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products; and
d) The use of the substance or object will not lead to overall adverse environmental or human health impacts.

This MPA guidance document details how these criteria can be met for the production of recycled aggregates and explains how a quality management system may be structured to achieve this.

End of waste criteria relative to recycled aggregates

a) The substance or object is used for specific purposes;
Construction aggregates, which includes aggregates from recycled resources, are produced for use in specific construction applications and defined by national specifications.

b) A market or demand exists for such a substance or object;
The GB average annual market demand for construction aggregates from 2016 to 2020 was 242 million tonnes therefore a market and a demand exist.

c) The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products;
Aggregates produced from recycled resources in conformity to a Harmonized Construction Products Regulation Aggregate Product Standard, and in compliance with national construction application specifications, meet the existing legislation and standards applicable to aggregate products.

d) the use of the substance or object will not lead to overall adverse environmental or human health impacts.
As part of the 2013 review of the aggregates Quality Protocol a comprehensive Risk

Assessment undertaken by the Environment Agency reported that:

The overall conclusion of this work is that chemical substances in recycled aggregates produced from construction waste, in compliance with the QP, pose no greater risk than that of some virgin aggregates.

In meeting the requirements of criterion c above and limiting suitable inert wastes to the same wastes and restrictions as the 2013 aggregates Quality Protocol, this guidance document meets the requirements of this criterion.

CONFIDENTIAL

Checklist for key elements within a quality management system for recycled aggregates meeting Aggregate Product Standards and end of waste criteria.

The absence of a Quality Management Manual detailing an aggregate recycling operation's quality management system (QMS) that meets the factory production controls mandatory within an Aggregate Product Standard will indicate non-compliance with End of Waste criteria (c) and the aggregates will remain waste.

Non-conformity to any of these key elements within a QMS will indicate that the recycled aggregate was not produced in conformity to an Aggregate Product Standard, will not meet the purchaser's specification for an application, and will remain waste.

	Check
1. Quality Management Manual A document detailing the management systems in place at the point of recycled aggregate production. This document will set out the procedures in place to meet the Factory Production Control requirements for conformity to the Aggregate Product Standards.	
Manual details must include: 2. The management and operatives' roles and responsibilities in implementing and monitoring the quality management manual procedures. (see Aggregates Guidance Document: section B3.1)	
3. Waste Acceptance Procedures including acceptable waste codes, inspection systems and how rejected incoming waste is managed. (see Aggregates Guidance Document: section B3.2)	
4. A list or table of aggregate products that are produced at the facility including product descriptions and relevant application specifications to which they comply. (see Aggregates Guidance Document: sections B3.3 & B3.5)	
5. A list or table of tests undertaken to determine that the aggregate products have the characteristics to meet all the specification requirements. (see Aggregates Guidance Document: section B3.7)	
6. Sampling and testing frequencies in line with minimum requirements relating to the Aggregate Product Standards. (see Aggregates Guidance Document: section B3.8)	
Test Results: (See Aggregates Guidance Document: section B3.6)	
7. Recycled aggregate producers must have results for all tests listed within the Quality Management Manual for their aggregate products.	
8. The frequency of testing must meet the minimum testing frequencies listed within the Quality Management Manual.	

CONFIDENTIAL

Appendix G - Example of Declaration of performance

Declaration of Performance

1. Unique identification code of the product type: **Unbound recycled aggregates to BS EN 13242**
2. Intended use: **Aggregates for unbound use in civil engineering work and road construction**
3. Manufacturer: (state manufacturer's name and address and site location)
4. Authorised representative: (if applicable)
5. System of AVCP: **System 4**
6. Harmonized Standard: **BS EN 13242**
7. Produced in conformity to the MPA Guidance for the production of aggregates from inert waste.

Essential Characteristics	**Test**	**Pipe bedding aggregates SHW Series 500 New SHW CC500 (d/D)**				
		0/2	0/4	4/10	10/20	20/40
Particle shape, size and density	Grading Particle Density	GF80 NR	GF80 NR	Gc80/20 NR	Gc80/20 NR	Gc80/20 NR
Cleanliness	Fines content	f10	f10	f4	f4	f4
Resistance to fragmentation	Los Angeles Coefficient	LA NR	LA NR	LA 50	LA50	LA50
Composition	Classification of Constituents Water soluble sulfate	NR SS0.2	NR SS0.2	X1-Rc,Ru,Rb, Ra,FL:NR SS0.2	X1-Rc,Ru,Rb, Ra,FL:NR SS0.2	X1-Rc,Ru,Rb, Ra,FL:NR SS0.2

The performance of the products identified above are in conformity with the set of declared performances. This declaration of performance is issued under the sole responsibility of (insert name of responsible person).

Signed for and on behalf of (Company name) by:

Name .....

Position .....

Address .....

.....

.....

Date of issue .....

Signature .....

CONFIDENTIAL