Statement of Verification

BREG EN EPD No.: 000206 Issue 01

This is to verify that the

Environmental Product Declaration

provided by:

Aggregate Industries UK Limited

BRE Global Verified EPD

is in accordance with the requirements of:

EN 15804:2012+A1:2013

and

BRE Global Scheme Document SD207

This declaration is for:

Granite Aggregate – Bardon Hill

Company Address

Bardon Hill
Coalville
Leicestershire
LE67 1TL

AGGREGATE INDUSTRIES

Signed for BRE Global Ltd	Emma Baker Operator	20 April 2018 Date of this Issue
20 April 2018 Date of First Issue		19 April 2023 Expiry Date

BRE Global Verified EPD

BRE Global Ltd., Garston, Watford WD25 9XX.
T: +44 (0)333 321 8811 F: +44 (0)1923 664603 E: Enquiries@breglobal.com

Environmental Product Declaration

EPD Number: 000206

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2013 Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012+A1:2013
Commissioner of LCA study	**LCA consultant/Tool**
Aggregate Industries UK Ltd Bardon Hill Coalville Leicestershire LE 67 1TL	BRE LINA
Declared/Functional Unit	**Applicability/Coverage**
1 tonne of granite aggregate	Product specific
EPD Type	**Background database**
Cradle to Gate	ecoinvent

Demonstration of Verification
CEN standard EN 15804 serves as the core PCR [a]
Independent verification of the declaration and data according to EN ISO 14025:2010 ☐Internal ☒ External
(Where appropriate [b])Third party verifier: Kim Allbury
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)

Comparability
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A1:2013. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A1:2013 for further guidance

Information modules covered

Product			Construction		Use stage							End-of-life					Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building							
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4		D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal		Reuse, Recovery and/or Recycling potential
☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		☐

Note: Ticks indicate the Information Modules declared.

Manufacturing site

Aggregate Industries
Bardon Hill Quarry
Bardon
Coalville
Leicestershire
LE67 1TL

Construction Product

Product Description

Granite aggregates are produced from a naturally occurring igneous rock body by blasting, crushing and screening to produce different size aggregates from 225 mm gabion stone to 0-2 mm crushed rock fines.

Bardon Hill quarry produces approximately 4 million tonnes of aggregates per year. These products are used in a variety of applications including asphalt, ready-mixed and precast concrete, coastal and river defence and road construction.

Technical Information

Property	Value, Unit
Resistance to Fragmentation (BS EN 1097-2:2010) / Los Angeles Coefficient	16
Oven Dried Particle Density (BS EN 1097-6:2013)	2.76 Mg/m³
Water Absorption (BS EN 1097-6:2013)	0.7 %
Uniaxial Compressive Strength (BS EN 1926:2006)	120 MPa

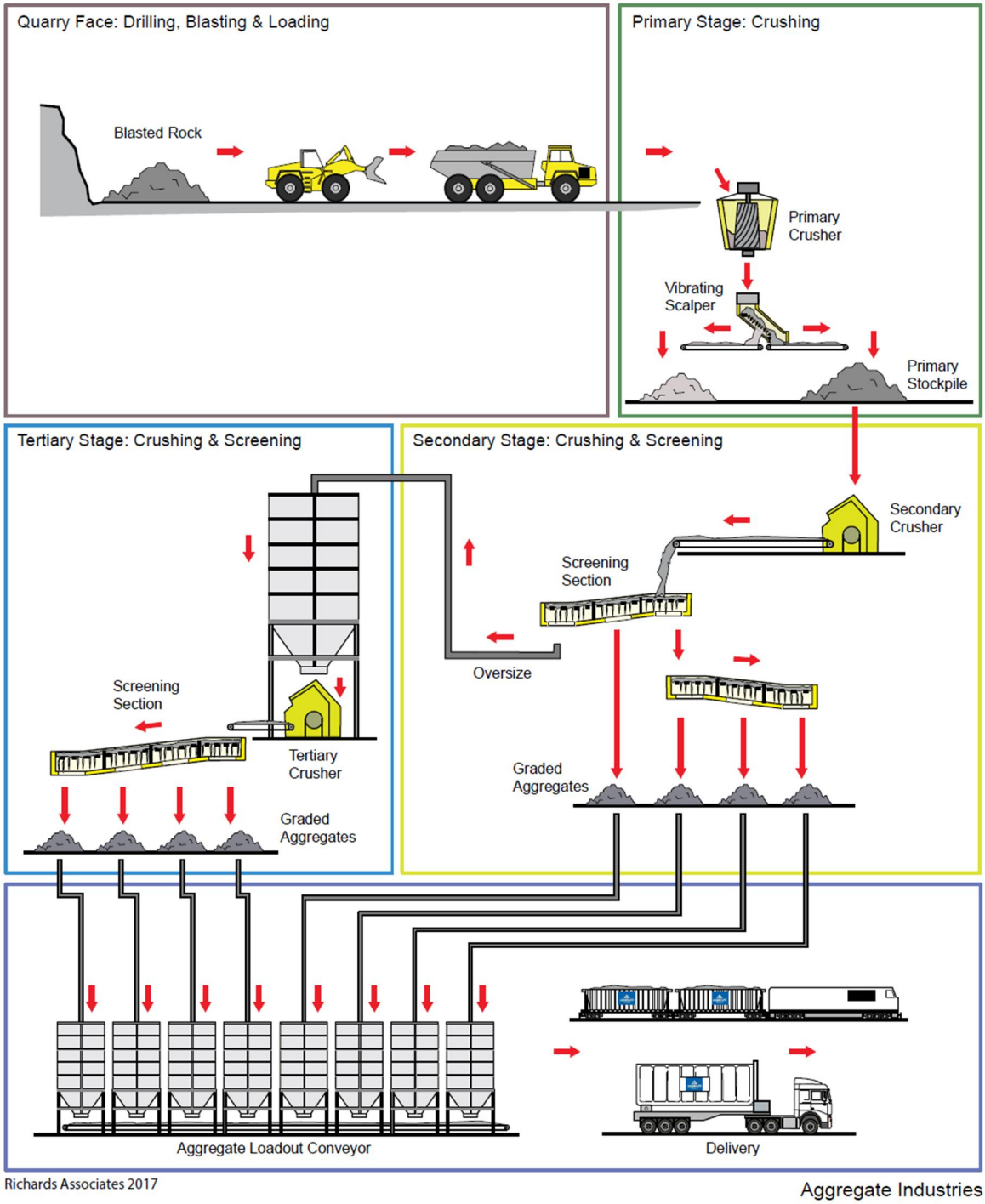
Main Product Contents

Material/Chemical Input	%
Granite	100

Manufacturing Process

The igneous rock mass is drilled and then explosives are used to release several thousands tonnes of rock at a time. This rock which ranges in size from 2.5 meters to 0.5 mm is loaded into a crusher to reduce larger pieces to 300 mm, this is transported by conveyor to a processing plant where crushing and screening takes place to produce various sized graded aggregates for sale. Approximately 25 % of Bardon Hill aggregates are delivered to customers by rail.

Process flow diagram



Life Cycle Assessment Calculation Rules

Declared / Functional unit description

1 tonne of granite aggregate

System boundary

This is a cradle to gate EPD (i.e. processes covered in the extraction and processing in modules A1 to A3).

Data sources, quality and allocation

Specific primary data derived from Aggregate Industries Bardon Hill works have been modelled. In accordance with the requirements of EN 15804+A1, the most current available data has been used. The manufacture specific data from covers a production period 01/01/2017 to 31/12/17.

Within BRE LINA, all background LCI datasets have been taken from the ecoinvent database v3.2. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs according to the requirements specified in EN 15804+A1.

100% of the aggregates produced at the Bardon Hill works production site in the period are covered by this EPD. No allocation of total site energy use, water, waste and emissions was required.

Cut-off criteria

All raw materials and consumable item inputs, and associated transport to the plant, process energy and water use, direct production waste and wastewater are included.

LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts

			GWP	ODP	AP	EP	POCP	ADPE	ADPF
			kg CO_2 equiv.	kg CFC 11 equiv.	kg SO_2 equiv.	kg $(PO_4)^{3-}$ equiv.	kg C_2H_4 equiv.	kg Sb equiv.	MJ, net calorific value.
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	6.36e+0	8.49e-7	4.18e-2	1.06e-2	5.67e-3	9.82e-6	8.71e+1

GWP = Global Warming Potential;
ODP = Ozone Depletion Potential;
AP = Acidification Potential for Soil and Water;
EP = Eutrophication Potential;
POCP = Formation potential of tropospheric Ozone;
ADPE = Abiotic Depletion Potential – Elements;
ADPF = Abiotic Depletion Potential – Fossil Fuels;

Parameters describing resource use, primary energy

			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	3.35e+0	8.71e-6	3.35e+0	9.53e+1	0.00e+0	9.53e+1

PERE = Use of renewable primary energy excluding renewable primary energy used as raw materials;
PERM = Use of renewable primary energy resources used as raw materials;
PERT = Total use of renewable primary energy resources;
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials;
PENRM = Use of non-renewable primary energy resources used as raw materials;
PENRT = Total use of non-renewable primary energy resource

Parameters describing resource use, secondary materials and fuels, use of water

			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m^3
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00	0.00	0.00	2.55e-2

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;
NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results (continued)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG
	Total (of product stage)	A1-3	6.71e-2	1.71e-1	6.03e-4

HWD = Hazardous waste disposed;
NHWD = Non-hazardous waste disposed;
RWD = Radioactive waste disposed

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	AGG	AGG	AGG	AGG
	Transport	A2	AGG	AGG	AGG	AGG
	Manufacturing	A3	AGG	AGG	AGG	AGG
	Total (of product stage)	A1-3	0.00	1.47e-2	4.37e-3	0.00

CRU = Components for reuse;
MFR = Materials for recycling
MER = Materials for energy recovery;
EE = Exported Energy

Summary, comments and additional information

About Bardon Hill Quarry

Bardon Hill quarry produces approximately 4 million tonnes of aggregates per year, it has its own rail siding and transports 25 % annually by rail. The site has been quarried for centuries and is currently developing an extension area to allow continued production for the next forty years.

The quarry is a site of geological interest. The quarry and the Bardon Hill estate is certified to The Wildlife Trust's Biodiversity Benchmark standard, including Bardon Hill (278 m) which is a site of special scientific interest (SSSI). In addition, the site is part of the Charnwood Forest Living Landscape Partnership with the Leicestershire and Rutland Wildlife Trust which helps to create biodiversity rich environments that link to similar areas, providing corridors for fauna and flora to spread.

About Aggregate Industries

Aggregate Industries was the first company to be certified to BES 6001 Framework Standard for Responsible Sourcing. We are a heavy weight construction materials company producing and supplying an array of material with over 300 sites and more than 4000 dedicated employees. We produce cement, aggregates, asphalt, ready-mixed concrete and precast concrete products as well as specialist lightweight aggregates (Lytag) and sands. We also offer a national road surfacing service. Our products and services are certified to ISO 9001, 14001 & OHSAS 18001.

Aggregate Industries are part of the LafargeHolcim Group, which is the leading global building materials and solutions company with around 90,000 employees in over 80 countries. It holds leading positions in all regions with a balanced portfolio in developing and mature markets.

References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A1:2013. London, BSI, 2013.

BSI. Environmental labels and declarations – Type III Environmental declarations – Principles and procedures. BS EN ISO 14025:2010 (exactly identical to ISO 14025:2006). London, BSI, 2010.

BSI. Environmental management – Life cycle assessment – Principles and framework.
BS EN ISO 14040:2006. London, BSI, 2006.

BSI. Environmental management – Life cycle assessment – requirements and guidelines.
BS EN ISO 14044:2006. London, BSI, 2006.

BSI. Tests for mechanical and physical properties of aggregates. Methods for the determination of resistance to fragmentation. BS EN 1097-2:2010. London, BSI, 2010.

BSI. Tests for mechanical and physical properties of aggregates. Determination of particle density and water absorption. BS EN 1097-6:2013. London, BSI, 2013.

BSI. Natural stone test methods. Determination of uniaxial compressive strength. BS EN 1926:2006. London, BSI, 2006.