



Assured Steel Certification

CARES Cloud:
Making jobs easier, processes smoother.
And structures are safer for everybody.

15 Nov 2022

14 - 18

NOVEMBER



Sunway Pyramid
Convention Centre
Malaysia



2022 SEAIISI

**STEEL MEGA
EVENT & EXPO**

Technology • Sustainability • Construction

Contents

- Digital supply chain – CARES Cloud
- CARES Upstream Cloud
- CARES Downstream Cloud
- CARES Cloud Benefits



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CARES

CARES - Assured Steel Certification

- CARES certification provides confidence to the users, purchasers and specifiers of steels through a regime of third party
- regulation, testing and inspection
- Independent, not-for-profit certification body, established in 1983
- Provide accredited certification schemes primarily for constructional steels

Certification Services

- Product Certification
- Management system certification
- Technical approvals
- Post Tensioning
- UKCA/UKNI
- Sustainable Constructional Steels Scheme
- BES 6001 Responsible Sourcing Certification

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CARES - Assured Services Offered

Product Conformity Certification

- Reinforcing steel – BS 4449, BS 6744, SS560, CS2, ISO6935 plus others (i.e. ASTM)
- Reinforcing steel fabrication – BS 8666 (cut/bend), SS561, BS 4483 (fabric)
- Pre-stressing wire and strand – BS 5896 plus others
- Welding of Reinforcing steel – BS8548 / BS EN ISO 17660
- Approval of PT Installation for Highway Structures
- Approval of PT Installation for non - Highway Structures
- Singapore Specialist Builders – In-Situ Post Tensioning Works
- Alternative Structural Steel to BC1

Management Systems Certification

- Quality Management systems to ISO 9001:2015
- Environmental Management systems to ISO 14001:2015
- Occupational Health and Safety Management systems to ISO 45001:2018

UKCA/UKNI

- Structural steel sections to EN 10025:2004
- Constructional flat steel to EN 10025:2004
- Stainless Steel to EN10088-5:2009
- Pre-cast Concrete to various harmonized standards

Sustainability Certifications

- Sustainable Construction Steel (SCS) Certification (Sector certification scheme UKAS accredited to BS 8902)
- BES 6001 Responsible Sourcing Certification
- ResponsibleSteel Certification
- Environmental Product Declaration to EN 15804 (3rd party verified EPD Report)
- Product carbon foot-printing (CF Report)

Technical approval

- European Technical Approval of PT kit to EAD 160004
- Coupler approval (*TA1-A to UK Highways Design Manual, TA1-B to BS8597, TA1-C to Sellafield Nuclear Specification and TA1-F to ISO 15835*)
- Reinforcement Continuity Systems to CARES TA2
- Stud shear Reinforcing Systems to CARES TA7
- Pile Cage Connection Systems to CARES TA15

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CARES Accredited Certification Schemes

CARES	CARES Hong Kong Ltd	CARES Certification PTY Ltd (Australia)	CARES Certification PTE Ltd (Singapore)
<ul style="list-style-type: none"> • Construction Products and Associated Services (CP&AS) • Construction Products Directive (CPR) • Post-Tensioning Systems (PT) • Steel for the Reinforcement of Concrete (SRC)* • Technical Approvals (TA) • Sustainable Constructional Steel (SCS) • BES 6001 • Environmental Management Systems (EMS) • Occupational Health and Safety Management Systems (OHSAS) • Quality Management Systems (QMS) 	<ul style="list-style-type: none"> • Environmental Management Systems (EMS) • Occupational Health and Safety Management Systems (OHSAS) • Quality Management Systems (QMS) 	<p>JAS-ANZ accreditation in progress for:</p> <ul style="list-style-type: none"> • Post-Tensioning Systems (APT) 	<p>SAC accreditation in progress for:</p> <ul style="list-style-type: none"> • Factory Production Control (FPC) • Post-Tensioning Systems (SPT) • Steel for the Reinforcement of Concrete (SSRC) • Quality Management Systems (QMS)



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Digital Transformation in Construction Industry

- The future of construction will be digital; and digital transformation is one of the core elements of the ongoing industrial revolution.
- The construction industry accounts for 6% of the national economy and hires as many as 2.4 million workers in the UK – roughly 8% of the whole workforce. Yet, despite its national and indeed global importance, it has yet to undergo any significant digitisation.
- Investment in digital solutions is already beginning to have a positive impact, according to the recent survey (CauseWay report). It found 54% of organisations that had already adopted integrated digital practices had seen an increase in workforce productivity; 43% said business win rates had improved; and 56% had cut operating costs.



UK - Government Construction Strategy (2011)

"This Government's four year strategy for BIM implementation will change the dynamics and behaviours of the construction supply chain, unlocking new, more efficient and collaborative ways of working. This whole sector adoption of BIM will put us at the vanguard of a new digital construction era and position the UK to become the world leaders in BIM."

Francis Maude
Minister for the Cabinet Office



Digital Supply Chain

Opportunity Title	HS2 Main Works S1 & S2 - WP064 - Rebar (CUT & BENT ONLY)
Buying Organisation	SCS JV
Website	http://www.scsrailways.co.uk/
Opportunity Method	Contract Opportunity
Opportunity Status	Closed
Opportunity Type	Public Sector
Notice Type	Notice
Supply chain ID	12364-SCS
Nature of Opportunity	Goods
Estimated contract value (GBP)	Not disclosed

Document Title: Subcontract Works Information
 Document no.: 1CP01-MDS_2100-CR-COIN-S003-000024
 Revision: P02



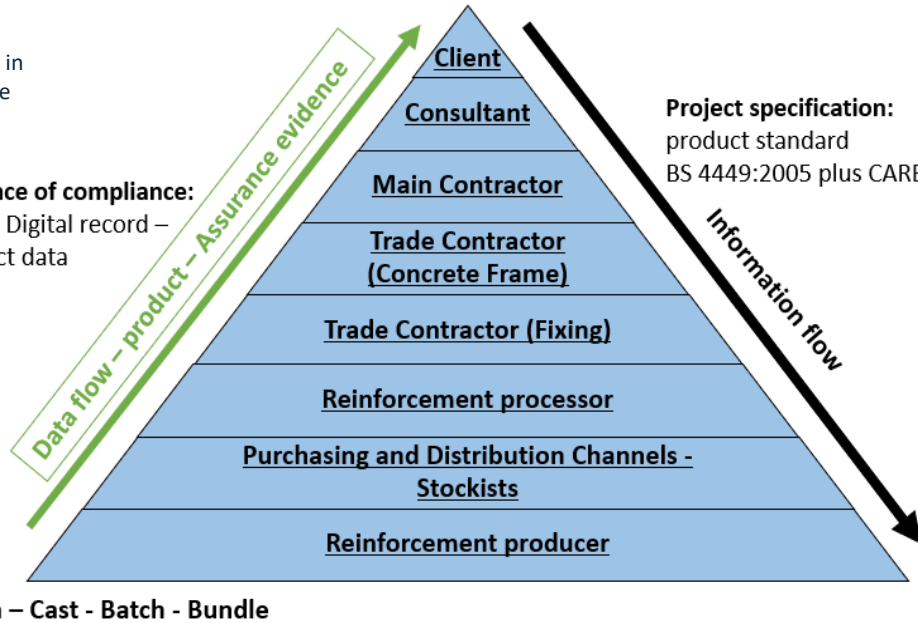
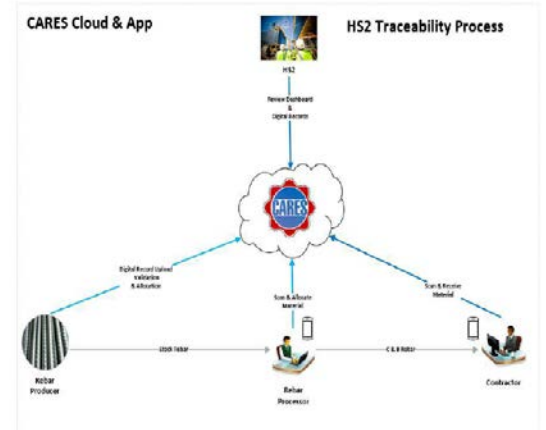
www.cares.cloud

- The bars shall be obtained from and cut and bent by organisations holding a valid CARES product acceptance scheme (or equivalent scheme) certificate of approval for the production and supply of steel for the reinforcement of concrete.
- Materials complying with the requirements given in Clauses 1712.1 to 6 and supplied in accordance with the CARES product acceptance scheme or equivalent scheme shall be deemed to meet the requirements for traceability and identification of materials described above.

2.1.16 CARES Cloud (Reinforcement)

(CARES Cloud requirements are optional scope which may be instructed).

CARES Cloud is a digital solution for the assurance of steel reinforcement product quality and sustainability credentials, including the carbon footprint in development and provided by the UK Certifying Authority for Reinforcement Steels (CARES). See CARES Cloud Information sheet for further details.



Test	Mean	Actual Area (mm²)	Mass per Metre (kg/m)	Yield Strength (N/mm²)	Tensile Strength (N/mm²)	Elongation at Break (%)
1	52	795.08	4.209	522	619	1.16
2	52	794.52	4.237	528	619	1.172
3	52	793.96	4.219	530	622	1.176
4	52	788.72	4.27	533	625	1.175

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Change

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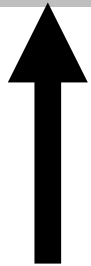
CARES

The imperative

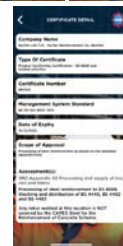
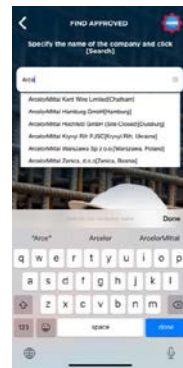
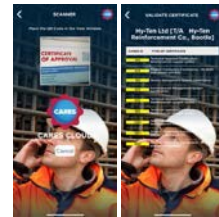
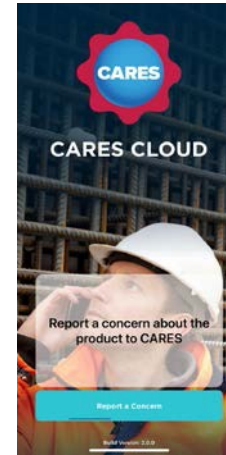
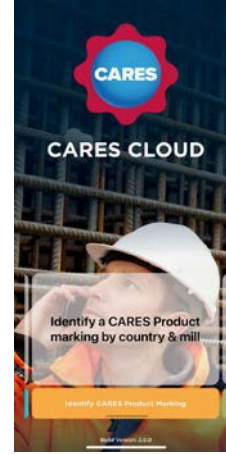
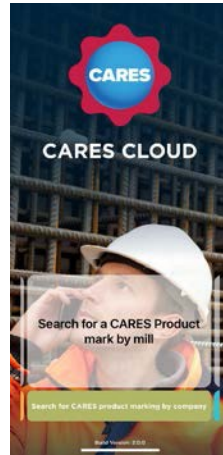
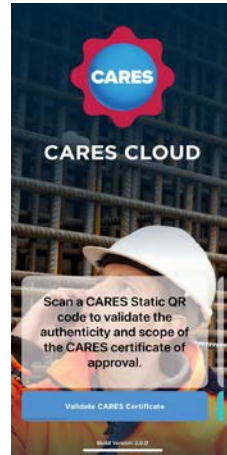
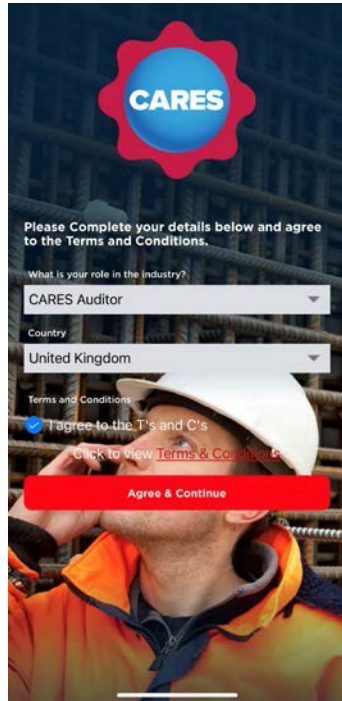
Building safety

Net zero

Data and digital



CARES Apps



CARES CLOUD
CARES UK Business
PEGI 3

Install

Add to Wishlist

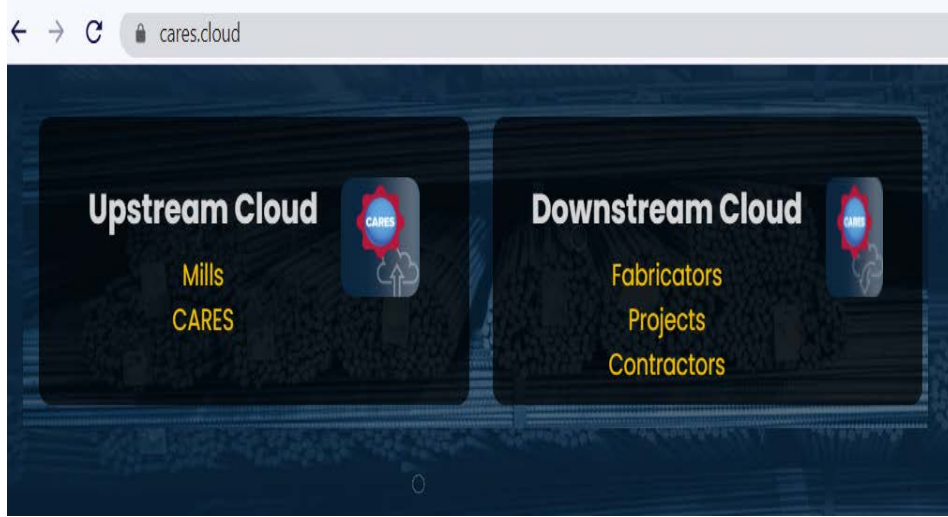


The CARES APP provides the ability to report a concern, search for CARES specific Bar Marking and scan to validate CARES certification.

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CARES Cloud

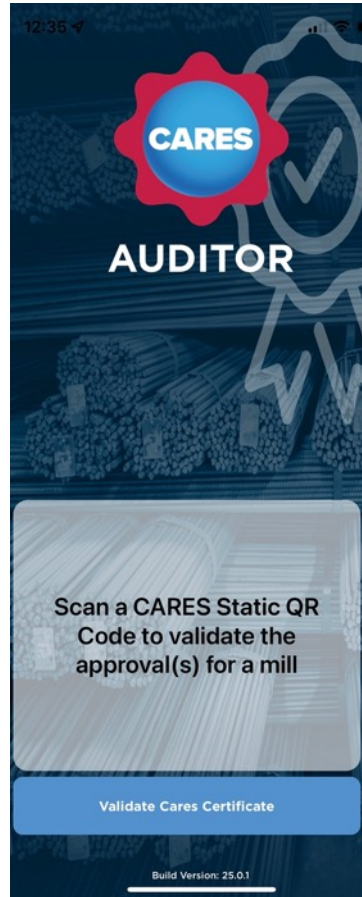


- ✓ The CARES Cloud is a digital ecosystem consisting of the CARES Upstream Cloud, CARES Downstream Cloud and complementary Apps.
- ✓ The Upstream Cloud enables Steelmakers to publish CARES digital records to the CARES Cloud. The CARES digital records contain the product information and the sustainability credentials, including the carbon footprint.
- ✓ The CARES Downstream Cloud enables the reinforcement fabricator to receive the rebar from the CARES approved steelmaker, process it and allocate it to the project. The project team, normally a sub-contractor, will receive the rebar from the fabricator to complete the chain of traceability from the manufacturing source to the site and its location in the structure.

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CARES Upstream Cloud - Authenticity



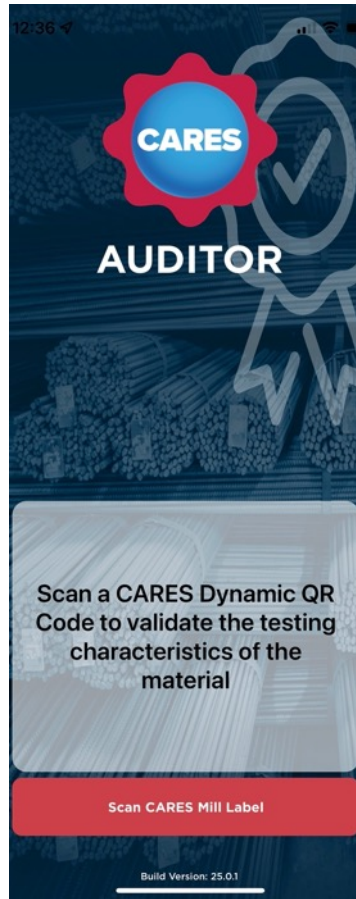
Mill Cert CT-CERT-1103
Cast No 1003027
Standard BS 4449 2005 Grade B500B
Parameter 20



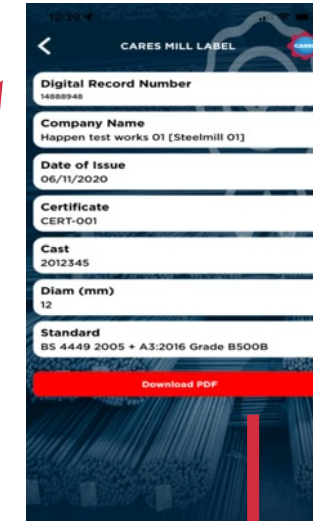
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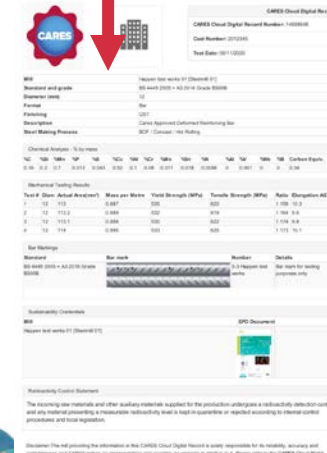
CARES Upstream Cloud – Digital Record



Mill Cert **CTG-CERT-1103**
 Cast No **1003027**
 Standard **BS 4449 2005 Grade B500B**
 Diameter **20**

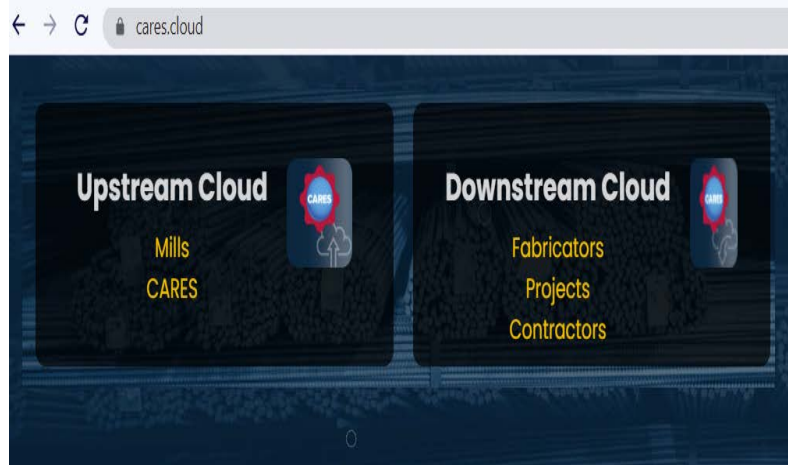


- Source
- Chemical Properties
- Mechanical Properties
- Bar Marking
- Carbon Footprint

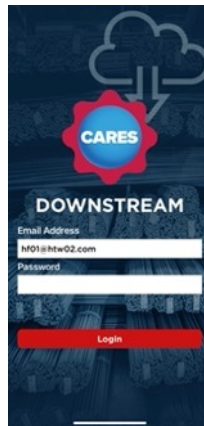


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CARES Downstream Cloud



- The CARES Downstream Cloud secure web portal application is developed to help CARES certified fabricators, projects and contractors in the supply chain to confirm the validity and scope of approval on the certificate; and to scan the CARES Static QR Code on labels/delivery notes to validate the Origin and Standard of Material used.
- The portal includes functionalities to generate Material Compliance Report and Carbon Footprint Calculation.
- CARES Downstream App has been developed and made available for use of fabricators, projects and contractors.



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CARES Downstream Cloud – Assurance Report

ajw@cares.cloud / Happen Building Contracting / HS2 Test Project

Home Dashboard CARES Cloud Downstream - Level 1 User Guide - Contractor - [Download]

Project Details Supply Chain Tasks Activity Events Summary Events Details Assurance Report Carbon Detail

Fabricator

Company Name	Approval	Version	Type Of Certificate	View Certificate	Download Certificate
Happen test works 02 [Fabricator 01]	1616	1	Product Conformity Certification	1616	
Happen test works 02 [Fabricator 01]	1646	1	Sustainable Constructional Steel Scheme	1646	
Happen test works 02 [Fabricator 01]	1646	1	Occupational Health and Safety Management System Certification	1646	
Happen test works 05 [Fabricator 02]	1625	1	Product Conformity Certification	1625	

1 of 1 pages (4 items)

Mill(s)

Company Name	Approval	Version	Type Of Certificate	View Certificate	Download Certificate
Abinsk Electric Steel Works, Ltd [Abinsk, Krasnodar Region, Russia]	1187	3	Product Conformity Certification - BS 4449 and/or related products	1187	
Abinsk Electric Steel Works, Ltd [Abinsk, Krasnodar Region, Russia]	1189	2	Quality System Certification	1189	
African Foundries Limited [Ogun State, Nigeria]	1149	2	Product Conformity Certification - BS 4449 and/or related products	1149	



Fabricator



Steel Mill



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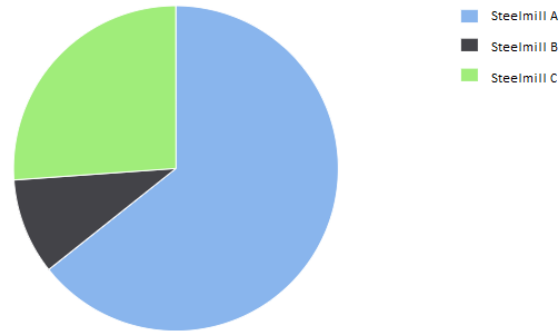


CARES Downstream Cloud – Project Carbon

Project Details | Supply Chain | Activity | Events Summary | Events Details | Assurance Report | **Carbon Detail**

- GWP A1-A3 & Steel Tonnage / Mill – Pie Chart
- Steel Tonnage / Mill – Pie Chart
- GWP A1-A3 & Steel Tonnage / Mill – Total
- Mill GWP A1-A3 (Kg CO2 Eq.)
- Steel Tonnage / Country – Pie Chart
- GWP A1-A3 & Steel Tonnage / Country – Total

Carbon Mill Summary



Carbon Summary

Mill Name	EPD Scheme	Weight (tonnes)	GWP A1-A3 (kg CO ₂ Eq.)	Total GWP A1-A3 (kg CO ₂ Eq.)
Steelmill A (Site A, Country)	CARES	697.9	647	451541.3
Steelmill B (Site B, Country)	CARES	153	438	67014
Steelmill C (Site C, Country)	CARES	280	655	183400
Total:			1,130.9	701,955.3

Carbon Delivery Details

Fabricator	Call off Reference	Delivery Reference	Reference Date	Mill	EPD Scheme	Weight (tonnes)	GWP A1-A3 (kg CO ₂ Eq.)	Total GWP A1-A3 (kg CO ₂ Eq.)
Fabricator A (Site A, Country)	41	202021832	21/01/2021	Steelmill A (Site A, Country)	CARES	12	647	7764
Fabricator B (Site B, Country)	41	202021832	21/01/2021	Steelmill B (Site B, Country)	CARES	23	655	15065
Fabricator A (Site A, Country)	40	202021824	20/01/2021	Steelmill A (Site A, Country)	CARES	3.3	647	2135.1
Fabricator B (Site B, Country)	56	202100153	20/01/2021	Steelmill A (Site A, Country)	CARES	5	647	3235

Global Warming Potential (GWP - kg CO₂ equivalent per tonne of steel)

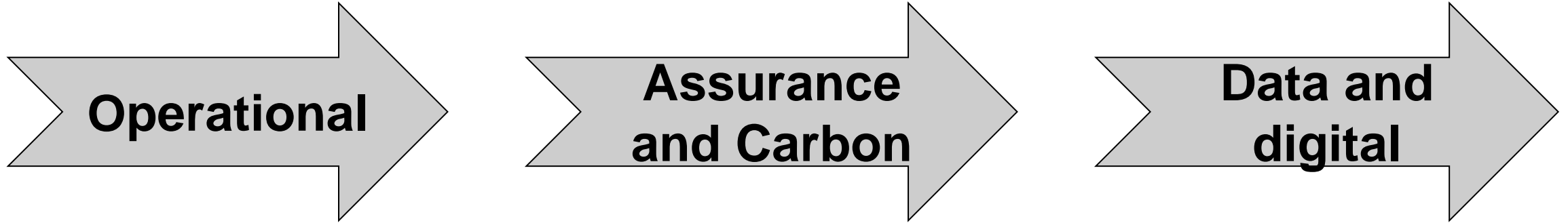
Reporting of the Supplying Mills

- CARES SCS (Sustainable Constructional Steel) approved mills hold valid Environmental Product Declaration (EPD) to report GWP
- Other independently third party verified and publicly available EPD to report GWP

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CARES Cloud benefits – HS2 trial project



- 1) **Site productivity uplift** – at least 900 man-days saved in processing time - £270,000
- 2) **Accurate as-built carbon accounting and carbon footprint saving** - create the potential for a (non-cash) saving of over £3,600,000 in CO_{2eq} for 60,000 tonnes of rebar.
- 3) **Improved assurance processes** - reliable, accurate, easily accessible product information and evidence of assurance from the certification body with nearly 40 years experience plus supply chain transparency. Save receipt, review, storage, and retrieval of at least 70,000 assurance documents.
- 4) **Demonstrate compliance with Government policy and procurement advice** – Taking account of carbon in procurement decision making, visibility of rebar source and accurate quantification of rebar produced in the UK, ready compliance with future Government regulations (Building Safety Act 2022, Golden Thread – post Grenfell) and achievement of the HS2 Net Zero Plan.
- 5) **Data sharing and integration**
 - i. Sharing material quality and sustainability data across companies in the supply chain.
 - ii. API connectivity to existing systems: e.g. Optimise, BIM, RebarSITE, ERP, Tekla.
- 6) **Reduced site rebar wastage** – Reduce by 1.0% would save £720,000 (@ today's prices), plus extra non-cash carbon savings.

CARES Cloud benefits



Traceability

Authenticated product information and carbon footprint data

- i. Origin of the reinforcing steel
- ii. For supplier audits and sourcing decisions
- iii. For assessing own scope 3 emission reductions
- iv. Evidencing safety characteristics of the reinforcing steel
- v. For approval bodies, authorities and regulators



Assurance

Authenticated assurance evidence and maximal mitigation of supply chain risks

- i. On certainty about the materials' data integrity
- ii. On digitally verifiable authenticity of the issuer
- iii. On validation of a supplier's approval status
- iv. Permanent audit trail across the supply chain for government, client and consultant
- v. Capture GPS co-ordinates for audit trail



Connectivity

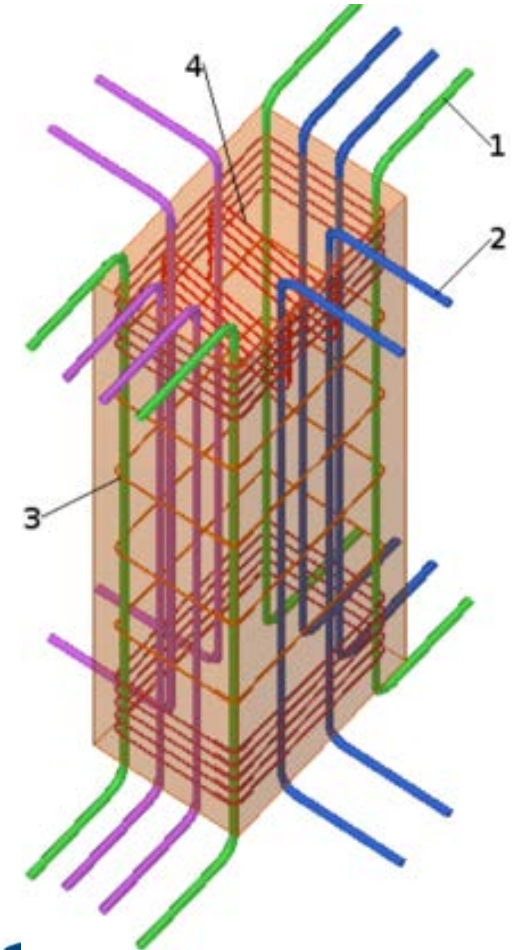
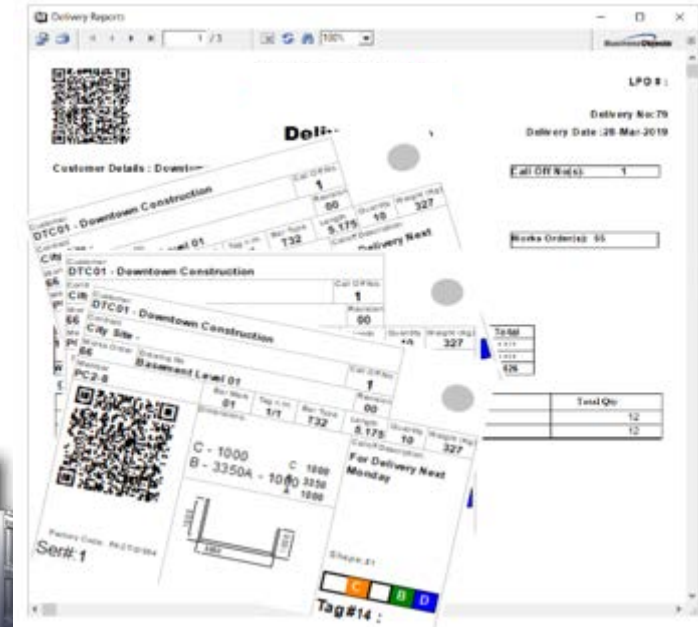
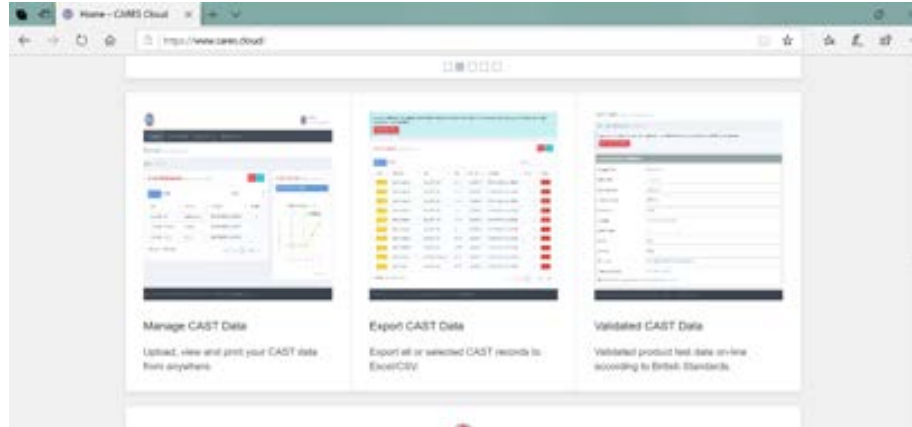
Immediate saving on process automation

- i. On material receipt and quality processes
- ii. On insight of material data analytics
- iii. On using product data and assurance evidence in the BIM model
- iv. To internal management information systems

Digital Transformation Journey

Traceability – Member / Bar mark

1. BIM / IFC Drawings
2. Rebar Schedule data
3. Rebar Call off data
4. Rebar Processing & Fabrication Data
5. Rebar Delivery/Installation Data
6. Product test data



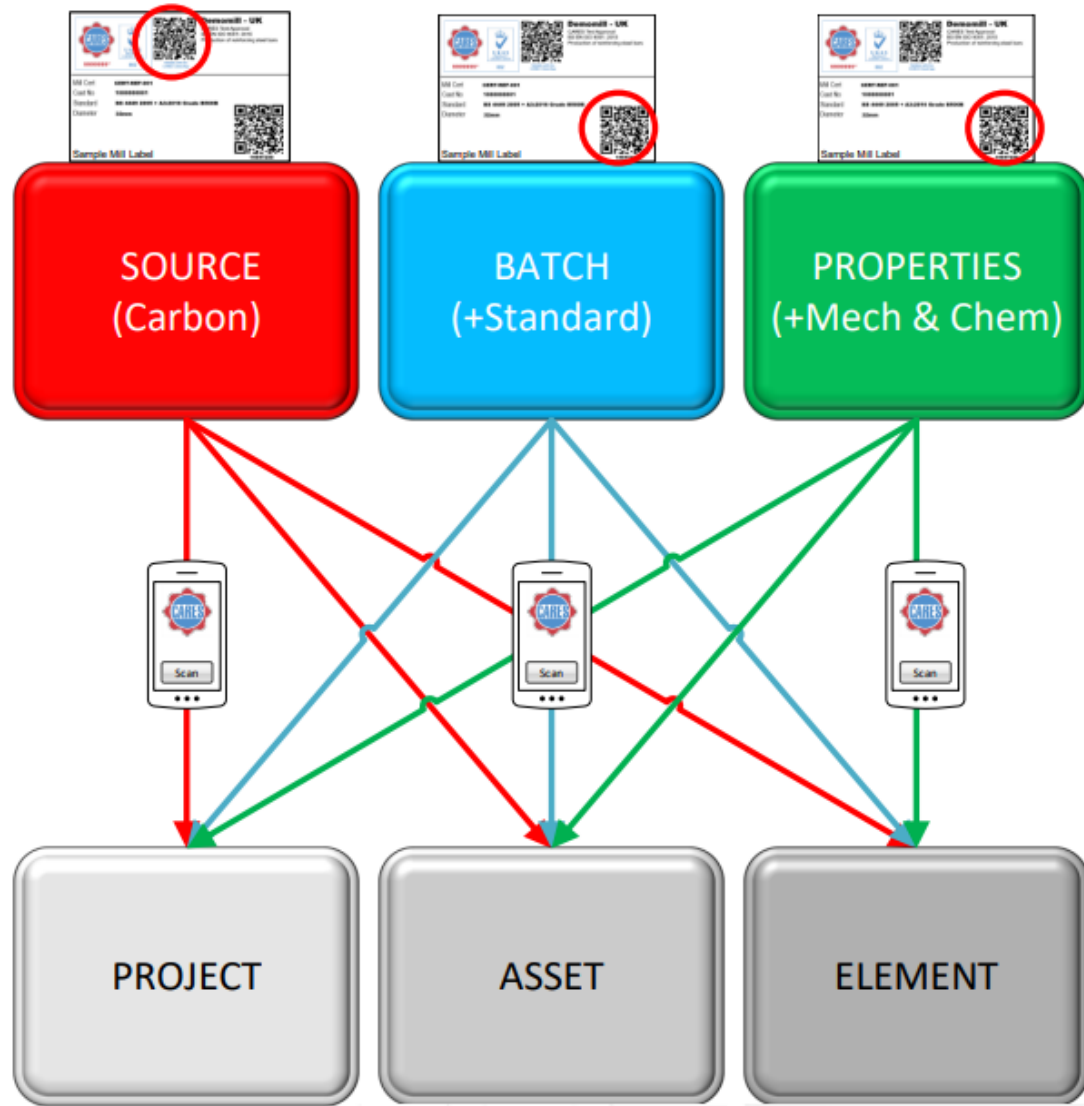
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Rebar product traceability

Traceability Level



CERTIFICATE OF APPROVAL

Standard and grade	SD 4443 2005 + A3 2010 Grade B500B
Diameter (mm)	32
Form	Bar
Finishing	CR1
Description	Concrete Reinforcing Bar
Steel Making Process	BCP + Concrete Hot Rolling

Chemical Analysis - % by mass														
%C	%Si	%Mn	%P	%S	%Cu	%Ni	%Nb	%Ti	%Al	%N	%O	%H	%As	%Sb
0.160	0.2	0.7	0.013	0.003	0.002	0.1	0.011	0.018	0.009	0	0.001	0	0	0

Mechanical Testing Results					
Test Number	Spec	Actual Area (mm ²)	Mass per Metre (MPa)	Yield Strength (MPa)	Tensile Strength (MPa)
1	32	750.46	6.200	533	616
2	32	754.52	6.237	528	610

Traceability Allocation





Assured Steel Certification

<https://www.youtube.com/watch?v=7MIJQ--gvfU&t=170s>



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Thank you

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Web: www.carescertification.com

LinkedIn: www.linkedin.com/company/carescertification/

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CARES Cloud:

Making jobs easier, processes smoother.
And structures are safer for everybody.

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