CLEVELAND STEEL & TUBES LTD

Structural Steel Reuse

Cleveland Steel and Tubes – 50 years of repurposing and reusing steel

Managing Director; Roy Fishwick –BSc MBA

30 years experience

Climate Emergency

Target Net Zero – 2050
(and don't forget 2030!!)

For real change embodied carbon *also crucial*

Our factory powered on solar saves 7T C02 per annum
Our steel reuse saves nearly 40 000T C02 per annum

The business "climate" has also changed

-new demand

-possible value in sustainable offers

Recycle – that's enough?

Steel is a great material and 95%+ is currently recycled

So unless we flatten more buildings we cant have more EAF 

Steel is an EVEN GREATER material - properties don't deteriorate

Cannot reuse ;

Steel that's be subject to Radioactivity

Steel that has been subject to fire (need to check the history of the building, standards on the re-use of steel after a fire etc)

Steel that's been subject to fatigue (may need to carry out further inspections for micro-cracking of the steel)

Reasons for ReUse - carbon

Blast furnace (BOF) *– 2.1T Carbon per tonne*
Electric Arc furnace (EAF) *- 0.3-0.7T carbon per tonne*

Electric arc is the usual route for scrap to be recycled

95% of steel is recycled – little room for improvement going forward

Steel reuse saves 95% carbon versus new BOF (2T) and saves recycling energy/carbon so approx. 30% (0.7T)

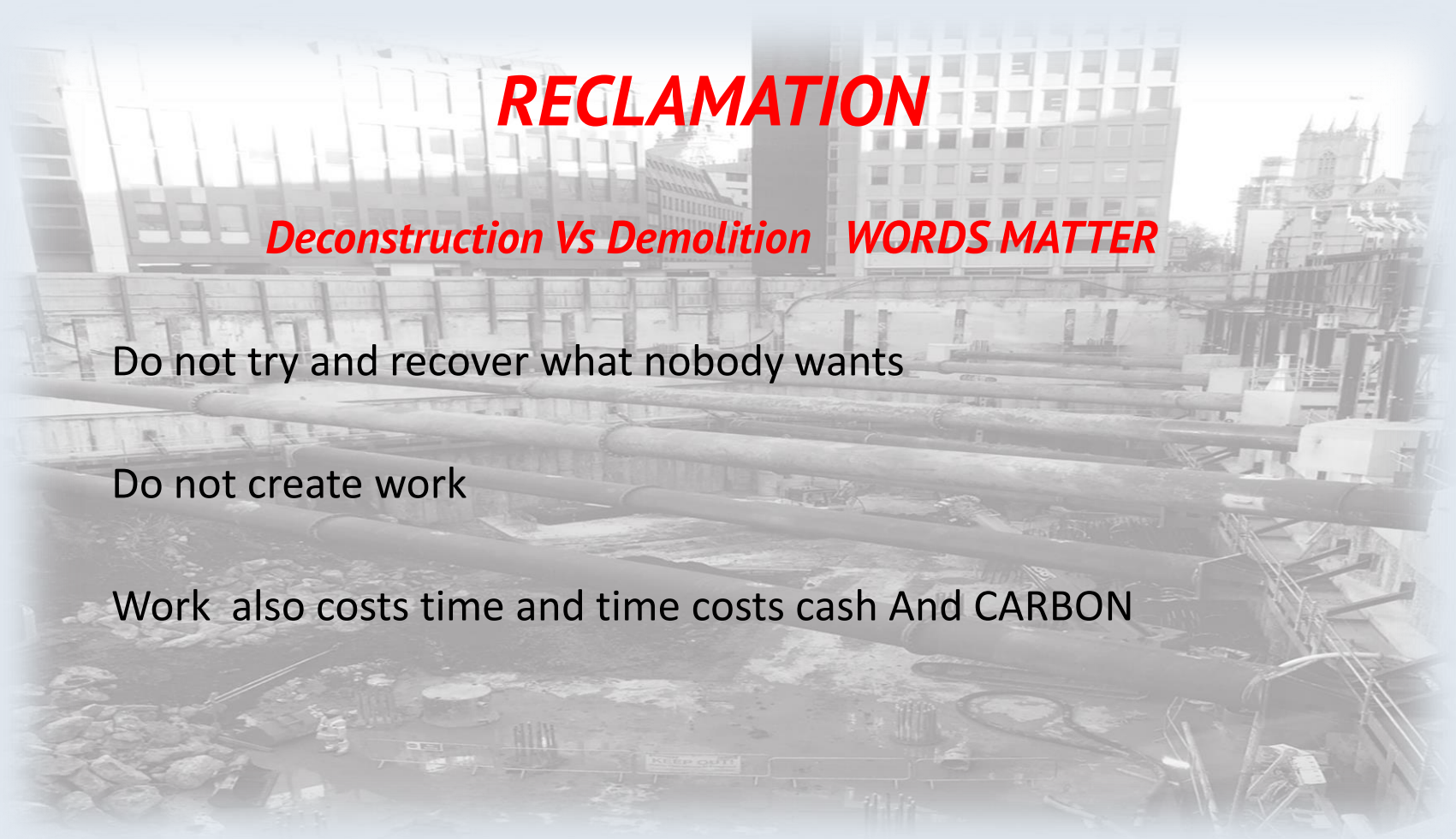
Carbon cost of recovery for reuse of steel is maximum 60kg/Tonne often nearer 20kg/T

Carbon cost of demolition ????
(NOT the same as cash cost)

How much recovery work occurs anyway and how much adjustment to improve outcomes?

Don't get hung up on transport carbon, only 5% of steel CO2 is transport and all scrap is exported

CLEVELAND STEEL & TUBES LTD



RECLAMATION

Deconstruction Vs Demolition WORDS MATTER

Do not try and recover what nobody wants

Do not create work

Work also costs time and time costs cash And CARBON

The Profit Opportunity and Risk

- Metal prices very volatile – including scrap

		"worst"	"best"
• However basic costing			
•	New Steel	£800/T	£1300/T
•	Scrap	£300/T	£100/T
•	Demolition cost	£150/T	£0/T
•	Transport cost	£50/T	£50/T
•	Cleaning cost	£200/T	£200/T
•	Cutting Cost	£80/T	£80/T
•	Tidy/Grind cost (studs)	£240/T ?	£0/T
•	Hole repair cost	£50/T ?	£0/T
•	Testing	£20/T	£20/T
•	PROFIT	£(38)/T!!	£850/T

In house costs

Whose Profit is it?

Difficult to create cost certainty

Just buy it in?

CLEVELAND STEEL & TUBES LTD

The Advantages

Cost - IF WELL MANAGED

Upto 96% Carbon saving

CLEVELAND STEEL & TUBES LTD giraffe

Cleveland Steel and Tube LCA Technical Report: Confidential Internal Use

Life Cycle Analysis (LCA): recovered and refurbished coated steel tubes

Local Resource – (scrap)

Socio economic benefits – all in UK

Design

Don’t set unrealistic targets but leave the door open

Some reuse is better than none

Specification is key

DESIGN THE BUILDING YOU NEED *THEN* REUSE

Specifications include modern grades, how can you hope to reuse?

Specify by performance criteria – not by size and grade

Minimise usage – if you are 30% heavier then NO carbon saving

EAF vs BOF – this is a GLOBAL emergency. Is ticking all your own "green" boxes really making a difference or just punting the problem to someone else

Feedback Loops

Cosmetic expectations for cosmetic situations

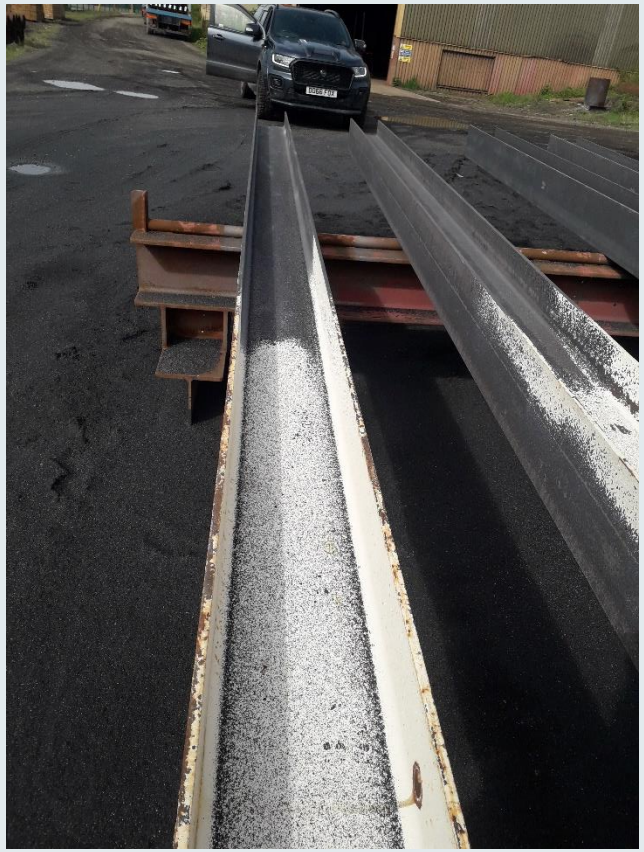
Case Studies

Tree of Trees – Platinum Jubilee

Provided by Cleveland Steel in Yorkshire, the design has been optimised to maximise the use of old surplus steel, keeping the level of embodied carbon to a minimum.

CLEVELAND STEEL & TUBES LTD

Simple Reuse



Support joists

Basic connections

Holes/attachments dont matter

CLEVELAND STEEL & TUBES LTD

Simple Reuse

CLEVELAND STEEL & TUBES LTD

Arkengarthdale Bridge

4T of Carbon saved

CLEVELAND STEEL & TUBES LTD

Holbein Gardens

40T of Carbon saved

CLEVELAND STEEL & TUBES LTD

Hunterston Turbine

2017

>1400T

Watch out for the seagulls

Bloomberg

2017

100s of tonnes

Holding up London

CLEVELAND STEEL & TUBES LTD

London Olympic Stadium

2010/11

>2000T Irish gas pipe

Greenest games ever

CLEVELAND STEEL & TUBES LTD

NTS Building

	Cost if new	Additional cost of reuse	Cost saving vs new	Net saving	Carbon saving (approx.)
Design/Admin	£312 000	£26 000	£162000	(£26000)	n/a
Ground works	£422 000	0	Planings = £130000 Muck = £133 000	£260 000	Haulage- 224T Co2 Stone – 52T CO2
Steel	£1020000	£160 000	£566 000	£566 000	1000T CO2
Cladding	£740 000	n/a	n/a	n/a	n/a
Floor	£950 000	n/a	n/a	n/a	n/a
Landscaping	£150 000				
Foundations	£132 000		Muck - £4000	£4000	4T CO2
Erection	£239 000	n/a	n/a	n/a	n/a
Totals	£3,776,000		£995 000	£969 000	1480T CO2

CLEVELAND STEEL & TUBES LTD

Cleveland Steel & Tubes Ltd
Dalton Industrial Estate, Thirsk, North
Yorkshire, YO7 3JN, United Kingdom

Telephone: +44 (0)1845 577789
Fax: +44 (0)1845 578373

Factory Production Control 2273-CPR-0093

BS EN ISO 9001:2015

BS EN ISO 9001:2015, NHSS 3B

VERIFIED

The Alliance for Sustainable Building Products

UK GBC Member

STEEL for life SPONSOR

SUPPLY CHAIN SUSTAINABILITY SCHOOL GOLD

The Telegraph
As featured by the Daily Telegraph Business club

Bianco Group