UK Steel Strategy Demand Assessment

Part II. Steel Production Capacities & Supply Chain Gap Analysis

5 March 2026

Prepared for the Department of Business and Trade

Department for Business & Trade

HATCH

Notice to Reader

This report was prepared by Hatch Associates Limited ("Hatch", or "the Consultant") for the sole and exclusive use of the UK Department of Business and Trade ("DBT" or the "Client") for the development of its UK steel strategy demand assessment. The use of this report is intended to inform DBT in its development of its steel strategy for the UK by identifying potential gaps and opportunities for domestic production along the UK's broader steel supply chain. The report is based on British Steel's previously published plans to transition from blast furnaces to electric arc furnaces (EAFs). However, no final decisions have been taken on the transformation and the strategy, and timings are therefore liable to change. This report contains forward looking information including but not limited to: long term steel demand forecasts, steel production capacities and limitation, and investments in emerging sectors among others. Words such as "anticipate", "believe", "plan", "expect", "estimate", "intend", "budget", "scheduled", "forecast", "project" and similar expressions are often (but not necessarily always) used to identify forward-looking information. This information reflects the author's current beliefs and is based on information currently available to the author. Forward-looking information involves significant risks and uncertainties. A number of events or circumstances could cause actual results to differ materially from the long-term forecasts discussed in this report, including changes to trends in end-use sectors, demand drivers discussed in the report, technology developments and material substitution, population growth and immigration, macroeconomic factors, currency exchange, global capacities, and government policy and regulations.

Forward-looking information is based upon Hatch's beliefs, estimates and opinions at the time they are made. There can be no assurance that forward-looking information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements or information. Accordingly, readers should not place undue reliance on forward-looking information. Forward-looking information is made as of the date of this report, and Hatch does not assume any obligation to update or revise it to reflect new events or circumstances. Where Hatch has based its opinions on information provided by the Client, obtained from third parties, or available publicly, Hatch has not verified the accuracy, completeness or validity of such information and does not accept any liability in connection with such information.

Hatch shall not be responsible for any errors or omissions in this report or in any information contained herein regardless of any fault or negligence of the Consultants or others. This report is to be read in the context of and subject to the terms of the agreement between Hatch and the Principal (the "Hatch Agreement") as set forth in the accepted proposal dated 04 March 2025 including any methodologies, procedures, techniques, assumptions and other relevant terms or conditions specified in the Hatch Agreement;

This report is meant to be read as a whole, and sections of the report must not be read or relied upon out of context; and

Unless expressly stated otherwise in this report, Hatch has not verified the accuracy, completeness or validity of any information provided to Hatch by or on behalf of the Client and Hatch does not accept any liability in connection with such information.

This report shall not be distributed to, used nor relied upon by any other party nor for any other purpose without Hatch's prior written consent. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report is not to be referred to or quoted, in whole or in part, in any registration statement, prospectus, public filing, loan agreement, or other agreement or document without Hatch's written consent.

This disclaimer must accompany every copy of this Report (including any modifications to, derivatives of or subsequent versions of it).

Acronyms

AHS	Advanced High Strength
API	American Petroleum Institute
BF	Blast Furnace
BOF	Basic Oxygen Furnace
CCUS	Carbon Capture Utilisation and Storage
CHQ	Cold Heading Quality
CRC	Cold Rolled Coil
DBT	Department of Business and Trade
DRI	Direct Reduced Iron
E&M	Engineering and Machinery
EA	Equal Angles
EAF	Electric Arc Furnace
EU	European Union
GOES	Grain Oriented Electrical Steel
HBI	Hot Briquetted Iron
HDG	Hot Dipped Galvanised
HFI	High Frequency Induction
HRC	Hot Rolled Coil
HSM	Hot Strip Mill
LF	Ladle Furnace
NGOES	Non-Grain Oriented Electrical Steel
OBM	Ore Based Metallic
OEM	Original Equipment Manufacturer
OSW	Offshore Wind
PC	Pre-Stressed Concrete
PFC	Parallel Flange Channel
PLTCM	Pickling Line and Tandem Cold Mill
PPGI	Pre-painted Galvanised Iron
RPM	Reversing Plate Mill
SSC	Steel Service Centre
T&D	Transmission and Distribution
TAM	Total Addressable Market
TSCR	Thin Slab Casting and Rolling
UA	Unequal Angle
UB	Universal Beams
UBP	Universal Bearing Pile
UHS	Ultra High Strength
UK	United Kingdom
VDG	Vacuum Degasser
ZODIAC	Zinc and Other Developments in Alloy Coatings

Contents

This report provides an evidence base for the UK's future steel strategy; the focus of this report is on identifying and providing options to address production and supply chain gaps

Report Context

The government has launched a multi-sector effort to revitalise the nation's steel industry and **develop an actionable Steel Strategy** that will detail the core elements of an investment plan alongside an implementation roadmap

This engagement seeks to provide an **evidence base for the UK's steel strategy** and guide HMG's investment in the sector by identifying gaps and opportunities for domestic production along the UK's broader steel supply chain

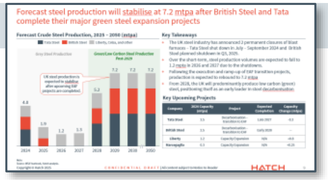
Focus Areas	Key Questions Answered
Part I	
Long-Term Steel Demand Outlook	What is the **projected long-term demand** for steel in the UK? How much of this demand will be generated from **investments in emerging sectors** related to energy transition and decarbonisation?
Part II	
Current Steel Production Capacities and limitations	How **capable** is the UK of meeting this long-term demand, and **what challenges** does it face?
Supply Chain Gap Analysis	Which parts of the supply chain have **identified gaps**?
Domestic Capabilities to Address Long-Term Demand	What **options are available** to address gaps in the UK steel sector?

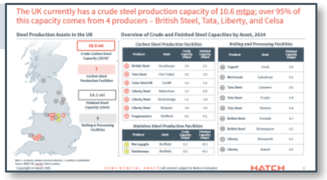
Part II of this report is structured into four core sections, each with a specific set of objectives informing key aspects of the steel production and supply chain gap analysis

Part II. **Steel Production Capabilities & Supply Chain Gap Analysis**

2.1 Current Steel Production Landscape

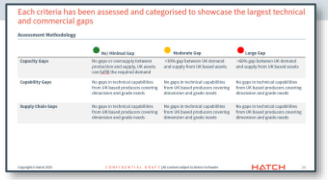
- **Production** – Overview of historical and forecast domestic steel production
- **UK Asset Landscape** – Overview of UK steel producers focusing on asset capacities, capabilities, and planned projects

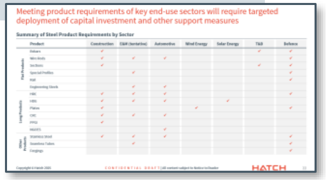




2.2 Product Capability and Supply Chain Methodology

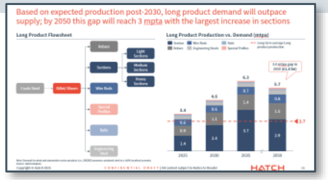
- **Methodology** – Approach overview for identifying product capacity/capability and supply chain gaps
- **Gap Assessment Criteria** – Overview of assessment factors for production gaps
- **Sector and Product Prioritisation** – Summary of prioritised products and sectors

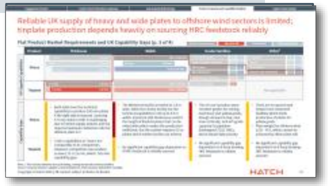




2.3 UK Product Capability Analysis

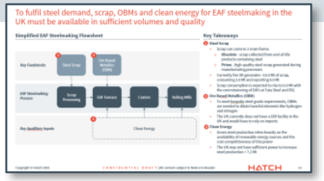
- **Capacity** – Flowsheet and assessment of total primary production capacity of UK assets and assessment of individual product production capacity of UK assets
- **Capability** – Assessment of individual product production capabilities of UK assets
- **Available Options** – Overview of possible options to address the capacity and capability gaps of UK assets





2.4 Supply Chain Analysis

- **Upstream** – Assessment of feedstock gaps for UK steel assets (i.e., energy, DRI, and scrap)
- **Downstream** – Assessment of key downstream sectors (i.e., construction, E&M, automotive, defence, T&D, transformers, solar and wind)
- **Available Options** – Overview of options to address broader steel sector supply chain gaps

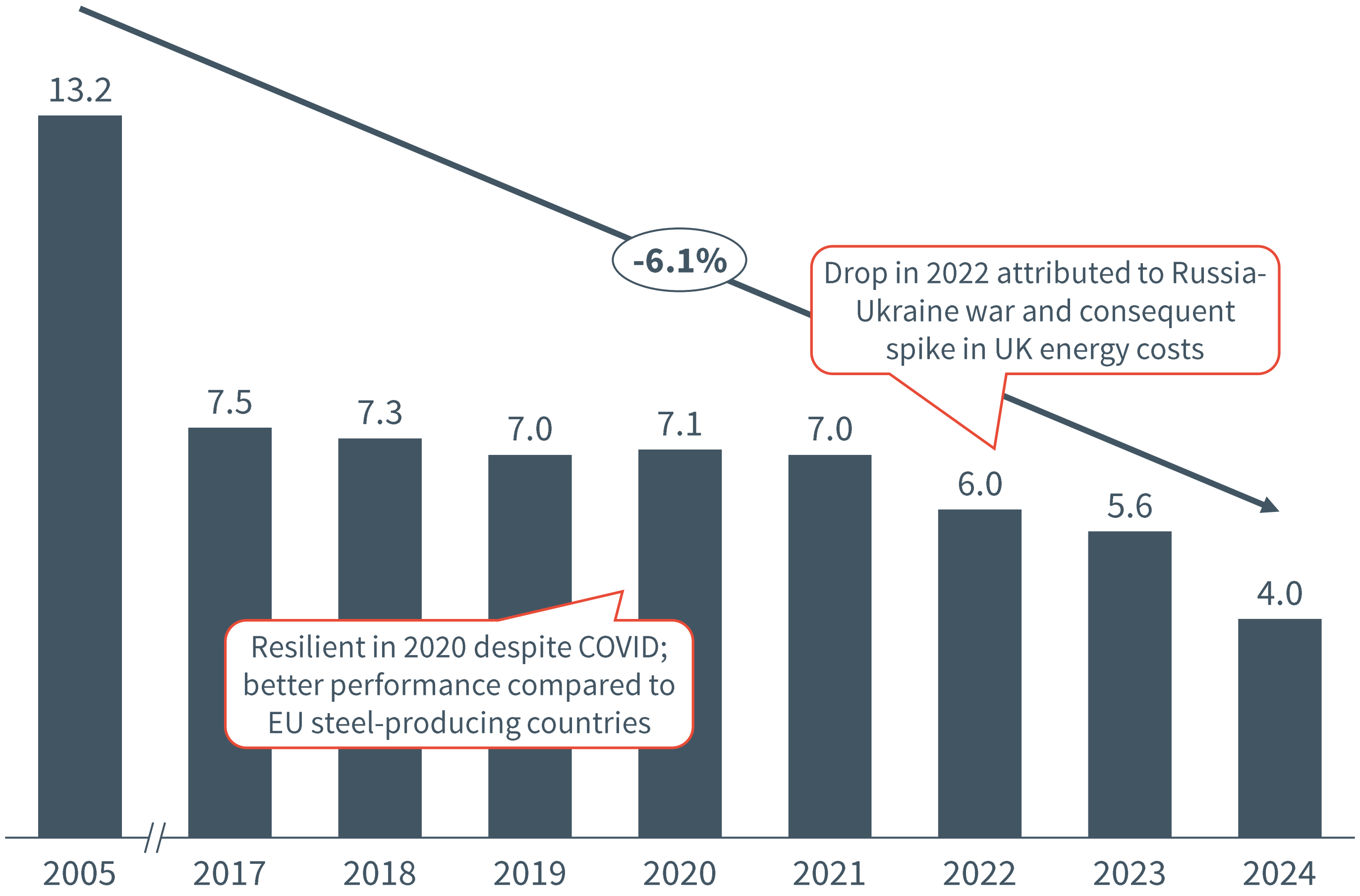


Source: Hatch analysis

Contents

Despite declining steel production in recent years, the UK has a generational opportunity to revitalise its steel industry

Historical Crude Steel Production, 2005 – 2024 (mtpa)



Drop in 2022 attributed to Russia-Ukraine war and consequent spike in UK energy costs

Resilient in 2020 despite COVID; better performance compared to EU steel-producing countries

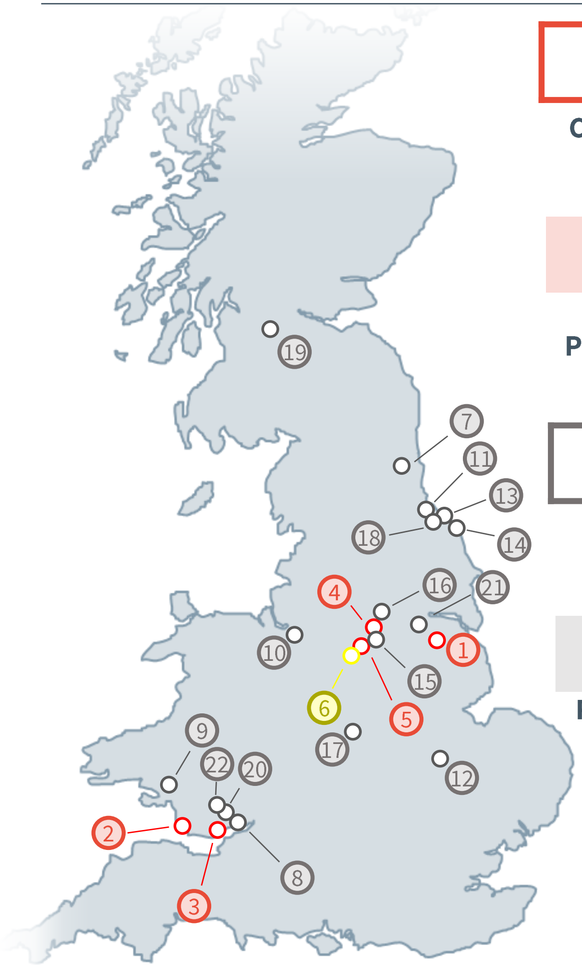
Source: WSA Yearbook, Hatch analysis

Key Takeaways

- The UK produces ~0.3% of global steel, facing strong competition from the EU as well as China, which produces over 50% of global output
- Over the last 20 years, domestic production has dropped by over 70% due to the increase of energy prices in the UK and reduced demand, while oversupply from China has weighed down steel prices globally
- In 2024, the UK produced ~4 mt of crude steel, a 29% drop from 2023 levels due to the closure of Tata Steel's Port Talbot Steel making facility (Jul – Sep 2024) and the unplanned shutdown of British Steel's blast furnace (Jul – Dec 2024, which has restarted in Jan 2025)
- **Looking ahead, there is a generational opportunity to revitalise the industry through investments in capability development and decarbonisation**; this will necessitate targeted investments in both steel production capabilities and capacities

The UK currently has a crude steel production capacity of 8.7 mtpa; over 95% of this capacity comes from four producers – British Steel, Tata, SSUK, and 7 Steel

Steel Production Assets in the UK



8.6 mt
Crude Carbon Steel Capacity (2024)[1]

5
Carbon Steel Production Facilities

10.7 mt
Finished Steel Capacity (2024)

16
Rolling & Processing Facilities

Overview of Crude and Finished Steel Capacities by Asset, 2024[2]

Carbon Steel Production Facilities

Producer	Asset	Crude Capacity (mtpa)	Finished Capacity (mtpa)
① **British Steel**	Scunthorpe	2.5 (BOF) 2.7 (EAF*)	1.2
② **Tata Steel**	Port Talbot[4]	3.5 (BOF) 3.2 (EAF*)	1.7
③ **7 Steel UK**	Cardiff	1.2	1.4
④ **SSUK**	Rotherham	1.2	0.7
⑤ **Forgemasters**	Sheffield	0.2	0.2

**British Steel and Tata Steel EAF'S are expected come online before 2030*

Stainless Steel Production Facilities

Producer	Asset	Crude Capacity (mtpa)	Carbon Steel Capacity (mtpa)	Stainless Steel Capacity (mtpa)
⑥ **Marcegaglia**	Sheffield	0.1	0.07	0.03

Rolling and Processing Facilities

Producer	Asset	Finished Capacity (mtpa)
⑦ **Met-Invest**	Gateshead	0.2
⑧ **Tata Steel**	Llanwern	0.8
⑨ **Tata Steel**	Trostre	0.4
⑩ **Tata Steel**	Shotton	0.4
⑪ **Tata Steel**	Hartlepool	0.2
⑫ **Tata Steel**	Corby	0.3
⑬ **British Steel**	Teesside	0.9
⑭ **British Steel**	Skinningrove	0.2
⑮ **SSUK**	Brinsworth	<0.1
⑯ **SSUK**	Stocksbridge[3]	0.3
⑰ **SSUK**	Wednesbury	0.7[6]
⑱ **Liberty**	Dalzell	0.4
⑲ **Liberty**	Newport	1.0
⑳ **Liberty**	Hartlepool	0.2
㉑ **Liberty**	Scunthorpe	0.2
㉒ **Liberty**	Tredegar	<0.1

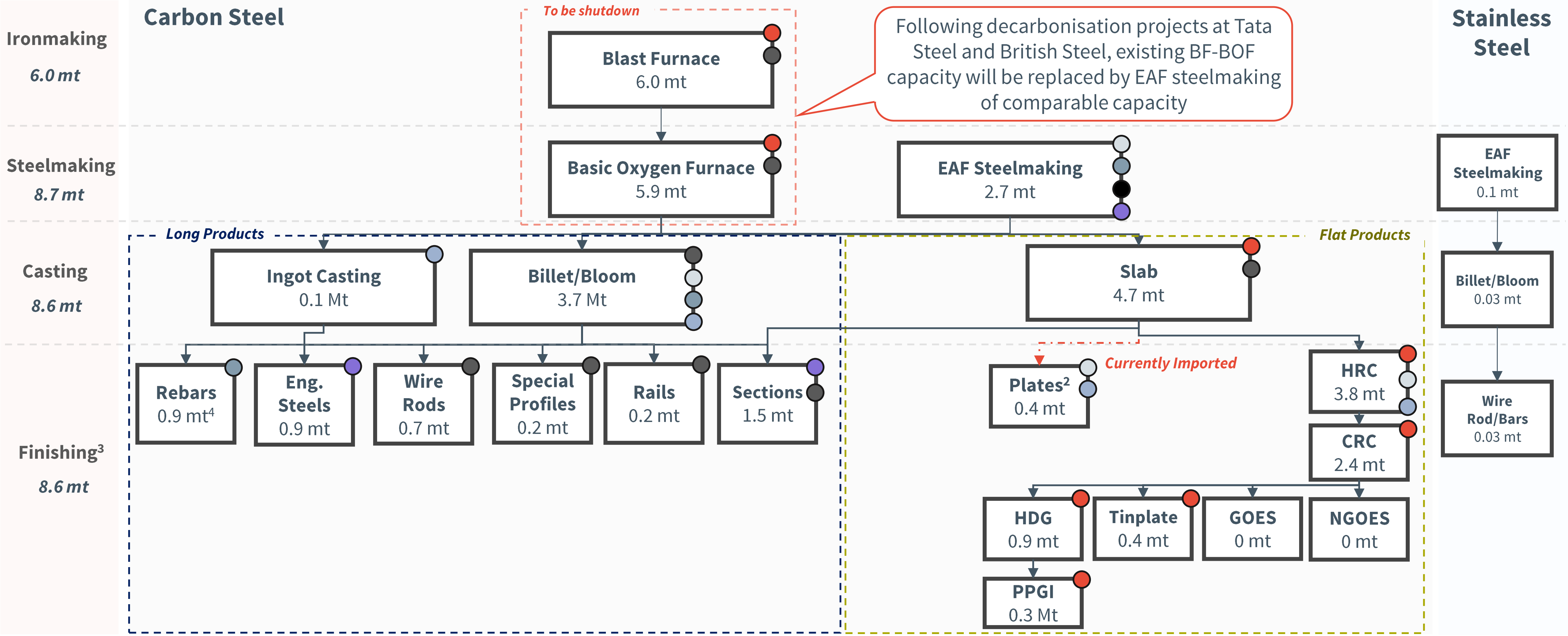
Note: 1. Excludes stainless steel production. 2. Finished product production capacity values have been adjusted for importing and exporting of semi-finished products 3. SSUK Stocksbridge production is currently idled 4. There is currently no production at Port Talbot, but an EAF is currently being constructed with a capacity of 3.2mtpa and is expected to come online in 2027.

Source: Company websites, Hatch analysis, Stakeholder meetings

Within the UK steel production landscape, British Steel, SSUK, and 7 Steel primarily produce long products while Tata Steel leads in flat product production

Overall UK Steel Industry Production Capacity Flowsheet, 2024[1]

SSUK | British Steel | Marcegaglia | Liberty Steel
Metinvest Spartan | Tata Steel UK | 7 Steel | Forgemasters



Ironmaking
6.0 mt

Steelmaking
8.7 mt

Casting
8.6 mt

Finishing[3]
8.6 mt

Carbon Steel

To be shutdown

Blast Furnace
6.0 mt

Basic Oxygen Furnace
5.9 mt

Following decarbonisation projects at Tata Steel and British Steel, existing BF-BOF capacity will be replaced by EAF steelmaking of comparable capacity

EAF Steelmaking
2.7 mt

Long Products

Ingot Casting
0.1 Mt

Billet/Bloom
3.7 Mt

Flat Products

Slab
4.7 mt

Rebars
0.9 mt[4]

Eng. Steels
0.9 mt

Wire Rods
0.7 mt

Special Profiles
0.2 mt

Rails
0.2 mt

Sections
1.5 mt

Currently Imported

Plates[2]
0.4 mt

HRC
3.8 mt

CRC
2.4 mt

HDG
0.9 mt

Tinplate
0.4 mt

GOES
0 mt

NGOES
0 mt

PPGI
0.3 Mt

Stainless Steel

EAF Steelmaking
0.1 mt

Billet/Bloom
0.03 mt

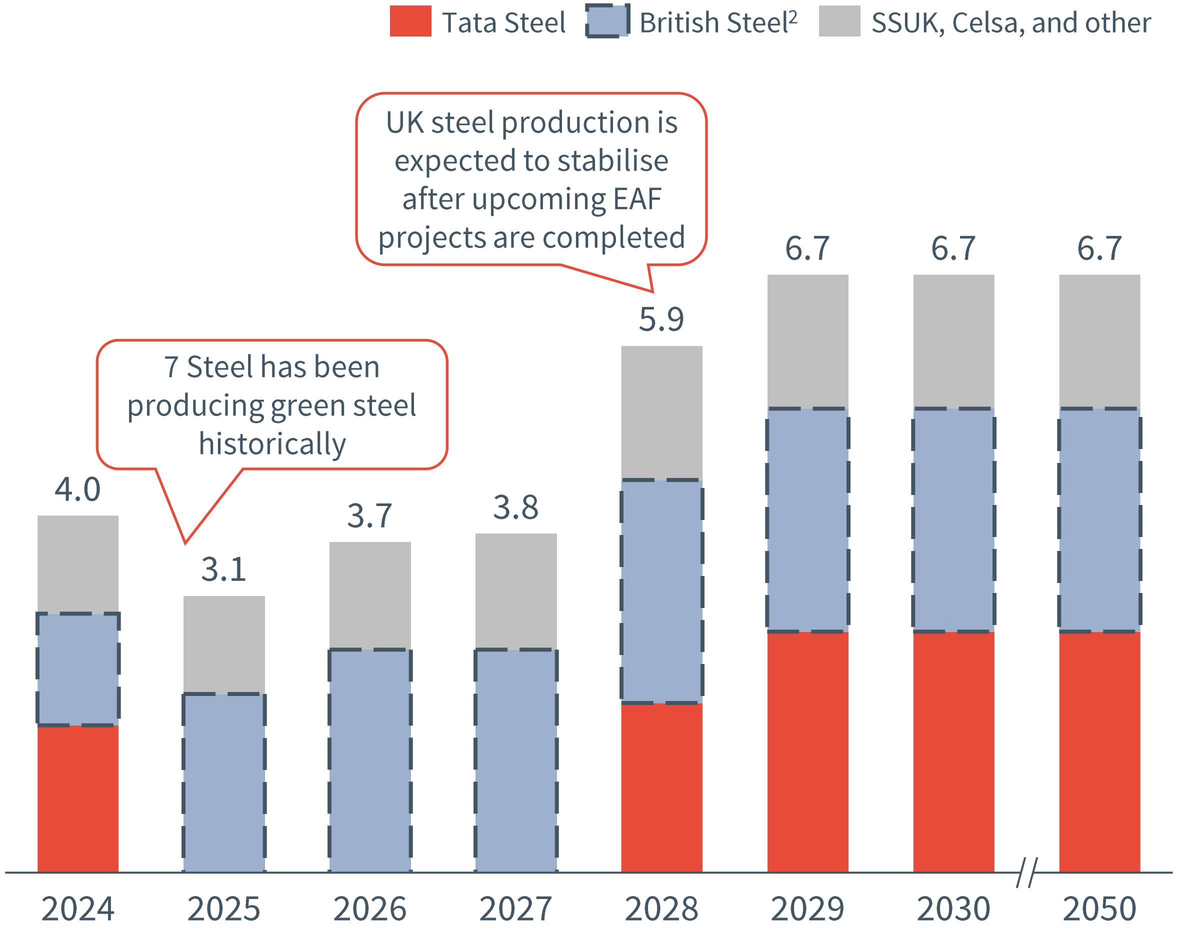
Wire Rod/Bars
0.03 mt

Note: 1. The stated capacities for strip products reflect maximum production potential and do not indicate the volume available for market distribution, due to internal utilisation for downstream products. 2. The slabs for plates are currently imported or sourced from Scunthorpe for both MetInvest and Liberty. 3. Finished product production values have been adjusted for importing and exporting of semi-finished products. 4. 7 Steel Rebar capacity of 0.9 mtpa can be transferred to wire rods due to dual capabilities.

Source: Company websites, Hatch analysis, Stakeholder meetings

Steel production volume is expected to fall to 3.1 mtpa in 2025 before reaching a long-term steady state of 6.7 mtpa post-2029

Forecast Crude Steel Production, 2025 – 2050 (mtpa)



UK steel production is expected to stabilise after upcoming EAF projects are completed

7 Steel has been producing green steel historically

Key Takeaways

- The UK steel industry has announced a permanent closure of the blast furnace at Tata Steel which was shut down in July – September 2024
- Over the short-term, steel production volume is expected to fall to 3.1 mtpa in 2025 before reaching a long-term steady state of 6.7 mtpa post-2029. In the interim, downstream assets are expected to continue operations at reduced production levels using imported semi-finished steel
- British Steel plans to replace blast furnaces with an EAF, though timelines have not been confirmed. Once complete, steel produced in the UK has the potential to be entirely low carbon and meet green steel requirements

Key Upcoming Projects

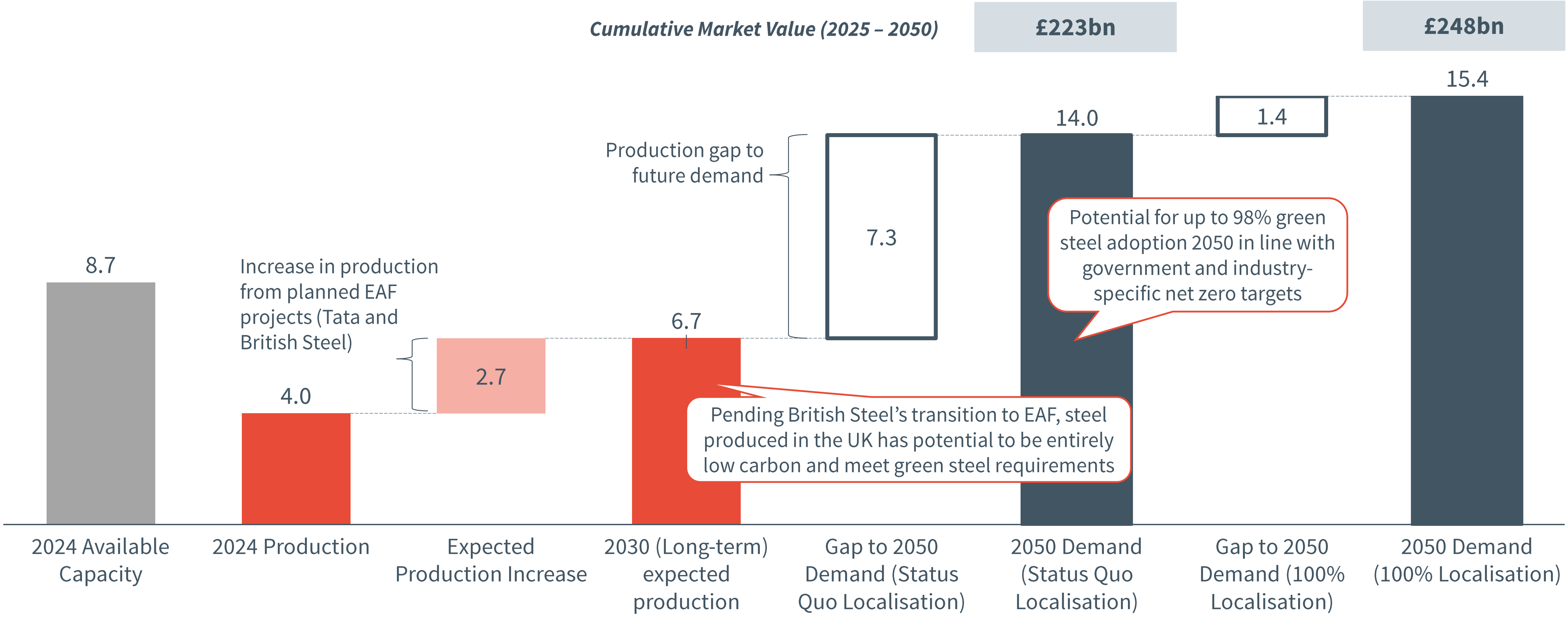
Company	2024 Capacity (mtpa)	Project	Expected Completion	Capacity Change (mtpa)
Tata Steel	3.5[1]	Decarbonisation – transition to EAF	Late 2027	-0.3
British Steel	2.5[1]	Decarbonisation – transition to EAF[2]	Early 2028	--
SSUK[3]	1.2	Capacity expansion	N/A	+0.8
Marcegaglia	0.1	Capacity expansion	N/A	+0.4

Note: 1. Pre-shutdown of blast furnaces and EAF construction dates and capacities are estimates. 2. British Steel blast furnaces are assumed to run until any other details are disclosed. based on British Steel's previously published plans to transition from blast furnaces to Electric Arc Furnaces. However, no final decisions have been taken on the transformation, and the strategy and timings are therefore liable to change. 3. Expansion plans for SSUK's EAF capacity, previously proposed under Liberty, are unclear and are liable to change following the publishing of this report

Source: WSA Yearbook, information made available by Tata Steel, British Steel, Liberty Steel, SSUK, and Marcegaglia, Hatch analysis, Stakeholder Meetings.

Over the long-term, a domestic production gap of ~7.3 mtpa could exist by 2050, presenting a critical opportunity for revitalising the UK steel sector

Forecast Crude Steel Supply vs. Demand, 2025 – 2050 (mtpa)



Note: Demand for wind and automotive sector products assumes contained steel in a 100% localised scenario
Source: Hatch analysis

Tata Steel UK is a key producer of HRC, coated products, and tinplate within the UK, with five steel assets and a crude steel production capacity of 3.5 mtpa (2024)

Producer Overview: Tata Steel UK

Background

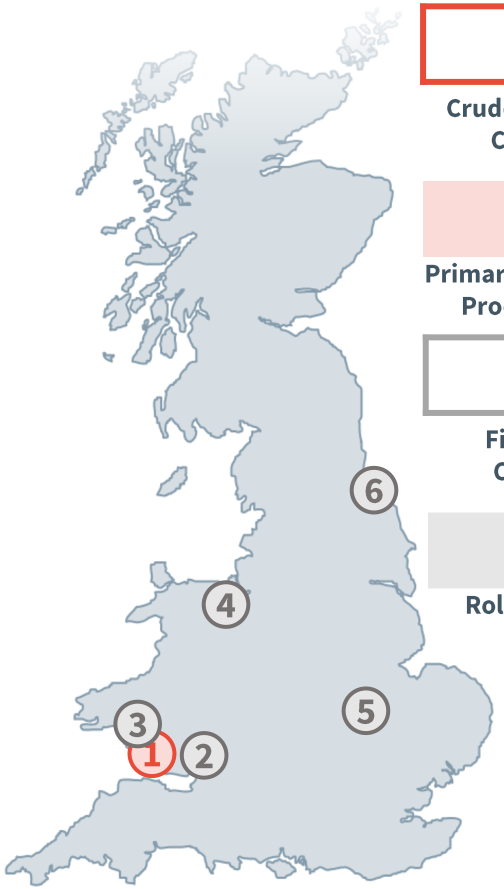
Tata Steel UK is the largest steelmaker in the UK, operating a centralised steelmaking plant at Port Talbot with processing sites across the UK. Tata Steel UK acquired its assets in 2007, which were previously owned by British Steel and the Corus Group. To supplement any gaps in technical capabilities, Tata Steel UK works closely with its facility in the Netherlands (Ijmuiden).

Steelmaking Asset	Steel Production Pathway	Capacity (mtpa)	Product Profile	Finished Capacity[1] (mtpa)
① **Port Talbot Steelworks**	*BF-BOF (past)*	*3.5*	HRC	2.8
	EAF (2028 onwards)	3.2	CRC	0.7

Rolling/Processing Asset	Asset Type	Product Profile	Finished Capacity (mtpa)
② **Llanwern Steelworks**	Cold rolling mill and galvanising line	HDG	0.8
③ **Trostre Steelworks**	Tinplate production line	Tinplate	0.4
④ **Shotton Steelworks**	Galvanising and colour coating line	HDG/PPGI	0.4
⑤ **Corby Steelworks**	HFI pipe production	Structural and conveyance pipes (from HRC)	0.3
⑥ **Hartlepool Steelworks**	HFI pipe production	Structural and conveyance pipes/O&G pipes (from HRC)	0.2

Transformation Plans

Tata Steel is planning to transition to EAF steelmaking from BF-BOF steelmaking. The transition plan includes the commissioning of 1x320t EAF on the Port Talbot site to produce green steel by 2027 to dramatically reduce carbon emissions. Currently, the BFs are closed and production is being supplemented by imported slabs.



3.5 mt

Crude Steel Production Capacity (2024)

1

Primary & Secondary Steel Production Facilities

2.8 mt

Finished Product Capacity (2024)

5

Rolling & Processing Facilities

Source: Company websites, Hatch analysis , Stakeholder meetings

British Steel is a key producer of sections and rails in the UK, with 3 steel assets and a crude steel production capacity of 2.5 mtpa (2024)

Producer Overview: British Steel

Background

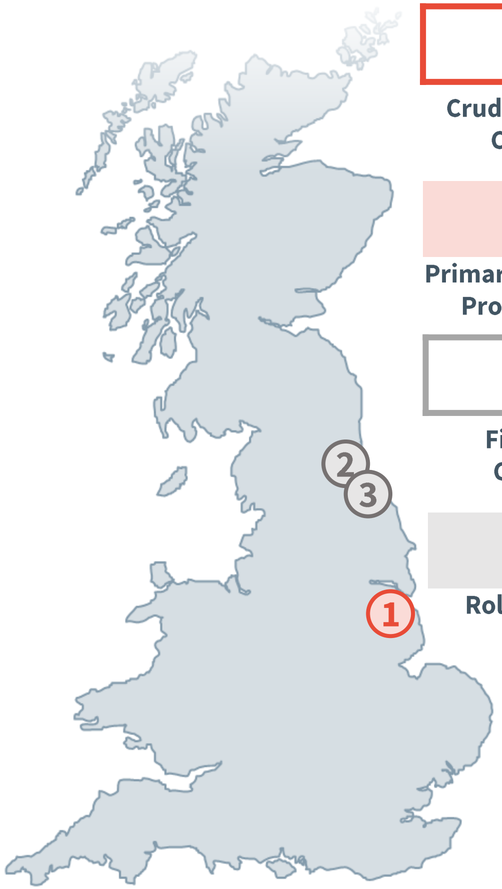
British Steel is a major producer specialised in long products (e.g., sections, rails, wire rod, and special profiles). Founded in 1967, British Steel has changed ownership several times, and as of 2020 is owned by the Jingye Group. British Steel centralises its primary steelmaking at Scunthorpe with further processing operations at Teesside and Skinningrove. It also produces semi-finished products which are shipped directly to other rolling facilities in Europe.

Steelmaking Asset	Steel Production Pathway	Capacity (mtpa)	Product Profile	Finished Capacity[1] (mtpa)
① **Scunthorpe Steelworks**	*BF-BOF (past)*	2.5	Wire rod	0.7
	EAF (2028 onwards[2])	2.7	Medium sections & rail	0.5

Rolling/Processing Asset	Asset Type	Product Profile	Finished Capacity (mtpa)
② **Teesside Steelworks**	Section mill	Heavy sections	0.9
③ **Skinningrove Steelworks**	Special profiles mill	Special profiles	0.2

Transformation Plans

British Steel is planning to transition to EAF steelmaking from BF-BOF steelmaking. The transition plan includes the commissioning of two 130-tonne EAFs on the Scunthorpe site to produce green steel but timelines have not been confirmed. The downstream processing assets at Scunthorpe, Teesside, and Skinningrove are expected to remain largely unchanged.



2.5 mt
Crude Steel Production Capacity (2024)

1
Primary & Secondary Steel Production Facilities

2.3 mt
Finished Product Capacity (2024)

2
Rolling & Processing Facilities

The report is based on British Steel's previously published plans to transition from BF to EAFs. However no final decisions have been taken on the transformation, and the strategy and timings are therefore liable to change

Note: 1. The product capacities between the new and old steel production pathway are unchanged despite an overall capacity decrease. 2. This is an estimate and official plans to convert from BF-BOF to EAF is still unknown.
Source: Company websites, Hatch analysis

Specialty Steels UK (SSUK) is a UK producer of specialist EAF-based steels with one core steelmaking assets and associated downstream facilities

Producer Overview: Specialty Steels UK (SSUK)

Background

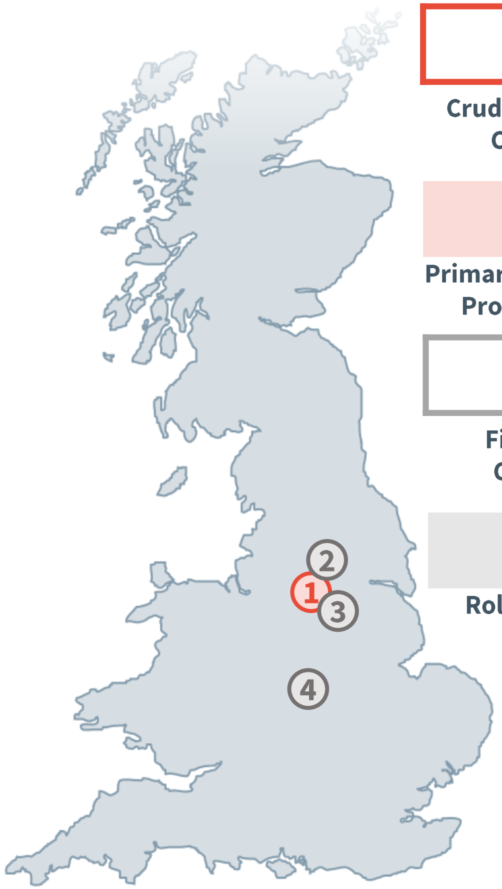
Speciality Steel UK (SSUK) is an EAF-based producer of specialist steels for aerospace, defence and industrial applications, operating facilities in Rotherham previously as part of the Gupta Family Group (GFG) Alliance. The business faced prolonged financial challenges following the collapse of its main lender and rising debt levels, resulting in EAF crude steel production stopping in Rotherham from July 2024 and the company being issued a winding-up order in August 2025.

Steelmaking Asset	Steel Production Pathway	Crude Steel Capacity (mtpa)	Product Profile	Finished Capacity (mtpa)
① **Rotherham**	EAF steelmaking	1.2	Engineering steels	0.7

Rolling/Processing Asset	Asset Type	Product Profile	Finished Capacity (mtpa)
② **Stocksbridge**[1]	Speciality steel production	Engineering steels (bars)	0.3
③ **Brinsworth**	Narrow hot strip mill	Speciality narrow strip	<0.1
④ **Wednesbury**[2]	Drawing lines	Engineering steel (coils)	0.7

Transformation Plans

Proposed restructuring measures by Liberty prior to liquidation - including debt reorganisation and investment plans – did not proceed following the court decision. Responsibility for SSUK's transition now lies with the independent Official Receiver, which is assessing potential buyers and evaluating options to re-establish operations and determine the future configuration of the Rotherham and Stocksbridge sites.



1.2 mt

Crude Steel Production Capacity (2024)

1

Primary & Secondary Steel Production Facilities

1.1 mt

Finished Product Capacity (2024)

3

Rolling & Processing Facilities

Note: : 1. SSUK Rotherham has rolling mill, bright drawbench and turning assets to support its primary steelmaking, 2. Wednesbury site capacity is shared with Rotherham and Stocksbridge and hence the actual individual capacity is not known

Source: Company websites, Hatch analysis , Stakeholder meetings

Liberty Steel UK operates only downstream processing assets, with no crude steelmaking capacity following the separation from SSUK

Producer Overview: Liberty Steel[1]

Background

Liberty Steel UK is part of the GFG Alliance and had previously pursued a strategy centred on EAF-based, lower-carbon steelmaking across multiple UK assets. Following the collapse of Greensill Capital, the group faced significant liquidity constraints and operational disruption. Sites including Rotherham and Stocksbridge are no longer part of Liberty Steel after being transferred into government-led liquidation as SSUK, leaving Liberty with a reduced UK operational footprint.

Rolling/Processing Asset	Asset Type	Product Profile	Finished Capacity (mtpa)
① **Newport**	Hot strip mill	HRC	1.0
② **Dalzell**	Plate mill	Plates, SAW	0.4
③ **Hartlepool**	HSAW pipe mill	HSAW pipes	0.2
④ **Scunthorpe**[2]	Steel rolling mills	Steel merchant bar	0.2
⑤ **Tredegar**[2]	Tube mill	Tubes & cold-formed sections	<0.1

Transformation Plans

Liberty Steel UK is progressing a restructuring programme focused on simplifying its remaining UK structure, improving financial stability and prioritising higher-value, specialist product lines. The company's efforts centre on maintaining continuity across its remaining assets, strengthening working capital, and securing investment to support a more sustainable operating model.

1.9 mt

Finished Product Capacity (2024)

5

Rolling & Processing Facilities

Note: 1. Liberty sites import slabs to supplement their product capacity 2. Scunthorpe rolling mills and Tredegar tube mills fall outside the perimeter of this production capabilities assessment but are shown as part of the Liberty asset portfolio
Source: Company websites, Hatch analysis , Stakeholder meetings

Contents

A comprehensive approach was used to identify and address operational and supply chain gaps in the UK's steel sector

Steel Production Capabilities, Capacities & Supply Chain Gap Analysis Methodology

1 Steel Production Capability & Capacity Gap Analysis

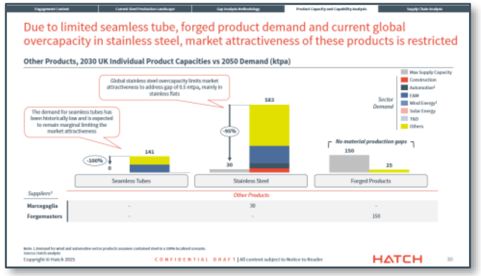
Evaluation of UK steelmaking assets based on their ability to produce the quantity and capabilities of target products required by key domestic end-uses

Capacity Analysis

+ Domestic steel production vs. long-term demand by product

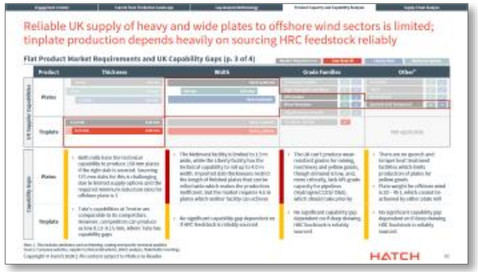
Capability Analysis

+ Dimensions
+ Grades
+ Shapes



Due to limited seamless tube, forged product demand and current global overcapacity in stainless steel, market attractiveness of these products is restricted

Other Products, 2030 UK Individual Product Capacities vs 2050 Demand (ktpa)



Reliable UK supply of heavy and wide plates to offshore wind sectors is limited; tinplate production depends heavily on sourcing HRC feedstock reliably

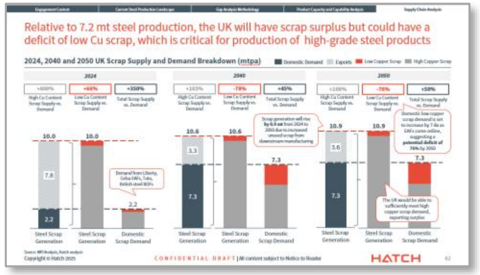
Flat Product Market Requirements and UK Capability Gaps (p. 3 of 4)

2 Supply Chain Gap Analysis

Evaluation of broader end-use sector supply chains, focusing on upstream input and sector-specific downstream requirements for addressing steel production gaps

Upstream Analysis

+ Energy
+ Ore Based Metallics (OBMs)
+ Scrap



Relative to 7.2 mt steel production, the UK will have scrap surplus but could have a deficit of low Cu scrap, which is critical for production of high-grade steel products

2024, 2040 and 2050 UK Scrap Supply and Demand Breakdown (mtpa)

Downstream Analysis

+ Construction
+ Engineering & machinery
+ Wind power
+ Automotive
+ Transmission & distribution
+ Nuclear
+ Solar power
+ Transformers
+ Motors
+ Defence

Output: *Options to address the key technical and commercial gaps for the products and key end-use sectors. These options will consider capital cost requirements, development timelines, policy support measures, and commercial risks*

Gaps have been assessed based on criteria specific to capacity, capability, and supply chain requirements

Assessment Methodology

1 Steel Production Capability & Capacity Gap Analysis

Analysis Area	🟢 Low	🟡 Medium	🔴 High
Capacity	Limited gaps or oversupply between 2030 production capacity and 2050 demand, UK assets can fulfil required demand	>30% gap between UK demand in 2050 and 2030 supply capacity from UK based assets	>60% gap between UK demand in 2050 and 2030 supply capacity from UK based assets
Capability	Limited gaps in technical capabilities from UK producers covering forecasted dimension and grade requirements	Some gaps in technical capabilities for products from UK producers covering forecasted dimension and grade requirements	Major gaps in technical capabilities for key products from UK producers covering forecasted dimension and grade needs

2 Supply Chain Gap Analysis

Analysis Area		🟢 Low	🟡 Medium	🔴 High
Upstream Inputs	*Capacity*	Limited to no gap in required inputs over the forecasted duration	Required inputs currently sufficient though will need to be scaled to meet long-term requirements	Required inputs are not available; critical for addressing steel production gaps
	Capability	The capability to provide the upstream commodity exists within the UK	The capability to provide the upstream commodity will require imports	Required capabilities are not available within the UK; critical for addressing steel production gaps
Downstream Processing & End-Use	*Capacity*	Limited to no gap in domestic supply chain capacity requirements	Supply chain capacity is partially built within the UK though some key players - present gaps limiting steel production	Major to complete gap in domestic supply chain capacity for target end-use sector
	Capability	Limited to no gap in domestic supply chain capability requirements	Supply chain capability is partially built within the UK though some key players - present gaps limiting steel production	Major to complete capability gap in domestic supply chain capabilities for target end-use sector

10 sectors have been prioritised for further gap analysis based on long-term demand share as well as UK strategic interests

Sector Analysis and Prioritisation

Sector	2050 Demand Share (%)	Growth Rate, ‘25 – ‘50 (%)
Construction	**56%**	**2%**
E&M	**12%**	**0.2%**
Automotive	**8%**	**2%**
Wind Power	**7%**	**7%**
T&D	**4%**	**12%**
Nuclear	**3%**	**5%**
Packaging	3%	2%
Yellow Goods	3%	3%
Heat Pumps	1%	9%
Oil & Gas	1%	-1%
Solar Power	**<1%**	**6%**
Transformers	**<1%**	**4%**
Motors	**<1%**	**0.2%**
Defence	**<1%**	**N/A[1]**
Rail	<1%	0%
CCUS	<1%	N/A[1]
Hydrogen	<1%	N/A[1]

Sectors	Prioritisation Basis
Construction	2050 demand share
E&M	2050 demand share
Automotive	2050 demand share
Wind Power	2050 demand share Growth rate ’25 – ‘50
Solar Power	Growth rate ’25 – ‘50
T&D	2050 demand share Growth rate ’25 – ‘50
Transformers/ Motors	Growth rate ’25 – ‘50
Defence	National strategic interests
Nuclear	National strategic interests

Note: 1. Metrics usually being forecasted based on projects, therefore a CAGR is not a representative metric in these instances 2. Wind and automotive steel demand are presented in the instance that all steel demand was fulfilled by the UK. While 10 sectors have been prioritised in line with the report mandate, other sectors should continue to be considered for broader steel strategy development purposes.

Source: Hatch analysis.

Meeting product requirements of key end-use sectors will require targeted deployment of capital investment and other support measures

Summary of Steel Product Requirements by Sector

▨ *Prioritised Sectors*

	Product	Construction	E&M	Automotive	Yellow Goods	Oil & Gas	Packaging	Rail	Wind Energy	Solar Energy	T&D	Nuclear	Transformers	Motors (non -auto)	Heat Pumps	Hydrogen	CCUS	Defence
Long Products	Rebars	✓							✓		✓	✓						✓
	Wire Rods	✓	✓	✓														✓
	Sections	✓									✓	✓						✓
	Special Profiles		✓		✓													✓
	Rail							✓										✓
	Engineering Steels		✓	✓											✓			✓
Flat Products	Plates	✓			✓	✓			✓			✓				✓	✓	✓
	HRC	✓	✓	✓		✓												✓
	CRC	✓	✓	✓			✓											
	HDG	✓	✓	✓			✓			✓					✓			
	PPGI	✓																
	NGOES/ GOES			✓									✓	✓				
	Tinplate						✓											
Other Products	Stainless Steel	✓	✓	✓								✓			✓			✓
	Seamless Tubes		✓			✓												✓
	Forgings		✓															✓

Note: 1. E&M for Forging contains Steel plants, Power and Shipbuilding.
Source: Hatch analysis

Contents

A comprehensive approach was used to identify and address operational and supply chain gaps in the UK's steel sector

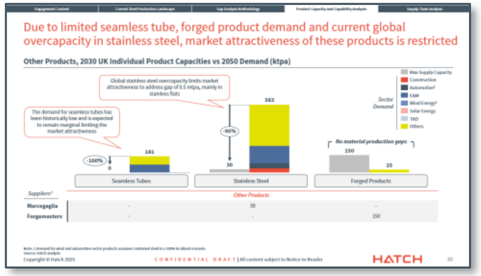
Steel Production Capabilities, Capacities & Supply Chain Gap Analysis Methodology

1 Steel Production Capability & Capacity Gap Analysis

Evaluation of UK steelmaking assets based on their ability to produce the quantity and capabilities of target products required by key domestic end-uses

Capacity Analysis

+ Domestic steel production vs. long-term demand by product



Due to limited seamless tube, forged product demand and current global overcapacity in stainless steel, market attractiveness of these products is restricted

Other Products, 2030 UK Individual Product Capacities vs 2050 Demand (ktpa)

Global stainless steel overcapacity limits market attractiveness to address gap of 0.5 mtpa, mainly in stainless flats

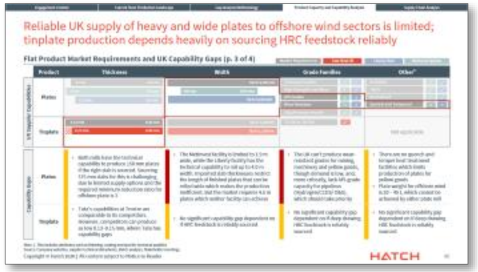
The demand for seamless tubes has been historically low and is expected to remain marginal limiting the market attractiveness

Suppliers¹	Seamless Tubes	Stainless Steel	Forged Products
Marcegaglia	-	30	-
Forgemasters	-	-	150

Copyright © Hatch 2025 CONFIDENTIAL DRAFT | All content subject to Notice to Reader HATCH 30

Capability Analysis

+ Dimensions
+ Grades
+ Shapes



Reliable UK supply of heavy and wide plates to offshore wind sectors is limited; tinplate production depends heavily on sourcing HRC feedstock reliably

Flat Product Market Requirements and UK Capability Gaps (p. 3 of 4)

Focus of this section

2 Supply Chain Gap Analysis

Evaluation of broader end-use sector supply chains, focusing on upstream input and sector-specific downstream requirements for addressing steel production gaps

Upstream Analysis

+ Energy
+ Direct reduced iron (DRI)
+ Scrap

Relative to 7.2 mt steel production, the UK will have scrap surplus but could have a deficit of low Cu scrap, which is critical for production of high-grade steel products

2024, 2040 and 2050 UK Scrap Supply and Demand Breakdown (mtpa)

Copyright © Hatch 2025 CONFIDENTIAL DRAFT | All content subject to Notice to Reader HATCH

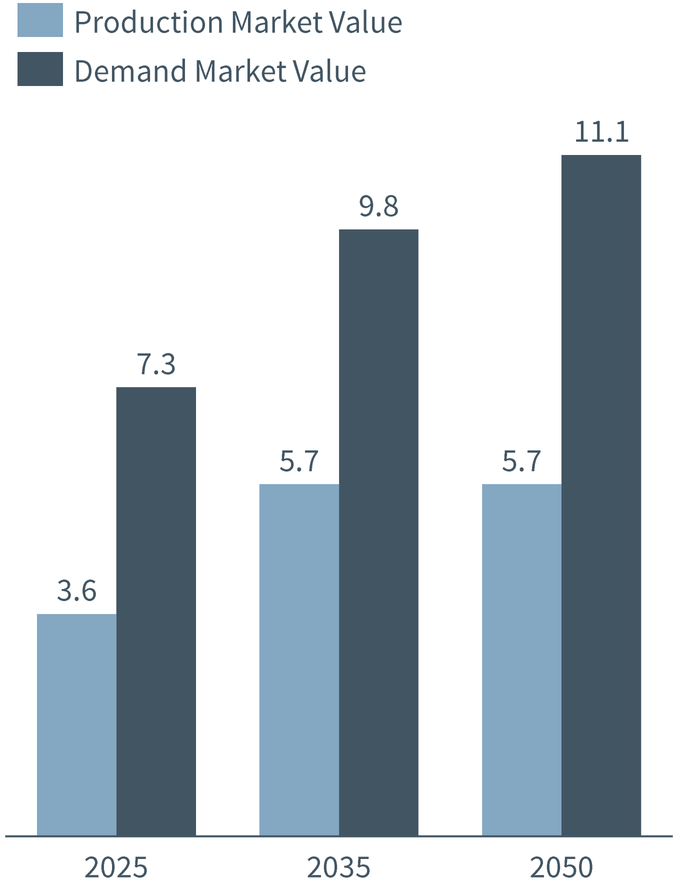
Downstream Analysis

+ Construction
+ Engineering & machinery
+ Wind power
+ Automotive
+ Transmission & distribution
+ Nuclear
+ Solar power
+ Transformers
+ Motors
+ Defence

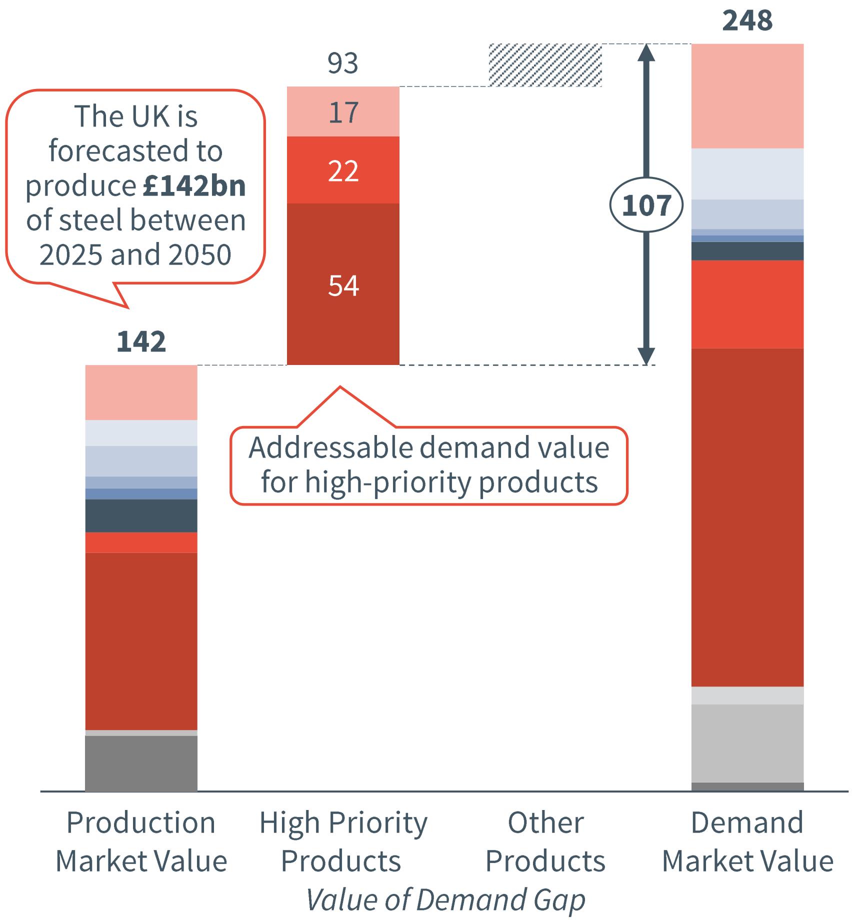
Output: *Options to address the key technical and commercial gaps for the products and key end-use sectors. These options will consider capital cost requirements, development timelines, policy support measures, and commercial risks*

Of the £248bn cumulative value of demand, there is potential for up to ~£93bn to be captured through various capacity and capability expansion projects

Captured vs. Addressable Demand Value per Year, 2025 – 2050 (£bn)



Cumulative Value by Product, 2025 – 2050 (£bn)



The UK is forecasted to produce **£142bn** of steel between 2025 and 2050

Addressable demand value for high-priority products

Market Value Gap by Product

	Product		Cumulative Market Gap Value (2025 – 2050)
Long Products	**Sections**	🟥	**£17bn**
	Rebars	⬜	n/a
	Wire Rods	⬜	n/a
	Special Profiles	🟦	n/a
	Rail	🟦	n/a
	Engineering Steels	⬛	n/a
Flat Products	**Plates**	🟥	**£22bn**
	Strip	🟥	**£54bn**
	HRC		
	CRC		
	HDG		
	PPGI		
	NGOES/GOES		
	Tinplate		
Other Products[1]	**Stainless Steel**	⬜	n/a
	Seamless Tubes	⬜	n/a
	Forgings	⬛	n/a

Note: 1. Despite representing a significant value gap, stainless steel and forged products are not addressable due to required scale requirements and global overcapacity. Value by product based on theoretical 100% localisation scenario.
Source: Hatch analysis

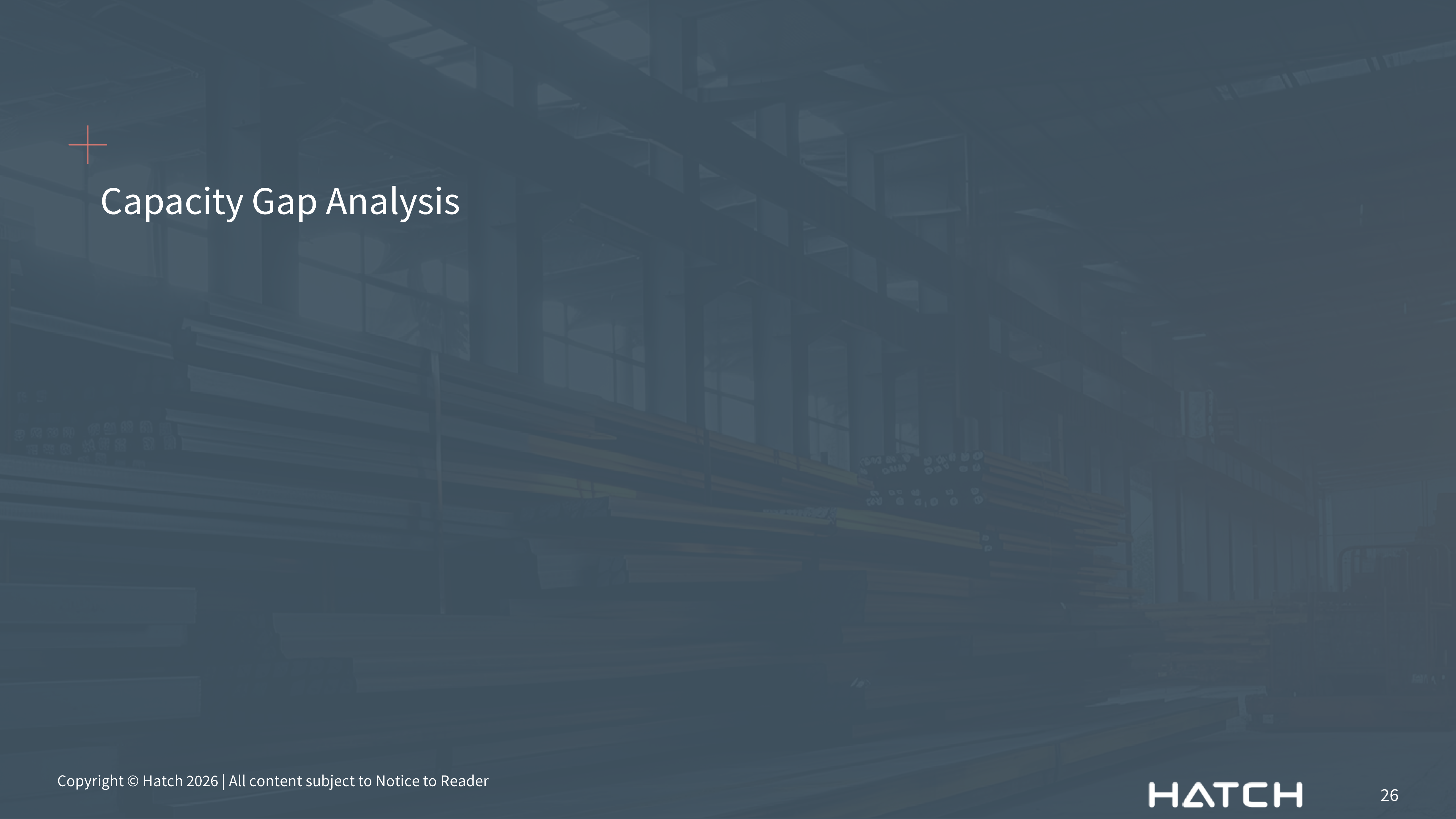
The UK faces significant capacity gaps in sections, HDG, and plates and capability gaps across all flat products

Capability and Capacity Gaps Summary

	Product	Capacity Gaps (mtpa)[1] 2050 Demand vs 2030 Supply[2]	Capability Gaps	Key Sectors Affected	Market Opportunity[3]	Cumulative Market Gap Value 2025 - 2050
Long Products	**Sections**	🟡 -0.7 (-30%)	🟢 None	T&D, Construction, Nuclear	**High**	**£17bn**
	Rebars	🟡 -0.7 (-44%)	🟢 None	T&D, Construction, Nuclear	**Med[4]**	n/a
	Wire Rods	🟢 -0.1 (-11%)	🟢 None	Construction, Auto, E&M	**Low**	n/a
	Special Profiles	🟢 +0.1 (+75%)	🟢 None	E&M, Yellow Goods	**Low**	n/a
	Rail	🟢 +0.1 (+56%)	🟢 None	Rail	**Low**	n/a
	Engineering Steels	🟢 +0.3 (+96%)	🟡 Sizes <0.22mm	Auto, E&M, Others	**Low**	n/a
Flat Products	**Plates**	🔴 -1.2 (-65%)	🔴 Wider width, suitable slab, lack of captive steel making	Wind (offshore), Nuclear	**High**	**£22bn**
	Strip	🔴 -4.5 (-60%)	🔴 N/A	-	**High**	**£54bn**
	HRC	🟢 +0.1 (+4%)	🔴 Grades: AHS, UHS, API (X70, X80), Gauge: 17.5-25mm	Automotive, O&G	**High**	
	CRC	🟢 -0.3 (-28%)	🔴 Grades: AHS, UHS, Gauge <0.5mm	Automotive	**High**	
	HDG	🔴 -2.6 (-79%)	🟡 Gauge: <0.5mm and >2mm, Coating: dual coating	Auto, Construction, Solar	**High**	
	PPGI	🟢 -0.1 (-25%)	🟡 Thin gauge material (<0.5mm)	Construction	**Low**	
	NGOES/GOES	🔴 -0.1 (-100%)	🔴 None	Transformers, EV Motors	**High**	
	Tinplate	🟢 +0.0 (+4%)	🟡 Dependent on suitable HRC feedstock	Packaging	**Low**	
Other Products	**Stainless Steel**	🔴 -0.5 (-90%)	🟡 UK has no capability in stainless steel flat products	Construction, Auto, E&M	*Market attractiveness limited due to lack of volumes and global overcapacity*	
	Seamless Tubes	🔴 -0.1 (-100%)	🔴 UK has no capability since closure of Desford Timken	O&G, E&M		
	Forgings	🟢 +0.1 (+500%)	🟢 None	Ships, Power, Others		n/a

Market attractiveness limited due to lack of volumes and global overcapacity

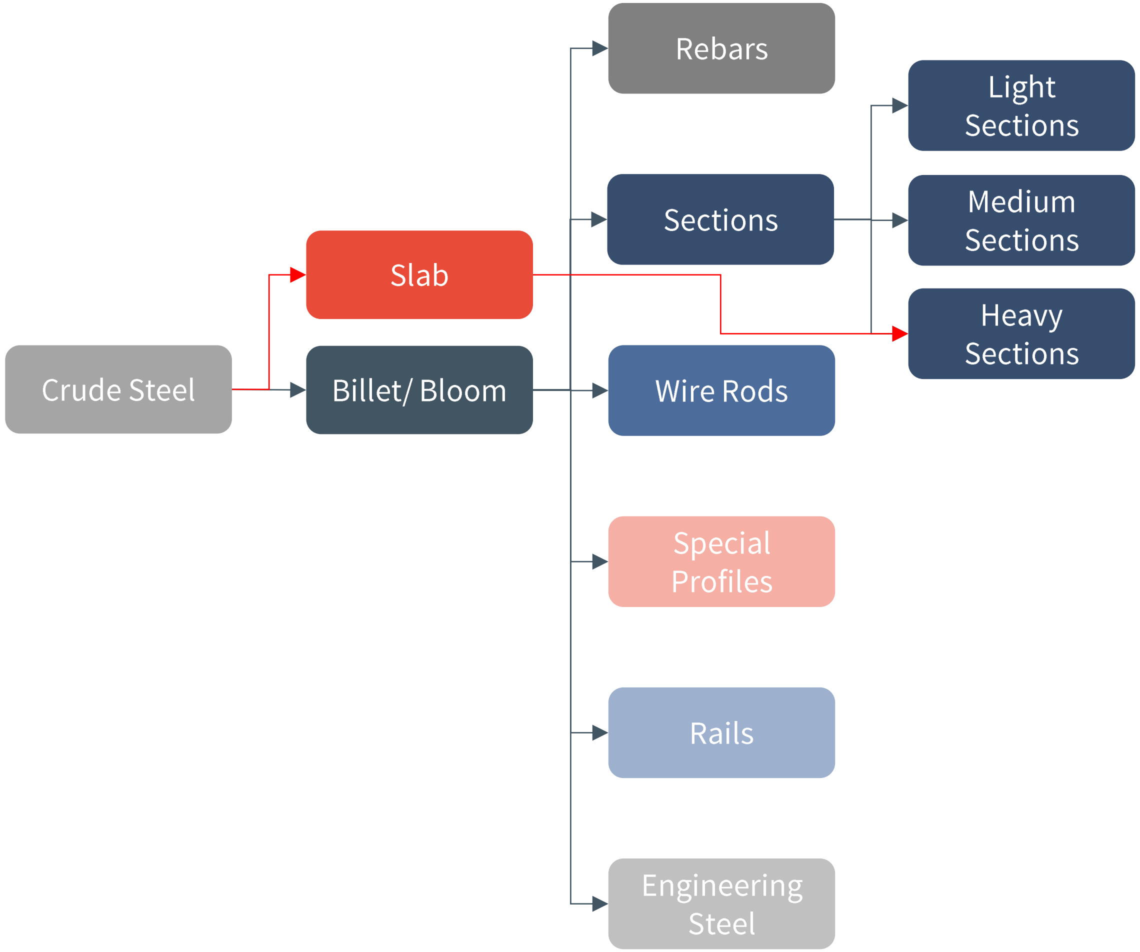
Note: 1 – Strip capacity gap (-3.8) is presented in terms of production whereas the individual strip products are presented relative to asset capacity 2 – Capacity gap based on long-term production (6.7 mtpa) vs forecast 2050 demand by product. 3 – Market Opportunity considers the combination of the relative gap of capacity, capability and cumulative market gap value between future demand and supply of UK steel assets. Value by product based on theoretical 100% localisation scenario. 4 – Rebar market opportunity is not considered significant due to various factors including product value, ability to meet with imports, current supply capabilities (which meet current demand), and ability to attract new investments. Source: Hatch analysis



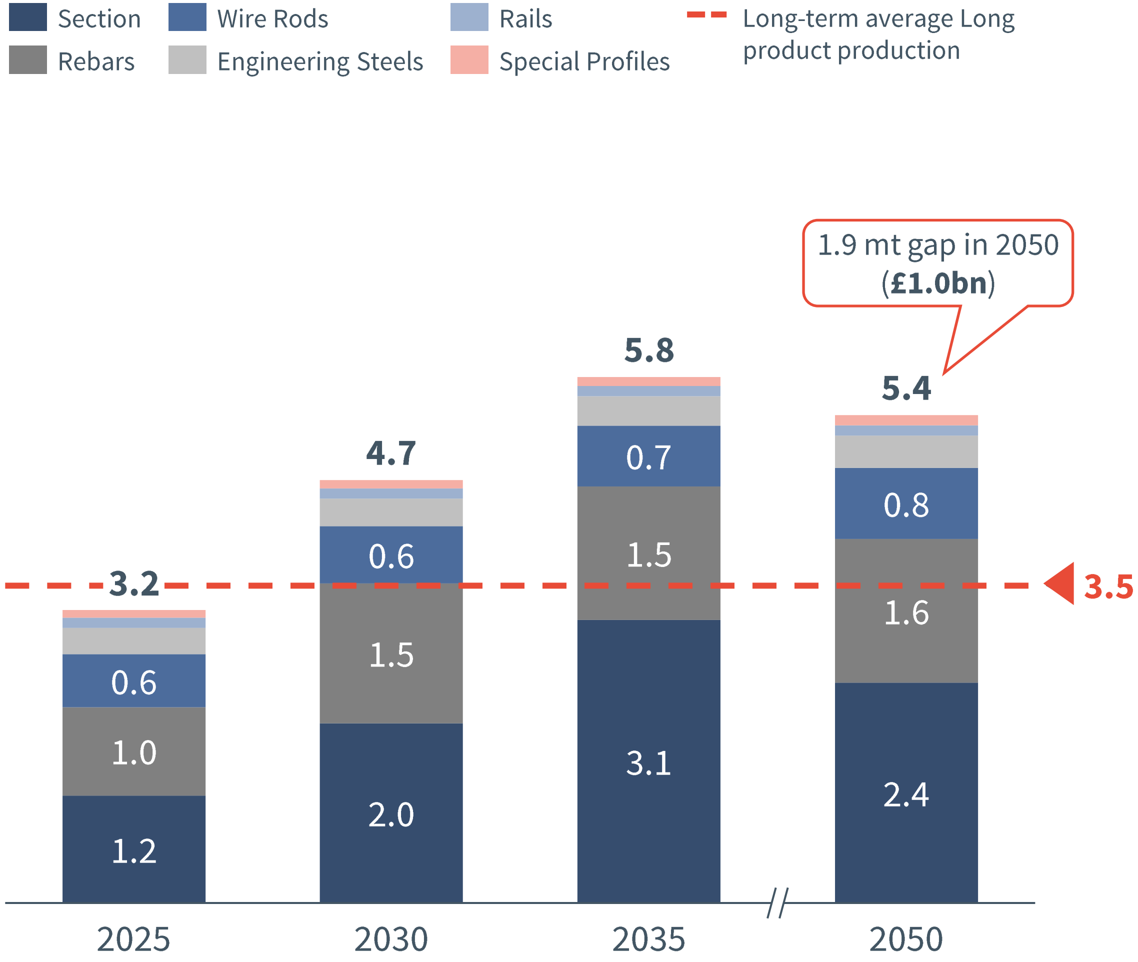
Capacity Gap Analysis

Based on expected production post-2030, long product demand will outpace supply; by 2050 this gap will reach 1.9 mtpa with the largest increase in sections

Long Product Flowsheet



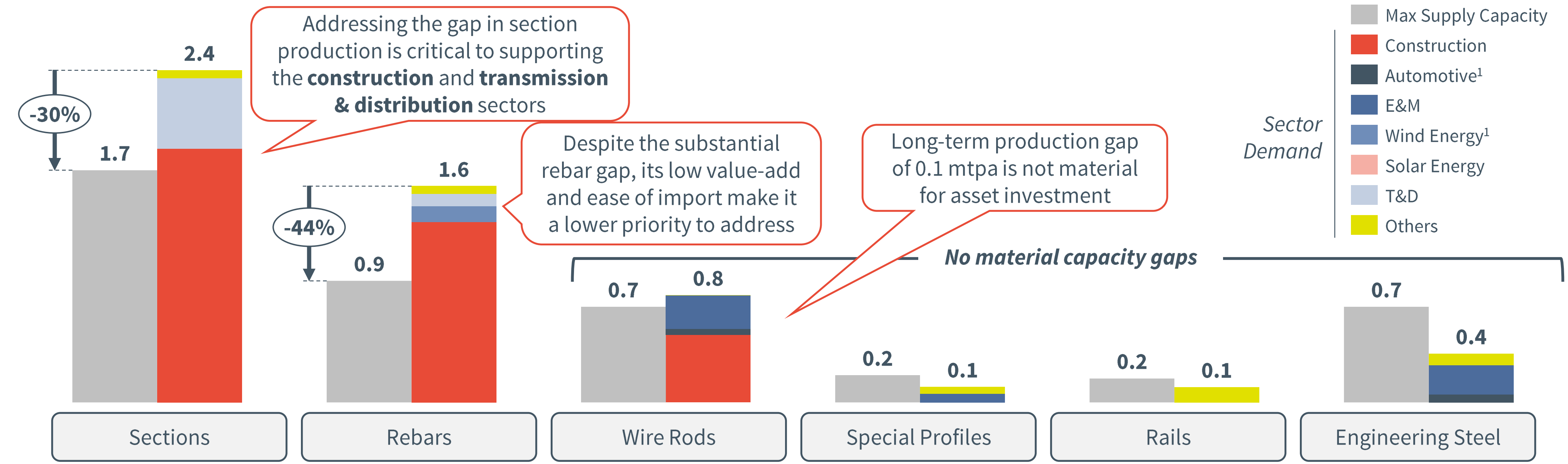
Long Product Production vs. Demand (mtpa)



Note: Demand for wind and automotive sector products assumes contained steel in a 100% localised scenario.
Source: Hatch analysis

As a critical product for the construction and T&D sectors, the largest long products opportunity is in sections, currently produced by British Steel and 7 Steel

Long Products, 2030 UK Individual Product Capacities vs 2050 Demand (mtpa)



Addressing the gap in section production is critical to supporting the **construction** and **transmission & distribution** sectors

Despite the substantial rebar gap, its low value-add and ease of import make it a lower priority to address

Long-term production gap of 0.1 mtpa is not material for asset investment

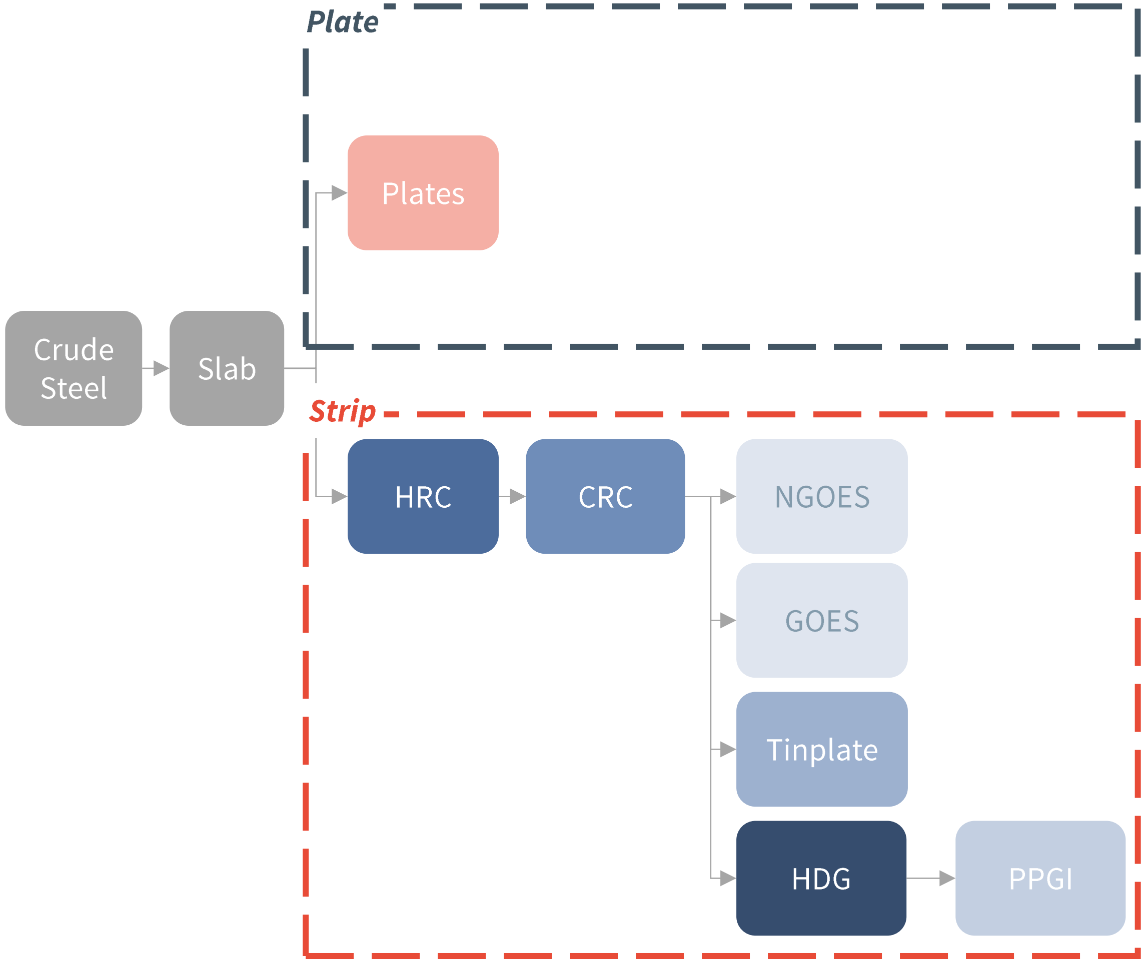
Suppliers[2]	Sections	Rebars	Wire Rods	Special Profiles	Rails	Engineering Steel
	Billet/ Bloom					
SSUK	-	-	-	-	-	0.7
British Steel	1.2	-	0.7	0.2	0.2[3]	-
7 Steel	0.5	0.9		-	-	-

Note : 1. The gaps between individual product capacities and demand assumes wind and auto at 100% localisation 2. Capacities are based on 2024 capacities and assume the capacities will be similar post-decarbonisation projects of British Steel and Tata Steel or other expansion projects 3. Estimated breakdown of Scunthorpe Sections and Rail Mill

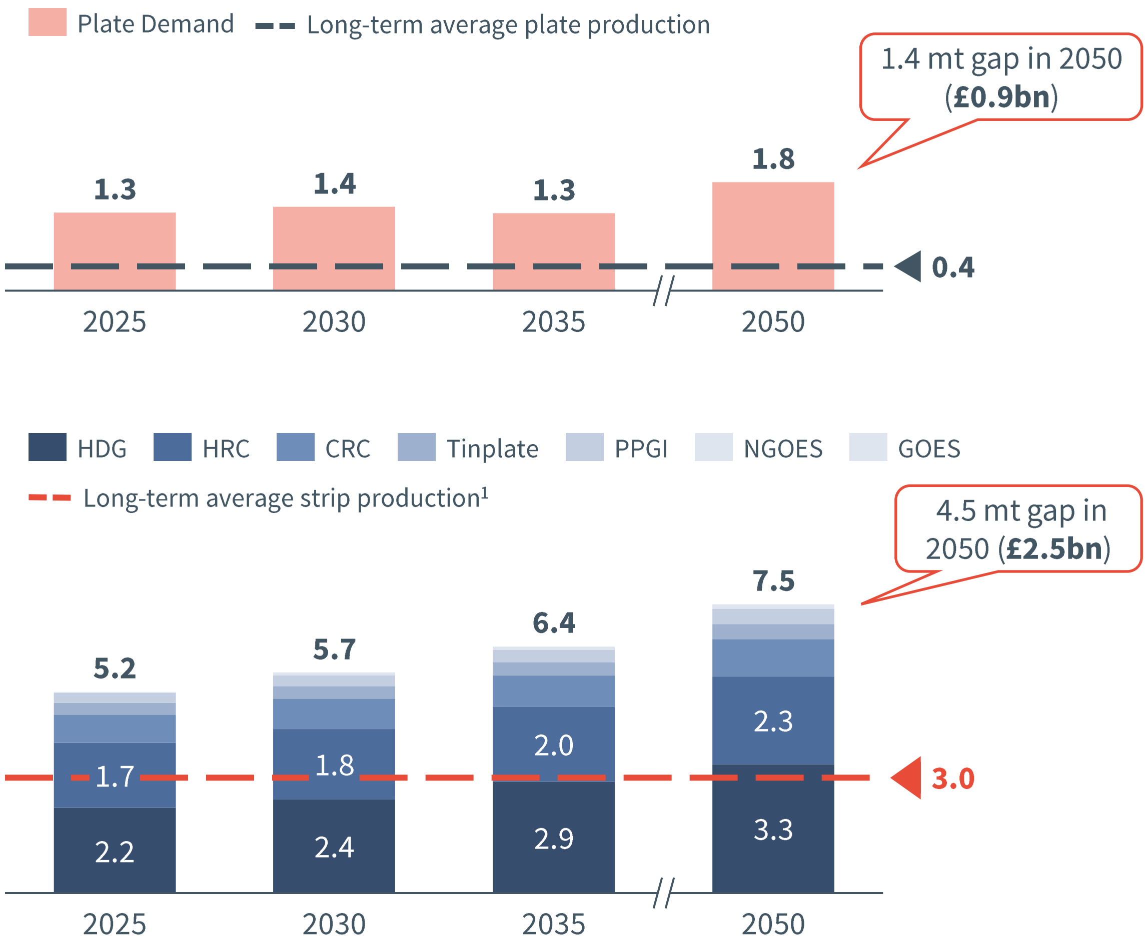
Source: Hatch analysis, Stakeholder Meetings

There is a significant supply gap in flat steel production, which is expected to reach ~5.9 mtpa by 2050 across both plate and strip products

Flat Product Flowsheet



Flat Product Production vs. Demand (mtpa)

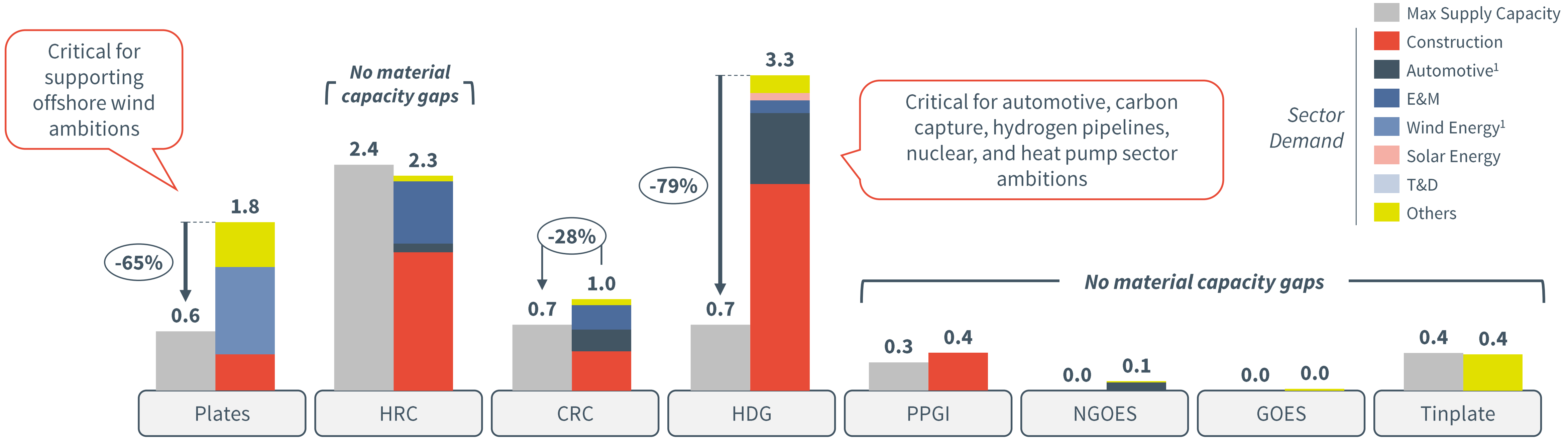


Note: 1.Demand for wind and automotive sector products assumes contained steel in a 100% localised scenario.

Source: Hatch analysis

HDG and plates are critical components for the construction and wind sector and represent the largest opportunities to close the long-term demand gap in the UK

Flat Products, 2030 UK Individual Product Capacities vs 2050 Demand (mtpa)



Critical for supporting offshore wind ambitions

Critical for automotive, carbon capture, hydrogen pipelines, nuclear, and heat pump sector ambitions

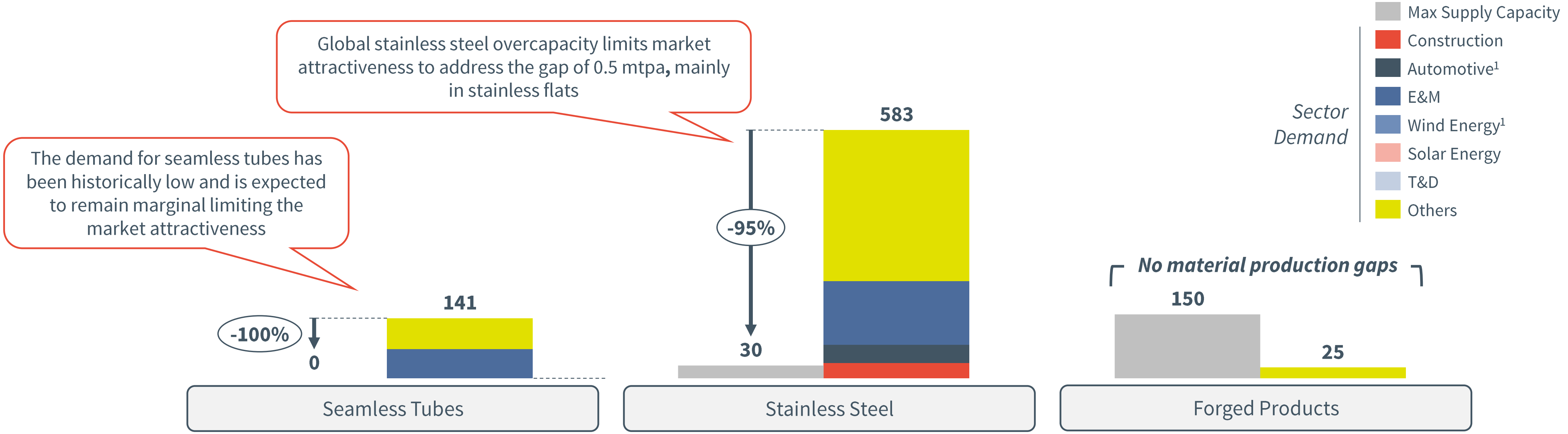
Suppliers[3]	*Plate*	*Strip*						
Tata Steel	-	1.4	0.7	0.7	0.3	-	-	0.4
Liberty[3]	0.4	1.0	-	-	-	-	-	-
Metlnvest	0.2	-	-	-	-	-	-	-

Note: 1. The gaps between individual product capacities and demand assumes wind and auto at 100% localisation 2. Capacities are based on 2024 capacities and assume the capacities will be similar post-decarbonisation projects of British Steel and Tata Steel or other expansion projects 3. Liberty's sites import slabs to further supplement their product capacities

Source: Hatch analysis.

Due to limited seamless tube, forged product demand, and current global overcapacity in stainless steel, market attractiveness of these products is restricted

Other Products, 2030 UK Individual Product Capacities vs 2050 Demand (ktpa)



Global stainless steel overcapacity limits market attractiveness to address the gap of 0.5 mtpa, mainly in stainless flats

The demand for seamless tubes has been historically low and is expected to remain marginal limiting the market attractiveness

Suppliers[3]	*Other Products*		
Marcegaglia	-	30	-
Forgemasters	-	-	150

Note: 1.Demand for wind and automotive sector products assumes contained steel in a 100% localised scenario.
Source: Hatch analysis

Capability Gap Analysis

Based on the capabilities of 7 Steel and British Steel, the UK currently has the technical ability to address rebar and special profile market requirements

Long Product Market Requirements and UK Capabilities (p. 1 of 5)

Market Requirement
7 Steel
British Steel

	Product	Sizes	Shapes	Grade Families	Other[1]
UK producer Capabilities	**Rebars**	**Diameter** 10 mm 50 mm 10 mm 50 mm	Plain ✓ Ribbed ✓	BS4449:2005 + A3:2016 ✓ BS5400-4: 1190 ✓ BS EN 1992-1-1:2004 ✓ BS EN 10080:2005 ✓ BS4449:2005 + A3:2016 ✓ BS7123:198 ✓	Not applicable
	Special Profiles	**Depth** 60 mm 400 mm 60 mm 430 mm	Bulb flats, crane rails, forklifts, track shoes , etc. ✓	S-235JR+AR ✓ S-235JO+AR ✓ S235J2+AR ✓ S275JR+AR ✓ S275J0+AR ✓ S275J2+AR ✓ S355JR+AR ✓ S355J0+AR ✓ S355J2+AR ✓	Not applicable
Capability Gaps	**Rebars**	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap	Not applicable
	Special Profiles	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap	Not applicable

Note: 1. This includes attributes such as finishing, coating and specific technical qualities
Source: Company websites, supplier technical datasheets, Hatch analysis

Based on the capabilities of 7 Steel and British Steel, the UK currently has the technical ability to address the medium and light sections market requirements

Long Product Market Requirements and UK Capabilities (p. 2 of 5)

7 Steel
Market Requirement
British Steel

	Product	Sizes	Shapes	Grade Families	Other[1]
UK Supplier Capabilities	**Light Sections**	**Depth** Up to 150 mm Up to 150 mm	Angles ✓ Channels ✓ PFC ✓	S-235-JR ✓ S-235-JO ✓ S-275-JR-J0 ✓ S-355-JR ✓ S-355-JO ✓ S-355-J2 ✓	Not applicable
	Medium Sections	**Depth** Up to 200mm Up to 200mm	UC , UB, UA ✓ PFC ✓ EA ✓	S-235-JR ✓ S-235-JO ✓ S-275-JR-J0 ✓ S-355-JR ✓ S-355-JO ✓ S-355-J3 ✓	Not applicable

Capability Gaps	**Light Sections**	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap	Not applicable
	Medium Sections	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap	Not applicable

Note: 1. This includes attributes such as finishing, coating and specific technical qualities
Source: Company websites, supplier technical datasheets, Hatch analysis

Based on the capabilities of British Steel, the UK currently has the technical ability to address the heavy sections and rail market requirements

Long Product Market Requirements and UK Capabilities (p. 3 of 5)

Market Requirement | British Steel

UK Supplier Capabilities

Product	Sizes	Shapes	Grade Families	Other[1]
Rail	**Density** Market Requirement: 35.7 kg/m – 35.7 kg/m British Steel: 22.0 kg/m – 75.0 kg/m	Vignole ✓ Tram ✓ Turnout ✓ Conductor ✓	700, 880, 900A, 900B ✓ R200, R220, R260Mn ✓ HP350, H355 ✓ Conductor ✓ Sleeper ✓	Not applicable
Heavy Sections	**Depth** Market Requirement: Up to 1000mm British Steel: Up to 1000mm	UC, UB, UA, UBP ✓ PFC ✓ EA ✓	S-235-JR ✓ S-235-JO ✓ S-275-JR-J0 ✓ S-355-JR ✓ S-355-JO ✓ S-355-J4 ✓ S420M ✓ S460M ✓	Not applicable

Capability Gaps

Rail	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap	Not applicable
Heavy Sections	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap	Not applicable

Note: 1. This includes attributes such as finishing, coating and specific technical qualities

Source: Company websites, supplier technical datasheets, Hatch analysis

Based on the capabilities of 7 Steel and British Steel, the UK currently has the technical ability to address wire rod market requirements

Long Product Market Requirements and UK Capabilities (p. 4 of 5)

Market Requirement | 7 Steel | British Steel

	Product	Sizes	Shapes	Grade Families	Other[1]
UK Supplier Capabilities	**Wire Rods (Mesh)**	**Diameter** Market Requirement: 5.5 mm – 17 mm 7 Steel: 5.5 mm – 17 mm	Not applicable	BS 4482:2005 Grade 250 ✓ (7 Steel) BS 4449:2005 Grade 500 ✓ (7 Steel)	Not applicable
	Wire Rods (Drawing)	**Diameter** Market Requirement: 5.5 mm – 30 mm British Steel: 5.5 mm – 30 mm[2]	Not applicable	CHQ ✓ (British Steel) Automotive Spring ✓ (British Steel) Tyre Cord ✓ (British Steel) PC Strand ✓ (British Steel) Free Cutting ✓ (British Steel) Bearing Steel ✓ (British Steel)	Not applicable

		Sizes	Shapes	Grade Families	Other
Capability Gaps	**Wire Rods (Mesh)**	🟩 + No significant capability gap	🟩 + No significant capability gap	🟩 + No significant capability gap	🟩 Not applicable
	Wire Rods (Drawing)	🟩 + No significant capability gap	🟩 + No significant capability gap	🟩 + No significant capability gap	🟩 Not applicable

Note: 1. This includes attributes such as finishing, coating and specific technical qualities. 2 – Current Rod mill capability is 5.5-17mm but will expand to 30mm following Project Aurora scheme.
Source: Company websites, supplier technical datasheets, Hatch analysis, Stakeholder Interviews

The UK can meet most engineering steels market demand, with a minor gap in small diameter capabilities

Long Product Market Requirements and UK Capabilities (p. 5 of 5)

▨ Partial requirements met ▨

Market Requirement | British Steel | SSUK

	Product	Diameter	Shapes	Grade Families	Other^{1,2}
UK Supplier Capabilities	**Engineering Steels**	**Diameter** 15 mm 120mm ▨ 22 mm 120mm	Bars ✓ Rods ✓ Ingots ✓	Bearing Steel ✓ Free Cutting ✓ Micro Alloyed ✓ Nitriding ✓ Carbon Magnesium ✓	Black ✓ Bright ✓ Turned ✓ Blasted ✓ Quench and Tempered ✓
Capability Gaps	**Engineering Steels**	+ SSUK Rotherham has a no capability in sizes below 22 mm. Sizes below 22mm can be partially met by British Steels rod mill	+ No significant capability gap	+ No significant capability gap	+ No significant capability gap

Note: 1. This includes attributes such as finishing, coating and specific technical qualities
Source: Company websites, supplier technical datasheets, Hatch analysis

Current capabilities show key gaps across the HRC and CRC market requirements, particularly in high strength automotive grade capabilities

Flat Product Market Requirements and UK Capability Gaps (p. 1 of 4)

▨ Partial requirements met ▨

Market Requirement | Tata Steel UK | Liberty Steel

UK Supplier Capabilities

Product	Thickness	Width	Grade Families	Other¹
HRC	1.2 mm 25.0 mm 1.8 mm 17.5 mm 1.5 mm 12.5 mm	1000 mm 2000 mm 1000 mm 1880 mm 980 mm 1540 mm	Deep Drawing ✓ ✓ Other Forming ✓ ✓ Structural Grades ✓ ✓ API Grades ▨ X Automotive - HS ✓ X Automotive - AHS X X Automotive - UHS X X	Dry Coating ✓ ✓ Pickled and Oiled ✓ ✓
CRC	0.3 mm 3.0 mm 0.5 mm 3.0 mm	850 mm 1800 mm Up to 1850 mm	Deep Drawing ✓ ✓ Other Forming ✓ ✓ Structural Grades ✓ ✓ Automotive - HS ✓ X Automotive - AHS X X Automotive - UHS X X	Semi Bright ✓ Bright ✓ Normal ✓ Enamelling ✓

Capability Gaps

HRC	🟥 + No capability from 17.5 – 25 mm, giving no capability in heavy gauge materials	🟩 No significant capability gap	🟥 + Limitations on higher strength API grades (X70, X80) and automotive steel grades with strengths > 800 MPa, such as Advanced High-Strength (AHS) and Ultra-High Strength (UHS) steels, are due to the power constraints of the hot strip mill	🟩 No significant capability gap
CRC	🟥 + Production of thin gauge material (<0.5 mm) for Shotton is limited	🟩 No significant capability gap	🟥 + Limitations on higher strength automotive steel grades with strengths > 800 MPa, such as Advanced High-Strength (AHS) and Ultra-High Strength (UHS) steels, are due to the power constraints of the hot strip mill	🟩 No significant capability gap

Note: 1. This includes attributes such as finishing, coating and specific technical qualities
Source: Company websites, supplier technical datasheets, Hatch analysis

Thin gauge PPGI and HDG are key technical limitations that may prevent the UK from effectively serving the construction and solar markets

Flat Product Market Requirements and UK Capability Gaps (p. 2 of 4)

▨ Partial requirements met ▨

Market Requirement | Tata Steel UK

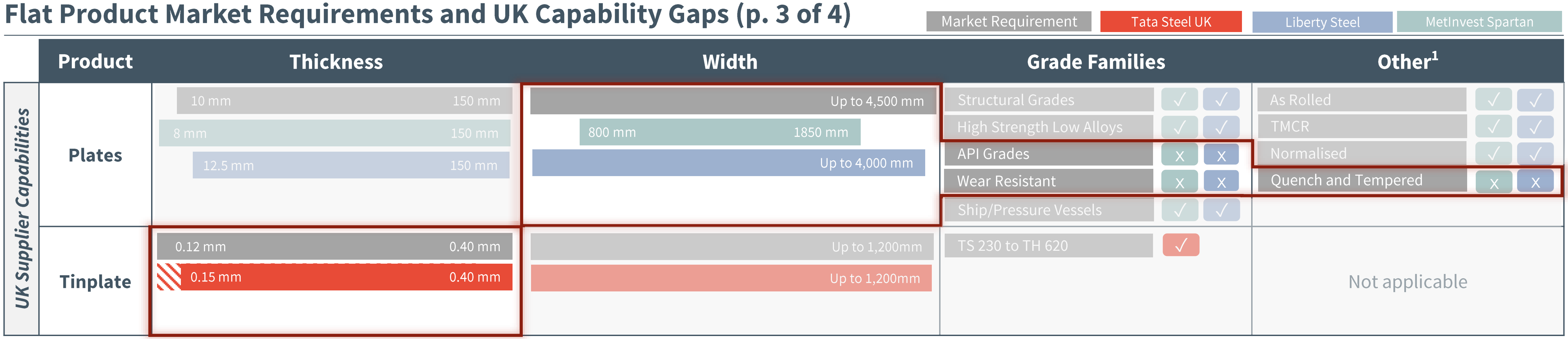
	Product	Thickness	Width	Grade Families	Other[1]
UK Supplier Capabilities	HDG	0.3 mm 3.0 mm ▨ 0.5 mm 2.0 mm	700 mm 1800 mm 800 mm 1850 mm	Deep Drawing X Other Forming ✓ Structural Grades ✓ API Grades ✓ Automotive - HS X Automotive - AHS X Automotive - UHS X	Dual Pot ▨ Heavy Coating X
	PPGI	0.25 mm 2.0 mm 0.5 mm 2.0 mm	650 mm 1250 mm 650 mm 1250 mm	Structural Grades ✓	Not applicable
Capability Gaps	HDG	🟥 + Production of thin gauge material (<0.5 mm), is possible but limited, which is used for construction and PPGI production + Thick gauge materials (>2.0mm) which may limit applications in automotive and solar	🟨 + No significant capability gap dependent on suitable HRC/CRC feedstock	🟨 + No significant capability gap dependent on suitable HRC/CRC feedstock	🟨 + Llanwern coating line has two pots and capability to produce MagiZinc, however to meet future demand a larger capacity would be required
	PPGI	🟥 + Production of thin gauge material (<0.5 mm) at Shotton is limited due to thickness limitations in HDG feedstock	🟨 + No significant capability gap dependent on suitable HRC/CRC feedstock	🟨 + No significant capability gap dependent on suitable HRC/CRC feedstock	🟩 + No significant capability gap

Note: 1. This includes attributes such as finishing, coating and specific technical qualities

Source: Company websites, supplier technical datasheets, Hatch analysis

Reliable UK supply of heavy and wide plates to offshore wind sectors is limited; tinplate production depends heavily on sourcing HRC feedstock reliably

Flat Product Market Requirements and UK Capability Gaps (p. 3 of 4)



Market Requirement | Tata Steel UK | Liberty Steel | MetInvest Spartan

UK Supplier Capabilities

Product	Thickness	Width	Grade Families	Other[1]
Plates	10 mm – 150 mm 8 mm – 150 mm 12.5 mm – 150 mm	Up to 4,500 mm 800 mm – 1850 mm Up to 4,000 mm	Structural Grades ✓ ✓ High Strength Low Alloys ✓ ✓ API Grades X X Wear Resistant X X Ship/Pressure Vessels ✓ ✓	As Rolled ✓ ✓ TMCR ✓ ✓ Normalised ✓ ✓ Quench and Tempered X X
Tinplate	0.12 mm – 0.40 mm 0.15 mm – 0.40 mm	Up to 1,200mm Up to 1,200mm	TS 230 to TH 620 ✓	Not applicable

Capability Gaps

Product	Thickness	Width	Grade Families	Other[1]
Plates	+ Both mills have the technical capability to produce 150 mm plates if the right slab is sourced. Sourcing 375 mm slabs for this is challenging due to limited supply options and the required minimum reduction ratio for offshore plate is 3	+ The MetInvest facility is limited to 1.9 m wide, while the Liberty facility has the technical capability to roll up to 4.0 m width. Imported slab thicknesses restrict the length of finished plates that can be rolled wide which makes the production inefficient. But the market requires 4.5 m plates which neither facility can achieve	+ The UK can't produce wear-resistant grades for mining, machinery and yellow goods, though demand is low, and, more critically, lack API-grade capacity for pipelines (Hydrogen/CCUS/ O&G), which should take priority	+ There are no quench and temper heat treatment facilities which limits production of plates for yellow goods + Plate weight for offshore wind is 20 – 45 t, which cannot be achieved by either plate mill
Tinplate	+ Tata's capabilities at Trostre are comparable to its competitors. However, competitors can produce as low 0.13–0.15 mm, where Tata has capability gaps	+ No significant capability gap dependent on if HRC feedstock is reliably sourced	+ No significant capability gap dependent on if deep drawing HRC feedstock is reliably sourced	+ No significant capability gap dependent on if deep drawing HRC feedstock is reliably sourced

Note: 1. This includes attributes such as finishing, coating and specific technical qualities
Source: Company websites, supplier technical datasheets, Hatch analysis, Stakeholder meetings

The UK currently relies on imports for electrical steels since the closure of Cogent Steel's facilities and has no other capability to produce electrical steels

Flat Product Market Requirements and UK Capability Gaps (p. 4 of 4)

Market Requirement | No identified UK Supplier

	Product	Thickness	Width	Grade Families	Other[1]
UK Supplier Capabilities	**NGOES**	0.27 mm – 1.0 mm	Not Available	Not applicable	**Power Loss** 2.35 – 13.00 W/kg X
	GOES	0.23 mm – 0.35 mm	Not Available	Not applicable	**Power Loss** 2.35 – 13.00 W/kg X
Capability Gaps	**NGOES**	🟥	🟥	🟥	🟥
		Currently no NGOES or GOES capability in the UK			
	GOES	🟥	🟥	🟥	🟥

Note: 1. This includes attributes such as finishing, coating and specific technical qualities 2. Facility is closed

Source: Company websites, supplier technical datasheets, Hatch analysis

The UK can adequately supply the long stainless steel market but lacks the capability to produce flat stainless steel products

Other Products Market Requirements and UK Capability Gaps (p. 1 of 2)

No identified UK Supplier

Market Requirement

Marcegaglia

	Product	Thickness	Shapes/Widths	Grade Families	Other[1]
UK Supplier Capabilities	**Stainless Steel (Long)**	**Wire Rod** 5 mm 27 mm 5 mm 27 mm **Rebar/Bars** 6 mm 40 mm 6 mm 40 mm	**Wire Rod** Round ✓ Square ✓ Hex ✓ **Rebar/Bars** Round ✓ Square ✓	Grades 304, 310, 316 ✓ Grades 420, 430 ✓	Not applicable
	Stainless Steel (Flat)	0.5 mm 9.0 mm	600 mm 2500 mm	Grades 304, 310, 316 X Grades 420, 430 X	Not applicable

		Thickness	Shapes/Widths	Grade Families	Other[1]
Capability Gaps	**Stainless Steel (Long)**	🟩 + No significant capability gap assuming the assets have been maintained accordingly	🟩 + No significant capability gap assuming the assets have been maintained accordingly	🟩 + No significant capability gap assuming the assets have been maintained accordingly	🟩 + No significant capability gap assuming the assets have been maintained accordingly
	Stainless Steel (Flat)	🟥 + No capability within the UK to supply stainless steel for flats	🟥 + No capability within the UK to supply stainless steel for flats	🟥 + No capability within the UK to supply stainless steel for flats	🟥 + No capability within the UK to supply stainless steel for flats

Note: 1. This includes attributes such as finishing, coating and specific technical qualities

Source: Company websites, supplier technical datasheets, Hatch analysis

The UK has no seamless tube producers and the projected long-term demand of 0.14 mtpa is below the scalability required for a new mill (~0.7 – 1.0 mtpa)

Other Products Market Requirements and UK Capability Gaps (p. 2 of 2)

Market Requirement

Forgemasters

No identified UK Supplier

	Product	Thickness	Shapes	Grade Families	Other[1]
UK Supplier Capabilities	**Seamless Tubes**	Up to 24 mm	Not applicable	API Group 1-4 X Premium and Propriety Grades X Sour and Non-Sour Grades X X-42-70 X	API Connections X Premium Connections X
	Forgings	Bespoke dimensions and requirements for engineered parts ✓			
Capability Gaps	**Seamless Tubes**	🟥 + Since the 2008 closure of Desford Timken, the UK's only seamless tube mill, demand has been met entirely by imports	🟥 + Since the 2008 closure of Desford Timken, the UK's only seamless tube mill, demand has been met entirely by imports	🟥 + Since the 2008 closure of Desford Timken, the UK's only seamless tube mill, demand has been met entirely by imports	🟥 + Since the 2008 closure of Desford Timken, the UK's only seamless tube mill, demand has been met entirely by imports
	Forgings	🟩 + No significant capability gap	🟩 + No significant capability gap	🟩 + No significant capability gap	🟩 + No significant capability gap

Note: 1. This includes attributes such as finishing, coating and specific technical qualities

Source: Company websites, supplier technical datasheets, Hatch analysis

Options for Addressing Production Gaps

Options have been developed as potential solutions to address key supply gaps; this list is not exhaustive and is based on various assumptions

Scope Context and Summary of Assumptions used to Develop Potential Options

- **Basis of preparation conducted as a desktop study,** guided by Hatch experience and expert judgement as well as meetings with steel producers and other steel stakeholders
- Anchor points for forecasting long-term steel demand are based on Part I of this demand assessment, which draw on government-set ambitions and industry forecasts (e.g. renewable energy generation, nuclear power generation, transmission and distribution, spend etc.) Demand ramp-ups or delays tied to government-set ambitions **have not been factored in** to adjust the demand
- Addressable demand for the wind and automotive sectors assumes a 100% localisation factor, as described in Part I
- **Business cases have not been developed or evaluated** for presented options; work will be required to assess commercial viability, and capital estimates exclude current planned investments
- Options demonstrate possible routes to address gaps and are **not exhaustive and have not been organised in any specific order**
- The scope of the report does not include policy recommendations or other measures regarding the UK's long-term steel strategy. Rather, the report **focuses on forecasting demand, supply, and potential technical configurations to close the gap**
- Stakeholder meetings suggest that Dalzell's plate width, weight, and location constraints Dalzell to fully meet offshore wind product needs. As a result, **Dalzell-inclusive options exclude offshore wind from the Total Addressable Market (TAM),** though Dalzell may be able to capture a portion of wind sector plate demand
- The options' **TAM values are based on the market gap value between 2025 and 2050**. While the **impact value** is calculated on **capacity** that has been addressed **over a 20-year period**, giving a 5-year buffer for timeline requirements
- In certain years, **supply may fluctuate to be larger than demand due to end-use sector demand spikes** (e.g., transmission and distribution), it is assumed the assets will operate at full capacity and export the steel into international markets during these periods

Source: Hatch analysis, Stakeholder meetings.

The UK faces significant capacity gaps in sections, HDG, and plates and capability gaps across all flat products; these present the most critical market opportunities

Capability and Capacity Gaps Summary

Technical solutions developed to address 'high' market opportunities in this section

	Product	Capacity Gaps (mtpa)[1] 2050 Demand vs 2030 Supply[2]	Capability Gaps	Key Sectors Affected	Market Opportunity[3]	Cumulative Market Gap Value 2025 - 2050
Long Products	**Sections**	🟡 -0.7 (-30%)	🟢 None	T&D, Construction, Nuclear	**High**	**£17bn**
	Rebars	🟡 -0.7 (-44%)	🟢 None	T&D, Construction, Nuclear	**Med**	n/a
	Wire Rods	🟢 -0.1 (-11%)	🟢 None	Construction, Auto, E&M	**Low**	n/a
	Special Profiles	🟢 +0.1 (+75%)	🟢 None	E&M, Yellow Goods	**Low**	n/a
	Rail	🟢 +0.1 (+56%)	🟢 None	Rail	**Low**	n/a
	Engineering Steels	🟢 +0.3 (+96%)	🟡 Sizes <0.22mm	Auto, E&M, Others	**Low**	n/a
Flat Products	**Plates**	🔴 -1.2 (-65%)	🔴 Wider width, suitable slab, lack of captive steel making	Wind (offshore), Nuclear	**High**	**£22bn**
	Strip	🔴 -4.5 (-60%)	🔴 N/A	-	**High**	**£54bn**
	HRC	🟢 +0.1 (+4%)	🔴 Grades: AHS, UHS, API (X70, X80), Gauge: 17.5-25mm	Automotive, O&G	**High**	
	CRC	🟢 -0.3 (-28%)	🔴 Grades: AHS, UHS, Gauge <0.5mm	Automotive	**High**	
	HDG	🔴 -2.6 (-79%)	🟡 Gauge: <0.5mm and >2mm, Coating: dual coating	Auto, Construction, Solar	**High**	
	PPGI	🟢 -0.1 (-25%)	🟡 Thin gauge material (<0.5mm)	Construction	**Low**	
	NGOES/GOES	🔴 -0.1 (-100%)	🔴 None	Transformers, EV Motors	**High**	
	Tinplate	🟢 +0.0 (+4%)	🟡 Dependent on suitable HRC feedstock	Packaging	**Low**	
Other Products	**Stainless Steel**	🔴 -0.5 (-90%)	🟡 UK has no capability in stainless steel flat products	Construction, Auto, E&M	*Market attractiveness limited due to lack of volumes and global overcapacity*	n/a
	Seamless Tubes	🔴 -0.1 (-100%)	🔴 UK has no capability since closure of Desford Timken	O&G, E&M		n/a
	Forgings	🟢 +0.1 (+500%)	🟢 None	Ships, Power, Others		n/a

Note: 1 – Strip capacity gap (-3.8) is presented in terms of production whereas the individual strip products are presented relative to asset capacity. 2 – Capacity gap based on long-term production (6.7 mtpa) vs. forecast 2050 demand by product. 3 – Market Opportunity considers the combination of the relative gap of capacity, capability and cumulative market gap value between future demand and supply of UK steel assets. Value by product based on theoretical 100% localisation scenario. 4 – Rebar market opportunity is not considered significant due to various factors including product value, ability to meet with imports, current supply capabilities (which meet current demand), and ability to attract new investments. Source: Hatch analysis

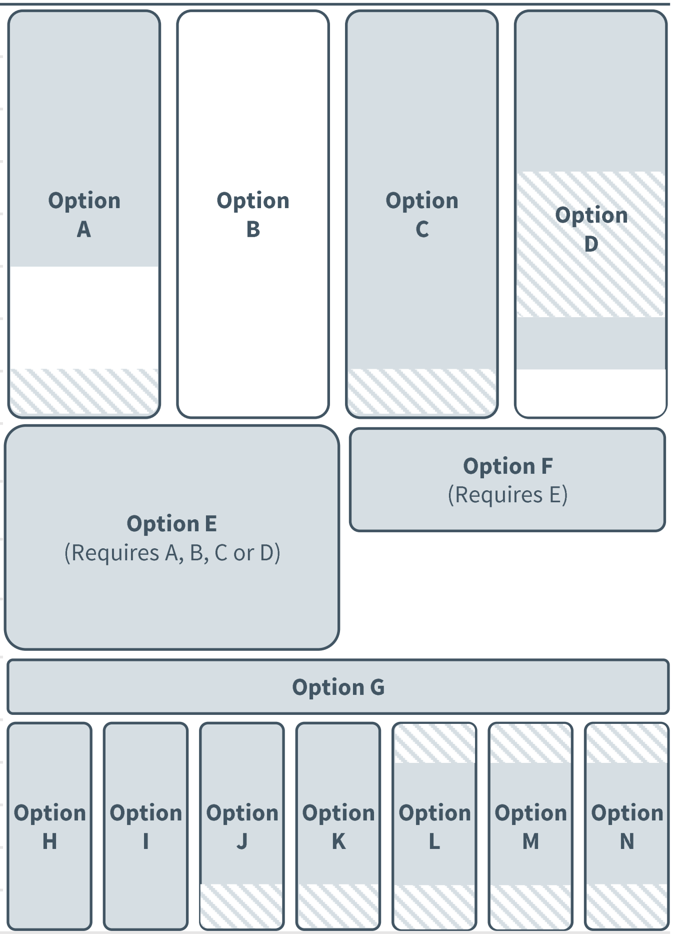
Technical options have been developed based on technical solutions to address the capacity and capability gaps across all key products

Summary of Technical Solutions to Address Gaps

☐ Requirements not met
▨ Partial requirements met

Product	Capability Gaps	Capacity Gaps	Technical Solution
Strip	High-strength automotive grades	--	Increased power of hot strip mill, laminar cooling upgrade for Port Talbot
	API grades for HRC	--	Increased power of hot strip mill, intense cooling upgrade for Port Talbot
	Thick gauge HRC/CRC	--	Increased mill stand power and force, new coilers for Port Talbot
	Dual pot coating for HDG	--	New galvanising line with dual pot capabilities
	Thick gauge HDG	--	New galvanising line with dual pot capabilities from thick gauge CRC
	Thin gauge HRC/CRC		New TSCR asset
	Thin gauge HDG		New galvanising line with dual pot capabilities from thin gauge CRC
		4.5 mt	Additional EAF steelmaking with TSCR, PLTCM and new galvanising lines
NGOES	All market requirements	--	Greenfield electrical steel site with a modified high silicon reheat furnace
		0.1 mt	High silicon HRC feedstock from Tata (or Option B) to feed a greenfield site
GOES	All market requirements	--	Greenfield electrical steel site with a modified high silicon reheat furnace
		0.02 mt	High silicon HRC feedstock from Tata (or Option B) to feed a greenfield site
Sections		0.7 mt	Additional EAF steelmaking with a section mill
Plates	Plate width: 4.5 m	--	New reversing plate mill
	Plate thickness: 150 mm (at 4.5 m width)	--	New reversing plate mill
	API grades	--	New reversing plate mill
	Wear resistant grades	--	Heat treatment – quench & tempering – integrated to reversing plate mill
		1.2 mt	Additional EAF steelmaking with reversing plate mill

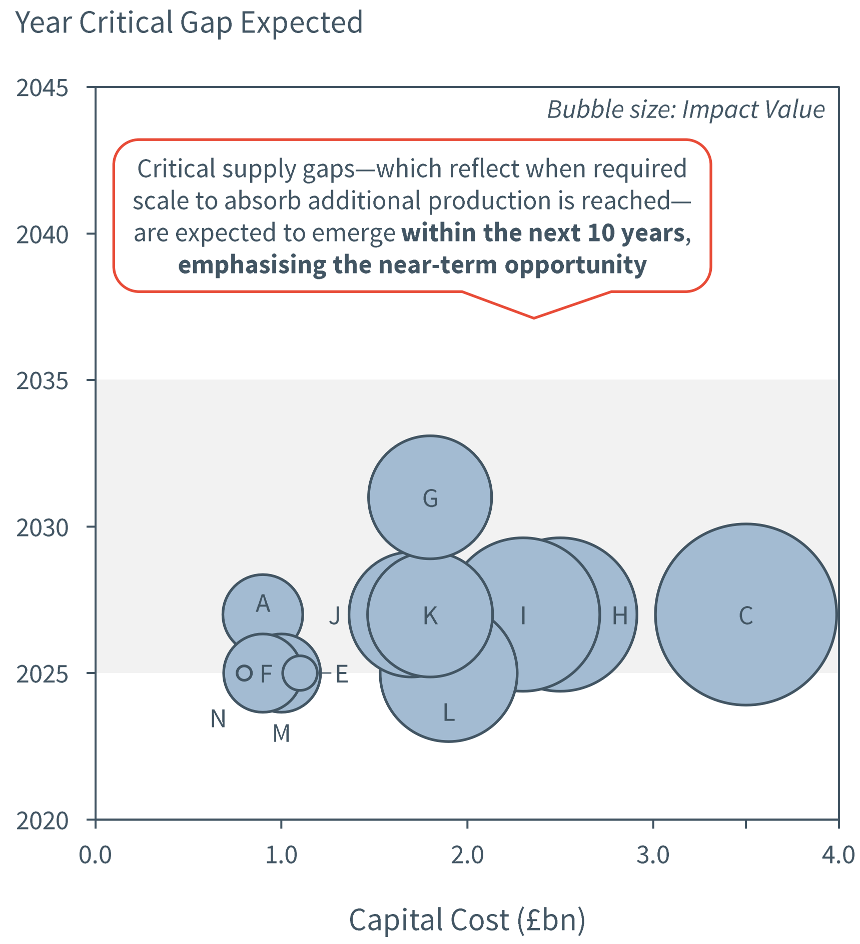
Option Where Addressed



Note: Options have not been assessed for business case or commercial viability and are intended to demonstrate possible routes to address capability and capacity gaps based on long-term UK demand.
Source: Hatch analysis, Stakeholder meetings.

14 potential technical solutions have been identified to illustrate how the gaps could be addressed, each will require detailed business cases to assess viability

Assessment Overview of Available Options[1]



Critical supply gaps—which reflect when required scale to absorb additional production is reached—are expected to emerge **within the next 10 years, emphasising the near-term opportunity**

Capability and Capacity Opportunity Options Summary

Options	Sections	Plates	*Strip Products*					TAM[2] (£bn)	Impact Value by 2050 (£bn) and Gap Addressed (%)[3]
			HRC	CRC	HDG	NGOES	GOES		
(A) Modify HSM with Cold Mill at Port Talbot			✓	✓	✓			53.6	**5.5** (10%)
(B) Port Talbot modification to be able to provide high temp route GOES feedstock[4]								53.6	**0.0** (0%)
(C) Greenfield plant with TSCR with coating lines			✓	✓	✓			53.6	**27.3** (51%)
(D) Port Talbot TSCR with coating lines[5]			✓	✓				53.6	**0.0** (0%)
(E) Greenfield electrical (NGOES) plant						✓		53.6	**1.1** (2%)
(F) Greenfield electrical (GOES) plant							✓	53.6	**0.2** (0.4%)
(G) Greenfield Steelmaking plant with integrated Sections Mill	✓							16.5	**12.7** (77%)
(H) Greenfield EAF Steelmaking with an Integrated Plate Mill		✓						22.4	**19.6** (88%)
(I) Plate Mill at Scunthorpe with Additional EAF		✓						22.4	**19.6** (88%)
(J) Greenfield Plate Mill with slab supply from Scunthorpe and backfill from Rotherham		✓						22.4	**13.1** (59%)
(K) Plate Mill and Caster utilising planned excess Port Talbot Steelmaking		✓						22.4	**13.1** (59%)
(L) Brownfield Liberty Plate Mill Modification (Plate Mill + New Meltshop)		✓						11.3	**15.7** (139%)
(M) Dalzell Upgrade, slab from Rotherham		✓						11.3	**5.2** (46%)
(N) Brownfield Dalzell Upgrade, slab from Scunthorpe and backfill from Rotherham		✓						11.3	**5.2** (46%)

Different pathways to address same gaps with varying capital requirements (H, I, J)

Impact value is larger indicating a reliance on unused capacity being filled with exports (L)

Note: 1 – Datapoints provided are based on the upper Hatch estimate; 2 - TAM (Total Addressable Market) which is the total market opportunity between 2025 – 2050; 3 –This is the percentage of the TAM that the option can address with it's added capacity, options are assumed to run for 20 years with excess products in a given year being sold as exports 4 - Option alone does not impact capacity or capability; option prepares Port Talbot to provide the adequate feedstock for Option E/ F. 5 – Doesn't address any capacity gap

Source: Hatch analysis.

Integrating a new cold mill with upgrades at Tata's hot strip mill can enhance the capability and capacity for HRC, CRC, HDG to increase sector coverage

Strip

Option A: Modified HSM with Integrated Cold Mill at Port Talbot with Greenfield Galvanising Line

Description

1. HSM modification at Port Talbot:
   - \+ Mill stand replacements to increase rolling force/power
   - \+ Cooling line upgrade (laminar and intense)
   - \+ New coilers
2. New tandem cold mill connected to link (existing pickling line)
3. New galvanising line

Addressed Gaps

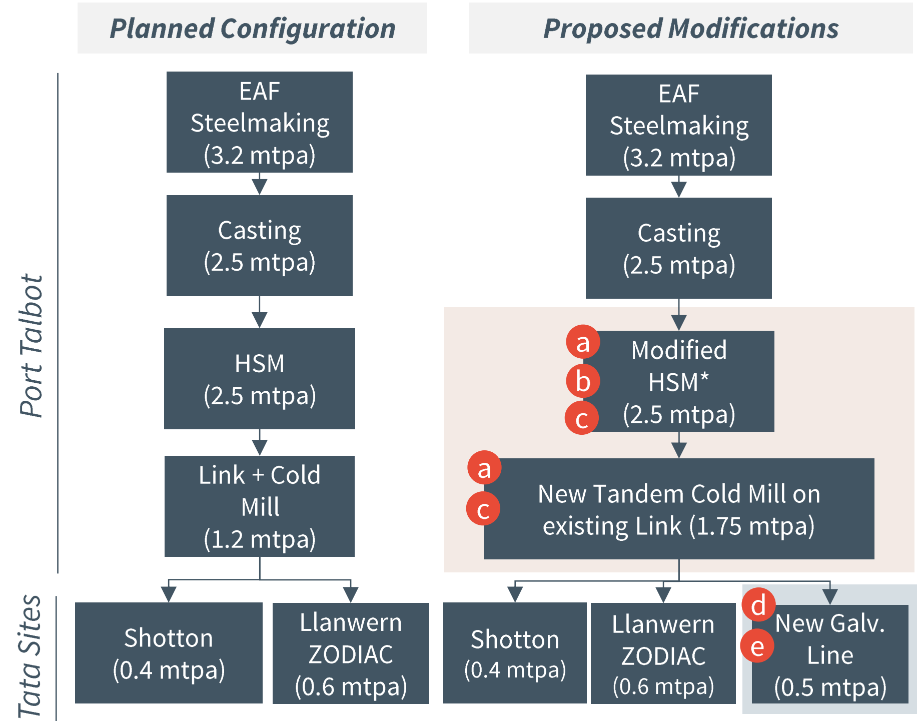
Capacity

May partially address HDG capacity gap (0.5 of 2.6 mt)

Capability

- ⓐ High strength automotive grades
- ⓑ API grades for HRC
- ⓒ Thick gauge HRC/CRC
- ⓓ Dual pot coating for HDG
- ⓔ Thick gauge HDG

Flowsheet



▨ *Brownfield changes*

▨ *Greenfield changes*

This option can also add Option E (NGOES). If low temp IP is obtained, Option F (GOES) can also be added; otherwise, Option B will be required to add Option F

Requirements

CAPEX Estimate	*Timeline Estimate*
£0.7 – 0.9bn (excludes pickling line capital cost)	42 – 48 months (with a 2- to 3-month operational stoppage on HSM)

Other Requirements

Location	*Headcount*	*Infrastructure*
Port Talbot and greenfield galvanising line (preferably near Port Talbot)	50 – 100 (for new galvanising line)	Transport links potentially required between Port Talbot and a new galvanising line

Potential Risks

Schedule	*Land Availability*
The operational stoppage at the HSM could cause timeline overruns if not managed correctly	Location which has a suitable amount of land available for the new galvanising line

Note: Risks shown here are project specific and general project risks are noted after all the options

Source: Hatch analysis

Modifying Port Talbot to produce high temp route GOES and HRC for a greenfield electrical steel plant can meet domestic demand, which are critical for transformers

Electrical Feedstock

Option B: Brownfield Port Talbot Modification to Provide High-Temp Route for GOES Feedstock

Description

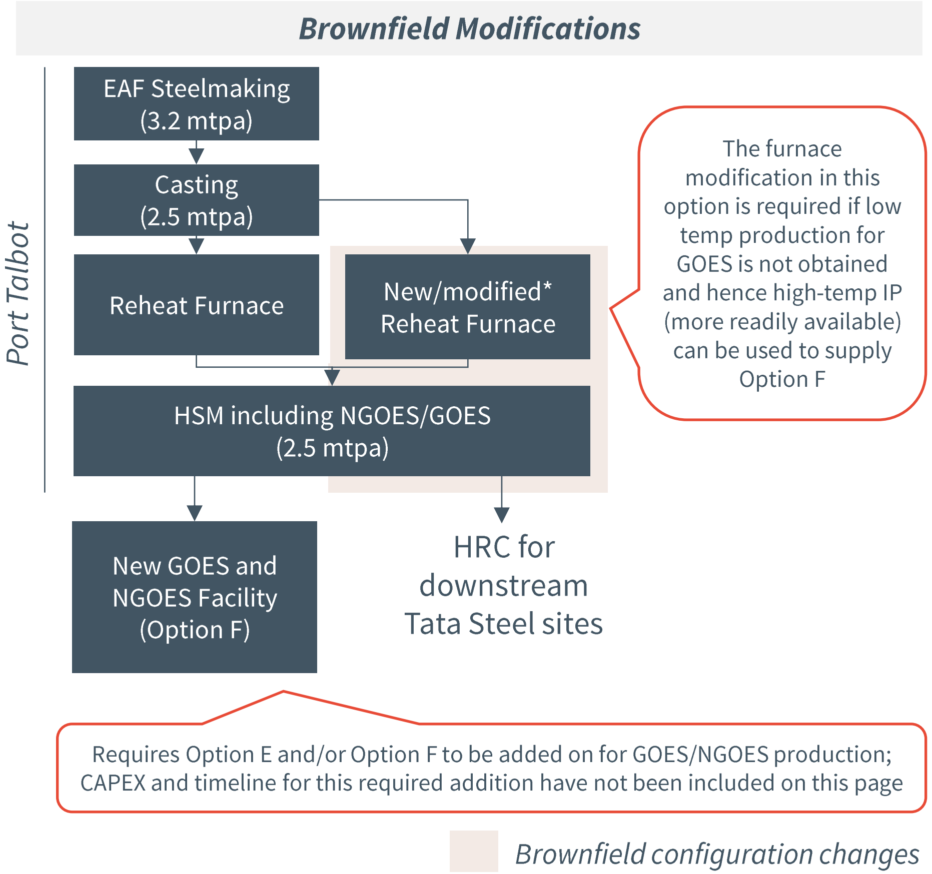
This option requires a greenfield electrical steel plant. The HRC feedstock could be sourced from Port Talbot (taken out of the allocation for Tata distribution). It would also require a new modified reheating furnace if high temperature production route for GOES is considered. Therefore, this option is required to be used in conjunction with Option F (greenfield GOES plant)

Addressed Gaps

Capacity & Capability

Option alone does not impact capacity or capability, though it would enable Port Talbot to provide the adequate feedstock for Option F (Greenfield GOES plant)

Flowsheet



Brownfield Modifications

Port Talbot

EAF Steelmaking (3.2 mtpa)

Casting (2.5 mtpa)

Reheat Furnace

New/modified* Reheat Furnace

HSM including NGOES/GOES (2.5 mtpa)

New GOES and NGOES Facility (Option F)

HRC for downstream Tata Steel sites

The furnace modification in this option is required if low temp production for GOES is not obtained and hence high-temp IP (more readily available) can be used to supply Option F

Requires Option E and/or Option F to be added on for GOES/NGOES production; CAPEX and timeline for this required addition have not been included on this page

▨ *Brownfield configuration changes*

Requirements

CAPEX Estimate	*Timeline Estimate*
£0.10 – 0.25bn – Port Talbot (excluding costs for Option E or Option F)	30 – 36 months (Port Talbot) (excluding timeline for Option E or Option F)

Other Requirements

Location	*Headcount*	*Infrastructure*
Port Talbot	No additional workforce in Port Talbot	Infrastructure between Port Talbot and Greenfield site

Potential Risks

Capacity	*Hot Mill Operation*
By transferring strip capacity to NGOES/ GOES production, it exacerbates the production shortfall of other strip products	High silicon steel production may reduce HSM efficiency and overall output due to narrower products and increased maintenance

Note: Risks shown here are project specific and general project risks are noted after all the options
Source: Hatch analysis

Building a greenfield strip plant will enable the UK to address the capacity and capability gaps to serve the construction and automotive sectors

Strip

Option C: Greenfield Plant with TSCR and Downstream Coating Lines

Description

Greenfield steelmaking process with integrated thin slab casting and rolling, PLTCM feeding into new galvanising lines and potentially into existing ZODIAC at Llanwern. With this option, there is additional flexibility compared to Option A in addressing the capacity gaps for 2050 demand

Addressed Gaps

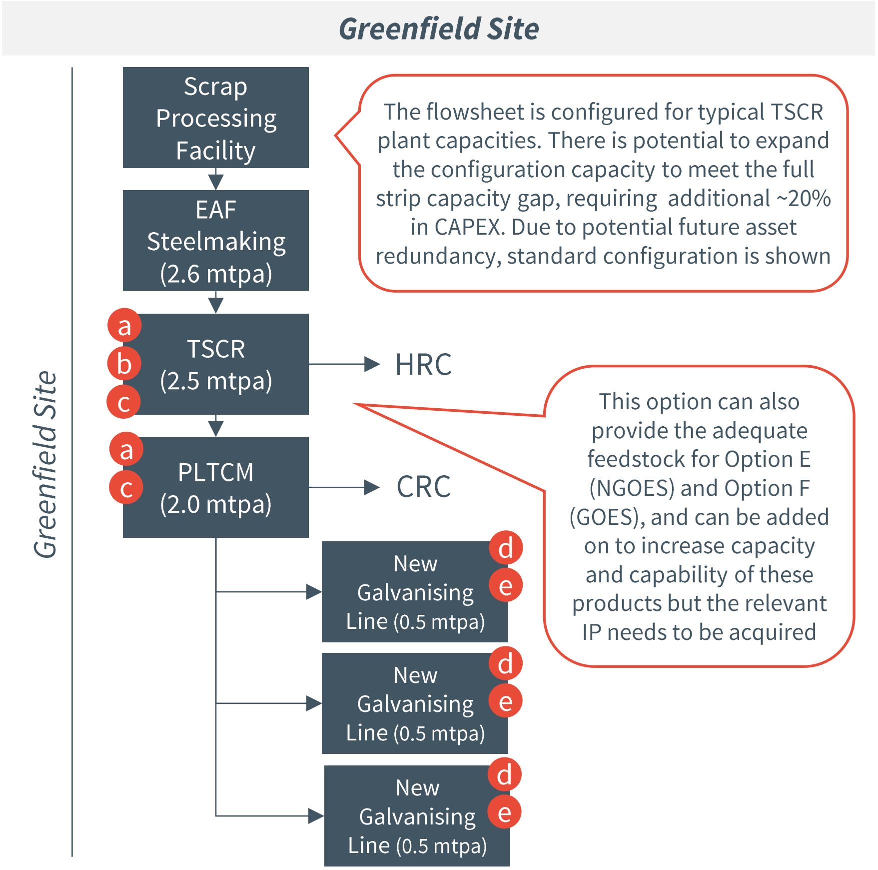
Capacity

May partially address HDG capacity gap (1.5 of 2.6 mt) and overall strip capacity, additional HRC (0.5 mt) & CRC (0.5 mt)

Capability

- ⓐ High strength automotive grades
- ⓑ API grades for HRC
- ⓒ Thin and thick gauge (HRC/CRC)
- ⓓ Dual pot coating for HDG
- ⓔ Thin and thick gauge HDG

Flowsheet



Greenfield Site

Greenfield Site

Scrap Processing Facility

EAF Steelmaking (2.6 mtpa)

ⓐ ⓑ ⓒ TSCR (2.5 mtpa) → HRC

ⓐ ⓒ PLTCM (2.0 mtpa) → CRC

ⓓ ⓔ New Galvanising Line (0.5 mtpa)

ⓓ ⓔ New Galvanising Line (0.5 mtpa)

ⓓ ⓔ New Galvanising Line (0.5 mtpa)

The flowsheet is configured for typical TSCR plant capacities. There is potential to expand the configuration capacity to meet the full strip capacity gap, requiring additional ~20% in CAPEX. Due to potential future asset redundancy, standard configuration is shown

This option can also provide the adequate feedstock for Option E (NGOES) and Option F (GOES), and can be added on to increase capacity and capability of these products but the relevant IP needs to be acquired

Requirements

CAPEX Estimate	***Timeline Estimate***
£3 – 3.5bn (excluding additional capacity expansions)	48 - 60 months (12 – 24 months planning, investor sourcing, 36 months execution)

Other Requirements

Location	***Headcount***	***Infrastructure***
Stand-alone facility, preferably close to port and rail links	800 – 1,000 people	Close port link for import of virgin iron, green power availability

Potential Risks

Raw Materials	***Workforce***	***Utilities***
Scrap availability/ OBM sourcing	Skilled workforce to relocate to a potentially remote greenfield site	Power availability and cost to operate the EAF

Note: Risks shown here are project specific and general project risks are noted after all the options

Source: Hatch analysis

Building a TSCR strip plant at Port Talbot will make strip production more efficient though will not address the UK's capacity or capability gaps

Strip

Option D: Brownfield Port Talbot with TSCR and Downstream Coating Lines

Description

New TSCR asset at Port Talbot to utilise the planned EAF steelmaking capacity. This including an integrated thin slab casting and rolling, HRC will feed existing downstream facilities and a new NGOES facility

Addressed Gaps

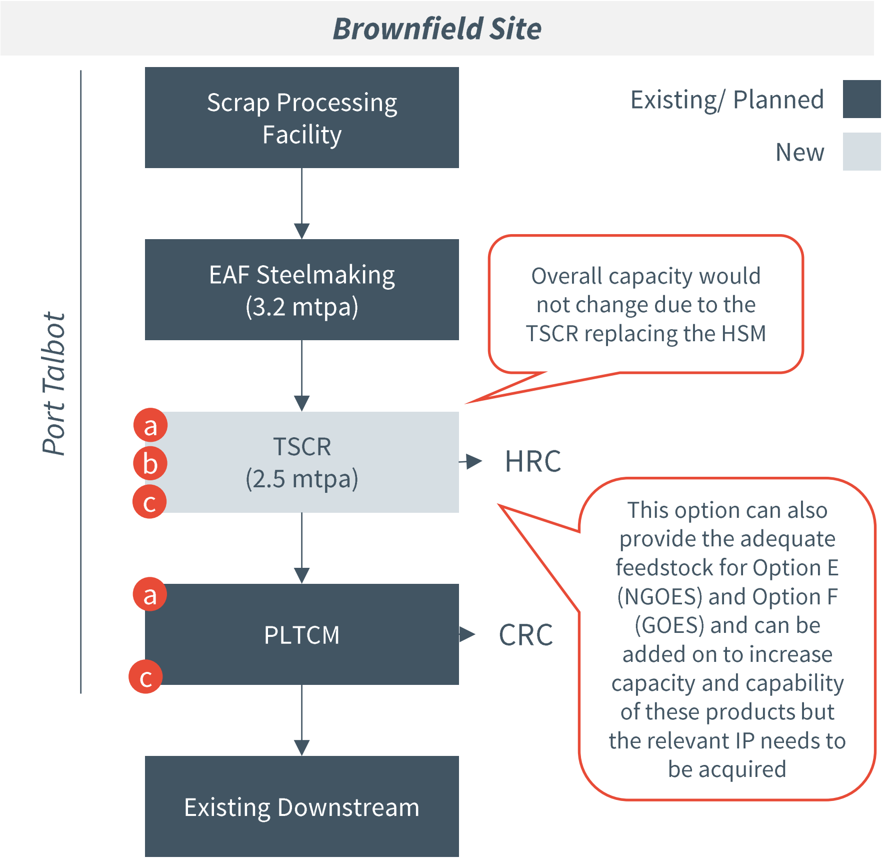
Capacity

No change but NGOES/GOES capacity could be reduced with Options E and F; overall strip capacity remains the same

Capability

- ⓐ High strength automotive grades
- ⓑ API grades for HRC
- ⓒ Thin and thick gauge (HRC/CRC)

Flowsheet



Overall capacity would not change due to the TSCR replacing the HSM

This option can also provide the adequate feedstock for Option E (NGOES) and Option F (GOES) and can be added on to increase capacity and capability of these products but the relevant IP needs to be acquired

Requirements

CAPEX Estimate^1	*Timeline Estimate*
£1 -1.5bn	48 - 60 months (12 – 24 months for planning and investor sourcing, 36 months for execution)

Other Requirements

Location	*Headcount*	*Infrastructure*
Port Talbot	N/A	N/A

Potential Risks

Constructability	*Ongoing Operations*
Connection to existing melt shop with TSCR facility will be challenging	Maintaining operations of casting and hot rolling may be difficult as new TSCR is being built

Note: Risks shown here are project specific and general project risks are noted after all the options. 1 - Excluding additional capacity expansions

Source: Hatch analysis

Building a greenfield NGOES plant would address the capacity and capability gap for non-grain oriented electrical steels but requires adequate feedstock

NGOES

Option E: Greenfield Electrical Steel (NGOES) Plant

Description

Greenfield facility consisting of anneal and pickle line, cold rolling mill, annealing and coating line, slitting and packaging

Addressed Gaps

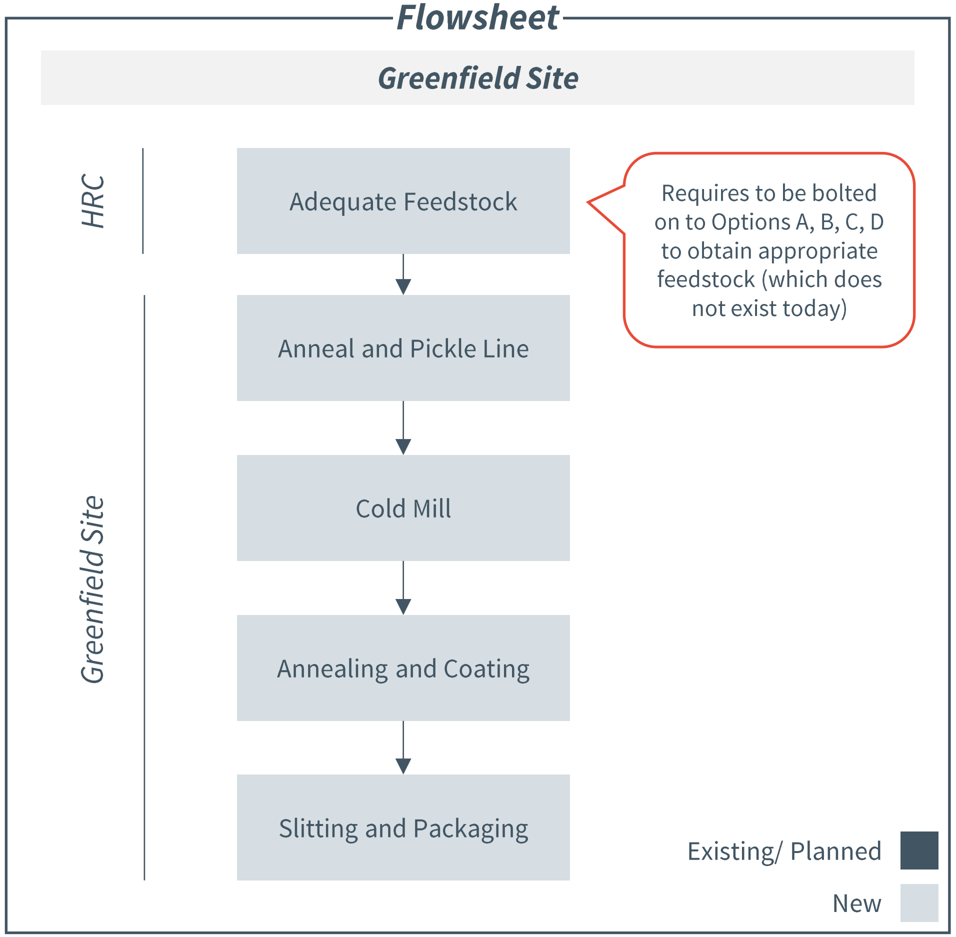
Capacity

May address NGOES capacity gap of ~0.1 mt, though will not reduce overall strip capacity gap

Capability

All market required NGOES capabilities

Flowsheet



Requires to be bolted on to Options A, B, C, D to obtain appropriate feedstock (which does not exist today)

Existing/ Planned ■

New □

Requirements

CAPEX Estimate	*Timeline Estimate*
£0.9 -1.1bn	36 – 48 months (12 – 18 months planning, investor sourcing, 24 months execution)

Other Requirements

Location	*Headcount*	*Infrastructure*
Greenfield, ideally close to consumers	200 – 250 people	Adequate transportation links for incoming HRC feed and product distribution

Potential Risks

IP	*Workforce*
Availability of appropriate IP for the production route from HRC through to finished product	Skilled workforce availability at greenfield site

Note: Risks shown here are project specific and general project risks are noted after all the options.
Source: Hatch analysis

Building a GOES plant onto the NGOES greenfield facility (Option E) would address the capability gap for grain-oriented electrical steels, used in transformers

GOES

Option F: Greenfield Electrical Steel (GOES) Plant (Addition to Option E)

Description

Expansion of Option E to include additional equipment to produce GOES. Process can share initial anneal and pickle line as well as the cold rolling mill. Additional cold rolling capacity for thinner gauges is required with additional downstream processes. Option F is unlikely to be utilised without Option E due to volume requirements

Addressed Gaps

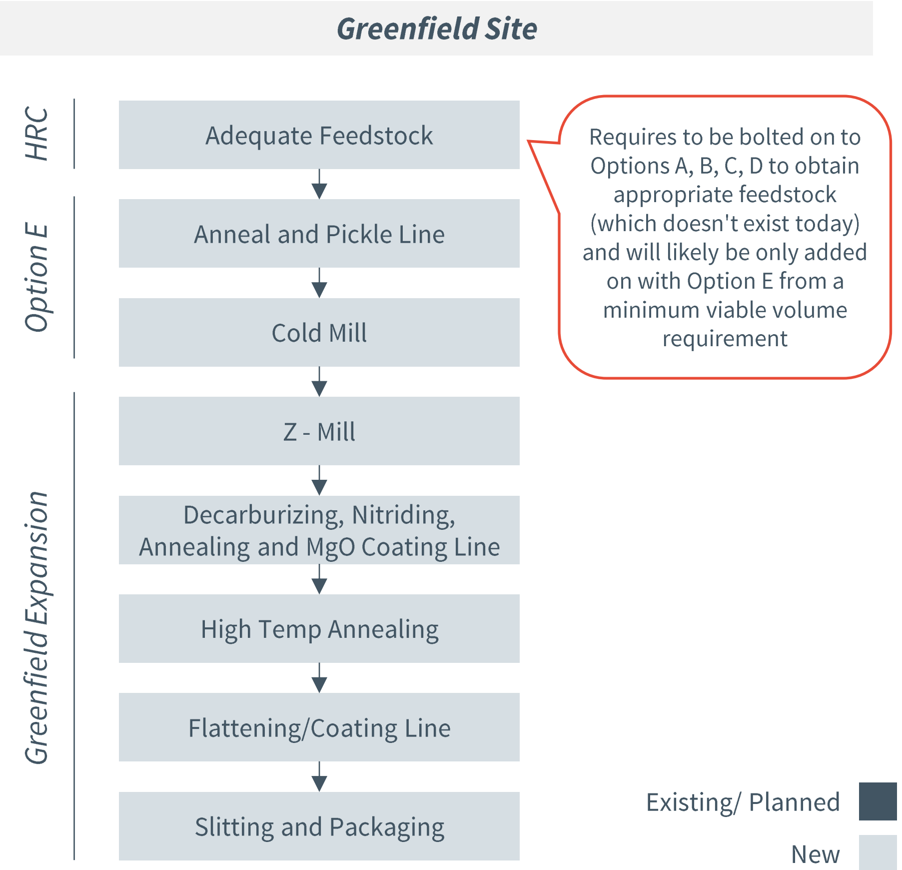
Capacity

May address full GOES capacity of ~0.02 mt though will not reduce overall strip capacity gap

Capability

All key market requirements would be fulfilled for GOES

Flowsheet



Greenfield Site

HRC
- Adequate Feedstock

Option E
- Anneal and Pickle Line
- Cold Mill

Greenfield Expansion
- Z - Mill
- Decarburizing, Nitriding, Annealing and MgO Coating Line
- High Temp Annealing
- Flattening/Coating Line
- Slitting and Packaging

Requires to be bolted on to Options A, B, C, D to obtain appropriate feedstock (which doesn't exist today) and will likely be only added on with Option E from a minimum viable volume requirement

Existing/ Planned ■

New □

Requirements

CAPEX Estimate	***Timeline Estimate***
£0.6-£0.8 bn (as addition to Option E)	36 – 48 months (12 – 18 months planning, investor sourcing, 24 months execution)

Other Requirements

Location	***Headcount***	***Infrastructure***
See Option E (as this is to be fitted into option E's greenfield site)	100 – 150 people (additional to Option E)	See Option E (as this is to be fitted into Option E's greenfield site)

Potential Risks

IP	***Workforce***
Availability of appropriate IP for the production route from HRC through to finished product	Skilled workforce availability at greenfield site

Note: Risks shown here are project specific and general project risks are noted after all the options.
Source: Hatch analysis

By building an integrated greenfield steelmaking plant with a sections mill, the UK can address future demand driven by T&D and construction sectors

Sections

Option G: Greenfield Steelmaking Plant with Integrated Sections Mill

Description

This option consists of building a greenfield EAF steelmaking plant with a dedicated sections mill to address the capacity gap required for key sectors such as construction and T&D

Addressed Gaps

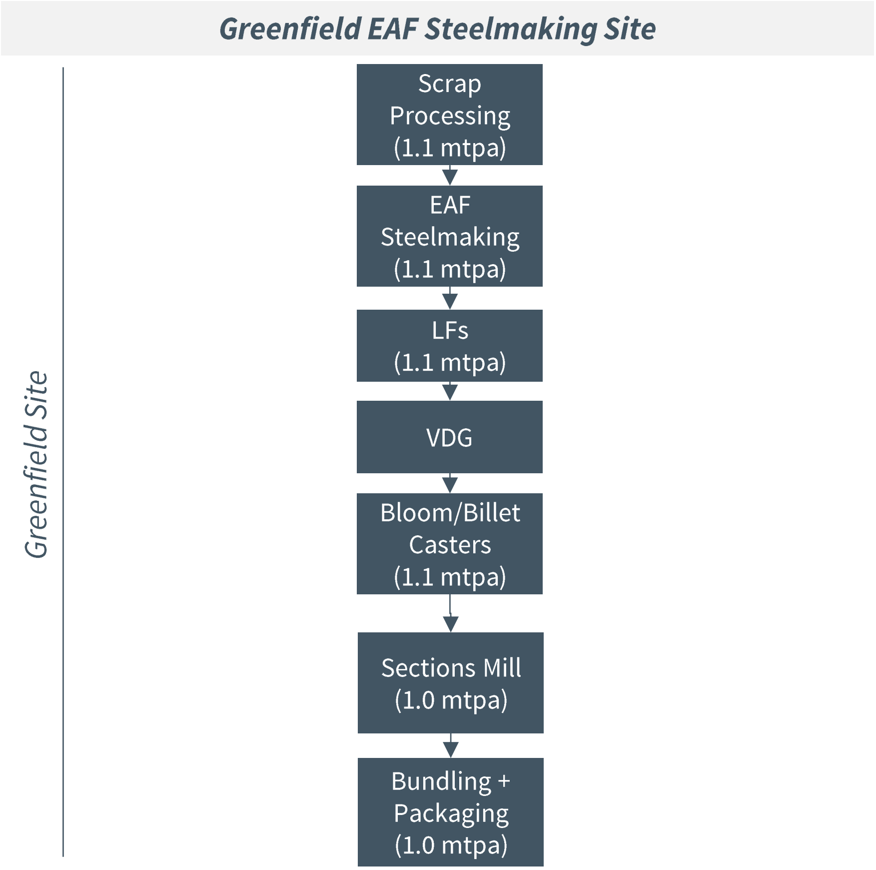
Capacity

May fully address 2050 capacity gap (1.0 production of 0.7 mt gap, 0.3 can be exported)

Capability

All key market requirements would be fulfilled for sections

Flowsheet



Requirements

CAPEX Estimate	***Timeline Estimate***
£1.3 - 1.8bn	36 – 48 months (12 – 18 months planning, investor sourcing, 24 months execution)

Other Requirements

Location	***Headcount***	***Infrastructure***
Stand-alone facility (potentially near large infrastructure projects)	300 - 400 people	Rail links would be required

Potential Risks

Raw Materials	***Workforce***	***Utilities***
Scrap availability/ OBM sourcing	Skilled workforce to relocate to a potentially remote greenfield site	Power availability and cost to operate the EAF

Note: Risks shown here are project specific and general project risks are noted after all the options
Source: Hatch analysis

The UK is currently unable to sufficiently serve offshore wind steel demand, which has the potential to represent up to half of plate demand by 2050

Plates

Plate Mill Site – Offshore Wind Key Requirements

Requirements	MetInvest Spartan	Liberty Dalzell	Greenfield Plate Mill
Plate Demand – offshore wind is expected to require 0.9 mtpa by 2050			✓
Plate Grades – EN10025-4 S355ML grades (TMCP Heat Treatment)	✓	✓	✓
Plate Width – width between 4 – 4.3 m is required for monopiles and up to 4.5 m for cones			✓
Plate Length – length between 9 – 18 m is required		✓	✓
Plate Thickness – thickness between 65 – 130 mm is required with a minimum reduction ratio of 2.5 – 3.0		✓	✓
Plate Weight – plate weight needs to ideally be within 25 – 45 tonnes			✓
Coastal Location – due to plate weight and loading efficiency, costal location is required			✓

Source: End-user Stakeholder Meetings, Hatch analysis

Key Takeaways

Plate demand in the UK is set to substantially increase from 1.3 mtpa in 2025 to 1.8 mtpa by 2050, primarily due to an increase in plate demand for offshore wind turbines, which may account for up to 50% of demand in 2050. Plate mill options have accordingly been evaluated to serve the offshore wind market, which will be a key segment to unlocking domestic steel demand. The two existing sites and a greenfield site were compared against end-user requirements:

MetInvest Spartan

+ MetInvest is the least capable plate mill due to its size, capacity and location. It is able to supply the commodity plate demand market but will struggle to fulfil any offshore plate demand

Liberty Dalzell

+ While Dalzell can cover plate grades, length and thickness. They would struggle with the width (limit of 4 meters) and weight (limit of 18 tonnes) of the plates even with upgrades due space and location restrictions. The ideal plate mill would be situated on the coast, as plates would be transported by sea cargo as road and rail would be expensive and inefficient to load and unload

Greenfield Plate Mill

+ A greenfield plate mill can be optimised to cover all aspects

Building a greenfield plate mill could create proximity efficiencies with wind tower manufacturers, advancing localised supply chain attractiveness

Plates

Option H: Greenfield EAF Steelmaking with an Integrated Plate Mill

Description

Greenfield plate mill facility with dedicated scrap-based EAF steelmaking. In comparison to Option C, this provides further flexibility on the capacity allowing the potential to fulfil the higher capacity gaps between 2025 to 2050 driven by offshore wind ambitions (i.e., largest gap of ~2.6 mt in 2030)

Addressed Gaps

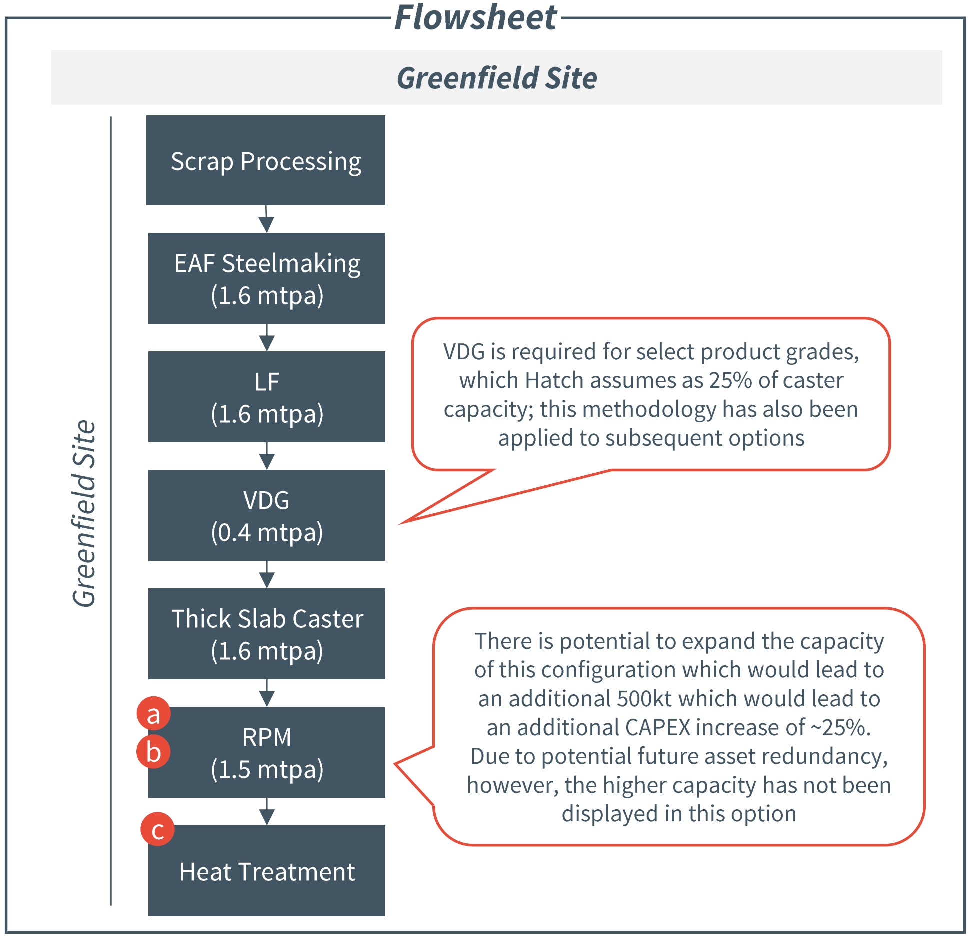
Capacity

May fully address 2050 capacity gap (1.5 production of 1.2 mt gap (0.3 can be exported))

Capability

- ⓐ Plate width: 4.5 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



VDG is required for select product grades, which Hatch assumes as 25% of caster capacity; this methodology has also been applied to subsequent options

There is potential to expand the capacity of this configuration which would lead to an additional 500kt which would lead to an additional CAPEX increase of ~25%. Due to potential future asset redundancy, however, the higher capacity has not been displayed in this option

Requirements

CAPEX Estimate	***Timeline Estimate***
£2.2 – 2.5bn (excluding additional capacity expansions)	48 – 60 months (12 – 24 months planning, investor sourcing, 36 months execution)

Other Requirements

Location	***Headcount***	***Infrastructure***
Stand-alone facility (ideally located with coastal near wind tower OEMs)	500 – 600 people	New port rail link (wide plates are difficult and expensive to transport by truck)

Potential Risks

Raw Materials & Workforce	***Timeline***
Scrap availability/ OBM sourcing and a new skilled workforce to relocate to a potentially remote greenfield site	Extensive timeline that is vulnerable to delays, meaning extra capacity may miss peak demand in 2030

Note: Risks shown here are project specific and general project risks are noted after all the options
Source: Hatch analysis

Building a plate mill which utilises Scunthorpe's EAF and slab caster lowers the CAPEX, reducing barriers for the UK to serve the offshore wind market

Plates

Option I: Brownfield Plate Mill at Scunthorpe with an Additional EAF

Description

New plate mill located at Scunthorpe utilising an expansion of the planned EAF project to produce additional volumes, as well as a modified 2.2 mt two-strand slab caster that can produce slabs up to 450mm thick[2]

Addressed Gaps

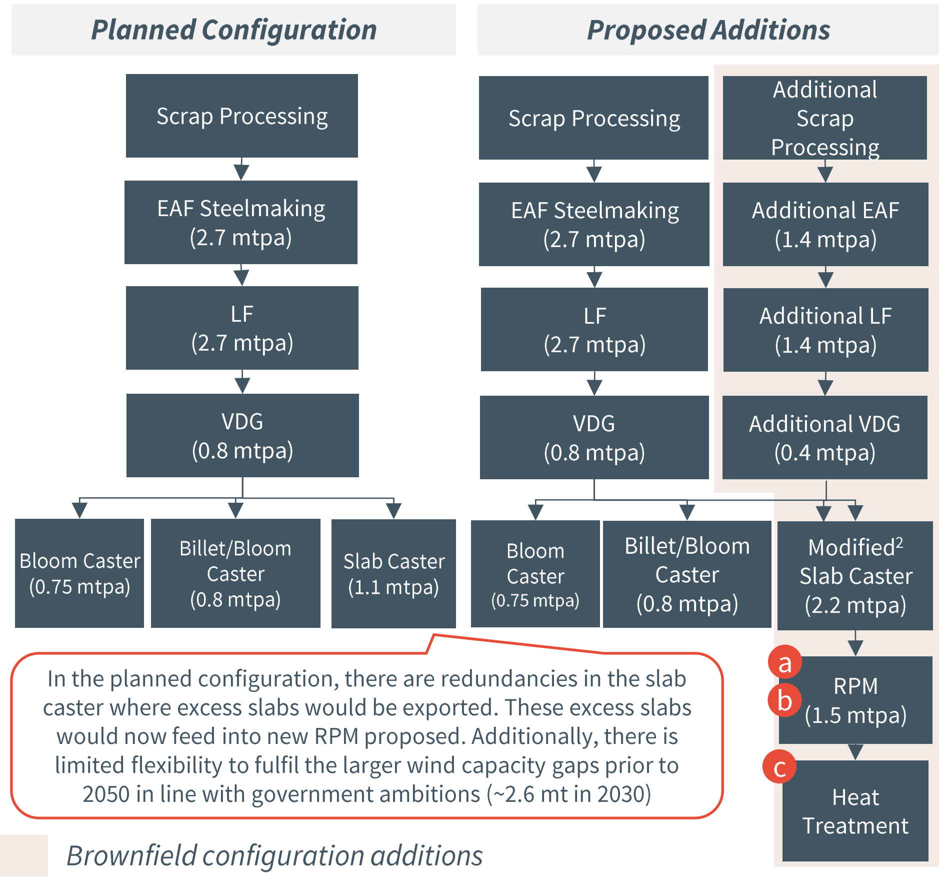
Capacity

May partially address 2050 capacity gap (1.5 mt vs 1.2 mt gap (0.3 mt available for export)

Capability

- ⓐ Plate width: 4.5 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



Planned Configuration

Scrap Processing → EAF Steelmaking (2.7 mtpa) → LF (2.7 mtpa) → VDG (0.8 mtpa) → Bloom Caster (0.75 mtpa) / Billet/Bloom Caster (0.8 mtpa) / Slab Caster (1.1 mtpa)

Proposed Additions

Scrap Processing → EAF Steelmaking (2.7 mtpa) → LF (2.7 mtpa) → VDG (0.8 mtpa) → Bloom Caster (0.75 mtpa) / Billet/Bloom Caster (0.8 mtpa) / Modified[2] Slab Caster (2.2 mtpa)

Additional Scrap Processing → Additional EAF (1.4 mtpa) → Additional LF (1.4 mtpa) → Additional VDG (0.4 mtpa) → Modified[2] Slab Caster (2.2 mtpa)

Modified[2] Slab Caster (2.2 mtpa) → ⓐ ⓑ RPM (1.5 mtpa) → ⓒ Heat Treatment

In the planned configuration, there are redundancies in the slab caster where excess slabs would be exported. These excess slabs would now feed into new RPM proposed. Additionally, there is limited flexibility to fulfil the larger wind capacity gaps prior to 2050 in line with government ambitions (~2.6 mt in 2030)

▨ *Brownfield configuration additions*

Requirements

CAPEX Estimate	*Timeline Estimate*
£2.0 – 2.3bn	42 - 48 months (12 – 18 months planning, investor sourcing, 30 months execution)

Other Requirements

Location	*Headcount*	*Infrastructure*
Scunthorpe	300 – 400 people	Existing port & rail link (wide plates are difficult and expensive to transport by truck)

Potential Risks

Raw Materials	*Schedule*	*Utilities*
Scrap availability/ OBM sourcing	Additional risk to include demolition of the BF area to clear required land	Power availability and cost to operate the additional EAF

Note: Risks shown here are project specific and general project risks are noted after all the options. 2 -The cast thickness range to support the plate mill and the existing section mill would be 225 – 450mm. A caster of this range is not proven technology and as such the two strands would need to be slightly different in operating range to bridge the full thickness requirement.

Source: Hatch analysis

Greenfield plate with slabs supplied from British Steel's Scunthorpe site, with SSUK's Rotherham site backfilling billets to Scunthorpe

Plates

Option J: Greenfield Plate Mill with Slab Supply from Scunthorpe and Backfill from Rotherham

Description

This option requires the new plate mill to obtain their slab supply from Scunthorpe & SSUK Rotherham to supply Bloom and billet to Scunthorpe. This will mean no new steelmaking is required, other than that already planned for Scunthorpe. This option only requires a change in specification to a thick slab caster[2] at Scunthorpe and a greenfield plate mill

Addressed Gaps

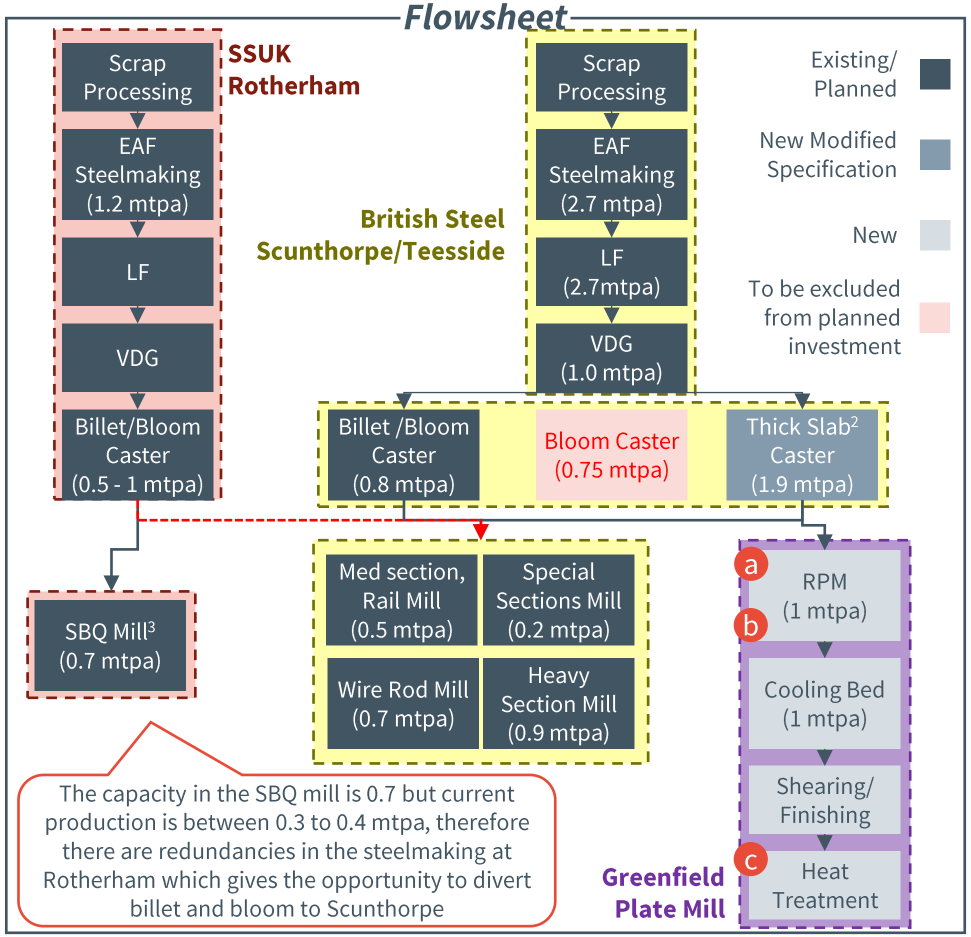
Capacity

May partially address 2050 capacity gap (1.0 mt of the 1.2 mt gap)

Capability

- ⓐ Plate width: 4.5 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



SSUK Rotherham

Scrap Processing → EAF Steelmaking (1.2 mtpa) → LF → VDG → Billet/Bloom Caster (0.5 - 1 mtpa) → SBQ Mill[3] (0.7 mtpa)

British Steel Scunthorpe/Teesside

Scrap Processing → EAF Steelmaking (2.7 mtpa) → LF (2.7mtpa) → VDG (1.0 mtpa) → Billet /Bloom Caster (0.8 mtpa); Bloom Caster (0.75 mtpa); Thick Slab[2] Caster (1.9 mtpa)

Med section, Rail Mill (0.5 mtpa)
Special Sections Mill (0.2 mtpa)
Wire Rod Mill (0.7 mtpa)
Heavy Section Mill (0.9 mtpa)

Greenfield Plate Mill

ⓐ ⓑ RPM (1 mtpa) → Cooling Bed (1 mtpa) → Shearing/ Finishing → ⓒ Heat Treatment

Existing/ Planned ■
New Modified Specification ■
New ■
To be excluded from planned investment ■

The capacity in the SBQ mill is 0.7 but current production is between 0.3 to 0.4 mtpa, therefore there are redundancies in the steelmaking at Rotherham which gives the opportunity to divert billet and bloom to Scunthorpe

Requirements

CAPEX Estimate[1]	*Timeline Estimate*
£1.4 – 1.7bn (slab caster is partially compensated through redirecting bloom caster investment)	Plate mill lead-time: 60 – 72 months (12 – 24 months planning, investor sourcing, 48 months execution)

Other Requirements

Location	*Headcount*	*Infrastructure*
Rotherham, Scunthorpe, Teesside and greenfield plate mill (anywhere)	200 – 300 people	Plate mill ideally situated at a port location and connected to rail infrastructure

Potential Risks

Grades Risk	*Insolvency Risk*	*Commercial Risk*
Rotherham ability to supply grades for Scunthorpe & require end user approval	If one partner fails or becomes insolvent, the supply is at risk	Mutual agreement is required to be able to supply semis between sites

Note: Risks shown here are project specific and general project risks are noted after all the options. 1 – This is not including the capex required for the current planned investment in Scunthorpe i.e. planned meltshop. 2 - The cast thickness range to support the plate mill & the existing section mill would be 225 – 450mm. A caster of this range is not proven technology & as such the two strands would need to be slightly different in operating range to bridge the full requirement. 3 – SBQ mill can produce rebars and wire rods

Source: Hatch analysis

Brownfield site with a new plate mill and caster at Port Talbot, which will use the planned EAF's 0.5 mtpa of surplus crude steel

Plates

Option K: Plate Mill and Caster Utilising Planned Excess Port Talbot Steelmaking

Description

Integration of a new plate mill at the Tata Port Talbot facility with a new thick slab caster to supply the plate mill. As Tata has an excess of 0.5 mtpa of crude steel capacity, it runs the risk of underutilising downstream facilities or requiring additional crude steel imports

Addressed Gaps

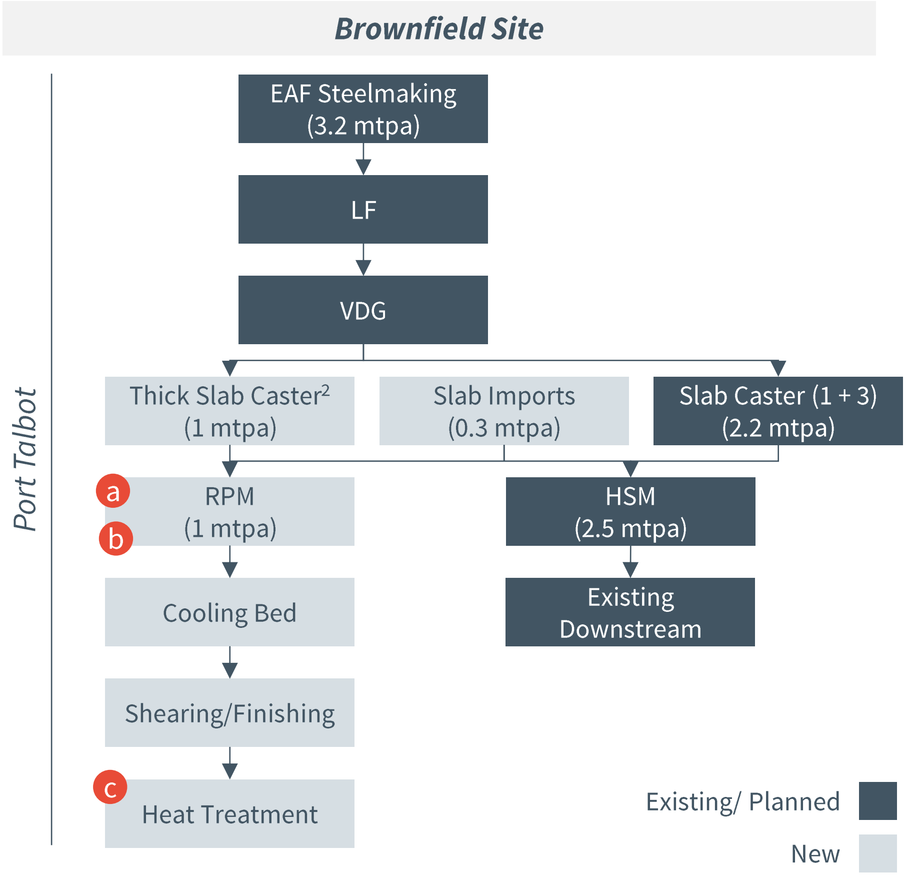
Capacity

May partially address 2050 capacity gap (1.0 mt of the 1.2 mt gap)

Capability

- ⓐ Plate width: 4.5 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



Brownfield Site

Port Talbot

EAF Steelmaking (3.2 mtpa)

LF

VDG

Thick Slab Caster[2] (1 mtpa)

Slab Imports (0.3 mtpa)

Slab Caster (1 + 3) (2.2 mtpa)

ⓐ ⓑ RPM (1 mtpa)

Cooling Bed

Shearing/Finishing

ⓒ Heat Treatment

HSM (2.5 mtpa)

Existing Downstream

Existing/ Planned ■

New □

Requirements

CAPEX Estimate[1]	***Timeline Estimate***
£1.5 – 1.8bn	Plate mill lead-time: 48 – 60 months (12 – 24 months planning, investor sourcing, 36 months execution)

Other Requirements

Location	***Headcount***	***Infrastructure***
Port Talbot	275 - 325 people	New port rail link (wide plates are difficult and expensive to transport by truck)

Potential Risks

Capacity Target	***Imports***	***Meltshop Logistics***
Meltshop needs to produce 3.2 mtpa from a single EAF which could be challenging	This option relies on the availability of suitable imports	Using one EAF to feed three casters will be very technically challenging

Note: Risks shown here are project specific and general project risks are noted after all the options. 1 – This is not including the capex required for the current planned investment in Port Talbot i.e. Planned Meltshop. 2 – Caster 2 at Port Talbot was considered but due to the requirements of the plate mill, caster 2 is not capable and would need to be replaced with a new thick slab caster with added capabilities

Source: Hatch analysis

Upgrades at Liberty Dalzell - which would include a new meltshop and plate mill improvements - can increase output but will not cover offshore market demand

Plates

Option L: Brownfield Liberty Plate Mill Modification (Plate Mill + New Meltshop)

Description

This option involves building a new meltshop at Dalzell and significantly upgrading Dalzell's plate mill. The meltshop will be single EAF/LMF/VDG facility feeding liquid steel to a thick slab caster that will provide the slabs to feed the plate mill. This option will not be able to adequately supply the offshore wind market based on product requirements (4.5 m width, 20 – 45 t)

Addressed Gaps

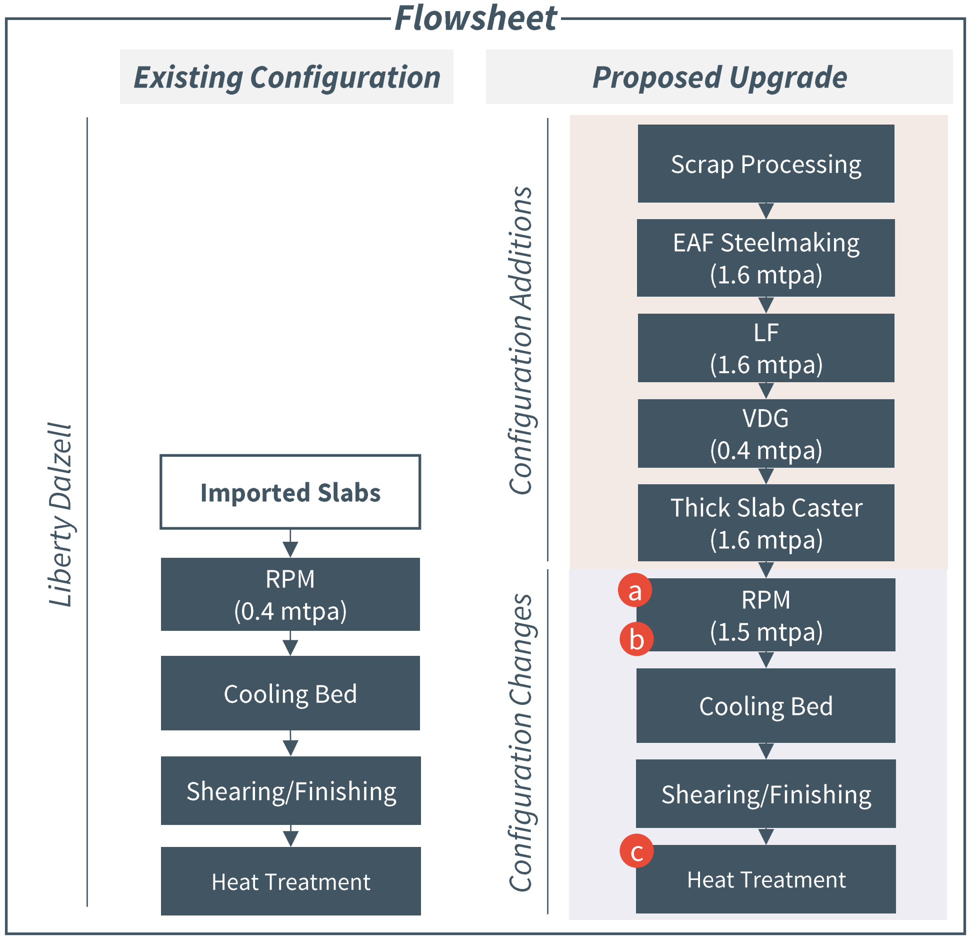
Capacity

1.5mt of capacity production from 0.3 mtpa currently, reducing the capacity gap to 0.9 mt in 2050 due to being unable to fulfil offshore wind needs

Capability

- ⓐ Plate width: 4.0 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



Liberty Dalzell

Existing Configuration

- **Imported Slabs**
- RPM (0.4 mtpa)
- Cooling Bed
- Shearing/Finishing
- Heat Treatment

Proposed Upgrade

Configuration Additions

- Scrap Processing
- EAF Steelmaking (1.6 mtpa)
- LF (1.6 mtpa)
- VDG (0.4 mtpa)
- Thick Slab Caster (1.6 mtpa)

Configuration Changes

- ⓐ ⓑ RPM (1.5 mtpa)
- Cooling Bed
- Shearing/Finishing
- ⓒ Heat Treatment

Requirements

CAPEX Estimate	*Timeline Estimate*
£1.6 – 1.9bn	48 – 60 months (12 – 24 months planning, investor sourcing, 36 months execution)

Other Requirements

Location	*Headcount*	*Infrastructure*
Motherwell	300 – 350 people	Existing rail link

Potential Risks

Land & Logistics	*Permitting*	*Power*
Overall plant size and material logistics limit overall capacity	Land availability and permitting	Power availability and cost to operate the EAF

Note: Risks shown here are project specific and general project risks are noted after all the options

Source: Hatch analysis

Upgrades at Liberty’s plate mill with slab feedstock being obtained from the SSUK Rotherham site can increase output but will not cover offshore market demand

Plates

Option M: Liberty Dalzell upgrade with slab supply from SSUK Rotherham

Description

This option involves utilising SSUK’s Rotherham site to produce feedstock for the Dalzell site. This includes a new thick slab caster at the Rotherham site and upgrading the facilities at Dalzell to produce 700 ktpa of capacity and plate sizes up to 4.0 m. This option will not be able to adequately supply the offshore wind market based on product requirements (4.5 m width, 20 – 45 t)

Addressed Gaps

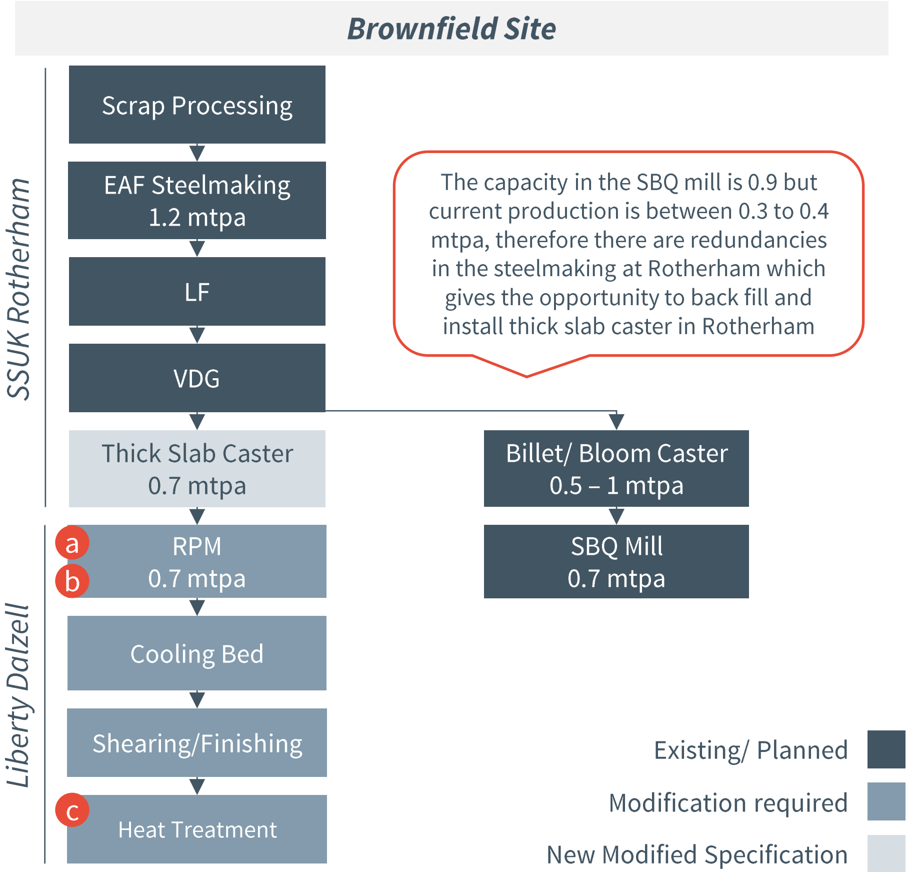
Capacity

Plate capacity of 700 ktpa from 300 ktpa currently (reducing the gap to 1 mtpa)

Capability

- ⓐ Plate width: 4.0 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



Brownfield Site

SSUK Rotherham

Scrap Processing

EAF Steelmaking 1.2 mtpa

LF

VDG

Thick Slab Caster 0.7 mtpa

Billet/ Bloom Caster 0.5 – 1 mtpa

SBQ Mill 0.7 mtpa

The capacity in the SBQ mill is 0.9 but current production is between 0.3 to 0.4 mtpa, therefore there are redundancies in the steelmaking at Rotherham which gives the opportunity to back fill and install thick slab caster in Rotherham

Liberty Dalzell

ⓐ ⓑ RPM 0.7 mtpa

Cooling Bed

Shearing/Finishing

ⓒ Heat Treatment

Existing/ Planned ■

Modification required ▨

New Modified Specification □

Requirements

CAPEX Estimate	*Timeline Estimate*
£0.8 – 1.0bn	36 months (12 months planning and investment, 24 months in construction)

Other Requirements

Location	*Headcount*	*Infrastructure*
Rotherham, Motherwell	100 – 150 people	Existing Rail link

Potential Risks

Mass flows	*Underutilisation*	*Meltshop Logistics*
The mass flow from the meltshop in Rotherham may be insufficient for the slab caster	Specific to the Billet/bloom caster, as volume will be prioritised for the slab caster	Based on annual slab caster capacity, it may limit the billet/ bloom caster

Note: Risks shown here are project specific and general project risks are noted after all the options

Source: Hatch analysis

Dalzell's plate mill could be upgraded; with slabs coming from British Steel's Scunthorpe site, and SSUK's Rotherham site supplying billets to Scunthorpe

Plates

Option N: Brownfield Dalzell upgrade with slab supply from Scunthorpe and backfill from Rotherham

Description

This option requires Dalzell to obtain slab supply from Scunthorpe or Rotherham to supply bloom and billet to Scunthorpe, meaning no new steelmaking. It requires a change in specification to a thick slab caster at Scunthorpe and modification of the Dalzell plant. This option will not be able to adequately supply the offshore wind market based on product requirements (4.5 m width, 20 – 45 t)

Addressed Gaps

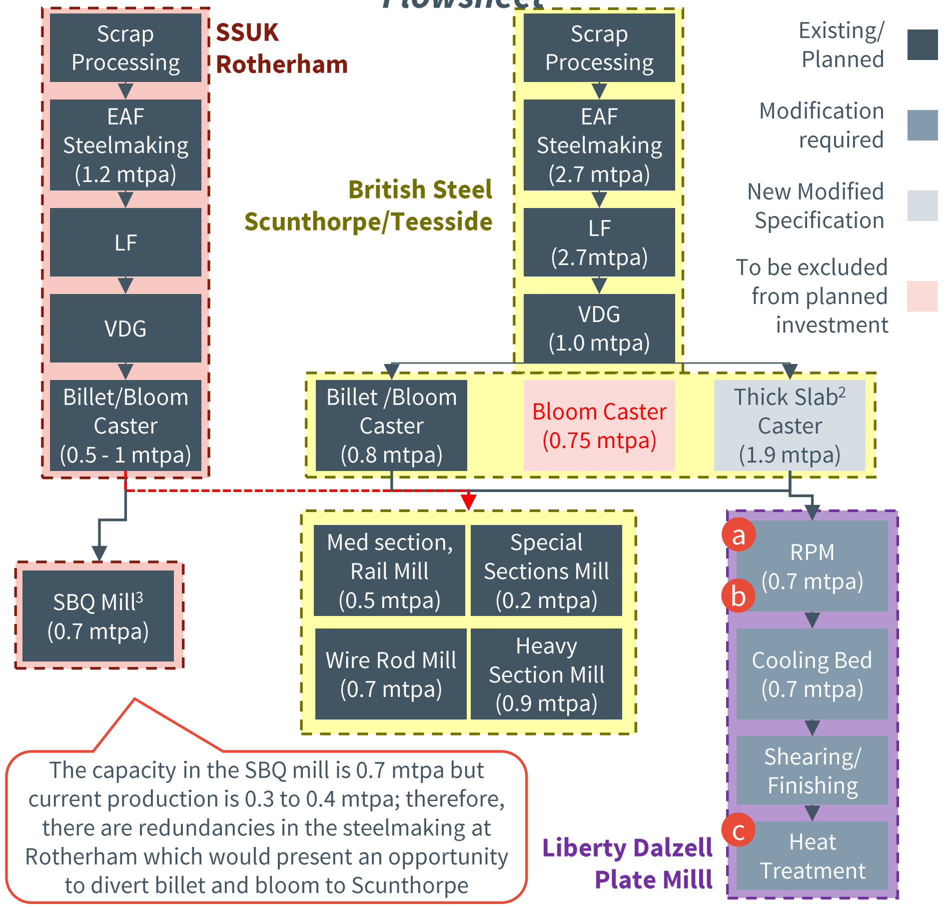
Capacity

Plate capacity of 700 ktpa from 300 ktpa currently (reducing the gap to 1 mtpa)

Capability

- ⓐ Plate width: 4.0 m
- ⓑ Plate thickness: 150 mm
- ⓒ API grades

Flowsheet



SSUK Rotherham

Scrap Processing → EAF Steelmaking (1.2 mtpa) → LF → VDG → Billet/Bloom Caster (0.5 - 1 mtpa) → SBQ Mill[3] (0.7 mtpa)

British Steel Scunthorpe/Teesside

Scrap Processing → EAF Steelmaking (2.7 mtpa) → LF (2.7mtpa) → VDG (1.0 mtpa) → Billet /Bloom Caster (0.8 mtpa) | Bloom Caster (0.75 mtpa) | Thick Slab[2] Caster (1.9 mtpa)

Med section, Rail Mill (0.5 mtpa)

Special Sections Mill (0.2 mtpa)

Wire Rod Mill (0.7 mtpa)

Heavy Section Mill (0.9 mtpa)

Liberty Dalzell Plate Milll

ⓐ ⓑ RPM (0.7 mtpa) → Cooling Bed (0.7 mtpa) → Shearing/ Finishing → ⓒ Heat Treatment

The capacity in the SBQ mill is 0.7 mtpa but current production is 0.3 to 0.4 mtpa; therefore, there are redundancies in the steelmaking at Rotherham which would present an opportunity to divert billet and bloom to Scunthorpe

Existing/ Planned	■
Modification required	■
New Modified Specification	□
To be excluded from planned investment	■

Requirements

CAPEX Estimate[1]	Timeline Estimate
£0.6 – 0.9bn	40 months (In line with current timeline of Scunthorpe Melt shop project)

Other Requirements

Location	Headcount	Infrastructure
Rotherham, Motherwell, Scunthorpe and Teesside	50 – 100 people	This option will likely require new rail to be built or require road-based logistics

Potential Risks

Logistics	Insolvency Risk	Commercial Risk
Logistics need to be arranged with the 250 miles from Scunthorpe to Motherwell	If one partner fails or becomes insolvent, supply is at risk	Mutual agreement is required to be able to supply semis between sites

Note: Risks shown here are project specific and general project risks are noted after all the options. 1 – This is not including the capex required for the current planned investment in Scunthorpe i.e. planned meltshop. 2 - The cast thickness range to support the plate mill & the existing section mill would be 225 – 450mm. A caster of this range is not proven technology & as such the two strands would need to be slightly different in operating range to bridge the full requirement. 3 – SBQ mill can produce rebars and wire rods

Source: Hatch analysis

Beyond project-specific risks, all options are subject to industry-wide risks that should be considered during further business case evaluation

Risk Factors and Mitigations to Consider

RISKS NOT EXHAUSTIVE

Risk	Mitigation
Commercial viability & attractiveness. The project's success depends on market demand, pricing, and the ability to attract investors	Conduct detailed market analysis to understand demand, competition, and pricing trends to develop a robust financial and business case for the project
Capital cost overrun. Unexpected increases in project costs can strain budgets and impact financial returns	Clearly define the scope to develop accurate estimates and allocate contingency within the budget to cover unforeseen costs
Timeline delay. Delays in project completion can lead to increased costs and lost revenue opportunities	Develop a detailed project plan with clear timelines, milestones, permitting and resource allocations inclusive of key bottlenecks such as land acquisition. Set a contingency period to accommodate any delays
Cost competitiveness with imports. Competing with low-cost imported steel can affect ability to secure domestic customers and market share	Policy support mechanisms (e.g., operational cost subsidies/rebates, tariffs on imports, etc.) may be required to address cost competitiveness with imports
Securing a workforce. Projects may require additional skilled labour; Challenges in securing a workforce could cause project delays and result in increased labour costs	Invest in training and apprenticeship programs to develop a long-term skilled workforce

Contents

A comprehensive approach was used to identify and address operational and supply chain gaps in the UK’s steel sector

Steel Production Capabilities, Capacities & Supply Chain Gap Analysis Methodology

1 Steel Production Capability & Capacity Gap Analysis

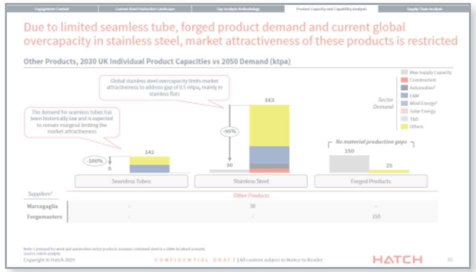
Evaluation of UK steelmaking assets based on their ability to produce the quantity and capabilities of target products required by key domestic end-uses

Capacity Analysis

+ Domestic steel production vs. long-term demand by product

Capability Analysis

+ Dimensions
+ Grades
+ Shapes



Due to limited seamless tube, forged product demand and current global overcapacity in stainless steel, market attractiveness of these products is restricted

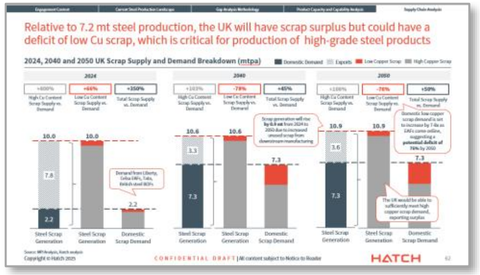
Reliable UK supply of heavy and wide plates to offshore wind sectors is limited; tinplate production depends heavily on sourcing HRC feedstock reliably

2 Supply Chain Gap Analysis

Evaluation of broader end-use sector supply chains, focusing on upstream input and sector-specific downstream requirements for addressing steel production gaps

Upstream Analysis

+ Energy
+ Ore Based Metallics (OBMs)
+ Scrap



Relative to 7.2 mt steel production, the UK will have scrap surplus but could have a deficit of low Cu scrap, which is critical for production of high-grade steel products

Downstream Analysis

+ Construction
+ Engineering & machinery
+ Wind power
+ Automotive
+ Transmission & distribution
+ Nuclear
+ Solar power
+ Transformers
+ Motors
+ Defence

Focus of this section

Output: *Options to address the key technical and commercial gaps for the products and key end-use sectors. These options will consider capital cost requirements, development timelines, policy support measures, and commercial risks*

Supply Chain Gap Analysis – Upstream

The UK can currently produce enough scrap and energy for additional EAFs, but further upstream capacity and a DRI plant may be crucial to meet future demand

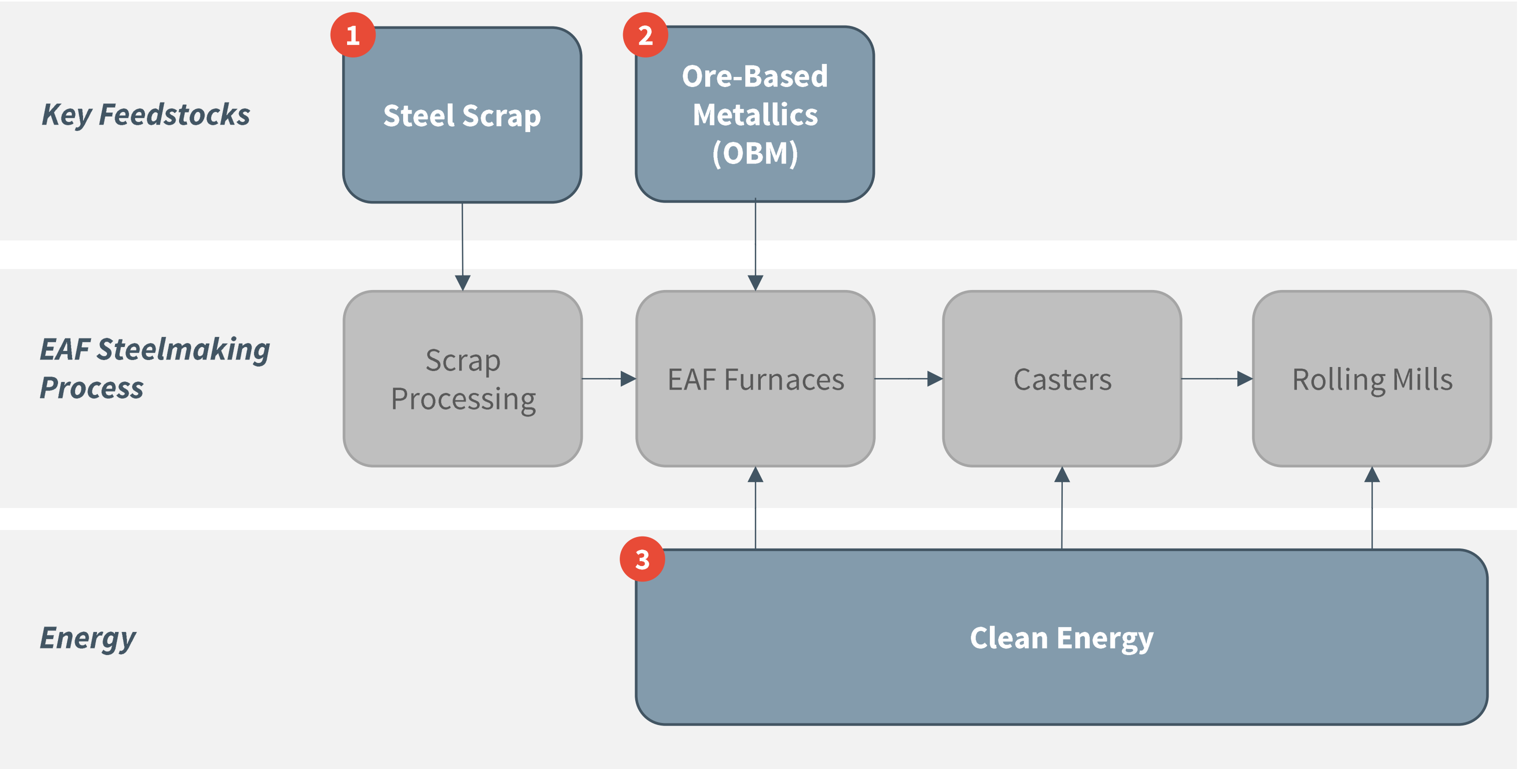
Steel Demand Supply Chain – Upstream Gap Summary

	Sector	Capacity	Capability	Supply Chain Gaps	Options to Address
Upstream	**Steel Scrap**	🟡	🟡	+ The UK currently produces enough scrap (to fulfil Tata and potential British Steel requirements) overall; however, it does not generate sufficient volumes of low-copper content scrap, which is critical for the production of high-grade steel products	+ Construction of scrap processing plants that process high-copper scrap by reducing copper content to achieve quality requirements for production of high-grade steels
	OBM	🔴	🔴	+ If the UK scales steel production and constructs more EAFs due to limited supply of scrap, DRI will be required as a substitute. The UK currently does not have a DRI facility in the UK, relying solely on imports	+ Import HBI from the open market through long-term offtake agreements + Pursue partnerships with projects in emerging green DRI corridors (e.g., new green DRI projects in Europe or Middle East) + Evaluate alternative iron making and steel process which are underdevelopment such DRI-ESF-BOF
	Energy	🟡	🟢	+ The UK can produce clean energy, but additional EAFs (Tata Steel and potentially British Steel) or upstream facilities will require significant additional power to meet the new demand	+ Increasing the UK's power generation and grid capacity to meet steel supply chain requirements

Source: Hatch analysis

To capture addressable domestic steel demand, scrap, ore-based metallics, and clean energy must satisfy volume and quality requirements for EAF steelmaking

Simplified EAF Steelmaking Flowsheet



Key Takeaways

① **Steel Scrap**

- Scrap can come in two main forms:
  - **High-copper content scrap:** scrap collected from end-of-life products containing steel (copper content of ~0.3 –0.4%)
  - **Low-copper content scrap:** high-quality steel scrap generated during manufacturing processes (copper content of ~0.2 – 0.3%)

② **Ore-Based Metallics (OBM)**

- To meet bespoke steel grade requirements, OBMs are needed to dilute harmful elements such as hydrogen and nitrogen

③ **Clean Energy**

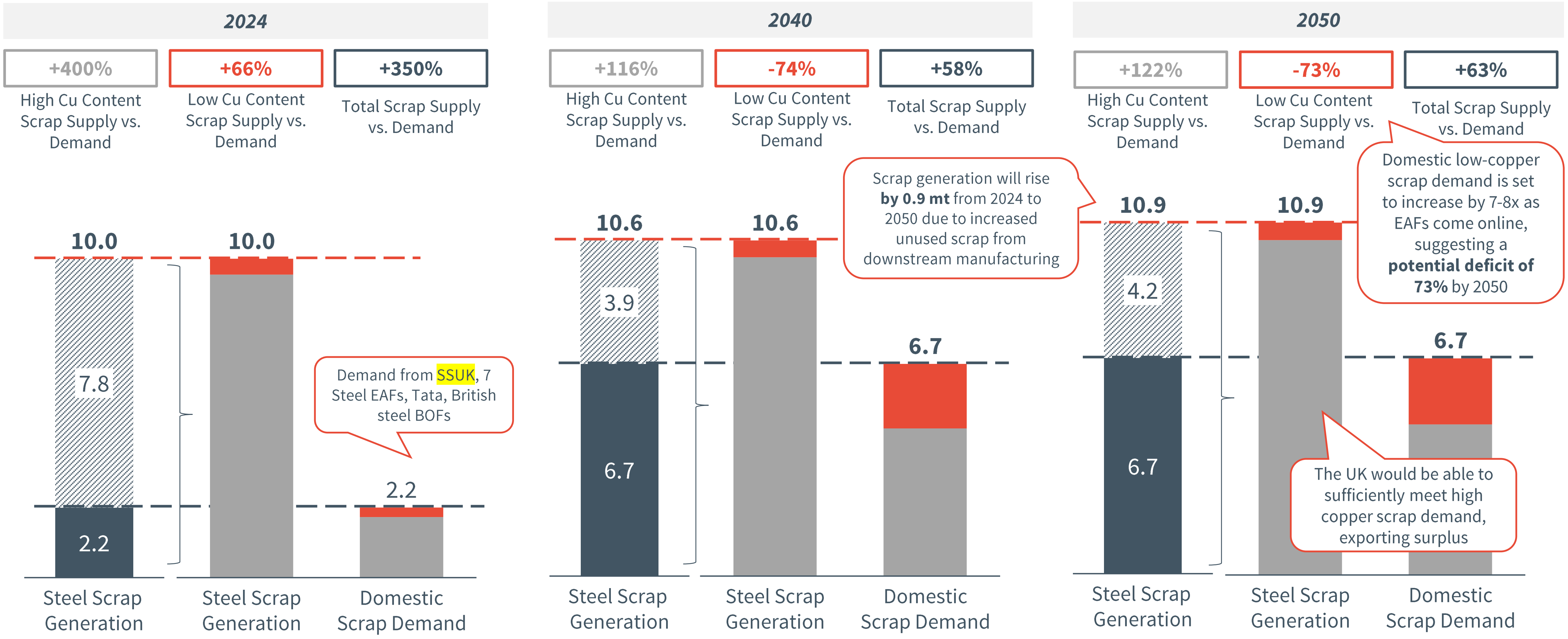
- Green steel production relies heavily on the availability and cost competitiveness of clean energy sources (e.g., wind, solar, nuclear)

Source: Hatch analysis

Relative to 6.7 mt steel production, the UK will have scrap surplus but could have a deficit of low-copper scrap, which is critical for production of high-grade steel products

UK Scrap Supply and Demand Breakdown in 2024, 2040, and 2050 (mtpa)

■ Domestic Demand ▨ Exports 🟥 Low Copper Scrap ■ High Copper Scrap



Demand from SSUK, 7 Steel EAFs, Tata, British steel BOFs

Scrap generation will rise **by 0.9 mt** from 2024 to 2050 due to increased unused scrap from downstream manufacturing

Domestic low-copper scrap demand is set to increase by 7-8x as EAFs come online, suggesting a **potential deficit of 73%** by 2050

The UK would be able to sufficiently meet high copper scrap demand, exporting surplus

Source: MPI Analysis, Hatch analysis

There are two key options to address the deficit of low-copper scrap: (1) increasing scrap processing, and (2) using OBM to dilute copper content

Technical Issues Related to Processing of Copper in Scrap

+ **Scrap accounts for the largest component of the operating costs and its mix requires careful examination by a steel producer to determine the lowest cost mixture to achieve specified grades.** There is wide variation of copper levels required in steel, rebars can accept 0.4% copper while for certain grades in automotive steel, copper levels must be <0.1%

+ **The copper level in scrap can vary widely**. E3 and E1, obsolete scrap, contain higher levels of copper ~ 0.3 – 0.5% and have wider availability. E2 and E8, prompt scrap or new scrap, contain 0.2 – 0.3% copper and have lesser availability. Copper levels in scrap can be reduced by processing and shredding. For example, if there is E1 scrap available with 0.40% copper, then the scrap can be run through a shredder to remove the copper to reduce the copper to 0.26%. Some high-quality shredders can achieve as low as 0.16%

+ **There are technical challenges to metallurgically reduce copper in the liquid steel in the furnace.** There are no commercially proven technologies available currently. There is research and development being conducted to develop these technologies, but these are still at lab scale and are many years away from being deployed commercially. As an example, Swansea University is conducting R&D and using electrowinning technology to remove copper from steel

Options to Consider for Deficit of Low-Copper Content Scrap

Option 1:

Increase processing of high copper scrap to reduce copper content and meet the required quality standards for scrap

Option 2:

Use OBM, with copper levels ~0%, to dilute the copper in the steel. This requires importing or production of OBM as a substitute of low-copper scrap. OBM can be DRI or pig iron. Given the high emission footprint of pig iron, DRI is expected to be the default OBM of choice

Option 3:

Invest in R&D to develop new technologies to improve scrap processing and removal of copper from liquid steel in EAF

A new scrap facility could be developed to convert excess scrap into low-copper scrap suitable for EAFs, addressing the future deficit

Option to Fulfil Low-Copper Content Scrap Demand: High Copper Content Scrap Processing Facility

Description

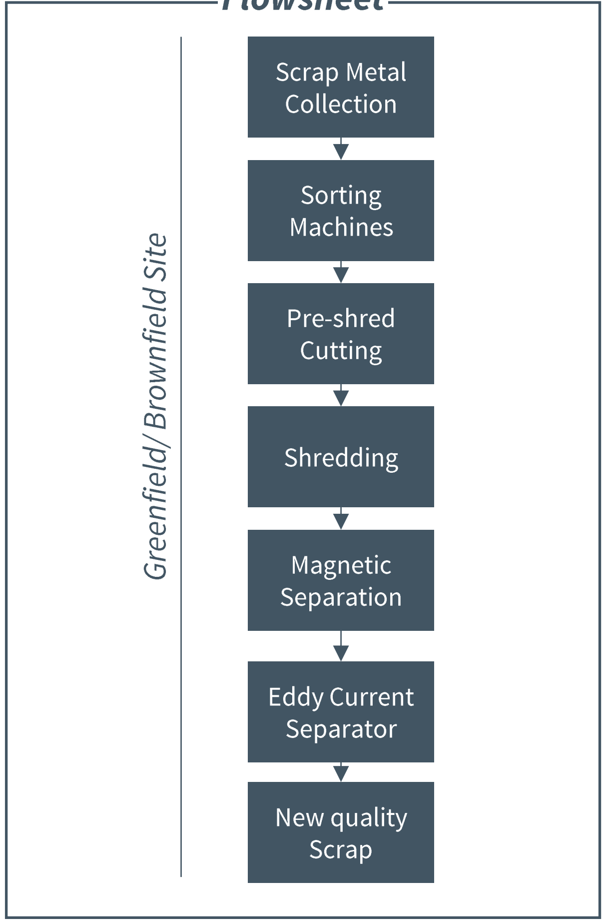
This option explores setting up a facility to process high copper scrap metal by reducing the copper content to meet the required scrap quality standards. This processed scrap can then be used as feedstock for the planned EAFs. Four of these shredders will be needed to close the addressable gap

Addressed Gaps

Upstream

This option looks to address the gap presented by the insufficient supply of low-copper content scrap, a gap of 1.5 – 2 mtpa by 2050 from as early as 2030. This option presented is for a typical processing facility with capacity of 450 ktpa

Flowsheet



Requirements

Capital Cost Estimate	***Timeline Estimate***
£30 – 40m (for a typical 450 ktpa facility)	24 – 48 months (minimum 6 months planning, 18 months construction)

Other Requirements

Location	***Headcount***	***Infrastructure***
Ideally situated with good road and rail access	50 – 70 people	Good system of roads for inbound and outbound logistics, railroad access, and power availability

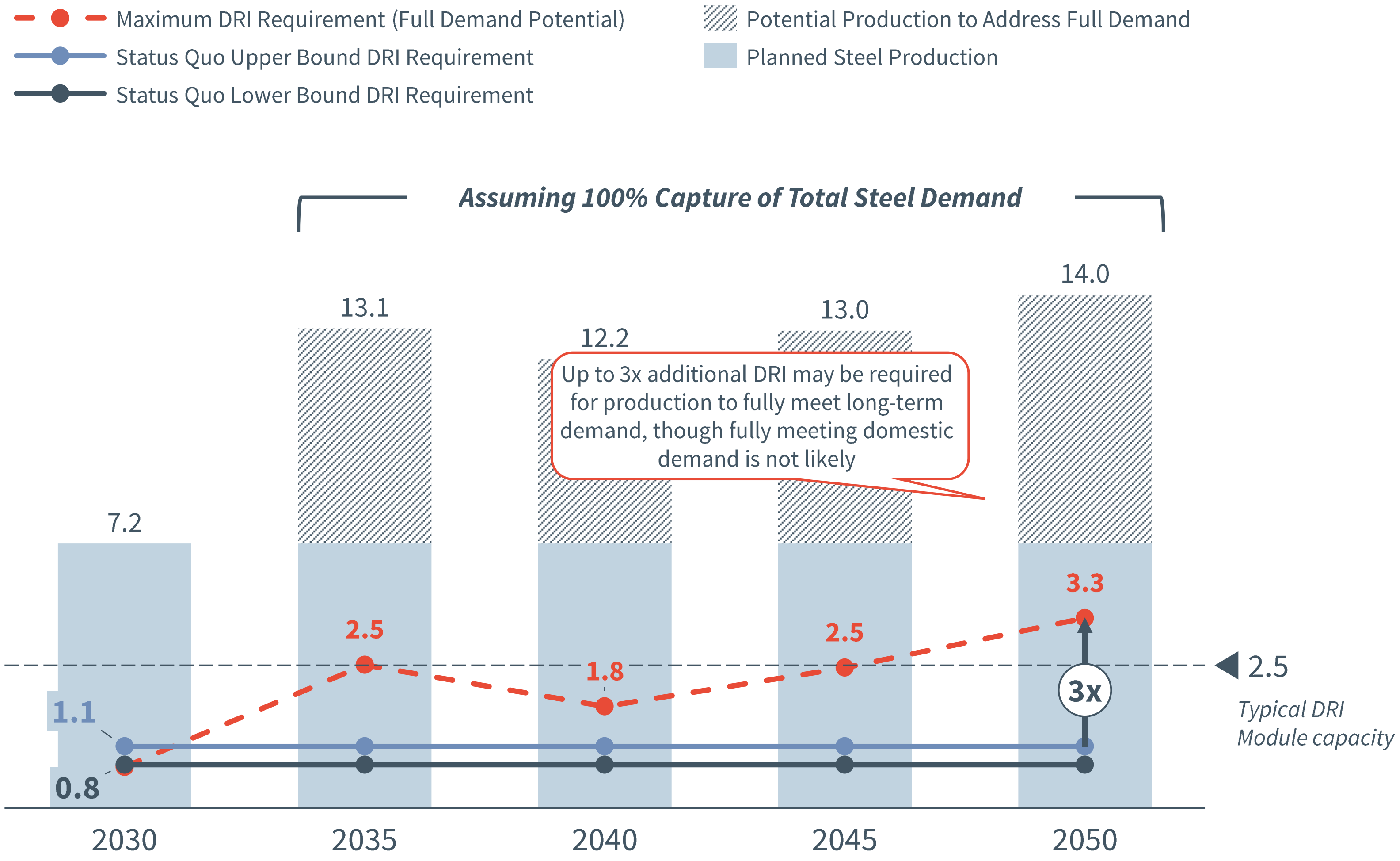
Risks

Regulatory	***Legal***	***Workforce***
Air quality permits due to high VOCs. Stormwater run-off and contamination risk	Legal challenges from continuous traffic and noise from shredder operations	Difficulty in sourcing skilled workforce (mechanical and electrical) personnel

Source: Hatch analysis

Relative to 6.7 mt steel production, the UK would need 0.8 – 1.1 mt DRI for special grades, this would theoretically increase by 3x to capture 100% of UK demand

DRI Requirements vs. Steel Production, 2030 – 2050 (mtpa)



Note: This assumes status quo Wind and Automotive Localisation

Source: Hatch analysis

Technical Requirements of DRI

- **Description:** Direct reduced iron (DRI) is produced by removing chemically-bound oxygen from iron oxide pellets, using natural gas or hydrogen. Contents include iron with small amounts of copper, nitrogen, and other impurities
- **Requirement:** DRI is suitable for use in EAF, in conjunction with scrap. Scrap is generally suitable for production of standard grades where copper content can exceed 0.15%. For high value grades (e.g., automotive, deep drawing, etc.) copper content cannot exceed 0.1 %. DRI is accordingly required to reduce the copper content of scrap steel
- **UK context:** After Tata Steel and British Steel transition to scrap-based EAF steelmaking, increased demand for DRI can be expected for impurity removal

Key Takeaways

- Scrap generation in the UK is limited to a maximum of 10.9 mtpa in 2050, suggesting increased demand for DRI to support planned EAF production of 6.7 mtpa
- DRI demand may reach up to 3.3 mtpa (3x increase) if the UK aspires to capture 100% of domestic demand, due to the production of higher value grades

The UK needs DRI to produce certain high-grade steels; DRI plants become commercially viable at 2 mtpa, though alternative options are available

Securing the DRI Feedstock for UK Steel

Options	**6.7 mtpa of production**	**14.0 mtpa of production**
Building a greenfield DRI plant (further details shown on the right)		✓
Import HBI[1] from the open market through long term offtake agreements	✓	✓
Enter into JV agreements in projects in emerging green DRI corridors in Middle East or new green DRI projects in Europe		✓
Evaluate alternative iron and steel making process which are underdevelopment such DRI-ESF-BOF		✓

Option to Fulfil DRI Demand: New DRI Plant

Description

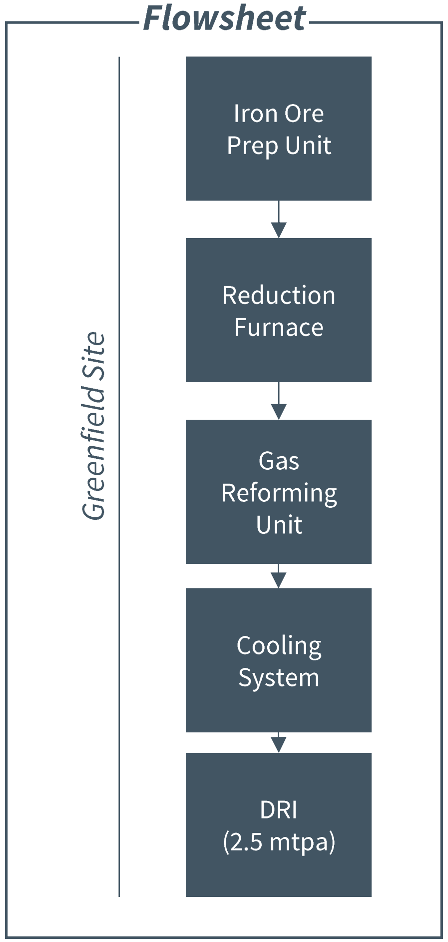
This option details out the requirements for a DRI plant, this is to support the feedstock system for planned UK steel facilities. This is a greenfield site that can be placed anywhere, ideally situated to an EAF or near good transport links to transport the DRI

Addressed Gaps

Upstream

The UK is expected to need 0.8 – 1.1 mtpa of DRI to support 6.7 mtpa of EAF steel production. This option shows typical details for a facility that produces 2.5 mtpa. Current requirements of 0.8 – 1.1 mt will be not be commercially viable for a 2.5 mtpa facility but could become in future if production increases further

Flowsheet



Requirements

Capital Cost Estimate

£1.2 - 1.5bn
For a typical natural gas or H_2 based 2.5 mtpa module

Timeline Estimate

48 – 60 months (minimum; 12 months planning, 36 months construction)

Headcount

175 – 200 employees

Risks

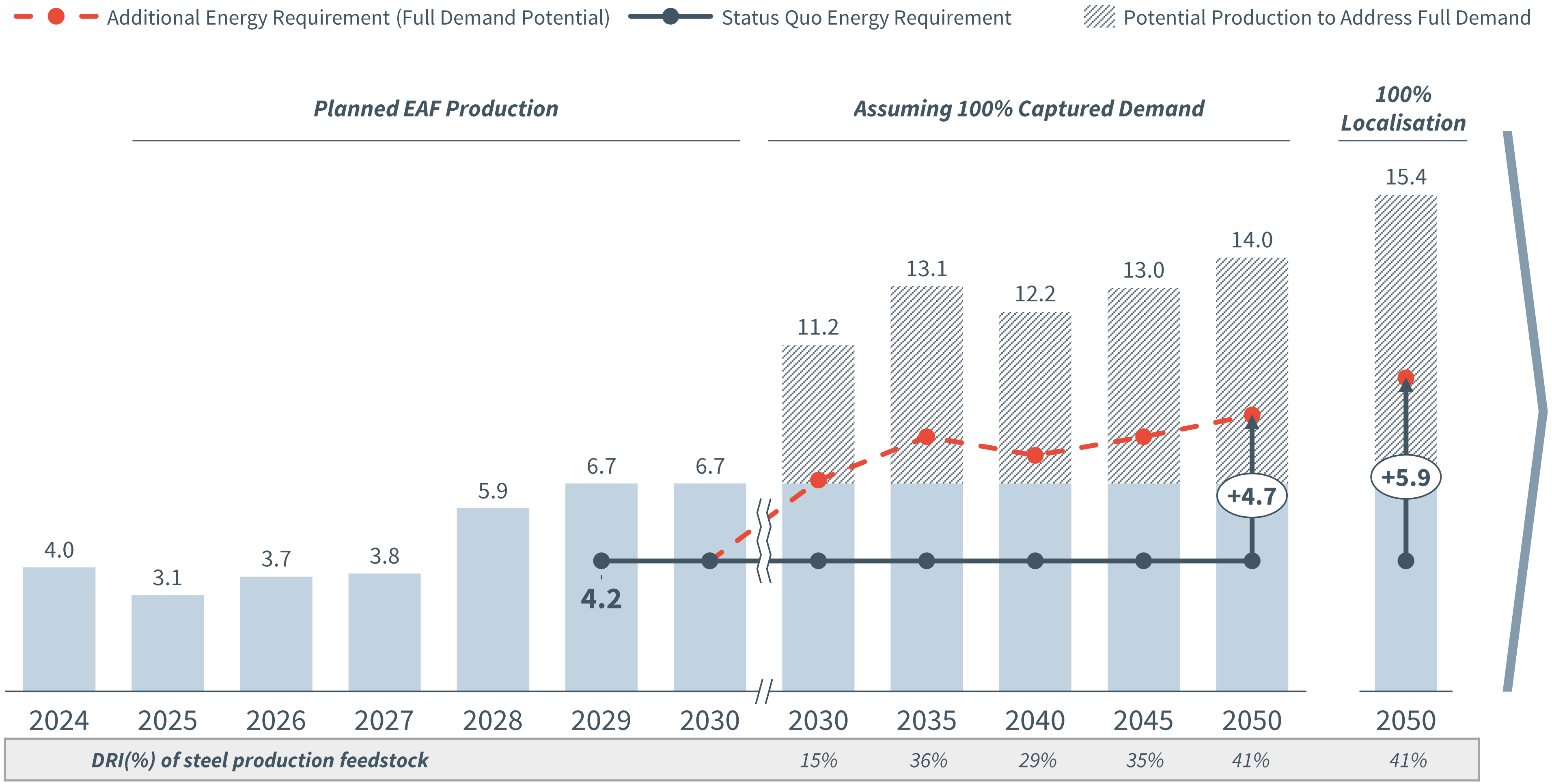
Workforce

As the UK historically has never had a DRI plant, sourcing staff that have the appropriate skills and experience can be challenging

Note: 1. DRI is very combustible when transported by sea. HBI is the compacted form of DRI to overcome the problems associated with shipping.
Source: MPI Analysis, Hatch analysis

If the UK scales above current EAF production to capture addressable domestic demand, energy requirements could increase by up to 5.9 GW by 2050

Additional Energy Requirements (GW) vs. Steel Production (mtpa), 2030 - 2050



If the UK scales above currently planned steel production of 6.7 mtpa to further capture addressable demand, **up to 5.9 GW of energy will be required by 2050**, though fully meeting domestic demand is not likely; **this can be supplied from renewable energy expansions** (e.g., nuclear SMRs)

Note: 100% Localisation, integrates forecasted steel demand and if 100% of steel demand from the automotive and wind sector was localised to the UK
Source: Hatch Analysis

Supply Chain Gap Analysis – Downstream

Localising supply chains will drive steel demand growth; aside from construction and T&D, most core and emerging sectors require comprehensive supply chain development

Steel Demand Supply Chain – Downstream Gap Summary

	Sector	Capacity[1]	Capability[1]	Supply Chain Gaps	Options to Address
Downstream	**Construction**	🟡	🟢	+ There are no capability gaps, but capacity will likely need to be increased for future demand gaps	+ Increase overall capacity of supply chain in line with construction sector demand
	E&M	🟡	🟡	+ The UK has reasonable technical capabilities and capacity in E&M, largely lost due to hollowing of supply chains	+ Encourage E&M OEMs and system integrators to onshore their manufacturing process in the UK
	Automotive	🔴	🔴	+ The automotive supply chain has been challenged by declining demand as well as other macroeconomic factors over recent years	+ Encourage auto OEMs and system integrators to onshore their manufacturing process in the UK
	Wind Energy	🔴	🔴	+ The UK lacks sufficient manufacturing facilities for key components like towers, nacelles, and blades and it relies on OEMs based in the EU	+ Encourage wind OEMs to onshore production in the UK which will also accelerate the growth of specialist SSCs
	Solar Energy	🔴	🟡	+ Solar panel frame fabrication is predominantly imported, limiting ability to supply HDG for further downstream use	+ Increase production of HDG and overall capacity of supply chain in demand from the solar sector
	T&D	🟡	🟢	+ The UK has no capability gaps but will need to increase supply chain capacity to meet the rapid demand growth in T&D	+ Increase overall capacity of T&D supply chain in line with demand increase
	Defence	🟡	🟡	+ While defence represents a small share of domestic end-use demand, capability gaps suggest reliance on imports for critical applications	+ Engagement between MoD and steel producers regarding plans for suppling defence-grade steels in line with expansions
	Transformers	🔴	🔴	+ The UK faces capacity and capability gaps across the supply chain, including lack of local electrical steel production	+ Onshore production of electrical steel and transformer manufacturing in the UK
	Motors (Non-Auto)	🔴	🔴	+ The UK faces capacity and capability gaps across the supply chain, notably for non-auto motor OEMs limiting broader sector development	+ Onshore production of electrical steel and EV motor manufacturing in the UK
	Nuclear	🔴	🟡	+ The UK has reasonable capabilities mainly for construction but less so for critical equipment. For future nuclear ambitions, capacity and capability both should be increased	+ Improve capacity of plates production for nuclear applications and the overall supply chain

Note: 1. For explanation behind the criteria see the assessment methodology on p.17 and capacity is based on 2050 demand.
Source: Hatch analysis.

The UK steel sector has suitable capabilities to address the construction and T&D sectors, though it lacks the capacity to capture ambitious growth potential

Steel Demand Sector Downstream Supply Chain Summary (p.1 of 7)[1]

🟢 Low 🟡 Medium 🔴 High

Sector: **Construction**, **Transmission & Distribution**

High-Level Supply Chain

Steel Producer → Steel Service Centre → Fabricator → Project Developer → Asset Owner

	Steel Producer	Steel Service Centre	Fabricator	Project Developer	Asset Owner
Capacity (2050)	🟡	🟡	🟡	🟡	🟡
Capability	🟢	🟢	🟢	🟢	🟢

Key Takeaways

Observations

- + Construction projects are typically localised within the country of development
- + The UK has no capability gaps but may face capacity challenges with a potential growth in T&D and construction demand
- + New transmission infrastructure is typically developed on a project-to-project basis, further limiting supply chain investment in specialised T&D facilities

Options

- + Increase overall production capacity to address the construction and T&D supply chains
- + Encourage long-term investments in specialised UK facilities and OEMs to develop the T&D supply chain

Note: 1. For explanation behind the criteria see the assessment methodology slide (slide 17)

Source: Hatch analysis

With aspirational UK capacity ambitions, the nuclear supply chain would need to be developed from both a capability and capacity standpoint

Steel Demand Sector Downstream Supply Chain Summary (p.2 of 7)[1]

Sector | **High-Level Supply Chain** | **Key Takeaways** (*Observations* / *Options*)

Nuclear

	Steel Producer	Service Centre	Component Manufacturer	Equipment Manufacturer	System integrators	Technology suppliers	Asset Owner
Capacity (2050)	🔴	🟡	🟡	🟡	🟡	🟡	🟡
Capability	🟡	🟡	🟡	🟡	🟡	🟡	🟡

Observations

+ The UK has partial capabilities within the supply chain for future projects due to the complexity in steel requirements
+ To meet nuclear capacity ambitions, the supply chain capacity should be increased

Options

+ Improve capacity and capability of plates production for nuclear applications
+ Increase the capacity of the overall supply chain

The UK solar supply chain is heavily reliant on Chinese imports for panel frames, while domestic E&M capacity would need to expand to meet future demand

Steel Demand Sector Downstream Supply Chain Summary (p.3 of 7)[1]

🟢 Low 🟡 Medium 🔴 High

Sector | **High-Level Supply Chain** | **Key Takeaways** *Observations* *Options*

Solar

Steel Producer → Steel Service Centre (SSC) → Panel Frame Fabricator → Contractor → Project Developer → Asset Owner

	Steel Producer	Steel Service Centre (SSC)	Panel Frame Fabricator	Contractor	Project Developer	Asset Owner
Capacity (2050)	🔴	🟡	🔴	🟡	🟡	🟡
Capability	🟡	🟢	🔴	🟢	🟢	🟢

Observations
- + Solar panel frame fabrication is predominantly imported, limiting ability to supply HDG for further downstream use

Options
- + Encourage localisation of panel frame fabricators to bolster domestic clean energy supply chain

E&M

Steel Producer → Steel Service Centre (SSC) → Component Manufacturer (Tier 2) → System Manufacturer (Tier 2) → E&M OEMs

	Steel Producer	Steel Service Centre (SSC)	Component Manufacturer (Tier 2)	System Manufacturer (Tier 2)	E&M OEMs
Capacity (2050)	🟡	🟡	🟡	🟡	🟡
Capability	🟡	🟡	🟡	🟡	🟡

Observations
- + The UK has strong technical capabilities with a reliable supply chain for E&M
- + To meet 2050 demand, overall capacity across the supply chain would need to be increased

Options
- + Encourage OEMs and system integrators to onshore manufacturing process in the UK

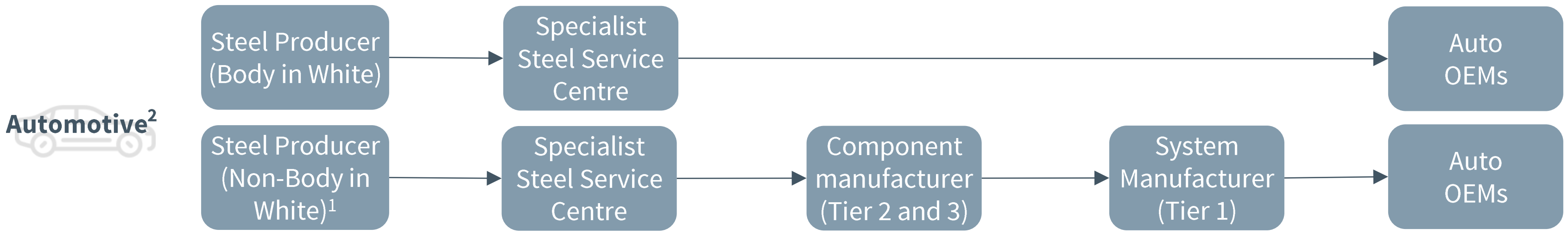
Note: 1. For explanation behind the criteria see the assessment methodology slide (slide 17), 2. This includes the seats, suspensions, wheel rims, bumpers, wipers etc.
Source: Hatch analysis

The automotive supply chain has hollowed out over recent years due to several macroeconomic factors, suggesting comprehensive efforts to revitalise growth

Steel Demand Sector Downstream Supply Chain Summary (p.4 of 7)[1]

🟢 Low 🟡 Medium 🔴 High

Sector | **High-Level Supply Chain** | **Key Takeaways**



Automotive[2]

Steel Producer (Body in White) → Specialist Steel Service Centre → Auto OEMs

Steel Producer (Non-Body in White)[1] → Specialist Steel Service Centre → Component manufacturer (Tier 2 and 3) → System Manufacturer (Tier 1) → Auto OEMs

Capacity (2050)	🔴	🔴	🔴	🔴	🟡
Capability	🔴	🔴	🔴	🔴	🟡

Observations	*Options*
+ The UK's automotive supply chain has been hollowed out due to a variety of factors including falling demand in key markets, manufacturer model changeovers, and broader economic and pollical uncertainty + Supply chain localisation varies by component (e.g., power trains are largely imported while frame and body use a larger share of domestically produced steel)	+ Collaborate with auto OEMs and system integrators to address domestic manufacturing challenges

Note: 1. For explanation behind the criteria see the assessment methodology slide (slide 17), 2. This includes the seats, suspensions, wheel rims, bumpers, wipers etc.
Source: Hatch analysis

The UK's wind supply chain relies heavily on imports, limiting opportunities for steel production despite ambitious long-term installation targets

Steel Demand Sector Downstream Supply Chain Summary (p.5 of 7)[1]

🟢 Low 🟡 Medium 🔴 High

Sector | **High-Level Supply Chain** | **Key Takeaways** (*Observations* / *Options*)

Wind Energy

Steel Producer → Steel Service Centre (SSC) → Wind Tower Manufacturer → Contractor → Project Developer → Asset Owner

	Steel Producer	Steel Service Centre (SSC)	Wind Tower Manufacturer	Contractor	Project Developer	Asset Owner
Capacity (2050)	🔴	🔴	🔴	🟡	🟡	🟡
Capability	🟡	🔴	🔴	🟢	🟢	🟢

Observations

- Traditional fabricator are largely concentrated in Europe and Asia
- Due to a limited domestic wind tower manufacturing presence, demand for associated steel facilities to produce key components (i.e., nacelles, blades, towers) has been limited
- This has limited requirements for domestic specific steel service centres

Options

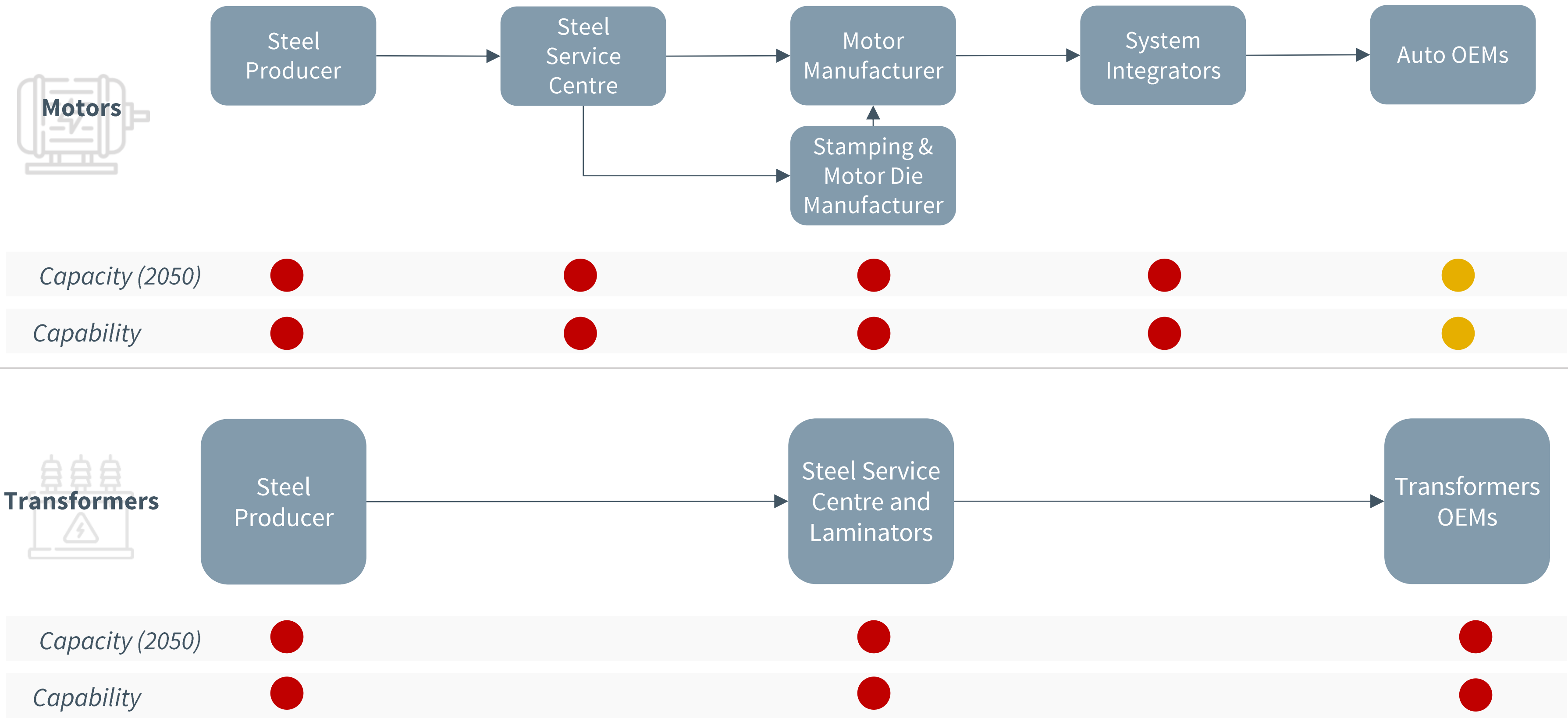
- Encourage wind OEMs to onshore production in the UK which will also accelerate the growth of specialist SSCs

Note: 1. For explanation behind the criteria see the assessment methodology slide (slide 17)
Source: Hatch analysis

As sectors positioned for domestic demand growth, motors and transformers would require broader supply chain location to capture steel production potential

Steel Demand Sector Downstream Supply Chain Summary (p.6 of 7)[1]

🟢 Low 🟡 Medium 🔴 High



Motors

	Steel Producer	Steel Service Centre	Motor Manufacturer	System Integrators	Auto OEMs
Capacity (2050)	🔴	🔴	🔴	🔴	🟡
Capability	🔴	🔴	🔴	🔴	🟡

Transformers

	Steel Producer	Steel Service Centre and Laminators	Transformers OEMs
Capacity (2050)	🔴	🔴	🔴
Capability	🔴	🔴	🔴

Key Takeaways

Observations

- + The UK faces capacity and capability gaps in the transformers and motors supply chain, including lack of local electrical steel production
- + Additional supply chain development may create opportunities to export to Europe

Options

- + Broad efforts to bolster domestic sectors in consideration of expected demand uplift would create opportunities across the entirely of supply chain, including upstream steel production

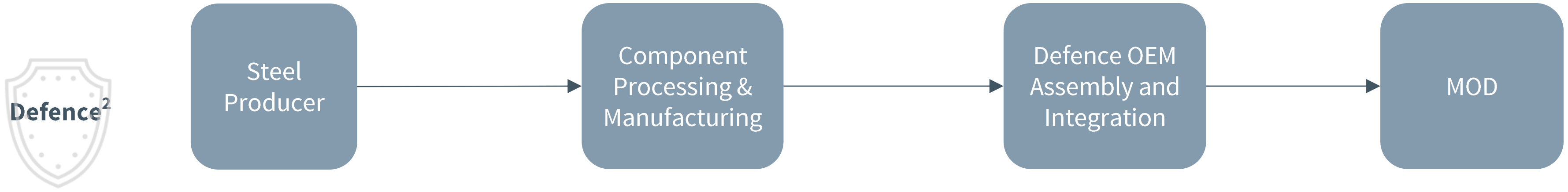
Note: 1. For explanation behind the criteria see the assessment methodology slide (slide 17)
Source: Hatch analysis

Building resilience within the defence supply chain requires onshoring OEMs and further coordination between UK steel producers and the defence industry

Steel Demand Sector Downstream Supply Chain Summary (p.7 of 7)[1]

🟢 Low 🟡 Medium 🔴 High

Sector | **High-Level Supply Chain**



	Steel Producer	Component Processing & Manufacturing	Defence OEM Assembly and Integration	MOD
Capacity (2050)	🟡	🟡	🟡	🟢
Capability	🟡	🟡	🟡	🟢

Key Takeaways

Observations

+ The UK will need to onshore more OEMs to increase supply chain resilience
+ The defence supply chain is highly specialised and very challenging to shift, which could take several years

Options

+ The defence industry should engage further with UK steel producers to source defence-grade steels and strengthen supply chain resilience in line with national security imperatives

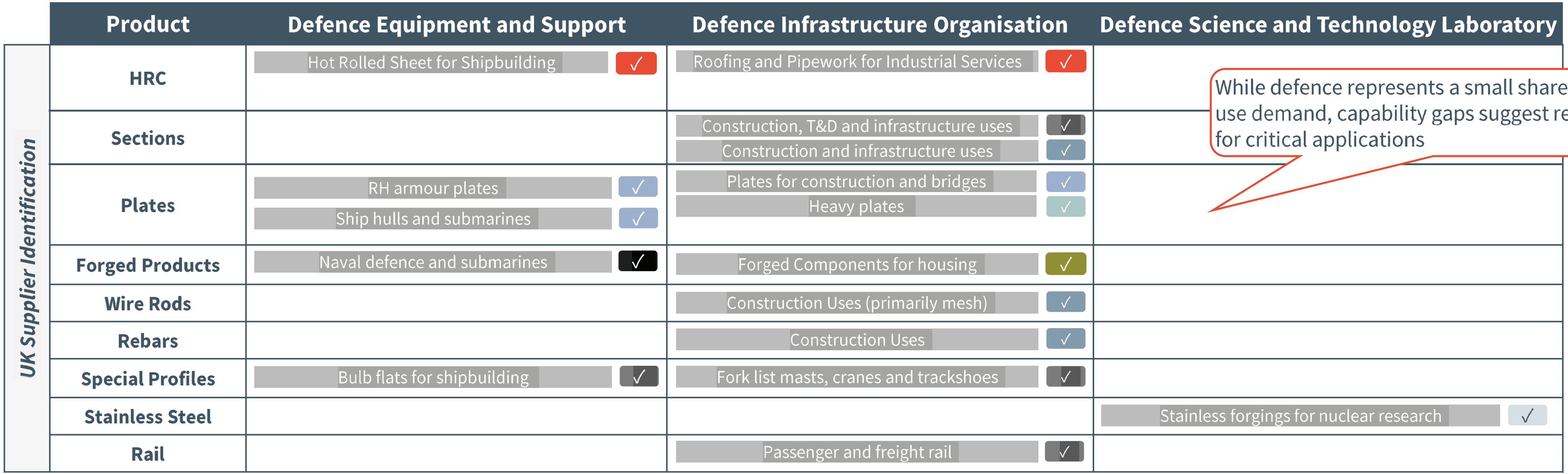
Note: 1. For explanation behind the criteria see the assessment methodology on p.17. 2. Defence supply chains are highly complex and have been simplified for purposes of this gap analysis
Source: Hatch analysis

Domestic steel production is strategically critical to supporting defence applications and domestic resilience

Defence Demand Sector Downstream Supply Chain Supplier Identification[1]

Metlnvest Spartan	Somers Forge	Forgemasters
Tata Steel UK	7 Steel	Marcegaglia
Industry Requirement	British Steel	Liberty Steel

NOT EXHAUSTIVE



UK Supplier Identification

Product	Defence Equipment and Support	Defence Infrastructure Organisation	Defence Science and Technology Laboratory
HRC	Hot Rolled Sheet for Shipbuilding ✓	Roofing and Pipework for Industrial Services ✓	
Sections		Construction, T&D and infrastructure uses ✓ Construction and infrastructure uses ✓	
Plates	RH armour plates ✓ Ship hulls and submarines ✓	Plates for construction and bridges ✓ Heavy plates ✓	
Forged Products	Naval defence and submarines ✓	Forged Components for housing ✓	
Wire Rods		Construction Uses (primarily mesh) ✓	
Rebars		Construction Uses ✓	
Special Profiles	Bulb flats for shipbuilding ✓	Fork list masts, cranes and trackshoes ✓	
Stainless Steel			Stainless forgings for nuclear research ✓
Rail		Passenger and freight rail ✓	

While defence represents a small share of domestic end-use demand, capability gaps suggest reliance on imports for critical applications

Supply Chain Risks

Steel Products for Defence

- The UK has sufficient capabilities and capacities, though this had not been fully utilised by the defence industry due to limited visibility on domestic steel production capabilities to fulfil the industry-specific steel requirements
- If the UK loses access to domestically produced steels used in defence not easily substitutable with imports (e.g., jet engines and armoured vehicles programs), there may be delays to defence programmes, inhibiting both operational capabilities in the interim and a broader loss of economic opportunity from public spending
- Declined domestic defence industry manufacturing may result in impaired domestic innovation capabilities if the UK begins to fall behind strategic competitors and misses economic opportunity to participate in defence procurements of allied countries
- To address risks, there should be further engagement between the defence industry and UK steel producers to procure defence-grade steels to build up UK supply chain resilience

Note: 1. Steel producer capabilities based on data made available by UK Steel, provided capabilities have not been validated with mentioned producers and accordingly may not be exhaustive or reflective of current capabilities for listed requirements.
Source: Royal United Services Institute for Defence and Security Studies 'At the Crux: UK Steel Risk in the Energy Transition', UK Steel Defence Procurement Positioning Paper (May 2024), Hatch analysis.

For more information,
please visit www.hatch.com

Hatch Associates Ltd.
4th Floor
20 St. Andrew Street
London EC4A 3AG
United Kingdom