Written Evidence Submitted by Celsa Steel (HNZ0100)

On 29 March 2021, the Chair of the House of Commons Science and Technology Committee wrote to four British steel manufacturers asking for information on:

- *what actions they were taking to contribute to the 2050 UK Net Zero target, including:*
  - *if they had set any specific emissions reduction targets;*
  - *if they had produced a roadmap for emissions reductions;*
- *what role they saw for low-carbon hydrogen in decarbonising the UK steel industry;*
- *how much they were investing into research on hydrogen currently;*
- *any ongoing research into this area that they were involved in; and*
- *what support the Government could best provide to support them in decarbonising their business.*

Reproduced below is the response that was received from CELSA Steel, on 28 May 2021.

CELSA UK is fully committed to supporting the 2050 UK Net Zero target and has already made public statements concerning its ambition to achieve net zero carbon status as a business by 2030, some 20 years in advance of the national target, should the right business conditions be created. For many years we have been monitoring and publishing our annual sustainability report, detailing our emissions, and we hold Environmental Product Declarations (EPDs) for our range of products. Up to now, most of our effort has been to work on scope 1 and 2 emissions, decreasing energy usage by exploring innovative solutions and increasing our energy efficiency through updating equipment and using new technologies. As an energy intensive user, principally electricity, in order to melt steel, we are highly dependent on the decarbonisation of electricity supply to reduce our carbon footprint. We do not have our own generation capability and we are working with our electricity providers to increase the amount of renewable supply to our facilities. Currently, we are categorising our scope 3 emissions and by the end of this year (2021) we will have identified the key areas for concentration of effort, have milestones in place defining critical moments in the pathway to net zero and have early years actions of our roadmap well detailed.

Our method of steelmaking (melting ferrous scrap waste in an Electric Arc Furnace (EAF)) is currently the lowest carbon technology for steel production, emitting less than a third of the CO2 of the BF/BOS (Blast Furnace/Basic Oxygen Steelmaking) route. Exploration of hydrogen-based steelmaking techniques is being carried out in the industry, principally by the BF/BOS producers, as a potential route to reducing their carbon footprint. Given the contribution our EAF steelmaking process makes to the recycling of waste and the circular economy, as well as its low carbon footprint, which could be lowered even more significantly by the decarbonisation of electricity generation, we do not envisage a technological replacement for EAFs. Indeed, in the UK we see more EAF production as being a likely part of the drive towards decarbonisation of steel, unless of course the UK continues down the route of offshoring manufacturing, which in turn will actually add to global carbon emissions.

Where hydrogen plays a part for CELSA Steel is in our rolling mills reheat furnaces, which currently run on natural gas. We are investigating the immediate conversion of one reheat furnace to hydrogen through the IETF scheme. We are working in consultation with SWIC (South Wales Industrial Cluster) to offer ourselves as a significant potential user for hydrogen in Cardiff in the event that bulk hydrogen supplies are made available to the area.

This would enable smaller potential users to piggy-back on our demand and therefore enable the rollout of hydrogen within this part of the cluster. Our assisted conversion to hydrogen in this project would provide a demand base for the geographical locality. Obviously, the key operational issues have to be overcome (this is a live production operation so we must be able to ensure smooth transition to a new reheat technology) and the operational cost has to be the same as current costs of natural gas.

Once this is successfully implemented, we would look to convert our second reheat furnace. Conversion of both reheat furnaces would represent the elimination of our largest scope 1 carbon emissions. Clearly it is key that the hydrogen generation should be low carbon as there is little point in converting our scope 1 emissions into scope 2 CO2.

Decarbonisation of electricity generation is clearly the most important contributor to CELSA's net zero target. It has to be done, however, in an economically sensible and equitable way. Electricity prices in the UK for energy intensive users such as ourselves have for many years been high in comparison with competitors and this has led to UK EAF steel producers being less profitable than near competitors and less able to attract investment. Any decarbonisation of the steel sector (or indeed most manufacturing) implies increased electricity consumption, whether it be through transition from BF/BOF to EAF or through increased Direct Reduced Iron (DRI) usage, or through hydrogen based steelmaking. Unless competitive electricity costs are assured, private investment will not happen. Current policies of treating UK energy generation in isolation from what is happening in other economies and passing through the cost burden of UK generation, transmission and policy to industrial users will end in UK deindustrialisation. In just the same way as industry needs to look at its supply chain emissions as well as its own internal CO2, the UK as a whole can not pursue net zero objectives which actually lead to higher global carbon emissions through manufacture overseas and transport of goods to the UK. It has to align its electricity prices to near competitor countries and provide the right business environment for industry to thrive, for more localised self-sufficiency, for the growth of the circular economy and the reduction of global CO2 emissions.

The strategic setting required by CELSA to help our progress to decarbonisation;

1. Competitive electricity prices in comparison with near neighbours (e.g. France/Germany) – multiple UK Steel papers have been written on this subject with potential solutions/recommendations.

2. Incentivisation of outcomes by promoting a low carbon demand for steel. Government has enormous procurement power in both direct and indirect procurement. It could insist that the whole supply chain should focus on low carbon requirements for projects, particularly for steel.

3. Retaining waste for use in the UK. We have a moral and economic duty. Promoting the circular economy through the retention of ferrous scrap in the UK, incentivising the collection, improved sorting and reprocessing of scrap in the UK, and for exports only to be allowed under restrictions.

In our opinion, once the above key criteria are met, there will be sufficient incentive for manufacturers to adapt and meet the demands for net zero carbon steel.