JUSTIFICATION STATEMENT – STEEL CLADDDING ECO-CREDENTIALS

This justification statement has been requested by Aberdeenshire Council Planning to demonstrate the eco-credentials for the use of steel cladding as a suitable external wall or roof cladding material to meet the requirements of the Woodend Sustainable Community Design & Access Statement, approved under APP/2019/1306, and used to determine any current and future forthcoming Planning applications for changes to the approved housetypes.

The following information has been taken from Euroclad Group's Environmental Product Declaration (EPD-TS-2022-024) for its Elite 51, 52 & 53 Wall Systems, in relation to the relevant parts concerning the steel element of the cladding system.

The EPD considers the following areas in relation to the life cycle assessment of steel cladding:

A1-3: Production Stage (Raw material supply, transport to production site, manufacturing)

Tata Steel's manufacturing sites are based in the UK. Includes preparation of recycled scrap and responsible sourcing of materials to BES 6001 Standard.

A4&A5: Production Stage (Transport to the construction site and installation)

Largely dependent on location of construction site but using UK manufacturers will obviously reduce the environmental impact from this stage.

B1-5: Use stage (Related to the building fabric including maintenance, repair, replacement)

Any maintenance, repair, replacement or refurbishment of the cladding is only considered beyond the duration of the long reference service life of the cladding. The finish coating itself has a minimum 40 year lifespan with the actual steel itself far exceeding this.

C1-4: End of life (Deconstruction, transport, processing for recycling & reuse and disposal)

Deconstruction is primarily removal of cladding from the building, based upon supply chain partner data. Recycled cladding is processed in a shredder and there is no additional processing of material for reuse. According to an NFDC survey, only 1% of steel is disposed via landfill. 89% of steel is recycled and 10% of steel profiles are reused.

D: Reuse, recycling and recovery

Whilst it is noted and accepted that steel has sizable environmental impacts at the beginning of its life cycle in the manufacturing process, its material properties hugely benefit it in the latter stages.

ArcellorMittal, one of the leading steel and mining companies, state that steel is infinitely recyclable without quality loss, has recycling rates of c. 90%, has a lower carbon footprint than competing materials and is a key enabler in decarbonising many other technologies. Part of the answer to steel's decarbonisation challenge is through the increased use of scrap, or recycled steel. Today, around 20% of steel is produced through recycling scrap and this percentage is forecast to rise to 50% by 2050.

In relation to recycled content, the Steel Construction Carbon Credentials publication dated October 2020 for Steel for Life and the British Constructional Steelwork Association (BCSA) states;

British Steel advise: "In the European steel industry as a whole, recycled scrap steel accounts for 56% of total steelmaking, being made up of 32% pre-consumer and 24% post-consumer scrap. "For purchases of European Steel, we recommend using a recycled content figure of 56% which reflects the total industry position." (July 2020).

Steel is 100% recyclable, and unlike other construction products it can recycled and reused repeatedly. Steel is routinely recovered for recycling, and a highly-sophisticated industry has developed to take advantage of this. In construction, the current recovery rates from demolition sites in the UK are 99% for structural steelwork and 96% for all steel construction products. These impressive figures far exceed those for any other construction material, as most other demolition products are downcycled into products of a lower quality or function, rather than being truly recycled.

A Timmins article published 06/04/2023 states the following eco credentials of steel;

Recyclability and reusability of steel

One of the most significant environmental benefits of steel buildings is their high recyclability. Steel is 100% recyclable, which means it can be melted down and repurposed into new steel products without losing its quality or strength. This reduces waste and the need for raw materials, conserving valuable natural resources.

Moreover, steel components can often be reused in new construction projects. Dismantling a steel building leaves the steel beams and other components intact, allowing them to be reused in other structures. This reusability reduces the environmental impact of construction and demolition waste.

Reduced construction waste

The use of prefabricated steel components minimises construction waste on-site, as these elements are manufactured to precise specifications in a controlled factory environment. This results in less waste generated during construction, which reduces the amount of material sent to landfills and the associated environmental impact.

Durability and longevity

Steel buildings are known for their durability and longevity…This long service life reduces the need for frequent replacement, which can be resource-intensive and generate additional waste. Additionally, steel's inherent resistance to pests, mould, and corrosion means that less maintenance is required over time, reducing the use of potentially harmful chemicals and treatments.

Resource efficiency

The production of steel has become more resource-efficient over the years, with modern steel manufacturing processes using significantly less energy and water than in the past. This reduction in resource consumption reduces the overall environmental impact of steel production, making it a more sustainable choice for construction.

Sustainable sourcing and certification

Many steel manufacturers are committed to sustainable sourcing and responsible production practices. By choosing steel products from manufacturers with environmental certifications,

such as LEED or BREEAM, you can ensure that your building materials have been produced with minimal ecological impact. These certifications also contribute to the overall sustainability credentials of your project, demonstrating your commitment to eco-friendly construction.

Lifecycle assessment and environmental product declarations

Steel manufacturers and suppliers are increasingly providing Lifecycle Assessments (LCAs) and Environmental Product Declarations (EPDs) for their products. These documents offer transparent information about the environmental impact of steel products throughout their entire lifecycle, from raw material extraction to end-of-life disposal or recycling. By using steel products with LCAs and EPDs, you can make informed decisions about the environmental performance of your building materials and contribute to more sustainable construction practices.

Conclusion

The design guide states the metal cladding to be “sinusoidal aluminium or zinc, which has low maintenance, high durability, and is readily recyclable.” Steel cladding also meets all these criteria, as demonstrated by the information provided.

As with aluminium cladding, steel cladding can be removed and reused elsewhere in the future if required and it also has the strength to withstand extreme weather conditions, pertinent given location and current storms we are encountering on a more regular basis. Steel is 100% recyclable, and it is highly likely any steel used has already been recycled. Steel and aluminium roofs are both extremely durable and have a similar lifespan, circa 50-75 years subject to environmental, pollution exposure and maintenance. Steel cladding is far more readily available than aluminium for the minimal areas required on this development. The developer is currently only able to source aluminium cladding at vast minimum quantity orders which will result in excessive waste being produced on site. There is no minimum order quantity for steel cladding, so the developer is able to order only what is required.

It is therefore considered that the use of steel cladding meets the requirements of the approved Design Guide and is therefore an acceptable and appropriate external material which also meets the aesthetics produced by alumnium or zinc cladding.