GPP In practice

Designing green, low carbon bus shelters

CORNWALL COUNCIL, UNITED KINGDOM

Procurement objectives

The sustainable procurement of bus shelters was conducted in three stages: design; prototype development; and large scale production. This example focuses on the design stage.

The contract was advertised in February 2011 as part of an open procurement procedure. Those who expressed an interest were invited to a Supplier Information Day (SID). Later that month a Request for Quotations (RFQ) was released, accompanied by a brief, which elaborated on some of the issues raised during the SID. In addition to submitting quotes, bidders gave method statements on how a series of quality issues would be addressed. This was used as a basis to select the winning designer who went on to produce a pattern book with a series of detailed designs, from which prototype bus shelters were developed.

Background

Cornwall Council has developed a new Responsible Procurement Policy which outlines its commitments to ethical sourcing, environmental sustainability and carbon management.

Commissioning the design and manufacture of sustainable bus shelters is also part of the Council's ambition to raise the profile of public transport. It has been supported through 'Eco Communities', a UK Government backed scheme to develop and demonstrate low carbon living.

There are currently around 6,000 bus stops in Cornwall with a wide range of associated shelters and signs. A programme of improvements to the quality and sustainability of this transport infrastructure, based on need and capacity, is now underway.

Criteria used

Subject matter of contract: Design of sustainable bus shelters

Request for quotations (RFQ): As well as submitting quotes, bidders were asked to prepare method statements to address 5 different priority aspects of bus shelter design. The quality of the responses to the 2 questions related to sustainability were marked according to the extent to which bidders considered at least the following aspects:

1) How would you define "sustainable" in the context of the design of these shelters?

Materials sourcing (renewable/ abundant materials), low mileage, ethical sourcing, readily transportable (reduced bulk), durability, adaptability to new technologies, ease of maintenance, reducing waste sent to landfill and possibility of developing local skills in manufacture, erection and maintenance

2) Outline how you would set about designing a sustainable bus shelter with zero carbon credentials. What features might it include? How would you demonstrate these credentials?

Materials source locations, manufacturing processes, simple incorporation of the equipment it will house, low power lighting with switch off, simple erection, vandal resistance, ease of maintenance and preferred third party accreditation & name of likely accreditor.

Award criteria: The ratio for assessment of the RFQ and accompanying method statements was price 30%, quality 70%. The winning designer was commissioned to deliver a prototype and a pattern book (containing information to enable efficient and cost effective manufacture, assembly and installation) for a range of bus shelters according to the following specifications:

Technical specifications:

- Bus shelters should seek to be zero carbon in sourcing, manufacture and operation. The prototype design will provide at least a zero carbon design, endeavouring to provide carbon capture in sourcing and fabrication/manufacture but excluding erection/ installation.
- They should have a very low carbon demand in operation.
- Design information should demonstrate the sustainability of each shelter in manufacture, construction, use and decommissioning. This should be achieved through considering the following issues associated with materials; sourcing, transportation, production methods, energy use in sourcing, production and operation, and reuse/ recycling/ disposal to landfill upon decommissioning.

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Results

Request for quotations: There were 15 expressions of interest in the original contract from a variety of organisations. 14 of these sent representatives to the supplier information event and 10 responded to the request for quotation. The successful tenderer scored 21/25 for quality and 4.5/5 on the "design for zero carbon" aspect.

Sustainable design: The successful bidder has delivered a full pattern book and six bus shelter designs for use by Cornwall Council. These designs are comprised of engineered wood, toughened glass, stainless steel and mechanical fixings all with a projected 50 year service life or more. Verifying whether shelters can be deemed "zero carbon" proved to be a complex issue, which the Council is still looking into, but they are satisfied that these wooden shelters have a very low carbon footprint compared to conventional metal shelters.

The brand of engineered wood detailed by the designer for the main structure is certified with PEFC, FSC and Cradle to Cradle Gold certified. The modified wood for the roofs, which is sourced from sustainable resources such as certified, reclaimed or recycled timber, has a 100% non-toxic production process. The anti-graffiti wood coating specified allows paints to be removed with a water jet washer, meaning that chemicals can be avoided. LED 10W ZD Lamps with a lifespan of 39500 hours (until lumen degradation reaches 75%), have been stipulated, which is equivalent to 18 years service, based on 6 hours per day. The lighting controller switches the light on and off on a daily basis throughout the year to save energy.

Three prototypes based on these designs have subsequently been produced, installed and fully tested. The manufacture of the pattern book for Cornwall Council will be let as a 4-year framework contract.

Environmental impacts

The key environmental aspects of solid wood are mainly related to the legal and sustainable character of the originating forest management. The impacts related to uncontrolled wood logging are for example loss of biodiversity, erosion and soil degradation, which is why the use of certification schemes can be beneficial.

Lighting equipment consumes energy throughout its life cycle, especially the use phase. It can also cause the pollution of air, land and water during production and the generation of hazardous waste. LED lighting is one of the most energy-efficient and versatile forms of lighting, saving up to 70% energy and money compared to other lighting technologies[1].

The use of aggregates consumes non-renewable materials and has negative environmental impacts in terms of quarrying and subsequent transportation. The bus shelter prototypes were built on easy-to-install concrete rafts made with 85% Cornwall sourced waste aggregate and the pavers around the structure were comprised of 75% waste aggregate from local sources.

Lessons learned

Leading Councillors and Corporate Directors need to be fully supportive of this type of project going forward at every stage, as do the public, who should be consulted during the design stage before any infrastructure is installed.

The supplier information day, where Council staff explained the background, design requirements and associated procurement process, proved to be fundamental to informing the project specification. Stakeholders at the Council had the opportunity to see what the market potential was in a short period of time. Outcomes from this event were also fed into the brief which accompanied the request for quotations and helped define the needs, expectations and ambitions for the designs.

The project fell behind schedule and there was pressure to keep within budget, but the Council's Strategic Transport team emphasised that this type of project should not be rushed as the product must be right to take to the market place. Lastly, it was commented that requesting "low carbon" as opposed to "zero carbon" credentials may avoid inefficient time and cost issues, as parameters can vary widely and verification is very complex.

[1] It is hoped that the rapid deployment of LED technology will help reduce energy use from lighting in the EU by 20% by 2020, one of the targets of the Digital Agenda for Europe (see IP/10/581, MEMO/10/199 and MEMO/10/200).

For more information, please see European GPP Criteria for Construction.

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