

Sustainable Procurement - Case Study

Category: Durakerb

Benefits: Environmental / Social / Economic

Background

Wakefield Council traditionally used pre-cast concrete kerb edgings when building or maintaining its 1,400km road network. The laying of traditional kerb edgings by hand involves a risk of injury to the workforce, so Wakefield Council assessed the risk of injury and took steps to reduce it. A trial was undertaken to use lightweight kerb edgings made entirely from re-cycled materials. This was done to reduce installation costs and time, to lessen the risk of musculoskeletal disorders, and to meet the Council's commitment to reduce carbon emissions and make greater use of re-cycled materials.

The Council selected Durakerb, which is made entirely from re-cycled materials. It is laid in the same manner as traditional kerb edgings, but has many advantages compared to traditional materials.

The Process

Wakefield Council recognised the need to use alternative products that would lessen the risk of injury to its staff, make use of waste material that would otherwise end up in landfill sites, and provide a better service to its road users by reducing road disruption time. By using whole life costing principles, the Council determined that Durakerb offered better value for money than comparable cheaper traditional products. This whole life costing approach took account of design, raw material, sourcing, manufacture, delivery, use, and disposal.

The Council also identified the potential social, environmental and economic impacts and costs for each stage when evaluating the range of products. The Council's Highways division purchases Durakerbs using a contract let by the Yorkshire Purchasing Organisation (YPO).

Success Factors

When compared to traditional kerbs made from pre-cast concrete, the Council took account of the benefits of Durakerb which include:

- Lightweight construction, weighing less than 6kg (compared to 70 kg for concrete), removing the need to use mechanical lifting equipment with reduced risk of accidents.
- Traditional kerbs rely heavily on natural resources.
- Their weight permits more to be transported in one load resulting in lower transportation costs.
- Their weight allows more to be stored in the same floor space.
- Productivity is 3 to 4 times greater because they can be laid without mechanical lifting equipment which also reduces traffic management costs and disruption, and reduces the need for an operator driver.
- The product is made entirely from recycled materials (100% recycled polymers) that would otherwise be destined for landfill. 182 recycled bottles make one Durakerb.

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- At end of life or if no longer required, it can again be re-cycled and the Council will receive a payment from the recycling company.
- The durable construction results in a very substantial reduction in cracking and chipping when compared with traditional kerbs, significantly reducing expensive maintenance costs.
- The product can be cut using hand tools. The cutting of traditional kerbs creates noise and dust (crystalline silica) pollution, also increases operators' exposure to vibratory tools.

Lessons Learnt

Mechanical lifting machinery is used extensively with traditional kerbs. On site this requires different machines for different situations (uneven ground, narrow spaces, etc.). Both on site and in the depot machines are used to unload the delivery wagons. All machines require safety checks that incur a cost to the Council and also require an operator. Moving to Durakerb eliminates these and so reduces the impact of the initial higher purchase cost.

Key sustainability indicators:

- **Environmental:** reduction of CO₂ emissions and waste to landfill.
- **Social:** reduced musculoskeletal injury risk and reduced long-term disabilities.
- **Economic:** whole life costing savings for the Council, reduced road closures and restrictions for the public, also reduced sick leave.

Comparison Data:

Matrix of comparison	Durakerb	Traditional kerb	Comparison
Transportation			
Loads per 38 tonnes trailer	1248 units	364 units	242 % better
Weight of load	6.7 tonnes	25.1 tonnes	73 % better
* CO ₂ emissions	247 Kg CO ₂ e	925 Kg CO ₂ e	73 % better
Production			
Use of raw materials	0 %	100 %	100 % better
Purchase cost per unit	£ 8.32	£ 2.48	235 % worse
Embodied carbon (manufacture)	8.7 kg but recyclable	10.5 kg	17 % better
Installation (325 metres), based on installation of £10 per linear metre of bedding material			
Installer labour – 2 men	£177 per person day	£177 per person day	Same
Mechanical lifter	N/A	£16 per day	Total saving
JCB and driver	N/A	£244 per person day	Total saving
Days to install 325 metres	1.30	4.06	68 % better
Damage rate	1%	5%	80 % better
Installation costs	£7,299	£7,731	£432 or 5 % saving

* Based on a 15 tonne Euro 5 lorry travelling 100km. Kg CO₂e is the total Carbon Dioxide emitted in Kg.