



Creating markets for recycled resources

Buying Recycled in Estates Management

CASE STUDY

Recycled Plastic Boardwalk Ham Wall, RSPB Reserve



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CASE STUDY – Recycled Plastic Boardwalk, Ham Wall RSPB Reserve

RSPB Ham Wall Reserve

At Ham Wall in Somerset, extensive visitor facilities for use by the blind, less able and wheelchair users have been installed. These include approximately 500m of flat (ground level) and raised boardwalk made entirely from recycled plastic. The material was chosen for its suitability in a wetland environment, where structural decay and leaching are major concerns.

The plastic is available in a range of colours, with black or brown the most commonly used. Black was chosen by the RSPB at Ham Wall, as the most suitable colour to blend in well with the peat substrate on site. The material is manufactured from recycled High Density Polyethylene (HDPE), reclaimed from plastic bottles and water/gas piping. The plastic is washed and granulated before being mixed with a colorant. The colorant is ultra-violet stabilised so that it does not fade in sunlight. This mix is then melted, and either pushed into moulds or extruded to give a continuous profile that can be cut to prescribed lengths.

Boardwalk within a hide, Ham Wall



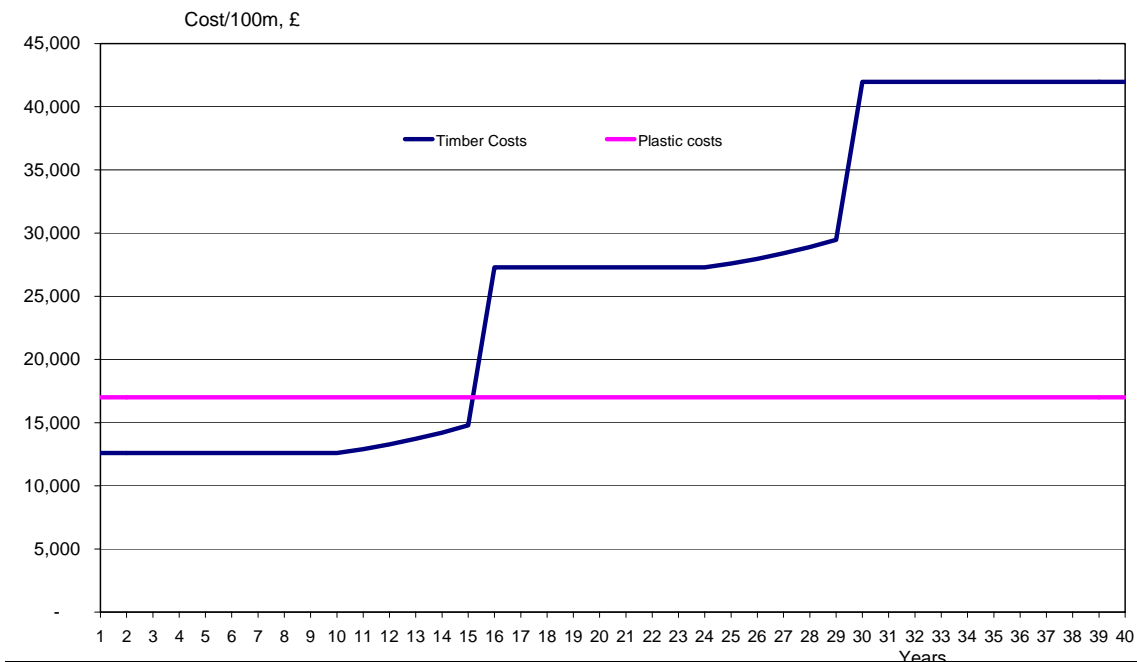
Cost

The boardwalk was delivered in prefabricated 3m lengths laid directly onto the ground, and cost approximately £60/metre (not including staff time). The raised section, which was installed by the supplier, worked out at approximately £170 per metre. Much of this difference resulted from the extra material required, including thicker decking and bearers, 3m upright posts, side rails and handrails.

Whole-life costs for recycled plastic and timber are compared below. Where costs have not been provided, assumptions have been made based on extrapolations from other similar installations. Costs vary significantly depending on the nature of the installation and the buying power of the organisation.

While costs of plastic are initially higher, the whole-life costs of plastic are substantially lower. The graph below shows that the break-even point between a timber and recycled plastic walkway is reached as soon as the timber walkway is replaced for the first time.

Costs comparison per 100m of raised walkway (timber and plastic)



Cost assumptions are set out in the Table below. The estimated average cost per annum of the 100m section of timber walkway over its life is £986, more than twice the cost of recycled plastic walkway at £425 per 100m.

Ham Wall – costs comparison per 100m of raised walkway (timber and plastic)

	Timber costs	Plastic costs
Materials	£5,500	£10,000
Installation	£7,000	£7,000
Maintenance - year 11	£307	
- year 12	£372	
- year 13	£437	
- year 14	£502	
- year 15	£567	
Average cost per annum of walkway over its lifespan	£986	£425

Assumptions:

- The timber walkway must be replaced every 15 years.
- The plastic walkway must be replaced every 40 years.
- Maintenance is required on the timber walkway after 10 years. This is calculated at 3 days every year per 100m of boardwalk in year 11, 4 days every year in year 12, 5 days in year 13, 6 days in year 14 and 7 days in year 15. Material costs of £112 per annum are included in the final 5 years, equivalent to 2% of the cost of the total timber materials.

Installation

The raised section of the boardwalk was constructed on site by the contractor/supplier whilst the flat boardwalk was supplied in preformed 3m lengths and bolted together by staff and volunteers. Corners, joins and viewing screen floor decking were built by staff using decking, bearers and kick rails supplied as individual pieces. The boardwalk was laid over a weed-suppressing fabric made by Terram, which successfully impaired the growth of plants through the decking.

Performance benefits

Sally Mills from the RSPB has identified the following performance benefits resulting from the use of recycled plastic boardwalks at Ham Wall:

- The plastic is very flexible and forgiving, and so adapts to variations in the ground beneath.
- It is very tough and does not chip, split or snap even under high stress.
- Although it will melt under continuous or extreme heat, it is difficult to ignite.
- It requires no treating and so is essentially maintenance free.
- It does not degrade or leach any chemicals.
- It does not weaken with time.
- The decking is non-slip as it has a 'grain' included in the moulding. Handrails however can be moulded smooth so that they do not chaff the skin.
- The material can be drilled, sawn, screwed, chiselled etc. without specialist tools. (However, the nature of the plastic material increases the wear rate of saws and drill bits.)
- It is water resistant – handrails or benches can be wiped down and do not remain damp like wood.
- Graffiti can be cleaned off much more easily than from wood.

Disadvantages

The following disadvantages were identified for plastic boardwalk:

- The initial cost is higher than for wooden decking, rolled stone or tarmac.
- The solid product is heavy and therefore difficult to move about safely. (Each 3m section requires four or more people to move it into place.)
- There are only a limited number of suppliers of this material so it may be difficult to source locally.
- Due to the flexibility of the plastic boards, joint supports that had been originally designed to take wooden boards had to be modified, as they were too widely spaced and did not provide sufficient support for the more flexible plastic planks.

Raised boardwalk with woodchip fringe, Ham Wall Reserve

