

Benefits of recycling

The recycling of materials from artificial grass pitches (AGPs) can offer a range of potential benefits to both facility owners and the wider environment. For example, there can be reductions in overall project costs, waste materials going to landfill, and the carbon footprint from manufacturing and transportation.

Typical scenarios include :

- Pitches at the end of their useful life (requiring replacement)
- Ugrades to pitches (where the original surface can be used elsewhere)
- Extensive damage (as can be caused by flooding)

Key issues are discussed in detail below.

Life expectancy

An artificial grass playing surface, if well maintained, should last 10-15 years before replacement is necessary. Replacement typically comprises the total removal of the playing surface (carpet) and the shockpad below, followed by a new installation. However, in some circumstances, the old shockpad can be overlaid with new carpet after localised repairs have been undertaken and it has been checked for regularity and porosity.

Removal of the old carpet

The pitch contractor will usually include within his tender price a cost for removing the carpet and shockpad and 'carting away from site'. In the case of a sand-filled or sand-dressed carpet, the seams are cut using an angle grinder and a vehicle lifts the front edge of the 4 m-wide carpet strip and rolls it up (Photographs 1 & 2). The carpet eventually splits and the resulting roll is loaded into a skip until the pitch is cleared. If the carpet is dry, much of the sand will fall out of the carpet, and if wet, most will stay in. The total weight of materials is significant. For example, a new 23 mm pile sand-filled artificial grass hockey pitch with an area of over 5,941 m² would require dry materials weighing 213 tons of which 200 tons is sand filling.

New innovations

Specialist machines have been developed to extract and collect sand and rubber infill and roll up individual strips of carpet into rolls (Photograph 3). Where UK contractors have used such machines, it is claimed that 85-95% of the infill content can be removed when working in dry conditions. It is also reported that the carpet from a full-sized hockey or football pitch can be taken up in four days. Once rolled up, it is tightly banded and sent for recycling or sold cheaply for low-budget sports pitches. The sand and rubber can also be cleaned and reused.

Disposal and recycling

Some of the carpet and sand/rubber infill may still be removed from site and taken to landfill but most contractors now involve specialist recycling companies. Recycling can comprise separating the pile from the carpet backing



Carpet being carefully rolled up using the bucket of an excavator. The excavator is positioned on the carpet to avoid damaging the shockpad



Old carpet rolled up ready to be taken away



Automatic carpet lifting and rolling machine in operation

Recycling of Artificial Grass Carpets

and forming new polymeric products, using the carpet for walkways and paths (particularly on golf courses) or shredding it for other uses. Various other reuses of artificial grass include radio control car clubs using it as a track for model cars, farmers using it as walkways for their livestock and sailing clubs using it as a surface in boat storage areas. Many old pitches in the UK are installed above sheet prefabricated rubber/foam composition shockpads of 10-12 mm thickness. These are rarely overlaid with new carpet and are usually removed and recycled by granulating and using as rubber crumb for other purposes. In situ formed shockpads comprising resin-bound rubber crumb are also granulated for other purposes.

Re-use for sports applications

It may be possible to reuse a certain amount of the carpet in sports projects to create pathways or surfacing other hardstanding areas. In some cases, club members will want 'a bit of carpet'.

Old sand-filled, sand-dressed and 3G carpets are not easy or economical to re-install on other sites as they have many cut in lines and can be distorted and stretched when removed. If large enough sections between line markings can be rolled up, they can be reused on small games areas provided they are installed correctly (Photograph 6).

A non-sand-filled (water based) carpet with an integral shockpad is the easiest to reuse and can be rolled up strip by strip in its entirety and transported to another site for reuse. A recent example was at King Edward VI School in Morpeth which took delivery of the old artificial grass hockey carpet from Bisham Abbey National Sports Centre. The school installed the carpet above their existing hard porous mineral sports pitch and the end result is a resounding success for the school¹.

If reusing a carpet in its entirety is to be considered (as described above), the pitch contractor should find a customer well in advance of removal work commencing. The old carpet will have to be carefully rolled up and the carpet rolls numbered (Photograph 2). The customer will then have to arrange transportation of the rolls of carpet to their new destination and deposit them on to the new pitch area or other area within the site (Photographs 4 & 5). The existing base has to be porous and exhibit good surface regularity and a specialist carpet fitter will have to cut the carpet to fit the new pitch. In some cases, the edges of the 4m-wide rolls of carpet will have to be trimmed to remove frayed edges which means that there may be a gap at each end of the pitch requiring in-filling with new carpet. The operation demands care, attention and skilled carpet fitters.

Contamination from flood damage

In the event of flood damage, a specialist sports surface consultant is required to advise on the scale of the contamination and damage and whether the existing surface can be rejuvenated or if a new surface/construction is required. The carpets might be sanitised and refilled, but if the floodwater penetrates underneath the carpet and causes displacement, then it is likely that total removal will be necessary. The various options for replacement, recycling or disposal should be carefully considered along with all appropriate health and safety measures.

See Sport England's *Flooding Information Sheet 6 'After the Flood – Pitches and Courts'* for further information and links to useful websites at <http://www.sportengland.org/facilities-planning/tools-guidance/flood-guidance/>.



Rolled-up carpet manoeuvred 'one at a time'



Rolled-up carpets carefully stacked up awaiting reuse on a new site



Recycled carpet installed onto a block of macadam surfaced tennis courts to create an artificial grass pitch

¹ See *The King Edward VI School (Comp 2011)* facility case study available from Sport England's website at <http://www.sportengland.org/facilities-planning/tools-guidance/design-and-cost-guidance/artificial-sports-surfaces/>