

SPACES

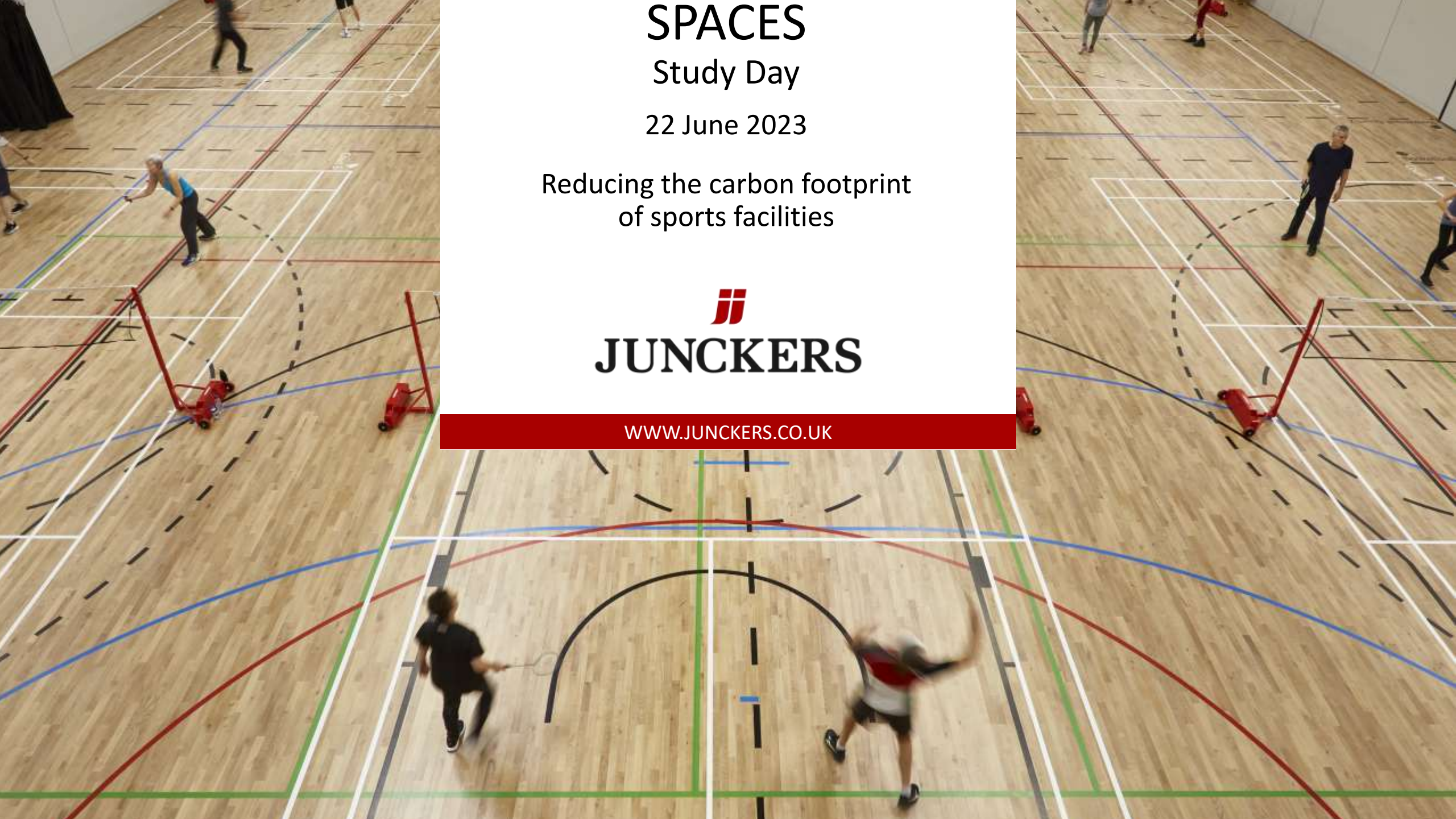
Study Day

22 June 2023

Reducing the carbon footprint
of sports facilities


JUNCKERS

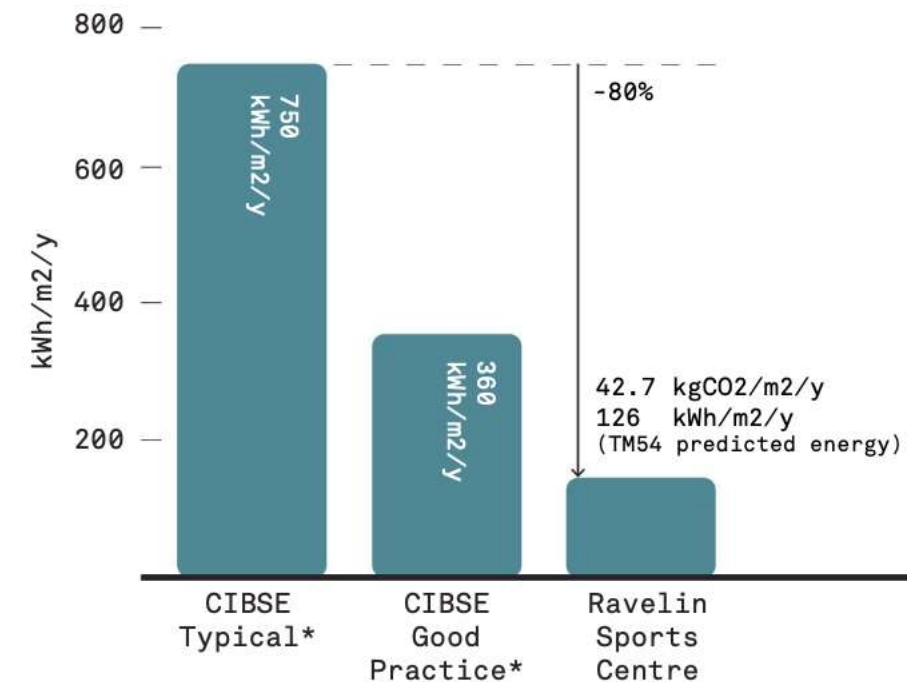
WWW.JUNCKERS.CO.UK



Reducing Carbon Footprint

- Sport and leisure facilities are associated with high operational costs. The recent energy crisis will mean many operators are faced with difficult decisions.
- Though operational energy is still a major challenge, recent projects like Ravelin Sports Centre are successfully using Passivhaus design to minimise primary energy demand.
- Form factor, performance of the building envelope, natural light and ventilation all provide a significant opportunity for demand reduction.
- Figure 1 highlights the difference between typical, best practice, and current generation facilities.

Figure 1

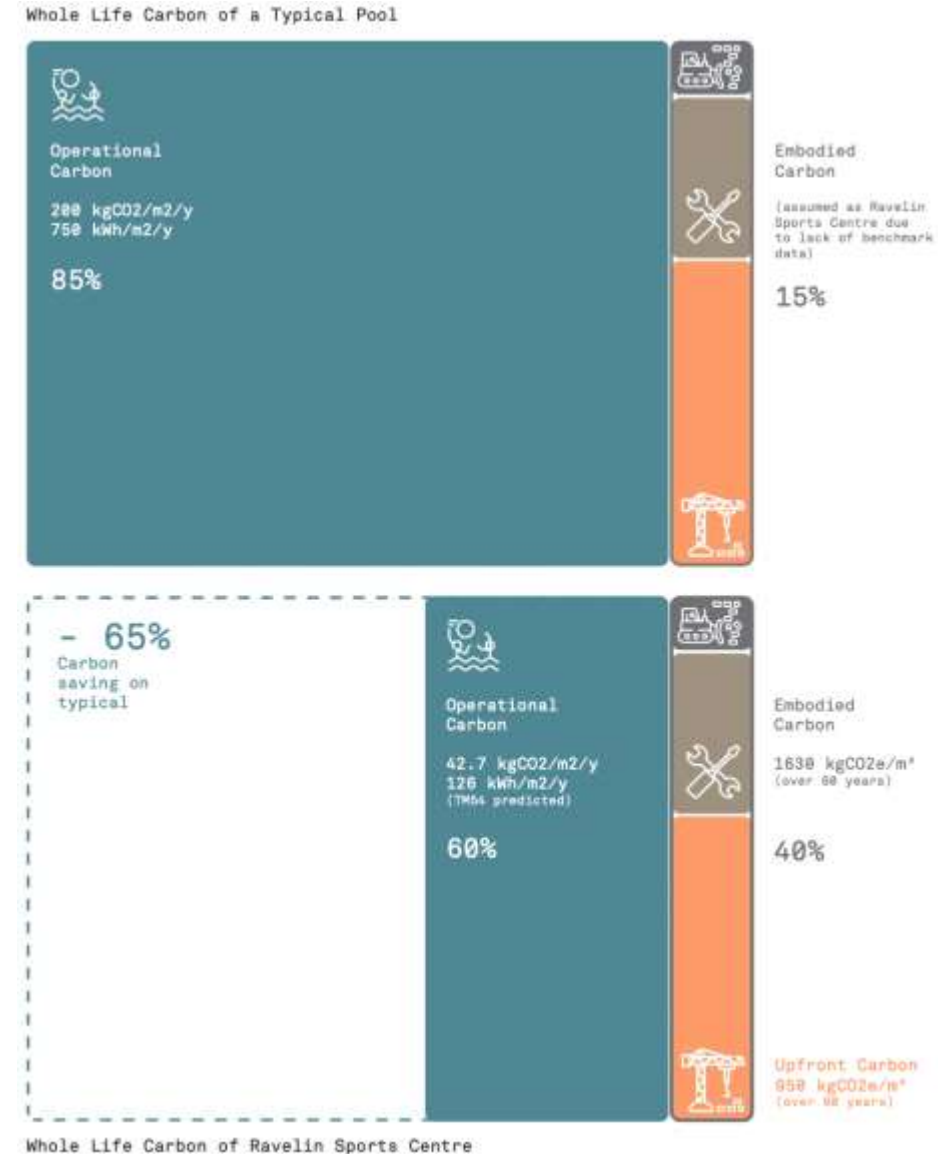


*Data interpreted from CIBSE Energy Benchmarking Tool for Sports and Recreation Centres: Combined

Whole life carbon

- As the squeeze on operational carbon intensifies, embodied carbon comes more sharply into focus.
- Figure 2 illustrates how moving to a lower energy design sees the share of embodied carbon increase from 15% to nearly 40%.
- Reduction of embodied carbon is therefore an urgent design consideration, as opportunities for operational carbon reduction diminish.

Figure 2



Embodied carbon

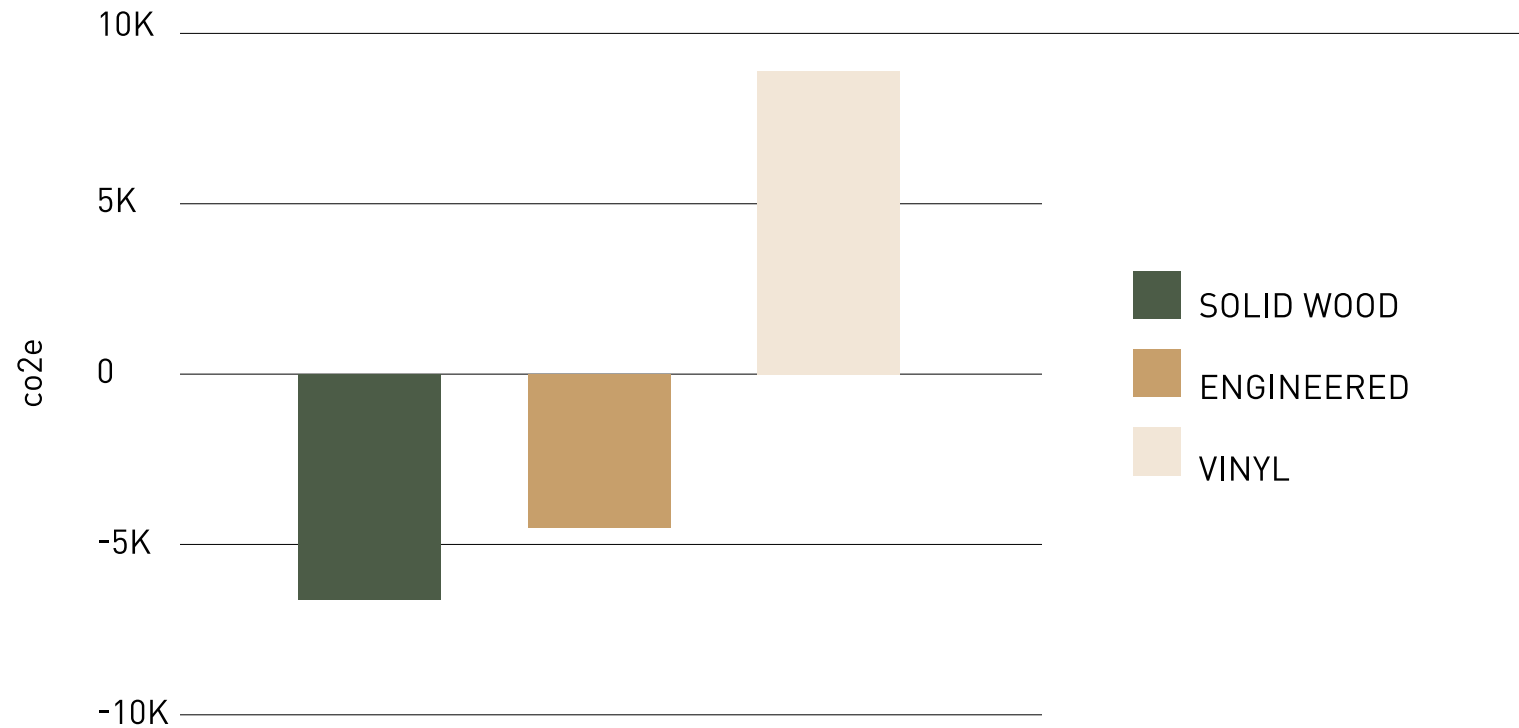
- Focus on embodied carbon shows:
 - Green roofs are accompanied by a relatively large carbon premium
 - Specification of high impact materials can make a significant difference:
 - Building materials: Concrete
 - Building services: Refrigerants
 - Offsite solutions can offer benefits, but less than they might promise
- Overall, the results showed how creative we need to be to hit emerging industry targets that are designed to get us to Net Zero.

Aligning lifespan of building components

- The importance of aligning the lifespan of individual building components to the lifespan of the building.
- 40% of embodied carbon is emitted post completion when finishes need to be replaced, building services replaced or the layout modified to accommodate evolving sports and leisure needs.

Sports floors: embodied carbon

Comparison of vinyl, engineered and solid hardwood sports floors
(based upon 600m² area)



Case study

Britannia Leisure Centre

With the aim to encourage more participation in sport, Hackney Council has opened a new community facility, Britannia Leisure Centre. As part of a wider, mixed-use development in an inner-city environment, the different activity spaces were stacked vertically in a spatially efficient design.

Architect:	FaulknerBrowns
Main Contractor:	Morgan Sindall
Flooring Contractor:	Pica Floorings Ltd
Awards:	AJ100 Community Impact of the Year (2022) New London Awards 2022, overall + culture winner Delivering Social Value Award, Building Awards (2021)



Case study

Merkinch Primary School and Family Centre

In 2020, a ten-year transformative construction programme for Scottish schools was announced, providing a much-needed boost for the sector. As part of the initiative, a new procurement process focused on carbon reduction was put in place. All new school buildings, including refurbishments, now need to demonstrate net zero carbon credentials to qualify for funding.

Merkinch Primary School and Family Centre project generated 437 kgCO₂e/m² of embodied carbon over the life cycle.

The RIBA Sustainable Outcomes Guide specifies climate challenge target metrics for non-domestic buildings for embodied carbon over the life cycle, which are increasingly challenging as we approach 2030:

2020: < 800 kgCO₂e/m²

2025: < 650 kgCO₂e/m²

2030: < 500 kgCO₂e/m²

Architect: Norr
Main Contractor: Robertson Construction
Flooring Contractor: Courtcraft
Awards: Learning Places Scotland Awards 2021

- Innovation in Delivering Value
 - Innovation in Delivering a Sustainable Learning Space
- IAA Presidents Award 2021



Embedded carbon reduction

Architects FaulknerBrowns have developed a set of values for embedded carbon reduction:

- Retrofit first
- Build less
- Build lean
- Build efficient
- Build to last
- Build to reuse

Retrofit first

Kresen Kernow

Set within a UNESCO World Heritage Site and Conservation Area, Kresen Kernow is housed in formerly derelict brewery buildings, rebuilt and redeveloped whilst carefully conserving many of the historic, original features. The new, purpose-built facility brings together a staggering 1.5 million manuscripts, books and documents relating to the history, people, places and culture of Cornwall, dating back to 1150.

David Burne, Senior Architect at Purcell and the project lead said: “Solid hardwood flooring was chosen as it is a sustainable, natural product, with a long life and low maintenance requirements. The Nordic Oak was selected due to its warm appearance and light colour characteristics which complement the tones of the historic granite slabs adjacent, whilst enhancing the natural illumination of the main exhibition space and visitor reception area.”

Architect:	Purcell
Main Contractor:	Midas Construction
Flooring Contractor:	Tre Concepts
Awards:	RIBA South West Award 2021 Planning Awards: Design Excellence 2021 Civic Trust Award 2020



Build to last: Design life of sports flooring

- Solid hardwood: 60-year design life; “one floor for life”
- Maintenance:
 - 22mm solid hardwood floor: Can be refurbished between eight and ten times. Estimated 10 to 12 years between each refurbishment. 60-year life span easily achieved.
 - Engineered wood floors: Typically two refurbishments. Approximately a 15-year life span. Strength issues with core materials have been seen.
 - Synthetic floors: Vinyl and PU have approximately a 15-year life span. Cannot be refurbished. Issues with disposal, recycling and crude oil as a raw material.
 - Linoleum floors: Have approximately a 15-year life span.
- Solid hardwood can provide “one floor for life”. Engineered, synthetic and linoleum sports activity floors require replacement several times during a buildings 60-year design life.



Build to reuse

National Theatre of Scotland

When Hoskins Architects were commissioned to design new headquarters for the National Theatre of Scotland in Glasgow, an ingenious bit of re-using, re-purposing and recycling took place. The new office space and social areas were fitted with a previously used Junckers sports floor, complete with the old line marking paint. Named Rockvilla, the new facility brings together departments previously spread across several sites. The building, housed in a redevelopment of a disused warehouse, retains an industrial aesthetic in a nod to the history of the site.



The Braunstein Taphouse

The Braunstein Taphouse, home to award-winning Danish malt whisky, is not just a beautiful building. It has been designed and built to have ability to be disassembled. Its waterfront location is deemed under threat from rising water levels in the future, which lead Adept Architecture to create a building that can be taken apart and rebuilt or easily reused/recycled.



Case study

University of Birmingham's Indoor Sports Centre

Designed by Lifschultz Davidson Sandilands, the centre features an Olympic standard swimming pool, fitness suites, multi-purpose hall, a dance and exercise studios and six squash courts, all fitted with Junckers solid hardwood sports flooring.

Following the 2022 Commonwealth Games the 2,200 m² multi-purpose hall was reconfigured, with its sports floor layout modified to accommodate evolving sports and leisure needs.

With the original flooring in as new condition, it has been lifted and supplied to the Scottish basketball club Caledonia Gladiators new home at Playsport in East Kilbride. The Gladiators compete in the British Basketball League, the top tier of British basketball.



Outcomes Steve and Alison Tierney with Caledonia Gladiators. Pic: Big Partnership

INDEPENDENTLY VERIFIED CERTIFICATION

- EPD
- FSC® and PEFC™ chain of custody certified
- Indoor Climate Label
- ISO 14001 and 50001
- CE Marking



The mark of
responsible forestry





JUNCKERS

Performing on Danish design

junckers.co.uk

 [@junckersfloors](https://www.instagram.com/junckersfloors)