# Lower Thames Crossing adopts pioneering standards to slash carbon footprint in infrastructure development



The Lower Thames Crossing (LTC) project—a major highways development aimed at constructing an 11km road and tunnel below the River Thames, providing a new connection between Kent and Essex—has taken a leading role in applying innovative decarbonisation standards to reduce its environmental impact. As part of its commitment to ambitious carbon reduction targets, LTC is integrating two key standards: PAS 2080 and BSI Flex 350, to manage and cut carbon emissions throughout the project's lifecycle.

PAS 2080, originally launched in 2016 as the world’s first specification targeting carbon reduction in infrastructure, has recently been updated and expanded in its 2023 revision. This updated standard now covers not only infrastructure but also buildings, extending its reach to cover the entire lifecycle of built environment assets—from material sourcing, design, and construction, through operation, use, and ultimately demolition and disposal. Developed collaboratively by the British Standards Institution (BSI), the Institution of Civil Engineers (ICE), and the Green Construction Board (GCB), PAS 2080:2023 emphasises an integrated, whole-life approach to carbon management. It encourages early collaboration among all project stakeholders—including asset owners, designers, contractors, and material suppliers—to embed carbon-conscious decision-making from the outset and maintain this focus throughout the asset’s lifetime.

The LTC project’s application of PAS 2080 is illustrative of this collaborative and systemic approach. Project managers have adopted the standard’s principles to rethink traditional construction methodologies and materials, aiming for significant carbon savings. Among these initiatives is the use of alternatives to conventional concrete mixes by incorporating lower-carbon cements and binders, in line with the BSI Flex 350 standard. BSI Flex 350 promotes the substitution of high-carbon construction materials with more sustainable options, contributing to the reduction of greenhouse gas emissions within the value chain.

The event hosted by ICE South East England’s Carbon Competency Roadshow highlighted these efforts, featuring input from the LTC project’s asset owners, contractors, designers, and material suppliers. The forum provided expert guidance on applying both PAS 2080 and BSI Flex 350 in tandem and included a panel discussion to further explore practical challenges and opportunities inherent in aligning such standards with real-world, large-scale infrastructure projects.

Beyond the LTC project, PAS 2080 has gained recognition as a global carbon management standard that meets World Trade Organization requirements. It provides a transparent and consistent framework to quantify carbon at critical points in infrastructure delivery, encouraging data sharing and identification of interdependencies within complex asset networks. The ICE has also supported implementation by publishing free guidance to assist organisations in embedding PAS 2080’s processes, while the British Standards Institution offers a certification programme to formally acknowledge compliance and commitment to sustainable development.

The revised PAS 2080 and complementary BSI Flex 350 standards represent a shift from carbon reduction ambition to tangible action, encouraging sustainability-driven innovation across the infrastructure sector. Implemented well, these frameworks not only aim to cut emissions significantly but also reveal cost-saving opportunities by promoting smarter design, construction, and procurement practices. Projects like the Lower Thames Crossing exemplify how rigorous application of these standards can drive industry-wide transformation toward net-zero carbon goals in the built environment.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://www.ice.org.uk/events/previous-events/applying-pas-2080-and-bsi-flex-350-to-a-major-project)
* Paragraph 2 – [[2]](https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/), [[3]](https://www.mottmac.com/en-us/news/mott-macdonald-co-authors-update-of-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/), [[4]](https://www.ice.org.uk/news-insight/news-and-blogs/latest-news/news/what-is-pas-2080-2022-version), [[5]](https://www.weforum.org/stories/2023/01/pas-2080-construction-emissions-davos2023/), [[6]](https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/)
* Paragraph 3 – [[1]](https://www.ice.org.uk/events/previous-events/applying-pas-2080-and-bsi-flex-350-to-a-major-project), [[4]](https://www.ice.org.uk/news-insight/news-and-blogs/latest-news/news/what-is-pas-2080-2022-version), [[7]](https://www.carbontrust.com/what-we-do/assurance-and-labelling/pas-2080-carbon-management-in-infrastructure)
* Paragraph 4 – [[1]](https://www.ice.org.uk/events/previous-events/applying-pas-2080-and-bsi-flex-350-to-a-major-project), [[2]](https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/), [[6]](https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/)
* Paragraph 5 – [[7]](https://www.carbontrust.com/what-we-do/assurance-and-labelling/pas-2080-carbon-management-in-infrastructure), [[4]](https://www.ice.org.uk/news-insight/news-and-blogs/latest-news/news/what-is-pas-2080-2022-version), [[1]](https://www.ice.org.uk/events/previous-events/applying-pas-2080-and-bsi-flex-350-to-a-major-project)
* Paragraph 6 – [[1]](https://www.ice.org.uk/events/previous-events/applying-pas-2080-and-bsi-flex-350-to-a-major-project), [[2]](https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/), [[5]](https://www.weforum.org/stories/2023/01/pas-2080-construction-emissions-davos2023/), [[7]](https://www.carbontrust.com/what-we-do/assurance-and-labelling/pas-2080-carbon-management-in-infrastructure)

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## Bibliography

1. <https://www.ice.org.uk/events/previous-events/applying-pas-2080-and-bsi-flex-350-to-a-major-project> - Please view link - unable to able to access data
2. <https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/> - In April 2023, BSI announced the launch of PAS 2080:2023, an updated carbon management standard designed to assist built environment organisations in reducing their carbon emissions. The revised standard now encompasses both buildings and infrastructure, detailing steps to reduce the carbon footprint over the entire lifecycle of an asset, from materials to design, construction, use, demolition, and disposal. Developed in collaboration with the Institution of Civil Engineers (ICE) and the Green Construction Board (GCB), PAS 2080:2023 emphasises integrating carbon management into decision-making from the project's inception to its end of life, encouraging early collaboration among project parties to maintain a low-carbon focus throughout.
3. <https://www.mottmac.com/en-us/news/mott-macdonald-co-authors-update-of-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/> - Mott MacDonald co-authored the updated PAS 2080:2023, the world's first specification for decarbonising buildings and infrastructure. The revision expands the scope to include both buildings and infrastructure, detailing steps to reduce the carbon footprint over the entire lifecycle of an asset. The updated standard, developed with the Institution of Civil Engineers (ICE) and the Green Construction Board (GCB), covers materials, design, construction, and use of structures, including demolition and disposal. PAS 2080:2023 aims to integrate carbon management into decision-making from the earliest stages of projects through to their end of life, supporting organisations in reviewing their carbon emissions by encouraging early collaboration between project parties.
4. <https://www.ice.org.uk/news-insight/news-and-blogs/latest-news/news/what-is-pas-2080-2022-version> - PAS 2080:2022 is a global standard for managing carbon in buildings and infrastructure, developed by the British Standards Institution (BSI) with sponsorship from the Institution of Civil Engineers (ICE) and the Green Construction Board (GCB). The standard provides a framework for organisations to manage whole-life carbon, covering the provision, operation, use, and end of life of new projects or programmes of work, as well as the management or retrofit of existing assets and networks. PAS 2080:2022 aims to help organisations understand the impact of their assets on the wider network, revealing interdependencies and encouraging early collaboration, defining roles and responsibilities, and integrating carbon-focused decision-making and procurement processes throughout the asset's lifecycle.
5. <https://www.weforum.org/stories/2023/01/pas-2080-construction-emissions-davos2023/> - PAS 2080, launched in 2016, is the world's first international specification for reducing carbon emissions in the construction, operation, and use of the built environment. In 2022, its scope was expanded to include buildings as well as infrastructure. The updated standard, relaunched in March 2023, aims to guide the entire value chain—asset owners, designers, constructors, and product/materials suppliers—in collaboratively driving carbon emissions towards zero. PAS 2080 recognises that achieving deep and absolute carbon reduction requires strong leadership, a systems approach, collaboration across the value chain, and a whole-life view of built environment assets, networks, and systems.
6. <https://www.bsigroup.com/en-GB/insights-and-media/media-centre/press-releases/2023/april/bsi-launches-an-update-of-the-worlds-first-specification-for-the-decarbonization-of-buildings-and-infrastructure/> - BSI, in its role as the National Standards Body (NSB), announced the launch of the revised carbon management standard, PAS 2080:2023, designed to help built environment organisations accelerate progress to a sustainable world by reducing their carbon emissions. The scope of the standard has expanded to accelerate progress with a move from ambition into action on decarbonisation, by detailing steps to reduce the carbon footprint of both buildings and infrastructure over the whole lifecycle of an asset. The new standard, developed with the Institution of Civil Engineers (ICE) and the Green Construction Board (GCB), covers everything from the materials to design, construction, and the use of a structure, including demolition and disposal.
7. <https://www.carbontrust.com/what-we-do/assurance-and-labelling/pas-2080-carbon-management-in-infrastructure> - PAS 2080 is a global standard for managing infrastructure carbon and has been authored to meet World Trade Organization requirements. The framework looks at the whole value chain, aiming to reduce carbon and reduce cost through more intelligent design, construction, and use. PAS 2080 also ensures carbon is consistently and transparently quantified at key points in infrastructure delivery, which promotes sharing of data along the value chain. PAS 2080 is applicable to any member involved in the delivery of infrastructure, including asset owners/managers, designers, constructors, and product/material suppliers.