HS2

Environmental Sustainability Progress Report

2023 – 2024

Contents

Executive summary

This report looks in detail at the work we're carrying out to embed environmental sustainability into the design and construction of Britain's new high-speed railway.

Our fourth Environmental Sustainability Progress Report for HS2 covers our activity from April 2023 to March 2024, which has seen significant change for the project. The previous government cancelled Phase 2a, between the West Midlands and Crewe, and Phase 2b, between Crewe and Manchester, in October 2023. We are still building the Phase One route between London and the West Midlands. This report focuses on data from our work along the London – West Midlands route and includes some data from our enabling works on Phase 2a.

Our environmental ambitions remain clear, to provide zero carbon rail travel for a cleaner, greener future. We will actively pursue the best affordable and cost-saving measures to meet our environmental commitments in continuing to minimise HS2's carbon footprint; use materials and resources responsibly; support nature recovery; and respect the people and places directly affected by construction activity. We will make sure the railway operates efficiently in the face of climate change.

We've now planted nearly 950,000 trees and shrubs between London and the West Midlands as part of HS2's Green Corridor and we remain on target to plant seven million.

We are continuing to make progress towards our aim to cut carbon emissions by 50%. We have performed well against our 2023 – 2024 Phase One carbon reduction target of 32.2%, with our current forecast being that we will achieve an overall carbon reduction of 32.5% against the baseline once HS2 is complete. We will continue to innovate and identify carbon reduction opportunities to achieve our overall 50% reduction target.

For biodiversity, we met our 2% improvement target for all three of our accounting measures on Phase One: in area-based habitats, hedgerows and watercourses, compared with our 2022 – 2023 position. We achieved a net gain position for two of the three measures – hedgerows and watercourses – and are showing positive progress for area-based habitats. Following the rescoping announcement, we will not be updating the Phase 2a metric calculation beyond the 2019 baseline, as there will be no further design information available for this section of the route.

Our infrastructure continues to set new standards and we marked the start of a five-year construction programme on HS2's flagship station in Birmingham at Curzon Street in January 2024.

The station is designed to meet at least a BREEAM excellent standard, joining Old Oak Common in West London and HS2's Interchange station in Solihull in receiving industry-recognised certification for buildings that reduce energy use and materials waste and minimise their impact on the natural environment.

The project is now in the peak construction stage and we diverted 99.6% of all construction and demolition waste from landfill during 2023 – 2024, exceeding our target of 95%. Our efforts to responsibly source and consume materials have been resoundingly successful with 100% of timber, steel and concrete responsibly sourced.

We have prepared this report with reference to Global Reporting Initiative (GRI) Standards, the world's most widely-used framework for sustainability reporting. BSI Group has provided independent assurance of data and their assurance statement is included on page 43.

The United Nations Sustainable Development Goals (UN SDGs) represent 17 social, economic and environmental priorities, designed to combat our global challenges. Our contribution to the UN SDGs is shown throughout the 'Our performance' chapter.

Executive summary: At a glance

32.5%

forecast carbon emissions reduced to date, contributing to our 50% target for the London – West Midlands route.

–2.5%

is outstanding against our biodiversity baseline in area-based Phase One habitats.

99.5%

of light duty vehicles trips (e.g. vans) compliant with air quality standards.

949,490

trees and shrubs planted on HS2's Green Corridor between London and the West Midlands since 2017.

99.8%

of non-road mobile machinery registrations (e.g. excavators) compliant with air quality standards.

100%*

of heavy goods vehicles trips (e.g. lorries) compliant with air quality standards.

99.6%

of construction and demolition waste diverted from landfill.

0

number of the most serious level 1 environmental incidents.

100%

of timber, steel and concrete responsibly sourced.

* Note this is 99.99% rounded up to 100%

Our environmental sustainability approach

Image: Visualisation of the River Blythe viaduct, Solihull.

Our commitment

Environmental sustainability is part of our overall commitment to sustainability and is fundamental to our strategic goal for HS2 to 'create an environmentally sustainable solution and deliver respectfully to people and places'. It is key to our Environmental Sustainability Vision to provide 'zero carbon rail travel for a cleaner, greener future'.

Our environmental sustainability commitment is made up of five key areas, which form our environmental sustainability objectives for HS2. They are:

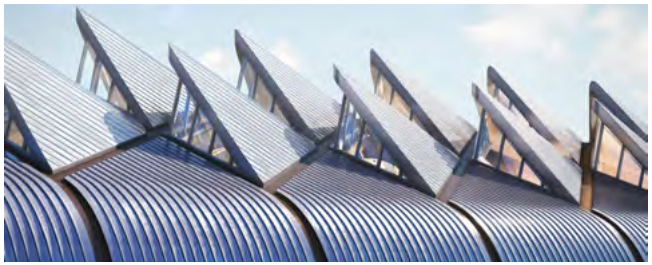
- HS2 Green Corridor;
- climate change;
- community experience;
- historic environment; and
- responsible consumption and production.

Planting trees as part of environmental mitigation works.

Our environmental sustainability objectives

HS2 Green Corridor

We will create a resilient green corridor for both nature and people, that will conserve and enhance habitats, seek to achieve biodiversity gains through partnership working while designing mitigation to integrate into the character of the landscape.



Climate change

We will minimise the carbon footprint of HS2 towards a goal of net zero carbon emissions, build a network that is climate resilient for the long term, and deliver zero carbon journeys from day one of operation.

Community experience

Where reasonably practicable, we will minimise adverse impacts of HS2 construction and operation on people and the environment including effects from air pollution, flooding, and noise and vibration.

Historic environment

We will reduce harm to the historic environment and deliver a programme of heritage mitigation including knowledge creation through investigation, reporting, engagement and archiving.

Responsible consumption and production

We will promote circular economy principles, responsibly source and make efficient use of sustainable resources, reduce waste and maximise the proportion of material diverted from landfill.

Cross-topic reporting

We also report on cross-topic data, which cover environmental requirements that aren't specific to a single objective, including BREEAM assessments and environmental incidents.

Our approach

Governance

Our governance regime for environmental sustainability was covered in our 2022 – 2023 progress report and has remained the same.

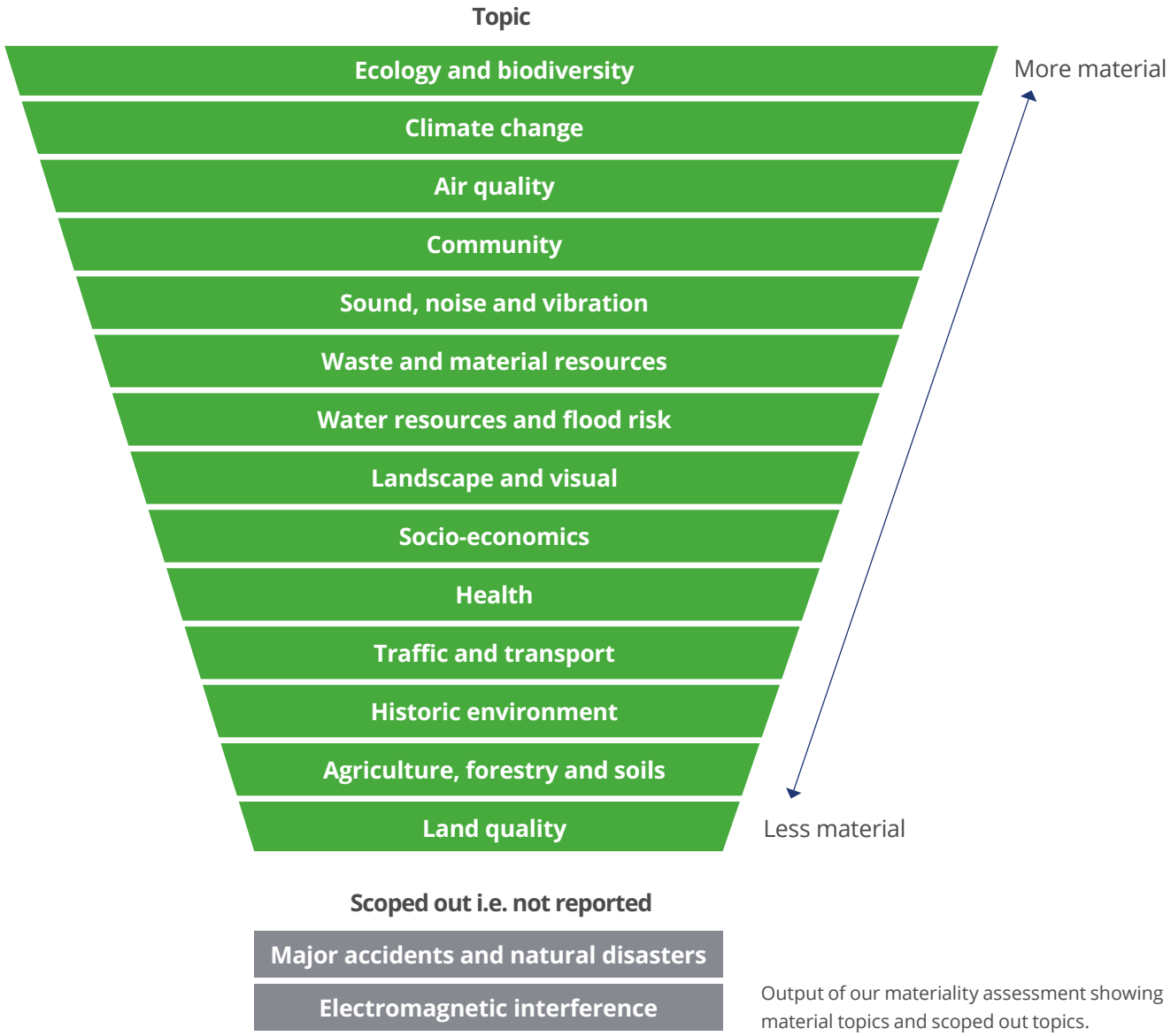
Prioritising environmental sustainability topics

We need to identify the environmental topics that are most important to the high-speed railway. They are the environmental areas where we are most likely to have a significant effect and the areas that potentially affect the project. We call this process our materiality assessment and our material topics form the basis of what we report on.

In 2023, we updated our materiality assessment to align with the 2023 Global Reporting Initiative (GRI) Standards. The materiality assessment can be found in our 2022 – 2023 progress report.

Stakeholder and community engagement

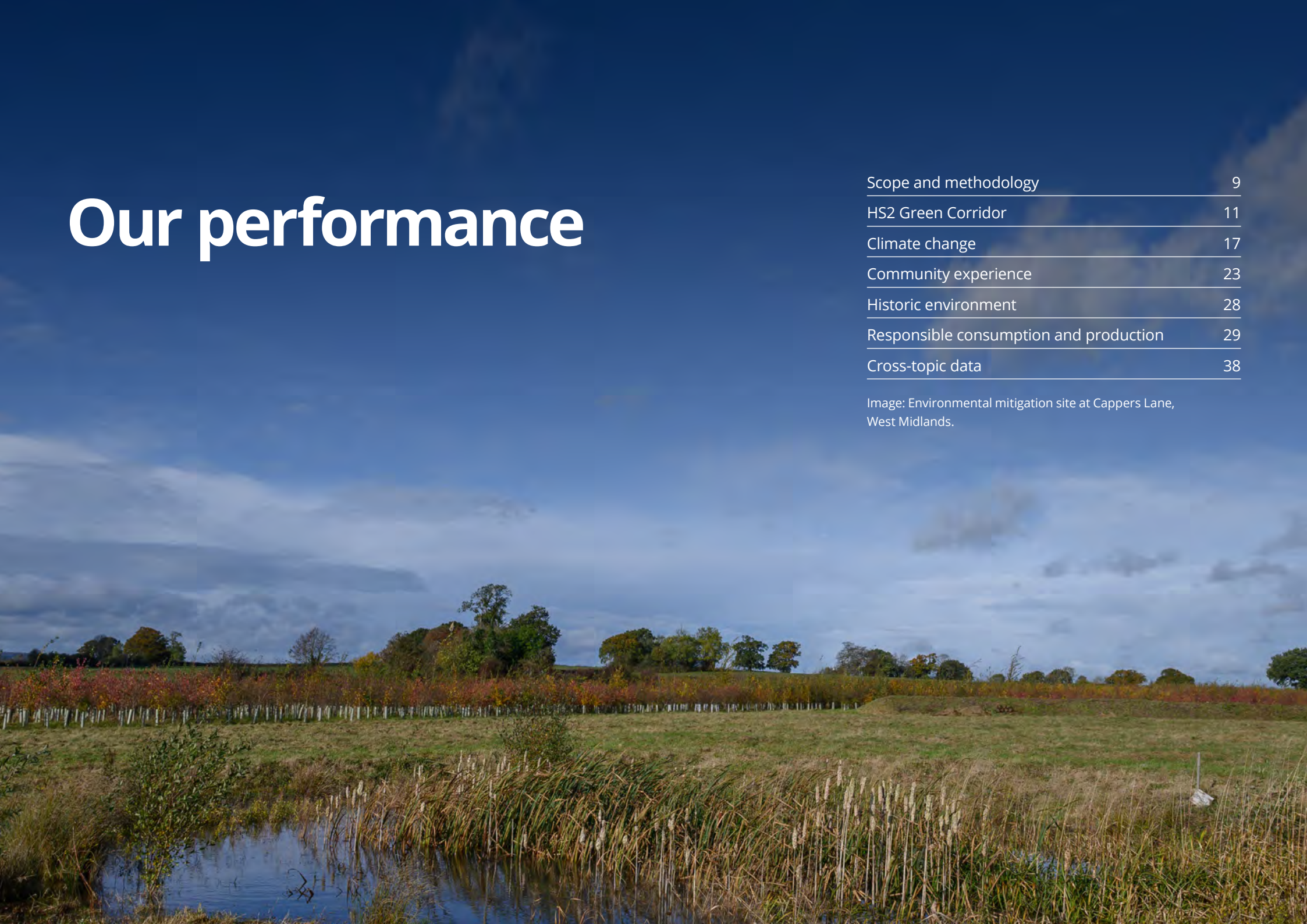
It is important we continue to work with local communities and understand their concerns, particularly those directly affected by the new railway. We work closely with our environmental stakeholders to make sure we respect people and places in our decision-making and actions. Our 2022 – 2023 progress report details our stakeholder groups. We have continued to engage with all these groups in the past year, for example working with local authorities through our planning forums.



Output of our materiality assessment showing material topics and scoped out topics.

Our performance

Image: Environmental mitigation site at Cappers Lane, West Midlands.



Scope and methodology

The following pages include our environmental sustainability performance for 2023 – 2024, presented as data and case studies.

We have reported on our performance in line with our environmental policy objectives and separately on 'cross-topic' data:

- HS2's Green Corridor
- climate change
- community experience
- historic environment
- responsible consumption and production, and
- cross-topic data.

We have provided a summary table after each data table, comparing progress with our data for 2020 – 2021, 2021 – 2022 and 2022 – 2023. We have also provided case studies to illustrate our work.

Note on historic environment

We have not provided data for the historic environment due to the nature of the topic because the value of our heritage can't be quantified easily. For example, archaeological works vary in size but can be equally informative. Numbers do not adequately show the value of the activities. However, we have provided a case study to indicate the impact of our work.

Note on cross-topic data

We have also reported on cross-topic data, which refer to a group of environmental requirements that aren't specific to a single objective. They include BREEAM assessments of our built environment and environmental incidents such as disturbances or damage.

Reporting period

The reporting period covers April 2023 to March 2024. However, due to the way data is reported by our main reporting platform, the data used is from March 2023 to February 2024, unless otherwise stated. This is in line with our annual corporate reporting period.

Data collection and calculation

Notes explaining the methodology we use for data collection and calculations are included next to the relevant data tables.

Scope

All data relates to the railway we are now building between the West Midlands and London. The only exceptions are the following.

- The biodiversity accounting process on page 12, which also includes the baseline for the Phase 2a route to Crewe.
- The number of trees and shrubs planted on page 14.
- The carbon footprint data on pages 19-21, which include some Phase 2a contracts. This has been noted next to the relevant data points.

Data has been grouped into two categories:

- main works civils contractors (MWCCs) – SCS Joint Venture (JV), Align JV, EKFB JV and BBV JV; and
- stations – Euston and Old Oak Common. Our stations at Interchange, Solihull, and Curzon Street, Birmingham, are still at the design stage and are only included in the BREEAM Buildings data.

The data only refers to live contracts. When new contracts are awarded, they will be included in the relevant data. The only exemption is the whole-life carbon footprint dataset: for contracts not yet awarded, we only include the baseline information.

Scope and methodology

The table below show the location of the works being undertaken by HS2 construction partners:

The location of the works being undertaken by HS2 construction partners

Contract type	Partnership	Contractors	Location of works
Enabling works contracts	CS JV	Costain Group Plc, Skanska Construction UK Ltd	Within M25
	Fusion JV	Morgan Sindall Construction & Infrastructure Ltd, BAM Nuttall Ltd, Ferrovial Agroman (UK) Ltd	Leamington Spa, Warwickshire to M25
	LM JV	Laing O' Rourke Construction, J Murphy & Sons	Birmingham to Leamington Spa
Main works civils contracts	SCS JV	Skanska Construction UK Ltd, Costain Group Plc, STRABAG SE	Within M25
	Align JV	Bouyges Travaux Publics, Volkerfitzpatrick, Sir Robert McAlpine	Chiltern tunnel and associated works
	EKFB JV	Eiffage, Kier, Ferrovial Construction and BAM Nuttall	Leamington Spa to M25
	BBV JV	Balfour Beatty Group, VINCI Construction UK Ltd	Birmingham to Leamington Spa
Stations	MD JV	Mace Limited and Dragados SA.	Euston station, London
	BBVS JV	Balfour Beatty Group Ltd, VINCI Construction UK Ltd, VINCI Construction Grands Projects SAS and SYSTRA Ltd	Old Oak Common station, west London

External assurance

'Reasonable' assurance on the key performance indicators for environmental sustainability performance data has been provided by BSI Group. We have included our independent assurance statement in this report on page 43.

Frameworks and standards

Our environmental sustainability data has been prepared with reference to the GRI Standards: Core option. The GRI index on page 46 can be used as a reference for our disclosures against the relevant requirements.

The United Nations Sustainable Development Goals (UN SDGs) are 'a blueprint to achieve a better and more sustainable future for all'. They represent 17 social, economic and environmental priorities designed to combat the global challenges facing humanity by 2030. As Britain's biggest build, HS2 has an important part to play in the UK's progress towards the UN SDGs. Under each commitment, we have included the UN SDG that our work contributes to.

The GRI index and UN SDGs are outside the scope of BSI Group verification.

HS2 Green Corridor

Creating a resilient green corridor for both nature and people, that will conserve and enhance habitats, seeking to achieve biodiversity gains through partnership working while designing mitigation to integrate into the character of the landscape.

Contributing to UN SDG:

Performance commentary, data tables and notes

Performance commentary

Our 2023 – 2024 corporate KPI target for Phase One was to achieve a 2% improvement in our biodiversity no net loss position from the December 2022 reporting position. We have three measures for our biodiversity accounting: area-based, hedgerows and watercourses. We met the 2% improvement target for all three of the measures compared with what was reported in 2022 – 2023. We are reporting a net gain position for two of the three measures – for hedgerows and watercourses – and have made positive progress on area-based habitats.

We also had a 2023 – 2024 corporate KPI target to achieve a 2% improvement in our biodiversity no net loss position on Phase 2a from the 2019 baseline position. Following the rescoping announcement, there is no intention to update the Phase 2a metric calculation beyond the 2019 baseline. This reflects the fact there will be no further design information available for this section of the route.

This year, we've continued to plant trees and shrubs along the London – West Midlands route with 59,009 being planting, contributing to over a million trees having been planted on Phase One and 2a combined.

The £5 million Phase One Woodland Fund, which is in addition to our tree planting described above, has awarded £1,650,637 worth of funding which has allowed for approximately 140 hectares of woodland creation and 70 hectares of plantations on ancient woodland sites (PAWS).

HS2 Green Corridor

Data tables and notes

Biodiversity accounting process

Phase One

		Pre-construction		Post-construction		Summary		
Date	Habitat group	Area (ha) / Length (m)	Biodiversity units	Area (ha) / Length (m)	Biodiversity units	Area (ha) / Length (m) difference (pre- vs post-)	Biodiversity unit difference (pre- vs post-)*	**% change in biodiversity units**
2017 baseline	Area-based habitats	6,775	22,059	6,777	20,484	2	-1,575	**-7.14%**
	Hedgerows	448,148	929,086	403,441	856,289	-44,707	-72,797	**-7.84%**
	Watercourses	76,371	139,902	78,063	146,143	1,692	6,241	**4.46%**
December 2022 update	Area-based habitats	6,462	20,649	6,473	19,097	10	-1,552	**-7.52%**
	Hedgerows	450,353	1,006,734	501,278	1,058,053	50,925	51,319	**5.10%**
	Watercourses	75,842	138,960	79,407	135,436	3,565	6,476	**4.70%**
March 2024 update	Area-based habitats	6,741	22,689	6,745	22,125	4	-564	**-2.49%**
	Hedgerows	444,443	931,980	546,956	1,175,036	102,513	243,056	**26.10%**
	Watercourses	77,950	143,368	84,728	154,258	10,980	6,779	**7.60%**

Phase 2a

		Pre-construction		Post-construction		Summary		
Date	Habitat group	Area (ha) / Length (m)	Biodiversity units	Area (ha) / Length (m)	Biodiversity units	Area (ha) / Length (m) difference (pre- vs post-)	Biodiversity unit difference (pre- vs post-)*	**% change in biodiversity units**
2019 baseline	Area-based habitats	2,979	7,887	2,973	6,545	-4	-1,342	**-17.01%**
	Hedgerows	234,180	499,229	300,766	629,867	66,586	130,638	**26.16%**
	Watercourses	22,605	46,661	14,040	28,860	-8,565	-17,801	**-28.15%**

* The biodiversity unit difference is the difference in biodiversity units as calculated before construction of the railway (pre-construction) compared with completion of the railway (post-construction). It is based on the design at that point in time. As the design evolves and improvements or savings are made, this number will change. For Phase 2a, the baseline presented is the forecasted units pre and post construction as it was in 2019. As construction is not going ahead, the impacts will now not happen.

HS2 Green Corridor

Notes:

Our biodiversity KPI

- We are seeking no net loss in biodiversity, excluding irreplaceable habitats such as ancient woodlands, across the London – West Midlands route. To measure progress towards our goal, we developed a modified version of the Department for Environment, Food & Rural Affairs (Defra) pilot biodiversity offsetting metric, in consultation with Defra and Natural England. It is called the HS2 metric. The HS2 metric uses habitats as a proxy for considering losses and gains of biodiversity and measures these losses and gains in biodiversity units.
- Industry guidance has evolved since we started reporting our biodiversity accounting figures. To align with this, in addition to reporting on area-based habitats, we now report our biodiversity accounting figures for hedgerows and watercourses too.
- More information about our biodiversity targets is outlined in the HS2 Environmental Sustainability Vision.

Methodology

- An HS2 metric has been used to calculate the figures shown above. The HS2 metric has not been used to define the level of biodiversity compensation that has been included in the scheme. It has been used as an accounting 'tool' and applied to the habitats present pre- and post-construction. It allows us to compare the losses and gains in biodiversity units due to HS2. This accounting process has been referred to as the 'no net loss calculation'. (For more information, see the HS2 London-West Midlands, No net loss in biodiversity calculation report). Since the launch of our Environmental Sustainability Vision, the 'no net loss' process has been renamed the 'biodiversity accounting' process to reflect our goal to secure biodiversity gains on Phase One and Phase 2a where this is cost-effective and possible within existing funding limits.
- Ancient woodlands are irreplaceable. For this reason, any measures that could be seen as an attempt to compensate for their loss are not included in our calculation. HS2's impact on ancient woodlands is the subject of separate reporting in the HS2 Ancient Woodlands reports.
- The metric calculates losses and gains to biodiversity on an area basis, except for linear features, like hedgerows and watercourses. Separate calculations are made for these based on the length of the habitats affected. Further details are provided in the HS2 London-West Midlands, No net loss in biodiversity calculation report.
- Methods are outlined in the technical notes that accompany the Environmental Statements for each phase of HS2:
  - Phase One (page 364)
  - Phase 2a (page 203)

These outline technical approaches as well as changes made to calculations between each phase of HS2.

Limitations

- The biodiversity accounting data represents a snapshot in time. Contractors are still progressing design work.
- Biodiversity gains are considered by contractors throughout the design stage, but the calculation of biodiversity accounting is only realised to the end of the design stage. Only assets that have reached an approved design stage have been taken into account.
- Contractors undertake and complete different stages of design using different timescales. This means the level of maturity of design and the resulting figures are not consistent across Phase One. For example, some design elements have completed proposed scheme design while other elements have completed detailed design or 'as-built' design.

HS2 Green Corridor

Number of trees and shrubs planted

Phase One

Year	Trees planted	Trees replaced	Net trees planted
2017–18	218,624	–	218,624
2018–19	125,852	6,553	119,299
2019–20	169,850	45,125	124,725
2020–21	271,707	30,405	241,302
2021–22	164,991	24,087	140,904
2022–23	119,563	73,936	45,627
2023–24	**91,517**	**32,508**	**59,009**
Total	**1,162,104**	**212,614**	**949,490**

Phase 2a

Year	Trees planted	Trees replaced	Net trees planted
2022–23	138,389	–	138,389
2023–24	–	–	–
Total	**138,389**	**–**	**138,389**

Route-wide

Year	Trees planted	Trees replaced	Net trees planted
To date	**1,300,493**	**212,614**	**1,087,879**

HS2 Green Corridor

Notes:

Methodology

- The annual planting season is from November to March. During this season we also replace trees that fail to grow in line with site-specific maintenance monitoring and management plans and to ensure that the original tree planting specification is being maintained.
- The basis of HS2's approach to tree planting and woodland creation is The National Plant Specification – Handling and establishing landscape plants. This provides industry standard guidance on the processes of plant handling and establishment for large-scale planting projects.
- Failures in saplings should be expected in the early years following planting. Aligning to industry-wide guidance, HS2 Ltd expects typical failure rates of new tree and shrub planting across its construction sites to be within the industry best practice range of 5 to 15% (this being in a typical climatic year). However, during prolonged periods of lower than expected rainfall, it would be expected that failure rates can be higher. Given numerous summer drought conditions since HS2 planting commenced, higher failure rates in newly planted trees are not unexpected. It should be noted that, due to the typical industry-wide failures of a proportion of newly-planted trees and the variations in seasonality, the Forestry Commission advise that the success of any tree planted areas is best assessed after five years from initial planting, when the plantation should, by then, be as near to 100% of the original planting intention.
- Due to the large scale of HS2 planting, the watering of new plants is not undertaken. Replacing plants lost is considered a more cost-effective solution and a far more ethical use of water resources during dry summer conditions.
- The published HS2 Information Paper E26 describes the minimum periods for the management and monitoring of habitats.

HS2 Green Corridor

Woodland Fund

Phase One Woodland Fund £5m	Schemes	Value	Creation area (Gross area of woodland creation)	PAWS* area (Gross area for PAWS restoration)	Total tree numbers
Committed – agreement in place or offered, application approved, in progress or received	9	£469,461	45.12 ha (67,206 trees)	0ha (0 trees)	67,206
Completed – interim or final claim received or paid	38*	£1,650,367	136.94 ha (234,635 trees)	69.63ha (119,784 trees)	354,419

* Plantations on Ancient Woodland Sites, or PAWS (previously referred to as Ancient Woodland Restoration), are ancient semi-natural woodlands that have been felled and replanted with other tree species, typically non-native trees, such as spruce, fir and larch.

Notes:

The HS2 Woodland Fund provides funding to create native woodland or restore plantations on ancient woodland sites near to the HS2 route.

This is in addition to trees planted as part of our mitigation planting.

Methodology

- This data presents our progress to-date and refers to Phase One as of end of March 2024.
- Note there was £2 million earmarked for a Phase 2a Woodland Fund, but Phase 2a of the project was cancelled before it could open for applications.

Definitions

- Committed: New woodland creation or ancient woodland restoration projects where funding has been allocated, either firmly or tentatively. These projects have not yet been delivered. This category also includes restoration projects that are underway or where we have received or approved an application.
- Completed: New woodland creation or ancient woodland restoration projects that have been completed since the start of the Woodland Fund scheme.
- PAWS: Plantations on Ancient Woodland Sites.

Climate change

Minimising the carbon footprint of HS2 towards a goal of net zero carbon emissions, building a network that is climate resilient for the long term, and delivering zero carbon journeys from day one of operation.

Contributing to UN SDG: 13 CLIMATE ACTION

Case study

Cutting emissions from concrete

We are innovating to cut emissions from the production and use of concrete. Following a successful trial, we have rolled out a digital measuring system that provides analysis of concrete onboard trucks, reducing wastage and therefore carbon, at many HS2 sites.

VERIFI®, a pioneering technology developed by Balfour Beatty VINCI's supply chain partners Saint Gobain Construction Chemicals, allows real-time monitoring, measurement and management of fresh concrete during transport. Sensors on the trucks monitor and replace 'manual consistence', for example, slump, and test the temperature of the fresh concrete. This means the quality of the concrete is assured digitally during the truck's journey, when it's delivered and before it is used.

The system provides digital readouts analysing the truck's load. It also reduces the concrete waste usually produced from manual sampling and testing during spot-checks. Once fully in use across BBV's route section, the technology could result in cutting 1,500 tonnes of carbon emissions.

One of our VERIFI®-monitored trucks carrying concrete to site.

Climate change

Performance commentary, data tables and notes

Performance commentary

The corporate KPI target for 2023 – 2024 was to achieve a 31% forecast reduction in carbon emissions against the combined carbon baseline for Phase One and Phase 2a by the end of March 2024. This included a target of 32.2% for Phase One and 21.4% for Phase 2a. We have performed well against our Phase One target, forecasting a 32.5% reduction in carbon against the baseline. The Phase 2a pause in work in March 2023, followed by the previous government's decision to cancel Phase Two in October 2023, resulted in reduced work being undertaken on Phase 2a, and no further carbon reductions were realised for the period.

Overall, there has been a significant increase of on-site renewables and hydrogen fuel alongside a gradual replacement of petrol and diesel with 'greener' alternatives such as LPG and HVO. This is attributable to the HS2 Diesel-Free Plan that we launched in November 2022. We now have one diamond (diesel free plus zero emission technologies used) site plus 22 gold (diesel free) sites and 12 silver sites (that have a plan in place to stop using diesel).

Climate change

Data tables and notes

Whole-life carbon footprint – progress against targets per contract

Contract type	Phase	Contractor	Total carbon reduction target	Baseline carbon footprint (tCO_2e)	Current carbon footprint (tCO_2e) (March 2024)	Current percentage reduction against baseline (March 2024)
Enabling works contracts	Phase One	CS JV	–	0	0	N/A
		Fusion JV	30%	11,070	7,630	31.1%
		LM JV		137,755	92,900	32.6%
Main works civils contracts	Phase One	SCS JV	50%	1,399,449	880,142	37.1%
		Align JV		996,479	568,951	42.9%
		EKFB JV		2,890,071	1,825,680	36.8%
		BBV JV		4,148,208	2,343,142	43.5%
Stations	Phase One	Euston (MD JV)	50%	710,479	416,746	41.3%
		Old Oak Common (BBVS JV)*		366,516	210,689	42.5%
		Interchange (Arup)		193,976	102,469	47.2%
		Curzon Street (MD JV)		158,151	70,847	55.2%
Rail Systems	Phase One and 2a	Track	50%	3,243,192	3,148,237	2.9%
	Phase One	Calvert IMD	50%	118,006	99,765	15.5%
	Phase One and 2a	Overhead catenary system (OCS)**	50%	42,634	42,634	0%
	Phase One and 2a	Cross passage doors (CPD)	50%	6,514	3,341	48.7%
	Phase One	Washwood Heath	50%	156,237	148,728	4.8%
	Phase One and 2a	Tunnel mechanical and electrical systems**	50%	191,595	191,595	0%

* No updated carbon data was available for Old Oak Common Station (BBVS) for the reporting period due to reporting verification and validation delays. HS2 is working with BBVS to correct data to avoid further delays.

** Carbon data not yet available. Contracts either not yet awarded or at an early design stage, hence 0% progress against targets reported.

Climate change

Whole-life carbon footprint – progress against targets per contract continued

Contract type	Phase	Contractor	Total carbon reduction target	Baseline carbon footprint (tCO_2e)	Current carbon footprint (tCO_2e) (March 2024)	Current percentage reduction against baseline (March 2024)
Rolling Stock	Phase One and 2a	Rolling stock (Hitachi-Alstom)	See notes	2,465,966	1,668,033	32.4%
	Phase 2a	ECW2 – Kier	50%	73,259	54,441	25.7%
	Phase 2a	Main civils works (MCW)	50%	1,052,704	864,644	17.9%
	Phase One total		**50%**	**16,203,932**	**10,944,407**	**32.5%**
	Phase 2a total		**50%**	**2,158,329**	**1,796,207**	**16.8%**
	Programme to date total			**18,362,261**	**12,740,614**	**30.6%**

Year-on-year progress comparison

Year	Contractor	Total carbon reduction target by contract	Baseline carbon footprint (tCO_2e)	Carbon footprint at the end of the reporting period (tCO_2e)	Percentage reduction against baseline at the end of the reporting period
2020–21	Phase One total	**50%**	14,544,000	10,855,000	25.4%
	Phase 2a total		478,000	478,000	0%
	Programme to date total		15,022,000	11,333,000	24.6%
2021–22	Phase One total		14,488,000	10,934,000	24.8%
	Phase 2a total		564,000	564,000	0%
	Programme to date total		15,052,000	11,498,000	23,6%
2022–23	Phase One total		16,356,677	11,521,580	29.6%
	Phase 2a total		2,158,329	1,792,525	16.9%
	Programme to date total		18,515,006	13,314,105	28.1%
2023–24	**Phase One total**		**16,203,932**	**10,944,407**	**32.5%**
	Phase 2a total		**2,158,329**	**1,796,207**	**16.8%**
	Programme to date total		**18,362,261**	**12,740,614**	**30.6%**

Climate change

Notes:

- No permanent HS2 assets are being constructed by CS JV, therefore a carbon footprint calculation is not required.
- Rolling stock is subject to a carbon target/limit – however, it is not expressed as a percentage. For more information regarding the carbon reduction target/limit follow the link and go to TTS-847 (p.73).
- The tables above show the contract types with baselines produced to date.
- Carbon reduction targets apply to the whole-life carbon footprint and are to be delivered during the contract period.
- Rail systems include: track, overhead catenary system, tunnel and lineside mechanical and electrical equipment, Calvert infrastructure maintenance depot and Washwood Heath depot and control centre.

Methodology

- The carbon data has been quantified in accordance with best practice industry standards (e.g. BS EN ISO 14040, BS EN ISO 14044, BS EN 15978).

Limitations

- The carbon data represents a snapshot in time. Contractors are still progressing design work.

Climate change

Energy and fuel consumption

Contract type	Contractor	Total grid electricity kWh	Onsite renewables kWh	Petrol (100% mineral) litres	Petrol (average fuel blend) litres	Diesel (white/ average biofuel blend) litres	Gas oil (red diesel) litres	LPG litres	CNG litres	Hydrogen litres	HVO* litres	Other fuel types kWh	Other fuel types litres
MWCC	Align JV	68,834,159	342	303	323	986,596	0	394,222	0	0	4,327,774	0	0
	BBV JV	12,764,303	0	0	1,541	22,362,042	0	363,105	0	17,995	0	422,335	0
	EKFB JV	2,989,900	0	2,918	16,474	27,446,229	1,000	0	0	5,747	0	0	0
	SCS JV	36,836,035	0	0	8,082	0	586,308	0	22,259	0	5,513,600	0	0
Stations	BBVS JV	1,269,007	157,797	0	207	988,747	0	20	0	11,391	0	0	0
	MD JV	518,665	0	0	0	15,927	0	0	0	0	912	0	0
Total Phase One contracts		**123,457,663**	**158,139**	**3,221**	**26,627**	**51,799,541**	**618,303**	**757,347**	**22,259**	**35,133**	**9,842,286**	**422,335**	**0**

Year-on-year progress comparison

Year	Contract type	Total grid electricity kWh	Onsite renewables kWh	Petrol (100% mineral) litres	Petrol (average fuel blend) litres	Diesel (white/ average biofuel blend) litres	Gas oil (red diesel) litres	LPG litres	CNG litres	Hydrogen litres	HVO* litres	Other fuel types kWh	Other fuel types litres
2020–21	Total Phase One contracts	1,038,184	4,323	16,686	47,091	1,400,483	9,289,152	1,175	-	0	-	104,874	16,402
2021–22		22,454,371	3,682	26,314	44,697	2,436,122	23,308,065	297,331	-	2,560	-	368,167	3,051,854
2022–23		65,326,924	10,094	3,917	42,945	41,820,083	3,169,106	455,205	-	595	-	36,469	10,234,193
2023–24		**123,457,663**	**158,139**	**3,221**	**26,627**	**51,799,541**	**618,303**	**757,347**	**22,259**	**35,133**	**9,842,286**	**422,335**	**0**

*Until last year we were including hydrotreated vegetable oil (HVO) under the 'other' category. However, due to its prominence this year, we have reported it separately.

Notes:

Definitions

- Petrol (average fuel blend): standard grade petrol sold in the UK contains a blend of just under 5% bioethanol and around 95% petrol.
- Diesel (average biofuel blend): the most common biodiesel blend is B20, which ranges from 6% to 20% biodiesel blended with petroleum diesel. However, B5 (a biodiesel blend of 5% biodiesel and 95% diesel) is also commonly used in fleet vehicles.
- LPG – Liquefied Petroleum Gas.
- CNG – Compressed Natural Gas.
- Total grid electricity comprises conventional grid electricity and grid electricity from zero carbon tariffs.
- The 'Other' categories include natural gas received through the gas mains grid network in kWh.
- More information about the supply of renewable road fuels in the UK can be found on the renewable fuel statistics web page.

Community experience

Minimising the adverse impacts of HS2 construction and operation on people and the environment including effects from air pollution, flooding, and noise and vibration.

Contributing to UN SDG: 7 AFFORDABLE AND CLEAN ENERGY

Case study

Colne Valley viaduct noise barrier testing

The architectural specifications for the 2.1-mile Colne Valley viaduct, on the outskirts of west London, created complex challenges for the team designing the noise barriers. As well as minimising the viaduct's appearance and reducing noise, the design had to provide passenger views from HS2 trains.

The design included semi-transparent noise barriers to preserve these views, but these could only rely on predictions about their ability to cut noise. In June 2023, main works civils contractor Align JV completed field testing of the barriers – the first of their kind in the UK – to confirm the predictions and increase confidence in the barriers' acoustic performance.

Align JV tested sample barriers at RAF Bentwaters in Suffolk. Using a 40-metre mock-up of a train and the noise barriers, sounds representing a train were played through a loudspeaker, with microphones measuring the noise levels. The tests showed the noise barriers performed as expected, underlining robust design predictions and proving noise could be reduced without blocking views from the train.

Align JV test sample noise barriers at RAF Bentwaters in Suffolk.

Case study

The completed restoration of the banks of Hampden Pond.

Wendover Parish Council – Hampden Pond restoration

Our Community and Environment Fund (CEF) was created to provide benefits to communities directly affected by our work along the HS2 route. An award of £23,269, alongside some match funding from Wendover Parish Council, meant they were able to restore Hampden Pond and prepare it for the reintroduction of fish and other wildlife.

Lilies and trees had reduced oxygen levels and poisoned the pond's water. The restoration project included removing lilies and rhizomes, felling and processing of a small number of fallen trees, removing dead wood and repairing an eroded section of the pond bank. Once the work is finished, the parish council plans to add fish and boost local wildlife.

Community experience

Performance commentary, data tables and notes

Performance commentary

There has been high compliance with HS2 emission standards for all machinery and vehicles during this year. NRMM was 99.76% compliant, HGVs 99.99% compliant and LDVs (e.g. vans) 99.54% compliant. There has been continued deployment of cleaner machinery being used across our sites, including the use of battery power, renewable energy and hydrogen fuel cell technology.

Data tables and notes

Air Quality

Non-road mobile machinery (NRMM)

Contract type	Contractor	Target proportion of NRMM that meets HS2's emission standards	Proportion that was compliant in 2023–24
		Percentage	Percentage
MWCC	Align JV	100%*	99.3%
	BBV JV	100%*	99.7%
	EKFB JV	100%*	99.96%
	SCS JV	100%*	100%
Stations	BBVS JV	100%*	99.6%
	MD JV	100%*	100%
Total Phase One contracts		**100%***	**99.76%**

* Including approved exemptions.

Community experience

Heavy goods vehicles (HGVs)

Contract type	Contractor	Target proportion of HGVs that are Euro VI or better Percentage	Proportion that was compliant in 2023–24 Percentage
MWCC	Align JV	100%*	99.995%
	BBV JV	100%*	99.99%
	EKFB JV	100%*	99.998%
	SCS JV	100%*	99.997%
Stations	BBVS JV	100%*	99.98%
	MD JV	100%*	99.96%
Total Phase One contracts		**100%***	**99.99%**

* Including approved exemptions.

Light duty vehicles (LDVs)

Contract type	Contractor	Target proportion of LDVs that are EURO 6 diesel or EURO 4 petrol Percentage	Proportion that was compliant in 2023–24 Percentage
MWCC	Align JV	100%	99.89%
	BBV JV	100%	97.76%
	EKFB JV	100%	99.96%
	SCS JV	100%	99.96%
Stations	BBVS JV	100%	99.72%
	MD JV	100%	99.98%
Total Phase One contracts		**100%**	**99.54%**

Community experience

Year-on-year progress comparison

Year	Contract type	Vehicle type	Target Percentage	Proportion that was compliant Percentage
2020–21	Total Phase One contracts	Non-road mobile machinery	100%	99.8%
		Heavy goods vehicles	100%	99.2%
		Light duty vehicles	100%	83.9%
2021–22		Non-road mobile machinery	100%	99.9%
		Heavy goods vehicles	100%	99.9%
		Light duty vehicles	100%	88.7%
2022–23		Non-road mobile machinery	100%	99.5%
		Heavy goods vehicles	100%	99.97%
		Light duty vehicles	100%	98.7%
2023–24		**Non-road mobile machinery**	**100%**	**99.76%**
		Heavy goods vehicles	**100%**	**99.99%**
		Light duty vehicles	**100%**	**99.54%**

Community experience

Notes:

Methodology

- HS2 emission standards are included in both the Code of Construction Practice (Chapter 7), as well as the HS2 Information Paper E31.
- The reporting period is April 2023 to March 2024.

Definitions

- Non-road mobile machinery emissions (NRMM) standards: HS2 has applied NRMM engine emission requirements route-wide, for all machines with an engine power of between 37kW and 560kW.
- NRMM: refers to all mobile machines and transportable industrial equipment or vehicles that are fitted with an internal combustion engine, not intended for transporting goods or passengers on roads – for example, excavators, cranes and dump trucks.
- Light duty vehicles: vehicles with a permissible maximum weight less than or equal to 3.5 tonnes.
- Heavy goods vehicles: vehicles with a permissible maximum weight greater than 3.5 tonnes.
- NRMM exemptions policy: The Greater London Authority exemptions policy set out in the Supplementary Planning Guidance (SPG) applies routewide to HS2. They are awarded on a case-by-case basis to specialist plant and machinery or for short-term use where the NRMM may not be suitable for retrofit technology following clear justifications and review.
- HGVs exemptions policy: Certain HGVs may be exempt on the grounds of:
  a. Specialism: being a specialist vehicle (not readily available as Euro VI compliant).
  b. Unforeseen circumstances: for example, breakdowns or mechanical failure requiring a replacement vehicle that is not readily available as Euro VI compliant.
  c. Triviality: if a particular vehicle is expected to make no more than 12 visits to all HS2 works in the London Low Emission Zone in any 12-month rolling period, it may be given a specific exemption.

The total of the exemptions shall account for no more than 8% of unique vehicles on an annual basis.

Historic environment

Reducing harm to the historic environment and delivering a programme of heritage mitigation including knowledge creation through investigation, reporting, engagement and archiving.

Contributing to UN SDG: 11 SUSTAINABLE CITIES AND COMMUNITIES

Case study

Reinterment of Euston remains

More than 14,000 human remains that were archaeologically excavated from St James's Gardens in Euston as part of HS2 works were reinterred at Brookwood Cemetery, Surrey, in June 2023. Some of the relatives of those being reburied joined representatives of the Archbishops' Council, St James's Church, Piccadilly, and Historic England for a memorial service.

To honour the deceased, a memorial monument was created in a new landscaped garden. The design of the monument takes inspiration from the form of the gravestones and ledgers found at St James's Gardens.

Brookwood has often been the location for reburials from the capital over the past 150 years and has a connection to Euston. In the 1960s, the chapel at St James's Gardens was demolished and the remains of the individuals interred in its crypt were reburied at Brookwood.

As part of HS2's archaeology programme, the stories of those buried at St James's Gardens were told through an interactive exhibition held at St James's Church. The exhibition then moved to Camden Local Archives and Studies Centre.

The memorial monument and landscaped garden at Brookwood Cemetery

Responsible consumption and production

Promoting circular economy principles, responsibly sourcing and making efficient use of sustainable resources, reducing waste and maximising the proportion of material diverted from landfill.

Contributing to UN SDGs:

Case study

Logistics Hub hits two milestones

Our team at Willesden Euro Terminal Logistics Hub achieved two milestones in January 2024, just days apart. They delivered the millionth tonne of spoil to the CEMEX Barrington recovery site and saw the 1,000th spoil train leave the hub, carrying materials for beneficial reuse.

We sent our millionth tonne of excavated material for beneficial reuse at the CEMEX Barrington recovery site, a former quarry that worked chalk and clay for cement manufacture. Our excavated material will be used to infill the quarry.

After infilling, the quarry will be restored to lowland calcareous grassland with native hedgerows and trees. The material came from several sites, including Old Oak Common, the Victoria Road crossover box and the West Ruislip tunnel portal. In sustainably transporting over one million tonnes by rail to Barrington alone, we've removed about 60,000 lorry movements from the roads.

A week later, our 1,000th spoil train left the terminal carrying 23 loaded wagons and hauling 1,700 tonnes of excavated material. Over the course of the project, the logistics hub will shift over five million tonnes of spoil.

One million tonnes of excavated material have now been sent for beneficial reuse at the CEMEX Barrington recovery site.

The 1,000th spoil train leaves the Willesden Euro Terminal Logistics Hub.

Responsible consumption and production

Performance commentary, data tables and notes

Performance commentary

Responsible sourcing compliance has been excellent this year with 100% of timber, steel and concrete being responsibly sourced. Some 95.4% of 'other' materials (see notes in the data table below for definitions) were also responsibly sourced, far exceeding our 25% target.

For construction and demolition waste, 99.6% was diverted from landfill, exceeding the 95% target. For excavated material we diverted 95.2% from landfill overall, meeting our 95% target. However, in the year, SCS JV diverted 33.5% of their excavated material from landfill. This is due to surplus excavated materials being sent to 'sustainable placement' during this year. This is planned onsite disposal to avoid local traffic impacts and does not count towards beneficial reuse.

We have achieved 10.1% beneficial reuse of felled timber this year. However, the overall quantity of felled timber is minimal: 1,193 cubic metres, which is less than 2% of the amount generated in 2021 – 22. This is because site clearance at this stage of construction is limited.

Overall, 58.5% of water consumption was non potable, which corresponds to almost 3.3 milion cubic metres of water not taken from the public water supply system.

Data tables and notes

Responsible sourcing

Timber

Contract type	Contractor	Target for responsibly sourced timber Percentage	Certified timber Tonnes	Total timber purchased m^3	Proportion of responsibly sourced timber Percentage
MWCC	Align JV	100%	1,327	1,327	100%
	BBV JV	100%	125	125	100%
	EKFB JV	100%	732	732	100%
	SCS JV	100%	1,148	1,148	100%
Stations	BBVS JV	100%	164	164	100%
	MD JV	100%	188	188	100%
Phase One total		**100%**	**3,684**	**3,684**	**100%**

Responsible consumption and production

Steel

Contract type	Contractor	Target for responsibly sourced steel Percentage	Certified steel Tonnes	Total steel Tonnes	Proportion of responsibly sourced steel Percentage
MWCC	Align JV	100%	6,230	6,230	100%
	BBV JV	100%	37,250	37,250	100%
	EKFB JV	100%	21,086	21,086	100%
	SCS JV	100%	27,547	27,547	100%
Stations	BBVS JV	100%	12,358	12,358	100%
	MD JV	100%	135	135	100%
Phase One total		**100%**	**104,620**	**104,620**	**100%**

Concrete

Contract type	Contractor	Target for responsibly sourced concrete Percentage	Certified concrete Tonnes	Total concrete Tonnes	Proportion of responsibly sourced concrete Percentage
MWCC	Align JV	100%	514,623	514,623	100%
	BBV JV	100%	1,430,939	1,430,939	100%
	EKFB JV	100%	272,353	272,353	100%
	SCS JV	100%	472,168	472,168	100%
Stations	BBVS JV	100%	155,346	155,346	100%
	MD JV	100%	3,656	3,656	100%
Phase One total		**100%**	**2,850,645**	**2,850,645**	**100%**

Responsible consumption and production

Other material

Contract type	Contractor	Target for responsibly sourced other material types Percentage	Certified other material types Tonnes	Total other material types Tonnes	Proportion of responsibly sourced other material types Percentage
MWCC	Align JV	25%	759,824	759,824	100%
	BBV JV	25%	2,553,184	2,553,184	100%
	EKFB JV	25%	2,774,161	3,079,581	90.1%
	SCS JV	25%	225,660	229,991	98.1%
Stations	BBVS JV	25%	49,444	49,444	100%
	MD JV	25%	1,208	1,208	100%
Phase One total		**25%**	**6,363,481**	**6,673,232**	**95.4%**

Responsible consumption and production

Year-on-year progress comparison

Year	Contract type	Material	Proportion responsibly sourced (percentage)	Unit of measurement	Proportion responsibly sourced
2020–21	Total Phase One contracts	Timber	100%	10,561m³	99.9%
		Concrete	100%	501,759tn	100%
		Steel	100%	907,140tn	100%
		Other materials	25%	585,791tn	69.8%
		Timber	100%	4,353m³	100%
2021–22		Concrete	100%	999,043tn	100%
		Steel	100%	40,316tn	99.8%
		Other materials	25%	5,939,539tn	98%
2022–23		Timber	100%	29,278m³	100%
		Concrete	100%	2,051,910tn	100%
		Steel	100%	269,750tn	100%
		Other materials	25%	5,834,248tn	99.5%
2023–24		**Timber**	**100%**	**3,684m³**	**100%**
		Concrete	**100%**	**2,850,645tn**	**100%**
		Steel	**100%**	**104,620tn**	**100%**
		Other materials	**25%**	**6,673,232tn**	**95.4%**

Notes:

Methodology

- Responsible sourcing schemes are those identified in BREEAM Guidance Note GN18.
- The 'other material' section includes all related materials apart from timber, concrete and steel, for example, glass and metal. For a list of applicable materials please refer to Table 44 on page 265 of the BREEAM UK 2014 New Construction (Non-domestic Buildings) technical manual. The responsible sourcing of materials is also captured within the BREEAM Infrastructure (Projects) technical manual, Section 7.5 Responsible Sourcing of Construction Products, which aims to encourage the procurement and use of sustainably and responsibly sourced construction products and materials.
- This year we started reporting the timber data in cubic metres instead of tonnes.

Responsible consumption and production

Construction and demolition waste

Contract type	Contractor	Target (proportion construction and demolition waste diverted from landfill)	Total construction waste diverted from landfill in 2023–24	Total demolition waste diverted from landfill in 2023–24	Total construction and demolition waste diverted from landfill in 2023–24	Total construction and demolition waste in 2023–24	Proportion of construction and demolition waste diverted from landfill in 2023–24
		Percentage		Tonnes			Percentage
MWCC	Align JV	95%	25,300	0	25,300	25,381	99.7%
	BBV JV	95%	45,795	104	45,899	46,040	99.7%
	EKFB JV	95%	13,980	1	13,981	14,249	98.1%
	SCS JV	95%	22,802	0	22,802	22,821	99.9%
Stations	BBVS JV	95%	3,912	39,553	43,465	43,556	99.8%
	MD JV	95%	3,117	2,143	5,260	5,260	99.8%
Total Phase One contracts		**95%**	**114,954**	**41,801**	**156,755**	**157,356**	**99.6%**

Year-on-year progress comparison

Year	Contract type	Target (proportion construction and demolition waste diverted from landfill)	Total construction waste diverted from landfill	Total demolition waste diverted from landfill	Total construction and demolition waste diverted from landfill	Total construction and demolition waste	Proportion of construction and demolition waste diverted from landfill
		Percentage		Tonnes			Percentage
2020–21	Total Phase One contracts	95%	52,732	8,441	61,173	63,030	97.1%
2021–22		95%	92,583	79,045	171,628	173,220	99.1%
2022–23		95%	108,916	34,348	143,264	144,637	99.1%
2023–24		**95%**	**114,954**	**41,801**	**156,755**	**157,356**	**99.6%**

Responsible consumption and production

Excavated materials

Contract type	Contractor	Target (proportion of excavated material beneficially reused)	Total excavated material placed in permanent deposition or removed from site in 2023–24	Proportion of excavated material beneficially reused in 2023–24
MWCC	Align JV	95%	5,852,531	99.9%
	BBV JV	95%	6,212,555	100%
	EKFB JV	95%	8,843,167	100%
	SCS JV	95%	1,656,398	33.5%
Stations	BBVS JV	95%	755,284	100%
	MD JV	95%	7,086	100%
Total Phase One contracts		**95%**	**23,351,645**	**95.2%**

Year-on-year progress comparison

Year	Contract type	Target (proportion of excavated material beneficially reused)	Total excavated material placed in permanent deposition or removed from site	Proportion of excavated material beneficially reused
		Percentage	Tonnes	Percentage
2020–21	Total Phase One contracts	95%	880,764	94.6%
2021–22		95%	5,377,928	99.1%
2022–23		95%	9,899,078	89.3%
2023–24		**95%**	**23,351,645**	**95.2%**

Notes:

Definition

- Beneficial reuse of excavated materials: for an excavated material management activity to be classified as beneficial reuse it must meet the following tests:
  - The activity will lead to beneficial reuse and bring land back into use or provide ecological benefit.
  - In the case of quarries or landfill sites, the activity has a planning requirement to be restored.
  - The material is suitable for its intended use and would not harm human health or the environment.
  - The minimum amount of material would be used to achieve the restoration required by any planning consent.
  - Alternative material, whether waste or not, would be required if the material was not to be used.

Responsible consumption and production

Beneficial reuse of timber

Contract type	Contractor	Felled timber beneficially reused m³	Total felled timber m³	Proportion of felled timber beneficially reused Percentage
MWCC	Align JV	0	0	0.0%
	BBV JV	0	67	0.0%
	EKFB JV	120	1,126	10.7%
	SCS JV	0	0	0.0%
Stations	BBVS JV	0	0	0.0%
	MD JV	0	0	0.0%
Total Phase One contracts		**120**	**1,193**	**10.1%**

Year-on-year progress comparison

Year	Contract type	Felled timber beneficially reused m³	Total felled timber m³	Proportion of felled timber beneficially reused Percentage
2020–21	Total Phase One contracts	6,787	55,629	12.2%
2021–22		13,603	85,921	15.8%
2022–23		1,812	6,406	28.3%
2023–24		**120**	**1,193**	**10.1%**

Notes:

Methodology

- The beneficial reuse of timber includes:
  - being reused on site;
  - provided for community uses; and
  - used for solid wood production.
- The beneficial reuse of timber does not include:
  - used for reconstituted board production;
  - used for biomass;
  - other type of reuse (not disposal); and
  - landfill.
- There is no set target for this KPI. Contractors look to beneficially reuse timber when possible.

Responsible consumption and production

Water usage

Contract type	Contractor	Total water use m³	Proportion of water consumption that is non-potable Percentage
MWCC	Align JV	3,467,981	89.2%
	BBV JV	516,382	23.5%
	EKFB JV	141,910	49.5%
	SCS JV	370,031	0.0%
Stations	BBVS JV	41,796	0.0%
	MD JV	1,075,499	0.0%
Total Phase One contracts		**5,613,599**	**58.5%**

Year-on-year progress comparison

Year	Contract type	Total water use m³	Proportion of water consumption that is non-potable Percentage
2020–21	Total Phase One contracts	714,060	11.5%
2021–22		1,231,462	32.7%
2022–23		2,983,936	67.7%
2023–24		**5,613,599**	**58.5%**

Notes:

Definitions

- Water types:
  - Potable water is mains water.
  - Non-potable water is either water that has been captured and re-used from our processes; or water that is abstracted directly from the environment and subject to approval by the Environment Agency.

Methodology

- Water use is a challenge for infrastructure projects. Planning and selection of the appropriate water source for an activity is critical to operating in an environmentally sustainable way. We strive to use non-potable water for construction wherever possible through effective reuse of water, capture and storage of rainfall and sustainable abstraction from the environment, which is subject to regulation by the Environment Agency. There is no optimal percentage from each source. It depends on its uses and availability of sources on a given site. However, minimising potable water use for non-potable activities is typically beneficial as there is high cost and energy involved in treating, storing and moving potable water through the mains networks.

Cross-topic data

Our cross-topic data include BREEAM and environmental incidents and incorporate our efforts to meet multiple UN SDGs.

Contributing to UN SDGs:

Case study

Artist's impression of the new Birmingham Curzon Street station.

Curzon Street station

We marked the start of a five-year construction programme on HS2's flagship station in Birmingham in January 2024. Curzon Street station, built on the site of its 19th century predecessor, will play a vital role in the long-term economic future of the West Midlands. It is the first new intercity terminus station built in Britain since the Victorian era.

The station is designed to meet a BREEAM 'excellent' standard, a certification for buildings that reduce energy use and materials waste and minimise their impact on the natural environment. Featuring solar panels installed on platform canopies to generate sustainable power as well as heating, cooling and lighting systems that will reduce demand and consumption, the station will achieve net zero carbon emissions from the energy it needs to operate.

Our innovative design means there are more than 40 ways in which carbon emissions can be reduced. This will result in the station's lifetime emissions being more than 87,000 tonnes of CO_2 equivalent, or an unprecedented 55%, lower than if no measures were taken. That's the same as removing the emissions of more than 10,000 houses.

Cross-topic data

Performance commentary, data tables and notes

Performance commentary

This year again, we have had no level 1 (the most serious) environmental incidents. Despite working more hours, our level 2 incidents are also lower in number. Our weighted environmental incident rate is the lowest since we started reporting.

The Considerate Constructors Scheme (CCS) provides a rating for sites against their code of considerate practice. This year our sites continued to improve well, with a slight increase in the average score, achieving 44.2 our of a maximum score of 50.

For BREEAM, all of our contracts are either on target or achieving above the target. The BREEAM target ratings for Interchange and Old Oak Common stations are 'Excellent.' However, a design rating of more than 85% has been achieved on both, which is the threshold for the higher rating of 'Outstanding'.

Cross-topic data

Data tables and notes

Environmental incidents

Contract type	Contractor	Level 1 incidents	Level 2 incidents	Level 3 incidents	Level 4 incidents	Hours worked	Weighted Environmental Incident Rate (average over 2023–24)
MWCC	Align JV	0	0	3	16	6,418,065	0.7
	BBV JV	0	1	48	67	19,217,059	3.4
	EKFB JV	0	3	44	195	13,198,818	7.1
	SCS JV	0	1	29	109	13,219,567	3.8
Stations	BBVS JV	0	0	11	14	3,356,414	3.7
	MD JV	0	0	1	3	1,262,159	1.0
Total Phase One contracts		**0**	**5**	**136**	**404**	**56,672,082**	**4.0**

Year-on-year progress comparison

Year	Contract type	Level 1 incidents	Level 2 incidents	Level 3 incidents	Level 4 incidents	Hours worked	Weighted Environmental Incident Rate
2020–21	Total Phase One contracts	0	12	112	240	22,875,633	11.2
2021–22		0	14	122	339	38,256,008	7.8
2022–23		0	14	166	394	52,093,504	6.6
2023–24		**0**	**5**	**136**	**404**	**56,672,082**	**4.0**

Notes:

Methodology

- The reporting period for this dataset is from April 2023 to March 2024.
- Methodology: (Level 1 x 1000) + (Level 2 x 100) + (Level 3 x 10) + (Level 4 x 1) / (Total hours worked/100,000).

Definitions

- The definition of the incident levels is as follows.
  - Level 1: Incident with a significant and extensive event or failure to comply with legislation likely to result in prosecution.
  - Level 2: Incident with damage/disturbance event or failure to comply with legislation with potential to result in regulatory enforcement action.
  - Level 3: Minor incident/disturbance. Breach of monitoring threshold or trigger level attributable to site activities.
  - Level 4: Incident that resulted in no harm, loss or damage. Failure to comply with HS2 Code of Construction Practice.

Cross-topic data

Considerate Constructors Scheme (CCS)

Contract type	Contractor	CCS Score (average for all site visits in 2023–24)
MWCC	Align JV	43.7
	BBV JV	45.0
	EKFB JV	44.4
	SCS JV	45.0
Stations	BBVS JV	44.2
	MD JV	no site visits undertaken
Total Phase One contracts		**44.2**

Year-on-year progress comparison

Year	Contract type	CCS Score (average for site visits in a reporting period)
2020–21	Total Phase One contracts	45/50
2021–22		42.7/50
2022–23		44/45
2023–24		**44.2/50**

Notes:

About this KPI

- In January 2022, the Considerate Constructors Scheme monitoring and scoring system changed. Previously, sites were scored in five sections with a maximum score of 10 per section. With the new scoring system, each site is scored against three sections with a maximum of 15 points per section and a total of 45 points for a fully compliant site. A total of five points is available for innovations or best practices.
- HS2's former target for all sites was to achieve a score of at least 40 to 50. The new target is for a total score of 35 to 45 with a score of at least 11 in each of the three sections which is aligned to the relevant BREEAM Innovation credit. For more information about the new monitoring and scoring system, see this Considerate Constructors Scheme checklist.
- The Considerate Constructors Scheme is a not-for-profit, independent organisation founded to raise standards in the construction industry.
- MD JV had no CCS visits this reporting period due to the stage of their programme.
- The innovation points that may be awarded by CCS to Contracts after a successful application are not included in the overall score.

Methodology

- Where a site was assessed more than once during the reporting period, the average score was used.

Cross-topic data

BREEAM

BREEAM buildings

Contract	Target rating	Design rating (as of March 2024)	Post-construction rating (as of March 2024)
Old Oak Common (BBVS)	Excellent (70%)	Outstanding achieved 94.5%	On target
Interchange (Ove Arup & Partners International Ltd)	Excellent (70%)	Outstanding achieved 86.0%	On target
Curzon Street (WSP)	Excellent (70%)	On target	On target
Euston (Mace Dragados)	Excellent (70%)	On target	On target
London Underground Station (Mace Dragados)	Excellent (70%)	On target	On target

BREEAM Infrastructure (Projects)

Contractor	Target rating	Design rating (as of March 2024)	Post-construction rating (as of March 2024)
SCS JV	Excellent (75%)	Excellent achieved 82.6%	On target
Align JV	Excellent (75%)	Excellent achieved 78.7%	On target
EKFB JV	Excellent (75%)	On target	On target
BBV JV	Excellent (75%)	Excellent achieved 83.4%	On target

Notes:

Definitions

- BREEAM Buildings is the world's leading science-based suite of validation and certification systems for sustainable built environments and the world's leading sustainability assessment method for buildings. It recognises and reflects the value in higher performing assets across the built environment lifecycle and captures all key environmental and sustainability disciplines and measurement indicators relevant to the built environment.
- BREEAM Infrastructure (Projects): (formerly CEEQUAL) is the evidence-based sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and public realm projects.
- An 'Excellent' rating is achieved if the projected score is ≥70% for BREEAM Buildings and ≥75% for BREEAM Infrastructure: Projects.
- 'On target' is achieved if 'current projected score' minus any mandatory credits currently identified as high risk is equal to or above the mandatory target rating (70/75%) required across the HS2 programme.
- High risk definition – for a credit to be classified as high risk, one or more of the following criteria must be associated with it at the time when the quarterly progress report is submitted to HS2:
  - The evidence for the credit should have been in place prior to the current stage in the programme, hence immediate action is required to avoid losing the credit.
  - The credit, or at least one of its compliance details, is unlikely to be achievable due to non-compliance, technical uncertainty, design changes or programme changes.
  - The credit, or at least one of its compliance details, is prohibitively expensive and there is a low financial return (outside the agreed budget).
  - The credit is complex and there are a number of compliance details that are often missed or can easily be lost through not obtaining one piece of evidence or the project team have little experience of gaining the credit.

Note: Due to the long-term and entire project lifecycle coverage of both assessment types, certain credits may be assessed as high risk because the credit achievement can only be confirmed at a later stage of the construction and/or handover phase.

BSI Assurance UK Ltd Verification Opinion Verification Report

Verified as Satisfactory

Based on the process and procedures conducted, the HS2 Ltd Environmental Sustainability Report 2023/24 for the financial year ending March 2024 produced by **High Speed Two Ltd (HS2)**

- Is materially correct and is a fair representation of the sustainability datasets listed in the verification engagement section below
- Has been prepared in accordance with HS2 Ltd Technical Standards for Environmental Sustainability Reporting and the associated technical standards for the relevant datasets.

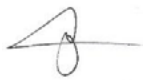
With the following caveats:

- During the course of the verification non-material errors were identified for several datasets. Where errors were identified, this was communicated to HS2 for investigation and correction.
- This verification opinion is based on the corrected datasets which were re-verified following correction.
- The verification activities conducted by BSI Assurance UK Ltd were limited to a review of historical data presented by HS2. Validation of the calculation methodology that has been used to determine some KPIs did not form part of the BSI verification engagement.

The following improvements were raised in relation to future Environmental Sustainability Progress Reports:

- The potential for material and non-material errors in future Environmental Sustainability Progress Reports presented for verification could be reduced by conducting a more rigorous internal review of the information provided by contractors under a more rigorous data quality assurance process.

Signed on behalf of BSI



Peter Hickmott

Operations Manager Internal & Supplier Audit Solutions UK&I
Issue Date: 28/6/2024

Verified as Satisfactory

Organization and Responsible party: **High Speed Two Ltd (HS2)**

Verification Objectives

To express an opinion on whether the following datasets included in the HS2 Environmental Sustainability Progress Report 2023/24 have been reported in accordance with the HS2 Technical Standards for Environmental Sustainability Reporting and are free from material error:

- Environmental Incidents
- Considerate Constructors Scheme
- BREEAM Buildings/ BREEAM Infrastructure (Projects) ratings
- Biodiversity Accounting Process
- Number of trees and shrubs planted
- Woodland Fund
- Whole life carbon footprint
- Energy and fuel consumption data
- Air quality
- Responsible sourcing – timber, concrete, steel and other materials
- Construction and demolition waste
- Excavated material
- Beneficial reuse of timber
- Water Usage

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The scope of the verification engagement was data related to the HS2 route being constructed between London and the West Midlands.

Note: The Biodiversity Accounting Process also includes the baseline for the Phase 2a route to Crewe; the number of trees and shrubs planted and the whole life carbon footprint data includes some Phase 2a contracts.

Materiality Level: As determined in the professional judgement of the verifier relevant to the dataset being evaluated.

Level of Assurance: Reasonable Verification evidence gathering procedures:

- Evaluation of the monitoring and controls systems through interviewing employees, observation & inquiry
- Verification of the data through sampling, recalculation, retracing, cross checking and reconciliation
- Interview of HS2 Subject Matter Experts and selected main work civil/station Contractors responsible for submitting data to HS2

Verification Standards

The verification was carried out in accordance with the principles contained in ISO 14064-3:2019, ISO 14065: 2013 and ISO14016:2020

Note: HS2 is responsible for the preparation and fair presentation of the Environmental Sustainability Progress Report in accordance with the agreed criteria. BSI Assurance UK Ltd is responsible for expressing an opinion on the information provided in the document based on the verification findings.

Global Reporting Initiative content index

Statement of use

HS2 Ltd has reported the information cited in this Global Reporting Initiative (GRI) content index for the period April 2023 to March 2024, with reference to the GRI Standards. Information cited in this Index may be found across the Annual Report and Accounts (ARA) and the Environmental Sustainability Progress Report (ESPR).

GRI index			
Disclosure	Disclosure title	Location	Direct answers, notes and omissions
GRI 1: Foundation 2021			
GRI 2: General Disclosures 2021			
2-1	Organisational details	• ARA page 80 (Notes to the financial statements)	High Speed Two (HS2) Limited Two Snowhill Snow Hill Queensway Birmingham B4 6GA Operational in England.
2-2	Entities included in the organisation's sustainability reporting		High Speed Two (HS2) Limited plus the supply chain where applicable.
2-3	Reporting period, frequency and contact point	• ESPR page 2 (Executive summary) • ESPR page 9 (Scope and methodology) • ESPR page 50 (back page)	
2-4	Restatements of information		There are no restatements of information in this report.
2-5	External assurance	• ESPR pages 43 -45 (BSI Independent Assurance Statement)	
2-6	Activities, value chain and other business relationships	• ARA page 9 (Strategic Report)	
2-7	Employees	• ARA page 55 (Remuneration and Staff Report)	
2-9	Governance structure and composition	• ARA page 36 (Governance Statement) • ESPR page 7 (Our approach)	
2-11	Chair of the highest governance body		The Chair of the HS2 Ltd Board is a non-executive position.
2-12	Role of the highest governance body in overseeing the management of impacts	• ESPR page 7 (Our approach)	

Global Reporting Initiative content index

GRI index			
Disclosure	Disclosure title	Location	Direct answers, notes and omissions
2-13	Delegation of responsibility for managing impacts	• ESPR page 7 (Our approach)	The Environmental Sustainability Committee (a sub-Board committee) is responsible for environmental impacts.
2-14	Role of the highest governance body in sustainability reporting	• ESPR page 7 (Our approach)	The Environmental Sustainability Committee (a sub-Board committee) is responsible for the ESPR.
2-15	Conflicts of interest	• ARA page 33 (Director's report)	
2-19	Remuneration policies	• ARA page 55 (Remuneration and Staff Report)	
2-20	Process to determine remuneration	• ARA page 55 (Remuneration and Staff Report)	
2-22	Statement on sustainable development strategy	• ESPR page 5 (Our commitment)	
2-23	Policy commitments	• ESPR page 5 (Our commitment)	
2-24	Embedding policy commitments	• ESPR page 7 (Our approach)	
2-25	Processes to remediate negative impacts	• ESPR page 8 (Our performance)	
2-29	Approach to stakeholder engagement	• ESPR page 7 (Our approach)	
3-1	Process to determine material topics	• ESPR page 7 (Our approach)	
3-2	List of material topics	• ESPR page 7 (Our approach)	
HS2 Green Corridor			
3-3	Management of material topics	• ESPR pages 11-16 (Green corridor case study and data)	
GRI 304: Biodiversity 2016			
304-2	Significant impacts of activities, products and services on biodiversity	• ARA page 16 (Key performance indicators, Environmental) • ESPR pages 11-16 (Green corridor case study and data)	
Climate change			
3-3	Management of material topics	• ESPR pages 17-22 (Climate change case study and data)	
GRI 302: Energy 2016			
302-1	Energy consumption within the organisation	• ARA page 19 (Environmental Sustainability Progress Report, related consumption) • ESPR page 22 (Energy and fuel consumption data)	Corporate energy consumption is provided in the ARA. Supply chain energy and fuel consumption data is included in the ESPR.

Global Reporting Initiative content index

GRI index			
Disclosure	Disclosure title	Location	Direct answers, notes and omissions
GRI 305: Emissions 2016			
305-1	Direct (Scope 1) GHG emissions	• ARA pages 18-19 (Environmental Sustainability Progress Report)	Corporate emissions information is provided in the ARA.
305-2	Energy indirect (Scope 2) GHG emissions	• ARA pages 18-19 (Environmental Sustainability Progress Report)	Corporate emissions information is provided in the ARA.
305-3	Other indirect (Scope 3) GHG emissions	• ARA pages 18-19 (Environmental Sustainability Progress Report) • ESPR pages 17-22 (Climate change case study and data)	Corporate emissions information is provided in the ARA. Supply chain emissions are in the ESPR.
305-5	Reduction of GHG emissions	• ESPR pages 17-22 (Climate change case study and data)	
Community experience			
3-3	Management of material topics	• ESPR pages 23-27 (Community experience case study and data)	
Historic environment			
3-3	Management of material topics	• ESPR page 28 (Historic environment case study)	
Responsible consumption and production			
3-3	Management of material topics	• ESPR pages 29-37 (Responsible consumption and production case study and data)	
GRI 301: Materials 2016			
301-1	Materials used by weight or volume	• ESPR pages 30-33 (Responsible consumption and production data)	Tonnes of timber, steel, concrete and 'other material' provided.
301-3	Reclaimed products and their packaging materials	• ESPR pages 35-36 (Responsible consumption and production data)	Excavated materials and beneficial reuse of timber provided.
GRI 303: Water and Effluents 2018			
303-5	Water consumption	• ARA page 21 (Environmental Sustainability Progress Report) • ESPR page 37 (Water usage)	Corporate water consumption is provided in the ARA. Supply chain water consumption is included in the ESPR.
GRI 306: Waste 2020			
306-3	Waste generated	• ARA page 20 (Environmental Sustainability Progress Report) • ESPR page 34 (Construction and demolition waste)	Corporate waste information is provided in the ARA. Supply chain waste generation is in the ESPR.
306-4	Waste diverted from disposal	• ARA page 20 (Environmental Sustainability Progress Report) • ESPR page 34 (Construction and demolition waste)	Corporate waste information is provided in the ARA. Supply chain waste generation is in the ESPR.

This publication is available at www.gov.uk/official-documents

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