



**Sharon Meek, National Rail  
Manager**

# Flex MSE®

Constructing Our Future



# Flex MSE<sup>®</sup> Components

Flex MSE<sup>®</sup> GTX BAG



Flex MSE<sup>®</sup>

INTERLOCKING PLATE



# Concrete and Flex MSE®

Construction – Building the Wall



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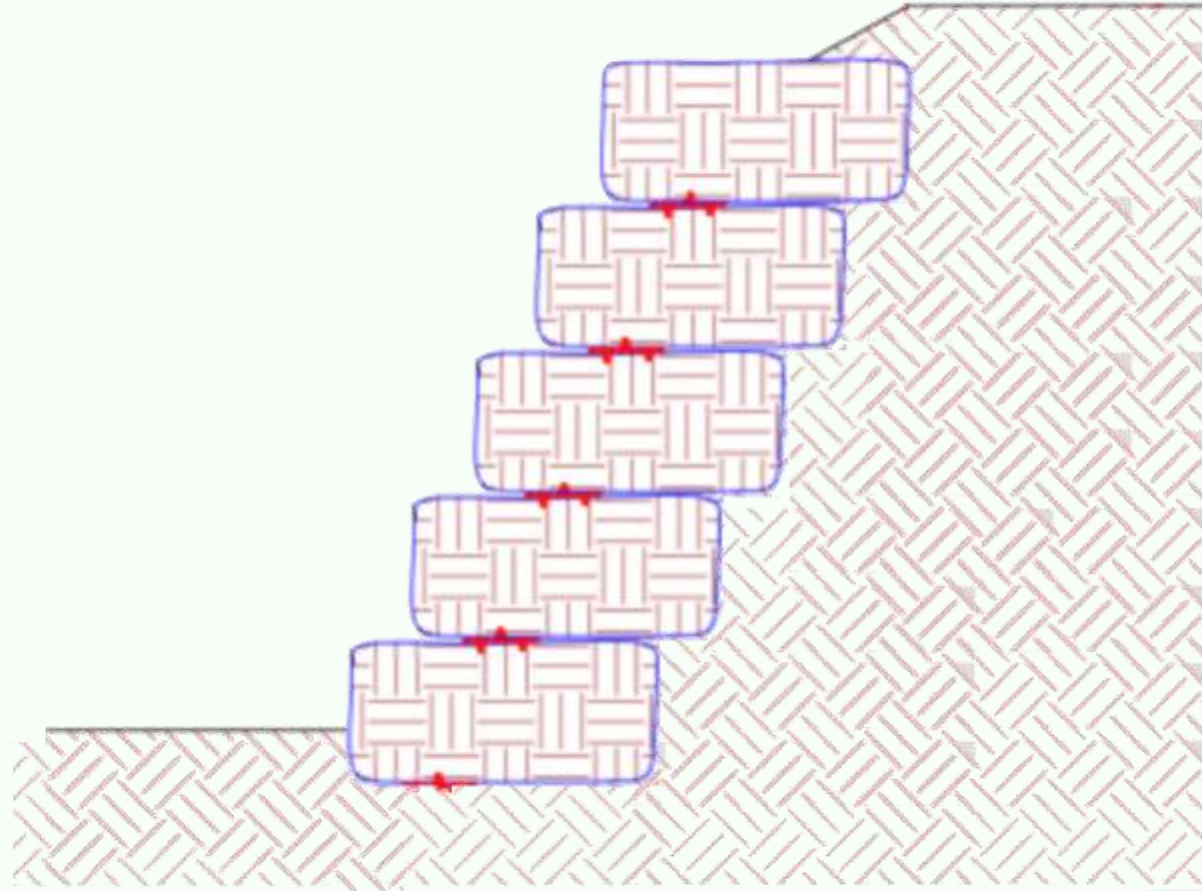


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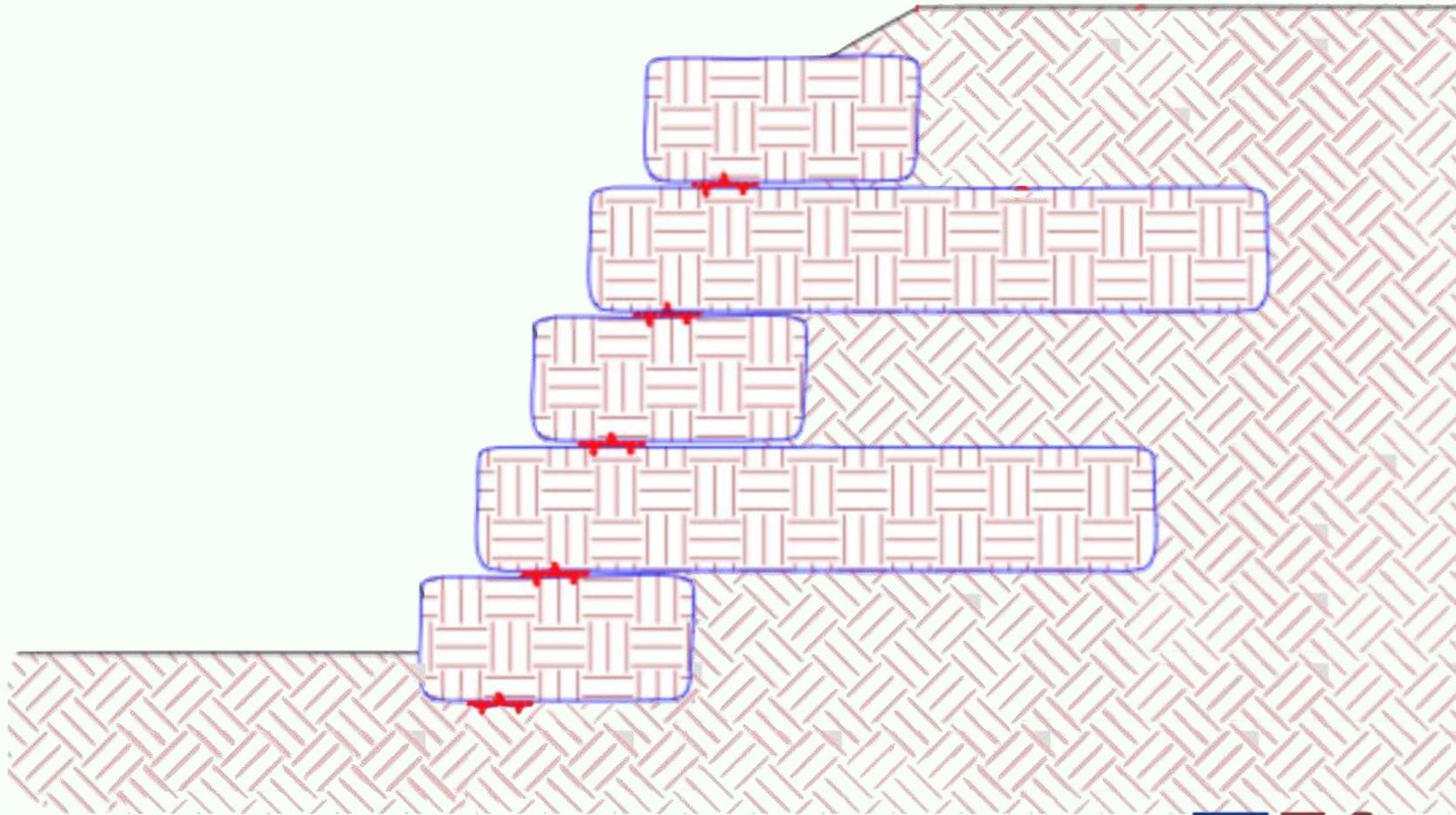
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- BREEAM compatible
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- Supplied & installed at ~60% the cost



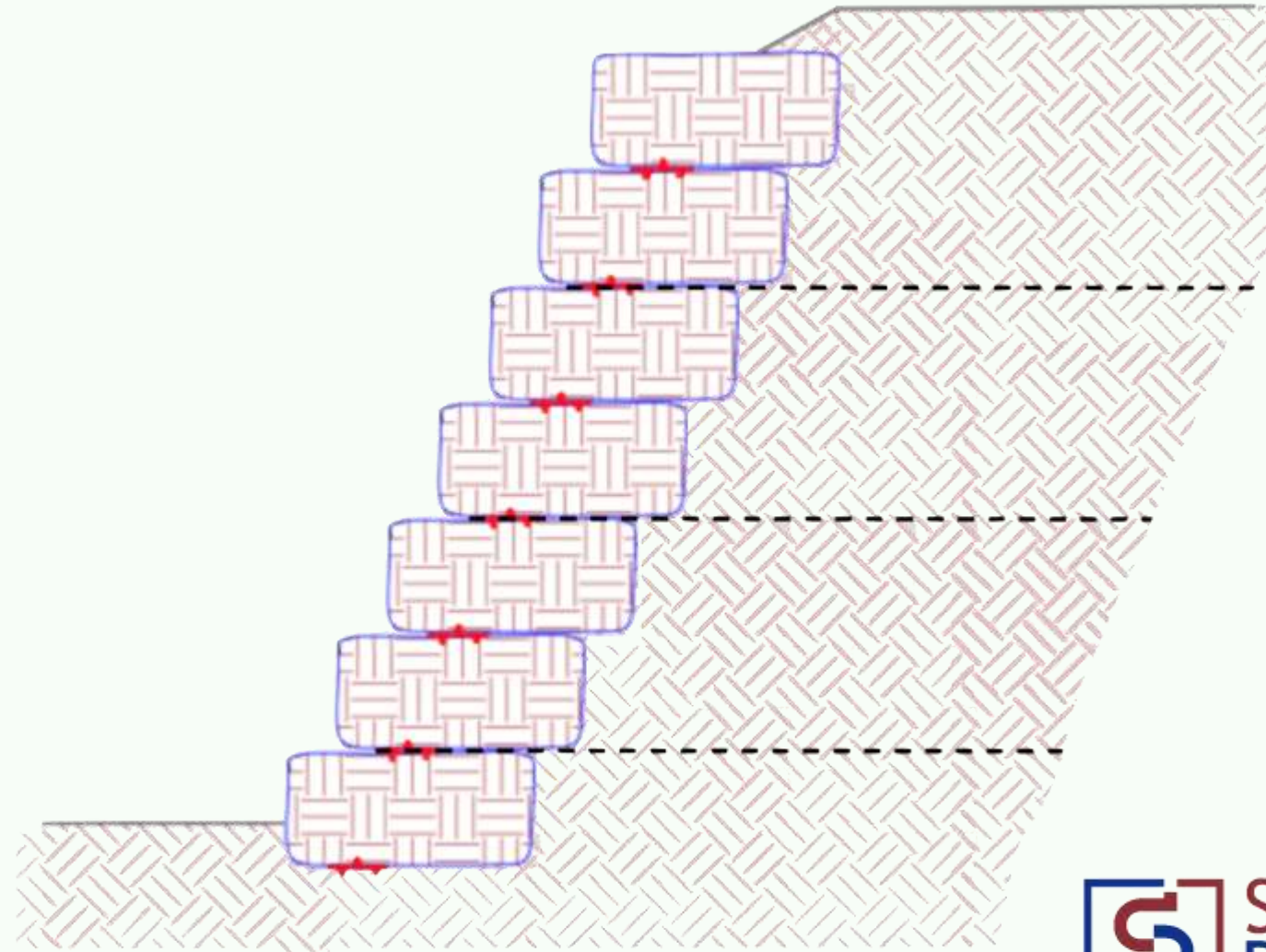
# Reinforced Earth – Gravity Walls $\leq 600\text{mm}$



# Reinforced Earth – Gravity Walls $\leq 1,200\text{mm}$



# Reinforced Earth – Excavate & Backfill >1,200mm



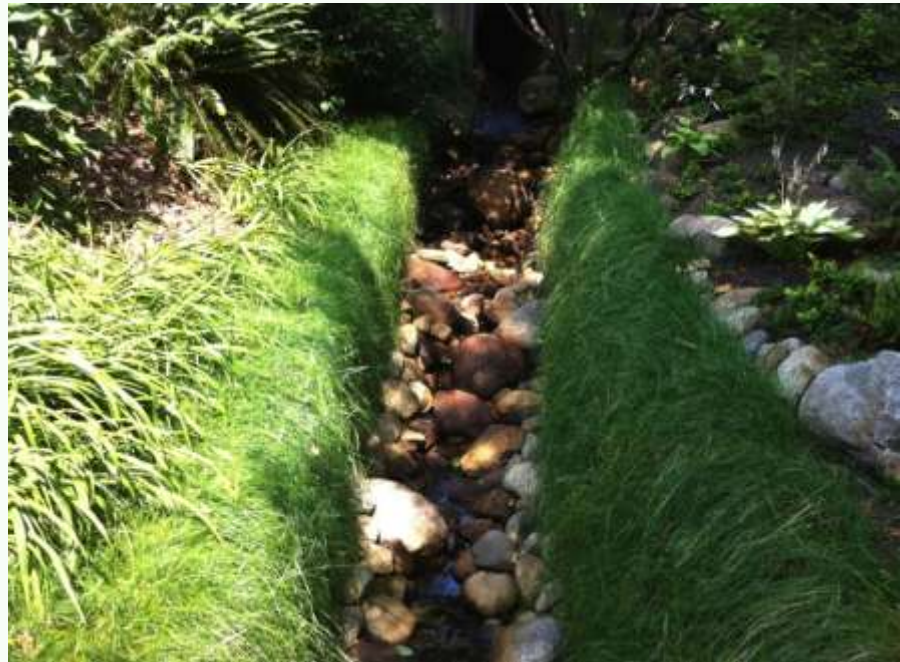
# Infrastructure







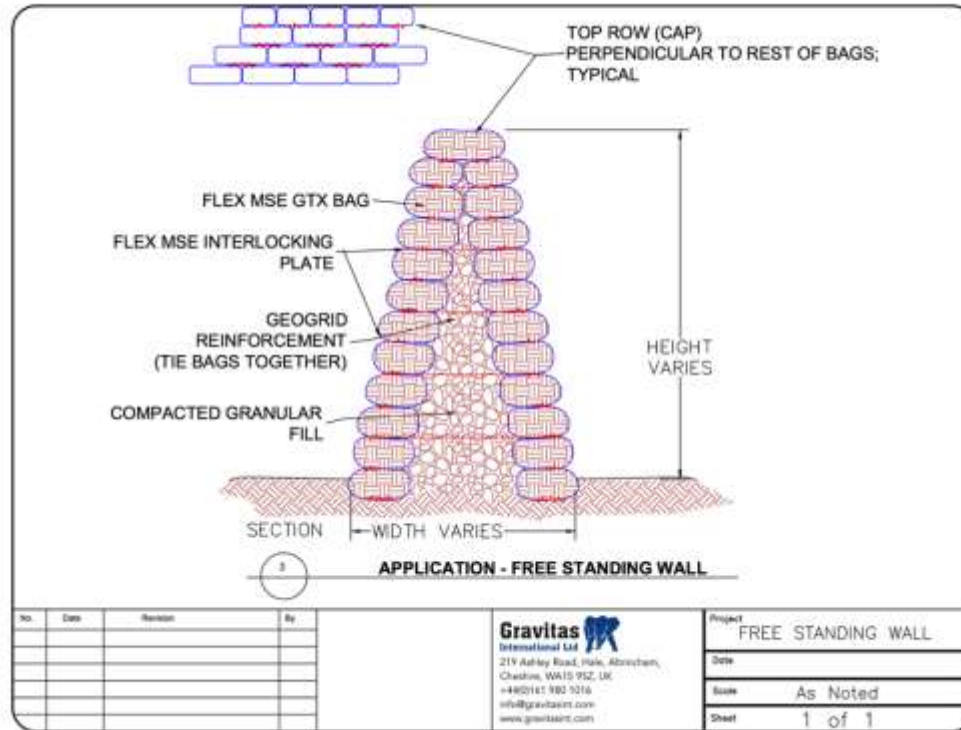








# Acoustic Barriers



# Maintenance



# RETAINING WALL STRUCTURE COSTS

(Indication Only – Costs Vary per Site & Installation Type)

- Gabion, Lock Block (no Geogrid) up to 3 courses high (2.25 m to 3 m): **£320 - £460/m<sup>2</sup>**
- Gabion, Lock Block w/ Geogrid and/or Soil Nails/Anchors: **£610 - £800 /m<sup>2</sup>**
- Binwalls and Greenwalls: **£610 - £750 /m<sup>2</sup>**
- Reinforced Earth Walls: **£540 - £800 /m<sup>2</sup>**



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AVERAGED ALL-IN COST FOR  
Flex MSE<sup>®</sup> SUPPLY, INSTALL & HYDROSEEDDED:

**£200 - £240 /m<sup>2</sup>**

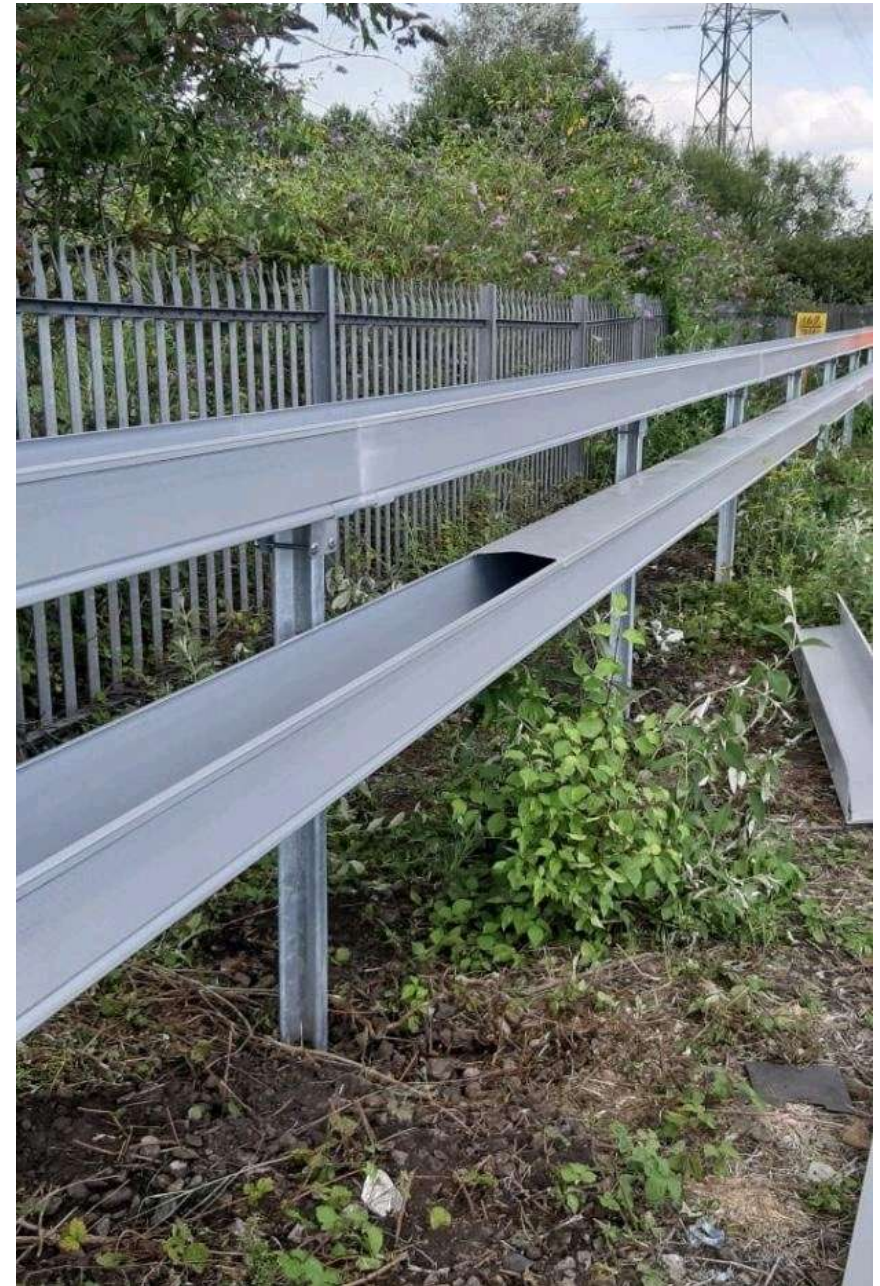
# RETAINING WALL STRUCTURE COSTS

(Indication Only – Costs Vary per Site & Installation Type)

- Gabion(no Geogrid) 3 courses high **£396 - £1,380/m<sup>2</sup>**
- Gabion w/Geogrid and/or Soil Nails/Anchors: **£1,830 - £2,400 /m<sup>2</sup>**
- Binwalls and Greenwalls: **£2,440 - £3,200 /m<sup>2</sup>**
- Reinforced Earth Walls: **£1,080 - £1,600 /m<sup>2</sup>**

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# TECHNO-CRETE

StrucSol Construction solutions

- 500 meters Handrail
- 1 meter post centres
- 1500 bags of postmix
- 10,000 litres water
- 30 tonnes



- 500 meters Handrail
- 1 meter post centres
- 500 bags of Technocrete
- No water
- 900 kgs





85% recycled and sustainably sourced oil

Over 70% less CO<sup>2</sup>

Save 10kg of CO<sup>2</sup> per 300x600mm hole

100 holes = 6 tonnes of concrete post mix

## The sustainable development vision



### A railway fit for the future

We believe that good management of our economic, social and environmental impacts is key to maintaining a strong and prosperous business. We will drive efficiency, build trust and create long term value for our stakeholders.

#### Our strategic objectives

This section sets out our strategic objectives which will underpin the delivery of our vision. The progress we make in achieving our vision will be determined by the outcomes we need to achieve, the outputs we need to deliver, and the activities we need to undertake.

#### Outcome objectives

To deliver our vision of a railway fit for the future, we have set the following outcome objectives:

- Rail travel is a cornerstone of economic growth
- Rail travel supports a greener environment
- Rail travel improves social and economic opportunities
- Sustained community support recognising the importance of rail
- Network Rail as a great place to work

#### Output objectives

To achieve our strategic outcome objectives, we have set the following strategic output objectives:

- Deliver outstanding value for money to taxpayers, customers and funders
- Make efficient use of natural resources, innovate with sustainable materials, and reduce, reuse or recycle any waste

- Be energy efficient across our infrastructure, operations whole
- Use low carbon energy sources to minimise rail's carbon footprint
- Make our network and our operations resilient to future changes in the climate
- Manage our land sustainably, enhancing its ecological diversity, and increasing its economic and social value
- Protect land, air and water from pollution and other negative impacts
- Improve the accessibility and inclusivity of stations and rail services, enabling more people to enjoy rail travel
- Make a lasting positive contribution to our neighbours and the communities we serve
- Respect the rights of our employees and those working in our supply chain
- Work together so that everyone returns home safely at the end of every day
- Invest in our people and develop their skills and talents within a culture of diversity, inclusion and mutual respect

#### Activity objectives

To achieve our strategic output objectives we have set the following activity objectives which will provide the focus for the work we will need to undertake.

- Communicate the role rail plays in making Great Britain more sustainable
- Communicate the benefits of a more sustainable approach to business
- Focus our investment on enhancing the sustainability of the railway
- Design sustainability into everything we do
- Innovate and introduce technology to make us more sustainable
- Invest in our capacity and capability to make us more sustainable
- Simplify processes to make us more efficient
- Risk assess our operational activities to make them more sustainable
- Learn from all incidents so we continuously improve
- Educate the public on the sustainable nature of rail travel
- Put in place the foundations to deliver and maintain a sustainable business through our business functions and routes



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