Green Solutions:

Cementitious Binders

How we can re-use site waste to lower CO2 emissions

telent NET ZERO

Telent Green Solutions Working Group

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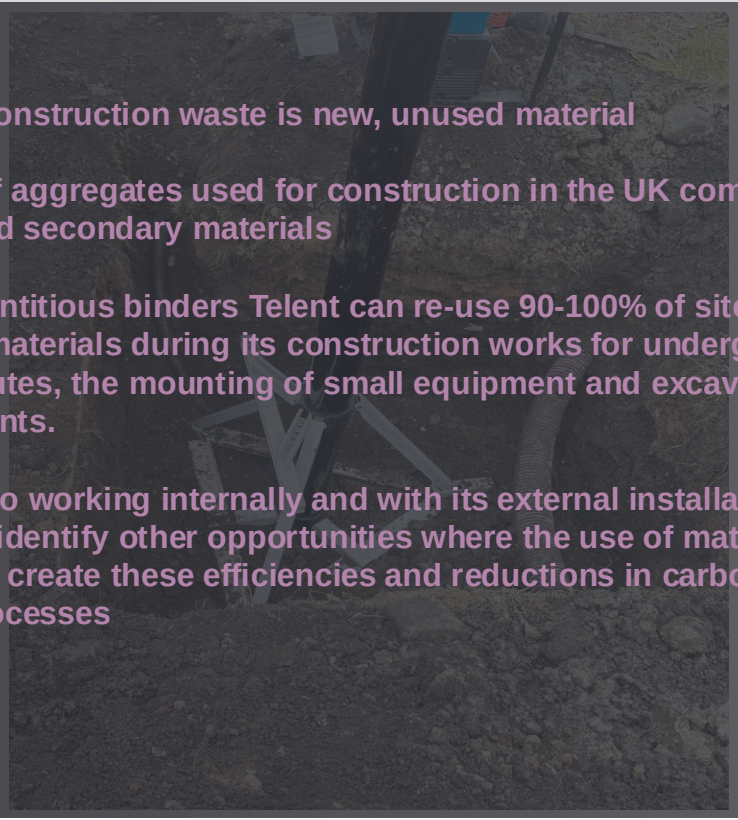
talent with technology

Green Solutions: Use of Cementitious Binders

Telent's Soil Waste: Telent generates a significant amount of soil waste during construction activities, especially when excavating for foundations and underground services.

Contaminated Waste: This soil waste is typically classified as contaminated and requires disposal at licensed landfills.

Environmental Impact: Transporting the waste to landfills leads to wasted HGV journeys and increased CO2 emissions. Additionally, Telent often needs to import materials like concrete and aggregates, further impacting the environment.



13% of all construction waste is new, unused material

Only 28% of aggregates used for construction in the UK comes from recycled and secondary materials

Using cementitious binders Telent can re-use 90-100% of site excavated materials during its construction works for underground services routes, the mounting of small equipment and excavation reinstatements.

Telent is also working internally and with its external installation partners to identify other opportunities where the use of material binders can create these efficiencies and reductions in carbon emitting processes

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Green Solutions: Our Vision

Telent have committed to achieving net-zero GHG emissions by 2050 through the Science Based Targets initiative (SBTi)

This includes emissions created indirectly by our entire value chain, from raw material extraction to customer use of our products and services - providing sustainable whole-life solutions to our customers

In 2023, we set a near-term target to reduce all emissions by an average of **50%**, no later than 2030

We commit to zero waste to landfill by 2025 and an 80% recycling rate across all facilities and operations

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SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

THE NET ZERO STANDARD
APPROVED NET-ZERO TARGETS

SILVER 2022 ecovadis Sustainability Rating

Green Solutions: GRP post install using cementitious binders Edinburgh

Telent has been trialling the use of excavated materials binders at its rail centre in Slateford, Edinburgh to mount lightweight GRP posts for carrying equipment such as CCTV cameras and WIFI access points and also for infill of excavated duct route

This will form part of a test facility where Telent can test and research technology and process to roll out to the wider rail networks and the rest of Telent's businesses.

The GRP post and base weighs just 15kg and can be carried by a single person.

This installation method, because of it's lightweight nature and excavated material re-use can be deployed quickly by a small team, with no need for heavy plant and with very little disruption to the operation of the railway or other transport infrastructure at reduced costs and lower CO2 emissions than traditional methods

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Green Solutions: Use of cementitious Binders

The use cementitious binders will support Telent in its drive towards net zero by

Reducing transport and tipping costs

Re-use of excavated materials means the waste is kept on site and re-used rather than tipped.
Less waste improves whole life costs and sustainability, cementitious bound material can be re-used.

Emissions reductions

Reductions in use of heavy plant and HGVs for transport and reductions in primary materials such as aggregate and concrete mean decreased CO2 emissions during project lifetimes

Hazardous waste reductions

All excavated materials can be re-used and there is no need to separate excavated materials

In 2023, during construction activities for just one rail project Telent transported 150 cubic metres of inert materials to licenced landfill.

All excavated material from rail side and platform based areas has to be considered contaminated.

These journeys could have been avoided by re-using the materials for reinstatement, base works, fencing and handrails.

Total carbon for each kg of soil waste sent to landfill is 19.517kgCO2e*

* UK Government GHG Conversion Factor for Company Reporting 2023 Condensed Set Version "Waste Disposal

Green Solutions: Use of cementitious Binders

Potential **Green Saving per journey: 154kgCO2e**

Status:

In consideration for applications across Telent construction portfolio.

Sustainability:

Positive change includes:

Reduction in use of landfill, fuel cost and CO2 emissions

Future Plans

Plans for use

Fencing/Gates
Underground services
Lightweight poles and equipment

Green Solutions: Use of cementitious Binders

Typical reductions per load to landfill

Savings in Fuel Cost

Per 10yd of Spoil to landfill

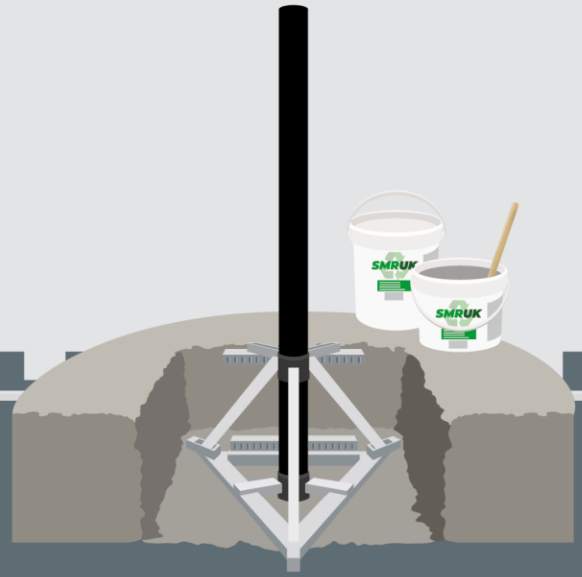
(Assumed rate: £1.51per litre @ 10mpg:

10 miles = 1gal = 4.55L = £6.87)

£6.87
per Load

from **£68.70**
per 10 Journeys

to **£13.74**
For 2 journeys (Typically an 80% reduction)



Savings CO_2e

(Typically using Binders the reduction in journeys to landfill is 80%)

153kg
per Load

from **1530kg**
per 10 Journeys

to **306kg**
For 2 journeys (Typically an 80% reduction)

Calculations are *according to UK Government GHG Conversion Factors for Company Reporting 2023

A direct multiplication of journeys per project and then projects per year can be used to calculate the total carbon per year

Green Solutions: Use of cementitious Binders

Scaling up across projects

Savings in Fuel Cost

(5 Projects with 20 journeys per project)

£549*

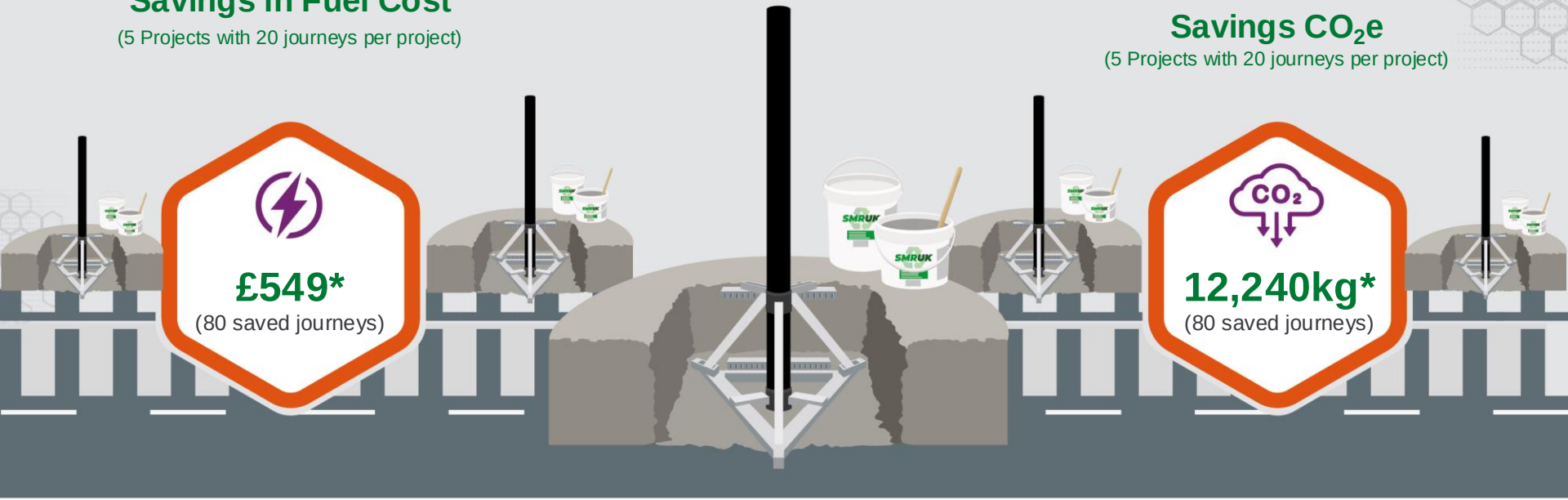
(80 saved journeys)

Savings CO_2e

(5 Projects with 20 journeys per project)

12,240kg*

(80 saved journeys)



Calculations are *according to UK Government GHG Conversion Factors for Company Reporting 2023

A direct multiplication of journeys per project and then projects per year can be used to calculate the total carbon per year

Green Solutions: Data & Technical Specification

PRIMARY EQUIPMENT

Standard large 10yd skip HGV used for all excavated materials

Date is from journey analysis over the year 2023

The cost of skip is not included in the calculations

Calculations are *according to UK Government GHG Conversion Factors for Company Reporting 2023

ASSUMPTIONS

- All excavations are hand dug
- The carbon emissions have been calculated per journey
- Each journey consists of the transportation of a 10 cubic yard skip (7.64 cubic metres)
- A cubic metre of waste soil weighs approximately 1000kg. (This can vary upto 1200kg depending on moisture content)
- Waste disposal of soils carbon conversion factor of 19.517kg CO2e per metric tonne (UK Government GHG Conversion Factor for Company Reporting 2023 Condensed Set)

CARBON

- Carbon savings are 7.84 x 19.519 = **153kg CO2e per journey**
- For landfill, CHG conversion factors include collection, transportation and landfill emissions (‘gate to grave’)

FUEL

- Fuel savings are based on a 10yd skip lorry with an economy of 10mpg
- A standard journey of 10 miles to a licenced waste facility
- Assuming a cost of diesel per litre of £1.51per litre @ 10mpg: 10 miles = 1gal = 4.55L = **£6.87**

SCALING UP

- A direct multiplication of journeys per project and then projects per year can be used to calculate the total carbon per year

All figures in this document are correct at the time of writing. Telent has made every attempt to ensure the accuracy and reliability of the information provided, however, the information is provided "as is" without warranty of any kind. Telent does not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information contained on this document.

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