Balfour Beatty
Ground Engineering

SUSTAINABILITY
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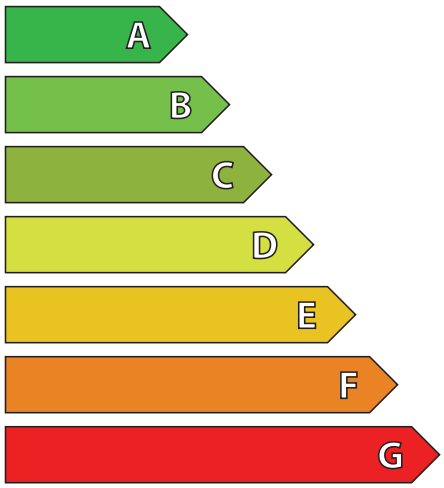
SUSTAINABLE SOLUTIONS:
MINI PILING

Mini Piles are used when the access or working area is restricted in size. By definition they are small diameter piles and so the amount of concrete / grout / steel is limited.

SUSTAINABILITY CATEGORY	SOLUTION OFFERING	
Environment	✓ ✓	Amount of concrete required is limited Bottom driven steel tubes produce no spoil
Community	✓ ✓	Minimal noise and vibration makes them ideal for use in environmentally sensitive areas, close to buildings Can be used effectively in small or restricted areas
Economic	✓ ✓	Mini piles use less concrete and steel than other main piling systems, so reducing the foundation carbon footprint Steel Tube Mini piles can be used as 'monopiles' to support new steel structures (eg new mezzanine floors), reducing number of piles and the need for pile caps

BBGE PRODUCT SUSTAINABILITY RATING	HOW TO IMPROVE RATING	
 • Bottom Driven Steel Tube • Self-Drill Micro Pile • Auger Bored Minipiles • Drilled Minipiles	✓ ✓ ✓ ✓	Changing Mini Piling technique from Auger Bored to Self-Drill or Bottom-Driven Steel Tube Reducing the diameter of the Mini Pile Using cement replacement in the concrete/grout Consider using Ground Improvement if feasible

Note: The above products have been scored on a rating system, developed by BBGE, that consder the following items: Concrete; Steel; Transport; Equipment and Spoil. A BBGE Technical Paper 'Sustainability in Foundations' is available on request.

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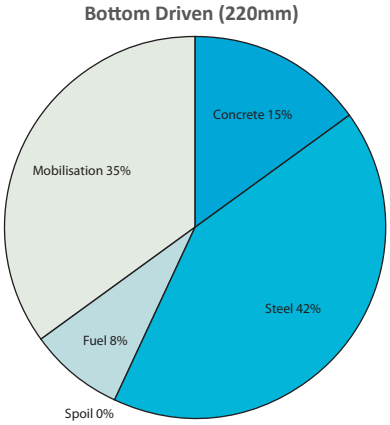
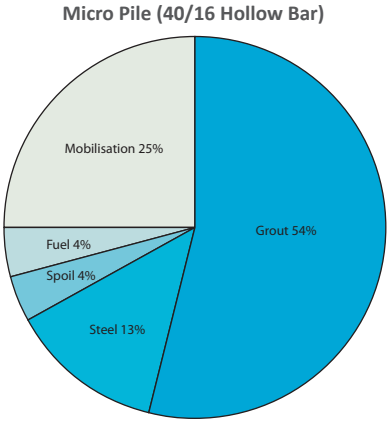
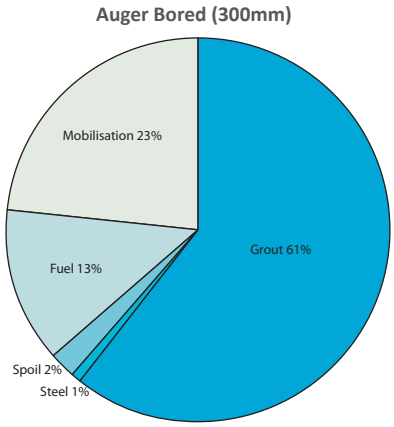
Did you know...

// COMPARISON OF TECHNIQUES

Using our in-house Carbon Calculator system, we have been able to compare the CO_2 produced for different Mini Piling systems. On one project in Central London with restricted access, a comparison between a Self-Drill Micro Pile, a Bottom-Driven Steel Tube Mini Pile and an Auger Bored Mini Pile was undertaken. The results showing the percentage of carbon dioxide embedded and emitted for each piling technique are shown in the charts below.







The table below shows the breakdown of the figures from our BBGE Carbon Calculator which highlights the difference in the total carbon dioxide embedded and emitted for each piling technique.

Type	Grout / Cement	Steel	Spoil	Fuel	Mobilisation	Total
Bottom Driven	0.16te	0.44te	None	0.08	0.36	1.13te
Micro Pile	0.79te	0.20te	0.066	0.06	0.36	1.59te
Auger Bored	1.94te	0.04te	0.066	0.4	0.72	2.91te

A copy of the technical paper giving further details of this project is available upon request. The paper is titled 'Carbon Footprint Comparison of Mini and Micro Piling Techniques'.

FOR FURTHER INFORMATION CONTACT:

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