



Midlands Highway Alliance Plus
MHA, MSIG, WMHA: Moving Forwards Together

Carbon Reduction and Value

Wednesday 22 June 2022

Innovations and Initiatives

Stuart McLeod, Balfour Beatty





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Stuart McLeod

Energy Manager –
Operations



Pete Stevens

Energy Manager –
Innovations



Parsa Arani

Project Engineer -
Energy



Mehrnoosh Khan

Energy Graduate



Tony Lane

Energy Manager -
HS2

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Demand Management



Power Profiler



- Specification of cost-effective low carbon power solutions for project compounds
- Presents lifecycle carbon and cost analysis with business case for recommended options
- Streamlines the quotation process for plant hire and mains connections enabling faster site mobilisations
- Designs and communicates electrical configuration for ease of installation
- Highlights social value of low carbon site set-ups
- Fully connected to O365 to provide reporting at project or SBU level





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Environmental Benefits

- Improved Insulation
- Improvements to DHW
- Showers fed from 50 litre 1kw water tank
- PIR system controls air extraction
- Pressure regulated and flow-controlled taps
- All units are fitted with additional consumer unit to integrate EcoNet
- Optional rainwater harvesting

EcoSense Cabins



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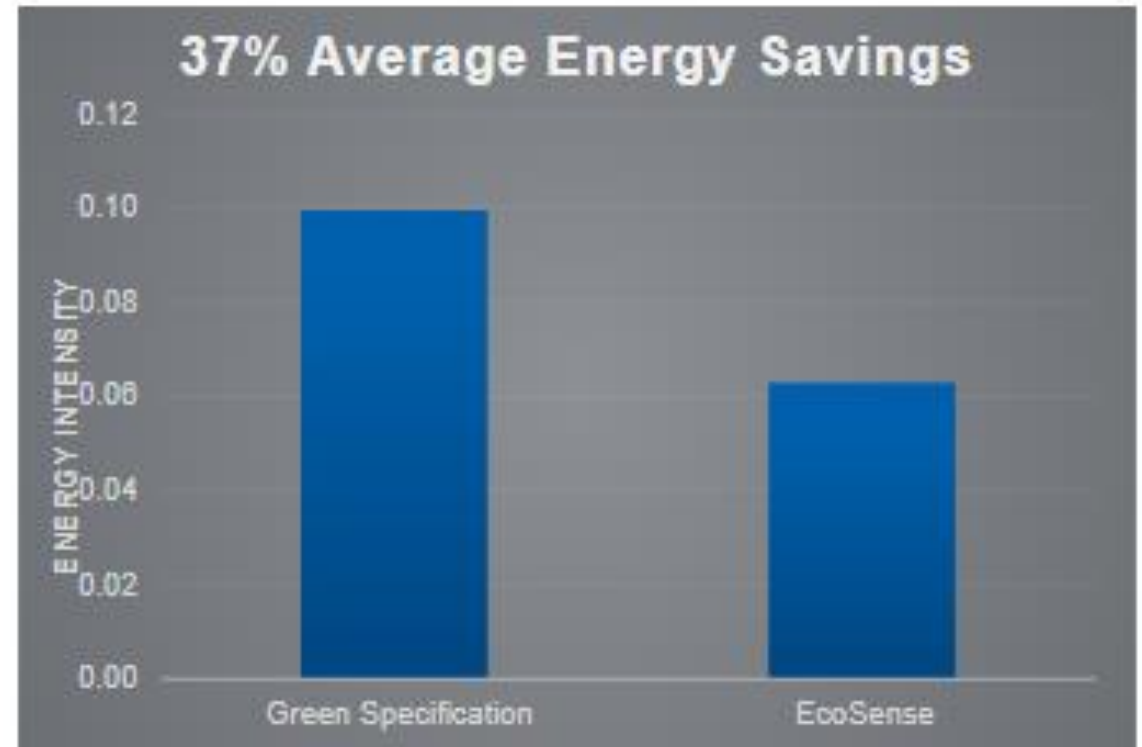


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EcoSense Savings

Site	Energy Intensity	Saving (%)
Aylth	0.09	
Westfield	0.13	
CCWEL	0.07	40%

Site	Energy Intensity	Saving (%)
Aylth	0.07	
Westfield	0.11	
Dalgety Bay	0.06	33%



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Modular Building Energy Efficiency

El Bjorn Dehumidifiers



Centrally controlled air conditioning heat pumps



PIR + Infra Red



Waterless Urinals



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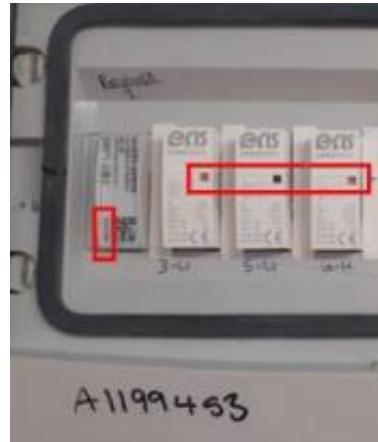
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EcoNet



GENERATOR: STARTED 100 kVA 80 kW High Load Generator (100 kVA 80 kW, 80 kVA)

GENERATOR 1 Enabled STARTED 100 kVA 80 kW 80 kVA

GENERATOR 2 Enabled STOPPED 40 kVA 32 kW 32 kVA

ACTIVE SUPPLY BAND CHANGE UP ONLY (00:00:00)

Per Phase



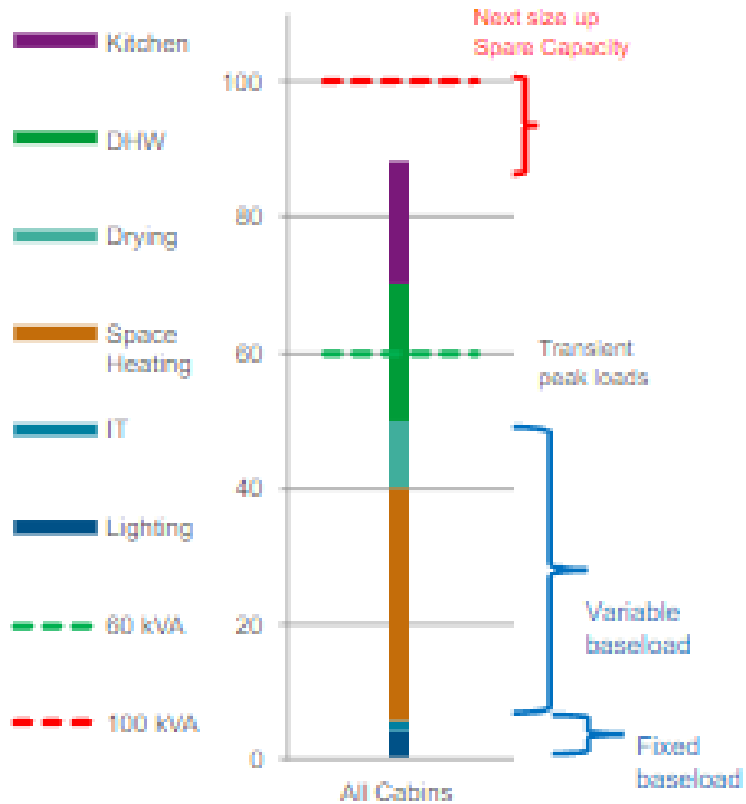
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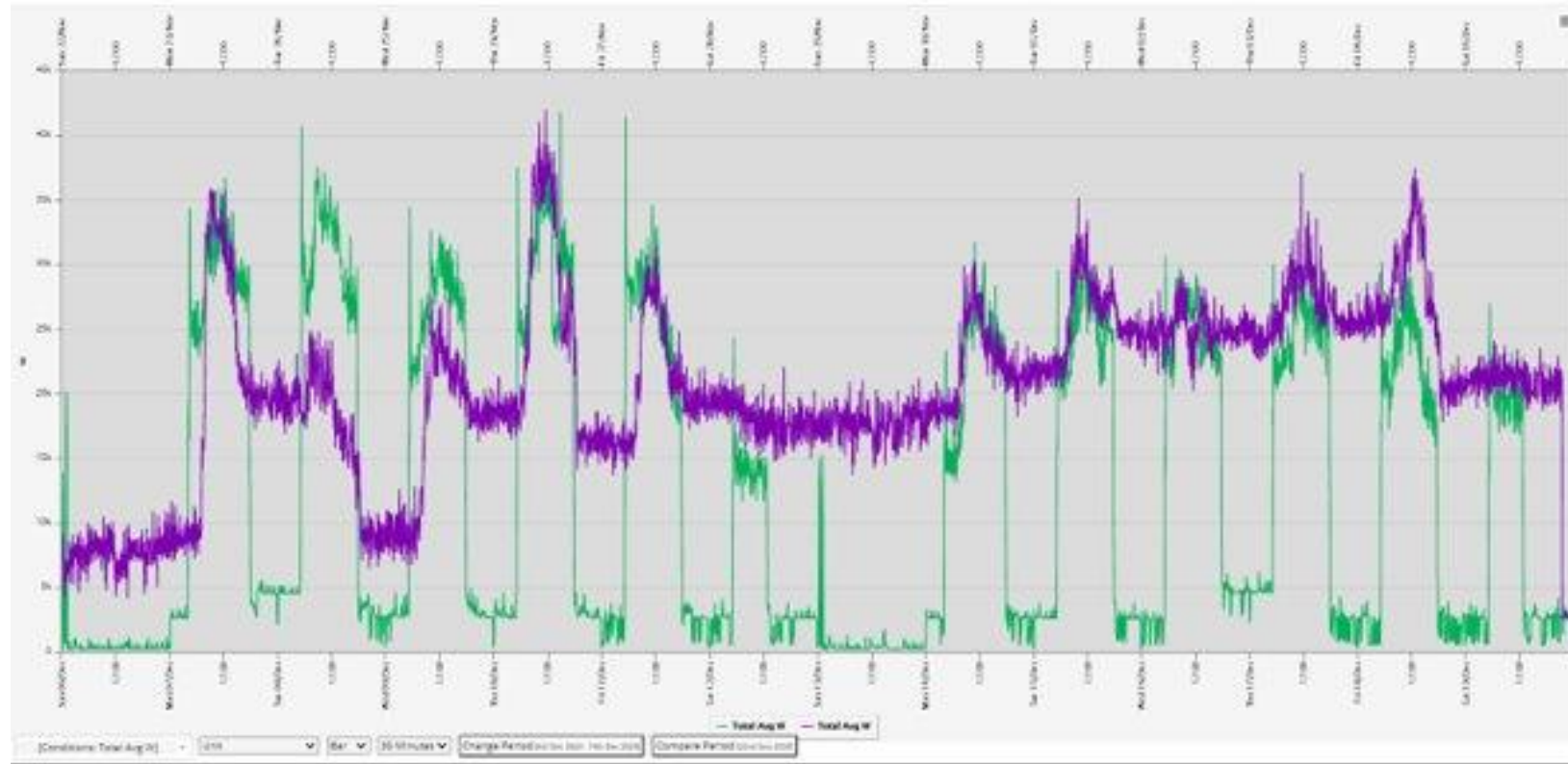




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EcoNet



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Vehicle Telematics

Key Achievements

34% reduction in equipment operating hours

37% reduction in fuel consumption

34% fewer on site labour hours – boots on the ground in front of the bucket or behind the blade



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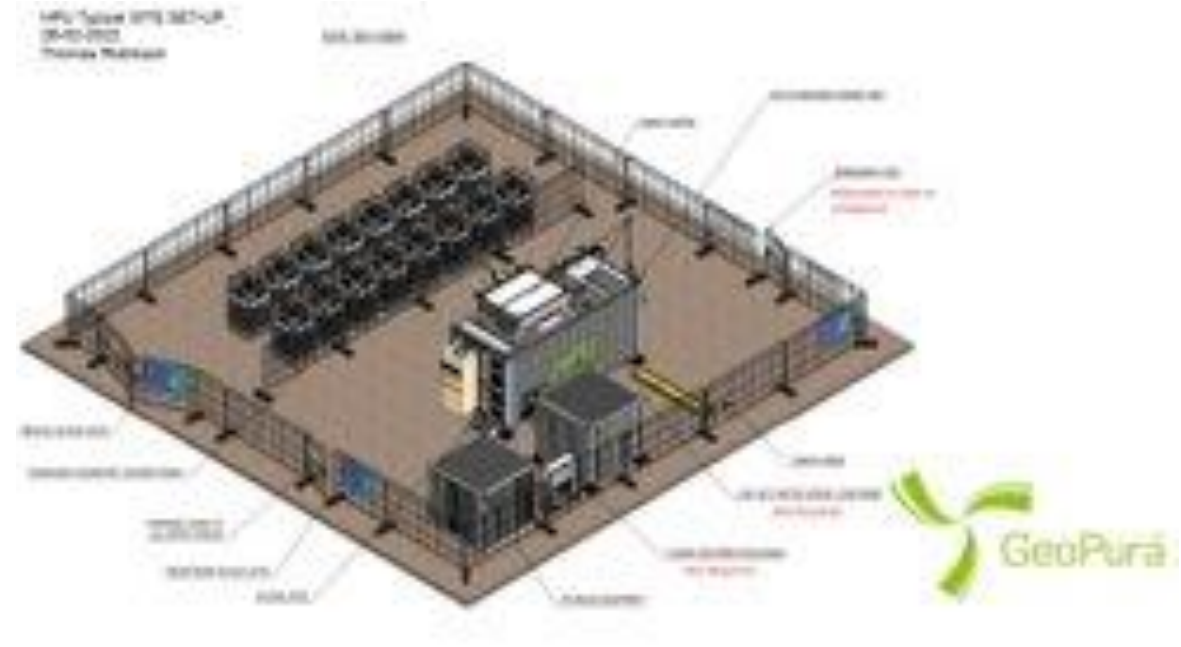
Alternative Fuels





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GeoPura Hydrogen Fuel Cell



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Hydrogen Gas Turbine



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Hydrogen Gas Turbine



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Battery Operated Hand Tools



The range of battery hand tools available covers:

- › Drilling
- › Cutting
- › Grinding
- › Welding
- › Sanding
- › Concreting
- › Bolting
- › Breaking
- › Compaction
- › Vegetation Clearance and gardening



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100% Sustainable Options by 2030

Model	Range	Est. Payload	Battery Size	Charge Time
Renault Kangoo van ZE I 33 Business with conversion	124 summer, 75 winter	660kg	33kw	6 hours on 7kw
Renault Kangoo maxi ZE van with conversion	124 summer, 75 winter	465kg	33kw	6 hours on 7kw
Renault Kangoo Maxi crew van cab with conversion	124 summer, 75 winter	499kg	33kw	6 hours on 7kw
Renault Master SL31 I Panel Van SWB with conversion	75 summer, 50 winter	910kg	33kw	6 hours on 7kw



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Any Questions?

