



# Southern Shield

## Good/ Best Practice feedback

Nature of works

Excavation

Date of good practice note

February 2018

### LPG/Diesel Hybrid excavator



### Description of the good practice

Projects are facing rising fuel costs and legislative pressure to meet increasing stringent environmental regulations. Euro 6 emissions standards are already in place for heavy duty diesel vehicles and it now encompasses all light commercial vehicles.

In response to this Lynch Plant Hire alongside Diesel Dynamics Limited (DDL), have developed a ground-breaking solution in the form of a dual fuel Doosan DX380 LC excavator, the only one in the country converted to use both diesel and Liquefied Petroleum Gas (LPG). This pioneering machine is undergoing evaluation and trials at the Kent MFF Dover Scheme and so far has shown to mitigate fuel costs, reduce emissions and positively contribute towards carbon footprint reduction.

The DDL software introduces gas (LPG/CNG (Compressed Natural Gas), including bio methane) at idle as well as through the entire rev range, giving fuel savings even at standstill. Stop-start technology introduces gas to the engine in as little as four seconds from start-up which gives fuel cost savings and improves overall performance. DDL are supported by Flogas who will enable the gas provisions on site at commercially attractive rates.

### What are the benefits?

- Testing has enabled circa 10% fuel cost saving as a baseline, lower emissions and carbon footprint as LPG has 42% less carbon intensity than diesel.
- Emission testing (using a Kane Auto Gas Analyser) undertaken on the Doosan showed NOx (Nitrous Oxides) levels down by over 50% and HC (Hydro Carbons) by 100% with no loss in engine torque under heavy load.
- Mass soot levels recorded by the machine are lower and subject to further testing. Lynch are confident that regeneration periods should extend, reducing maintenance and replacement to Diesel Particulate Filters.
- A 12% carbon saving has been calculated over its yearly use compared with regular excavators.
- Based on the following figures the total cost savings could significantly benefit the project and client:

#### **Pre-conversion**

Annual diesel used DX380: 80,080L

Diesel bill DX380: £38,438

#### **Post-conversion**

Fleet Gas used (L) DX380: 31,142

Fuel bill (diesel& LPG): £29,727

Overall cost saving: £8,711

Proportional fuel saving: 23%

## **Are there any drawbacks?**

Storage space of gas tanks

## **Supporting Information**

#### **Scheme:**

Dover Sea Wall Repairs

#### **Supplier:**

Lynch Plant Hire (<http://www.l-lynch.com>)

Diesel Dynamics Ltd (<http://www.dieseldld.com>)