

## Low Emission Bus Scheme Certificate

|                         |  |                      |         |                |                              |
|-------------------------|--|----------------------|---------|----------------|------------------------------|
| Customer:               | Optare Group Ltd                                       |                      |         |                |                              |
| Customer Address:       | Hurricane Way, Sherburn Ind. Estate, Sherburn-in-Elmet |                      |         |                |                              |
| Test Purpose:           | LEB Testing  | DYNAMOMETER SETTINGS |         |                |                              |
| Vehicle Manufacturer:   | Optare   | Unladen weight (kg)  | 10546.0 | Test Weight    | 12865 kg                     |
| Vehicle Type & Number:  | MetroDecker, VIN: SAB6JP2E7GS340007                    | Gross Weight (kg)    | 18000.0 | F°             | 106.09 N                     |
| Engine:                 | Mercedes Euro VI                                       | Seated Capacity      | 63      | F <sup>1</sup> | -1.8225 N/kmh                |
| Transmission:           | Automatic  | Passenger Capacity   | 100     | F <sup>2</sup> | 0.26626 N/kmh <sup>2</sup>   |
| Euro VI certificate Y/N | Manufacturer Certified                                 | GVW Check            | OK      | F <sup>3</sup> | -0.000888 N/kmh <sup>3</sup> |

### Declared fuel, properties and source plus carbon conversion factors

|                                  |        |                          |               |                                     |
|----------------------------------|--------|--------------------------|---------------|-------------------------------------|
| Net Heating Value: Diesel        | 36.00  | MJ / Litre               | Fuel Provider | UK market standard                  |
| Well-to-Tank Factor: Diesel      | 15.42  | g CO <sub>2</sub> e / MJ | WTT evidence  | UK GHG reporting factors 2016       |
| Well-to-Tank Factor: Electricity | 143.50 | g CO <sub>2</sub> e / MJ | Fuel Type     | UK Pump Diesel, UK Grid Electricity |

### Emissions and Energy consumption results from approved test facility - Average 3 tests

| Test Phase   | HC (g/km) | CO (g/km) | NO <sub>x</sub> (g/km) | PM (g/km) | CO <sub>2</sub> (g/km) | CH <sub>4</sub> (g/km)* | N <sub>2</sub> O (g/km) | Fuel Consumption (l/100 km) | Fuel used over cycle (litres/km) |
|--------------|-----------|-----------|------------------------|-----------|------------------------|-------------------------|-------------------------|-----------------------------|----------------------------------|
| Rural        | 0.002     | 0.008     | 0.141                  | N/A       | 748.5                  | 0.000                   | 0.055                   | 28.27                       | 0.283                            |
| Outer London | 0.005     | 0.021     | 0.049                  | N/A       | 918.1                  | 0.000                   | 0.084                   | 34.67                       | 0.347                            |
| Inner London | 0.010     | 0.028     | 0.139                  | N/A       | 1247.8                 | 0.000                   | 0.104                   | 47.12                       | 0.471                            |
| MLTB Average | 0.007     | 0.023     | 0.074                  | N/A       | 1010.2                 | 0.000                   | 0.090                   | 38.15                       | 0.381                            |
| LUB Average  | 0.005     | 0.016     | 0.105                  | 0.0048    | 891.5                  | 0.000                   | 0.074                   | 33.67                       | 0.337                            |

### Zero Emissions (Z.E.) Range: Energy consumption and charging efficiency



|   |     |                            |     |                                 |     |
|---|-----|----------------------------|-----|---------------------------------|-----|
| Total measured energy consumed on vehicle (kWh) | N/A | Distance in Z.E. mode (km) | N/A | Usable Battery Capacity (kWh)   | N/A |
| Measured grid energy during charging (kWh)*     | N/A | Charging efficiency (%)    | N/A | Max Theoretical Z.E. Range (km) | N/A |

### Total Tank-to-Wheel GHG CO<sub>2</sub> equivalent

| Test Phase   | CO <sub>2</sub> (g/km) | CH <sub>4</sub> (g/km x 25)* | N <sub>2</sub> O (g/km x 298)* | Fuel TTW** GHG (CO <sub>2</sub> Equivalent g/km) |
|--------------|------------------------|------------------------------|--------------------------------|--|
| Rural        | 748.5                  | 0.000                        | 16.489                         | 765.0  |
| Outer London | 918.1                  | 0.000                        | 25.112                         | 943.2  |
| Inner London | 1247.8                 | 0.000                        | 30.865                         | 1278.7   |
| MLTB Average | 1010.2                 | 0.000                        | 26.719                         | 1036.9   |
| LUB Average  | 891.5                  | 0.000                        | 22.085                         | 913.6  |

### Calculated total Well-to-Wheel GHG CO<sub>2</sub> equivalent emissions over test

| Test Phase   | Fuel Energy (MJ / km) | Fuel WTT*GHG Emissions (g CO <sub>2</sub> e / km) | Electrical Energy (MJ / km) | Electricity WTT* GHG Emissions (g CO <sub>2</sub> e / km) | Measured Fuel TTW** GHG Emissions (g CO <sub>2</sub> e / km) | Total WTW*** GHG Emissions (g CO <sub>2</sub> e / km) |
|--------------|-----------------------|---|-----------------------------|---|--|---|
| Rural        | 10.18                 | 156.9   | N/A                         | N/A   | 765.0  | 921.9   |
| Outer London | 12.48                 | 192.5   | N/A                         | N/A   | 943.2  | 1135.7  |
| Inner London | 16.96                 | 261.6   | N/A                         | N/A   | 1278.7   | 1540.2  |
| MLTB Average | 13.73                 | 211.8   | N/A                         | N/A   | 1036.9   | 1248.6  |
| LUB Average  | 12.12                 | 186.9   | N/A                         | N/A   | 913.6  | 1100.5  |

|   |   |                  |                   |   |                  |
|---|---|------------------|-------------------|---|------------------|
| Data Generated by (On behalf of Test facility): |  | Date: 19.07.2017 | Data Approved by: |  | Date: 24/07/2017 |
|---|---|------------------|-------------------|---|------------------|

### Low Emission Bus Certificate Summary

|  |            |                             |
|--|------------|-----------------------------|
| GHG Well-to-Wheel  | 1100.5     | g CO <sub>2</sub> e / km    |
| Euro V Average Diesel Equivalent                           | 1422.0     | g CO <sub>2</sub> e / km    |
| WTW GHG saving (compared with Euro V diesel equivalent)    | 321.5      | g CO <sub>2</sub> e / km    |
| % WTW GHG saving (compared with Euro V diesel equivalent)  | 23%        | g CO <sub>2</sub> e / km    |
| Zero Emission operating range (km)                         | N/A        | km                          |
| WTW CO <sub>2</sub> per passenger km (@ Max Pass Capacity) | 11.0       | g CO <sub>2</sub> e/pass km |
| Approved as Low Emission Bus? (15% saving or more)         | <b>YES</b> |                             |

\* WTT : Well-to-Tank      \*\* TTW : Tank-to-Wheel      \*\*\* WTW : Well-to Wheel

**COMMENTS:**  
\*Emission results marked in red are below detection levels.

**Test Numbers:** ML02016639 (18 July 2017), ML02016640 (18 July 2017), ML02016641 (18 July 2017).

|   |   |
|---|---|
| Certificate approved by:<br>On behalf of Bus manufacturer | Certificate Approved by:<br>On behalf of LowCVP/DfT |
|---|---|