

Julie Bradford  
Technical Support Officer  
Natural Resources Wales  
Chester Road  
Buckley  
Flintshire, CH7 3AJ

**Ref: PPC Permit BK6483IU/V006**

Date: 28/01/2018

Dear Julie,

Please find enclosed the returns for emissions monitoring and performance during 2017.

Please note:

1. All particulates results are reported as an average of 3x 1 hour samples.
2. Phenol on ST1 is reported as a 4 hour average (as permit variation).
3. CO and NOx on ST2 is reported as a full shift average (as permit variation).

If you have any queries, please do not hesitate to contact me.

Yours sincerely,



Adam Sammons  
Senior Engineer - Environment  
Manufacturing Planning, Facilities & Environment Division

Enc: Reporting forms Air1a – g, Sewer1, Waterusage1, Energyusage1, Performance1

31/01/2018

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1a / 280709

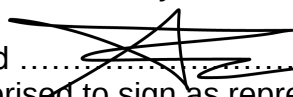
### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter | Emission Limit Value  | Reference Period                                | Result <sup>[1]</sup>                            | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|-----------------------|-----------------------|-------------------------------------------------|--------------------------------------------------|----------------------------|-------------------------|----------------------------|
| ST1            | Particulate           | 5mg/m <sup>3</sup>    | 1 hour<br>(avg 3x 1hr)                          | 0.16mg/m <sup>3</sup>                            | BS EN13284-1               | 07/09/2017, 13:19-16:37 | 0.33mg/m <sup>3</sup>      |
| ST1            | VOCs<br>(as carbon)   | 50mg/m <sup>3</sup>   | 1 hour                                          | 3.6mg/m <sup>3</sup>                             | BS EN 12619                | 07/09/2017, 11:28-12:28 | 1.3mg/m <sup>3</sup>       |
| ST1            | Formaldehyde          | 1mg/m <sup>3</sup>    | 1 hour                                          | 0.03mg/m <sup>3</sup>                            | BS CEN/TS 13649            | 07/09/2017, 10:33-11:33 | 0.03mg/m <sup>3</sup>      |
| ST1            | Phenol                | 0.25mg/m <sup>3</sup> | 4 hour (required for low<br>limit of detection) | <0.21mg/m <sup>3</sup><br>(< limit of detection) | BS CEN/TS4 13649           | 07/09/2017, 09:29-13:29 | 0.32mg/m <sup>3</sup>      |
| ST1            | Ammonia               | N/A                   | 1 hour                                          | 0.17mg/m <sup>3</sup>                            | BS EN 14791                | 07/09/2017, 12:05-13:05 | 0.22mg/m <sup>3</sup>      |

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed   
(Authorised to sign as representative of Operator)

Date: 28/01/18

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1b / 280709

### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter                       | Emission Limit Value | Reference Period                 | Result <sup>[1]</sup>                            | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|---------------------------------------------|----------------------|----------------------------------|--------------------------------------------------|----------------------------|-------------------------|----------------------------|
| ST2            | Particulate                                 | 5mg/m <sup>3</sup>   | 1 hour<br>(avg 3x 1 hr)          | <0.22mg/m <sup>3</sup><br>(< limit of detection) | BS EN 13284-1              | 07/09/2017, 08:24-12:46 | 0.44mg/m <sup>3</sup>      |
| ST2            | Oxides of Nitrogen<br>(as NO <sub>2</sub> ) | 100mg/m <sup>3</sup> | Average over<br>production shift | 20mg/m <sup>3</sup>                              | BS EN 14792                | 07/09/2017, 09:12-17:12 | 1.8mg/m <sup>3</sup>       |
| ST2            | CO                                          | 150mg/m <sup>3</sup> | Average over<br>production shift | 54mg/m <sup>3</sup>                              | BS EN 15058                | 07/09/2017, 09:12-17:12 | 37mg/m <sup>3</sup>        |
| ST2            | HCl                                         | 10mg/m <sup>3</sup>  | 1 hour                           | 0.15mg/m <sup>3</sup>                            | BS EN 1911                 | 07/09/2017, 14:10-15:10 | 0.06mg/m <sup>3</sup>      |
| ST2            | Flourides                                   | 1mg/m <sup>3</sup>   | 1 hour                           | 0.12mg/m <sup>3</sup>                            | BS ISO 15713               | 07/09/2017, 15:25-16:25 | 0.07mg/m <sup>3</sup>      |

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[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed .....  
(Authorised to sign as representative of Operator)

Date..... 28/01/18 .....

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1c / 280709

### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter                       | Emission Limit Value | Reference Period        | Result <sup>[1]</sup> | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|---------------------------------------------|----------------------|-------------------------|-----------------------|----------------------------|-------------------------|----------------------------|
| ST4            | Particulate                                 | 5mg/m <sup>3</sup>   | 1 hour<br>(avg 3x 1 hr) | 0.19mg/m <sup>3</sup> | BS EN 13284-1              | 04/09/2017, 13:01-16:25 | 0.38mg/m <sup>3</sup>      |
| ST4            | Oxides of Nitrogen<br>(as NO <sub>2</sub> ) | 100mg/m <sup>3</sup> | 1 hour                  | 6.8mg/m <sup>3</sup>  | BS EN 14792                | 04/09/2017, 12:29-13:29 | 1.9mg/m <sup>3</sup>       |
| ST4            | CO                                          | 150mg/m <sup>3</sup> | 1 hour                  | 22mg/m <sup>3</sup>   | BS EN 15058                | 04/09/2017, 12:29-13:29 | 5.9mg/m <sup>3</sup>       |

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[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed .....  
(Authorised to sign as representative of Operator)

Date.....28/01/18

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1d / 280709

### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter                       | Emission Limit Value | Reference Period        | Result <sup>[1]</sup>                            | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|---------------------------------------------|----------------------|-------------------------|--------------------------------------------------|----------------------------|-------------------------|----------------------------|
| ST9            | Particulate                                 | 5mg/m <sup>3</sup>   | 1 hour<br>(avg 3x 1 hr) | <0.21mg/m <sup>3</sup><br>(< limit of detection) | BS EN 13284-1              | 06/09/2017, 10:00-13:12 | 0.43mg/m <sup>3</sup>      |
| ST9            | Oxides of Nitrogen<br>(as NO <sub>2</sub> ) | 150mg/m <sup>3</sup> | 1 hour                  | 12mg/m <sup>3</sup>                              | BS EN 14792                | 05/09/2017, 09:37-10:37 | 1.8mg/m <sup>3</sup>       |
| ST9            | CO                                          | 150mg/m <sup>3</sup> | 1 hour                  | 34mg/m <sup>3</sup>                              | BS EN 15058                | 05/09/2017, 09:37-10:37 | 6.0mg/m <sup>3</sup>       |
| ST9            | Formaldehyde                                | 7mg/m <sup>3</sup>   | 1 hour                  | 0.14mg/m <sup>3</sup>                            | BS CEN/TS 13649            | 05/09/2017, 13:46-14:46 | 0.03mg/m <sup>3</sup>      |
| ST9            | Ammonia                                     | 10mg/m <sup>3</sup>  | 1 hour                  | 0.16mg/m <sup>3</sup>                            | BS ISO 14791               | 05/09/2017, 13:46-14:46 | 0.17mg/m <sup>3</sup>      |

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed  .....  
(Authorised to sign as representative of Operator)

Date. 28/01/18 .....

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1e / 280709

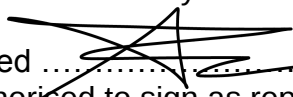
### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter                       | Emission Limit Value | Reference Period        | Result <sup>[1]</sup> | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|---------------------------------------------|----------------------|-------------------------|-----------------------|----------------------------|-------------------------|----------------------------|
| ST10           | Particulate                                 | 5mg/m <sup>3</sup>   | 1 hour<br>(avg 3x 1 hr) | 0.23mg/m <sup>3</sup> | BS EN 13284-1              | 05/09/2017, 09:39-13:07 | 0.46mg/m <sup>3</sup>      |
| ST10           | Oxides of Nitrogen<br>(as NO <sub>2</sub> ) | 150mg/m <sup>3</sup> | 1 hour                  | 0.95mg/m <sup>3</sup> | BS EN 14792                | 04/09/2017, 14:51-15:51 | 1.9mg/m <sup>3</sup>       |
| ST10           | CO                                          | 150mg/m <sup>3</sup> | 1 hour                  | 56mg/m <sup>3</sup>   | BS EN 15058                | 04/09/2017, 14:51-15:51 | 5.9mg/m <sup>3</sup>       |

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed  .....  
(Authorised to sign as representative of Operator)

Date...28/01/18.....

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1f / 280709

### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter                       | Emission Limit Value | Reference Period        | Result <sup>[1]</sup> | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|---------------------------------------------|----------------------|-------------------------|-----------------------|----------------------------|-------------------------|----------------------------|
| ST11           | Particulate                                 | 5mg/m <sup>3</sup>   | 1 hour<br>(avg 3x 1 hr) | 0.31mg/m <sup>3</sup> | BS EN 13284-1              | 05/09/2017, 13:28-16:51 | 0.62mg/m <sup>3</sup>      |
| ST11           | Oxides of Nitrogen<br>(as NO <sub>2</sub> ) | 150mg/m <sup>3</sup> | 1 hour                  | 48mg/m <sup>3</sup>   | BS EN 14792                | 05/09/2017, 10:44-11:44 | 1.8mg/m <sup>3</sup>       |
| ST11           | CO                                          | 150mg/m <sup>3</sup> | 1 hour                  | 28mg/m <sup>3</sup>   | BS EN 15058                | 05/09/2017, 10:44-11:44 | 5.8mg/m <sup>3</sup>       |
| ST11           | Formaldehyde                                | 7mg/m <sup>3</sup>   | 1 hour                  | 0.23mg/m <sup>3</sup> | BS CEN/TS 13649            | 05/09/2017, 11:49-12:49 | 0.05mg/m <sup>3</sup>      |
| ST11           | Ammonia                                     | 10mg/m <sup>3</sup>  | 1 hour                  | 0.10mg/m <sup>3</sup> | BS ISO 14791               | 05/09/2017, 14:49-12:49 | 0.164mg/m <sup>3</sup>     |

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[2] Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, e.g. gas chromatography.

[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed .....  
(Authorised to sign as representative of Operator)

Date.....28/01/18.....

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Air1g / 280709

### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter | Emission Limit Value | Reference Period        | Result <sup>[1]</sup> | Test Method <sup>[2]</sup> | Sample Date and Times   | Uncertainty <sup>[3]</sup> |
|----------------|-----------------------|----------------------|-------------------------|-----------------------|----------------------------|-------------------------|----------------------------|
| ST12           | Particulate           | 5mg/m <sup>3</sup>   | 1 hour<br>(avg 3x 1 hr) | 0.25mg/m <sup>3</sup> | BS EN 13284-1              | 06/09/2017, 13:31-16:46 | 0.51mg/m <sup>3</sup>      |

[1] The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.

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[3] The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed .....  
(Authorised to sign as representative of Operator)

Date.....28/01/18.....

Permit Number: EPR/BK6483IU/V006

Operator: Toyota Manufacturing UK Ltd

Facility: Deeside Engine Casting

Form Number: Sewer1 / 280709

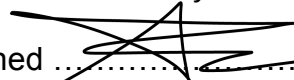
### Reporting of emissions to air for the year 2017

| Emission Point | Substance / Parameter  | Emission Limit Value | Reference Period | Result <sup>[1]</sup> | Test Method <sup>[2]</sup> | Sample Date and Times | Uncertainty <sup>[3]</sup>                                            |
|----------------|------------------------|----------------------|------------------|-----------------------|----------------------------|-----------------------|-----------------------------------------------------------------------|
| S1             | Total Suspended Solids | 200mg/L              | Per annum        | 135mg/L               | Filter paper / balance     | 31/08/2017            | Uncertainty is reported for accredited analysis, conducted quarterly. |
| S1             | COD                    | 1500mg/L             | Per annum        | 835mg/L               | Titration                  | 05/05/2017            |                                                                       |
| S1             | Total Hydrocarbon Oil  | 150mg/L              | Per annum        | 26mg/L                | Gravimetric                | 19/05/2017            |                                                                       |
| S1             | Copper                 | 1mg/L                | Per annum        | 0.17mg/L              | AA Spectrophotometer       | 25/08/2017            |                                                                       |
| S1             | Zinc                   | 2mg/L                | Per annum        | 0.61mg/L              | AA Spectrophotometer       | 18/08/2017            |                                                                       |
| S1             | Lead                   | 1mg/L                | Per annum        | 0.27mg/L              | AA Spectrophotometer       | 31/03/2017            |                                                                       |
| S1             | Nickel                 | 1mg/L                | Per annum        | 0.1mg/L               | AA Spectrophotometer       | All samples           |                                                                       |

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Signed  .....  
(Authorised to sign as representative of Operator)

Date.....28/01/18.....

Permit Number:     EPR/BK6483IU/V006

Operator:     Toyota Manufacturing UK Ltd

Facility:             Deeside Engine Casting

Form Number:        Waterusage1 / 280709

### Reporting of Water Usage for the year 2017

| Water Source      | Usage<br>(m <sup>3</sup> /year) | Specific Usage<br>(m <sup>3</sup> /unit output) |
|-------------------|---------------------------------|-------------------------------------------------|
|                   |                                 |                                                 |
| Mains water       | 9,791m <sup>3</sup> /annum      | 0.84 m <sup>3</sup> /tonne of cast aluminium    |
| Site borehole     | N/A                             |                                                 |
| River abstraction | N/A                             |                                                 |
|                   |                                 |                                                 |
|                   |                                 |                                                 |
| TOTAL WATER USAGE | 9,791m <sup>3</sup> /annum      | 0.84 m <sup>3</sup> /tonne of cast aluminium    |

**Operator's comments :**

To standardise consumption, the specific usage units are measured in m<sup>3</sup>/metric tonne of cast aluminium. This makes consumption units independent of engine production mix.

Site collected rain water for use on site is not counted.

Signed .....  
(authorised to sign as representative of Operator)

Date.....28/01/18.....

Permit Number:     EPR/BK6483IU/V006

Operator:            Toyota Manufacturing UK Ltd

Facility:            Deeside Engine Casting

Form Number:        Energyusage1 / 280709

### Reporting of Energy Usage for the year 2017

| Energy Source | Energy Usage |                         | Specific Usage<br>(MWh/unit output) |
|---------------|--------------|-------------------------|-------------------------------------|
|               | Quantity     | Primary Energy<br>(MWh) |                                     |
| Electricity * | 7,480MWh     | 19,449MWh               | 1.665MWh/tonne of cast aluminium    |
| Natural Gas   | 16,538MWh    | 16,538 MWh              | 1.416MWh/tonne of cast aluminium    |
|               |              |                         |                                     |
| TOTAL         | 24,018MWh    | 35,987MWh               | 3.081MWh/tonne of cast aluminium    |
|               |              |                         |                                     |

\* Conversion factor for delivered electricity to primary energy = 2.6

#### Operator's comments :

To standardise consumption, the specific usage units are measured per metric tonne of cast aluminium. This makes consumption units independent of engine production mix.

Electricity is reported as Grid, on-site generated electricity from the new solar PV installation is counted and treated as grid.

Signed .....  
(Authorised to sign as representative of Operator)

Date.....28/01/18.....

Permit Number:     EPR/BK6483IU/V003

Operator:            Toyota Manufacturing UK Ltd

Facility:            Deeside Engine Casting

Form Number:        Performance1 / 280709

**Reporting of other performance indicators for the year 2017**

| Parameter                                  | Units  | Result       |
|--------------------------------------------|--------|--------------|
| Total raw material used                    | Tonnes | 8,980Tonnes  |
| Dross removed from site                    | Tonnes | 308.42Tonnes |
| Bag filter dust                            | Tonnes | 40.63Tonnes  |
| Furnace linings                            | Tonnes | 60.4Tonnes   |
| Total swarf recycled                       | Tonnes | 510.6Tonnes  |
| Total 3 <sup>rd</sup> party scrap recycled | Tonnes | 48.1Tonnes   |

Operator's comments : Raw material quantity used does not include swarf and third party scrap.

Signed .....  
(Authorised to sign as representative of Operator)

Date.....28/01/18.....