

Introduction

Non-road mobile machinery (NRMM) has to meet tight emissions standards for particulates and nitrous oxides in London (as set by Greater London Authority) and on HS2. The standards are tightening and other geographies outside of London have started to introduce similar requirements.

HS2 have implemented NRMM requirements via the Emissions Compliance Verification (ECV) scheme which sets strict emission requirements for both on- and off-road vehicles and plant, which apply across HS2 in and outside of London.

NRMM consists of any mobile machinery, transportable industrial equipment or vehicle fitted with an internal combustion engine not intended for passenger or goods transport by road, examples include:

- Drilling rigs, bulldozers, forklift trucks, road maintenance equipment, snow ploughs and mobile cranes.
- Small gardening and handheld equipment (lawn mowers, chainsaws, etc.)
- Construction machinery (excavators, loaders, bulldozers, etc.)
- Agricultural & farming machinery (harvesters, cultivators, etc.)
- Rail plant including railcars and locomotives
- Inland water vessels are also classified as NRMM. However, the Greater London Authority (GLA) currently consider these as 'non-deployed' and exempt from NRMM requirements

NRMM regulations apply to all plant with an engine net power that is between **37kW** and **560kW**.

Abbreviations / Definitions

NRMM	Non-Road Mobile Machinery is defined as any mobile machine, item of transportable industrial equipment, or vehicle - with or without bodywork - that is: <ul style="list-style-type: none"> • not intended for carrying passengers or goods on the road • installed with a combustion engine - either an internal spark ignition (SI) petrol engine, or a compression ignition diesel engine Typical types of NRMM include excavators, generators, cranes, pumps, etc.
CAZ	Central Activity Zone (includes parts of Westminster, City of London and Canary Wharf)
CEA	Construction Equipment Association
CoP	[Planning] Code of Practice
ECV	Emissions Compliance Verification scheme
Major Development	Major developments are defined in the London Plan as residential developments of 10 dwellings or more (or, where the number is not given, 0.5 ha or more); and for all other uses, a floor space 1,000 m ² or more or a site area 1 ha or more. The site area is that directly involved in some aspect of the development.
Floor space	Floor space is defined as the sum of floor area within the building measured externally to the external wall faces at each level. Basement car parks, rooftop plant rooms, caretakers' flats etc. should be included in the floor space figure.
SPG	Supplementary Planning Guidance
DPF	Diesel particulate filter
NO_x	Nitrous Oxides cover nitric oxide (NO) and nitrogen dioxide (NO ₂). NO _x can cause respiratory, cardiovascular and immune system problems.
PM₁₀	Particulate matter 10 micrometres or less in diameter made up of soot (carbon), metals and inorganic salts that have adverse effects on human health.
LEZ	Low Emission Zone – currently covers most of Greater London (i.e. everything within the M25) but this terminology may be extended to describe other city centre-designated areas in the future.
SBU	Strategic Business Unit
SCRT	Selective Catalytic Reduction Technology
Retrofit	Retrofit is the process of fitting a new part that the NRMM equipment did not have when it was manufactured and is designed to make the NRMM meet a higher engine emission standard.
Exemptions	There are three exemptions categories for NRMM:

	“Block” where the type of NRMM plant is not currently manufactured at the EU stage stated in the supplementary planning guidance (SPG) or there is an insufficient quantity of compliant equipment in the UK supply chain and retrofit is unviable.
	“Viability” where the NRMM plant is not currently manufactured to meet the EU stage as stated in the SPG or there is an insufficient quantity of compliant plant in the UK supply chain for the task, however, it meets the next best available EU stage and retrofit is unviable, following robust consideration.
	“Short-term” where the NRMM plant is on site for a period of no greater than 30 days to account for a range of potential circumstances where equipment is urgently required or for a very short period.

Legislation and Regulation

The NRMM requirements are currently being enforced in two geographic areas:

1. Greater London
2. HS2 route (in and outside of London)

Other UK cities are implementing and considering implementing low emission zones. You are advised to consult with the local authority in your project’s area to ensure you are aware of planned changes, the timelines for implementation and what the proposed requirements are.

What you need to do - Project Delivery

As part of the contractual arrangements, the supply chain shall be informed of the specific NRMM requirements of the project and any exemptions in place. The supply chain must provide evidence to support any exemptions that need to be applied for, or for any retrofitting that has taken place.

All NRMM must be checked to ensure it meets the appropriate emissions standards for the project location prior to being allowed on site.

Labelling

All new NRMM must be fitted with the Construction Equipment Association (CEA)’s CESAR Emissions Compliance Verification (ECV) label to clearly identify the emissions status of the plant e.g. Stage IV. All ECV labelled equipment has a unique identifier and is logged on the CESAR ECV Clearing Portal. The QR code on the sticker links the live asset to the database.



From 1st March 2021 all hired/subcontracted plant must be equipped with an ECV label.

What you need to do - Record Keeping

Before bringing any NRMM on site the project lead shall register the site with the relevant authority based on the site’s location, see Appendix 1

For sites that operate in NRMM zone that is transitioning to adopting to using CESAR ECV Clearing Portal such as HS2, a NRMM compliance spreadsheet is required to be held locally on site to demonstrate compliance. Similarly, plant that is not fitted with an ECV label must also be entered manually onto a NRMM compliance spreadsheet in the interim.

What you need to do - Inspections

Planning enforcement or environmental health teams or customers with delegated authorities such as HS2 may choose to audit your site. They will have full access to the NRMM and CEA databases and will want to compare what equipment is on-site compared to what equipment is on the register/database.

For non-HS2 work carried out in London, ensure that all equipment is registered on the GLA’s NRMM database and for all HS2 work ensure that it is registered on the CEA’s ECV Clearing Portal or entered onto NRMM compliance spreadsheet. Both the GLA and CEA operate their own portals.

The enforcement teams may also want to inspect the remaining equipment to ensure that it is indeed below the 37kW threshold or above the 560kW threshold.

What you need to do - Checking

[ENV-SF-0011b](#) Non-Road Mobile Machinery and Subcontractor Generator Checklist is available for use to ensure that:

1. The NRMM Regulations are being complied with for projects within the London Low Emission Zone (LEZ) (Greater London and the Central Activity Zone); or
2. Non-London projects are meeting NRMM requirements where they are specified by the client or as a planning requirement, including HS2

What are Balfour Beatty’s minimum plant standards for NRMM

With a variety of different NRMM standards for different regions and projects Balfour Beatty has set the following minimum plant standards. Standards keep changing so please ensure that you projects meet any specific requirements that your customers may set in addition to those laid out below.

Table 1 – Minimum Plant Standards

	From 1 st January 2020	From 1 st March 2021 onwards	From 1 st January 2022 onwards	1 st January 2025
Greater London (excluding CAZ and Canary Wharf)	Stage IIIA	Stage IIIB	Stage IV*	Stage V
London Central Activity Zone (CAZ), Canary Wharf (North of the Isle of Dogs) & Opportunity Areas	Stage IIIB	Stage IV*	Stage V	Stage V
Rest of the UK	Stage IIIB (or IIIA with approved diesel particulate filter)*	Stage IIIB (or IIIA with approved diesel particulate or SCRT filter)*	Stage IV* Stage IIIB for specialist plant not used on HS2	Stage V

*Note: Stage IV machinery is only available above 56kW. Where NRMM has a rating below 56kW it must meet Stage V requirements.

Engines that have been retrofitted and approved by the Energy Savings Trust to meet the above requirements can be deployed on Balfour Beatty sites.

Where Stage IV or V plant cannot be supplied, written approval must be sought by the project director for its temporary use and relevant exemptions applied for under the relevant scheme. Both the GLA and HS2 operate their own exemption processes. The project director must be able to satisfy themselves that no alternatives exist or are available. Our aim is that all engines meet Stage V requirements by 2025.

Generally, exemptions are only available for specialist plant including piling rigs, crawler cranes, piling hammer power packs, tracked dumpers and on-track plant. Depending on the location additional approvals from the GLA or HS2 may also be required.

Retrofit of plant and equipment:

If the NRMM does not meet the required emission standard, then the potential for retrofitting abatement technology to mitigate both NOx and PM10 must be considered. Only retrofit technology that has been registered and endorsed by the the [Energy Saving Trust NRMM certification scheme](#) can be fitted and used on Balfour Beatty sites.

This is to ensure the retrofit is correctly specified and fitted in order to prevent engine damage or any risk to the operator. A list of suppliers and endorsed products can be found [here](#).

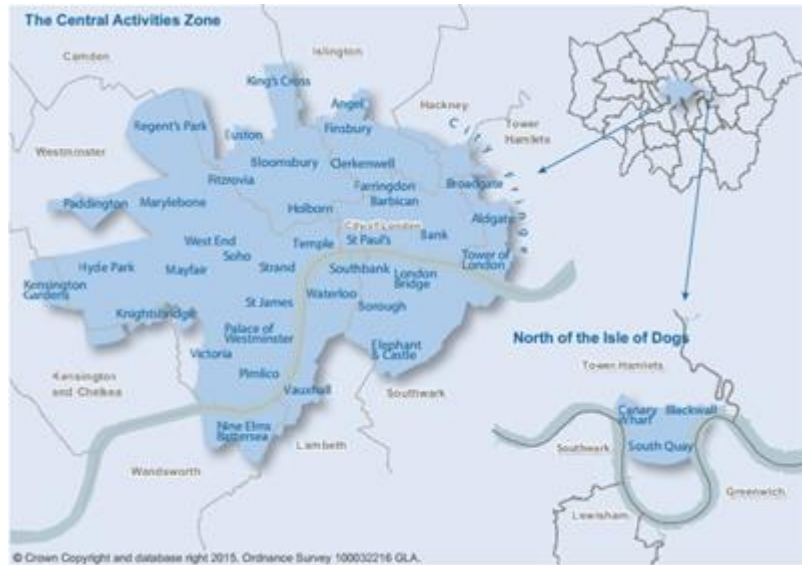
Requirements for Greater London

What you need to know - Greater London:

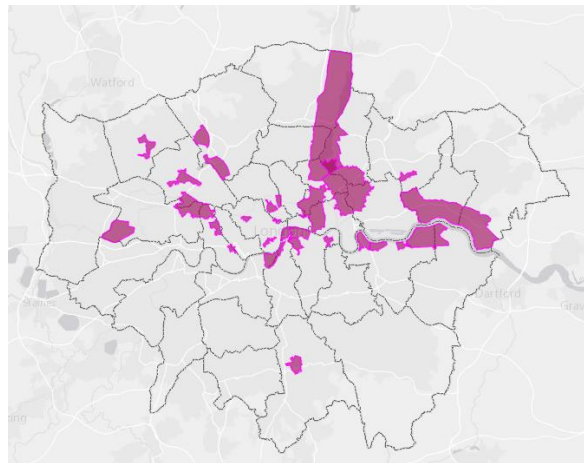
In London, NRMM is enforced through the planning regime either via the Greater London Authority (GLA's) Supplementary Planning Guidance (SPG) or a specific local Code of Practice (CoP). They apply to all SBUs undertaking activities that fall under the Major Development definition within London's Low Emission Zone, which is shown in map 1 below.



Map 1: London's Low Emission Zone (LEZ)



Map 2: Central Activity Zone (CAZ) and Canary Wharf (North of the Isle of Dogs)



Map 3: Opportunity Areas

There are three zones within London's Low Emission Zone:

1. Greater London (shown in blue on Map 1);
2. Central Activity Zone (CAZ) and Canary Wharf (shown in blue on Map 2).
3. Opportunity Areas (shown in pink on Map 3 and <https://www.london.gov.uk/what-we-do/planning/implementing-london-plan/opportunity-areas/opportunity-areas> as these change regularly)

Projects within the Greater London area that meet the Major Development definition are required to comply with the NRMM requirements.

The threshold for a Major Development is:

- Residential developments of 10 dwellings or more (or 0.5 ha where a number is not given) or;
- Projects with a floor space over 1,000 m² or more or a *site area 1 ha or more

*Note: The site area is that directly involved in some aspect of the development. Projects that do not meet the above criteria are not required to register on the NRMM register.

What you need to do – Greater London (including the Central Activity Zone and Canary Wharf)

1. Check whether the planning conditions for the scheme refers to the GLA's SPG on NRMM (Control of Dust and Emissions from Construction and Demolition, August 2014). If they do, you are required to comply with the NRMM requirements.

Where the planning conditions refer to a CoP you need to check whether these make specific reference to NRMM standards. CoPs vary among different local authorities and may have specific NRMM criteria such as in the case of the City of London, Royal Borough of Kensington and Chelsea or Westminster.

Typically, these make references like this:

10.8 All plant and machinery must also comply with the Non-Road Mobile Machinery (Emission of Gaseous and Particulate Pollutants) (Amended) Regulations 2014 in relation to emissions.

They can also be more specific, such as the Westminster CoP which lists the specific Euro Stage emissions that NRMM must comply with.

If planning conditions refer to a CoP that references NRMM you are required to comply with the NRMM requirements in them.

2. Check whether projects that are classed as Major Developments fall within the Central Activity Zone (CAZ) and Canary Wharf (North of the Isle of Dogs) (see maps 1 and 2). This will determine which NRMM requirements of EU Directive 97/68/EC for particulates and NO_x must be met.

What you need to do - London NRMM

For Balfour Beatty owned equipment or hired NRMM, it must be registered by the project lead.

Where subcontractors own or hire NRMM, they must provide supporting information to the project lead to enable it to be registered. [ENV-TF-0011a Non-Road Mobile Machinery \(NRMM\) Arrival Notification Form](#) can be used by sub-contractors to notify Balfour Beatty of the arrival of NRMM on site.

The project lead must register all NRMM on the NRMM website. As long as the data has been entered into the GLA portal no additional records are required.

If no exemptions (see 'Exemptions' section) are in place for non-compliant NRMM and retrofit technology is not available (see 'Retrofit' section) to meet the emission standards, the NRMM must not be used.

What you need to do - London Retrofit

For Balfour Beatty owned equipment or hired NRMM, approved retrofit products must be registered by the project lead.

Where subcontractors own or hire equipment that is equipped with retrofit technology, they must provide supporting information on the retrofit technology to the project lead to enable details to be registered.

The project lead must register all retrofitted technology at the same time as the NRMM on the NRMM website. If no exemptions (see 'Exemptions' section) are in place for non-compliant NRMM and retrofit technology is not available to meet the emission standards, the NRMM must not be used.

What you need to do - London Exemptions

Where NRMM does not meet emission standards exemptions may be sought. There are three exemptions categories - “Block” “Viability” “Short-term”.

From 1st January 2020 the block exemption for constant speed engines (such as generators) was lifted. For “Viability” and “Short-term” exemptions, contact the GLA directly on a case by case basis (see [NRMM exemption and retrofit policy October 2018](#).)

If approved, “Viability” exemptions are valid for 12 months from the date of approval.

If approved, “Short-term” exemptions are only valid for 30 days from the date of approved.

For Balfour Beatty owned or hired NRMM, exemptions must be sought by the project lead when registering the equipment on the NRMM website.

Where subcontractors own or hire equipment, they must provide all the evidence in advance for the project lead to seek an exemption when registering the NRMM on the NRMM website.

In all cases, the exemption must be specifically registered to the project where it will be used.

All exemptions must be applied for in advance, unless there is an emergency such as dealing with a flood.

The GLA are committed to processing exemptions within 10 working days and when NRMM is not granted an exemption by the GLA it must be removed from site within 5 working days if the equipment is currently on site and not brought to site if it has not yet been delivered.

Requirements for HS2

What you need to do - HS2

HS2 has contractual obligations to comply with the NRMM regulations on N1, N2 and Old Oak Common. Where projects find that they are covered by more than one NRMM compliance area, they must check who has ultimate authority. HS2 has ultimate authority for NRMM on its routes that pass through Greater London.

Area	From 2017	2020 & 2021 (EDC 044 / 107)	2022 (subject to annual review)
Central Activity Zone (includes Euston)	IV ^(1,2)	IV ^(1,2)	V
Rest of Greater London	IIIB ⁽²⁾	IIIB ⁽²⁾	IV ^(1,2)
Rest of country	IIIB ⁽²⁾	IIIB ⁽²⁾	IV ^(1,2)

Notes:

1. IIIB for $37 \leq P < 56\text{kW}$, as there is no corresponding Stage IV at EU level
2. IIIA for constant speed engines of any power, as there is no corresponding Stage IIIB or Stage IV at EU level

For 2020 and 2021, HS2 is operating a block exemption across its route. Plant will therefore only need to meet the 2017 requirements until 1st January 2022 when new and tighter requirements are enforced.

As such, Old Oak Common which would normally fall into the GLA’s definition of an Opportunity Area needs to meet the requirements for the Rest of Greater London for HS2 instead. Balfour Beatty’s minimum requirements account for HS2’s requirements.

HS2's air quality team require that they be contacted in advance of any machinery being brought to site. As such, all machinery has to be prenotified to HS2 using [ENV-SF-0011c](#) NRMM Prenotification Form (HS2) or the CESAR ECV Clearing Portal.

When using CESAR ECV Clearing Portal, all projects need is the CESAR ID and the ECV code as well as when the NRMM will be delivered and removed from site.

First time users will be sent a notification to register their details. After registering, users can access the site via: <https://cecp.datatag.app/>

For information on how to use the CESAR ECV Clearing Portal, please see appendix 2.

HS2 currently uses the same [exemption process](#) to the GLA for viability and short-term exemptions. For exemption applications please contact airquality.consents@hs2.org.uk.

HS2 Phase 1 route



Rest of the UK

What you need to do

Except for HS2, there is currently no legal requirement for non-London projects to meet the NRMM requirements. However, this is likely to change in the future. Balfour Beatty has therefore set its own requirements to protect its people, the communities we work in and the environment as detailed in Table 1 – Minimum Plant Standards

For any projects which choose to keep records of the NRMM used on their sites, form [ENV-SF-0011a](#) Non-London Projects Non-Road Mobile Machinery (NRMM Register) can be used.

[ENV-TF-0011a Non-Road Mobile Machinery \(NRMM\) Arrival Notification Form](#) can be used by sub-contractors to notify the principal contractor of the arrival of NRMM on site.

UK Documentation

Reference	Type	Title
ENV-TB-0011a	Tool Box Talk	London Projects: Non-Road Mobile Machinery (NRMM) Emissions Regulations
ENV-SF-0011a	Standard Form	Non-London Projects: Non-Road Mobile Machinery (NRMM) Register
ENV-SF-0011b	Standard Form	Non-Road Mobile Machinery and Subcontractor Generator Checklist
ENV-SF-0011c	Template Form	NRMM Prenotification form (HS2)
ENV-AD-0011a	Advice Note	London Projects – Non-Road Mobile Machinery (NRMM) Emissions Regulations
ENV-AD-0011b	Advice Note	London Projects - Non-Road Mobile Machinery (NRMM) Emissions Regulations Update 1
ENV-TF-0011a	Template Form	Non-Road Mobile Machinery (NRMM) Arrival Notification Form

Appendix 1

Registering sites in London

Projects based in London need to register at this web page: <http://nrmm.london>

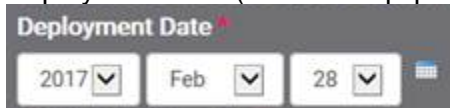
[ENV-TF-0011a Non-Road Mobile Machinery \(NRMM\) Arrival Notification Form](#) can be used by sub-contractors to notify the principal contractor of the arrival of NRMM on site.

All diesel NRMM with a net power between 37 and 560 kW must be registered on the online NRMM database for that particular project (<http://nrmm.london>) in order to prove that the NRMM is compliant. This information must be kept up to date when new equipment arrives on site and include all the following information:

- Site name



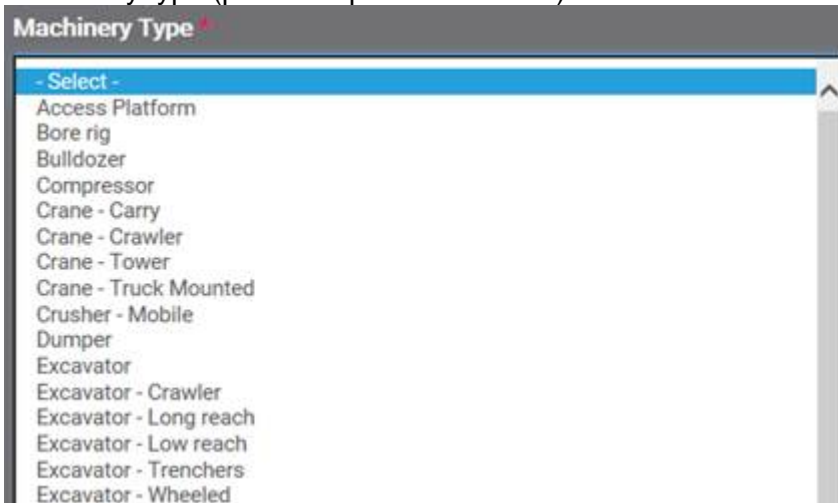
- Deployment date (date the equipment arrives on site)



- Deployment duration (number of days the equipment will remain on site)



- Machinery type (pick from pull-down menu)



- Machinery manufacturer (pick from pull down menu e.g. JCB)

Machinery Manufacturer

- Select -

- Aggreko
- Bobcat Company
- Caterpillar
- Doosan Infracore
- Hitachi
- Hyundai
- JCB
- John Deere & Company
- Komatsu
- Liebherr Group
- SANY Group
- Terex
- Thwaites
- Volvo CE
- Zoomlion
- Other...

- Engine manufacturer year (Enter the year the engine was manufactured)

Engine Manufacture Year

- Plant ID code ((which will be unique to the equipment similar to a license plate) – sometimes this is referred to as engine serial number (e.g. 11566276))

Plant ID

This is a unique identifier for this machine e.g License plate number (for road going NRMM), company or hire fleet ID number or engine serial number.

- Engine EU type approval number (e.g. e11*97/68AB*2004/26*0673*02)

Engine EU Type Approval number

- Engine power in kW

Engine Power

 kW

- EU engine emission stage

EU engine emission stage

- Select -

- EU Stage I
- EU Stage II
- EU Stage IIIA
- EU Stage IIIB
- EU Stage IV

This information should be available on the engine plate (see 'Reading Engine Plates' section). Access to the engine plate may be requested by an NRMM Inspector. Note: ensure the engine is switched off and has cooled before allowing the engine plate to be accessed and inspected. Access to an engine plate on a Balfour Beatty site is only permitted when safe to do so in line with the Golden Rules. To avoid unnecessary delays to inspection, check plant arriving to site has a readable ECV label that is kept clean to ensure its readability upon inspection.

Where retrofit technology has been added to make the NRMM compliant the following additional details are required:

- Retrofit type
- Retrofit company

- Retrofit date
- Retrofit details
- Retrofit approver

Where exemptions have been sought, the following additional details must to be entered:

- Exemption request
- Exemption status

The Project Manager must update the online register whenever new NRMM is brought on site that has a net power between 37 and 560 kW or when NRMM between 37 and 560 kW is taken offsite.

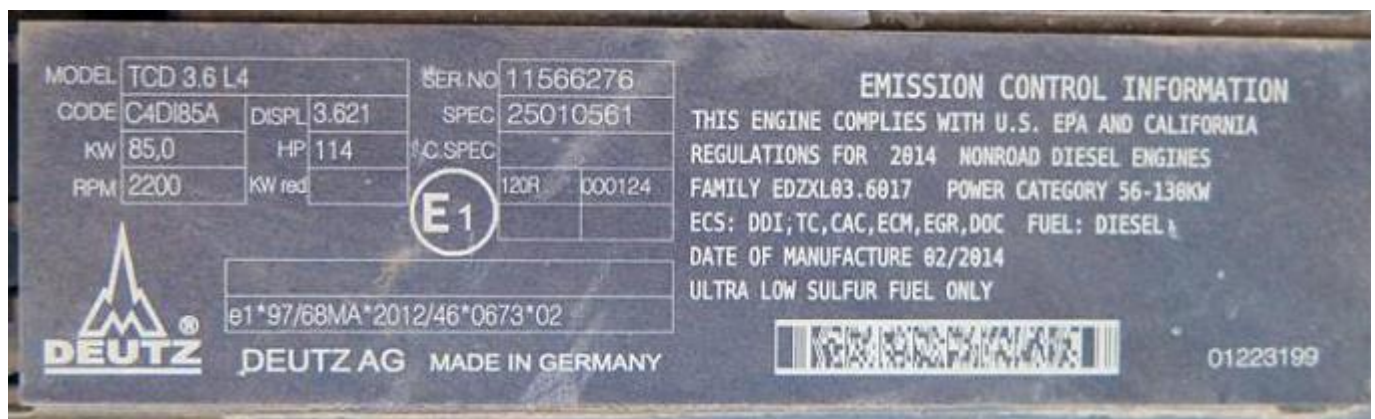
NRMM that does not meet the required emissions standard cannot be entered on the database. Unless approved retrofit technology has been installed (see 'Retrofit' section) or an exemption been granted (see 'Exemption' section) the NRMM must be removed from site and replaced with compliant equipment.

Reading Engine Plates

Engine plates contain the necessary information and evidence that is required to log NRMM on the NRMM portal. Engine plates can be difficult to locate. Where the engine plate is not visible on the engine there should be a duplicate plate in an alternative visible location, such as the drivers cab, or inside the engine hood, so it might be helpful to check in these locations first.

The engine plate should include information on as shown in the below example:

- Manufacturer (e.g. Deutz)
- Model (e.g. TCD 3.6 L4)
- Engine manufacturer year (e.g. 2012 – this is found in Engine EU type approval number after the second *)
- Plant ID (which will be unique to the equipment similar to a license plate) – sometimes this is referred to as engine serial number (e.g. 11566276)
- Engine EU type approval number (e.g. e1*97/68MA*2012/46*0673*02)
- Engine power (e.g. 85kW)



When locating the engine plate always follow our Golden Rules and observe our requirements on plant people interface. Never put yourself in danger when trying to read the engine plate such as crawling under equipment. If the engine plate is in an awkward position, a selfie-stick maybe required, in order to be able to take a photo of it (this is particularly useful for engine plates that have been mounted at above head height locations).

Where operated NRMM is used, always speak to the operator and ask them to provide you with a photo of the engine plate after they have switched off and isolated the equipment and waited for it to cool down.

For non-operated NRMM always wait for the equipment to cool down and take care to turn-off and isolate the equipment.

When reading the Engine EU Type approval number, there is one key digit that provides explicit evidence of the emission level to which the engine was manufactured. There is a second digit that can be used as an indication as to whether the engine type is approved for variable speed or constant speed operation.

Note also that Stage IV does not exist for any NRMM engines < 56 kW. In this case emission regulation in the EU is limited to Stage IIIB.

Example type approval number:
e11*97/68**LA***2010/26*9999*01

1st letter = EU Engine Emission Category

2nd letter = EU variable speed or constant speed designation
A = variable speed,
B = Constant speed

In this example the letters LA mean it is a variable speed Stage IIIB 130 560 kW engine. This complies with 01 Sept 2015 GLA NRMM requirements for all zones.

You can then use the first letter to find the EU Emissions Stage of the engine as follows:

Engine Category Letter	EU Emissions Stage
A-C	EU Stage I
D-G	EU Stage II
H-K	EU Stage IIIA
L-P	EU Stage IIIB
Q-R	EU Stage IV

If an engine plate cannot be found ask your supplier or contractor to provide you with the necessary engine plate information and the location of the engine plate. In most circumstances, if an engine plate cannot be found, the Enforcement or Environmental Health teams will require the equipment to be taken off site.

Appendix 2

From the home page, users can add, edit, view and download manifests. Manifests are essentially inventories of plant and equipment that are specific to the project the user is working on. To Add Manifests click on Manifests from the Menu and select the option Add Manifest

The screenshot shows the CESAR ECV Clearing Portal website. The header is blue with the CESAR logo on the left, the text 'CESAR ECV Clearing Portal' in the center, and navigation links 'Manifests', 'CECP home page - Plant Supplier User', 'Plant Supplier Test', and 'Logout' on the right. The main content area features a section for 'HS2' with a large 'HS2' heading and a smaller '14 CESR' logo. The text below the heading states: 'HS2 has set strict emission requirements for all Non-Road Mobile Machinery (NRMM) across the route. Please refer to the HS2 Code of Construction Practise and relevant HS2 Information Papers for further details:'. It then lists two information papers: 'HS2 Phase One Information Paper E31: Air Quality' with a URL and 'HS2 Phase 2a Information Paper E14: Air Quality' with a URL. A paragraph follows: 'By using this portal, and preregistering / updating all plant CESAR, ECV and deployment date details, you will not be required to submit any additional details to the Air Quality Consents mailbox on these pieces of equipment, with the exception of exemption applications. Please ensure all exemption applications are submitted, in line with the above document links, to the Air Quality Consents mailbox (airquality.consents@hs2.org.uk)'. The footer contains logos for 'Powered by DATATAG', 'CEA AEA', and a 'COMPLIANT VERIFIED & SECURED' badge, along with the copyright notice '© 2020 - Datatag ID Limited | Version: 1.0.0.4'.

To add manifests click on manifests from the menu and select the option add manifest

CESAR ECV Clearing Portal Manifests Plant Supplier Test Logout

Manifest saved.

Edit Manifest

Reference: 1-2-1

Supplier Company: Barbar Plant Group - B69 9SZ

*Date Due On Site: 22/07/2020

*Date Due Off Site: 06/08/2020

*Project: HS2

Required Stage Level: 4 - IV

*Site: Test Site Name - TSN (Test Description)

Created On: 28/07/2020 14:13:16

Save

Search

CESAR ID	ECV Code	Valid	Req. Exemption Confirmed	Processed
CESAR ID	ECV Code	✘		✘

Remove

Presented by **DATATAG** CEA AEA **GREENOV** VERIFIED & SECURED

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Technical Support

*Enter Manifest details and click Save to add a new manifest. Required fields are marked with **

CESAR and ECV codes are validated as soon as they are entered. For further information, please use the guidance available on the website itself as this is updated regularly.