This is the publicly accessible procedure portion.

1-1 PURPOSE & SCOPE

Scope
This procedure covers the evaluation, ongoing impacts assessment, notification and engagement in the event of a major, unplanned power loss at the campus resulting in the requirement that a significant number of standby diesel generators are required to run on the site. ***This procedure is separate to any H&S related emergency operating procedures (EOP) and risk assessments for on-site staff.*** *The AQ procedure also contains useful **assessment tools should a planned maintenance event similarly require a significant number of standby diesel generators to operate**. Key information for the outage is provided at the beginning of the form to best enable coordination and assessment. It is possible that the protocol could be initiated by external bodies like the EA or local authority before the action plan itself has been enacted locally.*

1-2 SITE INFORMATION

LON1 Feltham Data Centre	
Permit Number	TBC upon issue.
Address	Unit 4, Westgate Industrial Estate Feltham TW14 8RS
Grid coordinates (x, y)	507535, 173055

1-3 HEADLINE SCALE OF STANDBY ON SITE

MW Electrical	26.8 MWe
Permitted MW thermal	64.47 MWth
Installed number of standby engines	11
Resilience provision for the engines	The 5 existing CAT3516 engines serve data halls A, B, C, D and E and have the following arrangements: • 3 x engines in 3-to-make-2 distributed redundant supply to existing UPS / critical loads (n+1 arrangement); • 2 x engines supply to the mechanical loads (n+1 arrangement). The 6 proposed KD3500-E engines will serve data halls F, G and H and have an n+2 arrangement, configured as a block redundant system.
Site location	• The A30 Staines Road is located directly north with agricultural land and isolated properties beyond. • Commercial/industrial premises are located to the east and south. • There is open disused land to the west, with residential properties on Harrow Road beyond.
Stack Arrangement (indicative or average height + characteristic)	Containerised units, exhaust stacks discharge within individual risers which are 16.1m in height
Primary Grid connection description	Two 11kV supplies to the on-site data centre substation; either of these feeds can serve the 'customer load'. On completion of the planned upgrade works, the two 11kV feeds will be replaced with one 22kV utility supply. Currently, the two 11kV supplies are from SSEN substation STANWELL 33/11, transitioning to one 22kV supply from SSEN substation East Bedfont 132/22kV.
Minimum distance to other large data centres or aggregated standby which could share the same Primary Grid connection.	None identified within 2km
Standby Cluster? – estimated number of any off-site standby engines within 500m radius that would likely operate in a national black-start scenario	Not a cluster
Nearest sensitive/residential receptor	Approx. 70m northwest on Staines Road (Cafe)/125m north off Staines Road (Residential)
Local Authority AQ management Zone	The whole London Borough of Hounslow, and the adjacent Spelthorne Borough Council is declared as an Air Quality Management Area (AQMA) for the NO_2 annual mean AQAL.

This is the publicly accessible procedure portion.

1-4 HIERARCHY OF ENGINE NUMBERS AND ASSOCIATED OUTAGE DURATIONS OF CONCERN

Outage Scenarios	Indicative MWth (number of gens)	Maximum 1-hour concentration (µg/m^3)	Number of hours probability of exceedance of AQAL (200µg/m^3 >18 hours) is >5%	Number of hours probability of exceedance of AEGL-1 is >5%	Outage duration to notify as soon as possible the local authority and EA if event is likely to exceed[1] (hours)
1 x CAT3516	5.26 (1)	155	Unlimited hours	Unlimited hours	Unlimited hours
2 x CAT3516 (Suite 1)	10.53 (2)	238	1026	Unlimited hours	1026
1 x CAT3516 (Suite 2)	5.26 (1)	150	Unlimited hours	Unlimited hours	Unlimited hours
1 x KD3500-E	6.36 (1)	83	Unlimited hours	Unlimited hours	Unlimited hours
2 x KD3500-E	12.72 (2)	101	Unlimited hours	Unlimited hours	Unlimited hours
3 x KD3500-E	19.08 (3)	119	Unlimited hours	Unlimited hours	Unlimited hours
4 x KD3500-E (Suite 3)	25.44 (4)	136	Unlimited hours	Unlimited hours	Unlimited hours
Suites 1 and 2 (3 x CAT3516)	15.79 (3)	311	327	Unlimited hours	327
Suites 2 and 3 (1 x CAT3516 + 4 x KD3500-E)	30.7(5)	213	2954	Unlimited hours	2954
Suites 1 and 3 (2 x CAT3516 + 4 x KD3500-E)	35.96 (6)	309	414	Unlimited hours	414
All (3 x CAT3516 + 4 x KD3500-E)	41.23 (7)	381	219	Unlimited hours	219

Table note: Area of modelled maximum possible impact covers the commercial/industrial premises adjacent to the Site, and agricultural fields to the north.

1-5 EXTRACTS AND REVIEW OF AIR QUALITY MODEL FOR NO_2

Criteria	Predicted Environmental Concentration NO_2		
A	Conservative peak NO_2 under worst scenario {ambient AQ or AEGL}	381	µg/m^3
B	Indicative or likely typical during prolonged outage	32.6 (annual mean)	µg/m^3
C	Guidance distance that could be affected (see figure below)		

This is the publicly accessible procedure portion.

Figure note:
<389 exceedances represent a <1% probability of exceeding the AQAL (200µg/m^3 >18 hours) based on 219-hour outage.
<456 exceedances represent a <5% probability of exceeding the AQAL (200µg/m^3 >18 hours) based on 219-hour outage.
>456 exceedances represent a >5% probability of exceeding the AQAL (200µg/m^3 >18 hours) based on 219-hour outage.

	Headline realistic figures (for A max above)		
D	Site load on full outage	41.23	MWth
E	Fuel rate per hour (for A max above)	4.96	t/hr
F1	Average NOx emission rate per generator (CAT 3516)	13.42	kg/hr
F2	Average NOx emission rate per generator (KD3500 with SCR)	4.08	kg/hr
G	Total NOx emission rate on full site outage (for A max above)	56.62	kg/hr
	Key Risk Factors identified		
	Times of day	Midnight to early morning hours	
	Seasonal	Summer months (June to September), and warm weather meaning people are more likely to be present outside in gardens etc.	
	Windspeed range of concern and direction	1.5 – 4.0 m/s	From E/SE
	Area prone to poor AQ alerts	No	
	Local Authority known cluster	*not a cluster*	

1-6 RESPONSIBILITIES

Name	Company	Description
TBC	Environment Agency	Regulatory Authority
Climate Emergency & Environmental Strategy	London Borough of Hounslow	Local Authority

1-7 RELATED DOCUMENTATION

Document	Title	Notes
AERA	Environmental Permit Application, Air Emissions Risk Assessment – LON1, Feltham	410.064891.00001 Version No. 1.0 – March 2024

This is the publicly accessible procedure portion.

1-8 PROCEDURES

1-8-1 THE FOLLOWING STEPS ARE TO BE FOLLOWED IN THE EVENT OF A POWER FAILURE EITHER ON-SITE LOCALLY OR UK POWER NETWORKS.

Actions

Initial assessment

1. Start the incident diary – note start time of outage
2. Determine likely duration of outage initially (check with UK Power Networks/DNO, normal repair times for works internally and externally, how critical is the fault)
3. What fraction of the site standby (Section 1-4) is operating on load?
4. Assess wind direction and weather forecast (see Section 1-12)
5. Modify your assessment of **outage hours** to consider realistic **exposure hours** for the receptors using Section 1-5 if required:
    a. Are receptors exposed indoors for part or all of the outage
    b. Outdoors and/or very sensitive
    c. Will receptors be mobile and change during the event (diurnal cycle of work, travel, home etc)
6. Qualitatively assess where (based on wind direction) and when (receptor movement patterns) there could be an issue for AQ.
    a. Are you concerned for a prolonged outage (>18 hours) which is likely to exceed ambient NO_2 200µg/m^3 for each hour (refer to Section 1-4)
7. Refer to sensitive receptor list based on the specific circumstances (Table 1-11 Receptor list and make observations on surveilance route Section 1-10)

Notifications – Potential polluting event to air quality

8. Report your outage if the required hours are met (Outage Impacts Risk Assessment to EA based on hours in Section 1-4), **initially to the the EA National Customer Help Line** and then ideally to the EA permitting officer.
    a. EA helpline email address (Incident_Communication_Service@environment-agency.gov.uk) with assocoiated details – permit number, location, your risks – importantly script to email is that stated in Section 1-14):
        i. In summary *"This is a self-reported potentially polluting event to air quality caused by an EA permitted installation. We are a large Data centre needing to run a significant number of standby diesel engines that may lead to ambient air quality breaches. We have initiated the agreed air quality action plan"*
        ii. *Ask for a reference and provide updates to this*
        iii. *Confirm that the outage has ceased*
    b. Depending on your AQMP notification, the EA may declare the outage an Incident requiring attendance at the site by EA staff.
9. Also report to the Local Authority your Outage Impacts Risk Assessment in similar fashion
    a. Depending on your AQMP notification, the local authority may declare the outage an Incident requiring an attendance at the site.

External authorities' further decisions

10. If assessed as applicable the Environment Agency and Local Authority will decide if the event is so extreme that the emergency services should also be informed.
11. The Environment Agency, Local Authority or Emergency Services will provide advice directly to receptors to reduce their exposure
    a. Move and/or stay indoors
    b. Close windows
    c. Lower physical exertions
12. Update on changing circumstances (receptor risk factors – e.g.night time, traffic significantly reduced than normal, Sunday majority of industrial estate closed)

Operator Further Actions

13. Review and update EA as appropriate on changing circumstances (e.g. school closed anyway, temporary closure of mosque, traffic significantly reduced than normal, high winds and rain meaning potential for local expsure is reduced)
14. Review whether site has the ability to change the impact of the outage load and hence diesel emissions e.g. by reducing load – re-assess and provide update to EA.

This is the publicly accessible procedure portion.

1-9 NEAREST AMBIENT AIR QUALITY MONITORING STATIONS

Automatic monitors within the vicinity of the site include BAA Oaks, HS7 and HS9, as presented below.

ID	Site Type	NGR (m)		Pollutants Measured	Approx. Distance to Site (m)
		X	Y		
BAA Oaks	Urban Background	505729	174496	NO_2, PM_{10}, $PM_{2.5}$	2,200
HS7 Hatton Cross	Background	509334	174997	NO_2, PM_{10}	2,565
HS9 Feltham	Roadside	510691	173247	NO_2, PM_{10}	3,115

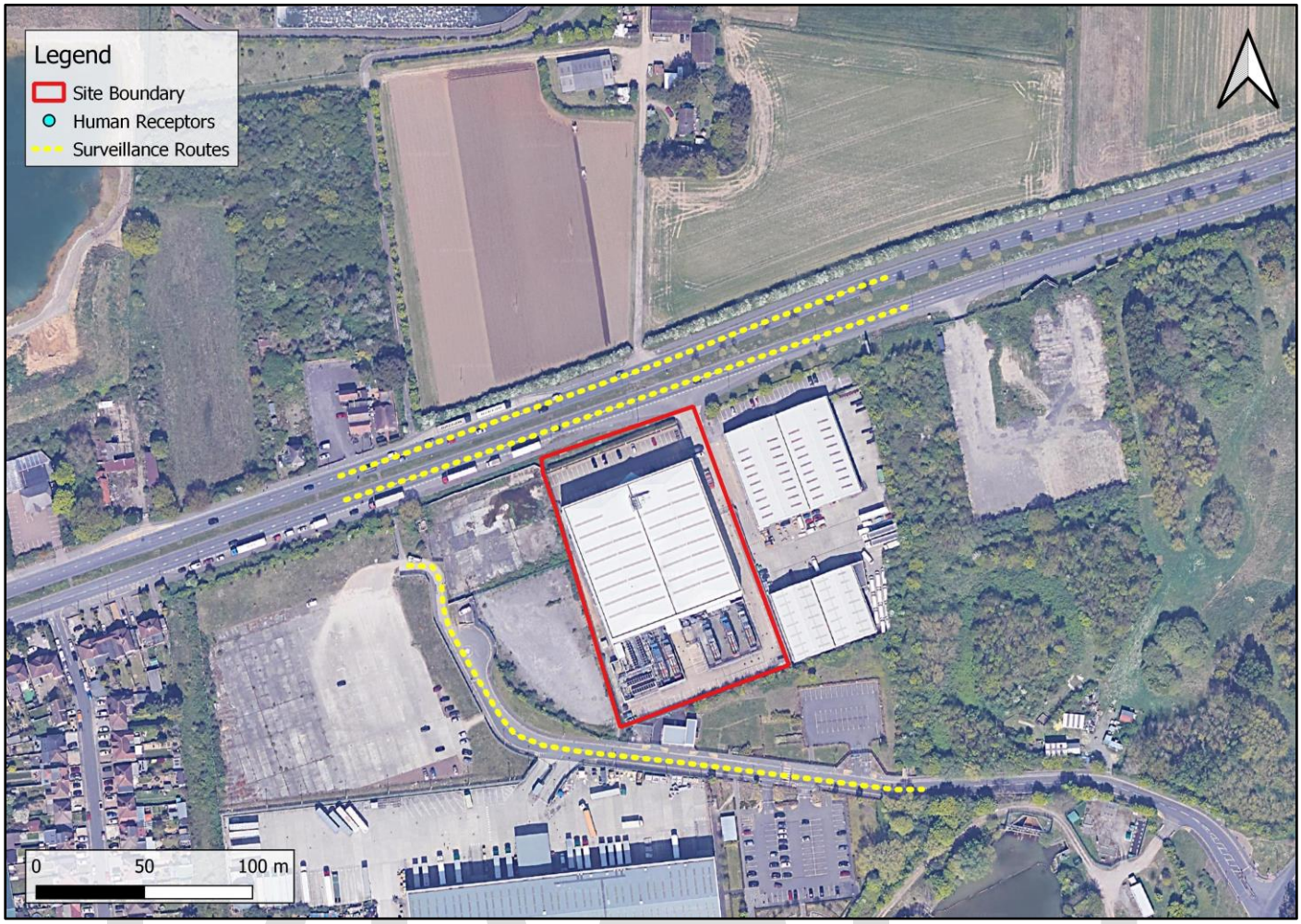
This is the publicly accessible procedure portion.

1-10 RECEPTOR PLAN AND SURVEILLANCE ROUTES

AQ receptor plan

This is the publicly accessible procedure portion.

Indicative surveillance route (modify based on wind direction and receptor activity)



1-11 RECEPTOR LIST

Reference (see Map in Section 1-10)	Type of receptor
HR1	Residential Dwelling
HR2	Residential Dwelling
HR3	Hospital
HR4	School
HR5	Residential Dwelling
HR6	Residential Dwelling
HR7	Residential Dwelling
HR8	Residential Dwelling
HR9	Residential Dwelling
HR10	Residential Dwelling
HR11	Mosque
HR12	Residential Dwelling
HR13	Residential Dwelling
HR14	Residential Dwelling
HR15	Residential Dwelling
HR16	Residential Dwelling
HR17	Residential Dwelling
HR18	Residential Dwelling
HR19	Residential Dwelling
HR20	Residential Dwelling

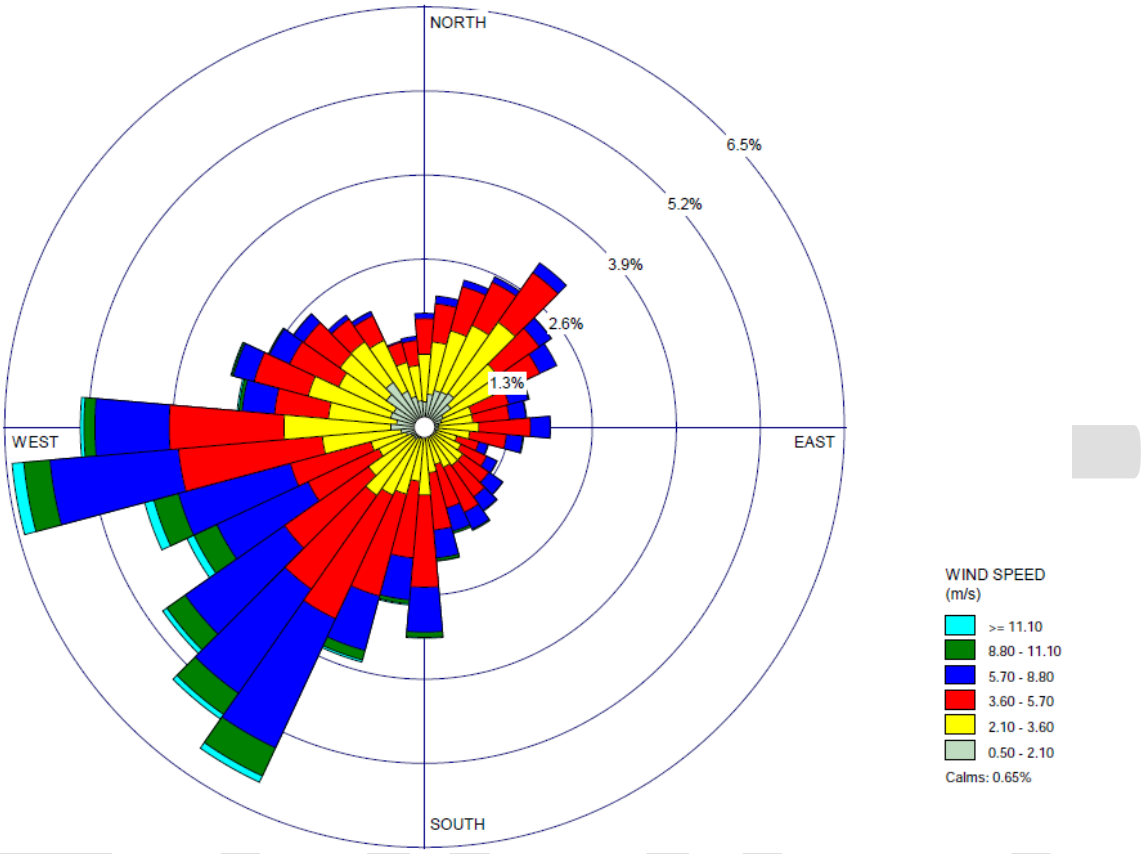
This is the publicly accessible procedure portion.

Reference (see Map in Section 1-10)	Type of receptor
HR21	Residential Dwelling
HR22	Residential Dwelling
HR23	School

This is the publicly accessible procedure portion.

1-12 LOCAL WEATHER FORECAST AND WIND-ROSE

Preferred Weather source
Heathrow Airport
Wind rose for the site (from AQ model)



This is the publicly accessible procedure portion.

1-13 PUBLIC ACCESS CONTACTS

Index	Operator Contact		
1	SF LHR contact	+44 20 3314 4768	Phone
	External Contacts		
2	EA incident hotline	0800 80 70 60	Phone
		Incident_Communication_Service@environment-agency.gov.uk	E-mail
3	London Borough of Hounslow Climate Emergency & Environmental Strategy Team	020 8583 4000	Phone
		environmental.strategy@hounslow.gov.uk	E-mail
4	Local Emergency services – Fire Brigade	020 8555 1200 (London Switchboard)	Non-emergency contact number
5	Local Emergency services – Police	101	Non-emergency contact number
List of public receptors who need to be contacted directly is held separately under GDPR			

This is the publicly accessible procedure portion.

1-14 REPORTING FORMAT FOR EA, LOCAL AUTHORITY ETC (SCRIPT)

Script for 'Data Centre Service Desk' to Environment Agency 'Customer Hotline'
Incident Communication Service <Incident_Communication_Service@environment-agency.gov.uk>

Information on Incident	Details
Type of Incident	**This is a self-reported potentially polluting event to air quality caused by an EA permitted installation**
Permit reference	TBC
Location:	Unit 4, Westgate Industrial Estate Feltham, TW14 8RS
Time and date of the outage:	<dd/mm/yy hh:mm>
Initial Understanding of the Incident:	We are a large data centre needing to run a significant number of standby diesel engines due to a likely prolonged power outage. This has the potential to lead to ambient air quality breaches especially if power loss exceeds 18 hours duration.
Potential Duration & Scale	
We have assessed the current outage scenario as	<use table 1.4 to inform this section with regard to magnitude of risk>
and could be running for the following number of hours as a result of the power loss on site	<hours>
Number of standby generators operating after 30minutes	<n>
Number of standby generators actually or predicted to be operating after 2 hours	<n>
Initial Actions being taken:	We have initiated the agreed air quality management action plan (AQMP). For information, this will be logged in your document management system (DMS) under the Permit reference. The AQMP includes the requirement to make this notification as soon as practical.
Other steps taken include:	<other steps taken include>
Our local EA Site permit contact is:	<enter name from contact sheet>
Updates	<reference>:
	Confirm that the outage has ceased
Visual Impact (fumes etc):	Yes/No
Commenced AQ assessment of impacts at potential receptors	Yes/No commenced at hh:mm
AQMesh Readings are available	No
Wind and weather conditions locally are?	Provide information (refer Section 1-12)
Contact Details:	
For urgent enquiries, please call	Complete as appropriate for Duty Manager
If you're unable to get in touch, please email our service desk and request that we return your call urgently, providing details of the information you require.	

This is the publicly accessible procedure portion.

1-15 DOCUMENT INFORMATION

EOP/SOP Ref	Procedure Name			
	LON1, Feltham Data Centre, Air Quality Management Action Plan			
System / Equipment:	**Location / Area**	**Rev**	**Status**	**Next review date**
Standby Generators	Unit 4, Westgate Industrial Estate, Feltham, TW14 8RS	1	Current	06/03/2025

1-16 CHANGE HISTORY

DATE	DESCRIPTION OF CHANGES	SECTIONS / PAGES UPDATED	AUTHOR	REVIEWED BY	DATE

This is the GDPR, private procedure part.

1-17 SPECIFIC PRIVATE CONTACTS (GDPR CONSIDERATIONS)

Use this separate annex to retain private contacts that should **not** be provided for public access in the event of a prolonged outage.

Index	Operator Contact		
1	SF LHR contact	Duty Managers	+44 20 3314 4768
	External Contacts		
2	Environment Agency	TBC	TBC
	Private Sensitive receptors to be directly contacted		
3	Mapcargo International (winds from SW/W)	Unit 1a Westgate One, Staines Rd TW14 8RS	01753 255255
4	Aviation Support Global Logistics (winds from SW/W)	Unit 1a One, Westgate Estate, Staines Rd, Feltham TW14 8RS	01753 757100
5	Bridgestone Aircraft Tire UK Ltd (winds from SW/W)	Westgate Estate, Staines Rd, Feltham TW14 8RS	01784 427580
6	ByBox (winds from W)	4555 Staines Rd, Feltham TW14 8RS	0303 834 9493
7	West London Direct Freight Ltd (winds from W)	Unit 2, Westgate Estate, Staines Rd, Feltham TW14 8RS	0844 567 0568

This is the publicly accessible procedure portion.

ANNEX A: EA'S GUIDE TO AQMP COMPLETION

PURPOSE & SCOPE

Edit the text in this section to expand on or explain how the procedure is being used locally.

It is envisaged that the production of the AQMP would be best done as part of any new permit application during detailed AQ modelling.

This template can be formatted to meet local operator EMS documents – it is primarily the content of most importance.

The absolute primary requirement is that this form documents and agrees the scale/load and duration of a local outage which should be notified soonest to local authority and EA due to possible concerns for local air quality – this might be a long-term outage (possibly around 18hours, or a short-term peak of only a few hours due to receptor proximity). This is ultimately to enable actions to assess and consider escalating to public warnings or the operator contacting their "Private Sensitive receptors to be directly contact as determined and agreed in advance".

Though exacerbating factors like low winds, time of day, meteorological inversion layers etc play an important part for ongoing AQ assessment it is most central to agree an uncomplicated, precautionary headline figure of likely concerning outage duration.

HEADLINE SCALE OF STANDBY ON SITE

This key information summarises the site. It begins the form to enable assessment of clustering (multiple outage notifications) and scale of multiple data centres at an early stage. Resilience is important to indicate & clarify that all plant wouldn't be required to meet site loads.

Campus sites – ones where multiple buildings are incorporated on to the same EA permit. Indicate how each of the site campuses is named and ensure the site plan includes them.

Campus sites will best be sub-divided into separate 1.4 and 1.5 tables (or clearly headed sections) for each. Initially it is suggested that the table indicates how each campus within the group will be affected. Ideally AQ actions and surveillance under table 1.8 to 1.11 inclusive can be common to all but if appropriate have separate routes etc as necessary.

HIERARCHY OF ENGINE NUMBERS AND ASSOCIATED OUTAGE DURATIONS OF CONCERN

Realistic Outage Scenarios based on a review of the way the site could reasonably be expected to react to a range of modes of power loss – edit the table as appropriate.

If this is a multi-site campus based data centre the following table can be sub-divided or repeated separately for each as appropriate.

The site may be able to bus couple between HV connections, or internally switch engines manually onto alternative circuits or stay-on load due to customer during 'heightened awareness' risk status which will affect the ability to manage the risk/load/run durations. The following are guidance scenarios edit accordingly. Line A should be the headline minimum load/duration event that triggers the AQMP and notifications: Outage Durations of concern – enter the approximate run time after which receptors downwind, or building downwash, theoretically could start to significantly exceed the AQS of NO_2 200ug/m^3 somewhere during the outage These hours are also the levels before which notifications are provided to EA or local authority – if you know the outage will exceed these hours notifications should be made soonest.

Important outcome is at least 2 rows one to indicate the scale of outage where no immediate reporting to the EA is required relying only on post event reporting as per permit Schedule 5 – Notification: and one for the worst case, realistic whole site loss of power. In essence row #1 is the pre-agreed 'need to know' duration of outage and #5 is the' outage of no concern'.

RELATED DOCUMENTATION

It is not envisaged that the local community needs to receive any direct contact in deriving the AQMP. Public engagement materials need only be produced ready for a prolonged outage resulting in risk of poor AQ. It is just providing explanation, advice, contacts etc ready. Only in exceptional circumstances should it be necessary to identified sensitive receptors and advise they are listed in 1-17 and to be contacted directly

PROCEDURES

Edit and amend the indicative steps as appropriate

This is the publicly accessible procedure portion.

RECEPTOR PLAN AND SURVEILLANCE

It would not be unreasonable to try-out the route during a routine planned whole-site black building test to gain a sense of the background AQ etc.

In the urban setting exhaust fumes will be very close and around the locale regardless of wind direction due to wind shear effects around tall buildings. Ensure the route considers very local receptors and those downwind at the time too.

RECEPTOR LIST

Indicate if these are in order of a route, or on a priority basis. Remember the receptors can change – this list should be reviewed regularly. IT IS NOT ENVISAGED THAT RECEPTORS NEED TO BE IDENTIFIED OTHER THAN BY GENERIC LOCALE. RECEPTORS DO NOT NEED TO BE PRE-WARNED OR DETAILS ACTIVILY SORT IN ADVANCE OF DEVELOPING THIS AQMP.

ONLY IN EXCEPTIONAL CIRCUMSTANCES DO PRIVATE SENSITIVE RECEPTORS NEED TO BE LOGGED AND CONTACTED {SUCH MAY ALREADY BE THOSE WHO ARE ADVISED OF TESTING DUE TO NOISE OR FUMES ETC}

NEAREST AMBIENT AIR QUALITY MONITORING STATIONS

Indicate is the station falls within the likely zone of ambient emissions. Also indicate if the site has installed its own continuous monitoring station(s). Can mobile monitoring stations be provided at short notice.

SPECIFIC PRIVATE CONTACTS (GDPR CONSIDERATIONS)

Use this separate annex to retain private contacts that should not be provided for public access in the event of a prolonged outage.