

This is the publically accessible procedure portion.

1-1 PURPOSE & SCOPE

Scope
<p><i>This procedure covers the evaluation, ongoing impacts assessment, notification and engagement in the event of a major, unplanned power loss at the facility resulting in the requirement that a significant number of standby diesel generators are required to run on the site.</i></p> <p><i>This procedure is separate to any H&S related emergency operating procedures (EOP) and risk assessments.</i></p> <p><i>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.</i></p>

1-2 SITE INFORMATION

Permit Number	EPR/PP3003PW/V002
Address	Spring Park Data Centre
	Westwells Road
	Corsham
Postcode	SN13 9GB
OS – grid coordinates	384831, 168835

1-3 HEADLINE SCALE OF STANDBY ON SITE

MW Elec	121.95	MW elec
Permitted MW thermal	328.160	MWth
Site MVA	118	MVA
Installed number of standby engines	70	n
Resilience provision for the engines	n+1	
Site location	Suburban; Campus	
Stack Arrangement (indicative or average height + characteristic)	<10m Containerised	m
Primary Grid connection description	<i>7 number 33kV distributed redundant supplies (7 to make 4 at full capacity)</i>	
Minimum distance to other large data centres or aggregated standby which could share the same Primary Grid connection.	None	m
Standby Cluster? – estimated number of any off-site standby engines within 500m radius that would likely operate in a national black-start scenario	N/A	n
Nearest sensitive/residential receptor	68 Westwells	m
Local Authority AQ management Zone	No	

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

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

EA Template Air Quality Management Action Plan (AQMP) Aggregated Diesel Standby 30/11/21 DRAFT

Criteria	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 – delete/add as appropriate	MWelec (number of gens)	Run duration (hours)	Outage duration to notify as <u>soon as possible</u> the EA and/or local authority if event is likely to exceed ¹
1 (required)	Worst case, realistic whole site loss of power e.g. <i>Maximum number of engines and/or load operating for SHORT period where concern could start. AEGL risk</i>	121.95MW (70 generators)	72 - Potential of very slight AQO exceedance at one receptor	EA to be advised within 1 hour if outage duration is expected to exceed 72 hours
2	Reasonable next subdivision of site plant or specific site buildings i.e. <i>accounting for various HV circuits A & B and/or worst case single data hall – NB this accounts for elective standby to support maintenance activities.</i>	48.960MW (24 generators HV generator farm)	72 - Probability of AQO exceedance still less than 1%	EA to be advised within 1 hour if outage duration is expected to exceed 72 hours
3	Worst case partial site number of generators e.g. <i>this might be a minimum number of engines and/or load operating for a reasonable LONG period where concern could start.</i>	48.960MW (24 generators HV generator farm)	72 - Probability of AQO exceedance still less than 1%	EA to be advised within 1 hour if outage duration is expected to exceed 72 hours
4	Specific data hall(S) locations: <i>Minimum part load or number of generators for named part of site due to proximity of receptors</i>	48.960MW (24 generators HV generator farm)	72 - Probability of AQO exceedance still less than 1%	EA to be advised within 1 hour if outage duration is expected to exceed 72 hours
5 (required)	Indicative maximum number of engines below which there is minimal outage impact for the local Air Quality i.e. <i>ambient NOx 200ug/m3 is not exceeded at all</i>	89.568MW (54 generators)	72 - Probability of AQO exceedance less than 1% as shown in previous Air Quality Assessment. Outage beyond this period unlikely	EA to be advised within 1 hour if outage duration is expected to exceed 72 hours
6	Other site specific representative outage HV Gen Farm Standby Generating Testing	48.960MW (24 generators HV generator farm)	15-minutes - potential for AEGL exceedance during routine testing in worst-case meteorological conditions. To minimise risk, the HV Gen Farm should not be tested during periods of westerly winds. This should be checked using the on-site meteorological station and the testing delayed as necessary until acceptable wind conditions resume	N/A

EA Template Air Quality Management Action Plan (AQMP) Aggregated Diesel Standby 30/11/21 DRAFT

Note1 The usual permit condition is to notify the EA within 24 hours of "Number of generators operating initially and the number then operating two hours after the outage" started. The duration in this column is the **pre-agreed predicted duration and scale of an ongoing outage notified as soon as possible** i.e. when 'within 24 hours' really means as soon as practical. The significant majority of outages will be small scale or short duration brown-outs, these need only be post-event reported to the local EA officer alone.

1-5 EXTRACTS AND REVIEW OF AIR QUALITY MODEL FOR NO₂

Criteria	Predicted Environmental Concentration NO ₂		
A	Conservative peak NO ₂ under worst scenario {ambient AQ or AEGL}	682.9 ^(a)	ug/m ³
B	Indicative or likely typical during prolonged outage	203.26 ^(b)	ug/m ³
C	Guidance distance that could be affected (radius) for the above figures	255 ^(c)	m
Headline realistic figures (for A max above)			
D	Site load on full outage	40	MWelec
E	Fuel rate per hour (for A max above)	1.43	t/hr
F	Average NOx emission rate per generator	8.32	kg/hr
G	Total NOx emission rate on full site outage (for A max above)	582.3	kg/hr
Key Risk Factors identified			
	Times of day	The receptors are residential properties and therefore use is likely to be similar on a daily and annual basis and assumptions on dates or times of high or lower sensitivity would not be appropriate	
	Seasonal		
	Area prone to poor QA alerts	No	
Comments:- (a) Maximum predicted 1-hour mean NO ₂ concentration at any receptor based on all meteorological data records. (b) Maximum predicted 83.68 th %ile 1-hour mean NO ₂ concentration at any receptor based on 72-hour grid outage. (c) Minimum distance from any generator exhaust to receptor where concentration predicted.			

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1-6 RESPONSIBILITIES

Name	Company	Description
Ark Service Desk	Ark Data Centres Limited	Co-ordination of Incident Management and associated client communications.
Technical Operations Manager (Meridian Park)	Ark Data Centres Limited	Co-ordination and management of site activities - Technical
Head of Energy & Sustainability	Ark Data Centres Limited	Incident support and regulatory reporting – Technical & Compliance
Head of Compliance	Ark Data Centres Limited	Incident support and regulatory reporting – Compliance
Major Incident Operations Team	Ark Data Centres Limited	Co-ordination of activities in the event a major incident is declared (ties into Business Continuity arrangements)

(MIOT)		
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1-7 RELATED DOCUMENTATION

Document	Title	Notes
	Notification template as part of permit ref	Readings to be taken and sent to the Environment Agency
	AQ model report supplied for improvement condition discharge	3650-1 (June 2022)
	Pre-prepared Public engagement materials & leaflet	N/A
	Other	

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
<p>Process flow chart or diagram:</p> <ol style="list-style-type: none"> EMS Notification – DNO Supplies out of tolerance, Generators start. Trigger Ark Incident and Escalation Process – captures start of incident date and time. Contact DNO to determine likely cause of supply failure and anticipated duration of outage. Once the the 11kV networks are stable and the anticipated duration of the outage determined, instigate EOP to rationalise the number of generators in operation against available circuits and data centre demand, if this is warranted. Instigate regular update calls with DNO Control Room. The outage and implementation of the Air Quality Management Plan will be reported to the EA. Initially this will be to the local permitting officer, and if unavailable the EA National Customer Help Line. Any direction from the EA regarding the declaration of a Pollution Incident will be noted and instructions followed. The outage and implementation of the Air Quality Management Plan will be reported to the Environmental Health Department at Wiltshire Council; Continue to assess anticipated duration of outage and number of generators in operation, if outage is going to exceed 72 hours with more than 54 generators in operation, notify occupants of 68 Westwells that there is an ongoing generator incident and to close all windows, as well as to consider travelling to an alternative location if practicable and the outage is predicted for an extended duration. Communication will be made to a nominated contact at the relevant receptor(s) on an hourly basis until the risk level has reduced to no risk or low risk, or power has resumed and the engines have ceased operation. Update the EA with any material changes to the nature of the outage and confirm notification affected stake holders. Once the mains supplies are restored advise the occupants of 68 Westwells that the incident is over and windows can be re-opened, apologising for any inconvenience caused. The above process is an extract from a the wider IED/EPR Reporting Process.

1-9 NEAREST AMBIENT AIR QUALITY MONITORING STATIONS

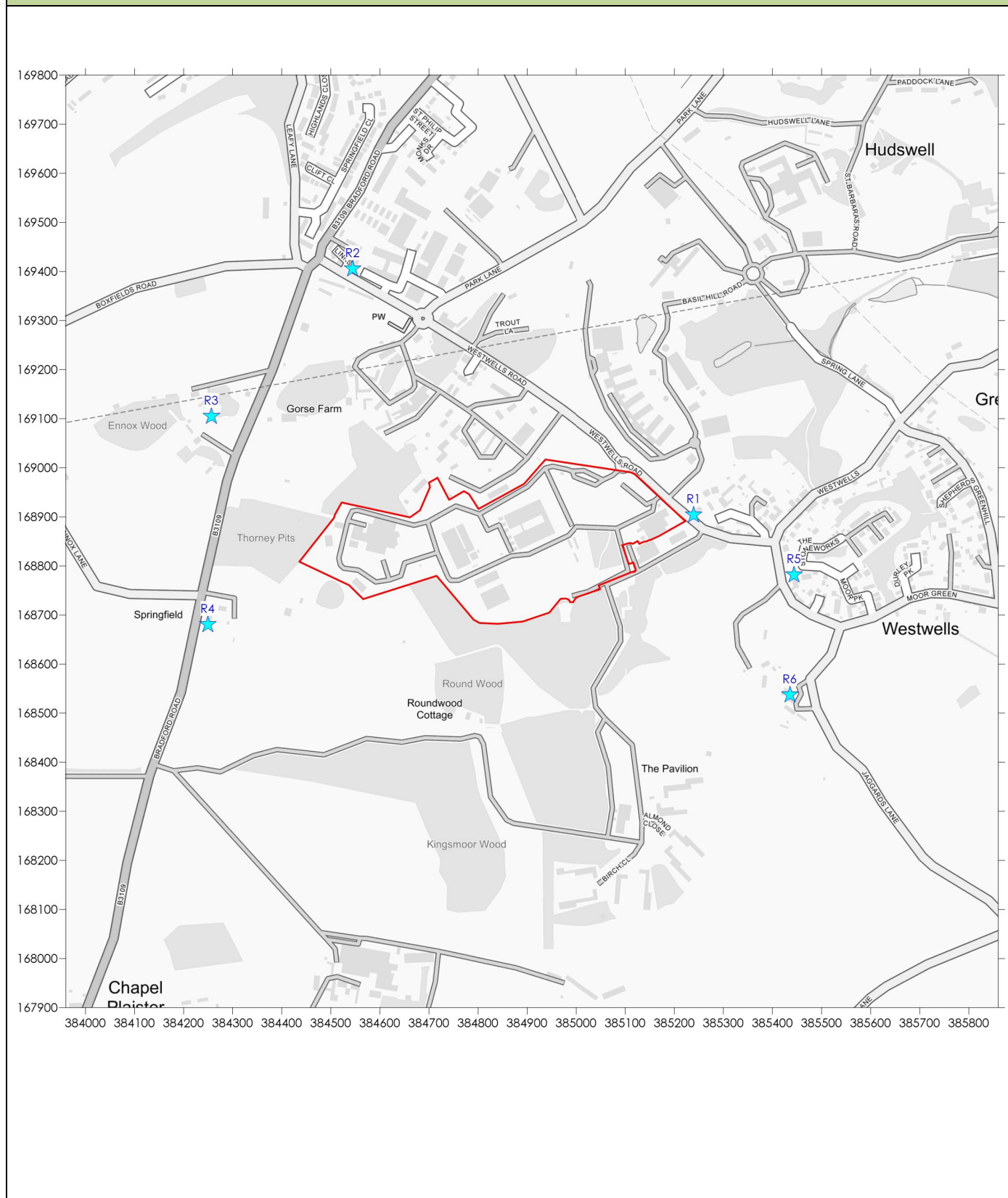
1	No relevant continuous air quality monitoring stations within vicinity of site.		

Access to current readings at: <https://uk-air.defra.gov.uk/latest/currentlevels?view=site>

This is the publically accessible procedure part.

1-10 RECEPTOR PLAN AND SURVEILLANCE ROUTE

AQ receptor plan and marked surveillance circuit

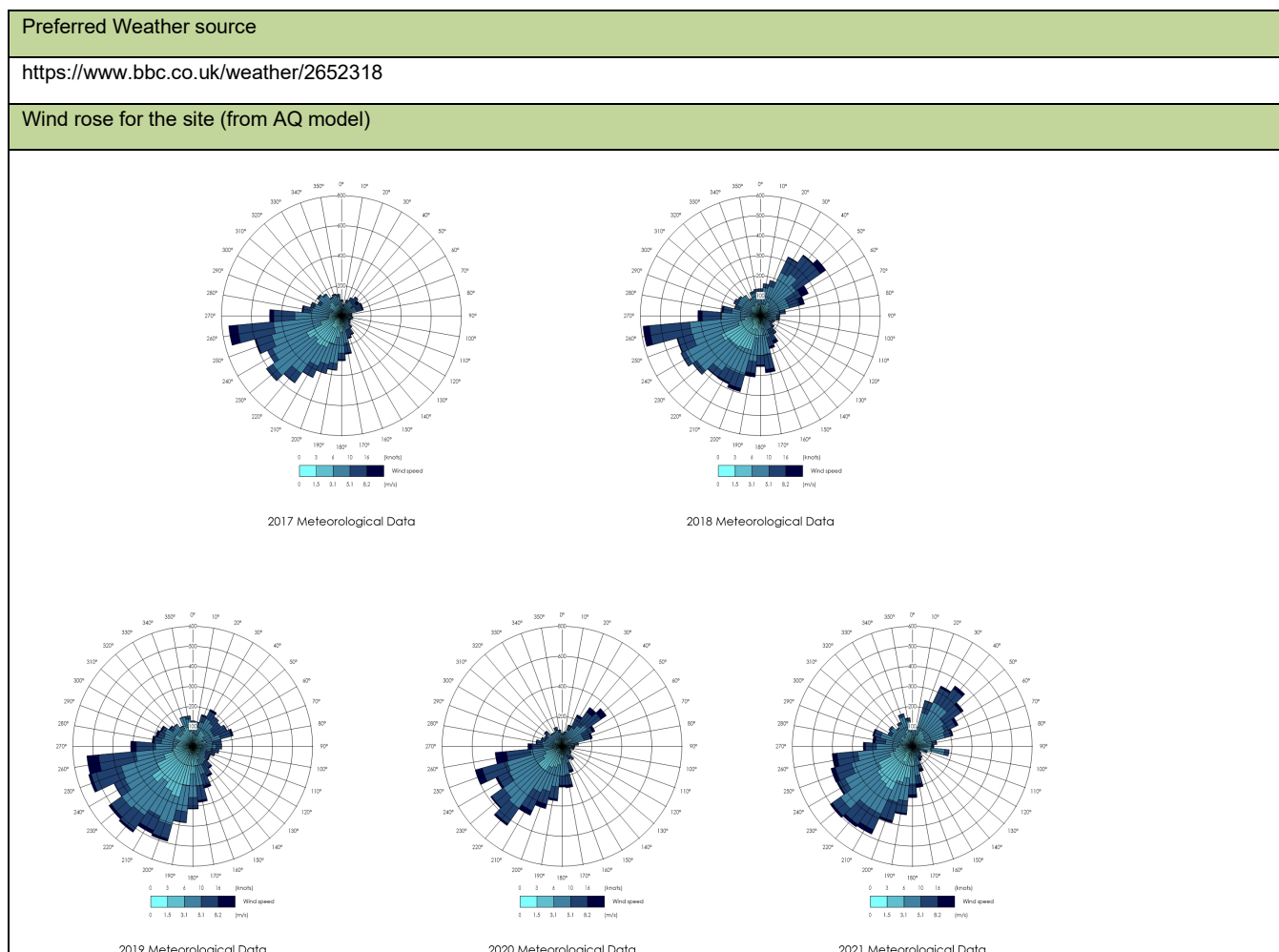


This is the publically accessible procedure part.

1-11 RECEPTOR LIST

Location ref	Type of receptor	NGR (m)	
		X	Y
R1	68 Westwells	385239.6	168903.8
R2	26 The Links	384544.3	169404.9
R3	The Retreat, Bradford Road	384256.3	169104.3
R4	Glenhaven, Bradford Road	384249.1	168680.2
R5	31 Moor Park	385443.6	168781.5
R6	Jaggards House	385435.2	168536.8
R7	Westwells Road	384781.7	169169.0
R8	Roundwood Cottage	384785.0	168498.2
The list is not to identify or assess individuals or organisations – it is only a generic profile for the locale. Are there any receptors who need to be expressly visited directly (see 1-16 Specific private contacts (GDPR Considerations))		Y	

1-12 WIND-ROSE



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Index	Operator Contact		
1	Ark Data Centres	Service Desk	Phone: 01225 818999 Email: ASD@arkdatacentres.co.uk
External Contacts			
	Local Council		
	Environment Agency	Incident hotline	Phone: 0800 80 70 60 Email: Incident_Communication_Service@environment-agency.gov.uk
	Environmental regulator (Environment Agency)	Local Site Inspector	Phone:
	Local Emergency services		Non-999 contact number
List of public receptors who need to be contacted directly is held separately under GDPR			

1-13 PUBLIC ACCESS CONTACTS

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	EPR/XXXXXX
Location:	<address & post code>
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	<copy the appropriate text from table 1.4>
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 action plan (AQMP – for info 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
Contact Details:	
For urgent enquiries, please call	XXXXXX.
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.	xxxxxx.

1-15 DOCUMENT INFORMATION

EOP/SOP Ref	Procedure Name			
System / Equipment:	Location / Area	Rev	Status	Next review date

1-16 CHANGE HISTORY

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

This is the GPRS, 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	Site contact – Duty Manager		Direct dial number
	Consultancy and technical support		
External Contacts			
	Local Council		<i>Name</i>
			<i>Phone</i>
	Environmental regulator (Environment Agency)		<i>Name</i>
			<i>Phone</i>
			<i>Email</i>
Private Sensitive receptors to be directly contact as determined and agreed in advance			
List of public receptors who need to be contacted directly is below or held separately under GDPR if necessary			

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FILL IN GUIDE

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.

HEADLINE SCALE OF STANDBY ON SITE

This key information summarises the site. It starts the form to enable clustering 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 NO₂ 200ug/m³ 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 1-16 and to be contacted directly

PROCEDURES

Edit and amend the indicative steps as appropriate

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.