Applicant's and Roy Clegg Responses to ExA First Written Questions Cottam Solar Park.

13. Other Planning Matters

ExQ	Respondent	Question	Applicants Response	Response by Roy Clegg
1.13.20	Applicant	With regard to paragraph	With reference to C7.9 Outline	The Applicants response
		11.8.2 of ES Chapter 11:	Battery Storage Safety	identifies shortcomings in the
		Ground Conditions [APP-	Management Plan [APP-348],	submissions made.
		046] and Contamination,	paragraph 5.5.4 details how the	At this stage, it should be possible
		please clarify how	battery storage area will be	to confirm that the applicant will
		potential leakage from	contained by local bunding and	build their own water supply,
		fire water storage will be	attenuated within gravel	provide tanks or supplementary
		mitigated in order to	subgrade of lined permeable	water supplies on site.
		prevent ground	SuDS features prior to being passed forward to the local land	Any of these options will affect the infrastructure on the site and
		contamination.	drainage network. In the event	should have been determined by
			of a fire, a system of	the applicant by now.
			automatically self-actuating	Cases of fires in solar projects are
			valves at the outfalls from the	now becoming common place
			battery storage areas will be	and some have been identified in
			closed, isolating the battery	the WR's. Below is a response
			storage areas drainage from the	that should also be noted.
			wider environment. The water	Guidance suggests that
			contained by the valves can	There are many questions raised
			then be tested and either	in the WR'S submissions which
			treated	have been unanswered by the
			and released or tankered off-	Applicant:
			site as necessary and in	Will the self-actuating automatic
			consultation with the relevant	valves be able to detect
			consultees at the time. The	contaminated fire runoff water
			potential release of stored	and rainwater and then divert
			water via leakage is not	either to an appropriate channel?
			considered a potential source	How will the runoff water be
			of contamination. The outline	contained, tested /treated and
			Plan is secured through	discharged to the SuDS?
			requirement 6 in Schedule 2 to	If the water storage tanks, are
			the draft DCO [EX2/C3.1_C].	already full how will the
				contaminated fire water, be
				disposed of?
				If a fire occurs in a battery, will the site be shut down or shut
				down until such time as the
				contaminated water has been
				filtered and disposed of to ensure
				that a further fire can be
				satisfactorily and safely dealt
				with?
				In the event of a fire and shut
				down of the solar farm will the
				developer be confident of
				continuing and is there a risk of
				failure and closure of the solar
				farm permanently?

ExQ	Respondent	Question	Applicants Response	Response by Roy Clegg
1.13.31	Applicant	Please explain why	The ICNIRP 1998 guidelines	The developer has chosen
		paragraph 21.2.8 of ES	provide a reference level of	to comment on human life
		Chapter 21: Other	100μT (for magnetic field) for the	and has not made any
		Environmental	general public to protect against	consideration of the
		Matters [APP-056]	indirect effects from Extremely	significant impact of EMF
		considers that the transient	Low Frequency EMF exposure.	on marine life, flora and
		use of Public Rights of Way	These guidelines were used to	fauna with wildlife, and
		crossing three 400kV	form the policy basis set out in EU	biodiversity, where all the
		circuits does not require	Council Recommendation	later are intrinsically linked
		any further investigation to	1999/519/EC, which states at	to each other.
		exposure. ICNIRP reference	paragraph (9) that "This	A myriad of cable runs in the
		levels in particular, would	recommendation has as its	project resulting in
		be exceeded (paragraph	objective the protection of the	connections carrying up to
		21.2.7).	health of the public and it	400Kv to transport
		Please refer to ICNIRP	therefore applies, in particular, to	electricity from the solar
		guidance, as	relevant areas where members of	panels to the National Grid
		appropriate.	the public spend significant time	at Cottam Power Station
			in relation to the effects covered	using transformers,
			by this recommendation".	inverters etc., all of which
			UK exposure limits comply with	transmit EMF's.
			the EU Recommendation in that	The WR shows that the
			the basic reference levels should	magnetic fields created on
			be applied where the time of	the development site will be
			exposure is significant.	significantly stronger, and
			The Department of Energy and	the effect of EMF will be
			Climate Change's 2012 Code of	distanced further away by at
			Practice for Power Lines:	least 7 metres.
			Demonstrating compliance with	A magnetic field measuring
			EMF public exposure guidelines,	57.5 milligauss immediately
			clarify that locations where time	beside a 230 kilovolt
			of exposure is significant	transmission line measures
			practically refers to residential	just 7.1 milligauss at 100
			properties, other habitations	feet, and 1.8 milligauss at
			such as hostels, and schools,	200 feet, according to the
			crèches and nurseries.	World Health Organization
			Furthermore, where the ICNIRP	in 2010.
			reference levels are exceeded,	An Electromagnetic Field is a
			the Code of Practice recommends	circular vector field that
			a calculation of measurement at	radiates out centrally from
			the location of the closest	its stronger central core
			property at which the exposure	with a magnetic influence
			guidelines apply. In this instance,	on moving electric charges,
			para. 21.2.7 of C6.2.21 ES	electric currents, and
			Chapter 21 Other Environmental	magnetic materials.
			Matters [APP056] estimates this	The electromagnetic fields
			to be 2.6 μ T if the nearest	will not be mitigated or
			property is 25m from the centre	stopped by covering over or
			of the Shared Cable Corridor.	burying. in effect the EMF
				will at its core be distanced 2.9 metres and have an
				effective band width

		across the River Trent calculated at 12 metres. The diagram, when enlarged will show the effect of EMF field strength set against underground and overhead cables and lateral core.
		So how do you mitigate? Revert to using overhead cable lines for water crossings and other buried large power lines on site.

ExQ	Respondent	Question	Applicants Response	Response by Roy Clegg
1.13.32	Applicant	Applicant: Why has the ES	The potential effects of	The Impact of EMF on
		not considered	electromagnetic fields were	Marine Life, Flora and Fauna
		the potential effects of	scoped out	and BioDiversity are well
		electromagnetic	of the Environmental Impact	researched, documented
		fields on biodiversity	Assessment (see section 3.13 of	and detailed in the WR's
		interests, including	C6.3.2.2 ES Appendix 2.2 EIA	submitted previously.
		the lamprey and therefore	Scoping Opinion [APP-064]).	The Water Framework
		the potential	Furthermore, such impacts on	Directive, the IUCN Red List,
		for effects on the Humber	ecological features were not	the OSPAR, the European
		Estuary Special	identified during the scoping	Eel Regulations (100/2007),
		Area of Conservation in this	exercise carried out with PINS	the Eels(England and Wales)
		regard?	and consultation (pre-application	Regulations, the Canal
		Please also explain why the	and statutory) with bodies	Rivers Trust and the Notts
		Information	such as Natural England and the	Biological & Geological
		to Support a Habitats	Lincolnshire Wildlife Trust.	Records Centre list
		Regulations	With regard to the presence of	threatened, endangered
		Assessment [APP-357] rules	lamprey in the River Trent and	and protected marine
		out the	the potential linkage with the	species including the Allis
		likelihood of significant	Humber Estuary SAC/Ramsar, it	Shad, Brook Lamprey,
		effects, given that	was considered that, on the basis	Bullhead, Common /
		this document also	the majority of the Humber	European Sturgeon, Crucian
		acknowledges that	lamprey population breed in	Carp, Eel, River Lamprey,
		this species may be found	rivers other than the Trent, the	Sea Lamprey, Smelt, Spined
		within the	likelihood of significant effects	Loach, Twaite Shad, White
		River Trent (paragraph	arising from construction phase	Clawed Crayfish, Brown
		5.1.6).	pollutions events was very low	Trout and the Atlantic
		Your attention is directed	(paragraph 5.1.6 of APP-357]).	Salmon all found in the
		towards the		Rivers Trent and Till.
		Environment Agency's WR		Many species of flora and
		[REP-093] in		fauna, because of unique
		this regard.		physiologies and habitats,
				are sensitive to exogenous

		EMF in ways that surpass
		human reactivity, are highly
		variable, largely unseen, and
		a possible contributing
		factor in species extinctions.
		EMF has an adverse effect
		on orientation, migration,
		food finding, reproduction,
		mating, nest and den
		building, territorial
		maintenance, defence,
		vitality, longevity and
		survivorship itself.
		•
		Wildlife loss is often unseen
		and undocumented until
		tipping points are reached.
		Is the Developer, Examiner
		and the Secretary of State
		satisfied that there is no risk
		to any protected species
		from the effect of EMF and
		its features because of this
		and other similar Project?

Major Accidents and Disasters

ExQ	Respondent	Question	Applicants Response	Response by Roy Clegg
1.13.41	Applicant	Paragraph 1.1.7 of the	The Applicant has revised both	Thermal Runaway has very
		Outline Battery	the Outline Battery Storage	few means of Mitigation
		Storage Safety	Safety Management Plan	once started. The main
		Management Plan	(OBSSMP) [C7.9_A] and ES	concerns regarding large
		[APP348] states that the	Appendix 17.4 BESS Fire Technical	scale Li-ion BESS are:
		LeBlock modular battery	note [C8.4.17.2_A], and	The potential for failure in a
		system by LeClanché has	these documents have been	single cell (out of millions)
		been used for assessment.	submitted at Deadline 2. The	to propagate to
		Please provide the	generic system used for indicative	neighbouring cells by the
		following information for	planning purposes is a 750 KWh	process known as "thermal
		this battery type:	BESS "cabinet" system integrating	runaway". Believed to be
		 detailed Specification, 	two battery racks, this is a	initiated by lithium metal
		Testing and Certification;	designation used by several BESS	dendrites growing internall
		 metal content in the 	Original Equipment	to the cell, a cell may simply
		batteries, type of wafer	manufacturers.	discharge internally
		insulation and testing	The BESS design, technology and	releasing its stored energy
		conditions,	system chemistry type is still to	as heat. Even sound Li-ion
		Manufacturers Warranties,	be determined, but it will be a	cells will spontaneously
		specific failure rates; and	lithium-ion battery system.	discharge internally if
		the lifecycle of battery,	The popular types of this	heated to temperatures
		how often it would need to	chemistry for BESS systems	which can be as low as 150
		be changed and the	within the lithium-ion family are	°C, releasing their stored
		associated procedure for	Lithium Nickel Manganese Cobalt	electrical energy, thus
		this.	Oxide (LiNiMnCoO2) known as	overheating neighbouring
			"NMC" or Lithium Iron	cells and so on.
			Phosphate (LiFePO4) known as	Temperatures sufficient to
			"LFP". The final battery	melt aluminium (660 °C) at
			chemistry will be confirmed as	least have been inferred
			part of the detailed design prior	

 1	1
to the commencement of	from analyses of such
construction, as secured through	thermal runaway accidents.
Requirement 5 in schedule 2 to	The potential for thermal
the DCO [EX2/C3.1_C]. For the	runaway in one cabin
purposes of the OBSSMP, a	propagating to a
concept design has been	neighbouring cabin.
considered that uses a BESS	In Arizona there were
specification based upon several	reports of "fires with 10-15
LFP BESS systems. This is	feet flame lengths that grew
considered to be a reasonable	into 50 - 75 feet flame
worst case for the purposes of	lengths appearing to be fed
the assessment in terms of BESS	by flammable liquids coming
toxic gas emission potential	from the cabinets".
(Hydrogen fluoride production)	The significant volumes of
and explosion risk (significant	water required to
levels of hydrogen produced	thoroughly cool the system
during thermal runaway).	in the event of a "fire", and
At the detailed design stage the	how this water will be
selected BESS system will be	contained and disposed of
designed to address prevailing	(since this will be
industry standards and good	contaminated with highly
practice at a time of design and	corrosive hydrofluoric acid
implementation. BESS system	and, therefore, must not be
and components used to	allowed to drain into the
construct the facility will be	surrounding environment).
certified to UL 9540 (2023)	Thermal runaway events are
standards.	uncontrollable except by
As a minimum, the battery	cooling all parts of the
system will have completed unit	structure affected
or installation level UL 9540A	 even the deepest internal
testing, demonstrating that	parts – below 150 °C. This
thermal runaway propagation	basically requires water, in
will not spread between	large volumes.
modules or	The lithium metal deposits
between battery racks and the	will react with air moisture,
generation of explosive gases	causing overheating and
will not threaten container	smoke. Battery swelling,
structural integrity. This offers a	electrolyte degradation, and
high level of protection against	internal short circuits are all
fire and explosion risk.	possible modes of failure
	with internal discharge and
	generation of locally intense
	heat.
	Because of the known
	thermal breakdown of even
	non-faulty cells, above a
	threshold temperature
	(which can be as low as 150
	°C), the loss of even a single
	individual cell can rapidly
	cascade to surrounding
	cells, resulting in a larger
	scale "fire." This is "thermal
	runaway" in which failures
	propagate from cell to cell
	within "modules" and from

· · · · · · · · · · · · · · · · · · ·		
		module to module within a
		"rack".
		The basic issue is simple:
		It is therefore essential to
		address prevention as a
		priority.
		No current engineering or
		industry standards require
		the Prevention of thermal
		runaway events by thermal
		isolation barriers.
		Nothing in existing
		standards prevents runaway
		incidents happening again,
		requiring for initiation only
		single-cell failures from
		known common defects in
		cell manufacture. A large
		BESS can pass all existing
		engineering design and fire
		safety test codes and still
		fail in thermal runaway – by
		now a well-known failure
		mode. This must be
		urgently addressed. It is
		critical to appreciate that all
		parts of the battery system
		must be cooled down.
		Playing water on a battery
		"fire" may cool the surface,
		but so long as Li-ion cells
		deep inside the battery
		remain above about 150°C,
		"re-ignition" events will
		continue. It is not sufficient
		to estimate water
		requirements on the basis
		of calculations assuming
		water reaches everywhere,
		uniformly. Firewater will be
		contaminated with, inter
		alia, highly corrosive
		Hydrofluoric Acid.
		Contamination of water
		supplies and waterways
		must be prevented. For
		example, in the recent Tesla
		car fire the BEV battery kept
		re-igniting, took 4 hours to
		bring under control and
		used 30,000 (US) gallons of
		water (115 m3). This was
		for a 100 kWh BEV battery,
		designed with inter-cell
		thermal isolation barriers.

"Clean agent" fire suppression systems are a common fire suppression system in BESS, but are totally ineffective to stop "thermal runaway" accidents. The McMicken explosion was an object lesson in this: the installed "clean agent" system operated correctly, as designed, on detection of a hot fault in the cabin. There was no malfunction in the fire suppression system. But it was completely useless because the problem was not a conventional fuel-air fire, it was a thermal
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not a conventional fuel-air
fire. it was a thermal
runaway event. Only water
will serve in thermal
runaway.
Indeed in the McMicken
explosion the "Novec 1230"
clean agent arguably
contributed to the
explosion by creating a
stratified atmosphere with
an air/Novec 1230 mixture
at the bottom and
inflammable gases
accumulating at the cabin
top.

ExQ	Respondent	Question	Applicants Response	Response by Roy Clegg
1.13.44	Applicant	With regard to paragraph	The detailed design phase of the	No engineering standards
		1.1.12 of the Outline	Scheme will consider the	are currently applied to pre-
		Battery Storage Safety	lifecycle of the battery system	empt future accidents in
		Management Plan [APP-	from installation to	grid-scale BESS, the most
		348], please provide	decommissioning. At the detailed	critical of which would be
		further information on how	design stage, risk assessment	design features aimed at
		the BESS would deal with	tools will be utilised together	preventing the
		thermal runaway.	with detailed consequence	phenomenon of "thermal
			modelling to provide a	runaway", the process
			comprehensive site	whereby failure in single cell
			operations and emergency	causes over-heating and hen
			response safety audit.	propagates to neighbouring
			The battery system mitigation	cells so long as a
			measures adopted in a final	temperature (which can be
			Battery Safety Management Plan,	as low as 150 °C) is
			will reflect the latest BESS	maintained.
			safety codes and standards	The engineering standards
			applicable at that stage.	NFPA 855, UL 1973 and
			Mitigation measures will be	UL9540/9540A. UL 9540A is
			discussed and coordinated with	a US standard that is widely

Lincolnshire Fire and Rescue	used in grid-scale BESS
Service (LFRS). Preparation and	engineering, is routinely
approval of the final Plan,	recommended by insurance
substantially in accordance with	and risk consultants and was
the outline Plan is secured	appealed to by the
through requirement 6 in	developer of the Cleve Hill.
Schedule 2 to the draft DCO	The problem is that
[EX2/C3.1_C].	UL9540A is fundamentally a
A Failure Modes and Effects	test procedure. It mandates
Analysis (FMEA) of the BESS (BS	no design features. It
EN IEC 60812) will be conducted	requires absolutely nothing
to lay the foundation for	that would prevent thermal
predictive maintenance	runaway in any BESS design.
requirements and complement	This means that an operator
the fault indicator capabilities of	can say truthfully that a
the BMS data analytics system.	given BESS is "fully
Comprehensive Hazard	compliant" with UL9540A,
Mitigation Analysis (HMA) will be	yet this would provide no
conducted by a BESS specialist	assurances at all regarding
independent Fire Protection	thermal runaway
Engineer following NFPA 855	prevention. It is therefore
(2023) guidelines and	wholly insufficient as a
recommendations.	safeguard to either the
Additional risk assessments likely	operator, the public, or to
to be conducted at the detailed	emergency services. NFPA
design stage are Fire Risk Analysis	855 [21], uniquely, requires
(FRA), Explosion	evaluation of thermal
Risk Analysis (ERA), Hazard and	runaway in a single module,
Operability Analysis (HAZOP).	array or unit and recognises
BESS 3rd Party risk analysis is	the need for thermal
sometimes automatically	runaway protection.
provided by Tier one BESS	However, it assigns that
manufacturers and / or BESS	role, with complete futility,
integrators.	to the Battery Management
If the BESS system supplied	System (BMS). Thermal
differs from the specification	runaway is an
considered for risk assessments	electrochemical reaction
and consequence modelling,	which once started cannot
then a full safety audit will be	be stopped electrically. It is
repeated for the new BESS	uncontrollable by
system specification. These	electronics or switchgear. A
studies will be completed and	BMS can locate faults,
signed off before construction	report and trigger alarms,
commences.	but it cannot stop thermal
The BESS will be designed to	runaway.
address prevailing industry	Nothing in UL 9540A
standards and good practice at a	addresses thermal runaway,
time of design and	and as a test method
implementation. BESS system	standard, it can provide no
and components used to	"safety certification" for Li-
construct the facility will be	ion BESS.
certified to UL 9540 (2023)	UL 1973 allows for the
standards.	complete destruction of a
As a minimum, the battery	BESS and the creation of an
system will have completed unit	explosive atmosphere so
or installation level UL 9540A	long as no explosion or
testing, demonstrating that	external flame is observed.
testing, achionsi ating tildt	external name is observed.

Hermal runaway propagationAn installation and all modules or modules or modules or ult 1973. At McKlicken one destroyed an explosive generation of explosive gases will not threaten container structural integrity. This offers a high level of protection against provides the most comprehensive guidelines for BSS design and ste installation specifications. BESS design structural integrity will be demonstrated through full-scale fire and explosion full-scale fire and explosion frestures. A BESS fire suppression system should be testing if a BESS enclosure is a uppression system should testing if a design (20 ft, 40 ft, SS (2023) guidelines, an installation specification. It rough defagration venting) features. A BESS enclosure is a walk in design (20 ft, 40 ft, SS ft), a fire suppression system should be encataved to the suppression system should be conducted. An independent integrated esign (20 ft, 40 ft, SS ft), a fire suppression system suppression system should be conducted. An independent integrated is a walk in design, a fire suppression system should be conducted. An independent integrated is a walk in design, a fire suppression system should be conducted. An independent integrated is the BESS hould reven thermal runaway, and did not prevent tame runawy in an indeois achowidegit the need for very or unit and does achowidegit the ened for 		· · ·	
 UL 1973. At McNicken one between battery racks and the generation of explosive gases will not threater container structural integrity. This offers a high level of protection against fire and explosion factor the sponders or surver the guidelines for BESS design and set installation specifications. BESS design fracturular litegrity mill be demonstrated through will be demonstrated through full-scale fire and explosion free velocition through deflagration venting) features. A BESS fire suppression system should be the suppression system should be the suppression system should be the suppression system will probably need to be initegrated. At best practice, fire suppression system must be installed. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system must be instaglated. As best practice, fire suppression system deformered to standing of potential fire abs S (2022) common wave, in a single module, array or unit and obes and "AHP (Authority Having Linstition) does not "AHP		thermal runaway propagation	An installation can do all
Image: Section of explosive gases will not threaten container structural integrity. This offers a high level of protection rais. rack was completely destroyed and an explosive atmosphere created but no time or explosion occured but no time or explosion coursed provides the most comprehensive guidelines for ESS design and its te installation specifications. rack was completely destroyed and an explosive atmosphere created but no time or explosion occured but no time or explosion accured but no time or explosion accured but no time or explosion occured but no time provides the most comprehensive guidelines of but through deflagration venting) Image: Imag		_	
generation of explosive gases will not threaten container structural integrity. This offers a high level of protection against the acxplosion occurred until first-responders opened the cabin door. UL 9540A is merely a test gase/fail" criteria for integrating WFA 66 (explosion protection) and NFPA 68 (Explosion protection of a potentially explosive atmosphere. It does not address cell-to-cell cascading in thermal runaway, nor the evolution of a potentially explosive atmosphere. It does not address cell-to-cell cascading in thermal runaway, nor the evolution of a potentially explosive atmosphere. It does not address cell-to-cell cascading in thermal runaway, nor the evolution of a potentially explosive atmosphere. It does not even prescribe that the cell- cascading of fire suppression system should be tasted to U. 9540A latest autoratior differs testing of fire suppression system must be integrated. If the BESS enclosure is a suppression system performance is a walk-in design, 20 ft, 40 ft, suppression system performance is a walk-in design, 20 ft, 40 ft, suppression system performance is a walk-in design, 20 ft, 40 ft, suppression system performance is a walk-in design, 20 ft, 40 ft, suppression system performance is a walk-in design, 20 ft, 40 ft, suppression system performance is a walk-in design, 20 ft, 40 ft, suppression system performance is a suplicing in BESS should review all U SF40A test suppression system fires suppression system is as movied and a wildinat the suppression system design, is as fire suppression system fires supersona and, it here supression agent and, there supression system fires association. Having Lurdischi does acknowledge the need for thermal runaway in a single module, ary out at a does acknowledge the need for thermal ru			
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or fully suppress a fire without the intervention of the Fire and Rescue Service. The suppression system must be capable of operating effectively in conjunction with a gas exhaust/ventilation system to minimise deflagration risks. System design and water supply requirements must be fully agreed with the Fire and Rescue Service. The BESS enclosure will be designed to withstand overpressures generated by the battery system during thermal runaway. An explosion prevention system to NFPA 69 standards and / or explosion protection system to NFPA 68 and EN 14797 standards will be integrated. Further, the BESS enclosure will have completed UL 9540A unit and / or installation testing or large-scale 3rd Party Fire and Explosion testing without pressure waves occurring or shrapnel being ejected. An independent Fire Protection Engineer specialising in BESS will review all UL 9540A test results and any additional fire and explosion test data which has been provided.	In the case of Sunnica, the Local Authorities have suggested that water supplies of 1900 litres per minute for 2 hours (228 m3) will be needed. But this is grossly inadequate. Using the above Tesla BEV fire experience, this amount of water would suffice for just two Tesla Model S car fires. Scaling this up to even the smallest 2 MWh BESS (such as that in McMicken, which contains stored energy equivalent to twenty Tesla Model S cars, it is clear to see that a much greater amount of water would be needed. COMAH There are growing concerns about the use of Lithium-ion batteries in large scale applications, especially as Battery Energy Storage Systems (BESS) linked to renewable energy projects and grid energy storage. These concerns arise from the simple consideration that large quantities of energy are being stored, which if released uncontrollably in fault situations could cause major damage to health, life,
explosion protection system to	amount of water would be
	needed.
BESS enclosure will have	СОМАН
-	0 0
3rd Party Fire and Explosion	batteries in large scale
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has been provided.	
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	property and the
	environment.
	BESS are not currently
	regarded by HSE as
	regulated under the COMAH The reason the COMAH
	regulations should apply is
	the scale of evolution of
	toxic or inflammable gases
	that will arise in BESS
	"fires". In the Drogenbos
	incident (2017, Table 1), the
	inhabitants of Drogenbos and surrounding towns
	were asked to keep all
	windows and doors shut; 50
	emergency calls were made
	from people with irritation
	of the throat and airways1.

I	
	A chemical cloud which
	"initially had been
	enormous", was charted by
	helicopter. The Belgian Fire
	Services could not control
	what was described as "the
	chemical reaction" and filled
	the cabin with water. Fears
	of an explosion with 20
	metre flames kept people
	confined for an hour.
	Although the initial visible
	flames were controlled
	quickly, cooling continued
	over the next 36 hours.
	Applicability of the COMAH
	(Control of Major Accident
	Hazard) Regulations 2015
	The governing criteria for
	application of the COMAH
	Regulations [17] are:
	1. The presence of
	hazardous materials, or
	their generation, "if control
	of the process is lost."
	2. The quantity of such
	hazardous materials present
	or that could be potentially
	generated.
	There is no doubt that
	hazardous substances such
	Hydrogen Fluoride (an Acute
	Toxic controlled
	by COMAH) would be
	generated in a BESS
	accident (i.e., in "battery
	fires"). Similarly highly
	Inflammable Gases (also
	controlled by COMAH)
	would be evolved even if
	the atmosphere remained
	oxygen-free. Depending on
	the size of the
	"establishment" these could
	be produced in sufficient
	quantities to be in the scope
	of COMAH.

Roy Clegg