

13 November 2019

National Infrastructure Planning
Cleve Hill Solar Park

BY EMAIL

Deadline 7 – Battery Storage and Kent Fire & Rescue

Dear Hefin,

On behalf of GREAT I am submitting our concerns about the safety management plans for the battery storage element of this development, and the applicant's engagement with Kent Fire & Rescue. Our concerns are:

1. We made a Freedom of Information request to Kent Fire & Rescue (KFR) which details the interactions between the applicant and KFR (Appendix A). It is evident that the applicant had not engaged KFR at any time during the consultation period and, instead, left it to KFR to learn about the application themselves and reach out to the applicant. The email from KFR to the applicant on 4 July 2019 proves this, which we find completely unacceptable when the application includes such a high risk battery storage element. It is therefore not surprising that KFR have been on the back foot from this point, whereas they should have been involved right from the very outset.
2. In view of the above, we feel it was unacceptable that KFR were not allowed to register as an interested party once they had learned about this application. As a result, they have not been able to contribute to the examination in a way that we would expect them to have been, particularly as they will be responsible for dealing with any incidents at the site should it proceed.
3. We are also surprised that, in an email to KFR on 15 August 2019, the applicant appears to direct them on what their involvement should be. Again, we do not feel this is appropriate for a development which has nothing of a similar scale in the world to compare to.

4. Furthermore, we cannot see that the feedback provided by KFR to the applicant in an email on 20 September 2019 (Appendix B), on their Outline Safety Management Plan, has been incorporated into the version submitted at Deadline 6 (4 October 2019). We have been unable to find this annotated version and would request this is shared with the ExA so we can see their comments.
5. We have also been unable to find the HSE's review of the Outline Safety Management Plan, referred to in an email from the applicant to KFR on 29 August, and would again request that this is shared with the ExA so we can see their comments.
6. The Graveney & Goodnestone Parish Council requested some information from KFR as they were also concerned about the lack of engagement. KFR sent a letter (Appendices C & D) which raised further concerns, particularly reference to allowing the fire to burn itself out if there was no immediate threat to life from the fire, as this did not consider the potential toxic pollution created by the fire. A follow up email was sent in response (Appendix E) and we contacted the Operational Centre of KFR to discuss our concerns. Additionally, two representatives from KFR attended the Parish Meeting on 11 November. During those discussions KFR made it clear that they are unable to comment at this stage as insufficient detail has been included in the application documentation. As a result, we have agreed with KFR that a public meeting will be held, should the application be approved, to enable assurance to be provided to the local communities on how they will respond to any incidents.
7. As we are aware, the Cleve Hill battery storage installation will be c.7 times larger than the current largest battery installation in the world (<https://www.bbc.co.uk/news/av/world-australia-45648303/world-s-biggest-battery-a-look-around-tesla-project>). This Tesla installation is in a remote part of Australia with nothing around it for miles, very different to the Cleve Hill scenario with residential properties less than 1 km away. We do not understand how such a large installation, with emerging and hugely dangerous technology, can even be considered in such a built up area with over 100,000 people potentially at risk (Faversham, Whitstable and Canterbury populations).
8. There have been a significant number of fires at battery installations across the world and the causes are unclear. As a result, it is not possible to mitigate against something that is unknown. Just this year, following an inquiry into fires at a battery installation in Arizona, Arizona energy regulator, Commissioner Sandra D. Kennedy, concluded that lithium ion batteries – specifically those that release hydrogen fluoride – “are not prudent and create unacceptable risks”. <https://pv-magazine-usa.com/2019/08/08/lithium-ion-not-prudent-and-create-unacceptable-risks/> (Appendix F)
9. The Korean government's findings on battery facility fires, released in June this year, blamed four factors: poor grounding causing electrical shocks, bad contractor installation, a lack of integrated control and protection systems, and 'insufficient

management of the operation environment'. <https://liiontamer.com/south-korea-identifies-top-4-causes-that-led-to-ess-fires/> It found that fires were more likely in certain environments, notably coastal sites, which caused humidity and salt damage to equipment. Of the 23 installations that caught fire, 18 were in coastal or mountain areas. In view of the location of the Cleve Hill development site, and the High Court case identified against Wirsol, we have grave concerns for the health and safety of the residents and visitors to the local area.

10. The decommissioning plans for these batteries are still unclear but what is clear is that the danger does not only extend during operation. Dumped household lithium ion batteries were blamed for setting 300 tonnes of refuse on fire in Scotland earlier this year. <https://www.viridor.co.uk/who-we-are/latest-news/2019-news/lithium-ion-battery-warning-issued-after-landfill-site-fire/> Forty firefighters and six fire trucks were needed to fight the two-day fire at a waste site in Dunbar in January. Afterwards recycling company Viridor warned a damaged lithium ion battery can project a shaft of flame for several minutes and can ignite surrounding waste material'. According to UK waste management trade body, the Environmental Services Association (ESA), a quarter of the 510 fires reported by ESA members across the UK in 2017-18 were attributed to discarded lithium-ion batteries.
11. The risks are not confined to battery installations either. Charging batteries are suspected of triggering the recent blaze which sank the Californian dive boat Conception, claiming 34 lives. <https://www.latimes.com/california/story/2019-09-05/what-caused-fire-aboard-the-conception>
12. As recently as July this year, a Virgin Atlantic Airbus with 217 passengers on board was forced to make an emergency landing during a New York to London flight after a passenger's battery pack caught fire. <https://www.telegraph.co.uk/news/2019/07/05/virgin-atlantic-london-flight-makes-emergency-landing-phone/>

In view of this and other extensive evidence, we ask the ExA to refuse the application for such a large, and potentially devastating, battery installation in such an unsuitable location. Graveney is not the right place to test large scale battery storage installations, the Australian desert is.

Kind regards,

Marie King

From: @arcusconsulting.co.uk>
Sent: 20 August 2019 08:52
To:
Subject: RE: Cleve Hill Solar Park

Sounds good, thanks

From: @kent.fire-uk.org>
Sent: 20 August 2019 08:37
To: @arcusconsulting.co.uk>
Subject: RE: Cleve Hill Solar Park

Good Morning

To let you know I will give you a call at 12.00hrs in the hope that will also be able to make the call, if not we can still have a discussion that will hopefully be beneficial for both parties.

Speak to you later.

From: @arcusconsulting.co.uk]
Sent: 15 August 2019 15:48
To: @kent.fire-uk.org>; @kent.fire-uk.org>; @kent.fire-uk.org>
cc: @countercontext.com>
Subject: RE: Cleve Hill Solar Park

Hi

Is there a time on Tuesday that works well for you for a call? Let me know and I can set up dial in details etc.

We are currently producing an Outline Safety Management Plan for the project which it would be helpful if we could share with you towards the end of next week, or early the week after for comment prior to the next deadline of the Examination on 30 August.

The Outline Safety Management Plan is likely to include specific measures to involve Kent Fire and Rescue Service and to ensure your teams have the relevant knowledge to address an emergency situation. An example of the sorts of measures are below (reproduced from [here](#)) – we can discuss any comments on this, and any additional suggestions on a call next week.

“

- Invite the fire department to your property to discuss BESS hazards. An adequate emergency response is the key to avoiding an uncontrolled fire. Keep in mind that some fire fighters will not fully understand the hazards and may assume that lithium-ion batteries are the same as lithium batteries.
- Key questions to discuss with the fire department include:
 - What is the main difference between extinguishing and cooling?
 - How to handle a damaged battery?
 - How to manage the flammable and toxic gases?
- Plan training exercises with the fire department when the system is commissioned.

- Standard Operating Procedures (SOP) & Standard Operating Guidelines (SOG) are of major importance and should be updated and tested on a regular basis.

If you have any questions let me know, otherwise hopefully speak early next week. Just to note I'm out of the office tomorrow – Friday, back on Monday.

Thanks,

Tel:
Mob:
Email: [@arcusconsulting.co.uk](mailto:info@arcusconsulting.co.uk)

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1C Swinegate Court East
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From:
Sent: 12 August 2019 12:57
To: [@kent.fire-uk.org](mailto:info@kent.fire-uk.org); [@kent.fire-uk.org](mailto:info@kent.fire-uk.org);
[@kent.fire-uk.org](mailto:info@kent.fire-uk.org)
Cc: [@countercontext.com](mailto:info@countercontext.com)
Subject: RE: Cleve Hill Solar Park

Hi

No worries, I'm next down in Kent on 22 and 23rd August so sounds like it won't work for a meeting. A call at the start of next week would be fine - Monday after 11am or anytime Tuesday?

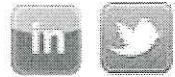
Kind regards,

Tel:
Mob:
Email: [@arcusconsulting.co.uk](mailto:info@arcusconsulting.co.uk)

Arcus

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From: @kent.fire-uk.org
Sent: 12 August 2019 12:42
T @arcusconsulting.co.uk; @kent.fire-uk.org,
@kent.fire-uk.org
Cc: @countercontext.com
Subject: RE: Cleve Hill Solar Park

Good Afternoon

Sorry I haven't got back to you yet, I am on a two week course and forgot to set my out of office. I am available early next week Monday and Tuesday if you wanted to come to KFRS Headquarters for a meeting?

Failing that we could set up a call to discuss the Cleve Hill project.

Please let me know and I will arrange it.

Kind Regards

| Operational Planning Team | Kent Fire & Rescue Service.

E-mail: @kent.fire-uk.org
Tel:
Office no.



From: @arcusconsulting.co.uk
Sent: 12 August 2019 10:33
To: @kent.fire-uk.org
Cc: @countercontext.com
Subject: RE: Cleve Hill Solar Park

Hi

I just wanted to check you had received my earlier email, and to draw your attention to the latest submission we made of 1 August regarding electrical safety in relation to Cleve Hill Solar Park (including the energy storage facility) – [REP3-021](#).

The design parameters for the energy storage facility are set out in Chapter 5 of the Environmental Statement – [APP-035](#), and the associated figures – [APP-053](#).

If you are able to review the above information and get back to me with any questions that would be much appreciated. We have been asked to provide an update to the planning examination by 30 August with regard to discussions with Kent and Medway Fire and Rescue.

I'd be happy to set up a call or a meeting for later in August if that would be helpful?

Kind regards,

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Email. [@arcusconsulting.co.uk](mailto:)

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From:
Sent: 18 July 2019 20:07
To: [@kent.fire-uk.org>](mailto:)
Cc: [@countercontext.com>](mailto:)
Subject: Cleve Hill Solar Park

Hi

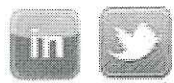
Just wanted to follow-up from our call yesterday lunch to make sure you have my details. As discussed it would be really helpful if you can send some questions as outlined on the phone yesterday, and we'll work them into a wider response to you.

Kind regards,

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Mob:
Email: @arcusconsulting.co.uk

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From: info@clevehillsolar.com <info@clevehillsolar.com>
Sent: 05 July 2019 09:01
To: @kent.fire-uk.org>
Cc: @arcusconsulting.co.uk>
Subject: RE: Kent Fire and Rescue Service

Dear

Thank you for getting in contact regarding Cleve Hill Solar Park.

To understand more information about what is proposed for Cleve Hill Solar Park, I would recommend that you consult with the DCO application, which you can view in full on the [Planning Inspectorate's website](#). It is easiest to navigate the documentation via the [Examination Library](#).

Within the application, the energy storage facility is assessed throughout the Environmental Statement.

In particular, for specific information on the electrical compound and the energy storage facility, I would encourage you to consult the Environmental Statement: Chapter 5 – Development Description, Section 5.4.2 p15-23 ([APP-035](#)).

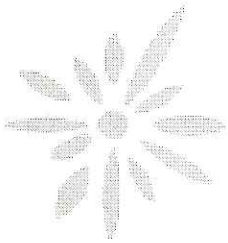
For information on the how the applicant has considered major accidents and disasters, I would encourage you to consult the Environmental Statement: Chapter 17 – Miscellaneous Issues, Section 17.7, p19-21 ([APP-047](#)).

I have also copied [redacted] in to this email, who is the technical lead on this project. He will be able to pick up any further questions you might have, or provide any more information that you might require.

Hopefully this is helpful. If you have any further questions or enquiries please don't hesitate to get in contact with myself at the details below or [redacted] at the email address in copy.

Kind regards,

Stakeholder Correspondence



CLEVE HILL

SOLAR PARK

Freepost: Cleve Hill Solar
T: 0800 328 2850
E: info@clevehillsolar.com
W: www.clevehillsolar.com

From: @kent.fire-uk.org
Sent: 04 July 2019 12:23
To: 'info@clevehillsolar.com' <info@clevehillsolar.com>
Subject: Kent Fire and Rescue Service

Good Afternoon,

I am contacting you from Kent Fire and Rescue Service in regard to the Cleve Hill Park Solar Array that is being planned for in Kent.

We unfortunately have only in the last month or so become aware of the project and have very limited information regarding the project should it get consent.

I have done some internet research about the type of Battery Energy Storage System and the Solar Panels being used and made assumptions so KFRS are aware of the size and scale of the project. (Largest battery storage system in the world).

Would it be possible to put me in contact with or send me some more information regarding the project as we are very interested in the project.

Your help would be much appreciated.

Kind Regards

| Operational Planning Team | Kent Fire & Rescue Service.

E-mail: @kent.fire-uk.org
Tel:
Office no.



This e-mail has been scanned for malicious content.

For more information about Kent Fire & Rescue Service visit: <http://www.kent.fire-uk.org>

Kent Fire & Rescue Service logs, records and reserves the right to analyse and act upon activity and communication on its Information Systems (including external systems such as external e-mail, emergency telephony etc), to meet our statutory responsibilities, protect systems from abuse, secure the effective operation of systems and any other lawful purpose.

From:
Sent: 20 September 2019 13:06
To:
Cc:
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Good Afternoon

Hope you well.

Thank you for sending out the Outline Safety Management Plan (OSMP) for KFRS to comment on and sorry it has taken a while to respond.

Whilst we are not a statutory consultee in relation to this project we will continue to work and engage as this project develops to ensure that Cleve Hill Solar Park Ltd comply with the statutory responsibilities that we enforce.

All risk reduction strategies start with prevention and it is the 'responsible person' for the premises that has responsibility for this as stated in the Regulatory Reform (Fire Safety) Order 2005. We would also expect that our Central Consultation Team (CCT) will become more involved as the appropriate planning applications are submitted and that any applications would conform to any legislation that relates to this type of development and the design of the BESS will reflect prevailing legislative requirements and UK industry recommendations.

Kent Fire and Rescue Service (KFRS) recognises the use of batteries (including lithium-ion) as Energy Storage Systems (ESS) is a new and emerging practice in the global renewable energy sector. As with all new and emerging practices within UK industry the KFRS would like to work with the developers to better understand any risks that may be posed and develop strategies and procedures to mitigate these risks.

The responses to the ARC recommendations set out in the OSMP details the information that we would expect to be provided during the planning application phase, we would then be working with our CCT and Water Services colleagues during the consultation phase to make sure that the Cleve Hill Solar Park conforms to the appropriate legislation and recommendations.

Kind Regards

| Operational Planning Team | Kent Fire & Rescue Service.

E-m: @kent.fire-uk.org
Te
Office

-----Original Message-----

From: @arcusconsulting.co.uk]
Sent: 10 September 2019 15:30
To: @kent.fire-uk.org; @kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Hi

Please could you let me know if it is likely that KFRS will be able to provide comments on the Cleve Hill Safety Management Plan report this week? Ideally we'd like to update and submit the document for Deadline 5 on Friday.

Thanks,

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Email: @arcusconsulting.co.uk

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-----Original Message-----

From: @kent.fire-uk.org>
Sent: 05 September 2019 17:40
To: @arcusconsulting.co.uk; @kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Thanks

We will have a look and get back to you as soon as we can.

Regards,

- Operational Planning and Resilience Kent Fire & Rescue Service | M:
www.kent.fire-uk.org

-----Original Message-----

From: @arcusconsulting.co.uk]
Sent: 04 September 2019 13:30
To: @kent.fire-uk.org>; @kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Hi both,

I've attached the latest version of the document submitted.

It's also on the examination portal here: <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010085/EN010085-001156-CHSP%20-%202012.5.1%20OBFSMP.pdf>

Kind regards,

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-----Original Message-----

From: [redacted]
Sent: 29 August 2019 12:17
To: Els [redacted]@kent.fire-uk.org>; [redacted]@kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Thanks

That's absolutely understood - I will respond to the question we have been asked as you set out and make sure the document reflects the latest position. I will also include the notes from the call with

We are hoping to receive the HSE review of the safety report today which we will incorporate and then submit on Friday. I'll send you a copy of that updated document when available so that you are working with the latest information. It may be worth holding off your review until that is received.

I recognise that you will respond when you are able, but for context, our next examination deadlines are:

Hearings - week commencing 9 September
Deadline 5 - 20 September
Deadline 6 - 4 October

Many thanks for your engagement on this.

-----Original Message-----

From: [redacted]@kent.fire-uk.org>
Sent: 29 August 2019 12:05
To: N [redacted]@arcusconsulting.co.uk>; [redacted]@kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Thanks

I will find time to have an initial look through when I am back in the office tomorrow. I want to ensure we give you all of the feedback from Kent Fire and Rescue service at the same time and this will require me to consult with a few subject matter experts so I will require a couple of weeks to complete this.

As such the 30 August deadline is not achievable but it would be appreciated if you could record that we will make comments as soon as we are able.

Regards,

Sent from my Windows Phone

From: <@arcusconsulting.co.uk>
Sent: 25/08/2019 07:45
To: @kent.fire-uk.org>; @kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Hi

Apologies I wasn't able to send this on last week.

We'd really appreciate your review and comments on this document. Kent Fire and Rescue is referred to in the document – please feel free to amend this text to make sure it is acceptable to you.

Please confirm whether it is possible to get comments back to us on the document before Friday 30 August. If that's not possible, then please let us know by when you think you will be able to respond.

Many thanks,

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F: <@arcusconsulting.co.uk<mail @arcusconsulting.co.uk>

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From: [redacted]@kent.fire-uk.org>
Sent: 20 August 2019 17:31
To: [redacted]@arcusconsulting.co.uk>; [redacted]@kent.fire-uk.org>
Subject: RE: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

Thanks

Apologies I could not attend the call, I will catch up with [redacted] to ensure the notes below are accurate but it looks like a good discussion.

The 30th August would be a difficult timescale for us if we do not see the Outline Safety Management plan soon.

Regards,

[redacted] – Operational Planning and Resilience Kent Fire & Rescue Service | T: [redacted] | M: [redacted]
| www.kent.fire-uk.org<<http://www.kent.fire-uk.org/>>

From: [redacted]@arcusconsulting.co.uk]
Sent: 20 August 2019 16:51
To: E [redacted]@kent.fire-uk.org<[redacted]@kent.fire-uk.org>>; [redacted]@kent.fire-uk.org<[redacted]@kent.fire-uk.org>>
Subject: Cleve Hill Solar Park - Kent Fire and Rescue Service - call notes 20/08/2019

As discussed earlier – please see below for some note from the call. As mentioned on the call, we'd intend to include this note with our next submission to the Planning Inspectorate to address their request for an update on discussions between CHSPL and Kent Fire and Rescue.

Please let me know if you have any comments / amendments.

Kind regards,

Notes from Telephone call between [redacted], Kent Fire and Rescue Service and [redacted], Arcus Consultancy Services Ltd – 20/08/2019 to discuss Cleve Hill Solar Park

* [redacted] – discussed the reason for the call, that Kent Fire and Rescue Service (KFRS) is looking to obtain as much information as possible in relation to the proposals. [redacted] highlighted that KFRS has been contacted by other organisations and their role is to provide guidance in respect of fire safety and ensure that KFRS has adequate information to enable any emergency response required to be as effective as possible.

* [redacted] made clear that Cleve Hill Solar Park Ltd (CHSPL) is keen to engage with KFRS and other organisations to ensure that the facility is as safe as possible. CHSPL also welcomes the safety concerns raised at this stage and the opportunity to address those concerns through consultation and to demonstrate that the development can be operated safely.

* - explained that an Outline Safety Management Plan is being developed which will incorporate the measures discussed and will be subject to consultation and review by KFRS.

* set out that KFRS is keen to work with CHSPL to ensure the Development can be delivered safely. KFRS has limited information available on battery technology, but is working on updating its information with reference to information on EVs, American research, such as NFPA 3 year project into Li-Ion battery safety ([link<https://www.nfpa.org/News-and-Research/Data-research-and-tools/Hazardous-Materials/Lithium-ion-batteries-hazard-and-use-assessment>](https://www.nfpa.org/News-and-Research/Data-research-and-tools/Hazardous-Materials/Lithium-ion-batteries-hazard-and-use-assessment)) that is available regarding planning and training, and through engagement with developers, such as CHSPL to continue learning and developing procedures as a result.

* - set out that KFRS has procedures for EV fires, but currently not for BESS. KFRS are helping to develop National Operational Guidance in relation to this technology to get safe systems of work in place. At the moment there are two key strategies depending on the scenario – letting a fire burn out and dousing with copious amounts of water. KFRS is aware of risks such as thermal runaway and reignition at a later date. Mitigation through good design and including fire detection and suppression measures in the design are a key part of the solution – preventing fires from occurring and spreading in the first place.

* - set out other considerations such as ensuring access to the site including to the electrical compound over the bund, safe access for fire appliances and ensuring an available water supply. Whether personnel are permanently based onsite or if the site is managed remotely also has a bearing on the regulatory regime that applies.

* - explained that the UK Health and Safety Executive has been contacted and that CHSPL intend to obtain a review of the Outline Safety Management Plan by HSE.

* - set out basic procedures for dealing with EV vehicle fires, including isolating the power supply, using copious amounts of water to cool the batteries. In some instances fires may be allowed to burn out if there is not water available, or the fire is located in a groundwater protection zone for example.

* - set out that fire suppression measures may not fully extinguish a fire but contain it and stop the spread. Other design mitigation such as separation between containers or battery units and the containers themselves can be designed to stop the spread. KFRS need to know what the manufacturer's recommended procedure is for each site.

* - outlined that for particular sites, it is not uncommon for containment and fire treatment measures to be held onsite, such as foam supplies at gas and oil storage depots and there may be equivalent solutions for energy storage.

* - asked that where measures are proposed, it is clear that they are being committed to, without qualifying terms such as "where practicable".

* - set out the importance of the availability of a sufficient water supply and whether any private hydrant are available in the area. ACTION - to request information internally. ACTION to request information from London Array Ltd

* discussed dousing with water and any implications for water quality responded that KFRS check if the location is in a ground water source protection zone and that determines whether large volumes of water would be used. ACTION – The Development lies outside Groundwater Protection Zones 1, 2 and 3.

* - set out that a Tactical Information Record will need to be developed for the Cleve Hill Solar Park site. There are 3-400 other such requirements across Kent, which applies to facilities with specific requirements in terms of fire response responded that the Outline Safety Management Plan would form a good basis for this and that ongoing consultation with KFRS would be undertaken throughout the design, construction and operation of the Development.

* asked if there were any specific considerations relevant to the wider development (solar park). set out that safe access for a fire appliance to as much of the site as possible and a water supply was again the key consideration. The time delay to reach remote parts of the site would result in a greater level of fire damage to equipment. explained the development design in this regard, with the spine road through the centre of the site. set out that it is KFRS role to make suggestions and it is up to the developer to what extent they are implemented.

asked whether there were any specific concerns in relation to flooding. set out that if catastrophic flooding occurred, the response in respect of the electrical compound would depend on whether there was a life risk, ie if the electrical compound was manned and personnel would be cut off. In this scenario, the solar park and battery storage facility would be shut down, and any personnel would await rescue (e.g., via boat). This would form part of a countywide response in the event of a flood event of this magnitude suggested the site operator should have emergency procedures in place to cover this eventuality.

* summarised KFRS considerations:

- * Possible need for Southern Water involvement to understand water availability in the area.
- * Need for KFRS to develop a Safe System of Work on the site in dialogue with the site operator
- * For access to and around the energy storage facility for fire appliances to be designed in.
- * If the electrical compound forms a permanent place of work the Regulatory Reform (Fire Safety) Order 2005 would apply.
- * The Outline Safety Management Plan should include containment measures.
- * KFRS will make suggestions in relation to design and mitigation, and the Applicant will determine whether and/or how to adopt the measures.

* set out that Cleve Hill has highlighted to them a need to updated their procedures in respect of BESS facilities, with existing developments present in the county and the Cleve Hill project gives a good opportunity to

collaborate with developers, operators and technology suppliers to ensure they have the most applicable and up to date knowledge available.

* mentioned that there was a further round of hearings on 10, 11 and 12 of September if KFRS wanted to attend and/or participate - LINK<<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010085/EN010085-000965-20190809%20CLEVE%20Notification%20of%20Hearings.pdf>>

* agreed to circulate notes and the Outline Safety Management Plan when available for KFRS input. set out project deadlines and requested that KFRS responded to help CHSPL to meet Deadline 4 (30 August) if at all possible.

* set out that CHSPL would likely submit these notes as supporting information to ExQ2.8.13 which requires an update in respect of dialogue between the Applicant and KFRS.

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**Kent Fire &
Rescue Service**

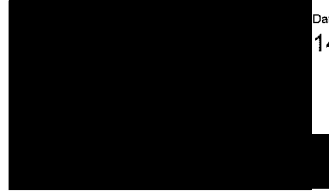
Headquarters
The Godlands
Tovil
Maidstone ME15 6XB



To
Ms Bex Ratchford

Graveney with Goodnestone Parish Council
50 Park Road
Sittingbourne
Kent
ME10 1DY

Date
14 October 2019



Dear Ms Ratchford,

Re: Cleve Hill, Solar Park

I am writing in response to your letter to Kent Fire and Rescue Service received on 30th September 2019 relating to the proposed solar park development at Cleve Hill, near Faversham.

Kent Fire and Rescue Service (KFRS) recognises the use of batteries (including lithium-ion) as Energy Storage Systems (ESS) is a new and emerging practice in the global renewable energy sector. We have approached Arcus consulting, who work on behalf of the Cleve Hill Solar park to understand more about the way they intend to manage the risk and have now asked them to formally consult through our internal consultation process. As with all new and emerging practice within UK industry the fire service is working to better understand any risks that may be posed and develop strategies and procedures to mitigate these risks.

However, all risk reduction strategies start with prevention and it is the 'responsible person' for the premises that has responsibility for this as stated in the Regulatory Reform (Fire Safety) Order 2005.

The outline duties of a responsible person are to:

- carry out a fire risk assessment of the premises and review it regularly
- tell staff or their representatives about the risks you've identified
- put in place, and maintain, appropriate fire safety measures
- plan for an emergency
- provide staff information, fire safety instruction and training

KFRS has procedures in place for a response to incidents involving batteries, these procedures include the following hazards:

- Fire/flammable gases (hydrogen, risk of explosion)
- Spontaneous ignition
- Explosion
- Projectiles
- Hazardous materials (corrosive/caustic and toxic)
- Electricity



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'Reducing our impact on the environment'*

www.kent.fire-uk.org

Chief Executive
Ann Millington

- Contamination

Whilst these procedures cover incidents involving any type of electrical storage battery they need to be considered alongside site specific risk information to give firefighters the guidance needed when dealing with a large scale ESS development such as the one proposed at Cleve Hill. As such and in line with other industrial sites in Kent & Medway, KFRS would work with the site operators to ensure site specific information is available if an emergency occurs. This information would include information relating to the fire detection and suppression features, water supplies, emergency access and environmental protection arrangements.

In broad terms and prior to a decision relating to any on-site fire suppression systems, KFRS would extinguish a fire on the site by applying large volumes of water. Alternatively, if no life risk were present, then a controlled burn strategy may be considered and employed in order to try to minimise the possible environmental pollution that may be caused with fire water run-off.

Whilst there have been fire incidents involving ESS in the United States (where the number of ESS sites is higher than the UK) there have to date, not been any such fires in Kent. However, rest assured that our firecrews would deal with such an incident with the same level of skill and dedication that they bring to any incident regardless of size, risk or complexity.

In addition to the information provided within this letter, KFRS are happy to discuss the concerns raised by the Parish Council. A North Group Officer will be in contact to arrange a meeting at a mutually convenient time.

Yours sincerely,



Chris Else
Area Manager



Concerns about battery storage Graveney - Cleve Hill Solar Plant

🕒 You forwarded this message on Tue 05/11/2019 12:02



Lut Stewart [REDACTED]
Fri 25/10/2019 13:19
You; mark.rist@kent.fire-uk.org ↕



Dear Mark,

Thank you for your call on Wednesday regarding the significant concerns expressed about the proposed battery storage by Faversham, Graveney and Whitstable residents.

I am the Vice Chair of GREAT (Graveney Rural Environment Action Team) and help to lead the campaign against the Cleve Hill solar plant and the battery storage element of this.

There is very wide support from organisations including for instance the Faversham Society, Kent Wildlife Trust, the RSPB, the Ramblers, CPRE Kent, the Faversham Creek Society, the Graveney School, Faversham Town Council, Graveney Parish Council as well as neighbouring parishes, the local Green Party, the Labour Party and we are also well supported by our local MP Helen Whately.

We are very fortunate to have 2 experts on battery storage in the team : Sir David Melville and Dr Bruno Erasin. They have been able to inform and raise awareness of the implications of a fire and resulting chemical reactions as well as the significant impact on the environment and human life.

In addition, there is the increased terrorism threat as this storage facility is co-located next to the London Array Substation and its size makes it an easy target and very accessible by air, road, rail and sea.

As you know this is a very large battery in an enclosure extending to some 25 acres and it will be situated in close proximity to a residential area. This is unlike any other very large battery storage facilities which are placed in deserts, on industrial terrains and far away from people.

This is then the reason for asking for a Public Meeting as residents are concerned and anxious about the possible implications and are campaigning for this facility to be placed in a more suitable location -- away from a residential area.

We propose to set up a Public Meeting at the end of November in the Alexandra Centre in Faversham with the Kent Fire and Rescue Service. However, should you feel that it would be more appropriate to meet separately with representatives from GREAT, the Faversham Society, the Parish Council and CPRE Kent then we would be happy to accommodate this.

Best wishes,

Lut Stewart

CLEVE HILL

THE CONTINUING STORY

Words by: Richard Fleury



Richard Belfield is an investigative journalist, bestselling author and award winning film maker. He has written for the *Sunday Times* and *Private Eye* and made documentaries for every major UK TV channel as well as *Discovery*, *National Geographic* and *Al Jazeera*. He lives just outside Faversham

Faversham-based Richard Fleury has been a journalist for 30 years, writing for national newspapers and magazines including *BBC Top Gear*, *Arena*, *GQ*, *Wired*, the *Times* and *Sunday Times* and the *Guardian*



The world's biggest battery – and the danger to Faversham – just doubled in size.

In the last issue, we reported on the threat to life posed by plans to install the largest battery plant ever built on the proposed solar power station on Graveney marshes.

We can now reveal it will be TWICE the size. With its capacity ballooning from 350 to 700 MWH, the Cleve Hill mega-battery is now more than five times the size of the current world record holder in Australia.

The developer's ambitions fly in the face of safety warnings from around the world. The lithium ion battery will be housed in 120 metal shipping containers – each one a 'bomb', according to a respected physics professor.

Based on industry experience both in the US and South Korea, the odds are that at least one of these containers will catch fire. And as our investigation in the last issue of the *Faversham Eye* showed, lithium ion battery fires can spread in a catastrophic chain reaction called thermal runaway, creating clouds of highly toxic hydrogen fluoride (HF) gas.

Cleve Hill Solar Park Ltd, the company behind the project, is doubling down just months before the planning inspectors' 30 November deadline. The fate of Graveney marshes and surrounding areas then lies with the Secretary of State for Business (Andrea Leadsom, at the time of writing).

CHSP quietly announced the dramatic news in September, at a planning hearing in Teynham to discuss the battery. Despite being completely untested at this vast scale, the controversial technology was not initially on the inspectors' agenda. The hearing was scheduled only at the request of the Faversham Society.

"It's only as a result of us battering away, saying this has to be raised. It hadn't been dealt with," says the Faversham Society's vice chairman Sir David Melville.

CHSP sent 15 people, twice the number at any previous hearing, even

jetting in staff from its Swiss battery supplier Leclanché from Geneva for half a day.

Physics professor Sir David was not impressed. "Who would you bring along to vouch for the safety of one of your operations?" he says. "The manufacturer of that equipment? It's risible. They should have had someone from the Health and Safety Executive."

Leclanché told inspectors its Graveney BESS (Battery Energy Storage System) would comprise 120 steel containers, each packed with 6 MWH of lithium ion batteries, claiming: "If each unit is made safe, it doesn't matter how big the overall plant is".

CHSP calls the project 'pioneering'; PR-speak for an experiment. No battery installation of this scale has ever been attempted anywhere in the world before, let alone operated safely. Yet despite frequent, well-documented fires and explosions associated with lithium ion batteries globally, CHSP insists its scheme is risk-free.

Leclanché vice-president Daniel Foehr admitted to inspectors: "The size of this project would be larger than anyone has experienced." But, he said: "We don't see this as one large installation. It's a scaling up of an installation. For us it doesn't make a big difference if we are dealing with 20 enclosures or 100 enclosures as we apply the same safety standards on each enclosure."

Is it really possible to scale up this flawed technology without scaling up the risks? Sir David Melville certainly doesn't think so. "It's a fatuous argument, that it's no more risky to have a hundred batteries than one," he says.

Sir David, a distinguished academic (whose CV includes working for NASA on the Apollo 11 moon landings early in his career) believes each 40ft metal container is a potential bomb. "Bombs work by containing the pressures resulting from rapid combustion," he explains. "That's what a bomb is, when the metal casing gives way, which is

very likely."

At the hearing, Leclanché's Daniel Foehr stated: "The fire suppression system inside container will close down fire and not propagate to the whole enclosure."

To be clear, absolutely no evidence exists to support this claim. Currently there is no publicly available data proving that suppression systems such as sprinklers and extinguishers – so called 'active fire protection' – can completely prevent or control thermal runaway. Suppression doesn't penetrate a battery's cells, so the heat inside cannot be absorbed or dissipated. It can easily appear that the fire is out, but the heat is actually trapped inside a cell, which can produce enough heat to ignite neighbouring cells, triggering thermal runaway.

Leclanché spokesman Foehr further claimed that spacing containers three metres apart will prevent fire spreading between them. "With these safety distances, it can not propagate to the neighbouring one," he said. "From 1 MWH to 1 GWH you can scale up according to safety rules and guarantee there is no fire risk."

Nonsense, says Sir David. "Look at the Great Fire of London," he argues. "Once you have a decent sized fire, then it will spread over distances of tens of metres."

At the hearing he asked: "There have been runaway fires. Did these precautions not exist?"

BESS fires continue to flare up around the world with alarming frequency. Fires linked to lithium-ion batteries have struck Europe, the US, Australia and Asia. In South Korea alone, fires have struck 23 of the country's 1,490 battery storage installations since 2017. That's three fires per 200 sites. In response, the Korean government suspended operations at 522 facilities and launched a five month official investigation which concluded in June this year. But more about that later.

Leclanché's Daniel Foehr answered: "These incidents have been a paradigm shift in lithium ion industry. The Korean government

investigated those manufacturers. Manufacturers redid a lot of their design and harsher regulations brought in improved design with early detection systems within the enclosures, monitoring and automatic shutdown in the event of a fire. This makes the systems way, way more reliable than two years ago.”

Only this year, an exploding lithium battery container at an Arizona solar power plant hospitalized four firefighters with chemical and chemical-inhalation burns. The container included a built-in alarm and a self-activating fire-suppression system.

The accident, in April 2019, prompted an Arizona state energy industry regulator to brand the risks ‘unacceptable’. It was the second fire suffered at an Arizona battery facility. The first, in 2012, was caused by a battery cell being overcharged due to a failure of the energy storage management system. Lightning struck for the second time despite the lithium batteries with 2 MWH capacity (a third of Cleve Hill’s planned 6 MWH per container) being housed in an industry-standard metal enclosure. Equipped with the same kind of safety systems CHSP proposes for its Graveney mega-battery. The container was designed to withstand significant heat and pressure and the interior was climate-controlled

to keep the batteries at a safe temperature.

Following an inquiry into the fires, Arizona energy regulator, Commissioner Sandra D. Kennedy concluded in August that lithium ion batteries – specifically those that release hydrogen fluoride – “are not prudent and create unacceptable risks”.

The Arizona Power Service’s system supplier Fluence, is among the top US energy storage companies, with a clean, ten-year track record of building and operating 760 MWH of large-scale batteries.

In contrast, Leclanché has installed just 150 MWH. It’s largest BESS to date is 34 MWH. If it’s approved, Cleve Hill represents more than four times the total capacity the company has ever installed.

“Everything they’ve built so far is a fraction of this,” says Sir David Melville.

Leclanché’s project manager for the world’s biggest battery installation is James Naish. James graduated with an engineering degree from Northumbria Uni a little over a year ago. Before being hired, his employment experience was largely limited to bar work and helping out on his family’s farm.

But returning to South Korea, let’s take a closer look at the ‘paradigm shift’ Leclanché claims has occurred

within the lithium storage industry ‘over the last two years’. The Korean government’s findings on battery facility fires were only released in June this year. The report blamed four factors: poor grounding causing electrical shocks, bad contractor installation, a lack of integrated control and protection systems and ‘insufficient management of the operation environment’. It found that fires were more likely in certain environments, notably coastal sites, which caused humidity and salt damage to equipment. Of the 23 installations that caught fire, 18 were in coastal or mountain areas.

The proposed Cleve Hill site is low-lying marshland, on a flood plain just metres from the sea.

“Battery manufacturers, system integrator companies and power conversion system companies are all at fault,” said Kim Jung-hoon, the electrical engineering professor heading the investigation panel.

Battery cell defects were found, but testing didn’t result in fires. So do lithium batteries explode? In 2017 battery fire safety study by Norway-based DNV GL, a leading independent advisor to the renewable industry. Despite conducting hundreds of ‘abuse tests’ on cells, none exploded. But researchers found that battery cells exposed to heat released flammable gases. “The explosion



ENERGY TRADING

Mega-batteries allow energy companies to make vast profits from storing and trading energy. The world’s current biggest battery in Australia made £16.5 million profit in its first year of operation. With more than five times the capacity, the proposed Graveney battery could make the best part of £100 million annually by storing cheap, off-peak electricity from the national grid, for CHSP to sell back when demand – and prices – peak. The company will also buy and sell energy across the English Channel via connections to Belgium and France.



South Korea ordered a nation-wide government probe following blazes at 23 battery storage facilities





“With more than 50 percent certainty you are going to have one fire. And one fire could cause the runaway”
Sir David Melville



hazard is not the battery itself, but the gases it may generate,” the report concluded.

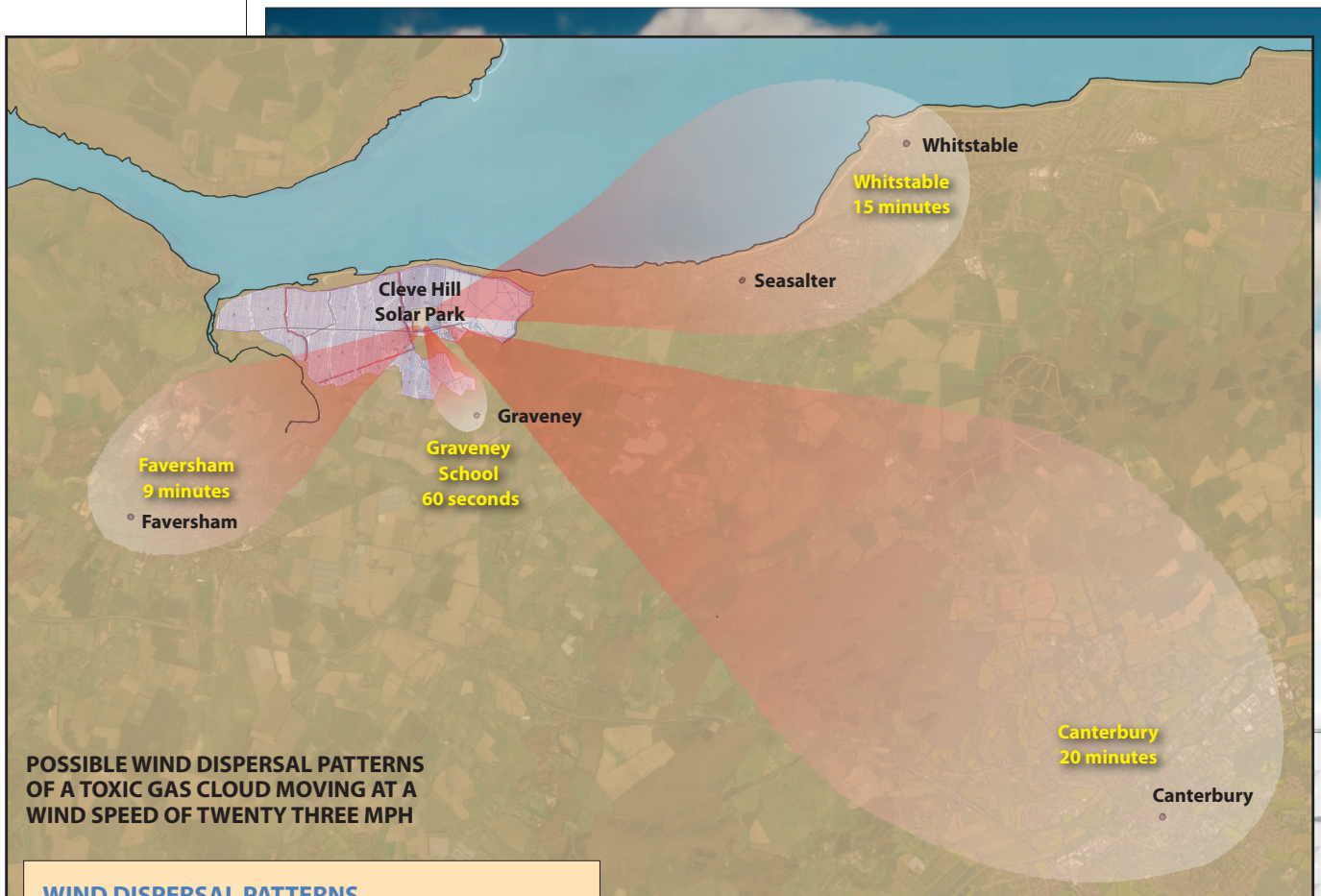
Either way, the energy industry is being forced to acknowledge that fires linked to lithium-ion batteries occur with disturbing regularity.

“Li ion batteries can burn,” said Ben Ditch, a fire researcher at FM Global, an American insurance company specializing in loss prevention for global corporations. “The fact is the hazard exists. It is something a lot of us have been worried about for some time.”

The spectre of disaster looms large within the battery storage industry. Global industrial consultants and analysts Wood Mackenzie tracks the safety of 200 battery storage systems in the US with a capacity of 10 MWH or more. The two Arizona fires plus another at the S&C Electric Company’s testing facility where lithium batteries were the suspected cause put the ratio of fires to batteries at two or three out of 200 – exactly the same as in South Korea. At those odds, it is almost inevitable that one of Cleve Hill’s 120 containers will catch fire.

“That’s one percent,” says Sir David Melville. “So with more than 50 percent certainty you are going to have one fire. And one fire could cause the runaway! Small scale fires are containable. But if you have got hundreds of containers together, it’s a different kettle of fish.”

Wood Mackenzie’s energy storage research director Ravi Manghani has said: “The ratio has to go down at least an order of magnitude, if not more,” adding: “The industry needs to do a better job of manufacturing safer cells, designing systems that



WIND DISPERSAL PATTERNS

In a key experiment in the Nevada desert in 1986, acid was released forming a dense, ground-hugging cloud of deadly hydrogen fluoride, the gas produced in lithium ion battery fires. Two miles downwind and depending on the wind direction the toxic cloud takes in the edge of Faversham. The cloud will have more than twice the lethal concentration of gas. As it travels beyond the town it will dilute causing blindness and life long injuries.

For a full explanation of the possible risks of a fire at the battery park see Issue 5 at www.favershameye.co.uk



have sufficient levels of redundancy, and having real-time monitoring that engages predictive analytics.”

UL LLC – formerly Underwriters Laboratories – is a 125-year old global product safety certification company with offices in 46 countries. Its principal engineer Ken Boyce said in an interview: “Li ion battery cells fail at a rate of only around one in every 12 million. Unfortunately, with billions of cells now being installed each year, that means something is going to happen.”

Something is going to happen. And the

odds are it will happen to the what is by far the biggest li ion battery the planet has ever seen.

So who, if anyone, will insure an experimental, untested power station built in one of the UK’s most densely-populated counties, on a flood-prone site between two towns of 20,000 and 32,000 people and a city of 55,000?

The answer is nobody...yet. At the recent planning hearing CHSP admitted: “We don’t have an insurer on board yet, it’s a bit premature for that, but we are in discussion with them,” said the company’s lawyer

Gareth Phillips, adding: “It’s a fairly obvious point that there’s no way we’re going to proceed without insurance because it would be a huge risk if something goes wrong, so insurance would have to be in place before construction went ahead anyway.”

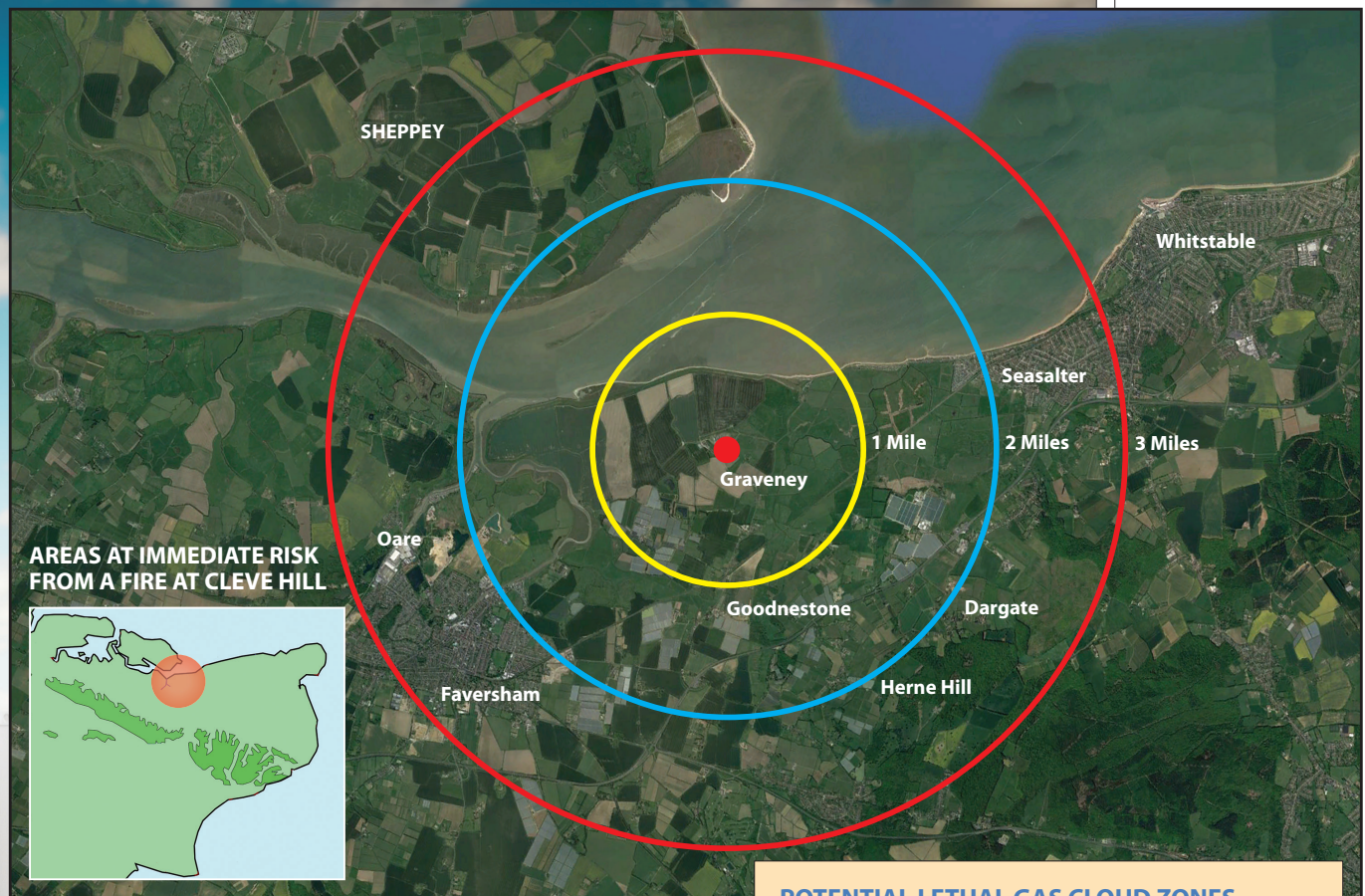
If something goes wrong, or when?

Much of the research carried out into the risks of li ion battery storage is done by manufacturers and utility companies themselves, with test results kept secret. Inevitably, that puts local residents researching

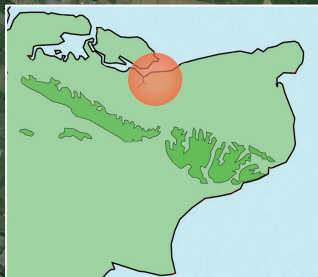


“Unfortunately, with billions of cells now being installed each year, that means something is going to happen”

Ken Boyce. UL LLC



AREAS AT IMMEDIATE RISK FROM A FIRE AT CLEVE HILL



POTENTIAL LETHAL GAS CLOUD ZONES

Insurers are very nervous about open-ended liabilities with thousands of different claims which can go on for years. If the fire continues for more than an hour (which these fires often do) the further the cloud travels and the more expensive it becomes as life long injuries cost insurance companies far more than deaths. Once the gas drops and becomes acid, the long term effect on local farmland will be catastrophic as it will take years to clean the soil.





“FAA battery fire testing has highlighted the potential risk of a catastrophic aircraft loss due to damage resulting from a lithium battery fire or explosion.”
US Federal Aviation Administration



the risk to their community at an impossible disadvantage.

In our last issue, we reported on gas dispersal modelling carried out by biochemical engineer Dr Bruno Erasin, who lives near the site. In response, CSHP commissioned its own report from consultants Arcus. Perhaps unsurprisingly, it concludes that a battery fire in one container where suppression equipment has failed would not release enough HF gas to poison those living nearby.

“They’re throwing a lot of money at this,” says Sir David Melville. “I’ve gone through Bruno’s calculations really thoroughly and they’re very sound, using well-established models. And their stuff is a different model, by a consultancy working in this area.”

Since our report in the last issue, CHSP has finally contacted Kent Fire and Rescue Service, outlining the company’s plans for managing a fire and is awaiting a response. For firefighters, li ion battery fires are hazardous, intense and difficult to control. Even relatively small fires can take days or even weeks to extinguish and can appear fully extinguished when they are not. Dumped household li ion batteries were blamed for setting 300 tonnes of refuse on fire in Scotland earlier this year. Forty firefighters and six

fire trucks were needed to fight the two-day fire at a waste site in Dunbar in January. Afterwards recycling company Viridor warned a damaged li ion battery can ‘project a shaft of flame for several minutes and can ignite surrounding waste material’.

According to UK waste management trade body the Environmental Services Association (ESA), a quarter of the 510 fires reported by ESA members across the UK in 2017-18 were attributed to discarded li-ion batteries.

Li ion batteries continue to be linked to catastrophic fires, both overseas and here in the UK. Charging batteries are suspected of triggering the recent blaze which sank the Californian dive boat *Conception*, claiming 34 lives. The £100 million fire which destroyed Ocado’s automated warehouse in Andover earlier this year began when a li ion powered robot caught fire while charging.

Meanwhile, the number of battery fires on aircraft continues to rise. In the US, the Federal Aviation Administration has said: “FAA battery fire testing has highlighted the potential risk of a catastrophic aircraft loss due to damage resulting from a lithium battery fire or explosion.” Leading US aviation

safety consultant John Cox describes lithium-ion battery fires as “one of the few rising risks in aviation”. And as recently as July this year, a Virgin Atlantic Airbus with 217 passengers on board was forced to make an emergency landing during a New York to London flight after a passenger’s battery pack caught fire.

The energy companies behind the Cleve Hill venture – Hive Energy and German-owned Wirsol – are guaranteed to make many tens of millions a year trading on the energy market with their monster battery. So it should be no surprise that they are willing to gamble that nothing will go disastrously wrong.

Their assurances may ring frighteningly hollow to those of us living in its shadow, but we are not the people they need to convince; it’s the planning inspectors, Andrea Leadsom MP and, let’s not forget, the insurance industry.

In the end it may not be the loss of a unique and bleakly beautiful landscape and its wildlife, the prospect of lasting environmental damage or even the potential loss of human life that pulls the plug on this nightmarish industrial experiment but simply the reluctance of underwriters to take a punt on such deeply unpromising odds.



WHATLEY TRIP

A plan by Faversham MP Helen Whatley to debate the proposed solar power plant in the House of Commons on 9 September was scuppered by Prime Minister (at the time of writing) Boris Johnson’s unlawful proroguing of Parliament. Ms Whatley opposes the scheme on environmental grounds but has remained silent on the battery issue. Instead, 50 local campaigners travelled to Westminster to meet Environment Minister Zac Goldsmith as part of a visit by the Graveney Rural Environment Action Team (GREAT).



A POSSIBLE CONFLICT OF INTEREST

Right at the start of the public enquiry into the Cleve Hill solar farm, Sir David Melville from the Faversham Society and Richard Knox-Johnston from the Council for the Protection of Rural England challenged the choice of inspector, as they believed he has a conflict of interest and should therefore not have been appointed.

Last June, they wrote to the government pointing out that David Rose was the examiner of the London Array Inquiry in 2006/7 and had recommended that the transfer station be built. They argued that it was only because he cleared this first stage that the developers could go

ahead with the current plans.

Whilst not questioning his integrity, they also pointed out that back in 2007 he did not consider Graveney Marshes to be “of sufficient importance to warrant protection from industrial development.” In other words, he had already made his mind up and could not now turn down the current application, without questioning his original decision.

They added that such a clear conflict of interest questioned the credibility of the inquiry and meant that his decision could be challenged.

In September, the government responded to say that all inspectors have a code of conduct requiring them to be impartial. The Planning

Words by:
Richard Belfield



Inspectorate then added a third inspector, each with an equal vote. According to the reply, this had nothing to do with the conflict of interest, but was “in response to the scale of written representations received and in recognition of the complexity of the issues raised.”

Sir David Melville told the *Faversham Eye*, “This is a classic bureaucratic response that misses the point and totally fails to address the conflict of interest of the Chief Examiner who should have been excluded from the whole process. Even if a further ten examiners were appointed it would still be improper to have Mr Rose in charge.”



A typical lithium ion battery park and transformer complex

Words by:
Richard Belfield



A SMALL PROBLEM OF INSURANCE

It may well be impossible to insure the Cleve Hill solar farm – that's the view of insurance industry veterans approached by the *Faversham Eye*. The immediate reaction of one hugely experienced broker was, "well no one's going to insure that!"

At a recent planning inquiry hearing, the promoters admitted that they had not looked at the insurance issue in great detail, assuming naively that everything would be all right. They did, however, admit that unless they can get a policy, the development will not go ahead.

To do this, they will need to convince an already sceptical market to issue multi billion pound policies covering both major pollution and an open-ended health hazard. After sustaining huge losses on oil spills, industrial clean up and asbestosis, the industry has little appetite for either.

The potential risks of Cleve Hill are huge: multiple deaths, life time injury, damage to homes, factories, commercial premises, the land, the waterways as well as mass evacuation, pollution and clean up. The numbers quickly escalate into billions.

The cost of the insurance premiums will be immense and may well make the entire project unprofitable. As the plant gets older, the premiums will inevitably increase because the batteries degrade, making them a greater fire risk. They will also need to be replaced, which means they will have to be dismantled and moved, adding to the hazard.

If the inspectors give the go ahead then the secretary of state (whoever it is that week) will issue a Development Consent Order. This will have to define what sort of insurance policy is required. The terms will have to be strict. The insurance policy will need to be a standalone, with the premiums guaranteed for the lifetime of the project, whoever owns it. Otherwise the company will just go bankrupt and the UK taxpayer will have to pick up the bill.

TECHNOLOGY

The technology is still relatively new. This means that any insurer will always look at the worse case scenario: what if there is a major fire, which burns for hours, days or even weeks?

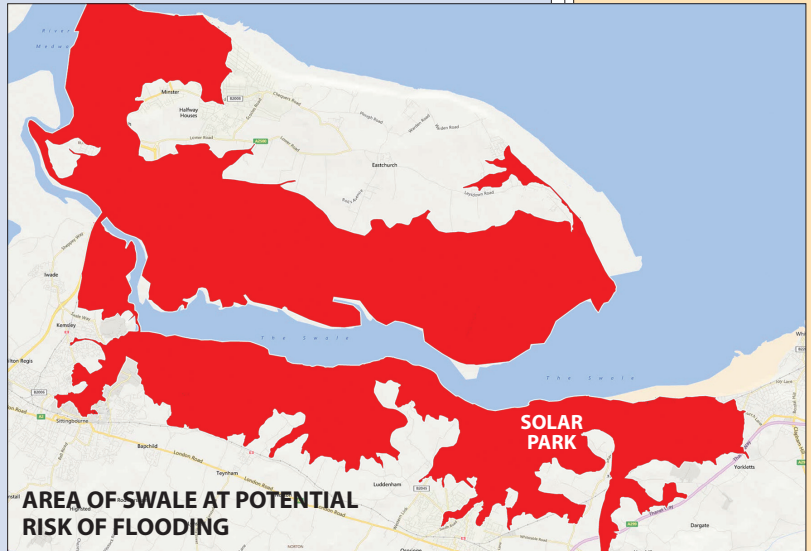
The scheme promoters constantly say the technology has been "tested". That's true. Unfortunately for them, the test results show that it will always fail at some point. There is an inherent flaw in li ion batteries - they spontaneously burst into flames, no matter how well they are built or stored.

The proposed Cleve Hill development will have 120 battery containers. So the issue here is not if there is a fire, but when it will happen. Before they issue a policy, insurers will look at the track record. There have been hundreds of fires from li ion batteries - whether they are on laptops, boats or even passenger airlines. Knowing they will have to pay out at some time in the first few years will deter most insurers.

So far there have been several major fires but no

major loss of life. The insurance industry is driven by statistics and the numbers suggest there will be a major catastrophe soon – and no one wants to be holding that insurance policy.

There is a second problem. Insurers are always nervous round new technologies, only ever taking a small piece of the total risk, limited to what they can afford to lose. They call it the "gambling line." The premiums are always higher and it means that a very large number of insurers will have to sign up and share the risk.



THE SIZE OF THE CLAIM

What will terrify any insurer is the size of any potential claim. The worse case scenario is a major fire, which leads to catastrophic thermal runaway and burns for hours. A strong on shore wind means most people in Graveney will die in minutes, with thousands more dying in Faversham shortly afterwards. As the gas gets diluted, the costs of the claim go up. It sounds callous, but insurers prefer death, which is a one off payment to paying for those injuries, like blindness and long term illnesses, which require a life time of expensive medical care. Open-ended lifetime care is every insurer's nightmare as the courts are quite happy for claimants to come back and ask for more.

It will take millions of gallons of water to put the fire out. This will turn the gas to acid, which will seep into the ground. The Faversham sewage works is a short distance away and once that is knocked out, the town will become uninhabitable and everyone will have to move out. Shepherd Neame takes its water from a spring below the brewery. Once this becomes polluted the business will close, probably permanently. Other major companies, like the Marks & Spencer distribution centre will also need to close, at least temporarily.

As the acid seeps into the water table it will destroy the farmland, causing long term damage to the local fruit industry.

Once the fire is successfully extinguished, the plant will need to be replaced at a significant capital cost. The evacuation of the town and the subsequent clean up, will add hundreds of millions to the bill.

The only close equivalent is nuclear. In the USA, the liability insurance for a nuclear reactor is \$13 billion (£10.2 billion) and the premium for each installation is \$375 million (£296.8 million).

Even if this was discounted by half, it will question the financial viability of the project.

FLOOD RISK

Cleve Hill developer CHSP often refers to the flood risk to its project as a 'one in a thousand year' event.

But as those living nearby will confirm, flooding is a frequent threat. As recently as 29 September this year, the Environment Agency issued a flood warning affecting Faversham, Graveney and Seasalter.

Immersion in water, particularly salt water, is known to trigger battery fire. Adding water to burning li ion batteries creates highly toxic hydrofluoric acid which, if it leaked, would mix with with spreading flood water and contaminate the surrounding land.