



Boom Developments Ltd
Unit 5E Park Farm
Chichester Road
Arundel
West Sussex
BN18 0AG
FAO: Jack Spurway

Our Ref: 700102254-001

2 June 2023

Dear Jack,

Low Farm Solar Farm, Wakefield: Planning Condition 16 – Coal Mining Risk

Boom Development Ltd (Boom) commissioned WSP UK Ltd (WSP) to provide additional support in relation to Planning Condition 16 (coal mining risk) for a proposed solar farm development on land off Wakefield Road in Grange Moor, Wakefield, WF4 4BB (the 'site').

The proposed development comprises the installation of a Solar Photovoltaic Farm (SPF) and associated infrastructure on nine separate land parcels (Parcels 1-9) to the north and south of Wakefield Road. The proposed associated infrastructure elements include the solar arrays, access roads leading off Wakefield Road to each land parcel, transformer units and a new substation to be constructed in the eastern portion of the site (Parcel 9).

A planning application for the construction of the solar farm has been submitted (ref: 2021/62/93644/E). Planning Condition 16 states:

"Prior to development commencing, a scheme of intrusive site investigations relating to Coal Mining Risk, shall be carried out on site to establish the risks posed to the development by past coal mining activity. Thereafter, a remediation strategy to address any identified land stability issues arising from coal mining, shall be submitted to, and approved in writing by, the Local Planning Authority. This should include the submission of the approved layout plan to illustrate the actual position of the recorded mine entries, if found present and calculated no build exclusion zones of each mine entry within influencing distance of the site. Remediation of the [sic] shall thereafter take place in accordance with the approved details".

With reference to Part B of the exemptions list included within the Coal Authority guidance on "Planning applications and Coal Mining Risk Assessments" (<https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments#full-publication-update-history>), solar arrays are exempt from requiring coal mining risk assessments for planning, by nature of the development:

"as the solar panels are unlikely to require deep and extensive foundations or groundworks and are often merely placed on the site surface freestanding with adjustable legs".

However, given the site's history and number of mine entries, a preliminary Coal Mining Risk Assessment (CMRA) was carried out for completeness (*Low Farm Wakefield, Preliminary Phase 1 Geo-Environmental Risk Assessment and Preliminary Coal Mining Risk Assessment, WSP, ref: 70078523, 2nd issue, July 2021*).

The CMRA identified potential coal mining risks in relation to unrecorded shallow mine workings, mine entries, open cast mining / associated backfilling and mine gas emissions.

The ground instability risks associated with below ground workings and backfilled open cast activities are considered unlikely to significantly impact the proposed solar farm development, as the ground works are minimal and the structures have adjustable supports (as noted in the Coal Authority guidance referenced above). Additionally, it is considered prohibitively expensive for a project of this nature and a site of this scale to carry out an intrusive ground investigation to further assess these coal mining risks.

Following the preliminary CMRA, the recorded shafts have been reviewed in greater detail, including with respect to the recorded open cast depths and the proposed development masterplan. Of the 13No. shafts or adits recorded to be present within the development parcels, 11No. are located within areas of open cast working. These are likely to have been removed either wholly, or in part by the open cast mining, and there is unlikely to be evidence of the shaft remaining at or close to the surface. The two shafts which are not located in open cast areas are located along the north eastern boundary of Parcel 6.

Intrusive ground investigations to locate/assess mine shafts is inherently unreliable, particularly for sites that have been subjected to open cast activities, which can obscure/remove the near-surface evidence of mine shafts. The majority of recorded shafts on site also have large Coal Authority "Departure" distances, mostly 10m, indicating that there is uncertainty over the accuracy of the records held and, therefore, uncertainty in the actual shaft locations. As a result, intrusive investigation of the shafts on site is likely to be inconclusive and prohibitively expensive.

The "Zone of Influence" (Zol) for each shaft has been assessed, taking account of the assumed diameter, the departure distance and the opencast depth/assumed depth to rockhead. It is proposed to locate key infrastructure outwith every recorded shaft Zol, thereby negating the need to locate them by intrusive ground investigation methods.

The Zols have been added to the attached drawing, showing that the proposed development masterplan has been prepared to take account of these; with key infrastructure (i.e. access roads, transformer units and substations) positioned outwith any recorded shaft Zol. It is noted that the masterplan may be altered slightly as the development design progresses. However, the intention that key infrastructure will not be located within any recorded shaft Zol is to be adhered to.

The approach of locating key infrastructure outwith any recorded shaft Zol was discussed with the Coal Authority in February 2022, as summarised in the attached email correspondence. Specifically, this included:

- The Coal Authority considering that this appears to be a pragmatic approach to managing the mining related risks by actively designing the masterplan around the areas of greater mining risk and demonstrating that each recorded shaft Zol has been considered.
- The approach should then be followed through the design documentation to allow the risks to be communicated to all site operatives (both during construction and



subsequent operation/maintenance). This includes adding a note to design drawings stating that key infrastructure is to be located outwith each recorded shaft Zol.

- On the basis of this approach, intrusive ground investigation to inform the risk associated with the mine shafts would no longer be a requirement for planning.
- Given the risks associated with the mine shafts in this instance, it appears appropriate to found solar panels within any recorded shaft Zol, with other infrastructure located outwith any recorded shaft Zol.

Although the potential for mine gas emissions exists on site, the risk of these affecting the proposed development is considered low, given the lack of enclosed, confined or occupied spaces within the proposed infrastructure and is, therefore, not proposed to be further investigated.

Based on the above, the risks associated with ground stability from mining activities are considered to have been appropriately assessed in respect of the proposed development and it is not considered necessary to intrusively investigate or further treat/remediate these risks.

Yours sincerely

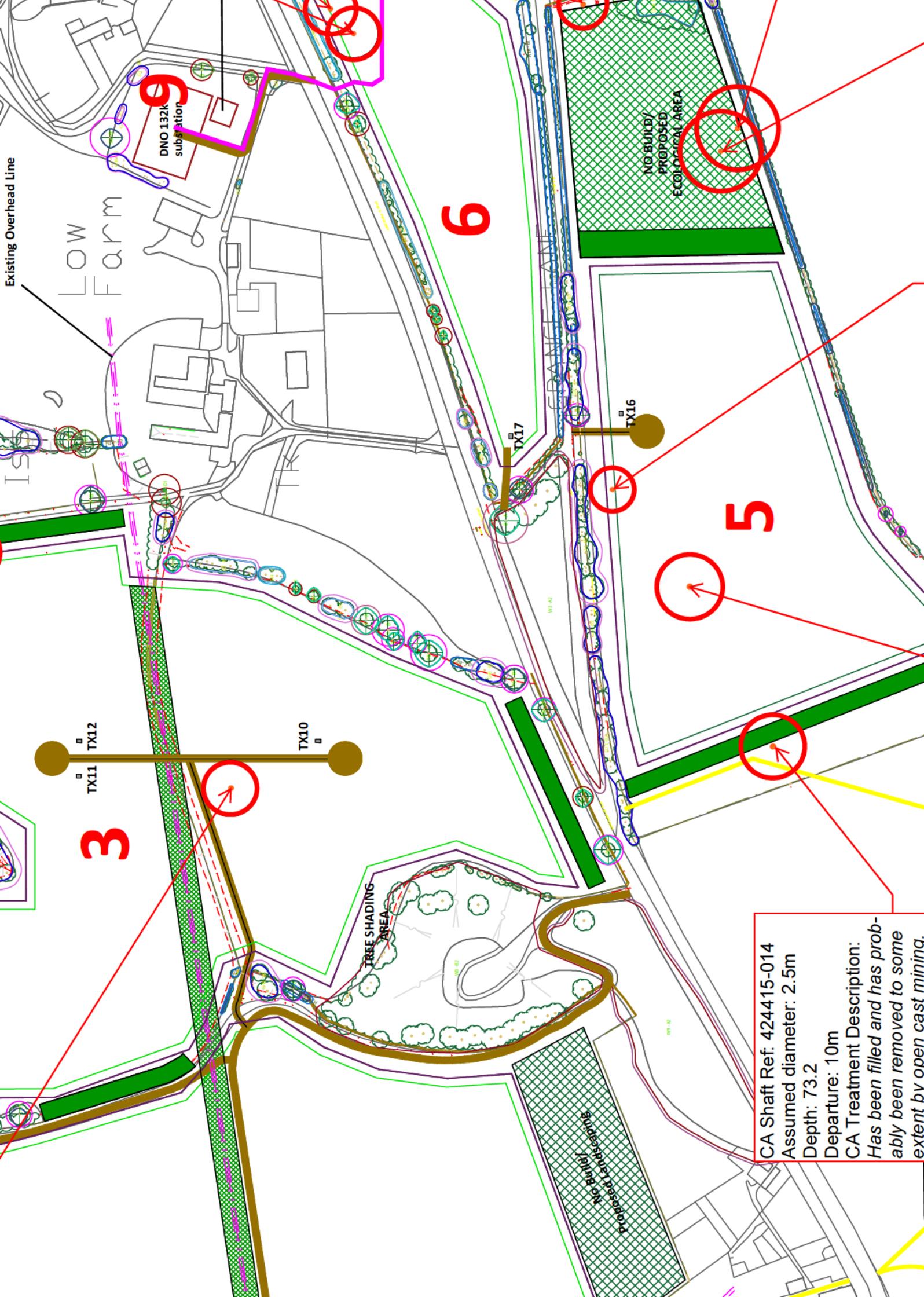
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Ben Thompson
Associate - Geotechnics & Tunnelling

cc: Sarah Cullen - Boom Power Ltd

Encl.

- Drawing depicting recorded coal mine entries and associated calculated shaft Zones of Influence in relation to the proposed development.
- Correspondence between WSP and the Coal Authority.



DNO 132k substation

LOW FARM

Existing Overhead Line

NO BUILD/ PROPOSED ECOLOGICAL AREA

TREE SHADING AREA

No Build/ Proposed Ecological Area

TX11 TX12

TX10

TX17

TX16

3

6

5

CA Shaft Ref: 424415-014

Assumed diameter: 2.5m

Depth: 73.2

Departure: 10m

CA Treatment Description:

Has been filled and has probably been removed to some extent by open cast mining.

Thompson, Ben

From: Debra Roberts <
Sent: 24 February 2022 15:05
To: Thompson, Ben
Cc: Smith, Claire; Adeoye, Oluyomi
Subject: RE: [External] FW: Low Farm, Flockton Investigation of Mine Shafts - Planning Application 2021/62/93644/E

Good afternoon Ben

Taking into consideration the nature of the development and your recommendations within your email of the 16 February 2022, based on your extensive review of the coal mining legacy affecting the site and the mitigation measures identified, subject to the applicant affording due consideration to your recommendations, this appears to be a pragmatic approach to take, in this particular instance.

I hope this helps.

Kind regards

Debs



Deb Roberts *M.Sc. MRTPI*
Planning & Development Manager – Planning & Development Team

E : planningconsultation@coal.gov.uk

W: gov.uk/government/organisations/the-coal-authority

My pronouns are: she / her

How to pronounce my name (phonetic spelling): Deb Rob-erts

From: Thompson, Ben
Sent: 23 February 2022 14:40
To: Debra Roberts <
Cc: Smith, Claire < Adeoye, Oluyomi <
Subject: [External] FW: Low Farm, Flockton Investigation of Mine Shafts - Planning Application 2021/62/93644/E

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Dear Debra,

Did my previous email – below come through last week? I have just received an “undeliverable” message, so not sure whether you ever received it.

Regards

Ben

From: Thompson, Ben

Sent: 16 February 2022 14:02

To: [debraroberts](#)

Cc: Smith, Claire Adeoye, Oluyomi

Subject: Low Farm, Flockton Investigation of Mine Shafts - Planning Application 2021/62/93644/E

Dear Debra,

Many thanks for your time earlier discussing the above site and your response (attached for reference), particularly your note re: intrusive investigation of the mine shafts on site.

As we discussed, the majority of the mine shafts on/adjacent to the site are within areas of former opencast activity and are noted to have been removed (at least partially) as a result. The shafts also have large Departure distances. Both combined, would make intrusive investigation of the shafts difficult and potentially very expensive.

We have looked in greater detail at the shaft locations with respect to the opencast depths from the abandonment plans and the proposed development masterplan. We have assessed the zone of influence for each shaft (taking account of the assumed diameter, the Departure distance and the opencast depth/assumed depth to rockhead) and prepared the attached sketch drawing, which depicts how the zone of influences interact with the proposed development. As you can hopefully see, there are only two shafts (ref: 424415-013 and 424416-009) where the zone of influence currently interact with any infrastructure other than the solar panels themselves. We are currently in discussion with the Client to understand whether these infrastructure can be moved outwith the zones of influence.

It was good to get your initial thoughts on this matter, notably that:

- The above approach appears to be a pragmatic approach to managing the mining related risks by actively designing the masterplan around the areas of greater mining risk and demonstrating that the features/zones of influence have been considered.
- This approach could then be followed through the design documentation to allow the risks to be communicated to all site operatives (both during construction and subsequent operation/maintenance).
- On the basis of this approach, intrusive ground investigation to inform the risk associated with the mine shafts would no longer be a requirement.
- Given the risks associated with the mine shafts in this instance, it appears appropriate to found solar panels within the zones of influence, with other infrastructure located outwith the zones of influence.

We will take on board your comment regarding adding the proposed mitigation (i.e. moving infrastructure to outwith the zones of influence) to our sketch before formally submitting it.

I acknowledge that you are unable to formally comment on the drawing without it coming through the planning process. However, I hope that this accurately reflects our conversation and that you are able to confirm this.

Once again, many thanks for your time.

Regards



Ben Thompson

Associate – Geotechnics & Tunnelling
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