

From: Martin Worsley [Redacted s.40]

Sent: 25 August 2021 15:04

To: Rugg, Ian (E&M - Landscapes, Nature & Forestry) [Redacted s.40]; Williams, Arwel (E&M - Landscapes, Nature & Forestry) [Redacted s.40]

Cc: Cate Barrow [Redacted s.40]

Subject: RE: WP 2b - mapping solar farms in Wales

Hi Ian,

Please see attached our fee proposal for work package 2b as discussed previously. I will address any queries next week now.

Best regards,

Martin

[Fee Proposal Document withheld s.44 – Commercially sensitive information]

Martin Worsley BSc MSc MISoiSci

Soil Scientist

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[Redacted s.40]

From: Martin Worsley

Sent: 23 August 2021 18:05

To: Ian Rugg [Redacted s.40]; Williams, Arwel (ESNR - ERA - Land, Nature & Forestry) [Redacted s.40]

Cc: [Redacted s.40]

Subject: WP 2b - mapping solar farms in Wales

Hi Ian, Arwell,

We have done some digging on WP 2b – the side project to map solar sites across Wales in order to determine total loss of agricultural land and predicted loss of best and most versatile land. (see email trail below).

BEIS provide a fantastic and comprehensive database of renewables projects in the UK since 2010. See here: <https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract> . It provides plenty of information but doesn't provide size (ha) or site boundaries (shapefiles). It is point data rather than polygon data. However, it could be very, very useful.

Each entry in the BEIS database has co-ordinates. This means you can easily populate the data into GIS (Arc, QGIS) and zoom around Wales visually identifying solar projects. If you exclude from the database sites which are a) still in planning, b) awaiting construction or c) were rejected – there remains around 120 solar farms in Wales. That is – 120 ‘Under Construction’ or ‘Operational’ solar farms.

We have delved into the various Ordnance Survey products, Open Source and Premium. The most detailed OS product – the MasterMap – does not list a ‘solar’ feature set. OS have started adding a ‘solar symbol’ to maps in Wales but this only applies to sites producing >5 MW. Around a third of Welsh sites produce < 5 MW. I think the assumption has to be that OS don’t currently provide a product that could be analysed to give site size (ha) and site boundaries – as we need for this project. With the wider assumption that there isn’t a product elsewhere on the market that will provide this.

But, the very, very useful BEIS database enables quick visual identification of solar sites in GIS and we don’t think it would be too onerous a task to use satellite imagery to map site boundaries (redline boundary) for the 120 sites in Wales. From which, we can provide the following information:

- a. Per site: name, operator, location, date of operation, power (MW), size (ha) and predicted BMV loss;
- b. Per county: number of sites, operators, total power (MW), total size (ha) and total predicted BMV loss;
- c. Wales: number of sites, operators, total power (MW), total size (ha) and total predicted BMV loss.

Provided BEIS are happy for us to use their data in this way and provided BEIS don’t know of a polygon-based database, I think this would be the best (perhaps only) way to go ahead with this project.

Best regards,

Martin

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[Redacted s.40]

From: Martin Worsley [Redacted s.40]

Sent: 29 July 2021 11:41

To: Rugg, Ian (E&M - Landscapes, Nature & Forestry) [Redacted s.40]

Cc: Cate Barrow [Redacted s.40]; Williams, Arwel (E&M - Landscapes, Nature & Forestry) [Redacted s.40]; Darren Ingram [Redacted s.40]

Subject: RE: Welsh Government R&D on effects of solar PV sites on soil and land - Version 2

Hi Ian,

- 1) We can make your 17th September deadline for WP1 – I will amend our revised quote accordingly. **Great, this is an important deadline for the work to be useful for appeal case schedules.**
- 2) I agree with you on the workshop – I would have thought representation from the solar industry – developers / operators – would be important? I'm happy to take your suggestions and include them in our revised quote. **A developer / operator would be good and possibly someone like Chris Stapleton or Rob Askew?**
- 3) We can develop and include a guide list of conditions for successful restoration but this would involve an additional cost, which I will include in our amended quote. **That's fine, look forward to seeing the amended quote.**
- 4) WP2b sounds like a good idea. To give us an idea of the size of the work – do you know how many solar developments we would be looking at? Does Welsh Gov have a detailed database of the developments since 2007 or would you be able to pull this together from your Local Authorities? Presumably we would be looking to map and measure solar developments based on satellite imagery – for developments in recent years (last 3 – 4 years?) we made need access to the development plans as they may not have been built yet or may not be showing on the latest available imagery. **I'm not aware of any previous work outside the 3 mentioned in the spec I sent to ADAS <https://www.statista.com/statistics/418830/number-of-solar-photovoltaic-installations-uk/>. <https://www.lancaster.ac.uk/spies/>. <https://iopscience.iop.org/article/10.1088/1748-9326/11/7/074016>. Arwel met BEIS recently and their rep was not aware of much work either. It doesn't mean it's not out there somewhere, I just don't know. I understand OS include solar farms in their products and produce change statistics which may be an opportunity. Ideally, any search should go back to the introduction of solar farms in the UK which I understand started in 2007. I'm not sure when the first solar site was installed in Wales though. I don't think missing the last few months of development would matter greatly, the key thing is identifying gross change (numbers, location, size and BMV status) over time. I'm not sure we currently have any handle on this / baseline numbers, areas etc.). I would see this exercise confined to Wales just because of potential work involved but may be worth considering how much extra work including England would be. I'm not sure how difficult it would be to access LDPs. Could you have a think about this and get back with some ideas and a guide price please? Because of the pressing need to agree the contract, it's probably best to include this as an optional extra in the spec at the moment and develop the idea later. If un-costed at the moment it's OK but a guide price range would certainly help. This will avoid any delays progressing the main contract.**

Regards,

Martin

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[Redacted s.40]

From: Ian Rugg [Redacted s.40]
Sent: 28 July 2021 08:28
To: Martin Worsley [Redacted s.40]
Cc: Kirk Hill [Redacted s.40]; Cate Barrow [Redacted s.40]; Williams, Arwel (ESNR - ERA - Land, Nature & Forestry) [Redacted s.40]; Darren Ingram [Redacted s.40]
Subject: RE: Welsh Government R&D on effects of solar PV sites on soil and land - Version 2

Hi Martin

(ccs for information)

Many thanks for sending through. I have read and discussed with Arwel. I am happy with the content but have a few comments / queries:

- 1 Work Package 1 (delivery): We need WP1 complete (or in a very advanced draft) by, at the latest, 17th September. This is to tie in with forthcoming solar appeals and timing is critical. If this could be done, it would be much appreciated. Delivery dates for WP2 , WP3 and WP4 are fine.
- 2 Work Package 1 (point 4 - workshop): I would like to see one or two other external specialists included. This is currently quite heavily weighted to ADAS and the steering group. I like your idea of including a BSSS rep (possibly through their PPC?).
- 3 Work Package 2 (point 6: *A discussion of to what extent soil handling conditions, as part of the planning process, can mitigate or remove any threats to soil and land. Can BMV sites realistically be restored to BMV and what factors influence this?*). We recently had some comments back from Ben Standing (Browne Jacobsen). He suggested including a guide list of conditions we would expect for successful restoration for BMV and non BMV land. Arwel and I think this is very important and would like to see included. I appreciate that all sites are different but think some sort of 'pick and mix' condition list should be possible. I'm hoping this can be done within the guide price and grateful for your thoughts.
- 4 Work Package 2 b. (*The date first introduced to the UK, the number of sites to date and the approximate number of applications per country, plus information on the range of site sizes...*). Would it be possible for ADAS to also do some GIS analysis (for Wales) to show the locations, boundaries and size of solar PV sites from 2007 to date? This should also relate the

sites to BMV status, so we have stats on the effect / loss relating to solar PV sites and BMV land. We can provide data layers for the ALC areas. I don't think any work like this has been done? I appreciate this is a significant task but would be grateful for your thoughts.

If you could get back by the end of this week it would really be appreciated then we can hopefully get the cost approved and start the work.

Thanks for your inputs to date, much appreciated. I am available most of today / tomorrow if you want to chat.

Ian

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