Submission ID: 18079

I have been the Flood Warden for the village of Greatford for the past ten years since February 2013. During this time I have walked the local area extensively and taken photographs to record all the daylight incidents of flooding during this decade.
Clearly, the prime interest of the Mallard Pass solar consortium is their financial profit, which drives the focus on the commercial issues for them. However, there is an extremely important aspect which they consistently ignore, which is the continuing stability, safety and well-being of the local population, without any increase in flood risk; and our way of life in the attractive rural countryside, in this important and productive rural border area of Lincolnshire and Rutland. In particular, there is much local concern about the inevitable increased and severity of local flooding if the solar site is permitted, constructed and operated for up to 40 years. Local flooding is already a periodic reality within Greatford, Essendine, and Banthorpe Lodge, from the West Glen river, and not just a possible risk.
Of note, the independent Flood Risk Assessment (FRA) produced by Arcus Environmental, for the Mallard Pass consortium was written by an individual who is also the Flood Risk Manager for Mallard Pass. This must bring its impartiality into question. This FRA focusses on the flood risk to the physical structures and operation of the proposed solar installation, and largely ignores the associated flooding in the local area, villages and properties, around the proposed solar site. Specifically, as in the points noted below, the extensive acreage of the site would be compacted during the 2-year construction period by the many vehicles and personnel, storage of equipment and components during this construction phase. This compaction would mostly remain throughout the 2-year construction period, the following forty years of operation, and the eventual de-commissioning. The compacted ground, which could not absorb surface water to the extent of natural soil structure, would cause increased run-off of surface water, which would increase the flood risk would continue for generations.
It is essential that the increased flood risk, both within the potential solar site, and in the local area outside the solar site, is taken fully into consideration in terms of the local population and housing, as well as the operation of the site itself (if it were to go ahead).
In hope, and with best regards, Chris Granville-White.
Greatford Flood Warden
On the Mallard Pass Flood Risk Assessment (FRA) below, I have highlighted pertinent points in bold, and made my comments in bold. CG-W.
1.3.4 Flood Zone Categorisation The EA Flood Map for Planning12 shows that the majority of the Site is located within Flood Zone (‘FZ’) 1. Areas of the Site are located within FZ 2 and FZ 3, areas described as ‘Medium’ and ‘High’ probability of flooding in Table 1: Flood Zones of the ‘Planning Practice Guidance to the National Planning Policy Framework’ 13, principally confined along stretches of the West Glen River towards to north and east of the Site. This zone is categorised as having a high flood risk and comprises land assessed as having a 1 in 100 or greater annual probability of river or sea flooding in any year.
1.3.5 Flood Defences. The Flood Map for Planning indicates the Site does not benefit from the protection of flood defences. The DEFRA Spatial Flood Defences dataset14 indicates flood defences are located along the banks of the River Gwash and the West Glen River. Defences along the River Gwash are located approximately 600 m west of the Site and comprise privately owned engineered high ground. The flood defence is shown to have crest levels in the range of approximately 19.1 m to 29.5 m AOD and a Standard of Protection (SoP) of 25 years. Defences along the West Glen River run along the banks of the watercourse through the centre of the Site and comprise privately owned natural high ground. The flood defence is shown to have crest levels in the range of approximately
13.6 m to 21.8 m AOD and a SoP of 50 years. Neither of the flood defences along the River Gwash and West Glen River are considered within the EA Flood Map for Planning. Acknowledging the SoP and location of the West Glen River flood defences within the Site Boundary it is assessed that the Site benefits from protection associated with such defences. 1.4 Historical Flooding The EA’s Historic Flood Map15 shows that th
1.4 Historical Flooding. The EA’s Historic Flood Map15 shows that the Site is not located in areas with recorded previous flooding history. Evidence from local stakeholders has been provided during the Stage 1 (informal) Consultation which indicates parts of land surrounding the Site have previously been impacted by surface water flooding.
2.1 Methodology. Flood risk will be classed as Negligible (where little or no risk is identified), Low (where theoretical risk is identified but mitigating factors may influence flood levels) or Moderate to High (where modelled levels or historical events show risk to the Site).
P7.
Plate 1: Typical PV Array Racking Set up off the Ground Where required, the electrically sensitive infrastructure will be located within contained units upon ground mounted platforms within aggregate based embankments which will lift the infrastructure above ground level and provide additional protection from surface water flooding as shown in Plate 2.
CGW: This section considers how flooding might affect the site infrastructure, eg. the need to raise panels, etc higher off the ground. This is looking at the site operating aspects, not about the impact on the local area and population.
P8. Plate 2: Electrical Infrastructure Raised Above Ground 19 The onsite pluvial flood risk will be mitigated through the implementation of a surface water drainage regime, discussed further in Section 3 of this report. Acknowledging the location of any sensitive infrastructure outside of modelled pluvial flood risk areas and the raised nature of the PV arrays the surface water flood risk is Negligible.
2.5. Acknowledging the low susceptibility and the infrastructure’s unlikely interaction with ground water, flooding of the Proposed Development as a result of groundwater fluctuations is unlikely and the risk is Negligible.
CGW Comment: This is again the Mallard Pass consortium considering the site infrastructure, rather than flood risk to communities.
1. 2.7 Flooding from Drainage The Site is located within a rural area with the A6121 dissecting through the centre in a general north-east to south-west direction and is assumed to have a drainage system based off satellite imagery and a Site walkover conducted in March 2022. The nearest infrastructure, PV Arrays, are located approximately 40 m north of the A6121 with a woodland located between the highway and PV arrays. Surface runoff that is not contained within the highway drainage system will be intercepted by the neighbouring woodland and will therefore not impact the PV Arrays. In addition, the base of PV Modules are located at a minimum height of 0.8 m and therefore will not impacted if surface runoff

from the highway were to reach the Proposed Development infrastructure. As such, flood risk from drainage is Negligible. CGW. Again, this is the industrial consortium considering the site infrastructure, not the local area and rather than flood risk to communities.
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2.8 Artificial sources (canals, docks, lakes, ponds) Tallington Lakes Leisure Park is located approximately 3 km east of the Site and is at an approximately elevation 12.5 m AOD. The nearest extent of the Site boundary has an approximate elevation 26.7 m AOD; the difference in elevation highlights the unlikely nature of the Lakes posing any flood risk to the Site. A large pond is located approximately 10 m east of the Site, in the event of water overtopping the pond, topography shows any exceedance would fall away from the Site and towards the West Glen River. The EA Surface water flooding map shows that any exceedance of the ponds located towards the north-east boundary of the Site would flow away from the Site and therefore would not impact the Proposed Development. CGW. Again, this is considering the site infrastructure, not the local area and communities.
3.2 Proposed Surface Water Drainage Strategy. An Outline Surface Water Drainage Strategy will be prepared as an appendix to the Environmental Statement which will outline how surface water runoff associated the Proposed Development will be intercepted, attenuated and discharged. CGW. Not yet received/seen
The design life of the Proposed Development for the purpose of the Environmental Impact Assessment is 40 years, subject to maintenance and repairs. The peak rainfall intensity allowance for the Site is 20 % based off the Upper end '2050s'; however, the catchment is greater than 5km2 . The catchment for the Site is approximately 164.3 km2 therefore as per the guidance the peak river flows allowance would be used which is 10% for the Welland Management Catchment Higher 2050s. To take the most conservative approach to the drainage design, a 20% climate change allowance will be applied. The dominant presence of clay-based strata located through the Site suggests infiltration may not be feasible; however, infiltration testing to Buildings Research Establishment (BRE) 365 standard will be conducted to determine the Sites capability to infiltrate surface runoff associated with hard standing areas implemented. Infiltration will be the favored technique to manage runoff from hardstanding areas to reduce peak runoff to surrounding watercourses and, thus, reducing flood risk downstream. In the event infiltration as the means of surface water drainage is not feasible, attenuation and controlled discharge to the nearest watercourse at a greenfield rate or alternative rate 23 Flood Risk Assessments: climate change allowances. [Online]. Available at:
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The Proposed Development will increase the impermeable areas as a result of the Solar Stations, Primary Onsite Substation compound and associated plant storage areas. Existing tracks will be utilised wherever possible and any new internal access tracks are assumed to comprise permeable aggregate, as shown in Plate 3. If this is not the case, access tracks will also be included in the impermeable surface calculation.
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2. It must be demonstrated that the Development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment; and 2. A site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. The Site is located partly within FZ 2 and 3. The Proposed Development is located primarily within FZ 1, with all sensitive elements (substations, inverters etc.) of the Proposed Development outside of the 1:100-year (+20%) extents. Only PV arrays, which are raised above ground level are located in FZ 2 and 3 highlighting a sequential design. CGW. Again looking at it from the perspective of the solar plant rather than flood risk to communities
5. CONCLUSION
This report has been written to meet the requirements of the NPS, NPPF and the EA. The Site is partially located within FZ 2 and FZ 3. In channel 1:100-year plus 20 % water levels for the West Glen River have been extrapolated utilising 1 m resolution LiDAR data to confirm a conservative 1:100-year plus 20 % flood extent. Electrically sensitive elements associated with the Proposed Development has been sequentially designed to be located outside of the 1:100-year plus 20%. The maximum pluvial 1:100-year depths located at the Site are 0.6 m; however, no infrastructure will be located within these areas. PV panels are to be set at 0.8 m above ground level and therefore will not be impacted during a 100-year pluvial event. The use of vegetation under the PV array drip line will reduce the potential for surface water run-off rates to increase at the Site. CGW. 'Reduce the potential' implies there would be an increase of surface water run-off.
Ground Compaction
The issues associated with the compaction of the soil on the proposed solar installation, are described with detail and with the professional authority by Philip Britton, the Chairman of Greatord Parish Council. This information was compiled based on his professional agricultural qualifications and practical working background.
It is self-evident, that after two years while the solar installation would be constructed, there would be much compaction of the ground. This would continue throughout the proposed 40-year life of the site.
Once compacted the soil's ability to absorb and hold water is reduced, and it also prevents water from seeping down further into any groundwater stores too. Therefore more water becomes available for flooding both on the surface and further downstream.
And clay soils do not uncompact themselves. It requires aerating, and ideally organic matter worked into it. This is when farmers spread well-rotted manure onto the fields, ready for them to plough the land. This process undoes any compaction from the year, and the mixed-in manure adds extra structure (as well as nutrients) to the soil. A farmer will subsoil after harvest to remove as much compaction as possible. Contractors won't be able to plough their damage out because they will have planted solar panels all over the fields and buried cables which would be pulled out by deep cultivation. Therefore the damage they do to field drainage will last 40 years, and the surrounding area will have to put up with the ensuing

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