TAIYO
POWER AND STORAGE

Parc Solar Caenewydd, Swansea

Technical Note on Flood Displacement and Compensation

Development of National Significance in the Renewable Energy Sector
Variation Submission

On behalf of **Taiyo Power & Storage Limited**

June 2024 | P21-2998

PARC SOLAR CAENEWYDD

TECHNICAL NOTE – FLOOD DISPLACEMENT AND COMPENSATION

This technical note has been provided in response to the Natural Resources Wales (NRW) comments which relate to the displacement of flood water onto the neighbouring water treatment works which are considered to be under risk of flood already.

The extent of displacement relates only to the legs of the frames which would be submerged in the event of a flood that reaches a maximum level of 12.5m AOD, which has been agreed with the NRW.

The solar panels themselves are above this level and therefore do not displace water.

Simple modelling was carried out to identify the number of legs within a 500mm depth band of flood water from 12.5m down to 10.m AOD. The number of legs are multiplied by the areas of each legs, based on dimensions of 150mm x 150mm, and the 500mm depth of the band. This approach provides the worst-case volume for each leg and relates to the displacement of the flood water. The table below summarises the volumes displaced.

Banding	Number of legs that sit within the bands	Volume of legs m^3 (number x 0.0225m^2 x 0.5m depth)
12.5-12.0	778	8.8
12.0-11.5	652	7.3
11.5-11.0	499	5.6
11.0-10.5	312	3.5
10.5-10.0	63	0.7

After volume displacement is calculated there needs to be an offset compensation of the same or greater volume. It is proposed that small scrapes are provided to account of the volume. These scrapes would have the cross sectional area of 0.09m2 which has been calculated from a 150mm deep scrape with 150mm base and 1 in 3 sides. The volume of compensation has been provided in the table below.

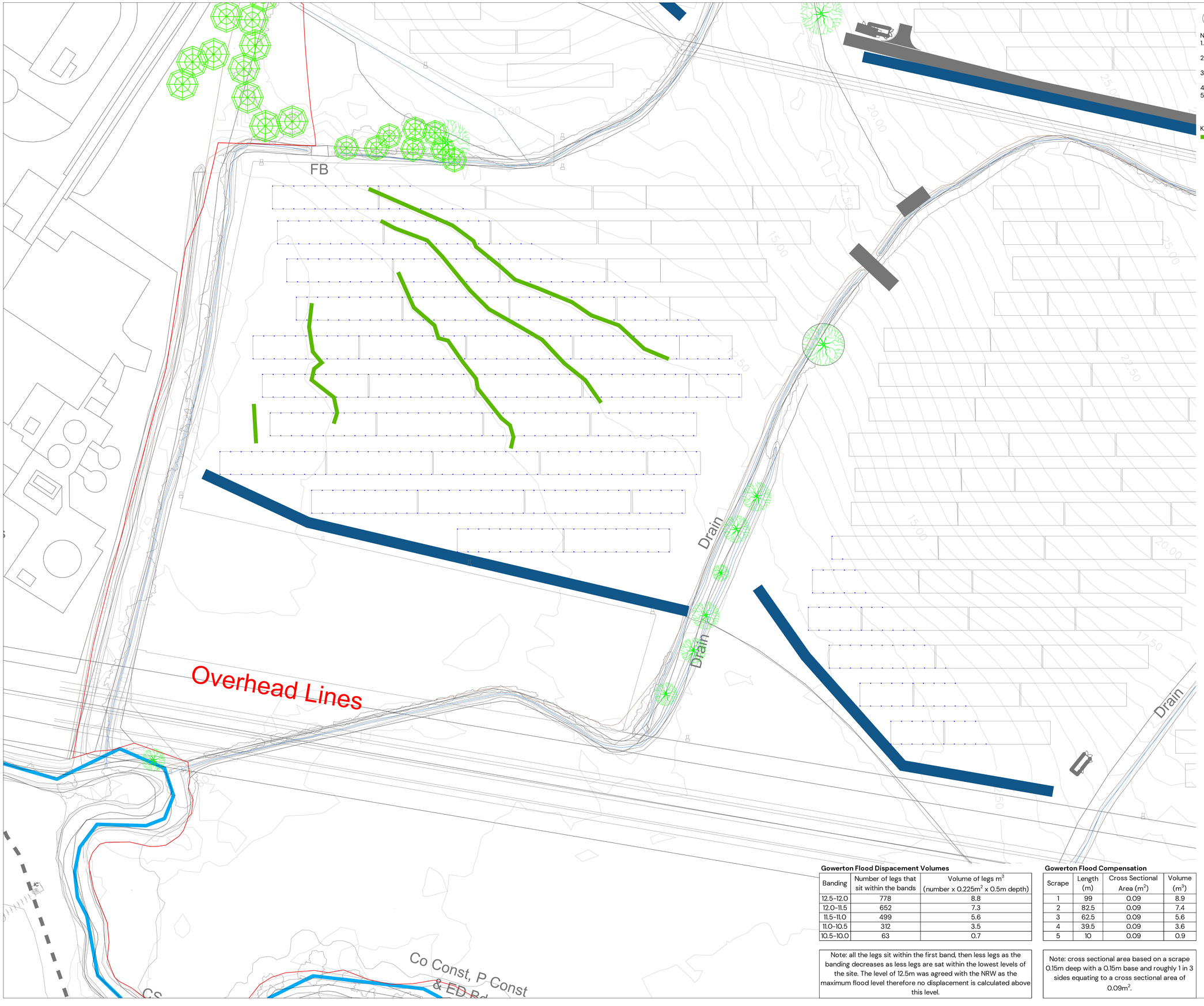
Scrape	Length (m)	Cross Sectional Area (m^2)	Volume (m^3)
1	99	0.09	8.9
2	82.5	0.09	7.4
3	62.5	0.09	5.6
4	39.5	0.09	3.6
5	10	0.09	0.9

The location of the legs and the scrapes used for compensation are indicated on the Flood Displacement included in the appendices of this note.

The scrape would be secured and incorporated into the final design, and this can be secured by planning condition. Namely, planning condition 5 as contained within the Statement of Common Ground which requires for a detailed layout of the development to be submitted to and approved by the local planning authority.

APPENDICES

P21-2998-PEG-XX-XX-DR-C-2000-P1_Flood Displacement



N

1:500
0 12.5m 25m

Notes:
1. Pegasus Group are not responsible for the misuse of this drawing, information to be used for planning.
2. NRW agreed a maximum flood level of 12.5m AOD which has bee used in this assessment.
3. Panel legs have assumed worse case 150x150mm dimensions. Spacing of legs have been placed every 3m as a conservative approach.
4. Analysis demonstrates no flood displacement onto third party land.
5. Depressions in the ground called up as scrapes as are not significant enough to be labelled ditch or swale.

KEY

Scrape (150mm base, 150mm deep, 1 in 3 sides)

Panel Legs (150mm x 150mm)

Gowerton Flood Dispacement Volumes

Banding	Number of legs that sit within the bands	Volume of legs m^3 (number x 0.225m^2 x 0.5m depth)
12.5-12.0	778	8.8
12.0-11.5	652	7.3
11.5-11.0	499	5.6
11.0-10.5	312	3.5
10.5-10.0	63	0.7

Note: all the legs sit within the first band, then less legs as the banding decreases as less legs are sat within the lowest levels of the site. The level of 12.5m was agreed with the NRW as the maximum flood level therefore no displacement is calculated above this level.

Gowerton Flood Compensation

Scrape	Length (m)	Cross Sectional Area (m^2)	Volume (m^3)
1	99	0.09	8.9
2	82.5	0.09	7.4
3	62.5	0.09	5.6
4	39.5	0.09	3.6
5	10	0.09	0.9

Note: cross sectional area based on a scrape 0.15m deep with a 0.15m base and roughly 1 in 3 sides equating to a cross sectional area of 0.09m^2.

REV	DATE	DESCRIPTION	REVISED	CHECKED	APPROVED
P2	07.06.2024	Minor updates.	LAJ	LAJ	-
P1	03.06.2024	First issue.	LAJ	LAJ	-

FLOOD DISPLACEMENT

Parc Solar Caenewydd
Gowerton

CLIENT:
Taiyo Power & Storage Ltd

DATE: 03/06/2024
SCALE: 1:500@A1
DRAWN BY: LAJ
CHECKED BY: LAJ
APPROVED BY: -

DRAWING NUMBER: P24-1340-PEG-XX-XX-DR-C-2000-P2
PG OFFICE / TEAM: BRS-IN

PEGASUS REF No: P21-2998
DRAWING STATUS: S0

PEGASUS GROUP