

Site:	100MW Swansea Greener Grid Park Extension
Client:	Statkraft UK Ltd.
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INTRODUCTION

Tetra Tech has been commissioned by Statkraft UK Ltd. to produce this technical note in support of an outline planning application to Swansea Council for the installation of a 100MW Battery Energy Storage System (BESS) within the Swansea Greener Grid Park Extension. The site is located to the immediate southeast of Swansea North 400kV GIS substation.

This technical note has been produced in order to demonstrate how the lighting for the development will have no adverse impacts on ecology.

This note has been provided to give an understanding of the potential impacts upon protected or sensitive ecological receptors as a consequence of the additional lighting required to meet operational needs. The new development is located within fields established with semi-improved grassland and bound of most side with gappy hedgerows with mature trees, there is a section of species rich hedgerow with mature trees to the northeast and just outside of the eastern boundary runs a small stream.

The technical note has been prepared by Associate Ecologist Sean Flynn MCIEEM CEnv and the conditions pertinent to it are provided in Appendix A.

DISCUSSION

This section discusses when the lighting will be in operation, how light will spill from the new lighting regime into surrounding habitats and then provides discussion on likely impacts upon protected or sensitive ecological receptors.

The external lighting installation, only when in full operation, will provide lighting of no more than 10 lux to habitats surrounding the proposed BESS site (see Appendix B – External Lighting BSL31147-RPS-XX-XX-DR-E-6301 P08). The lighting will be off for most of the time and will only be triggered by movement caused by the motion of people (or large objects / animals) moving passive infrared sensors (PIRs). The PIRs will be located on each lighting column which will illuminate the lantern on the column where movement is detected locally. For greater scrutiny, in the event of detection of movement on site, lanterns will be wired on security circuits which will bring on a certain group of light fittings only. This control will also allow for faults to be rapidly picked up if, for any reason, the lights become faulty (e.g. a PIR sensor becomes damaged and causes the lights to be switched on when not triggered).

Full operational lighting will only be used in the event of nighttime maintenance which would be undertaken as required and it is very unlikely in reality that all of the operational lighting would be on at the same time. Should there be any occasions when full operation lighting is functioning, light spillage to adjacent habitats will be limited to 1 lux and well below 1 lux to dense hedgerow to the north and grasslands to the south and east. This is clearly shown within drawing External Lighting BSL31147-RPS-XX-XX-DR-E-6301 P08 (see Appendix B).

The above detail and associated plans show that light spill is restricted to only when the PIR sensors are triggered by the movement of people (or large objects / animals) and that when lighting is operational light spill onto adjacent hedgerow is restricted to the short timespans when the lighting has been triggered.

Ecological Receptors

The key ecological receptors susceptible to lighting impacts present within the areas of the new development are hazel dormouse *Muscardinus avellanarius* and bats. Both species are nocturnal and could be adversely affected by excessive lighting.

Hazel dormouse

In the case of hazel dormouse, this species was identified within woodland to the southeast of the Swansea North substation during September 2023 and a European Protected Species licence (ref. S093147-1) is in place. The hedgerows within and surrounding the site are considered to be suboptimal for dormouse as they are for the most part defunct (i.e., not continuous shrub cover) and, as a consequence, do not connect to significant areas of suitable dormouse habitats. It is therefore considered that any impact to hazel dormouse would be negligible due to the absence of habitat suitable for dormouse inhabitation within zones of potential light spill.

Bats

In terms of impacts to bats from the new lighting regime, it is known that bats will use the woodlands and hedgerows around the site for foraging and commuting; this is likely to include some rarer, light sensitive species such as lesser horseshoe *Rhinolophus hipposideros* or greater horseshoe *Rhinolophus ferrumequinum* bats.


As noted above the light spill onto the habitats surround and within the site only becomes operational when the PIR sensors have been triggered or when nighttime maintenance is required, this illumination would affect only small areas of habitat on rare occasions for a short amount of time.

Light spill to the north of the development where there is suitable habitat for commuting and foraging bats would be no more than 0.5 lux which on the occasion when PIR sensors are triggered would not have a detrimental effect upon commuting or foraging bats.

Additionally, a significant amount of new woodland and new species rich grassland will be established and, as these habitats mature and are appropriately managed, they will have a net benefit for bats and dormouse and will serve to block out the low level of light spill expected from the new development.

CONCLUSION

There are no impacts upon nocturnal species (hazel dormouse and bats) expected as a consequence of the lighting for the new development. PIR sensors will be used so that the lighting is only triggered by people (or objects large enough) and during any nighttime maintenance. This would be on occasional basis and would likely only involve a small portion of the site being lit at any one time, otherwise the site would remain in darkness at all other times.

Document Control		
Revision:	2 – update lighting strategy	Status: FINAL
Date:	11 th April 2025	
Prepared by: Sean Flynn MCIEEM CEnv 		

APPENDIX A – REPORT CONDITIONS

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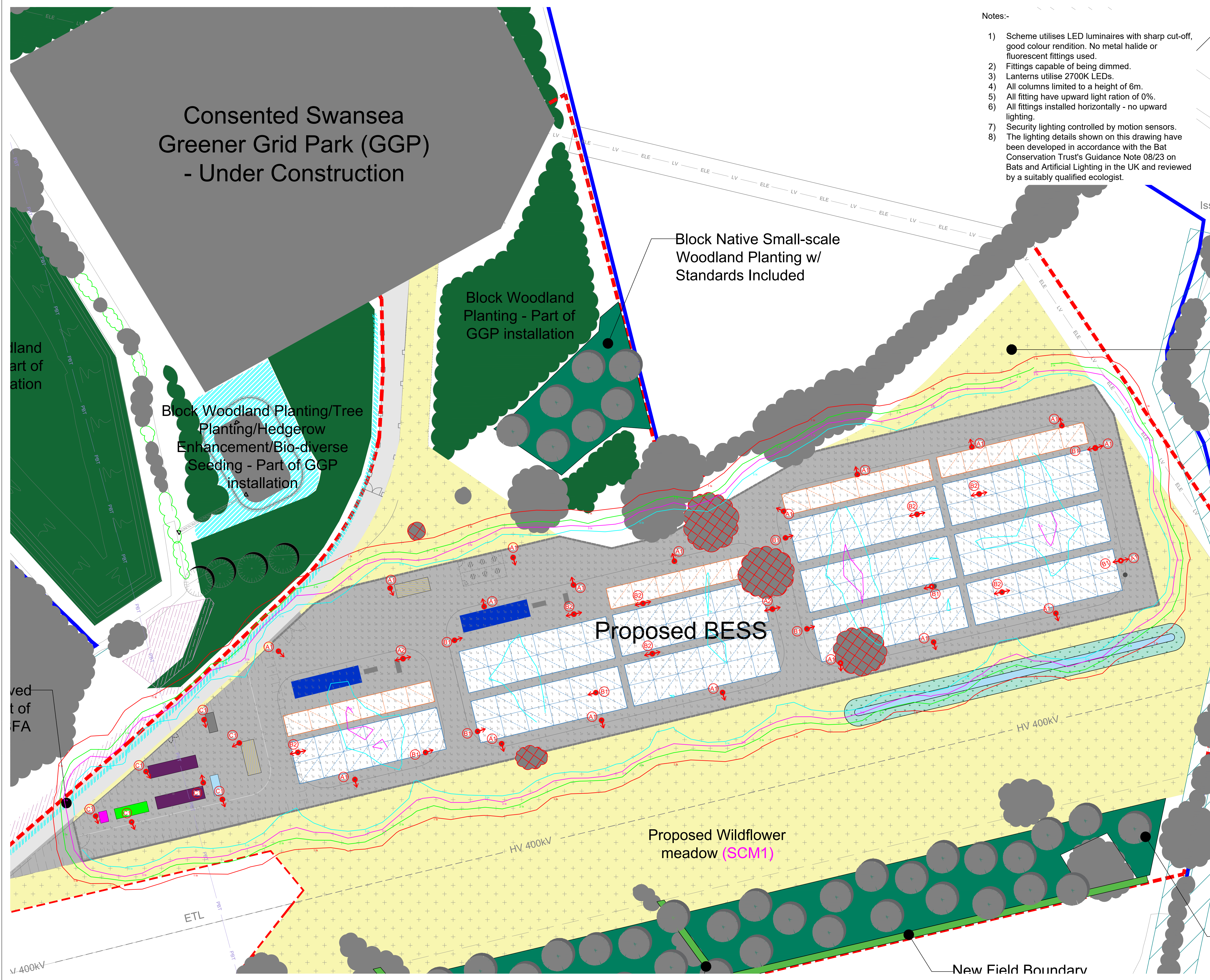
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APPENDIX B: External Lighting Plan BSL31147-RPS-XX-XX-DR-E-



- Notes:-
- 1) Scheme utilises LED luminaires with sharp cut-off, good colour rendition. No metal halide or fluorescent fittings used.
 - 2) Fittings capable of being dimmed.
 - 3) Lanterns utilise 2700K LEDs.
 - 4) All columns limited to a height of 6m.
 - 5) All fitting have upward light ration of 0%.
 - 6) All fittings installed horizontally - no upward lighting.
 - 7) Security lighting controlled by motion sensors.
 - 8) The lighting details shown on this drawing have been developed in accordance with the Bat Conservation Trust's Guidance Note 08/23 on Bats and Artificial Lighting in the UK and reviewed by a suitably qualified ecologist.

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Notes

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For guidance only. Do not scale off this drawing

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In addition to the hazards / risks normally associated with the types of work detailed on this drawing take note below. It is assumed that all works on this drawing will be carried out by a competent contractor, working, where appropriate, to an appropriate method statement.

Construction risks	Maintenance/Cleaning risks	Demolition/Adaption risks

A1 Kingfisher 72W LED 2700K 100mA ITALO 1
(4 module) with S05 optic column mounted at 6m

A2 Kingfisher 2 No 72W LED 2700K 100mA ITALO 1
(4 module) with S05 optic column mounted at 6m

B1 Kingfisher 37.4W LED 2700K 100mA ITALO 1
(2 module) with S07 optic column mounted at 6m

B2 Kingfisher 2 No. 37.4W LED 2700K 100mA ITALO 1
(2 module) with S07 optic column mounted at 6m

B1 A1 Kingfisher 72W LED 2700K 100mA ITALO 1 (4 module) with S05 optic column and Kingfisher 37.4W LED 2700K 100mA ITALO 1 (2 module) with S07 optic mounted back to back at 6m

C1 Kingfisher 52.3W ITALO 1 Pentha LED 2700K (2 module) with S05 optic column mounted at 6m

1 Lux
2 Lux
3 Lux
5 Lux
10 Lux

Calculation Summary

	Average (lx)	Max (lx)	Min (lx)	Uniformity (Min/Avg)
Battery Storage	14.21	95	3	0.21
Internal Roads	21.03	73	4	0.19
Welfare Area	19.48	53	0	0.00

P08	Background updated to landscape drawing 2242 L01F Landscape Mitigation Plan	DB	RP	09/04/25
P07	Background updated. Drawing title amended.	DB	RP	04/04/25
P06	Site layout updated. Scheme recalculated.	DB	RP	28/03/25
P05	Boundary fittings moved 2m into site away from the perimeter fence.	DB	RP	21/03/25
P04	2 No. A1/B1 fittings introduced to replace separate A1 and B1 fittings at western boundary. 1 No. C1 moved from access road.	DB	RP	20/03/25
P03	Site layout updated. Lighting scheme amended to suit.	DB	RP	20/03/25
P02	Site layout updated. Lighting scheme amended to suit.	DB	RP	05/02/25
P01	First issue	DB	RP	15/01/25
Rev	Description	By	Ckd	Date

MAKING COMPLEX EASY

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Client Statkraft

Project Swansea Greener Grid Park Extension

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SB	DB	RP

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P08

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