STATEMENT OF REQUIREMENT (SOR)
for
Optimal External Lighting (OEL) Feasibility Study (FS)

Introduction

Purpose

1. To assess the opportunity to reduce external lighting levels across the regular and reserve estate and determine the benefits in terms of: -

    - Reduced scope 2 carbon emissions.
    - Financial savings
    - Reduced light pollution
    - Increased biodiversity
    - Increased well-being
    - Security

Background

2. The MoD does not record expenditure on external lighting due to insufficient monitoring. Extrapolations must be made an area with monitoring around Salisbury Plan managed by Aspire. A crude extrapolation of these figures above suggests that for the whole Army UK estate

    a. 10.848 GWh of energy is used p.a. on external lighting.
    b. Creating the emission of 2528.93 tonnes CO_2 p.a.,
    c. At a cost of £1.3 million p.a

    Therefore a 10% reduction in use would abate 250.t CO2 e and save £131k per annum.

3. Artificial lighting has established effects on security, aesthetics, wildlife, and human well-being. Meanwhile lighting technology has developed, quantitatively in that artificial lighting has generally increased and qualitatively in the increasing adoption of LED (Light Emitting Diodes) lighting.

4. The Authority requires the tenderer to make recommendations that balance between the objectives of the Army: site security, biodiversity net gain, electricity cost reduction, and the lived experience of service persons.

Objectives

5. To survey the below Establishments, as a sample of the Army Estate:

    a. Duke of Gloucester Barracks, GL7 5RD
    b. Woolwich Station, SE18 4BH
    c. Swinton Barracks, SP11 9LQ

Objectives at Establishment Visit

6. To make estimates of the proportions of different external lighting designs (AKA ‘lanterns’). For example, are they SON (sodium) SOX (low pressure sodium, AKA LPS), or LED (Light Emitting Diode), including their height above ground.

7. To make estimates of external lighting shades (i.e. the material around the light bulb that directs the light in a particular direction). And to comment on their suitability to the Authority’s objectives.

8. To record the lux level around a sample of the external lighting on each Establishment. Furthermore, average lux levels around the permitter to take account of the total combined effect of multiple streetlights.

9. To comment on the impact of artificial lighting on wildlife/biodiversity with a whole ecosystem approach. Including a list of species effected.

10. To describe the quality of artificial light at each Establishment, e.g. is it orange, white, or blue, as the quality of light effects sleep schedules and wildlife, for instance. Furthermore, to estimate the proportions of light quality at each Establishment surveyed. This includes the Colour Temperature.

11. To make estimates of the longevity of the lighting in operation at the surveyed Establishments, i.e. when will it need to be replaced. This includes the ease of disposals/recycling.

12. In co-operation with the Authority, to make reasonable enquiries as to the Light control method, (for example Photo Electric Cell, time clock, or Central Management System) and the metering system that apply at each Establishment. To record this information in a presentable way to the Authority.

13. In co-operation with the Authority, to make reasonable enquiries as to the Light schedules (e.g. the times lights come on and off) at the surveyed Establishments. Also if any dimming or trimming schedules are in operation.

14. To record the above information in a presentable way to the Authority.

15. To provide to the Authority a methodology statement. Including what tools will be used to measure light (e.g. Photometric surveys)

Policy Review.

16. The Contractor will conduct a thorough review of relevant UK policies and guidance. The former being legally binding and the latter advisory.

17. Once the Contractor has completed the Establishment Visits and the Policy Review, they will be required to make specialist and context-informed Recommendations on the following:

Recommendations

18. The recommended lux level (externally) that should be aimed for in general across the Army Estate, subject to local conditions and factoring in the competing goals of: security and biodiversity/wellbeing, and subject to financial constraints.

19. If the Contractor thinks that the Army Estate is too diverse to specify one lux level to be aimed for, the Contractor should produce a classification system to separate the Army Estate with different lux levels to be aimed for in each. For example, rural/urban or low/high security.

20. Recommendations on how low a security compliant lux can be.

21. Recommendations on a lux level that would not adversely impact biodiversity around the permitter of the Army Estate. This would be informed by the latest literature on the relationship between artificial lighting and biodiversity. This Recommendation would need to be balanced against other Army goals.

22. Recommendations on a lux level that would be optimal for human health and wellbeing, factoring into account the latest literature on the relationship between artificial lighting and health/wellbeing.

23. Proposals on circadian lighting design, if applicable.

24. Recommendations on optimal lighting quality and/or colour (e.g. white, blue, orange),

25. Recommendation on preferable design (e.g. SON X, LED etc.…) including height and shade design,

26. Recommendations on optimal control method (e.g. Photo Electric Cell, time clock, or Central Management System), and schedule, for the Army Estate.

27. Recommendations factoring in the longevity of recommended lighting systems so the Authority can use this information to make financial decisions.

Requirements

28. The appointed contractor will need to: -

    a. Comply with security policies.
    b. Receive site specific Health and Safety briefs.
    c. Be escorted during site visits.

29. The contractor shall be responsible for associated transport and accommodation costs.

30. The contractor should request any additional information identified as available without delay and correspondingly the authority will supply it within 5 working days.

31. All requests for data should be made via Army Infra-FS3E-EstateExpl-SO2

Outputs/deliverables/milestones

32. Three final reports shall be required: -

    a. A Method Report detailing the data used and analysis undertaken
    b. A Policy Review report detailing applicable policies and guidance
    c. An Interpretative report detailing the findings and recommendations.

33. The first draft report shall be presented for discussion at a meeting where any additional requirement presented by either the contractor or authority to improve or alter the output can be considered.

34. The report shall be delivered electronically in pdf format.

35. The final report will be the Intellectual Property (IP) of the authority along with any authority owned data passed to bidders and tenderers

Payment

36. The contractor shall be paid via Contract, Purchase and Finance (CP&F) on completion of the report.