Appendix 3.2

SUMMARY LIGHTING ASSESSMENT 2020

REPORT

Fort Halstead: Summary Lighting Assessment

Client: Merseyside Pension Fund

Reference: PB9121-RHD-ZZ-XX-RP-Z-0001

Status: Final/P02

Date: 27 May 2020

Royal HaskoningDHV

Enhancing Society Together

HASKONINGDHV NEDERLAND B.V.

Newater House
11 Newhall Street
Birmingham
B3 3NY
Industry & Buildings
Trade register number: 56515154

+44 121 7096520 **T**
info.birmingham@uk.rhdhv.com **E**
royalhaskoningdhv.com **W**

Document title:	Fort Halstead: Summary Lighting Assessment
Document short title:	Fort Halstead: Summary Lighting Assessment
Reference:	PB9121-RHD-ZZ-XX-RP-Z-0001
Status:	P02/Final
Date:	27 May 2020
Project name:	Fort Halstead
Project number:	PB9121
Author(s):	James Niemann
Drafted by:	James Niemann
Checked by:	Steve Bloomfield
Date / initials:	27/05/2020 SB
Approved by:	Steve Bloomfield
Date / initials:	27/05/2020 SB

Classification
Project related

Royal HaskoningDHV

Table of Contents

Table of Tables

1 Introduction

The Site and land are currently used by QinetiQ, a private defence research company, and Defence Science and Technology Laboratory (DSTL), which provide scientific and technical research to the Ministry of Defence.

The Fort Halstead site was granted outline planning permission in the form of a masterplan development in 2015 with description of development as follows:

“Outline planning permission for the demolition of buildings and development of a mixed-use development comprising a business area (Use Classes B1 and B2 with ancillary energetic material testing) of up to 27,000 sq m GEA, 450 residential units, a hotel of up to 80 beds, a village centre (Use Classes A1-A3, B1a, D1 and D2), use of the Fort Area and bunkers as an historic interpretation centre (Use Class D1) with ancillary workshop space, and works associated with the development including roads, landscaping, security fencing, formal and informal open space, pedestrian, cyclist and public transport infrastructure, utilities infrastructure, sustainable urban drainage system, cycle and car parking (with all matters reserved); and detailed approval for two access points at Otford Lane/Crow Drive (primary) and Star Hill (secondary).” (Ref: SE/15/00628/OUT).

In 2019, a hybrid planning application was submitted. Refer to document PB9121-RHD-ZZ-XX-RP-E-0001 (Rev P01), for further details associated with the summary Lighting Re-Assessment.

The scheme has since been amended and a revised hybrid planning planning is being submitted in June 2020. The updated description of development is as follows:

"Hybrid application comprising, in outline: development of business space (use classes B1a/b/c) of up to 27,773 sqm GEA; works within the X enclave relating to energetic testing operations, including fencing, access, car parking; development of up to 635 residential dwellings; development of a mixed use village centre (use classes A1/A3/A4/A5/B1a/D1/D2); land safeguarded for a primary school; change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space and; associated landscaping, works and infrastructure. In detail: demolition of existing buildings; change of use and works including extension and associated alterations to buildings Q13 and Q14 including landscaping and public realm, and primary and secondary accesses to the site."

A Baseline Lighting Assessment report was compiled in February 2015, with the site assessments being undertaken between 22nd and 25th October 2015.

The scheme amendments have been taken into consideration within this report.

This report will identify any new or altered significant effects that have arisen from those presented in the consented ES (2015) at the site and surroundings, the potential direct and indirect impacts of the development arising from artificial lighting, the mitigation measures required to prevent, reduce, or offset the impacts and the residual impacts. It has been written by Royal HaskoningDHV and is for the purposes of the Hybrid Planning Application (HPA) for the proposed redevelopment of Fort Halstead (hereafter referred to as 'the Development') near Sevenoaks, in Kent.

2 Planning Policies

The following amended policies were identified, since the previous baseline lighting impact assessment was undertaken in 2015.

2.1 National Planning Policy

National Planning Policy identifies that by encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, and rural landscapes.

It also identifies that pollution is anything that affects the quality of land, air, water or soils, which might lead to an adverse impact on human health, the natural environment or general amenity. Pollution can arise from a range of emissions, including smoke, fumes, gases, dust, steam, odour, noise and light.

The new policy framework requirements are identified in **Table 2.1**.

Table 2.1: National Policy Framework 2019

National Planning Policy Framework 2019	
Policy Ref.	**Description**
Promoting healthy and safe communities (Item 91)	Planning policies and decisions should aim to achieve healthy, inclusive and safe places which: a) promote social interaction, including opportunities for meetings between people who might not otherwise come into contact with each other – for example through mixed-use developments, strong neighbourhood centres, street layouts that allow for easy pedestrian and cycle connections within and between neighbourhoods, and active street frontages; b) are safe and accessible, so that crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion – for example through the use of clear and legible pedestrian routes, and high-quality public space, which encourage the active and continual use of public areas; and c) enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling.
Promoting healthy and safe communities (Item 95)	Planning policies and decisions should promote public safety and take into account wider security and defence requirements by: a) anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate. Policies for relevant areas (such as town centre and regeneration frameworks), and the layout and design of developments, should be informed by the most up-to-date information available from the police and other agencies about the nature of potential threats and their implications. This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security; and b) recognising and supporting development required for operational defence and security purposes and ensuring that operational sites are not affected adversely by the impact of other development proposed in the area.
Considering development proposals (Item 110)	Within this context, applications for development should:

National Planning Policy Framework 2019	
Policy Ref.	**Description**
	c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
Ground conditions and pollution (Item 180)	Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life60; b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

2.2 Local Planning Policy

The following amended/revised local policies/guidelines, as indicated in **Table 2.2** would be of relevance to the ecological receptors.

Table 2.2: Relevant Local Planning Policies

Document	Policy / Guidance	Policy / Guidance purpose
Sevenoaks District Council: Allocations and Development Management Plan 2015	Policy EN6	Proposals for lighting that affect the outdoor environment which meet the following criteria will be permitted: a) where associated with a wider development, the proposal would be well integrated within the scheme; b) any impact on the night sky would be minimised through time-limited and user activated lighting, the alignment of lamps, provision of shielding and selection of appropriate lighting type and intensity; c) there would be no harmful impact on privacy or amenity for nearby residential properties; d) the proposal would preserve or enhance the character or appearance of any Heritage Asset which may be affected; e) any potential impacts on wildlife would be avoided or adequately mitigated where avoidance is not possible; and f) where proposals affect Areas of Outstanding Natural Beauty or open countryside, it can be demonstrated that the lighting is essential for safety or security reasons. Where these criteria are met, proposals incorporating the use of low energy lighting will be encouraged.

3 Approach

A desk-based assessment of the impacts associated with the proposed development was undertaken, based on the baseline lighting assessment (Royal HaskoningDHV, 2015) as presented in the consented ES.

3.1 Characterisation of the Impact

The characterisation of impacts remains as presented in the consented ES.

3.2 Significance Criteria

The significance criteria used in the assessment remains as per the consented ES.

3.3 Consultation

No additional consultation was undertaken further to the consultation undertaken for the baseline lighting assessment (Royal HaskoningDHV, 2015) as presented in the consented ES

3.4 Assumptions / Limitations

The assumptions and limitations detailed in the consented ES remain applicable to this assessment.

4 Baseline Conditions

The site is situated in the Sevenoaks District and falls within the Kent Downs Area of Outstanding Natural Beauty (AONB)

The baseline lighting assessment undertaken in 2015 (Royal HaskoningDHV, 2015) identified that the existing Site, although well illuminated (noting the requirement in relation to the security for the site given its existing operational use), is well screened from all directions by the boundary woodland and vegetation. Direct views of the existing Site lighting were therefore limited, and only from specific viewpoints are glimpses of the Site lighting possible.

The previous baseline is still considered to be valid on the basis that there has been no additional development of the surrounding area.

4.1 Assumptions / Limitations

There have been no significant changes to the lighting baseline since the consented ES.

4.2 Sensitivity of Receptors

The sensitivity of receptors remains as per the baseline lighting assessment (Royal HaskoningDHV, 2015) as presented in the Landscape Visual Impact Assessment.

5 Embedded Mitigation

There are no embedded mitigation measures of relevance to lighting.

6 Potential Impacts

The overall impact of the Development's lighting design and installation would remain as identified previously in the 2015 baseline lighting assessment (Royal HaskoningDHV, 2015), being considered to be an improvement on the existing levels of sky glow, therefore providing minor beneficial impacts at most viewpoints.

The impact of the Development's lighting in terms of light intrusion and luminaire intensity would be considered to remain to be negligible to minor beneficial at most of the viewpoints assessed and identified within the assessment.

7 Mitigation Measures

No additional mitigation measures are recommended above those proposed in the 2015 baseline lighting assessment.

8 Residual Impacts

It is envisaged that the previously identified impacts would remain as previously assessed, in terms of sky glow, which was assessed to range from negligible to minor beneficial.

The Impact in terms of light intrusion is envisaged to remained as ranging from negligible to minor beneficial; with the impacts in terms of luminaire intensity, remaining as ranging from minor adverse to minor beneficial.

As such there has been no amendments to the previously identified residual impacts.

9 Cumulative Sites

Previously the following list of non-consented cumulative sites were identified, however in consultation with Sevenoaks District Council no additional cumulative schemes were identified for consideration in relation to the lighting assessment:

- Mixed Use Development at the Former West Kent Cold Store
- LCA1: Darent Valley
- Ide Hill LCA
- Knockholt and Halstead Downs
- Knockholt Scarp
- Westerham and Brasted Parklands LCA

Consequently, no cumulative assessment has been undertaken for the lighting assessment.

10 Conclusions

The overall impact is deemed to remain with no significant adverse impacts upon the surrounding environment foreseen (based on the baseline conditions in (Royal HaskoningDHV, 2015)), on the basis that Development's lighting design and installation would be based on the best practice design guides and Sevenoaks District Council lighting requirements.

The impacts of sky glow are likely to remain as minor beneficial from all viewpoints located outside of the Site. This is a result of the Development's lighting being an improvement on the existing lighting environment through the use of improved photometry, luminaires and design. By complying with the Standards and Regulations, and use of suitable luminaires (as defined in the previous lighting impact assessment (Royal HaskoningDHV, 2015) providing lighting to the required illumination levels sky glow from direct upward light is likely to reduce.

To assist in reducing the levels of light pollution, the lighting systems at the Development would be required to comply with the national and local authority planning policies as identified in Section 2. The policies identified would assist in minimising any direct upward illumination and reduce any light spill and glare from the Development.

The Development would therefore remain to be considered to be an improvement on the existing levels of sky glow, therefore providing minor beneficial impacts at most viewpoints.

References

Department of Communities and Local Government. (2019). *The Town and Country Planning (Environmental Impact Assessment) Regulations 2019.* London: Department of Communities and Local Government.

ILP (Institution Of Lighting Professionals). (2013). *Guidance on Undertaking Enviromental Lighting Impact Assessments (Guide 04).* Warwickshire: ILP (Institution Of Lighting Professionals).

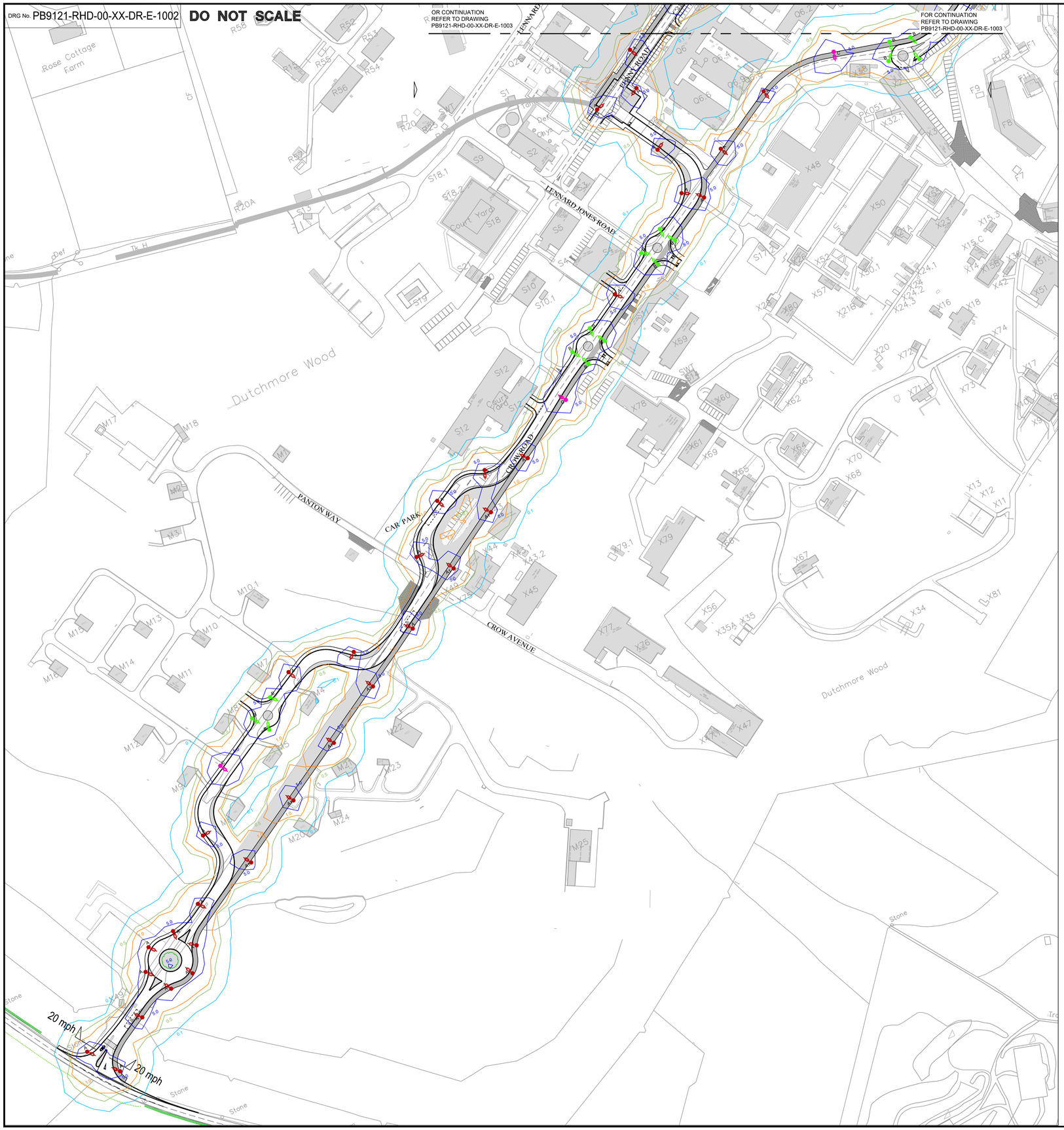
Ministry of Housing, Communities and Local Government. (2018). *National Planning Policy Framework.* London: Ministry of Housing, Communities and Local Government.

Royal HaskoningDHV. (2015). *Fort Halstead: Lighting Assessment Report.* Peterborough: Royal HaskoningDHV.

Sevenoaks District Council. (2015). *Allocations and Development Local Plan.* Sevenoaks District Council.

Appendix A: Proposed External Isoline Contours for Artificial Lighting (PB9121-RHD-00-XX-DR-E-1002 - PB9121-RHD-00-XX-DR-E-1004)

DRG No. PB9121-RHD-00-XX-DR-E-1002 **DO NOT SCALE**



LANTERN SPECIFICATION	COLUMNS REFS: A
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS
MOUNTING DETAILS	
COLUMN HEIGHT	- 6.0 METRES
OUTREACH ARM	- 0.5 METRES
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S
LAMP OUTPUT	- 5,900 LUMENS
DIMMED TO	- 2,950 LUMENS (50%)

LANTERN SPECIFICATION	COLUMNS REFS: A1
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS
MOUNTING DETAILS	
COLUMN HEIGHT	- 6.0 METRES
OUTREACH ARM	- 0.3 METRES
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S
LAMP OUTPUT	- 5,900 LUMENS
DIMMED TO	- 2,950 LUMENS (50%)

LANTERN SPECIFICATION	COLUMNS REFS: B
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS
MOUNTING DETAILS	
COLUMN HEIGHT	- 6.0 METRES
OUTREACH ARM	- 0.5 METRES
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S
LAMP OUTPUT	- 5,900 LUMENS
DIMMED TO	- 2,360 LUMENS (40%)

LANTERN SPECIFICATION	COLUMNS REFS: C
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS
MOUNTING DETAILS	
COLUMN HEIGHT	- 6.0 METRES
OUTREACH ARM	- 0.5 METRES
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S
LAMP OUTPUT	- 5,900LUMENS

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THE PURPOSE OF THIS DRAWING IS TO SHOW ILLUMINANCE CONTOURS FROM THE FIXED LIGHTING. THE LIGHTING UNITS SELECTED ARE BASED UPON INDUSTRY STANDARD LUMINAIRES AND MAY NOT BE THE EXACT UNITS PROPOSED.
3. THE CONTROL PHILOSOPHY IS FOR THE LIGHTING TO BE ON DURING HOURS OF DARKNESS. FURTHER DETAILS WILL BE DETERMINED AT MORE DETAILED DESIGN STAGE.
4. TO MINIMISE ANY IMPACT ASSOCIATED WITH THE ARTIFICIAL LIGHTING, LIGHTING HAS BEEN SELECTED WITH LOWER COLUMNS HEIGHTS AND THE 3000K COLOUR TEMPERATURE FITTINGS.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DOCUMENTS/DRAWINGS:
   - PB9121-RHD-ZZ-XX-RP-E-0001;
   - FORT HALSTEAD, LIGHTING ASSESSMENT REPORT (2015);
   - 00556I_PP01 - LAND USE AND GREEN INFRASTRUCTURE PLAN (JTP);
   - 00556I_PP02 - BUILDING HEIGHTS PLAN (JTP);
   - 00556I_PP03 - ACCESS AND MOVEMENT (JTP); AND
   - 00556I_PP04 - DEMOLITION PLAN (JTP).
5. LLF-LAMP LUMINANCE FACTOR TAKEN AS 100% OR 1 TO INDICATE WORST CASE OUTPUT.
6. THE FOLLOWING ROAD LIGHTING CLASSIFICATIONS HAVE BEEN ASSUMED FOR THE DESIGN, (BASED ON BS 5489-1) ON THE BASIS THESE WILL BE ADOPTED BY THE LOCAL AUTHORITY:
   - ADOPTABLE SUBSIDIARY ROADS (VEHICLE SPEEDS ≤ 30 MPH) - LIGHTING CLASS P5/P6; AND
   - CYCLING LANES - LIGHTING CLASS P5/P6, TO ALIGN WITH THE ADJACENT ROAD WAY (WHERE APPLICABLE).
   - TRAFFIC JUNCTIONS/ROUNDABOUTS - LIGHTING CLASS C5, WITH APPROACH ARMS LIGHTING CLASS P4.
7. SURROUNDING AREA (INCLUDING PLANNED DEVELOPMENT AREA) ASSUMED TO BE ENVIRONMENTAL ZONE E2, BEING LOW DISTRICT BRIGHTNESS (RURAL, SMALL VILLAGE, RELATIVELY DARK URBAN LANDSCAPE).
8. LIGHT COLUMNS WILL BE LOCATED AT THE REAR OF FOOTWAY UNLESS AGREED OTHERWISE.LIGHTING COLUMNS SHALL BE MINIMUM OF 0.8M FROM THE EDGE OF THE ROADWAY.
9. DETAILS REGARDING THE OPERATIONAL LIGHTING ASSOCIATED WITHIN THE PLANNED INDUSTRIAL / COMMERCIAL AREAS WILL BE DETERMINED AT MORE DETAILED DESIGN STAGES, FOLLOWING THE DESIGN GUIDANCE INDICATED IN THE LIGHTING IMPACT ASSESSMENT (SEE BELOW):
   - UTILIZING LED LIGHT SOURCES;
   - LIMITING UPWARD LIGHT BY SPECIFYING LIGHTING UNITS WHICH EMIT NO UPWARD LIGHT AS STANDARD;
   - RECOMMENDING AND DESIGNING LIGHTING LEVELS TO MEET THE LOWEST POSSIBLE LIGHTING LEVELS, WHILE MAINTAINING SAFE LEVELS OF ILLUMINATION; AND
   - MINIMIZING LIGHTING COLUMN HEIGHTS AS FAR AS POSSIBLE.

ISOLUX LEGEND (LUX) (REFER TO NOTE 5)	
0.1 LUX	ISOLUX COLOUR KEY
0.5 LUX	ISOLUX COLOUR KEY
1.0 LUX	ISOLUX COLOUR KEY
5.0 LUX	ISOLUX COLOUR KEY

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	28.05.20	ISSUED FOR PLANNING	SZ	JN	SB

REVISIONS

STATUS

S2 - SUITABLE FOR INFORMATION

CLIENT

MERSEYSIDE PENSION FUND

PROJECT

FORT HALSTEAD, KENT

TITLE

PROPOSED EXTERNAL ISOLINE CONTOURS FOR ARTIFICIAL LIGHTING

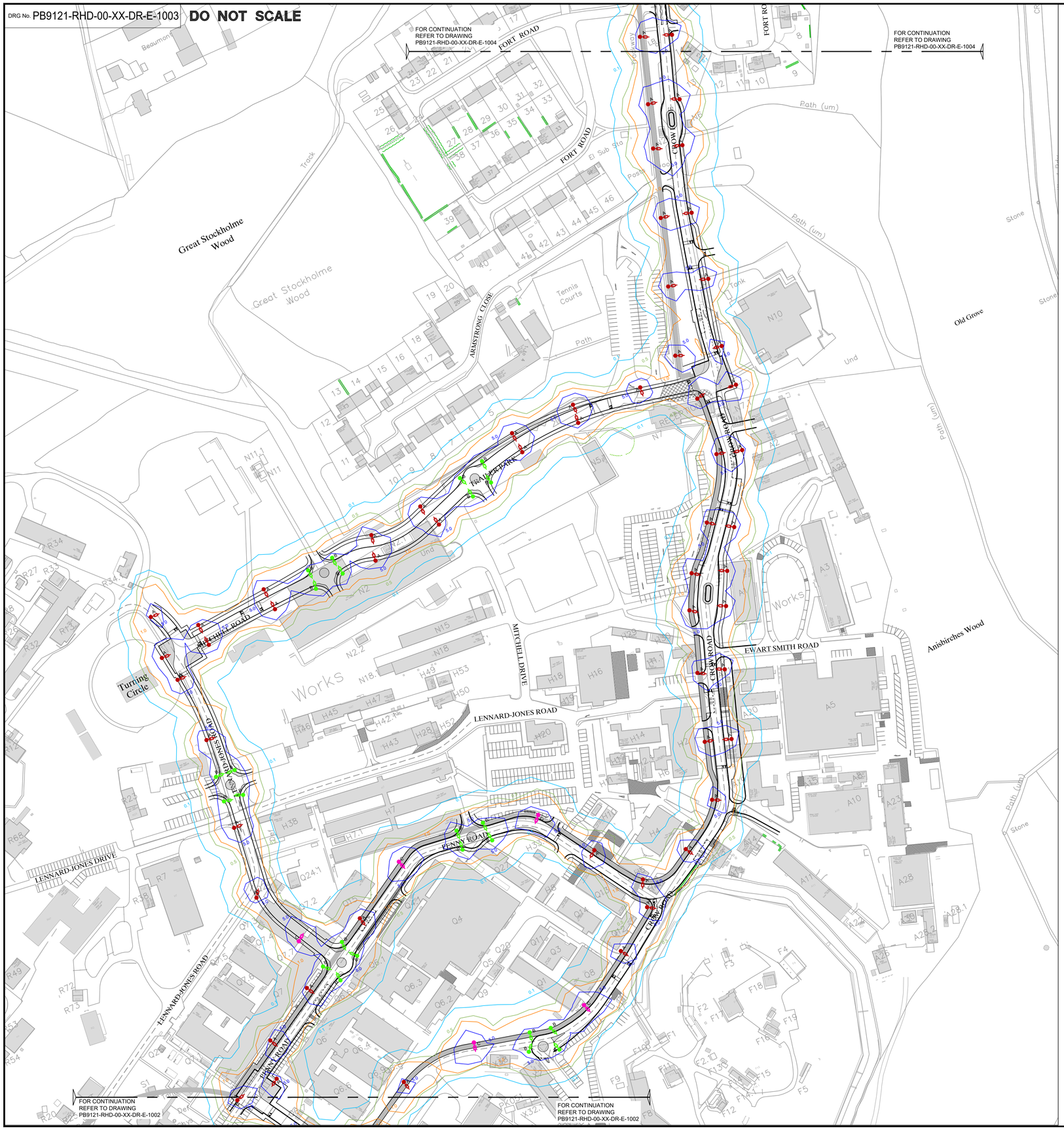
Newater House, 11 Newhall Street,
Birmingham, B3 3NY.
Tel +44 (0)121 233 4148
Email info@birmingham.rhdhv.com
Website www.royalhaskoning.com

Royal HaskoningDHV
Enhancing Society Together

DRAWN SZ	CHECKED JN	PASSED SB
DATE 26.05.20	CLIENT'S REF.	
SCALE AT A1 1:1250	AUTOCAD REF.	

DRAWING No.	REVISION
PB9121-RHD-00-XX-DR-E-1002	P01

DRG No. PB9121-RHD-00-XX-DR-E-1003 **DO NOT SCALE**



LANTERN SPECIFICATION		COLUMNS REFS: A
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.5 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900 LUMENS	
DIMMED TO	- 2,950 LUMENS (50%)	

LANTERN SPECIFICATION		COLUMNS REFS: A1
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.3 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900 LUMENS	
DIMMED TO	- 2,950 LUMENS (50%)	

LANTERN SPECIFICATION		COLUMNS REFS: B
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.5 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900 LUMENS	
DIMMED TO	- 2,360 LUMENS (40%)	

LANTERN SPECIFICATION		COLUMNS REFS: C
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.5 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900LUMENS	

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THE PURPOSE OF THIS DRAWING IS TO SHOW ILLUMINANCE CONTOURS FROM THE FIXED LIGHTING. THE LIGHTING UNITS SELECTED ARE BASED UPON INDUSTRY STANDARD LUMINAIRES AND MAY NOT BE THE EXACT UNITS PROPOSED.
3. THE CONTROL PHILOSOPHY IS FOR THE LIGHTING TO BE ON DURING HOURS OF DARKNESS. FURTHER DETAILS WILL BE DETERMINED AT MORE DETAILED DESIGN STAGE.
4. TO MINIMISE ANY IMPACT ASSOCIATED WITH THE ARTIFICIAL LIGHTING, LIGHTING HAS BEEN SELECTED WITH LOWER COLUMNS HEIGHTS AND THE 3000K COLOUR TEMPERATURE FITTINGS.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DOCUMENTS/DRAWINGS:
   - PB9121-RHD-ZZ-XX-RP-E-0001;
   - FORT HALSTEAD, LIGHTING ASSESSMENT REPORT (2015);
   - 00556I_PP01 - LAND USE AND GREEN INFRASTRUCTURE PLAN (JTP);
   - 00556I_PP02 - BUILDING HEIGHTS PLAN (JTP);
   - 00556I_PP03 - ACCESS AND MOVEMENT (JTP); AND
   - 00556I_PP04 - DEMOLITION PLAN (JTP).
5. LLF-LAMP LUMINANCE FACTOR TAKEN AS 100% OR 1 TO INDICATE WORST CASE OUTPUT.
6. THE FOLLOWING ROAD LIGHTING CLASSIFICATIONS HAVE BEEN ASSUMED FOR THE DESIGN, (BASED ON BS 5489-1) ON THE BASIS THESE WILL BE ADOPTED BY THE LOCAL AUTHORITY:
   - ADOPTABLE SUBSIDIARY ROADS (VEHICLE SPEEDS ≤ 30 MPH) - LIGHTING CLASS P5/P6; AND
   - CYCLING LANES - LIGHTING CLASS P5/P6, TO ALIGN WITH THE ADJACENT ROAD WAY (WHERE APPLICABLE).
   - TRAFFIC JUNCTIONS/ROUNDABOUTS - LIGHTING CLASS C5, WITH APPROACH ARMS LIGHTING CLASS P4.
7. SURROUNDING AREA (INCLUDING PLANNED DEVELOPMENT AREA) ASSUMED TO BE ENVIRONMENTAL ZONE E2, BEING LOW DISTRICT BRIGHTNESS (RURAL, SMALL VILLAGE, RELATIVELY DARK URBAN LANDSCAPE).
8. LIGHT COLUMNS WILL BE LOCATED AT THE REAR OF FOOTWAY UNLESS AGREED OTHERWISE.LIGHTING COLUMNS SHALL BE MINIMUM OF 0.8M FROM THE EDGE OF THE ROADWAY.
9. DETAILS REGARDING THE OPERATIONAL LIGHTING ASSOCIATED WITHIN THE PLANNED INDUSTRIAL / COMMERCIAL AREAS WILL BE DETERMINED AT MORE DETAILED DESIGN STAGES, FOLLOWING THE DESIGN GUIDANCE INDICATED IN THE LIGHTING IMPACT ASSESSMENT (SEE BELOW):
   - UTILIZING LED LIGHT SOURCES;
   - LIMITING UPWARD LIGHT BY SPECIFYING LIGHTING UNITS WHICH EMIT NO UPWARD LIGHT AS STANDARD;
   - RECOMMENDING AND DESIGNING LIGHTING LEVELS TO MEET THE LOWEST POSSIBLE LIGHTING LEVELS, WHILE MAINTAINING SAFE LEVELS OF ILLUMINATION; AND
   - MINIMIZING LIGHTING COLUMN HEIGHTS AS FAR AS POSSIBLE.

ISOLUX LEGEND (LUX) (REFER TO NOTE 5)	
0.1 LUX	ISOLUX COLOUR KEY
0.5 LUX	ISOLUX COLOUR KEY
1.0 LUX	ISOLUX COLOUR KEY
5.0 LUX	ISOLUX COLOUR KEY

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	28.05.20	ISSUED FOR PLANNING	SZ	JN	SB

REVISIONS

STATUS

S2 - SUITABLE FOR INFORMATION

CLIENT

MERSEYSIDE PENSION FUND

PROJECT

FORT HALSTEAD, KENT

TITLE

PROPOSED EXTERNAL ISOLINE CONTOURS FOR ARTIFICIAL LIGHTING

Newater House, 11 Newhall Street,
Birmingham, B3 3NY
Tel +44 (0)121 233 4148
Email info@birmingham.rhdhv.com
Website www.royalhaskoning.com

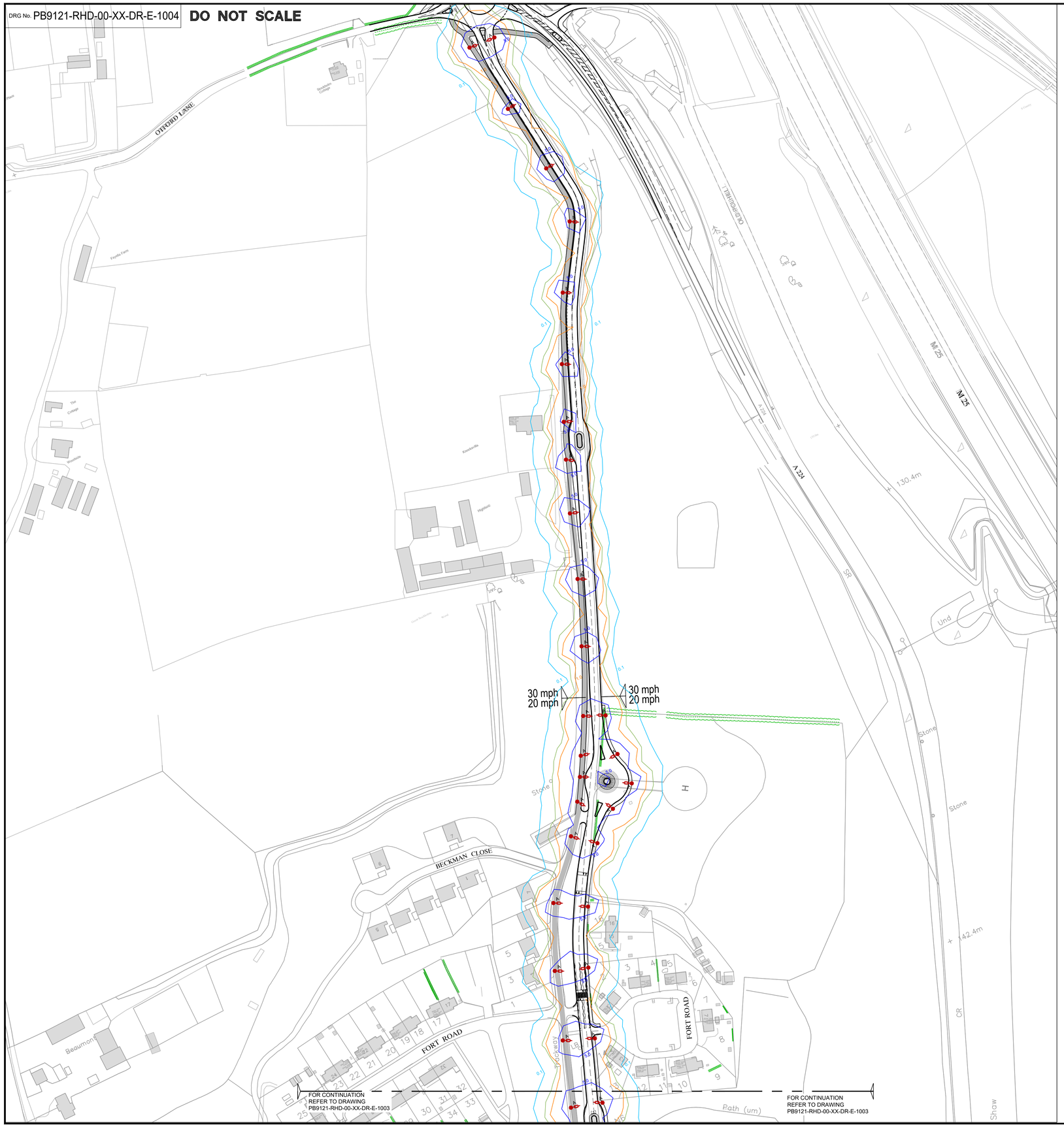
Royal HaskoningDHV
Enhancing Society Together

DRAWN SZ	CHECKED JN	PASSED SB
DATE 26.05.20	CLIENT'S REF.	
SCALE AT A1 1:250	AUTOCAD REF.	

DRAWING No. PB9121-RHD-00-XX-DR-E-1003 | REVISION P01

DRG No. PB9121-RHD-00-XX-DR-E-1004

DO NOT SCALE



LANTERN SPECIFICATION		COLUMNS REFS: A
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.5 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900 LUMENS	
DIMMED TO	- 2,950 LUMENS (50%)	

LANTERN SPECIFICATION		COLUMNS REFS: A1
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.3 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900 LUMENS	
DIMMED TO	- 2,950 LUMENS (50%)	

LANTERN SPECIFICATION		COLUMNS REFS: B
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.5 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900 LUMENS	
DIMMED TO	- 2,360 LUMENS (40%)	

LANTERN SPECIFICATION		COLUMNS REFS: C
LANTERN TYPE LUMINAIRE REFERENCE	- URBIS AMPERA MIDI 5240/350 mA/48 LEDs/5900 LUMENS	
MOUNTING DETAILS		
COLUMN HEIGHT	- 6.0 METRES	
OUTREACH ARM	- 0.5 METRES	
INCLINATION (WITH RESPECT TO HORIZONTAL PLANE)	- 0 DEGREE'S	
LAMP OUTPUT	- 5,900LUMENS	

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THE PURPOSE OF THIS DRAWING IS TO SHOW ILLUMINANCE CONTOURS FROM THE FIXED LIGHTING. THE LIGHTING UNITS SELECTED ARE BASED UPON INDUSTRY STANDARD LUMINAIRES AND MAY NOT BE THE EXACT UNITS PROPOSED.
3. THE CONTROL PHILOSOPHY IS FOR THE LIGHTING TO BE ON DURING HOURS OF DARKNESS. FURTHER DETAILS WILL BE DETERMINED AT MORE DETAILED DESIGN STAGE.
4. TO MINIMISE ANY IMPACT ASSOCIATED WITH THE ARTIFICIAL LIGHTING, LIGHTING HAS BEEN SELECTED WITH LOWER COLUMNS HEIGHTS AND THE 3000K COLOUR TEMPERATURE FITTINGS.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DOCUMENTS/DRAWINGS:
   - PB9121-RHD-ZZ-XX-RP-E-0001;
   - FORT HALSTEAD, LIGHTING ASSESSMENT REPORT (2015);
   - 00556I_PP01 - LAND USE AND GREEN INFRASTRUCTURE PLAN (JTP);
   - 00556I_PP02 - BUILDING HEIGHTS PLAN (JTP);
   - 00556I_PP03 - ACCESS AND MOVEMENT (JTP); AND
   - 00556I_PP04 - DEMOLITION PLAN (JTP).
5. LLF-LAMP LUMINANCE FACTOR TAKEN AS 100% OR 1 TO INDICATE WORST CASE OUTPUT.
6. THE FOLLOWING ROAD LIGHTING CLASSIFICATIONS HAVE BEEN ASSUMED FOR THE DESIGN, (BASED ON BS 5489-1) ON THE BASIS THESE WILL BE ADOPTED BY THE LOCAL AUTHORITY:
   - ADOPTABLE SUBSIDIARY ROADS (VEHICLE SPEEDS ≤ 30 MPH) - LIGHTING CLASS P5/P6; AND
   - CYCLING LANES - LIGHTING CLASS P5/P6, TO ALIGN WITH THE ADJACENT ROAD WAY (WHERE APPLICABLE).
   - TRAFFIC JUNCTIONS/ROUNDABOUTS - LIGHTING CLASS C5, WITH APPROACH ARMS LIGHTING CLASS P4.
7. SURROUNDING AREA (INCLUDING PLANNED DEVELOPMENT AREA) ASSUMED TO BE ENVIRONMENTAL ZONE E2, BEING LOW DISTRICT BRIGHTNESS (RURAL, SMALL VILLAGE, RELATIVELY DARK URBAN LANDSCAPE).
8. LIGHT COLUMNS WILL BE LOCATED AT THE REAR OF FOOTWAY UNLESS AGREED OTHERWISE.LIGHTING COLUMNS SHALL BE MINIMUM OF 0.8M FROM THE EDGE OF THE ROADWAY.
9. DETAILS REGARDING THE OPERATIONAL LIGHTING ASSOCIATED WITHIN THE PLANNED INDUSTRIAL / COMMERCIAL AREAS WILL BE DETERMINED AT MORE DETAILED DESIGN STAGE, FOLLOWING THE DESIGN GUIDANCE INDICATED IN THE LIGHTING IMPACT ASSESSMENT (SEE BELOW):
   - UTILIZING LED LIGHT SOURCES;
   - LIMITING UPWARD LIGHT BY SPECIFYING LIGHTING UNITS WHICH EMIT NO UPWARD LIGHT AS STANDARD;
   - RECOMMENDING AND DESIGNING LIGHTING LEVELS TO MEET THE LOWEST POSSIBLE LIGHTING LEVELS, WHILE MAINTAINING SAFE LEVELS OF ILLUMINATION; AND
   - MINIMIZING LIGHTING COLUMN HEIGHTS AS FAR AS POSSIBLE.

ISOLUX LEGEND (LUX) (REFER TO NOTE 5)	
0.1 LUX	ISOLUX COLOUR KEY
0.5 LUX	ISOLUX COLOUR KEY
1.0 LUX	ISOLUX COLOUR KEY
5.0 LUX	ISOLUX COLOUR KEY

REV	DATE	DESCRIPTION	BY	CHK	APP
P01	28.05.20	ISSUED FOR PLANNING	SZ	JN	SB

REVISIONS

STATUS

S2 - SUITABLE FOR INFORMATION

CLIENT

MERSEYSIDE PENSION FUND

PROJECT

FORT HALSTEAD, KENT

TITLE

PROPOSED EXTERNAL ISOLINE CONTOURS FOR ARTIFICIAL LIGHTING

Newater House, 11 Newhall Street,
Birmingham, B3 3NY.
Tel +44 (0)121 233 4148
Email info@birmingham.rhdhv.com
Website www.royalhaskoning.com

Royal HaskoningDHV
Enhancing Society Together

DRAWN	SZ	CHECKED	JN	PASSED	SB
DATE	26.05.20	CLIENT'S REF.			
SCALE AT A1	1:1250	AUTOCAD REF.			

DRAWING No. PB9121-RHD-00-XX-DR-E-1004

REVISION P01