

20.0 Appendix Two

Information obtained from SSL pertaining to the specification of the floodlighting to the all weather pitch or ATP (Artificial Turf Pitch) and the Multi Use Games Area (M.U.G.A).

Documents include:

- SSL 1982 05 - Floodlighting Scheme
- Floodlighting Performance Results
- Guidance notes for the reduction of obtrusive light
- Optivision MVP507 Specification Sheet
- Master MHN-FC Specification Sheet

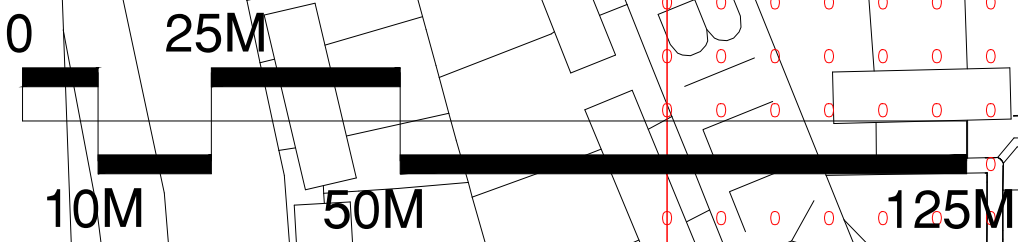
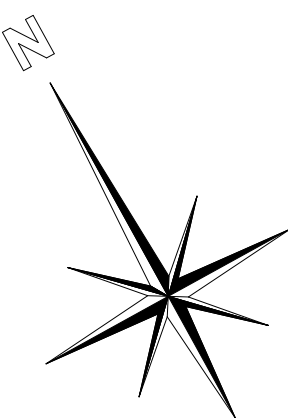
Alterations and Extension to Front Lawn Sports Pavilion for Havant Borough Council
Design and Access Statement



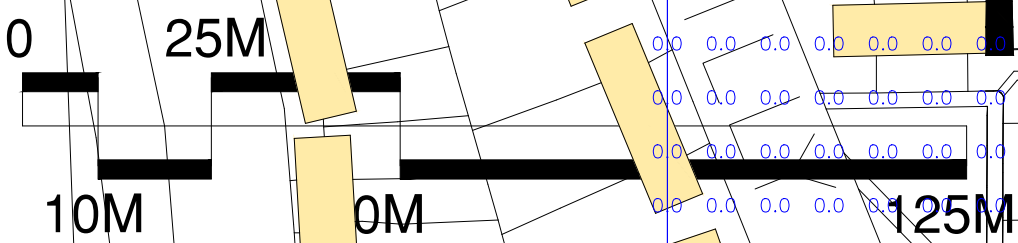
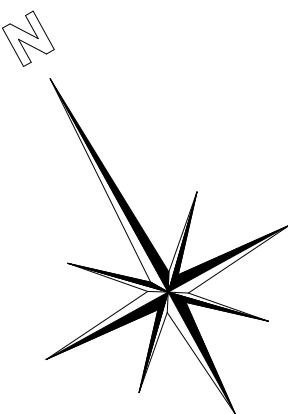
Front Lawn Recreation Ground

Artificial Turf Pitch

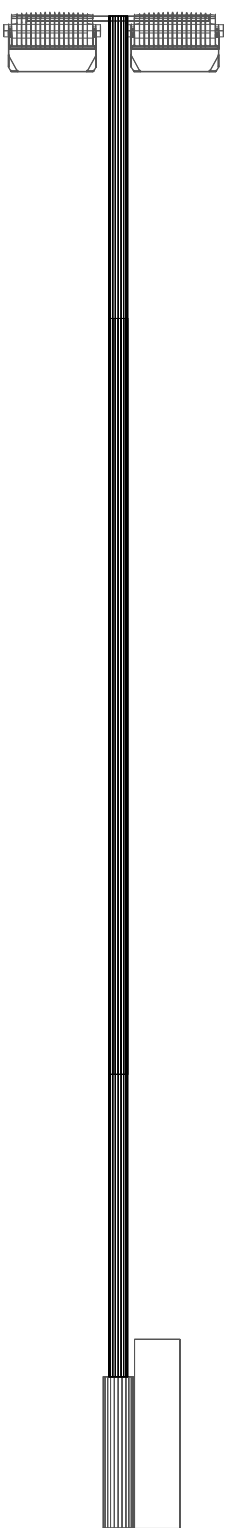
Residential House 1
Observer to nearest western residential property showing the intensity rating to be 1267 l.max cd with the threshold for the environmental zone being 7500 l.max cd.



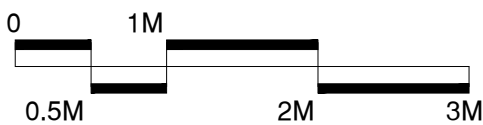
FA Competitive Full Sized Football Floodlighting Scheme - Scale 1:1000
Horizontal Illuminance and Spillage



FA Competitive Full Sized Football Floodlighting Scheme - Scale 1:1000
Vertical Illuminance and Spillage at 1.75m Height



Floodlighting Column
Elevation - Scale 1:50



CONSULTANTS
Surfacing Standards Ltd
1a Park House, Cully
Northants NN11 5DU
01536 400 012

- 1- DO NOT SCALE FROM DRAWING. ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
- 2- THIS DRAWING IS COPYRIGHT TO SURFACING STANDARDS LTD
- 3- ALL PERSONNEL SHOULD BE AWARE OF THE HEALTH AND SAFETY PLAN WHICH IS RETAINED IN THE SITE MANAGERS OFFICE.

NOTES

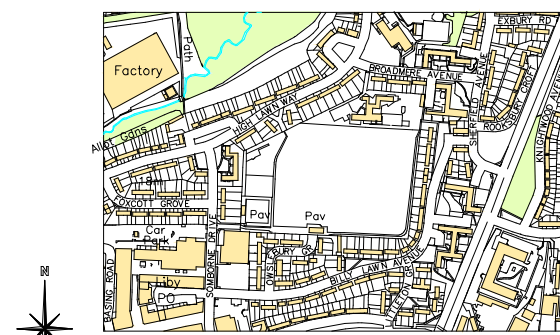
Please refer to the Design and Access Statement along with the Appendices:

Appendix A_Floodlighting Performance Results
Appendix B_MHN-FC 2000W
Appendix C_Opvision
Appendix D_ILP 2011

01	lighting spillage detail added	WB	07.10.15
00	PLANNING ISSUE	WB	02.10.15
REV	DESCRIPTION	BY	CHK DATE



KEY PLAN



AUTHOR

Wesley Bugg

TITLE

Front Lawn Recreation Ground
Artificial Turf Pitch
Floodlighting Scheme

PROJECT	SCALE	SIZE
SSL1982	1:1000	A1
DRAWING No	REVISION	
05	01	

Front Lawn Recreation Ground

Full Sized ATP & Tennis Court

Project code: SSL1982
Date: 07-10-2015

Designer: Wesley Bugg

Description: FA/FIFA min/ave 200lux full pitch with min 0.6 uniformity.
LTA recommended 500lux/0.7uniformity & 400lux/0.6uniformity

The results within this report and scheme are currently not showing a maintenance factor and will be the results when first installed and up to the first 100hrs of usage. After the first 100 hours of use the lights will naturally diminish by 20% (referred to as a maintenance factor of 0.8) further reducing the lighting and spillage levels significantly lower than those portrayed within this report. The levels after the first 100 hours of use will be at:

Football = 206ave/lux at 0.64 uniformity
Tennis = 587ave/lux at 0.73 uniformity

Sports Luminaires are mounted at 15m or 10m above the finished surface level.

All luminaires have a zero upward light ration without the use of additional accessories.

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

Surfacing Standards LTD

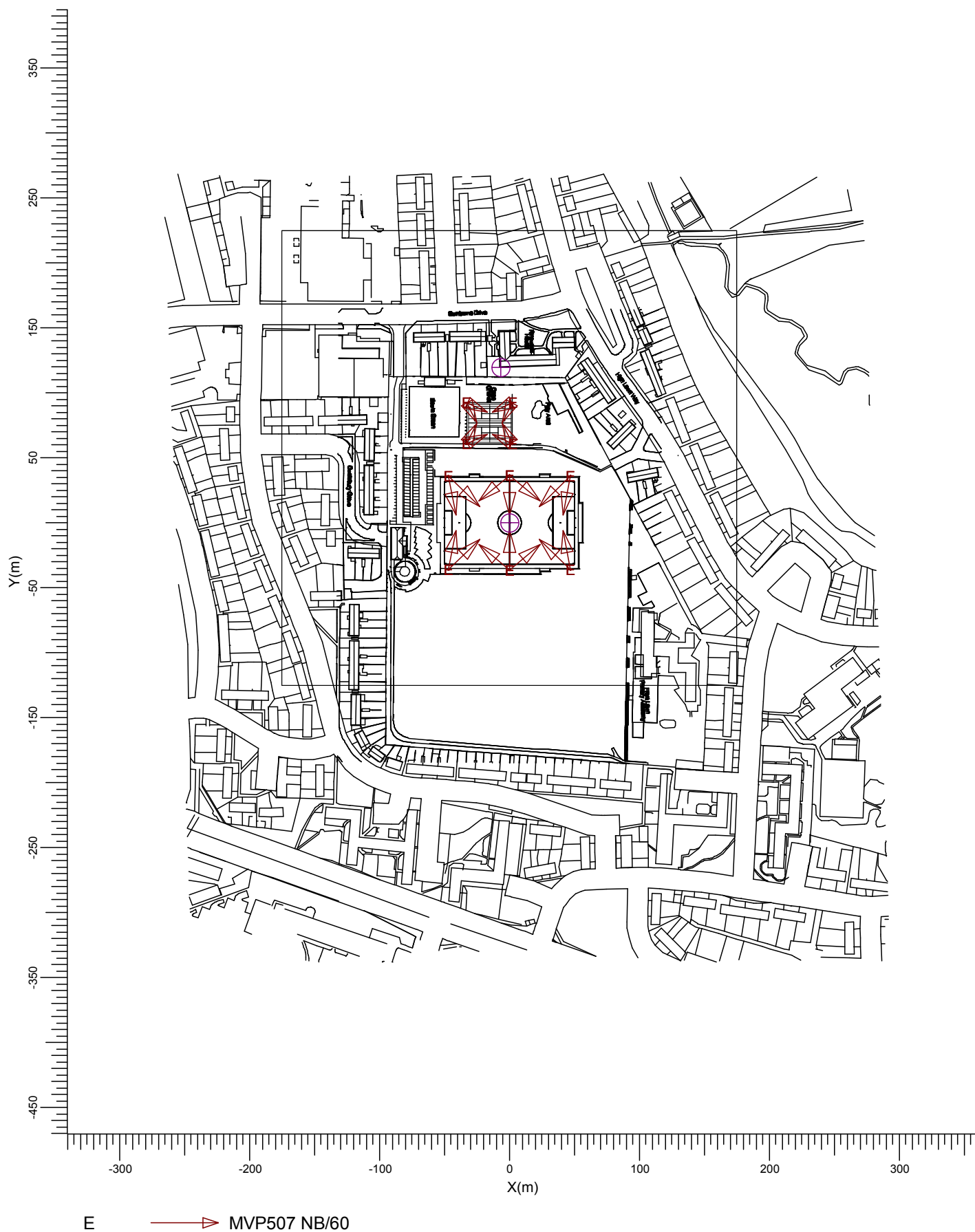
1a Perth House
Corbygate Business Park
Corby
Northants
NN17 5JG
Telephone: 01536400012
E-Mail: info@surfacingstandards.co.uk

Table of Contents

1.	Project Description	3
1.1	Top Project Overview	3
2.	Summary	4
2.1	General Information	4
2.2	Observer Information	4
2.3	Project Luminaires	4
2.4	Calculation Results	4
3.	Calculation Results	6
3.1	Football: Graphical Table	6
3.2	Tennis Court 1: Graphical Table	7
3.3	Tennis Court 1 TPA: Graphical Table	8
3.4	Tennis Court 2: Graphical Table	9
3.5	Tennis Court 2 TPA: Graphical Table	10
3.6	Spillage: Iso Contour	11
3.7	Spillage: Filled Iso Contour	12
3.8	Spillage: Mountain Plot	13
3.9	Evo Spill: Iso Contour	14
3.10	Evo Spill: Filled Iso Contour	15
3.11	Evo Spill: Mountain Plot	16
3.12	Glare Rating: Graphical Table	17
3.13	Glare Rating ATP: Graphical Table	18
4.	Luminaire Details	19
4.1	Project Luminaires	19
5.	Installation Data	20
5.1	Legends	20
5.2	Luminaire Positioning and Orientation	20

1. Project Description

1.1 Top Project Overview



Scale
1:4000

2. Summary

2.1 General Information

The overall maintenance factor used for this project is 1.00.

2.2 Observer Information

Code	Observer	Position		
		X (m)	Y (m)	Z (m)
Aa	Evo Spill	-0.00	-0.00	1.50
Bb	Closest Property	-6.97	119.54	1.80

2.3 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
E	22	MVP507 NB/60	1 * MHN-LA2000W/400V/842	2123.0	1 * 220000

The total installed power: 46.71 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code	Power (kWatt)
	E	
Football	14	29.72
Tennis Court 1	4	8.49
Tennis Court 2	4	8.49
Spillage	22	46.71

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code	Power (kWatt)
	E	
Mast 1	8	16.98
Mast 2	6	12.74
Tennis Mast 1	4	8.49
Tennis Mast 2	4	8.49

2.4 Calculation Results

Switching Modes:

Code	Switching Mode
1	Football
2	Tennis Court 1
3	Tennis Court 2
4	Spillage

(II)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave	Min/Ave	Min/Max
Football	1	Surface Illuminance	lux	257	0.64	0.47
Tennis Court 1	2	Surface Illuminance	lux	744	0.74	0.55
Tennis Court 1 TPA	2	Surface Illuminance	lux	652	0.64	0.44
Tennis Court 2	3	Surface Illuminance	lux	744	0.74	0.55
Tennis Court 2 TPA	3	Surface Illuminance	lux	652	0.64	0.44
Spillage	4	Surface Illuminance	lux	29.7	0.00	0.00

Calculation	Switching Mode	Type	Unit	Ave	Min/Ave	Min/Max
Evo Spill	4	Illuminance -> Aa	lux	9.48	0.00	0.00

Glare Rating for Grid of Observers:

Calculation	Switching Mode	Observer Grid	Reference Grid	Reflectance	GR-Max
Glare Rating	2	Tennis Court 1 TPA	Tennis Court 1 TPA	0.25	47.7
Glare Rating ATP	1	Football	Football	0.25	46.1

Obtrusive Light Calculations:

Switching Mode	Observer Code	Luminaire Code	Position			Aiming Angles			Maximum Intensity (cd)
			X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	
4	Bb	E	47.00	-36.00	15.00	136.00	66.00	0.00	434

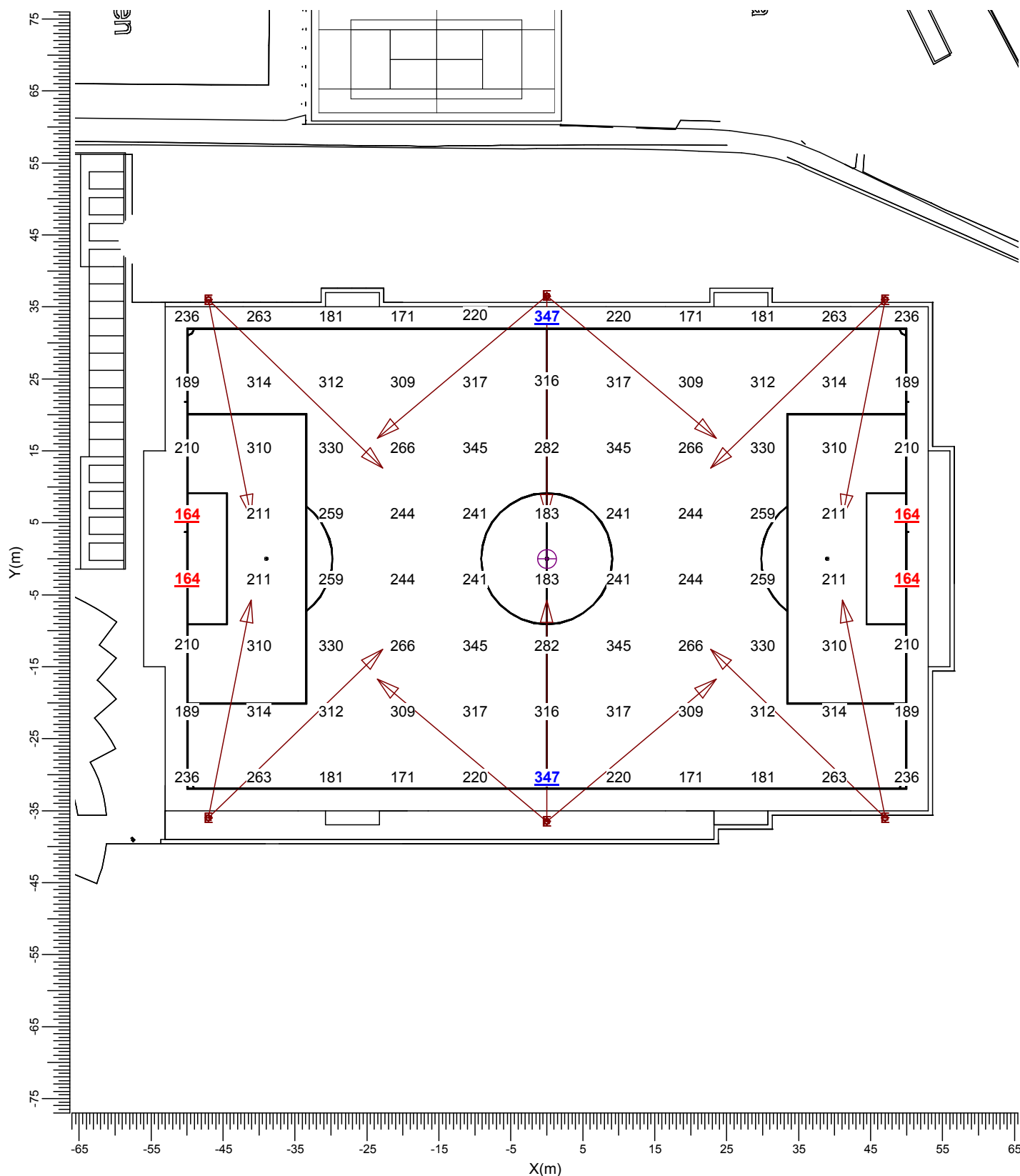
Switching Mode	ULR
1	0.00
2	0.00
3	0.00
4	0.00

3. Calculation Results

3.1 Football: Graphical Table

Football

Grid : Football at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E → MVP507 NB/60

Average
257

Min/Ave
0.64

Min/Max
0.47

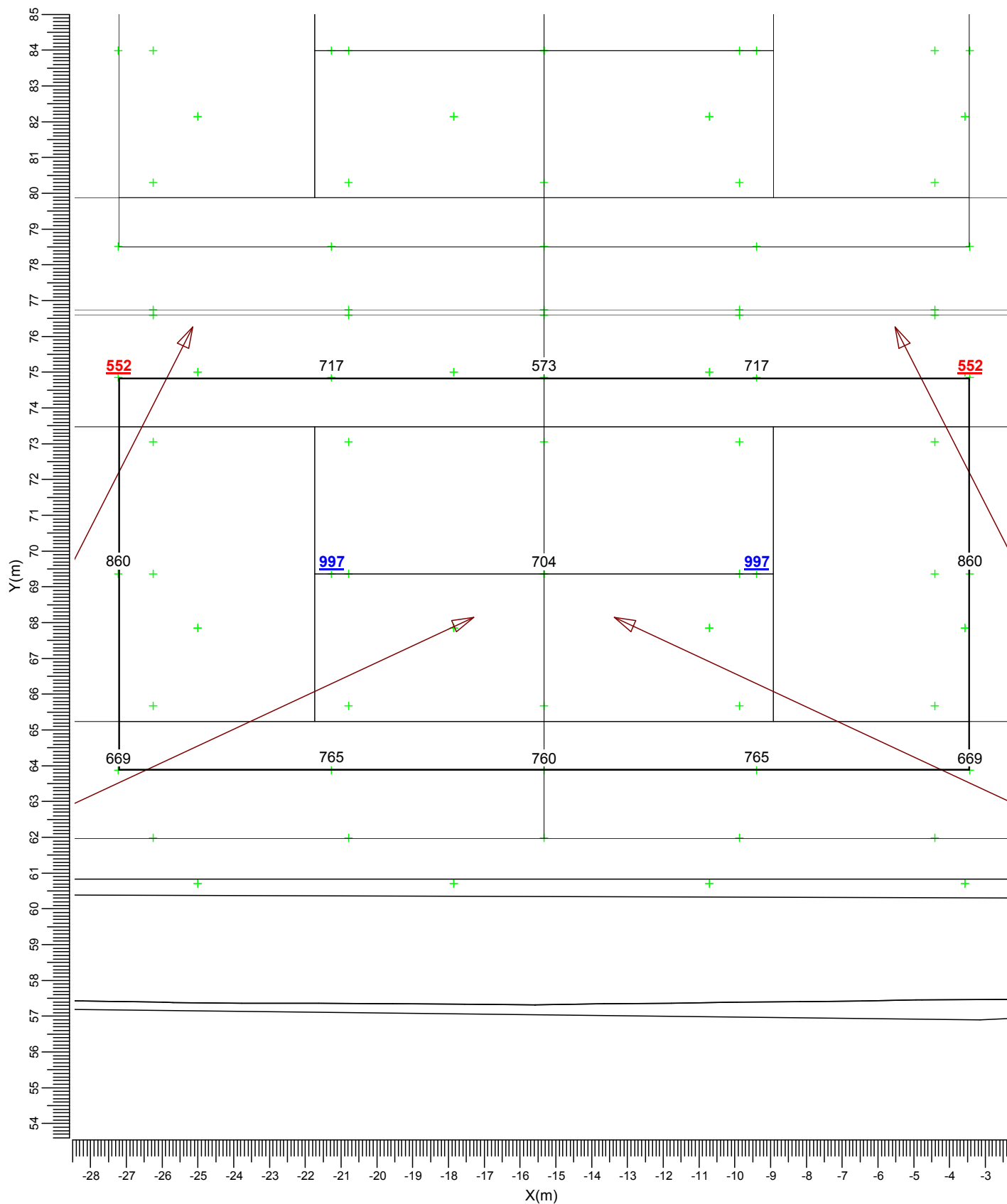
Project maintenance factor
1.00

Scale
1:750

3.2 Tennis Court 1: Graphical Table

Tennis Court 1

Grid : Tennis Court 1 at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E MVP507 NB/60

Average
744

Min/Ave
0.74

Min/Max
0.55

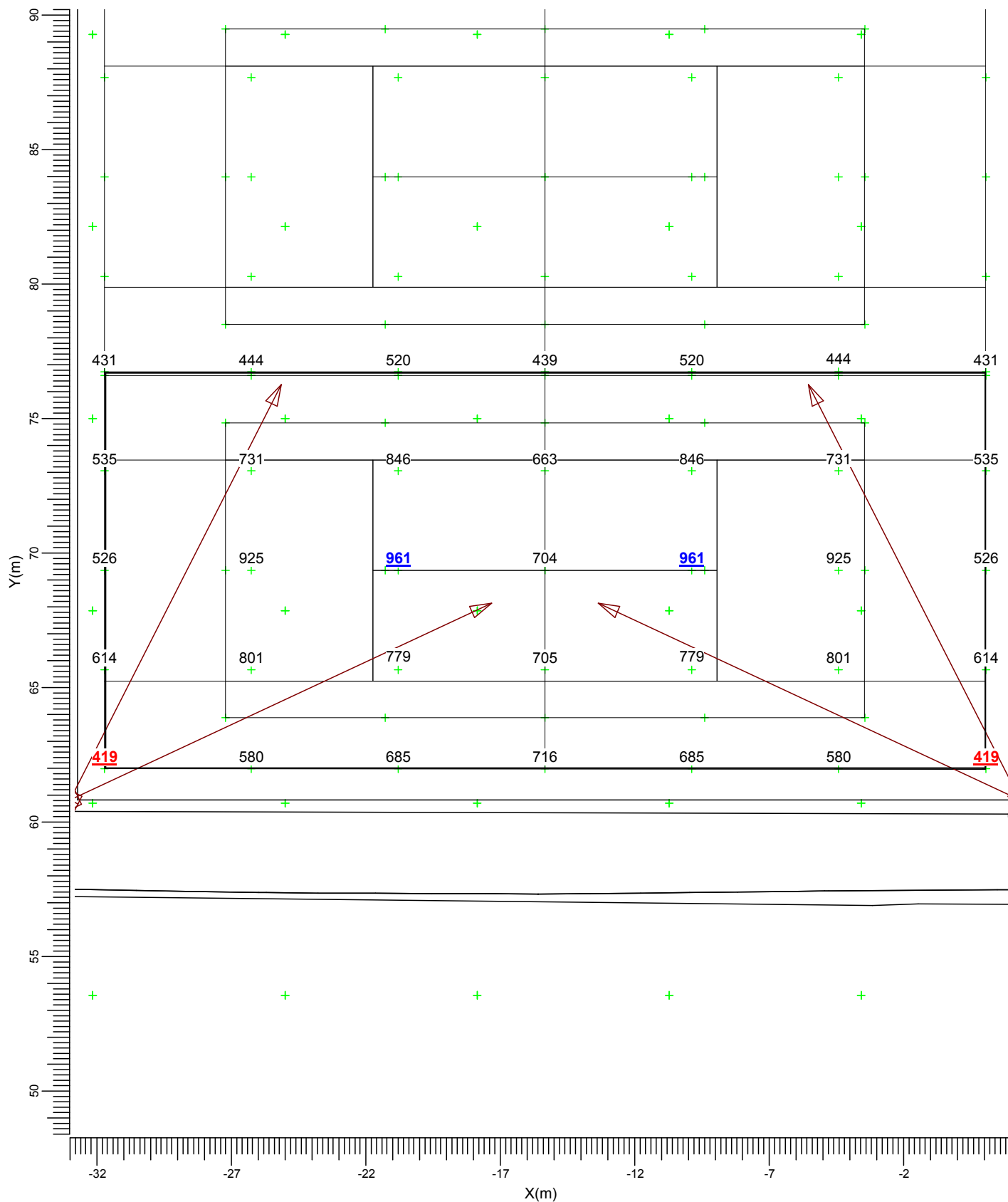
Project maintenance factor
1.00

Scale
1:150

3.3 Tennis Court 1 TPA: Graphical Table

Tennis Court 1

Grid : Tennis Court 1 TPA at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E MVP507 NB/60

Average
652

Min/Ave
0.64

Min/Max
0.44

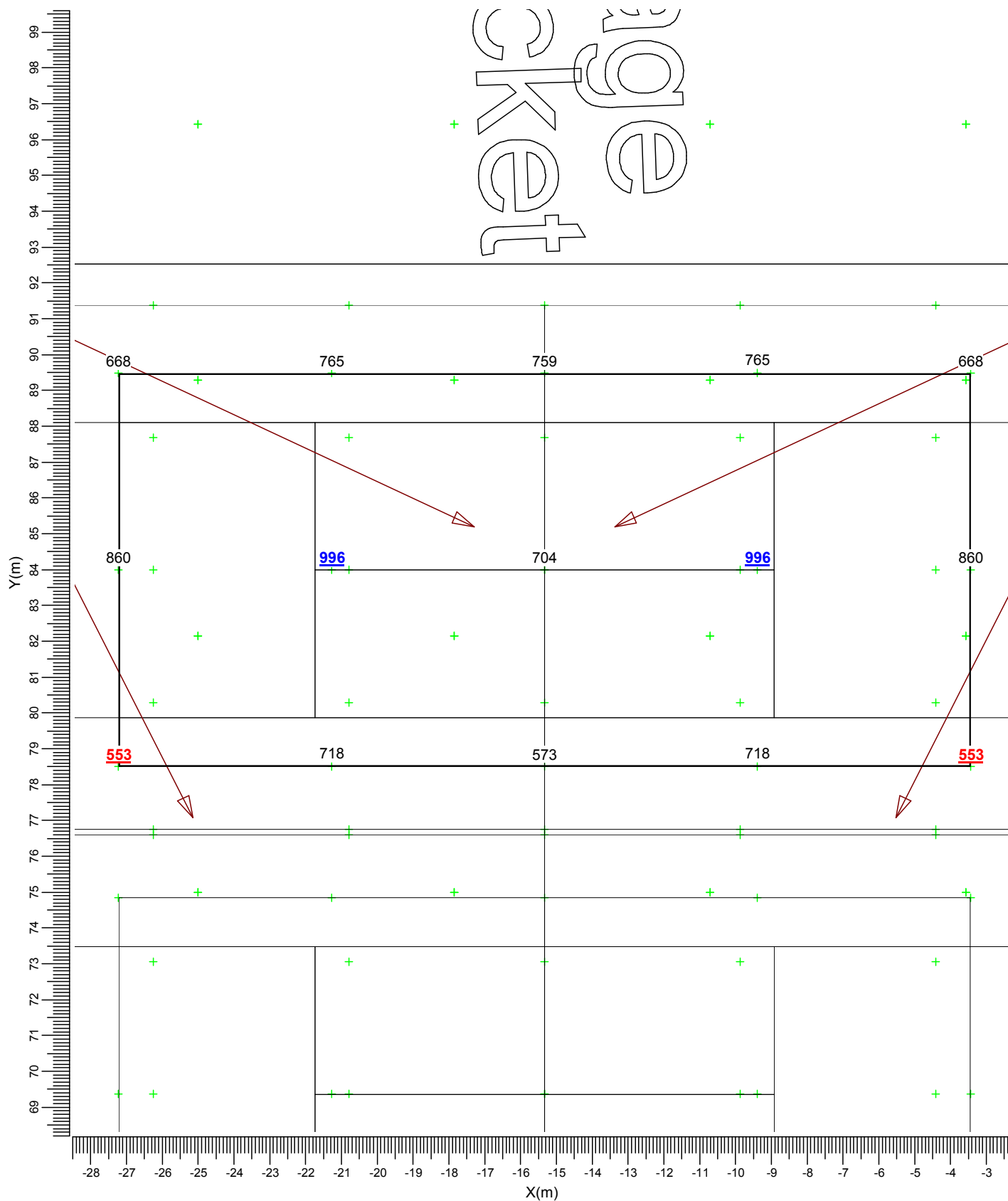
Project maintenance factor
1.00

Scale
1:200

3.4 Tennis Court 2: Graphical Table

Tennis Court 2

Grid : Tennis Court 2 at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E → MVP507 NB/60

Average
744

Min/Ave
0.74

Min/Max
0.55

Project maintenance factor
1.00

Scale
1:150

3.5 Tennis Court 2 TPA: Graphical Table

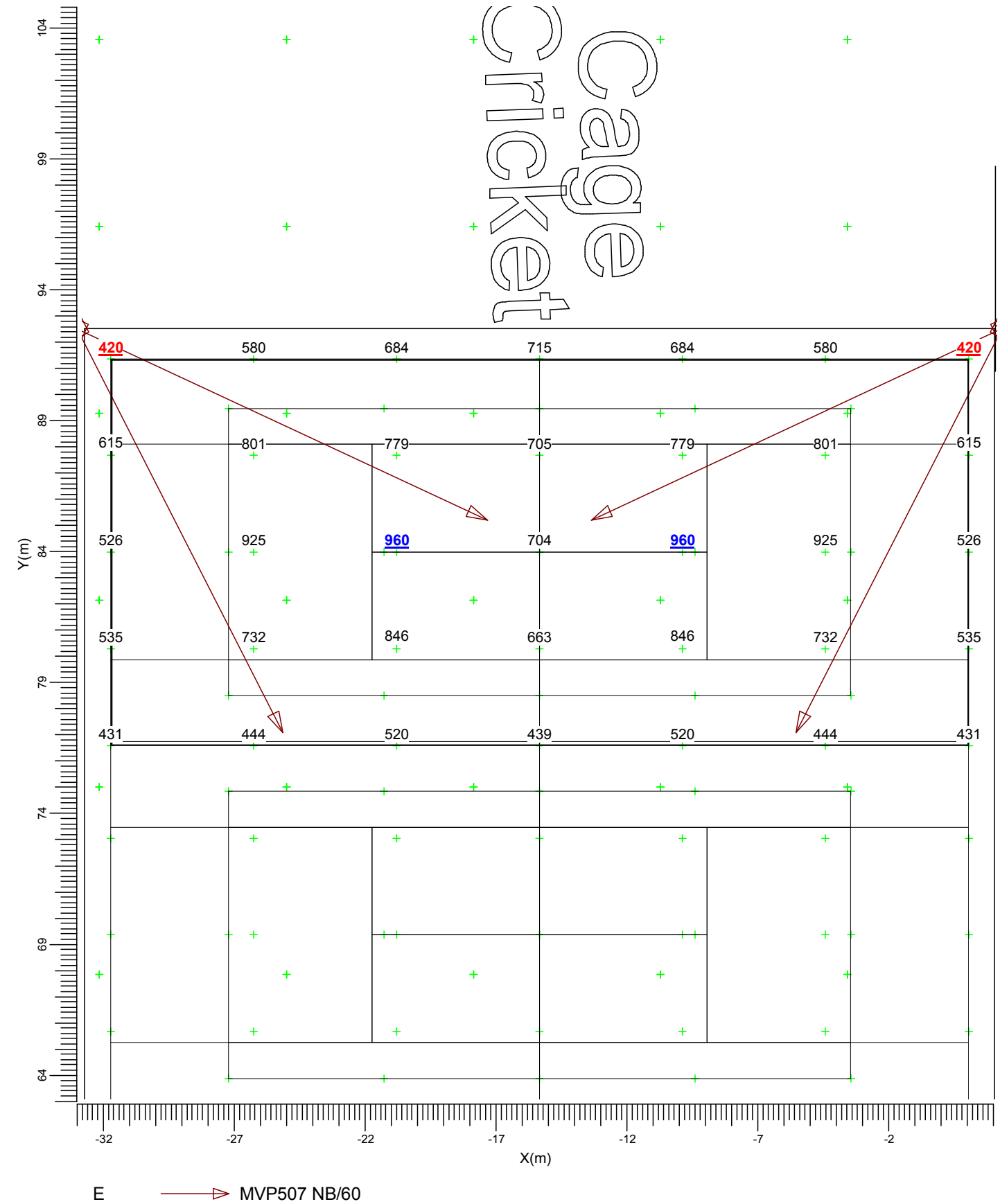
Tennis Court 2

Grid

: Tennis Court 2 TPA at Z = -0.00 m

Calculation

: Surface Illuminance (lux)

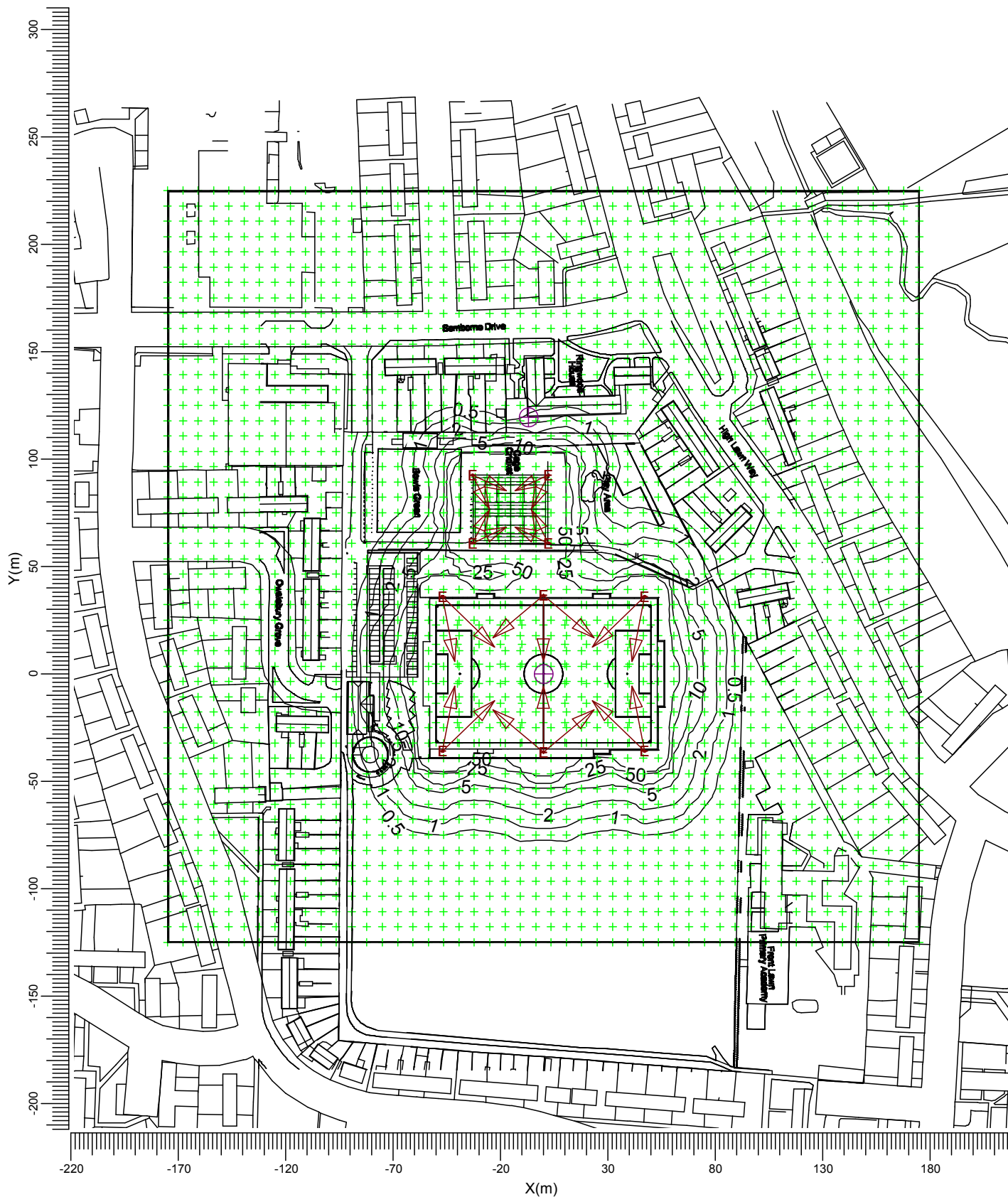


Average	Min/Ave	Min/Max	Project maintenance factor	Scale
652	0.64	0.44	1.00	1:200

3.6 Spillage: Iso Contour

Spillage

Grid : Spillage at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E  MVP507 NB/60

Average
29.7

Min/Ave
0.00

Min/Max
0.00

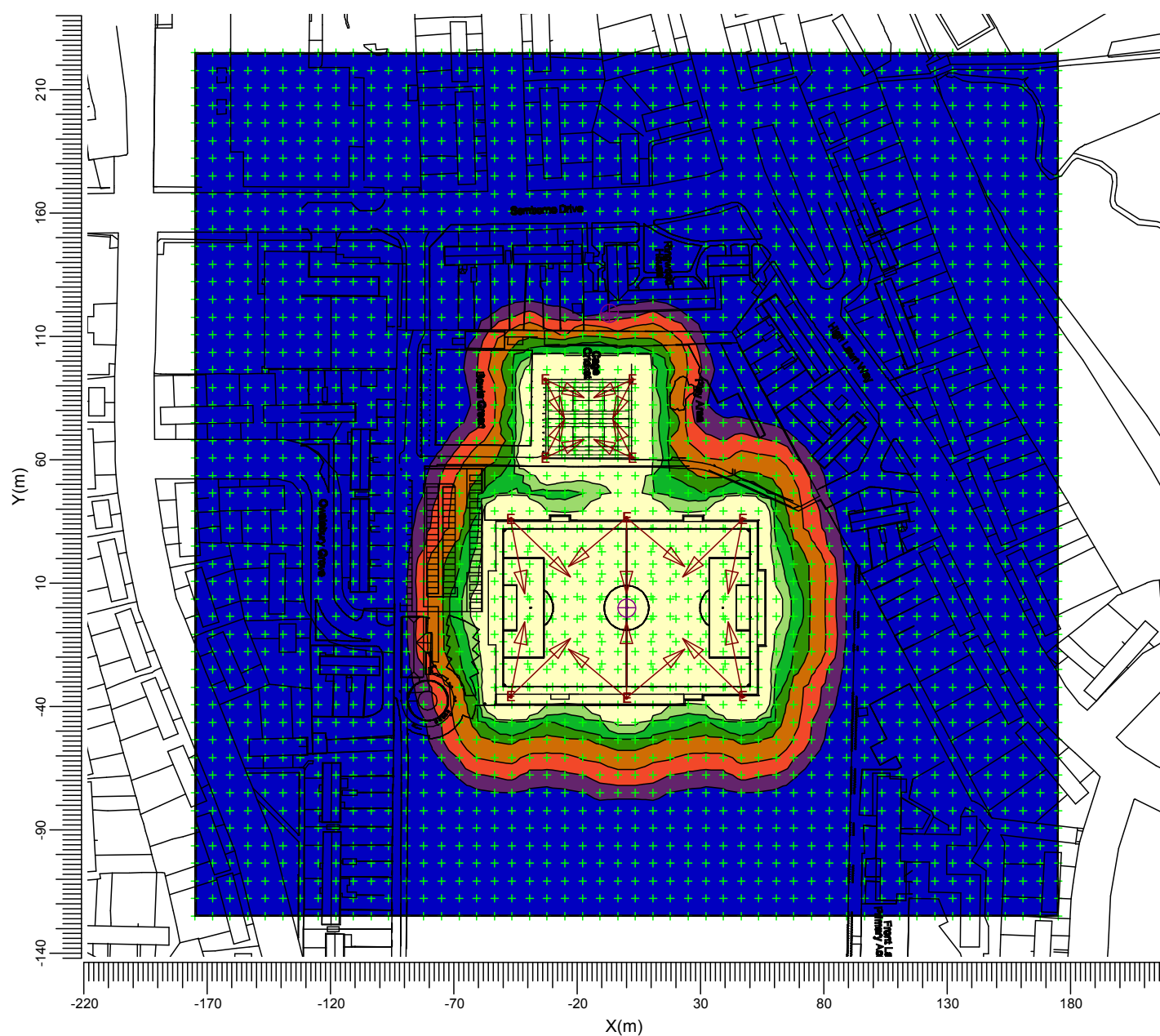
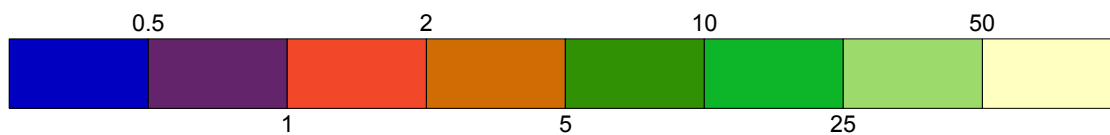
Project maintenance factor
1.00

Scale
1:2500

3.7 Spillage: Filled Iso Contour

Spillage

Grid : Spillage at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E  MVP507 NB/60

Average
29.7

Min/Ave
0.00

Min/Max
0.00

Project maintenance factor
1.00

Scale
1:2500

3.8 Spillage: Mountain Plot

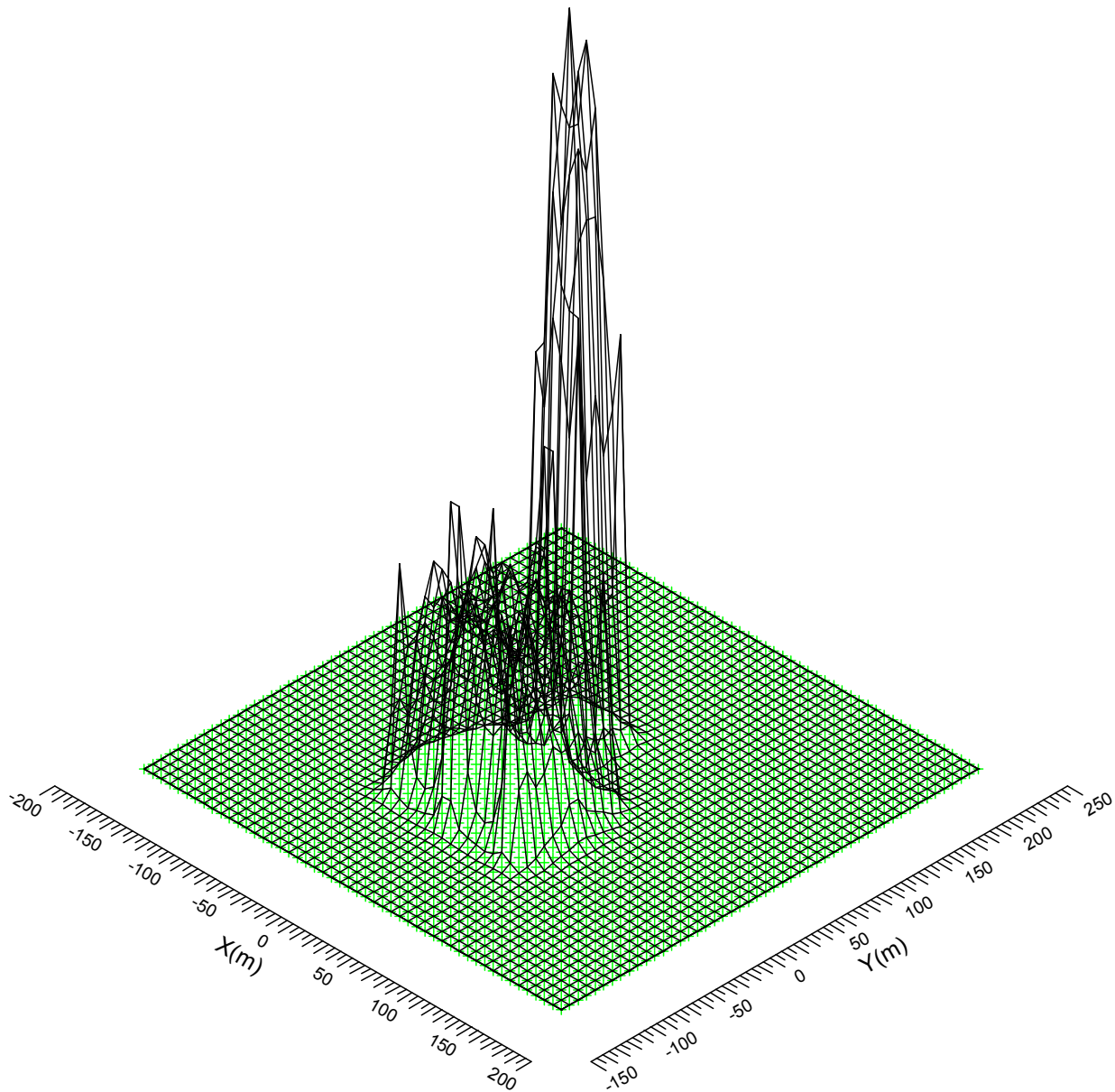
Spillage

Grid

: Spillage at Z = -0.00 m

Calculation

: Surface Illuminance (lux)

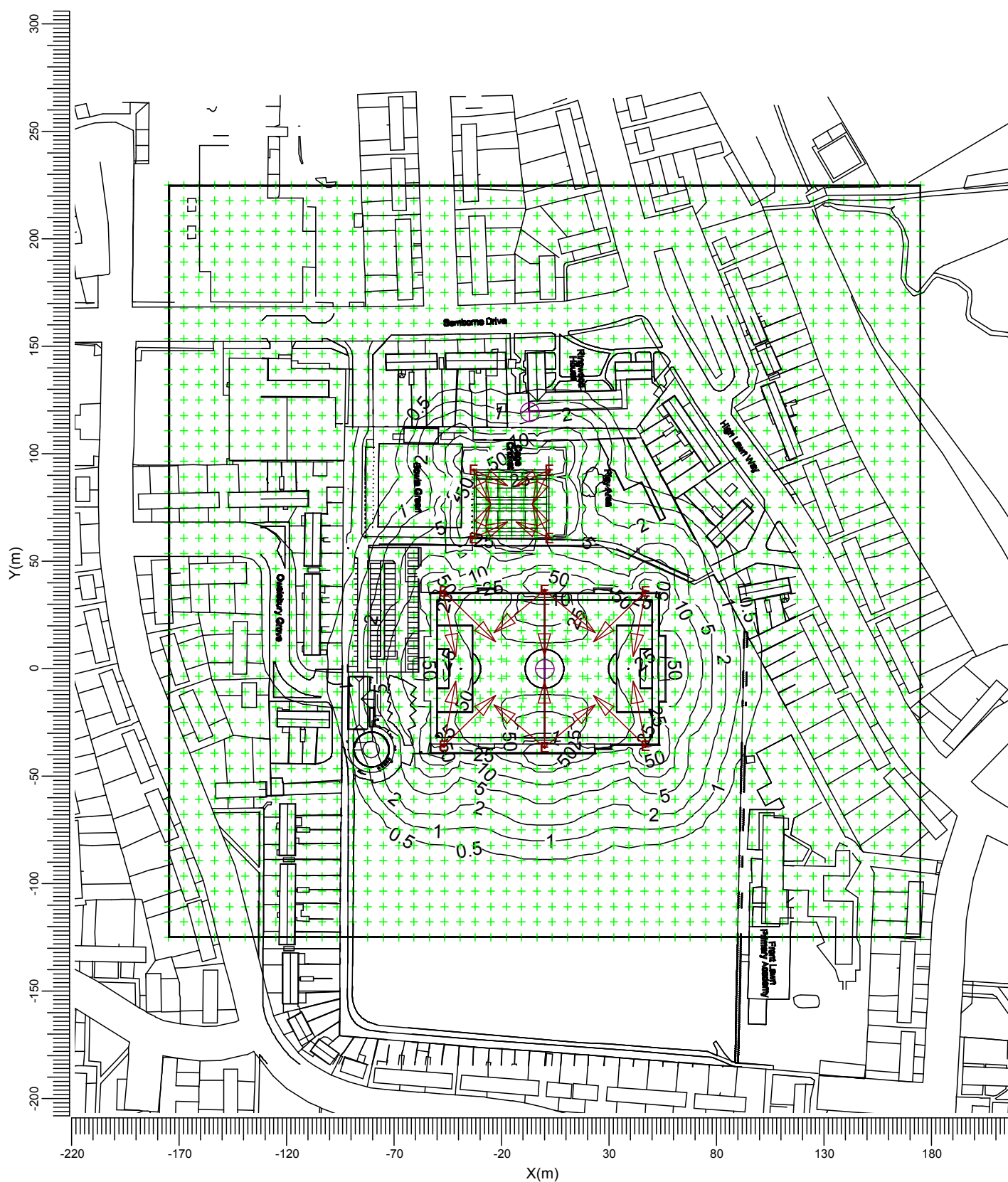


Average	Min/Ave	Min/Max	Project maintenance factor
29.7	0.00	0.00	1.00

3.9 Evo Spill: Iso Contour

Spillage

Grid : Evo Spill at Z = -0.00 m
Calculation : Illuminance towards Evo Spill (lux)
Height above grid : 1.80 m



E MVP507 NB/60

Average
9.48

Min/Ave
0.00

Min/Max
0.00

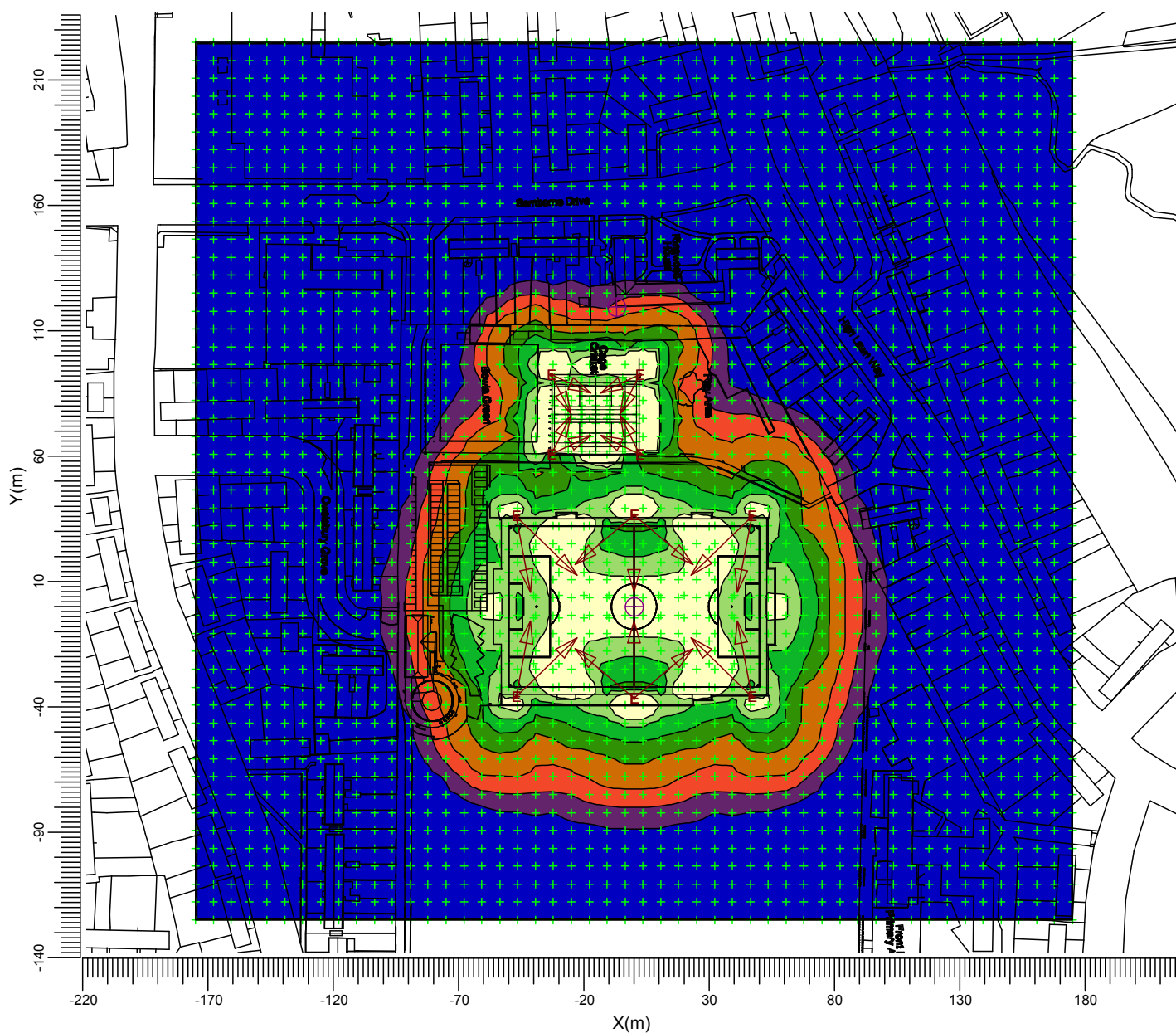
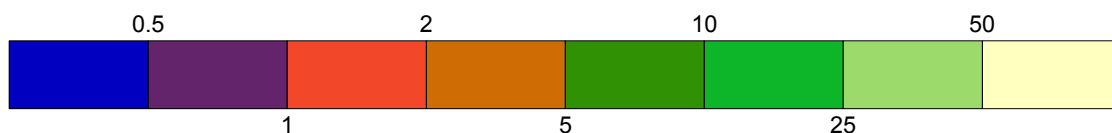
Project maintenance factor
1.00

Scale
1:2500

3.10 Evo Spill: Filled Iso Contour

Spillage

Grid : Evo Spill at Z = -0.00 m
Calculation : Illuminance towards Evo Spill (lux)
Height above grid : 1.80 m



E  MVP507 NB/60

Average
9.48

Min/Ave
0.00

Min/Max
0.00

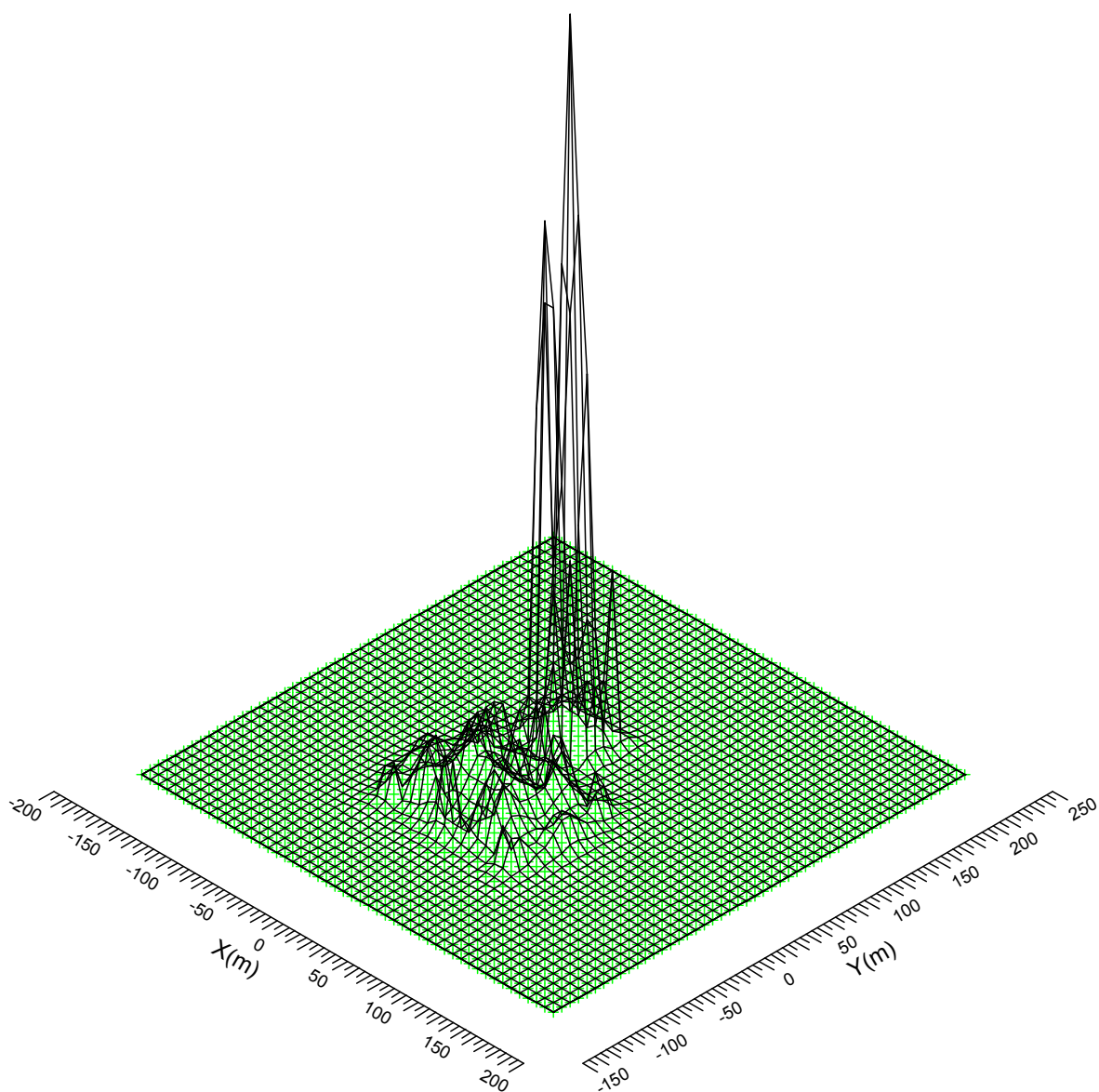
Project maintenance factor
1.00

Scale
1:2500

3.11 Evo Spill: Mountain Plot

Spillage

Grid : Evo Spill at Z = -0.00 m
Calculation : Illuminance towards Evo Spill (lux)
Height above grid : 1.80 m



Average
9.48

Min/Ave
0.00

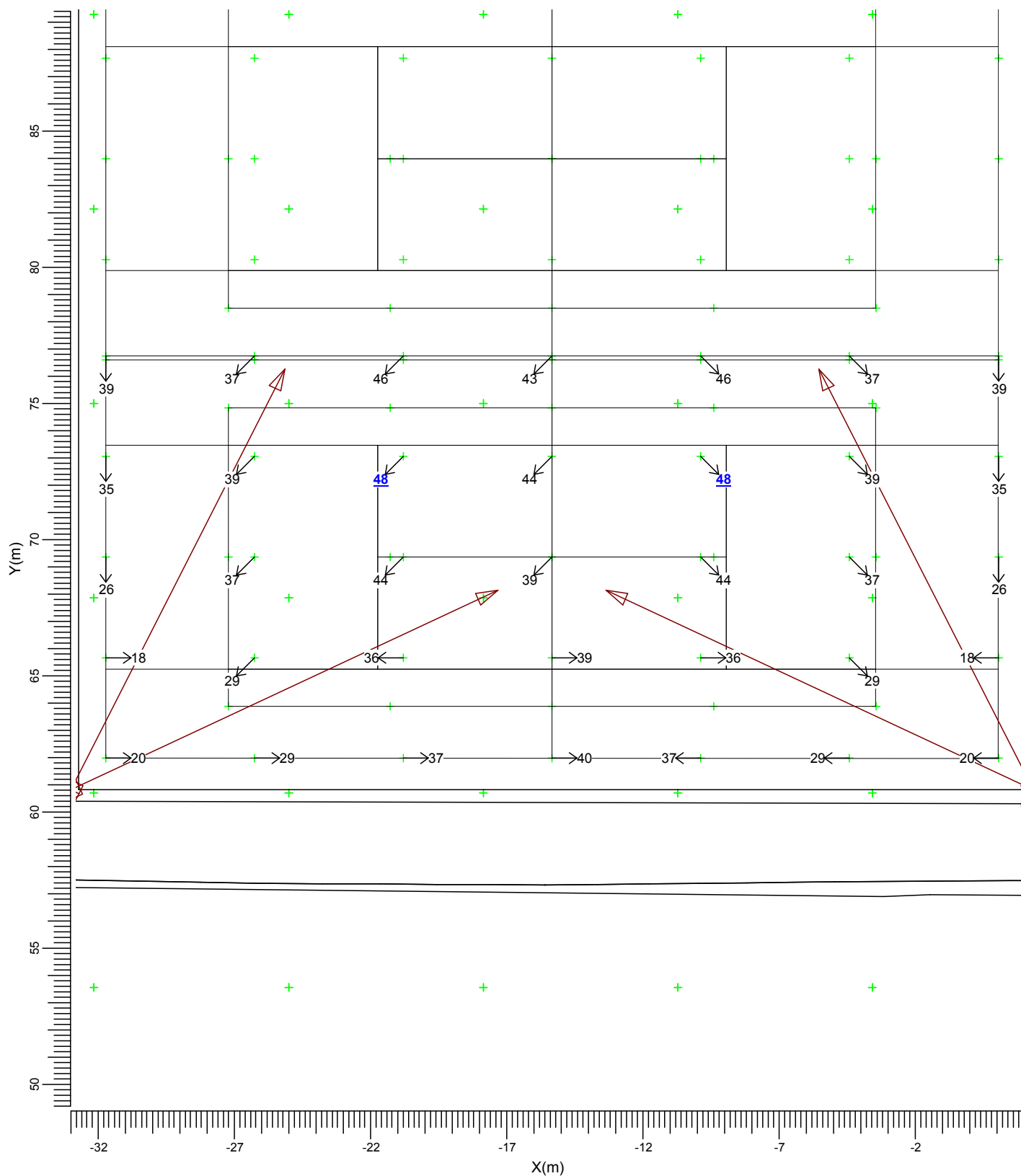
Min/Max
0.00

Project maintenance factor
1.00

3.12 Glare Rating: Graphical Table

Tennis Court 1

Grid of Observers : Tennis Court 1 TPA
Calculation : Glare Rating
Grid for Background Luminance : Tennis Court 1 TPA (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



E MVP507 NB/60

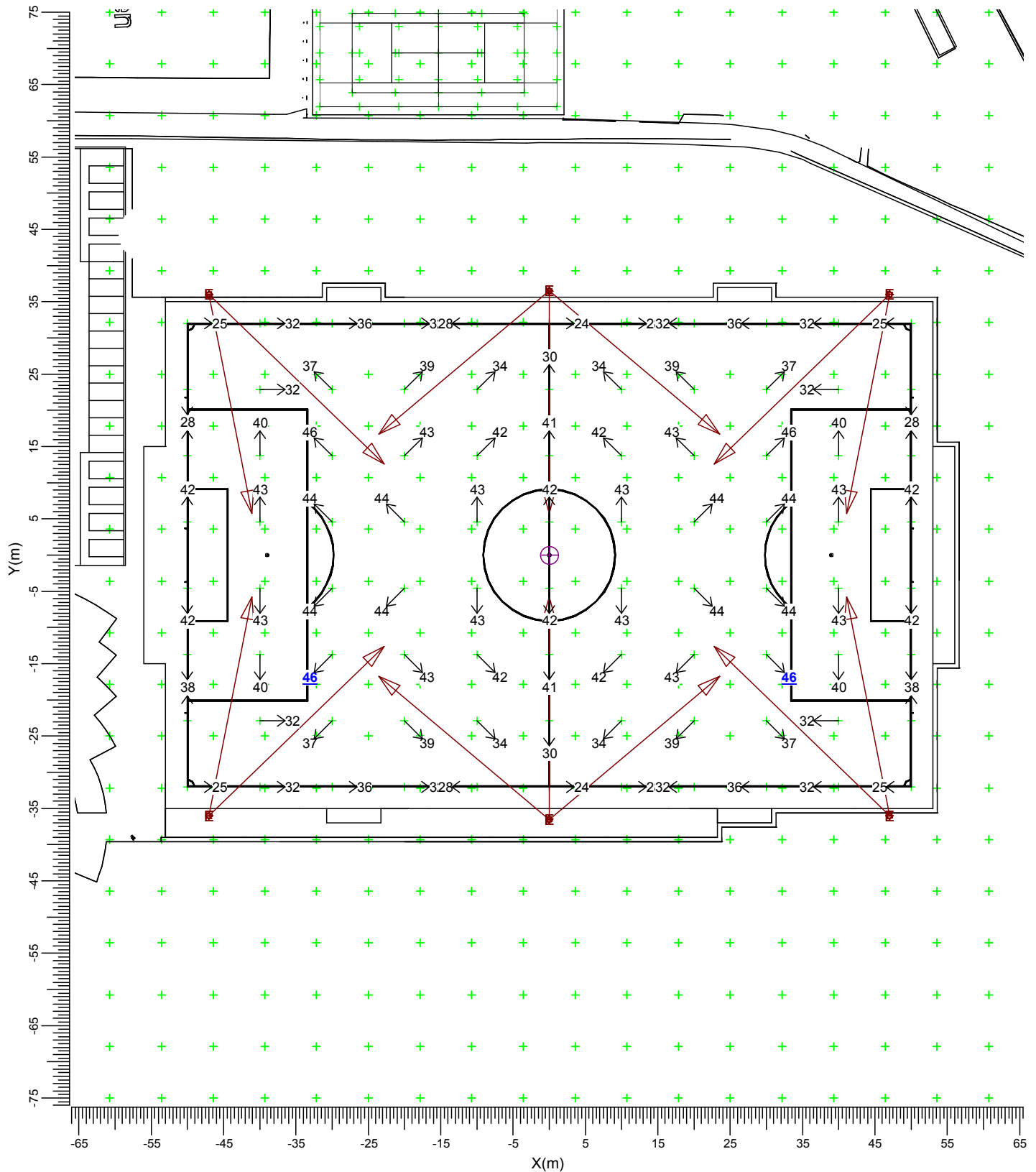
Project maintenance factor
1.00

Scale
1:200

3.13 Glare Rating ATP: Graphical Table

Football

Grid of Observers : Football
Calculation : Glare Rating
Grid for Background Luminance : Football (Reflectance: 0.25)
Vertical Viewing Angle : -2.0 deg



E → MVP507 NB/60

Project maintenance factor
1.00

Scale
1:750

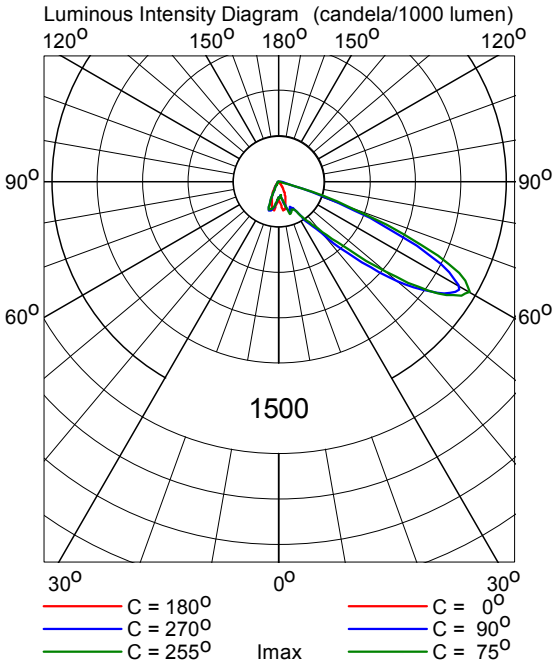
4. Luminaire Details

4.1 Project Luminaires

OptiVision MVP507
MVP507 1xMHN-LA2000W/400V/842 NB/60



Light output ratios	
DLOR	: 0.78
ULOR	: 0.00
TLOR	: 0.78
Ballast	: Conventional
Lamp flux	: 220000 lm
Luminaire wattage	: 2123.0 W
Measurement code	: LVMA107801



5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
E	22	MVP507 NB/60	1 * MHN-LA2000W/400V/842	1 * 220000

Switching Modes:

Code	Switching Mode
1	Football
2	Tennis Court 1
3	Tennis Court 2
4	Spillage

5.2 Luminaire Positioning and Orientation

Qty and Code	Position			Aiming Angles			Switching Modes			
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	1	2	3	4
1 * E	-47.00	-36.00	15.00	79.0	64.0	-0.0	+	-	-	+
1 * E	-47.00	-36.00	15.00	44.0	66.0	-0.0	+	-	-	+
1 * E	-47.00	36.00	15.00	-79.0	64.0	0.0	+	-	-	+
1 * E	-47.00	36.00	15.00	-44.0	66.0	0.0	+	-	-	+
1 * E	-33.00	60.83	10.00	25.0	60.0	0.0	-	+	-	+
1 * E	-33.00	60.83	10.00	63.0	60.0	0.0	-	+	-	+
1 * E	-33.00	92.52	10.00	-25.0	60.0	0.0	-	-	+	+
1 * E	-33.00	92.52	10.00	-63.0	60.0	0.0	-	-	+	+
1 * E	-0.00	-36.50	15.00	40.0	64.0	-0.0	+	-	-	+
1 * E	-0.00	-36.50	15.00	140.0	64.0	0.0	+	-	-	+
1 * E	-0.00	-36.50	15.00	90.0	64.0	-0.0	+	-	-	+
1 * E	-0.00	36.50	15.00	-40.0	64.0	0.0	+	-	-	+
1 * E	-0.00	36.50	15.00	-140.0	64.0	-0.0	+	-	-	+
1 * E	-0.00	36.50	15.00	-90.0	64.0	0.0	+	-	-	+
1 * E	2.34	60.83	10.00	155.0	60.0	-0.0	-	+	-	+
1 * E	2.34	60.83	10.00	117.0	60.0	-0.0	-	+	-	+
1 * E	2.34	92.52	10.00	-155.0	60.0	-0.0	-	-	+	+
1 * E	2.34	92.52	10.00	-117.0	60.0	-0.0	-	-	+	+
1 * E	47.00	-36.00	15.00	101.0	64.0	0.0	+	-	-	+
1 * E	47.00	-36.00	15.00	136.0	66.0	0.0	+	-	-	+
1 * E	47.00	36.00	15.00	-101.0	64.0	-0.0	+	-	-	+
1 * E	47.00	36.00	15.00	-136.0	66.0	-0.0	+	-	-	+

GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT

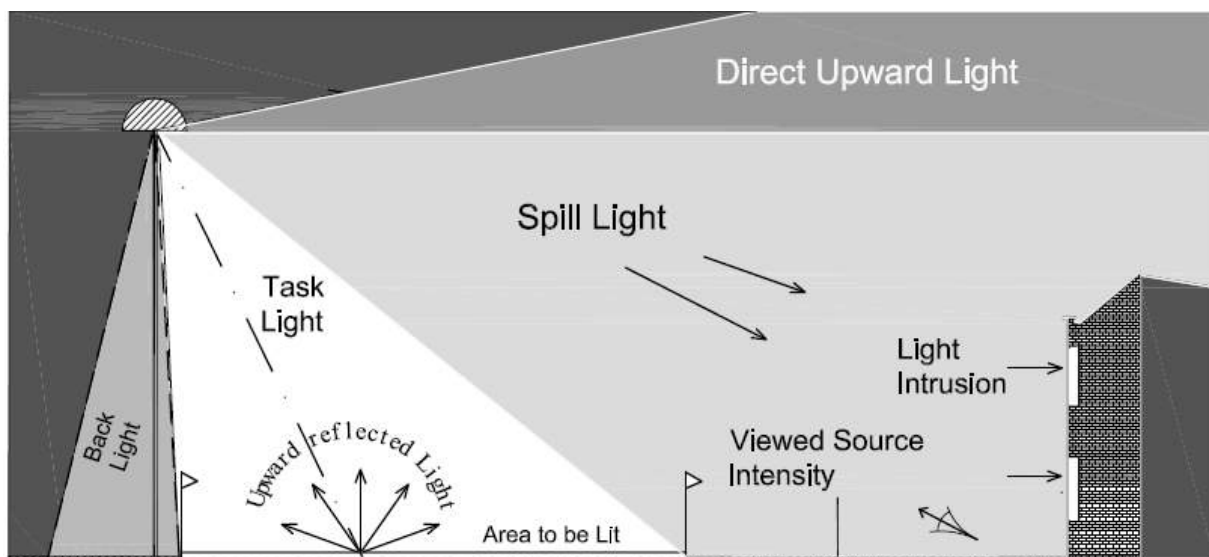
“Think before you light - The right amount of light, where wanted, when wanted.”

Man's invention of artificial light has done much to safeguard and enhance our night-time environment but, if not properly controlled, **obtrusive light** (sometimes referred to as light pollution) can present serious physiological and ecological problems.

Obtrusive Light, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution, which may also be a nuisance in law and which can be substantially reduced without detriment to the lighting task.

Sky glow, the brightening of the night sky, **Glare** the uncomfortable brightness of a light source when viewed against a darker background, and **Light Intrusion (“Trespass”)**, the spilling of light beyond the boundary of the property or area being lit, are all forms of obtrusive light which may cause nuisance to others and waste money and energy. Think before you light. Is it necessary? What effect will it have on others? Will it cause a nuisance? How can you minimise the problem?

Figure 1 – Types of obtrusive light



Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light. Organisations from which full details of these standards can be obtained are given on the last page of this leaflet.

Dim or switch off lights when the task is finished. Generally a lower level of lighting will suffice to enhance the night time scene than that required for safety and security.

“Good Design equals Good Lighting”

Any lighting scheme will consist of three basic elements: a light source, a luminaire and a method of installation.

Light sources (Lamps)

Remember that the light source output in LUMENS is not the same as the wattage and that it is the former that is important in combating the problems of obtrusive light.

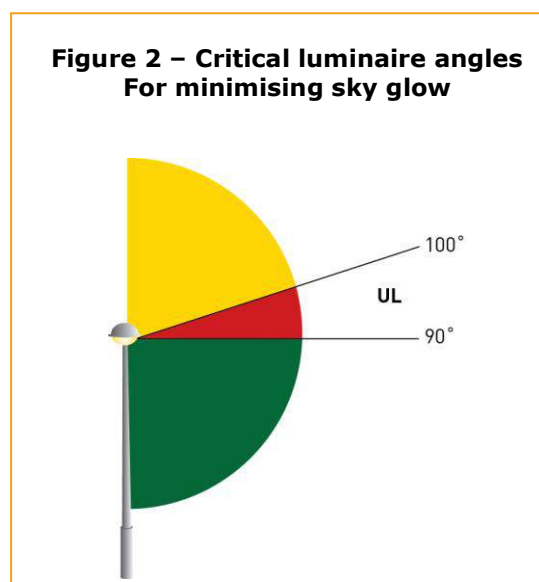
Most nighttime visual tasks are only dependant on light radiated within the visual spectrum. It is therefore NOT necessary for light sources to emit either ultra-violet or infra-red radiation unless specifically designed to do so. It is also understood that light from the shorter wavelengths of the spectrum has important effects on both flora and fauna that should be considered.

Research indicates that light from the blue end of the spectrum has important non-visual effects on the health of the human body, in particular in our sleep/wake patterns. It is therefore important to appreciate that while in obtrusive light terms the use of blue light should be minimised, there are many night-time tasks such as driving and sports where to be fully awake is an important aid to safety.

Luminaires

Care should always be taken when selecting luminaires to ensure that appropriate products are chosen and that their location will reduce spill light and glare to a minimum.

Use specifically designed lighting equipment that minimises the upward spread of light near to and above the horizontal. The most sensitive/critical zones for minimising sky glow are those between 90° and 100° as shown in Figure 2 and referred to as the lower, upward light output zone (UL).



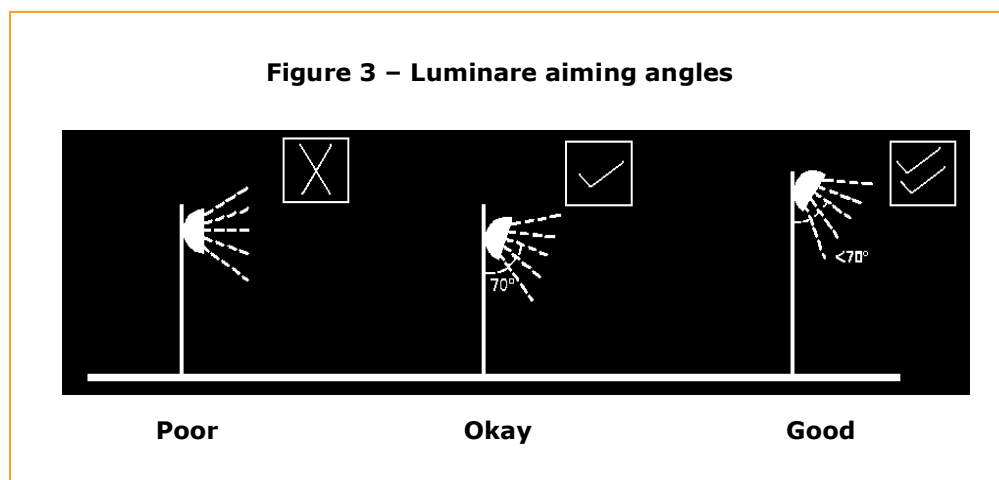
For most sports and area lighting installations the use of luminaires with double-asymmetric beams designed so that the front glazing is kept at or near parallel to the surface being lit should, if correctly aimed, ensures minimum obtrusive light.

Appendices 1 and 2 to these notes gives more details of how to choose and if necessary modify luminaires.

Installation

In most cases it will be beneficial to use as high a mounting height as possible, giving due regard to the daytime appearance of the installation. The requirements to control glare for the safety of road users are given in Table 3.

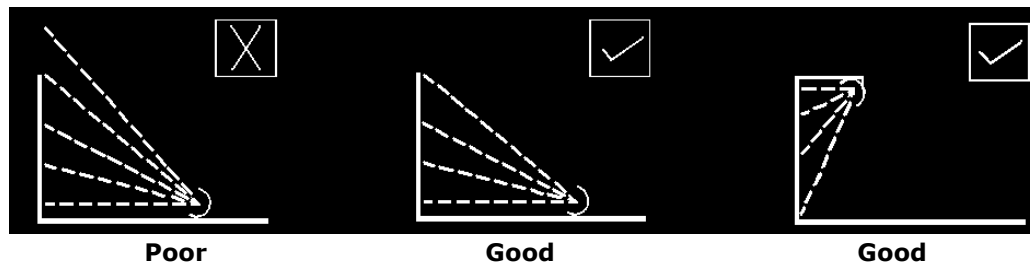
Keep glare to a minimum by ensuring that the main beam angle of all lights directed towards any potential observer is not more than 70°. Higher mounting heights allow lower main beam angles, which can assist in reducing glare. In areas with low ambient lighting levels, glare can be very obtrusive and extra care should be taken when positioning and aiming lighting equipment. With regard to domestic security lighting the ILP produces an information leaflet GN02:2009 that is freely available from its website.



When lighting vertical structures such as advertising signs, direct light downwards wherever possible. If there is no alternative to up-lighting, as with much decorative lighting of buildings, then the use of shields, baffles and louvres will help reduce spill light around and over the structure to a minimum.

For road and amenity lighting installations, (see also design standards listed on Page 5) light near to and above the horizontal should normally be minimised to reduce glare and sky glow (Note ULR's in Table 2). In rural areas the use of full horizontal cut off luminaires installed at 0° uplift will, in addition to reducing sky glow, also help to minimise visual intrusion within the open landscape. However in some urban locations, luminaires fitted with a more decorative bowl and good optical control of light should be acceptable and may be more appropriate.

Figure 4 – Façade Illumination



Since 2006 “Artificial Light” has been added to the list of possible Statutory Nuisances in England, Wales and Scotland. The monitoring of such nuisances will be the responsibility of Environmental Health Officers (EHOs) for which separate guidance is being produced.

With regard to the planning aspect, many Local Planning Authorities (LPAs) have already produced, or are producing, policies that within the planning system will become part of their local development framework. For new developments there is an opportunity for LPAs to impose planning conditions related to external lighting, including curfew hours.

The Scottish Executive has published a design methodology document (March 2007) entitled [“Controlling Light Pollution and Reducing Energy Consumption”](#) to further assist in mitigating obtrusive light elements at the design stage.

ENVIRONMENTAL ZONES

It is recommended that Local Planning Authorities specify the following environmental zones for exterior lighting control within their Development Plans.

Table 1 – Environmental Zones

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.

NB: Zone E0 must always be surrounded by an E1 Zone.

DESIGN GUIDANCE

The following limitations may be supplemented or replaced by a LPA's own planning guidance for exterior lighting installations. As lighting design is not as simple as it may seem, you are advised to consult and/or work with a professional lighting designer before installing any exterior lighting.

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers

Environmental Zone	Sky Glow ULR [Max %] ⁽¹⁾	Light Intrusion (into Windows) E_v [lux] ⁽²⁾		Luminaire Intensity I [candelas] ⁽³⁾		Building Luminance Pre-curfew ⁽⁴⁾
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m ²]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

ULR = **Upward Light Ratio of the Installation** is the maximum permitted percentage of luminaire flux that goes directly into the sky.

E_v = **Vertical Illuminance in Lux** - measured flat on the glazing at the centre of the window.

I = **Light Intensity in Candelas (cd)**

L = **Luminance in Candelas per Square Metre (cd/m²)**

Curfew = **the time after which stricter requirements (for the control of obtrusive light) will apply**; often a condition of use of lighting applied by the local planning authority. If not otherwise stated - 23.00hrs is suggested.

***** = **Permitted only from** Public road lighting installations

(1) Upward Light Ratio – Some lighting schemes will require the deliberate and careful use of upward light, e.g. ground recessed luminaires, ground mounted floodlights, festive lighting, to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.

- (2) Light Intrusion (into Windows)** – These values are suggested maxima and need to take account of existing light intrusion at the point of measurement. In the case of road lighting on public highways where building facades are adjacent to the lit highway, these levels may not be obtainable. In such cases where a specific complaint has been received, the Highway Authority should endeavour to reduce the light intrusion into the window down to the post curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.
- (3) Luminaire Intensity** – This applies to each luminaire in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some sports lighting applications with limited mounting heights, may be difficult to achieve.
- (4) Building Luminance** – This should be limited to avoid over lighting, and related to the general district brightness. In this reference building luminance is applicable to buildings directly illuminated as a night-time feature as against the illumination of a building caused by spill light from adjacent luminaires or luminaires fixed to the building but used to light an adjacent area.

Table 3 – Obtrusive Light Limitations for Exterior Lighting Installations – Road Users		
Road Classification ⁽¹⁾	Threshold Increment (TI)	Veiling Luminance (Lv)
No road lighting	15% based on adaptation luminance of 0.1cd/m ²	0.04
ME6/ ME5	15% based on adaptation luminance of 1cd/m ²	0.25
ME4/ ME3	15% based on adaptation luminance of 2cd/m	0.40
ME2 / ME1	15% based on adaptation luminance of 5cd/m ²	0.84

TI = **Threshold Increment** is a measure of the loss of visibility caused by the disability glare from the obtrusive light installation

Lv = **Veiling Luminance** is a measure of the adaptation luminance caused by the disability glare from the obtrusive light installation

(1) = Road Classifications as given in BS EN 13201 - 2: 2003 Road lighting Performance requirements. Limits apply where users of transport systems are subject to a reduction in the ability to see essential information. Values given are for relevant positions and for viewing directions in path of travel. For a more detailed description and methods for determining, calculating and measuring the above parameters see CIE Publication 150:2003.

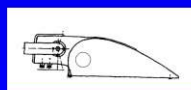
RELEVANT PUBLICATIONS AND STANDARDS:

British Standards: www.bsi.org.uk	BS 5489-1: 2003 Code of practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas BS EN 13201-2:2003 Road lighting – Part 2: Performance requirements BS EN 13201-3:2003 Road lighting – Part 3: Calculation of performance BS EN 13201-4:2003 Road lighting – Part 4: Methods of measuring lighting performance. BS EN 12193: 1999 Light and lighting – Sports lighting BS EN 12464-2: 2007 Lighting of work places – Outdoor work places
Countryside Commission/ DOE	Lighting in the Countryside: Towards good practice (1997) (<i>Out of Print but available on www.communities.gov.uk/index.asp?id=1144823</i>)
UK Government / Defra www.defra.gov.uk	Statutory Nuisance from Insects and Artificial Light – Guidance on Sections 101 to 103 of the Clean Neighbourhoods and Environment Act 2005 Road Lighting and the Environment (1993) (Out of Print)
CIBSE/SLL Publications: www.cibse.org	CoL Code for Lighting (2002) LG1 The Industrial Environment (1989) LG4 Sports (1990+Addendum 2000) LG6 The Exterior Environment (1992) FF7 Environmental Considerations for Exterior Lighting (2003)
CIE Publications: www.cie.co.at	01 Guidelines for minimizing Urban Sky Glow near Astronomical Observatories (1980) 83 Guide for the lighting of sports events for colour television and film systems (1989) 92 Guide for floodlighting (1992) 115 Recommendations for the lighting of roads for motor and pedestrian traffic – Second Edition (2010) 126 Guidelines for minimizing Sky glow (1997) 129 Guide for lighting exterior work areas (1998) 136 Guide to the lighting of urban areas (2000) 150 Guide on the limitations of the effect of obtrusive light from outdoor lighting installations (2003) 154 The Maintenance of outdoor lighting systems (2003)
ILP Publications: www.theilp.org.uk	TR 5 Brightness of Illuminated Advertisements (2001) TR24 A Practical Guide to the Development of a Public Lighting Policy for Local Authorities (1999) GN02 Domestic Security Lighting, Friend or Foe
ILP/CIBSE Joint Publications	Lighting the Environment - A guide to good urban lighting (1995)
ILP/CSS Publications	Joint Code of Practice for the installation, maintenance and removal of seasonal decorations. (2005)
ILP/CfDS Joint Publication www.dark-skies.org	Towards Understanding Sky glow. 2007
IESNA www.iesna.org	TM-15-07 (R) Luminaire Classification System for Outdoor luminaires

NB: These notes are intended as guidance only and the application of the values given in Tables 2 & 3 should be given due consideration along with all other factors in the lighting design. Lighting is a complex subject with both objective and subjective criteria to be considered. The notes are therefore no substitute for professionally assessed and designed lighting, where the various and maybe conflicting visual requirements need to be balanced.

APPENDIX 1 - PROPOSED OUTDOOR LUMINAIRE CLASSIFICATION SYSTEM

Variable Aim Luminaires – General Classifications:

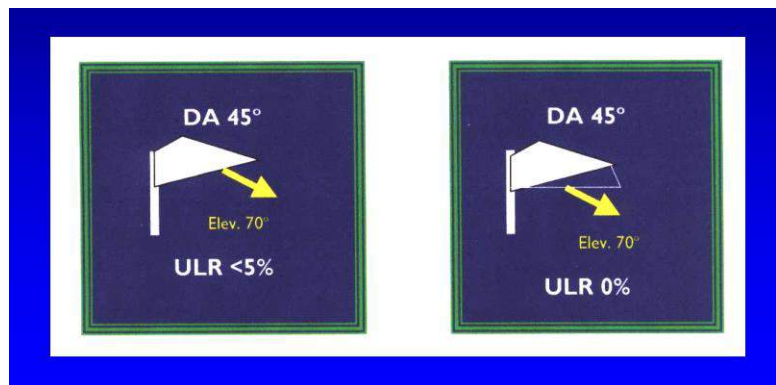
➤ Type A	Symmetrical	
➤ Type B	Asymmetrical	
➤ Type C	Double-Asymmetrical	

Proposed labelling System:

Fixed Position luminaires



Variable Aim Luminaires
(Shown here for a 45° Double-Asymmetric luminaire aimed at 70° – with and without a cowl).



APPENDIX 2 - ILLUSTRATIONS OF LUMINAIRE ACCESSORIES FOR LIMITING OBTRUSIVE LIGHT (images provided by Philips and Thorn)

Cowl (or Hood)



External Louvre



SHIELD



SHEILD "Barn Doors"



Double Asymmetric Luminaire



Simple Hood



Circular Louvre



Cowl & Louvre



Internal Louvre (horizontal)



Internal Louvre (vertical)





OptiVision - breakthrough downlight

OptiVision

OptiVision MVP507 is an asymmetric downlighting luminaire that combines compact dimensions with very high efficiency. Available with narrow, medium and wide beams for flexibility in application, it provides excellent control of spill light, glare and upward leakage of light. OptiVision MVP507 can accommodate metal halide lamps for good colour rendering or high pressure sodium lamps for economical operation.

Benefits

- Breakthrough asymmetrical downlighting luminaire combines compact dimensions with high efficiency
- Available with narrow, medium and wide beams for flexibility in use; sharp beam cut-off for excellent control of spill light and limitation of glare and upward light leakage
- Can be used with metal-halide lamps for good color rendering or high-pressure sodium lamps for economical operation

Features

- Compact dimensions
- High efficiency
- Can be used with metal-halide lamps or high-pressure sodium lamps
- Choice of narrow, medium and wide beams
- Control of spill light, glare and upward light leakage

Application

- Sports facilities
- Industrial areas
- Car parks

Specifications

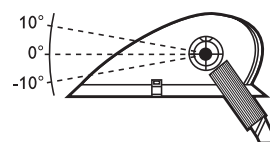
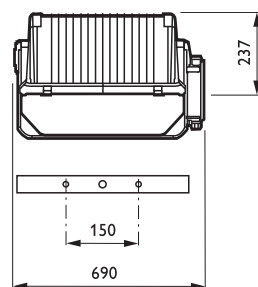
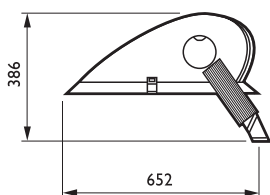
• Type	MVP507	• Installation	On mast headframe, ceiling and wall mounting Protractor scale integrated for aiming Ambient temperature outdoor: 35°C Drag factor (Cx): 0.447 Projected area in horizontal position: 0.127 m ² Max adjustment from the horizontal: -10° / +10°, downlighting only
• Light source	HID: - 1 x MASTER MHN-FC / XW / 1000, 2000 W - 1 x MASTER MHN-LA / XWH / 1000, 2000 W - 1 x MASTER HPI-T Plus / E40 / 1000 W - 1 x MASTER SON-T PIA / E40 / 600 W - 1 x SON-T / E40 / 600, 1000 W	• Maintenance	Lamp access by opening the hinged front glass for in-position lamp replacement Built-in safety switch to cut off current while opening the luminaire, only in MHN-LA lamp versions No internal cleaning required
• Lamp included	Yes (K or light colour 643, 740, 842 or 956) No	• Accessories	Simple aiming device (ZVP507 SAD)
• Optic	Narrow beam (NB) Medium beam (MB) Wide beam (WB)	• Remarks	Equipped with aluminium connection box with ignitor, installed on a separate gear tray (ZVF320) Bracket can be inverted to allow mounting above or below a cross arm Specially designed heat fins Pre-wired external 220 - 240 V / 50 Hz or 380 - 415 V / 50 Hz gear trays are available, to be ordered separately
• Ignitor	Series (SI), integral Semi-parallel (SP), external on a separate gear tray (ZVF320) Parallel (PA), external on a separate gear tray (ZVF320)	• Main applications	Sports, car parks, industrial areas
• Materials and finishing	Housing: non-corrosive, high-pressure die-cast aluminium Glass: thermally hardened, 4 mm thick Mounting bracket: hot-dipped galvanised steel Clips and hinges: stainless steel Reflector: high-reflectivity and high-purity anodised aluminium Finishing in raw aluminium		

Related products

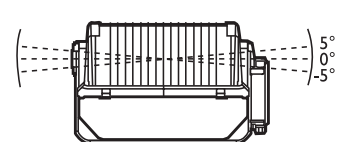


OptiVision MVP507 sports and area flood lighting luminaire

Dimensional drawing



Adjustment possibilities



MVP507

General information

Order code	Product family code	Number of lamps	Lamp family code	Lamp power	Lamp color code	Color	Optic	European Community mark	ENEC mark	Ball Impact Resistance mark
151922 00	MVP507	1	SON-TP	600	-	ALU	WB	CE	ENEC	BIR
151939 00	MVP507	1	SON-T	1000	-	ALU	WB	CE	ENEC	BIR
151946 00	MVP507	1	HPI-T	1000	-	ALU	WB	CE	ENEC	BIR
151953 00	MVP507	1	MHN-LA	1000	842	ALU	WB	CE	ENEC	BIR
151960 00	MVP507	1	MHN-LA	2000	842	ALU	WB	CE	ENEC	BIR
151977 00	MVP507	1	MHN-LA	2000	842	ALU	MB	CE	ENEC	BIR
151984 00	MVP507	1	MHN-LA	2000	842	ALU	NB	CE	ENEC	BIR
152035 00	MVP507	1	MHN-LA	2000	-	ALU	WB	CE	ENEC	BIR
152042 00	MVP507	1	MHN-LA	2000	-	ALU	MB	CE	ENEC	BIR
152059 00	MVP507	1	MHN-LA	2000	-	ALU	NB	CE	ENEC	BIR
152073 00	MVP507	1	MHN-LA	2000	956	ALU	WB	CE	ENEC	BIR
152080 00	MVP507	1	MHN-LA	2000	956	ALU	MB	CE	ENEC	BIR
152097 00	MVP507	1	MHN-LA	2000	956	ALU	NB	CE	ENEC	BIR
546285 00	MVP507	1	SON-T	600	-	ALU	WB	CE	ENEC	BIR
546292 00	MVP507	1	SON-T	1000	-	ALU	WB	CE	ENEC	BIR
546308 00	MVP507	1	MHN-LA	1000	842	ALU	WB	CE	ENEC	BIR
291339 00	MVP507	1	MHN-FC	1000	740	ALU	WB	CE	ENEC	BIR
291346 00	MVP507	1	MHN-FC	2000	740	ALU	NB	CE	ENEC	BIR
291353 00	MVP507	1	MHN-FC	2000	740	ALU	MB	CE	ENEC	BIR
291360 00	MVP507	1	MHN-FC	2000	740	ALU	WB	CE	ENEC	BIR
291490 00	MVP507	1	MHN-FC	1000	740	ALU	NB	CE	ENEC	BIR
291506 00	MVP507	1	MHN-FC	1000	740	ALU	MB	CE	ENEC	BIR
292497 00	MVP507	1	MHN-FC	1000	740	ALU	NB	CE	ENEC	BIR
292503 00	MVP507	1	MHN-FC	1000	740	ALU	MB	CE	ENEC	BIR
292510 00	MVP507	1	MHN-FC	1000	740	ALU	WB	CE	ENEC	BIR

Accessories



ZVP507 SAD

Simple aiming device (ZVP507 SAD)



© 2011 Koninklijke Philips Electronics N.V.
All rights reserved.

Specifications are subject to change without notice. Trademarks are the property of Koninklijke Philips Electronics N.V. or their respective owners.

www.philips.com/lighting

2011, September 14
data subject to change

Accessories

Order code	Product family code	Description
154275 00	ZVP507 SAD	Simple aiming device



© 2011 Koninklijke Philips Electronics N.V.
All rights reserved.

Specifications are subject to change without notice. Trademarks are the property of Koninklijke Philips Electronics N.V. or their respective owners.

www.philips.com/lighting

2011, September 14
data subject to change



MASTER MHN-FC

MASTER MHN-FC 2000W/740 400V XW UNP

Compact quartz metal halide lamps with double pinch

Product data

• General Characteristics

Cap-Base	Double Ended
Cap-Base Information	Cable
Bulb Finish	Clear
Burning Position	p5 [Parallel +/-5D or Horizontal(HOR)]
Life to 5% failures	7000 hr
Life to 10% failures	8000 hr
Life to 20% failures	9500 hr
Life to 50% failures	14000 hr

• Light Technical Characteristics

Colour Code	740 [CCT of 4000K]
Colour Rendering Index	56 (min), 62 (nom) Ra8
Colour Designation	White
Colour Temperature	4200 K
Colour Temperature Technical	4200 K
Chromaticity Coordinate X	380 -
Chromaticity Coordinate Y	419 -
Lamp Luminous Flux EM	210000 Lm
Lamp Luminous Efficacy EM	102 Lm/W
Lumen Maintenance 2000h	85 %
Lumen Maintenance 5000h	75 %
Lumen Maintenance 10000h	70 %
Average Luminance EM	1500 cd/cm2

Lumen Maintenance 1000h	90 %
Lumen Maintenance 14000h	45 %

• Electrical Characteristics

Lamp Wattage	2000 W
Lamp Wattage EM	2032 W
Voltage	400 V
Lamp Voltage	222 V
Lamp Current EM	10.11 A
Dimmable	no

• Environmental Characteristics

Mercury (Hg) Content	105 mg
----------------------	--------

• UV-related Characteristics

PET (NIOSH)	0.030 h.klx
Damage Factor D/fc	3.6 -
UV A	1823 mW/cm2
UV B	492 mW/cm2
UV C	532 mW/cm2
Specific Eff. Radiant Power	410 mW/klm

• Luminaire Design Requirements

Pinch Temperature	350 (max) C
Bulb Temperature	950 (max) C

MASTER MHN-FC

• Product Dimensions

Base Face to Base Face A	290 mm
Overall Length C	357 (max) mm
Diameter D	25.5 (nom), 33 (max) mm
Light Center Length L	177 mm
Arc Length O	108 mm
Cable Length X	58 mm

• Product Data

Order code	213495 00
Full product code	871150021349500
Full product name	MASTER MHN-FC 2000W/740 400V XW UNP

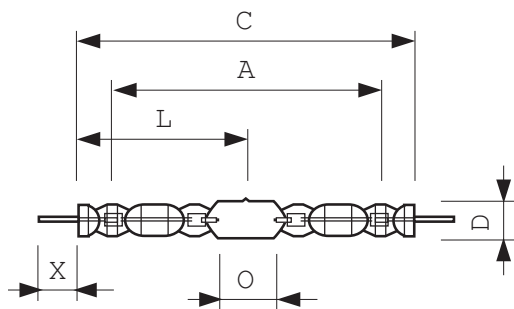
Order product name	MASTER MHN-FC 2000W/740 400V XW UNP
Pieces per pack	1
Packing configuration	1
Packs per outerbox	1
Bar code on pack - EAN1	8711500213495
Bar code on outerbox - EAN3	8711500213495
Logistic code(s) - 12NC	928070405130
ILCOS code	MD-2000/40/2B-H-XW
Net weight per piece	145.000 gr

Warnings and Safety

- Use only in totally enclosed luminaire, even during testing (IEC61167, IEC 62035, IEC60598)

- The luminaire must be able to contain hot lamp parts if the lamp ruptures

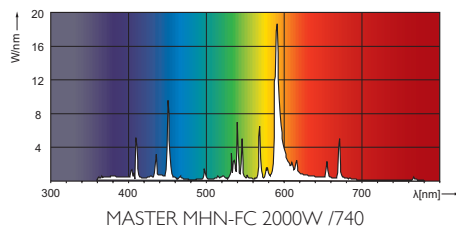
Dimensional drawing



MHN-FC, 1000W/2000W

Product	A (Norm)	C (Max)	D (Norm)	D (Max)	L (Norm)	O (Norm)	X (Norm)
MHN-FC 2000W/740 400V XW	290	357	25.5	33	177	108	58

Photometric data





© 2012 Koninklijke Philips Electronics N.V.
All rights reserved.

Specifications are subject to change without notice. Trademarks are the property of Koninklijke Philips Electronics N.V. or their respective owners.

www.philips.com/lighting

2012, September 10
data subject to change

21.0 Appendix Three

Existing Utilities on site.

- Sewer
- Electricity
- Gas
- Portsmouth Water
- BT

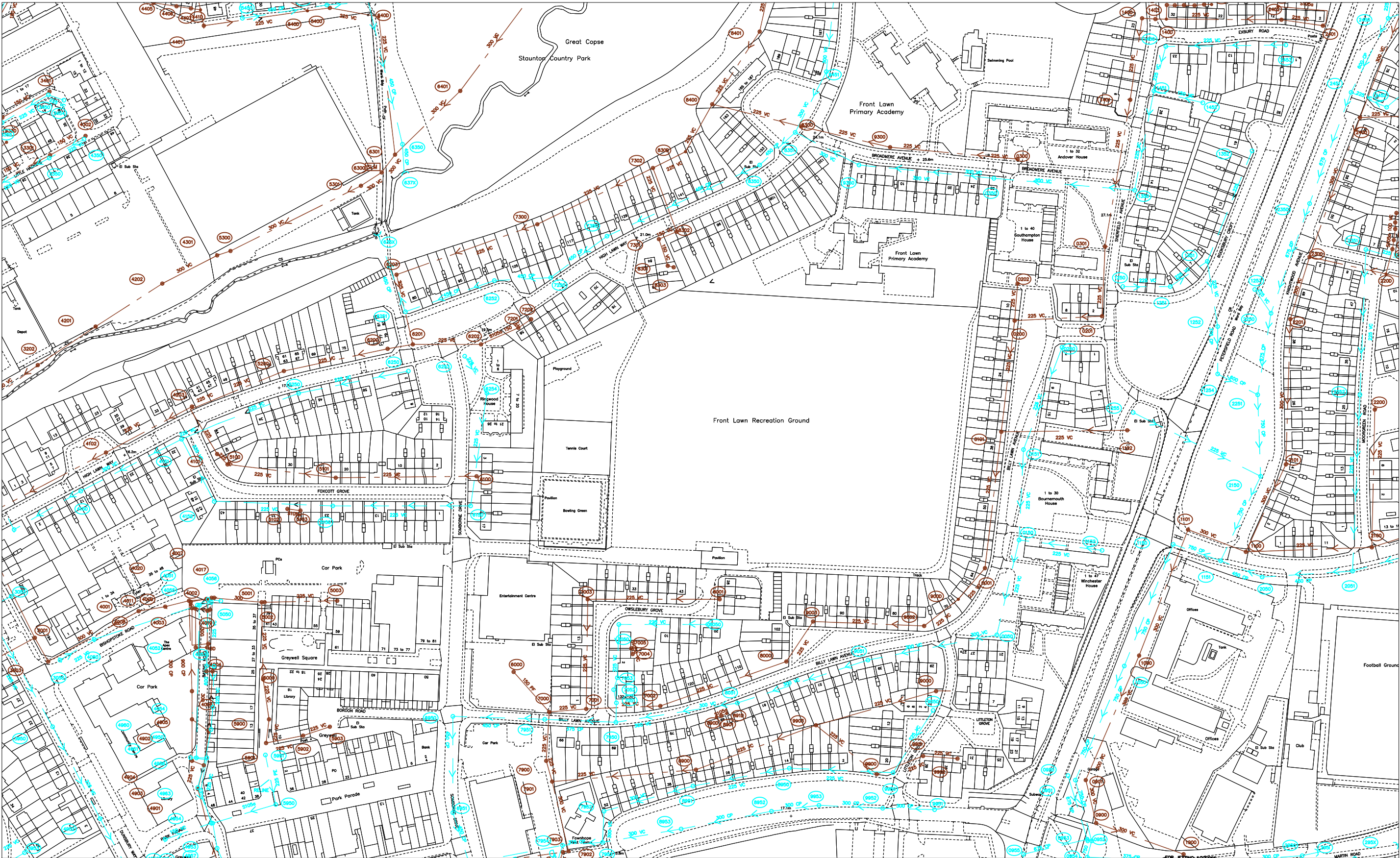


Alterations and Extension to Front Lawn Sports Pavilion for Havant Borough Council
Design and Access Statement

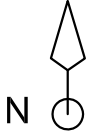


SEWER RECORDS PAGE 1 OF 2

108480



107902

O.S. REF. SU7108SE	Drawn by: kumaria	The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. WARNING: BAC pipes are constructed of Bonded Asbestos Cement WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement	 N	
	Scale: 1:2500			
Title: 200879_Lawn Recreation Ground,	Date: 18/08/2015	Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530.		

471354

4712296

SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape
0001X	20.85	19.25	225	VC	CIRC	2401X	30.39	28.01	225	VC	CIRC	4902X	16.118	13.058	UNK	UNK	CIRC	7201X			150	VC	CIRC
0050X	20.37	18.4	300	VC	CIRC	2402X	31.01		225	VC	CIRC	4902Y	16.118		150	UNK	CIRC	7202X			150	VC	CIRC
0101X	22.76	21.01	225	VC	CIRC	240DX			UNK	UNK	CIRC	4903X			300	VC	CIRC	7250X	20.44	18.53	450	CP	CIRC
0150X	21.45	19.6	225	VC	CIRC	2450X	29.06	25.56	600	CP	CIRC	4904X			600	CP	CIRC	7300X	19.34	17.19	225	VC	CIRC
0151X	22.83	20.66	225	VC	CIRC	2451X	27.17	24.64	675	CP	CIRC	4905X	16.13		300	CP	CIRC	7301X	21.59	20.15	150	VC	CIRC
0152X	21.64	20.11	225	VC	CIRC	2452X	27.04	25.3	225	VC	CIRC	4950X	15.59		225	VC	CIRC	7302X	20.02	18.57	225	VC	CIRC
0200X	24.7	21.8	225	VC	CIRC	2453X	30.6	29.3	225	VC	CIRC	4951X	15.49	13.5	300	VC	CIRC	7350X	20.64	18.89	450	CP	CIRC
0201X	25.49	23.05	225	VC	CIRC	2950X	18.67		300	CP	CIRC	4952X	14.95	12.31	225	VC	CIRC	7900X	16.27	15.14	225	VC	CIRC
0202X	25.52	23.64	225	VC	CIRC	2951X	-1		UNK	UNK	CIRC	4953X	14.76	12.85	300	VC	CIRC	7901X	16.18	14.68	300	VC	CIRC
0250X	24.64	21.9	225	VC	CIRC	3001X	15.58	11.87	375	CP	CIRC	4954X	14.97	13.27	225	VC	CIRC	7902Y	16.03		375	CP	CIRC
0300X	27	25.64	225	VC	CIRC	3003X	15.43	12.14	300	VC	CIRC	4955X	14.64	13.39	150	VC	CIRC	7903X	16.03		375	CP	CIRC
0301X	26.81	24.32	225	VC	CIRC	3050X	15.6	14.66	225	VC	CIRC	4956X	15.62	13.502	300	UNK	CIRC	7950X	16.89	15.15	375	CP	CIRC
0350X	26.67	25.15	300	VC	CIRC	3053X	15.34	12.84	225	VC	CIRC	4957X			UNK	UNK	UNK	7951X	16.69	14.89	450	CP	CIRC
0900X	19.09	16.96	300	VC	CIRC	3150X	16.01		300	VC	CIRC	4960X			225	UNK	CIRC	7952X	16	14.61	300	VC	CIRC
0901X	19.43	17.16	300	VC	CIRC	3202X	15.8	12.73	300	VC	CIRC	4963X	15.02		225	VC	CIRC	7953X	16.36	14.99	375	CP	CIRC
0950X	18.96	16.44	675	CP	CIRC	3301X	17.42	15.49	150	VC	CIRC	4964X	14.79	12.94	300	VC	CIRC	7954X	16.1	14.8	450	CP	CIRC
0951X	19.31	17.81	750	CP	CIRC	333DX			UNK	UNK	CIRC	5000X	16.66	13.04	225	VC	CIRC	8000X	18.08	16.85	225	VC	CIRC
0952X	18.93	17.62	750	CP	CIRC	3350X	17.47	15.53	225	VC	CIRC	5001X	17.72		300	UNK	CIRC	8001X	18.71	16.92	225	VC	CIRC
0952Y	18.93	17.62	375	CP	CIRC	3355X	17.54	15.5	225	VC	CIRC	5002X	17.72	12.7	225	VC	CIRC	8050X	18.68	16.47	225	VC	CIRC
0953X	18.91		675	CP	CIRC	3401X	17.11	15.53	150	VC	CIRC	5003X	17.8	12.9	225	VC	CIRC	8051X	17.71	16.3	300	VC	CIRC
0954X	18.65		450	CP	CIRC	3450X	17.12	15.71	225	VC	CIRC	5050X	17.48		UNK	UNK	CIRC	8300X	24.01	22.6	225	VC	CIRC
0955X	18.37		675	UNK	CIRC	3454X	17.09	15.79	225	VC	CIRC	5100X	17.88		225	VC	CIRC	8301X	21.88	20.51	150	VC	CIRC
1000X	20.24	17.92	300	VC	CIRC	3950X	15.12	12.87	225	VC	CIRC	5101X	18.55	15.9	225	VC	CIRC	8302X	21.82	19.8	225	VC	CIRC
1050X	20.04	18.45	750	CP	CIRC	3953X	14.7	11.87	225	VC	CIRC	5150X	18.5		225	VC	CIRC	8303X	21.92	20.66	150	VC	CIRC
1100X	21.47	19.42	300	VC	CIRC	4001X	16.49	12.34	300	VC	CIRC	5200X	17.66		225	VC	CIRC	830DX	21.79	21.79	225	VC	CIRC
1101X	21.82	18.91	300	VC	CIRC	4003X	17.209	12.579	UNK	UNK	CIRC	5250X	18.7		225	VC	CIRC	8350X	22.89	21.13	450	CP	CIRC
1102X	23.86	22.22	225	VC	CIRC	4003Y	17.209		UNK	UNK	CIRC	5300X	17.61		300	VC	CIRC	8351X	23.97	21.93	450	CP	CIRC
1150X	21.49	19.09	750	CP	CIRC	4004X	16.93		150	VC	CIRC	5301X	16.99	14.7	300	VC	CIRC	8400X	21.77	19.3	225	VC	CIRC
1151X	21.74	19.49	750	CP	CIRC	4006X	16.41	12.8	900	CP	CIRC	5400X	21.59	18.56	225	VC	CIRC	8401X	21.79	19.72	225	VC	CIRC
1250X	25.62	23.96	225	VC	CIRC	4007X	17.36	12.56	UNK	UNK	CIRC	540DX			225	VC	CIRC	8900X	16.78	15.04	225	VC	CIRC
1251X	24.96	23.53	225	VC	CIRC	4008X			UNK	UNK	CIRC	5450X	20.45	18.37	450	CP	CIRC	8901X			UNK	UNK	CIRC
1252X	24.29	22.69	375	CP	CIRC	4009X	17.12	12.55	300	VC	CIRC	5900X	16.56	13.11	225	VC	CIRC	8910X			UNK	UNK	CIRC
1253X	24.89	23.16	225	VC	CIRC	4011X	16.63	12.38	300	VC	CIRC	5901X	15.12	12.7	225	VC	CIRC	8950X	17.39	15.68	225	VC	CIRC
1254X	23.93	22.13	600	CP	CIRC	4014X	16.921	12.821	300	UNK	CIRC	5902X	15.64	13.61	225	VC	CIRC	8951X	16.8	15.35	300	VC	CIRC
1255X	24.09	22.69	225	VC	CIRC	4014Y	16.921		150	UNK	CIRC	5903X	15.53	13.63	225	VC	CIRC	8952X	17.14	15.93	300	CP	CIRC
1350X	27.38	25.66	300	VC	CIRC	4015X	17.2	12.568	300	UNK	CIRC	5950X			UNK	UNK	CIRC	8953X	16.6	15.4	300	VC	CIRC
1351X	24.6	23.14	225	VC	CIRC	4016X			150	UNK	CIRC	5951X			225	PE	CIRC	9000X	18.82	16.87	225	VC	CIRC
1352X			225	UNK	CIRC	4017X	17.39	12.49	300	VC	CIRC	6000X	17.3	15.83	150	PF	CIRC	9002X	19.76	18.03	225	VC	CIRC
1400X	29.21	27.54	225	VC	CIRC	4018X	16.88		150	VC	CIRC	6100X	18.77	17.02	225	VC	CIRC	9003X	18.15	16.4	225	VC	CIRC
1401X	28.71	26.69	225	VC	CIRC	4019X	17.24		150	VC	CIRC	6150X	18.79	17.22	225	VC	CIRC	900DX	19.9	19.9	225	VC	CIRC
1403X			225	VC	CIRC	4020X	17.36	12.48	300	VC	CIRC	6200X	19.22	16.39	225	VC	CIRC	9050X	18.46	16.66	225	VC	CIRC
140DX			225	VC	CIRC	4050X	15.91		225	VC	CIRC	6201X	19	15.85	225	VC	CIRC	9051X	18.2	16.9	300	VC	CIRC
1450X	29.32	27.72	225	VC	CIRC	4051X	17.42		225	VC	CIRC	6202X	19.75	18.16	225	VC	CIRC	9300X	25.19	23.57	225	VC	CIRC
1451X	28.62	27.1	225	VC	CIRC	4052X	16.72	13.69	225	VC	CIRC	6203X	17.05	16.14	225	VC	CIRC	9350X	24.98	23.42	300	VC	CIRC
1452X	28.4	27.37	150	VC	CIRC	4053X	17.22		225	VC	CIRC	6250X	18.91	16.8	225	VC	CIRC	9451X	22.9	21.35	300	VC	CIRC
1900X	18.63		300	VC	CIRC	4054X	16.36	13.55	225	VC	CIRC	6251X	18.27	16.38	450	CP	CIRC	9900X	17.99	16.35	225	VC	CIRC
2050X	21.95	19.91	450	CP	CIRC	4055X			UNK	UNK	CIRC	6252X	19.74	18.14	450	CP	CIRC	9901X	18.39		225	VC	CIRC
2051X	22.31	20.26	450	CP	CIRC	4056X	17.4		225	VC	CIRC	6253X	19.65	18.22	225	VC	CIRC	9902X	18.6		225	VC	CIRC
2100X	22.09	20.39	225	VC	CIRC	4057X	17.05		600	CP	CIRC	6254X	19.61	18.02	225	VC	CIRC	9903X	18	16.16	225	VC	CIRC
2101X	23.15	20.97	300	VC	CIRC	4101X			225	UNK	CIRC	6300X	16.52	14.54	300	VC	CIRC	9950X	17.97	16.07	225	VC	CIRC
2150X	22.86	20.45	750	CP	CIRC	4102X	16.45	14.2	225	VC	CIRC	6301X	16.69	14.59	300	VC	CIRC	9951X	18.16	17.06	300	CP	CIRC
2200X	25.17	21.63	225	VC	CIRC	4150X	16.52	14.87	300	VC	CIRC	6350X	15.77	13.97	450	CP	CIRC	9952X	17.7	16.73	300	CP	CIRC
2201X	25.39	22.77	300	VC	CIRC	4151X	17.27	15.47	300	VC	CIRC	6401X	16.42	14.75	300	VC	CIRC	9953X	17.48	16.18	300	CP	CIRC
220DX			225	VC	CIRC	4152X	17.98	15.99	225	VC	CIRC	640DX	19.85	18.05	225	VC	CIRC						
2250X	25.27	22.27	675	CP	CIRC	4201X	16.2		300	VC	CIRC	6950X	16.48	14.62	450	CP	CIRC						
2251X	24.26	21.34	750	CP	CIRC	4202X	16.36		300	VC	CIRC	6951X	15.53	14.45	450	CP	CIRC						
2252X	24.02	21.9	225	VC	CIRC	4203X	17.14	14.75	225	VC	CIRC	7000X	17.01	15.33	225	VC	CIRC						
2300X	24.44	22.09	300	VC	CIRC	4301X	16.44	13.06	300	VC	CIRC	7001X	17.27	15.57	225	VC	CIRC						
2302X			100	VC	CIRC	4302X	17.26	15.67	150	VC	CIRC	7002X	17.24	15.93	225	VC	CIRC						
2303X			100	VC	CIRC	4350X	17.25	16.09	225	VC	CIRC	7003X	18.27	16	225	VC	CIRC						
2304X			100	VC	CIRC	4401X	20.74		225	VC	CIRC	7005X			UNK	VC	CIRC						
2305X			100	VC	CIRC	4405X			UNK	UNK	CIRC	7050Y	18.16	15.89	225	VC	CIRC						
2350X	25.69	23.51	675	CP	CIRC	4406X			UNK	UNK	CIRC	7051X	17	15.25	225	VC	CIRC						
2351X	26.89	24.69	225	VC	CIRC	4407X			UNK	UNK	CIRC	7052X	17	15.33	225	VC	CIRC						
2400X	26.55	24.1	300	VC	CIRC	4901X	14.98																



BASED UPON THE ORDNANCE SURVEY MAP WITH THE SANCTION
OF THE CONTROLLER OF H.M. STATIONERY OFFICE CROWN
COPYRIGHT RESERVED.

This copy has been made by or with the authority of
SOUTHERN ELECTRIC plc. pursuant to section 47 of
the Copyright Designs and Patents Act 1988 (The Act).
Unless the Act provides a relevant exception to copyright,
the copy must not be copied without prior permission of the
copyright owner.

Scottish and Southern Energy plc. Registered in Scotland
No. 117119. Registered Office: Inverlismood House
200 Dunkeld Road Perth PH1 3AQ

PORTSMOUTH

023-9262-4200

H.V. MAINS RECORD

Scale 1:1250

Date: 14/08/2015

Grid Ref:SU71820819

aeeler

SOI

Plot 1 of 2

UNCONTROLLED COPY

Subject to Revision without Notice

Template: SIAS NRSWA BW A4 plot3

NORMAL DEPTH TO THE TOP OF THE
CABLE WHEN LAID.

	services	lv	lv	ehv
FOOTPATH	0.40m	0.45m	0.60m	0.75m
ROAD CROSSING	0.65m	0.60m	0.75m	0.90m

l.v./services -up to 1000V

h.v. -over 1000V to 11,000V

e.h.v. -22,000V and 132,000V

WARNING

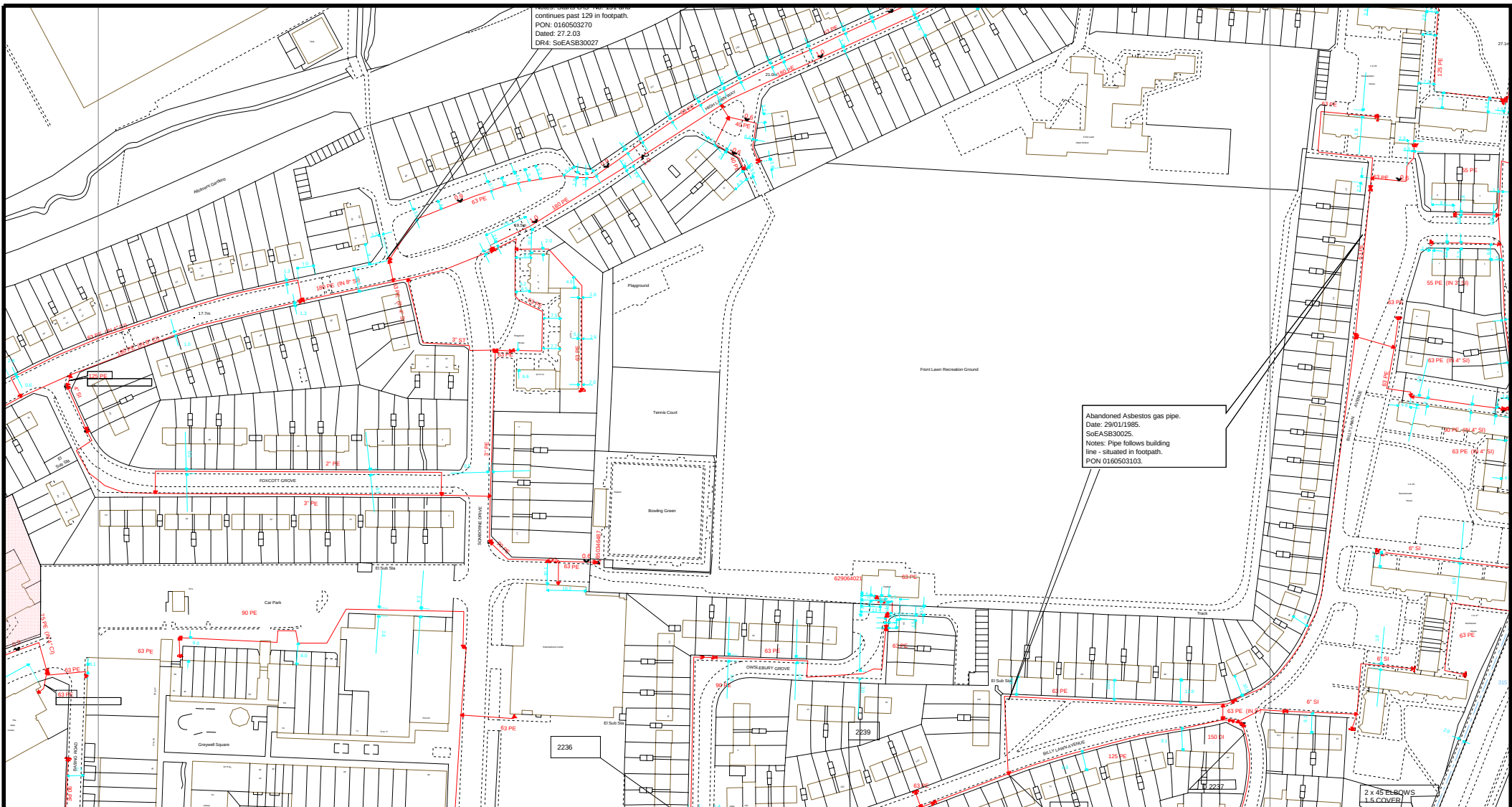
There may have been subsequent alterations to
the surface levels. Trial holes must be taken to
determine positions and depths of cables. HS (G)
47 Booklet from the Health and Safety Executive -
Avoiding Danger from Buried Cables - should be
consulted before commencing excavation work.
(available from HMSO)

WHEN WORKING IN THE VICINITY OF OVERHEAD LINES
THE HEALTH AND SAFETY GUIDANCE NOTE GSC SHOULD
BE CONSULTED.
(AVAILABLE FROM HMSO)



This copy has been made by or with the authority of SOUTHERN ELECTRIC p.l.c. pursuant to section 47 of the Copyright Designs and Patents Act 1988 (the Act). Unless the Act provides a relevant exception to copyright, the copy must not be copied without prior permission of the copyright owner.

WHEN WORKING IN THE VICINITY OF OVERHEAD LINES
THE HEALTH AND SAFETY GUIDANCE NOTE G56 SHOULD
BE CONSULTED.
(AVAILABLE FROM HMSO)



USER ID: SaraB

DATE: 14 Aug 2015

EXTRACT DATE: 14 Jul 2015

MAP REF: SU7108SE

CENTRE: 471781, 108182

SCALE: 1:2,313

LP Mains

MP Mains

IP Mains

LHP Mains

NHP Mains

Valve



Depth of
Cover



Syphon



Diameter
Change



Material
Change



This plan shows those pipes owned by Scotia Gas Networks plc in their role as a Licensed Gas Transporter (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regard to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Scotia Gas Networks plc or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

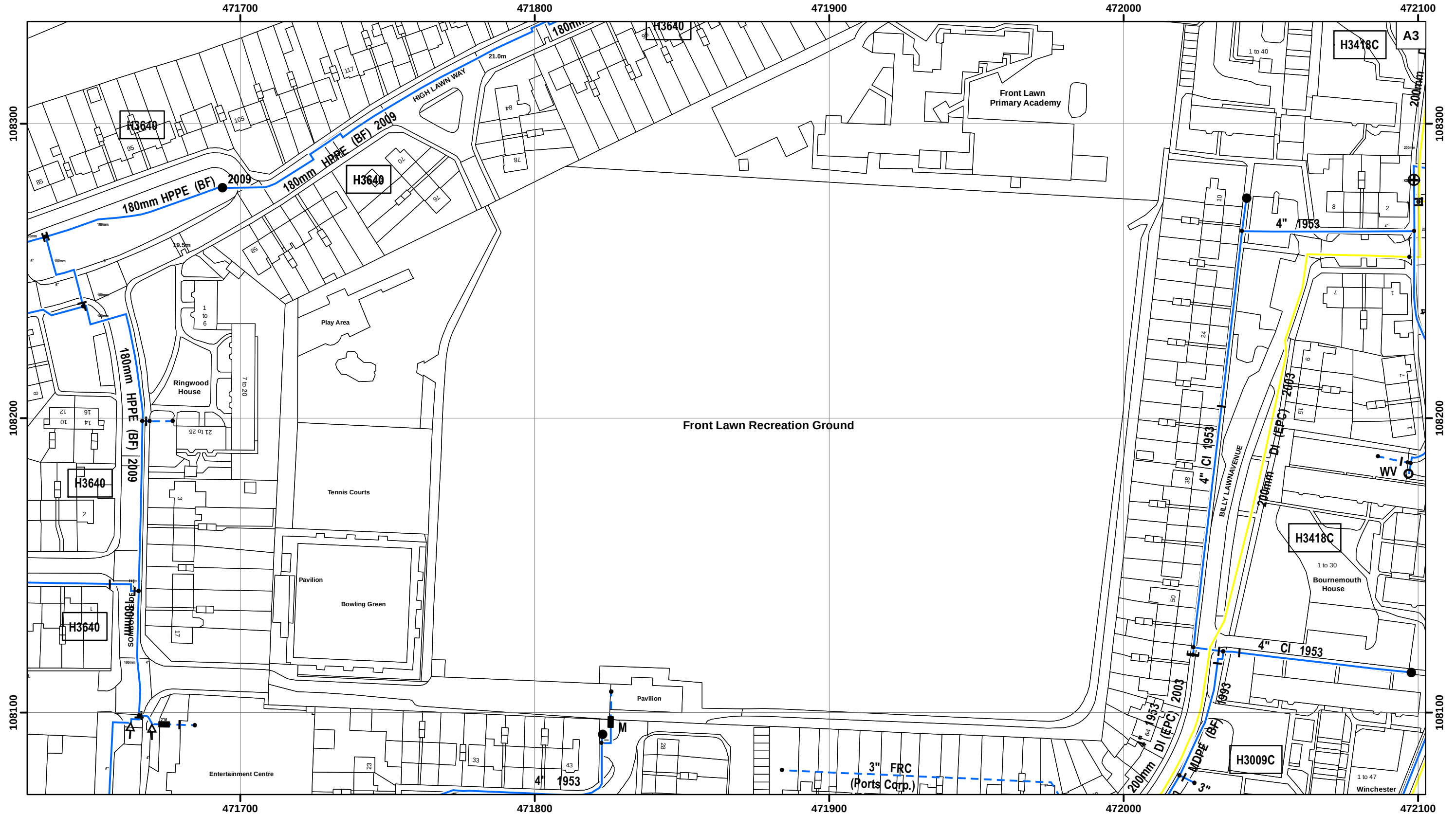
Product: UtilityMaps

Version: 1.6.6.1

Template: 'Scotia Gas Networks (A4 Landscape)'



This plan is reproduced from or based on the OS map by Scotia Gas Networks plc, with the sanction of the controller of HM Stationery Office. Crown Copyright Reserved.



	EXISTING MAIN		WASHOUT FIRE HYDRANT		COMPANY WASHOUT		FH TO BE CUT OUT UNLESS PURCHASED BY LOCAL AUTHORITY
	ABANDONED MAIN		FIRE HYDRANT		WO TO BE CUT OUT UNLESS PURCHASED BY LOCAL AUTHORITY		WOFH TO BE CUT OUT UNLESS PURCHASED BY LOCAL AUTHORITY
	PROPOSED MAIN		PROPOSED FIRE HYDRANT				



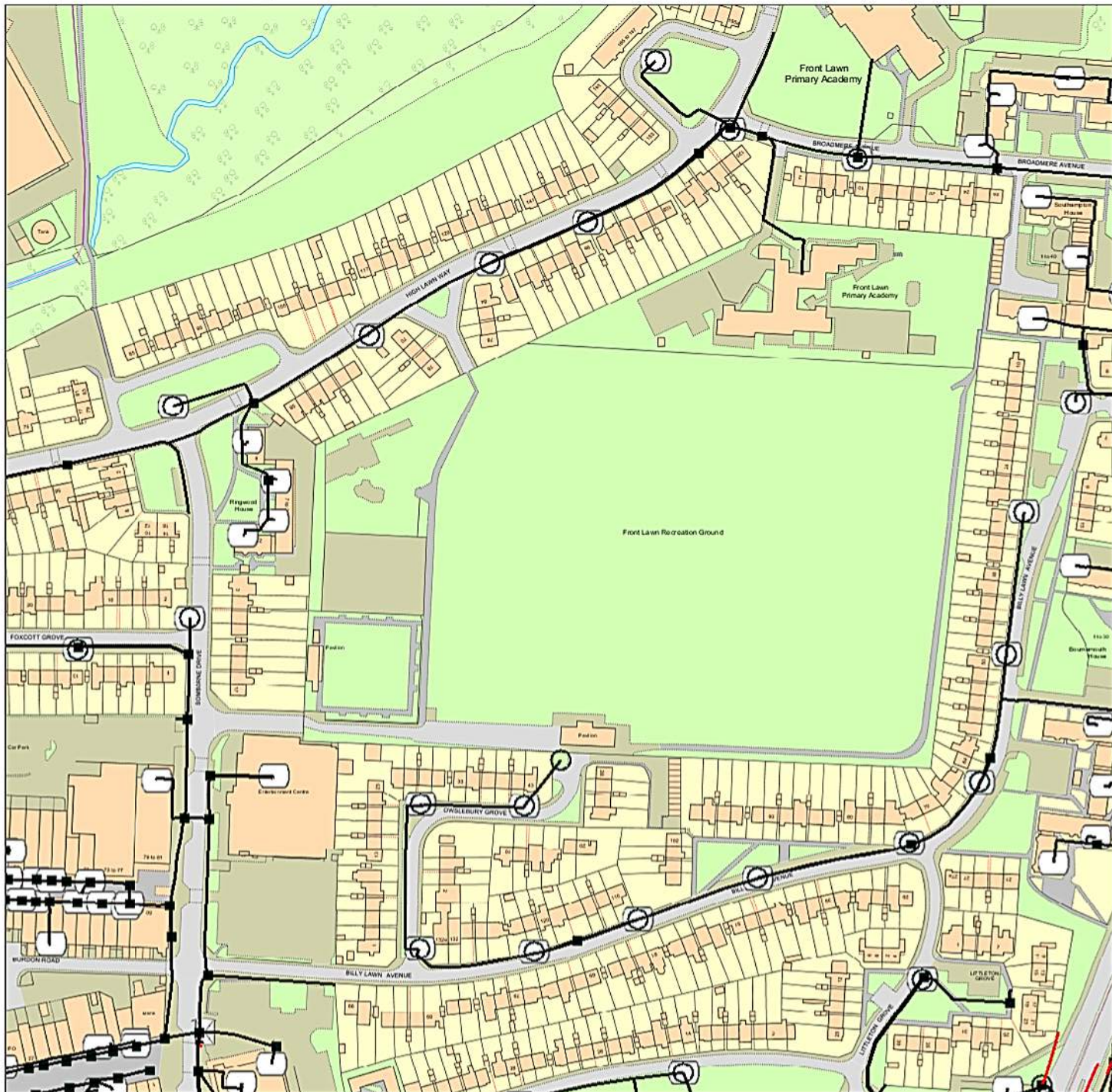
Registered Office
P.O. BOX NO. 8, West Street, Havant,
Hampshire. PO9 1LG.
Registered in England No. 2536455
Telephone: (023) 9249 9888
Fax: (023) 9245 3632
Website: www.portsmouthwater.co.uk

Reproduced by permission of Ordnance Survey on behalf of HMSO.
© Crown copyright and database right 2015. All rights reserved.
Ordnance Survey Licence Number 100018036.

The information supplied is given in good faith as a guide to locating underground apparatus. Its accuracy cannot be guaranteed, nor does it include comprehensive information about the existence or location of service pipes or cables to individual premises. The responsibility for locating and avoiding damage to apparatus on site shall be that of the person proposing to excavate in the street who shall be liable to the apparatus owner and any third party who may be affected in any way for any loss or damage caused by their failure to do so.

Drg No:
Job No:
OS Ref: SU7108SE
Scale: 1:1,250
Date: 08/09/2015

Maps by email Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy.

It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.

DIAL BEFORE YOU DIG

FOR PROFESSIONAL ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS

ADVANCE NOTICE REQUIRED
(Office hours: Monday-Friday 08.00 to 17.00)

Tel: 0800 9173993
E-mail: dbyd@openreach.co.uk
Website: www.dialbeforeyoudig.com

Reproduced from the Ordnance Survey map by BT by permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office
(C) Crown Copyright British Telecommunications plc 100028040

KEY TO BT SYMBOLS

	UNDERGROUND PLANT		POLE
	OVERHEAD PLANT		CABINET
	JOINT BOX		BURIED JOINT
	DISTRIBUTION POINT		JOINTING POST
	MANHOLE		PROPOSED U/G
	DP BOUNDARY		PROPOSED O/H
	OTHER BT BOUNDARY		PROPOSED BOX

Other proposed plant is shown using dashed lines. BT symbols not listed above may be disregarded. Existing BT plant may not be recorded. Information valid at the time of preparation.

openreach
a BT Group business

BT Ref : JYK11596Y

Map Reference : (centre) SU7182508191

Easting/Northing : (centre) 471825,108191

Issued : 14/08/2015 12:00:33

FOOTNOTE: WARNING IT IS ESSENTIAL THAT YOU CONTACT NATIONAL NETWORK HANDLING CENTRE BY EMAIL nnhc@openreach.co.uk BEFORE PROCEEDING WITH ANY WORK IN THE HATCHED AREA