

HOARE LEA

400 Longwater Avenue

Exterior Lighting Proposal Document

REP-05 | 1850-08-1602 | I-Exterior Lighting Design

March 2016



I.0

Introduction

I.I Introduction



400 Long Water Avenue, Green Park, Reading

The purpose of this document is to set out the proposed external road and footpath lighting approach for the new development situated within Green Park Reading.

This document will set out the key lighting elements which will be considered during the design development of the scheme. It will then go on to explain the guidance documents that will be referred to during the design development.

Following on from the above, the document will then go on to set out the average lux levels that will be provided for each area. Finally the document will provide examples of the typical lighting approaches that are proposed for each of the key spaces. This will mostly be functional navigational illumination and then potential for feature elements to add visual interest across the site.

I.2 Lighting Considerations



GMV Village Square



Brunel University

Safety & Orientation

The amount of lighting required for obstacle avoidance and visual orientation is minimal. For example, emergency lighting standards suggest a value of between 0.5 and 1 lux for a person, in a high stress situation, to safely negotiate safe passage. Often these low levels of illumination are provided by existing light spill and moonlight alone.

In reality the purpose of urban realm pedestrian lighting is not one of obstacle avoidance, but of human subjectivity. Research has shown that the ability to read a person's facial features in external realm environments is a key function in reducing "fear of crime".

Appropriately illuminated pedestrian areas can reduce fear of crime, which is known to encourage footfall – this in turn can increase natural and community surveillance and further deter criminal acts.

A pleasing and visually interesting exterior environment can be further enhanced by creating spaces and zones of interaction which encourage residence to utilise spaces in the evening.

I.2 Lighting Considerations



Technical Considerations

Understanding and knowledge of the potential negative impact of external realm lighting has increased dramatically in recent times. Where once it was perceived that lighting was an indispensable element within the visual contextual language of the nightscape, agendas related to energy consumption and social and environmental responsibility have made the utilisation of lighting a delicate issue.

As such a number of technical parameters of lighting have to be understood and managed within the lighting design process.

Predominantly these are:

- Energy Consumption
- Sky Glow
- Light Trespass
- Glare
- Lighting Control
- Lighting Appearance
- Environmental Impact
- Cost
- Maintenance

I.2 Lighting Considerations



Harbourside, Bristol



Palace Exchange

Light Colour

Impressions of character and impact can be expressed through the appropriate use of colour.

The visual impact of coloured light changes in relation to illumination levels, be that through daylight or artificial light sources.

By understanding the eye's sensitivity to colour one can utilise coloured light to create a strong visual impression that would have required a greater amount of energy to achieve in white light.

I.2 Lighting Considerations



Light Pollution

The general heading for the negative effects of light at night is Light Pollution but this heading actually covers four key factors. These are:

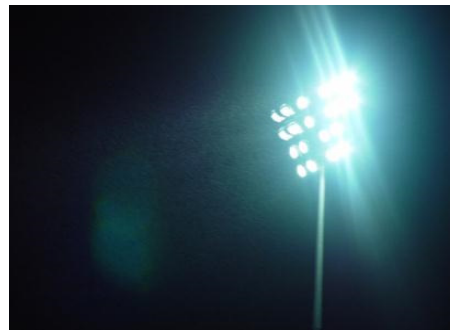
Glare: Glare occurs when the site user sees light directly from the fixture (or lamp) and contrast ratios are high.

Light Trespass/Encroachment: Poor outdoor lighting shines onto neighbourhood properties and into bedroom windows, reducing privacy and hindering sleep.

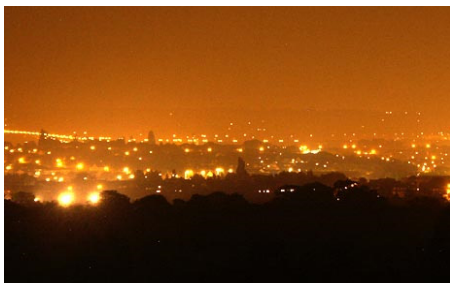
Sky Glow: A large fraction of poor lighting shines directly upwards, creating the adverse sky glow above towns and cities that washes out views of the dark night sky, taking away an important natural resource.

Energy Waste: Much outdoor lighting wastes energy because it is not well-designed with light not directed where it is required.

There is new legislation as part of the 'Clean Neighbourhoods and Environment Bill' which will cover lighting as a social nuisance, although there are many exclusions, it does start to highlight the importance of well designed external lighting as an integral part of the modern urban landscape.



Light Trespass & Encroachment



Sky Glow

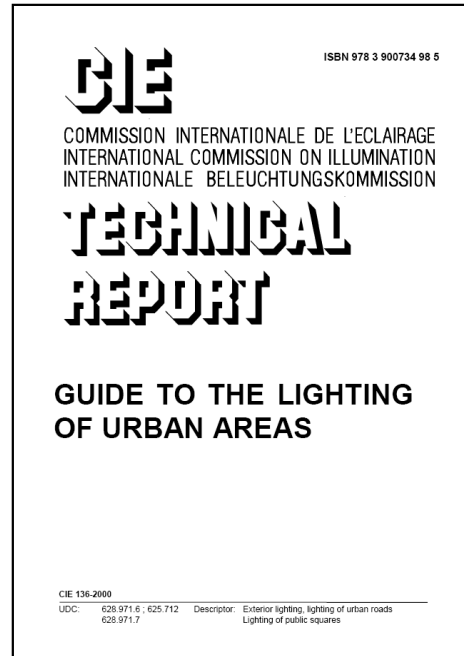
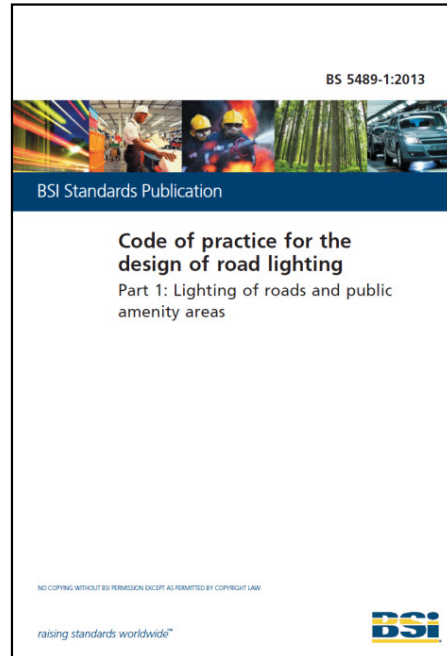
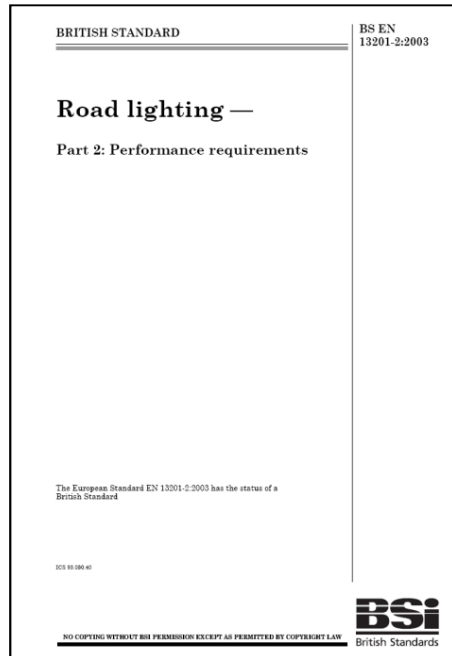


Glare

2.0

Legislation and Guidance

2.1 Legislation and Guidance



External Realm Lighting

A number of documents lay down the best practice and guidance on providing sufficient and appropriate lighting for pedestrian passage and visual interest.

These are:

- BS5489-1:2003
- BS EN13201-2:2003
- CIE136: 2000

And if appropriate:

- CIBSE Lighting Guide 6: The Outdoor Environment 1992
- CIBSE : Lighting the Environment: A guide to good urban lighting

2.1 Legislation and Guidance



Clean Neighbourhoods and Environment Act 2005

CHAPTER 16

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PART 1

CRIME AND DISORDER

1 Crime and disorder reduction strategies

2 Gating orders

PART 2

VEHICLES

Nuisance parking offences: fixed penalty notices

3 Exposing vehicles for sale on a road

4 Repairing vehicles on a road

5 Liability of directors etc

Nuisance parking offences: fixed penalty notices

6 Power to give fixed penalty notices

7 Power to require name and address

8 Use of fixed penalty receipts

9 Fixed penalty notices: supplementary

Abandoned vehicles

10 Offence of abandoning a vehicle: fixed penalty notices

11 Notice of removal

12 Disposal

13 Guidance



The Institution of Lighting Engineers

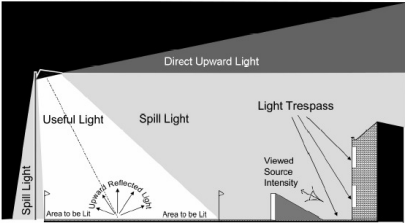
E-mail ile@ile.org.uk Website www.ile.org.uk

GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT

ALL LIVING THINGS adjust their behaviour according to natural light. Man's invention of artificial light has done much to enhance our night-time environment but, if not properly controlled, obtrusive light (commonly 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 and can be substantially reduced without detriment to the lighting task.

Sky glow, the brightening of the night sky above our towns, cities and countryside, Glare, the uncomfortable brightness of a light source when viewed against a dark background, and Light 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, waste money and electricity and result in the unnecessary emissions of greenhouse gases. Think before you light. Is it necessary? What effect will it have on others? Will it cause a nuisance? How can I minimise the problem?



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 right time scene than that required for safety and security.

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COMMISSION INTERNATIONALE DE L'ECLAIRAGE
INTERNATIONAL COMMISSION ON ILLUMINATION
INTERNATIONALE BELEUCHTUNGSKOMMISSION

TECHNICAL REPORT

GUIDE ON THE LIMITATION OF THE EFFECTS OF OBTRUSIVE LIGHT FROM OUTDOOR LIGHTING INSTALLATIONS

CIE 150:2003

UDC: 628.931 628.971

Descriptor: Artificial lighting: Design and calculation
Exterior lighting

Light “Pollution”

A number of documents lay down the best practice and guidance on reducing the visual and environmental impact of external lighting in relation to light pollution.

These are:

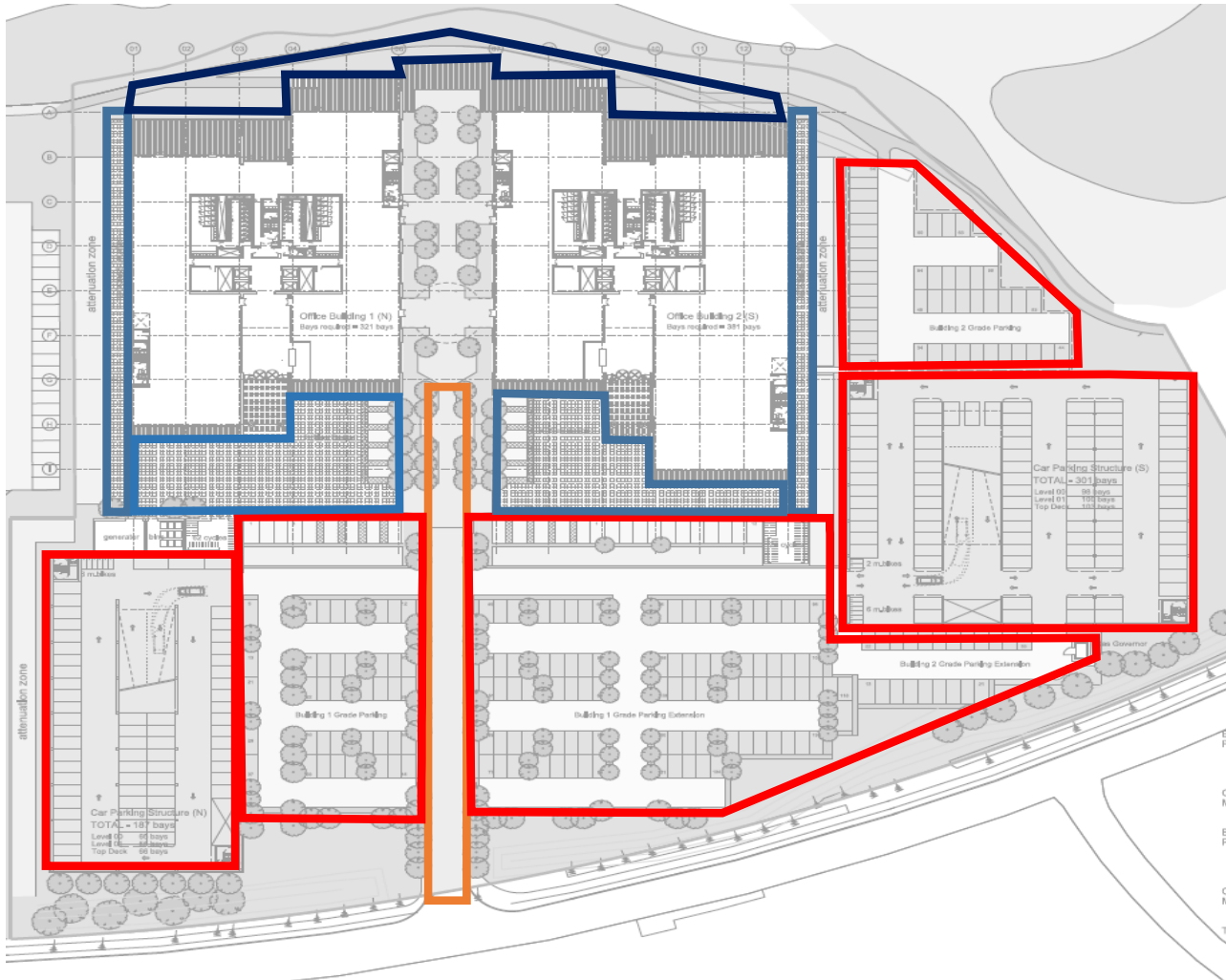
- CIE TECHNICAL REPORT - CIE 150: 2003
- ILE Guidance Notes for the Reduction of Obtrusive Light

The implementation of these standards is vital because of “The Clean Neighbourhoods and Environment Act, 2005” which makes light a statutory nuisance



3.0 Illumination Levels

3.0 Illumination Levels



Lighting Levels

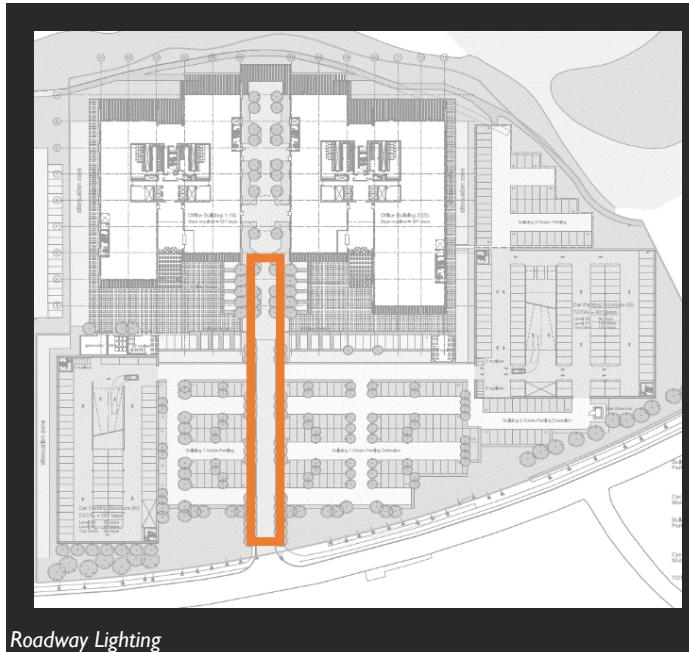
Anticipated lighting level requirements for pedestrian and vehicular routes through and around the scope area are shown.

- Entrance Road, BS5489-1:2013 Category S4
Requirements: 5 lux average, 1 lux minimum
To key routes only. (Due to proximity with car park, this road will likely be lit closer to 10lux.)
- Building Perimeter BS5489-1:2013 Category S6
Requirements: 2 lux average, 0.4 lux minimum
Any lighting provided is to be for ease of navigation only
- Car Park Open Level BS5489-1:2013 Medium Traffic
open car park and roof level of multi storey.
Requirements: 10 lux average, 0.25 uniformity.
- Building Rear/Lake side - No lighting present to ensure minimal impact on the ecology of the lake edge.



4.0 Lighting Proposals

4.1 Lighting Proposals – Roadways



Roadway Lighting

The key road route into the site is a private road so we have used the guidance illuminance levels as highlighted in chapter 3 of this document.

The main requirement for this lighting element is to allow safe navigation across the site for all road users.

To provide this general illumination it is proposed that column lights are utilised, as they can offer a good level of uniformed illumination with the minimum number of luminaires.

We propose the lighting columns do not exceed 6 metres in height to keep a more intimate 'human' scale across the site.

The adjacent image is a typical luminaire that would be proposed of this task.

The lighting levels proposed for this development would be an average illumination of 5-10lux

4.1 Lighting Proposals – Roadways



Roadway Lighting

The adjacent image is an example of a roadway illuminated with good uniformity.

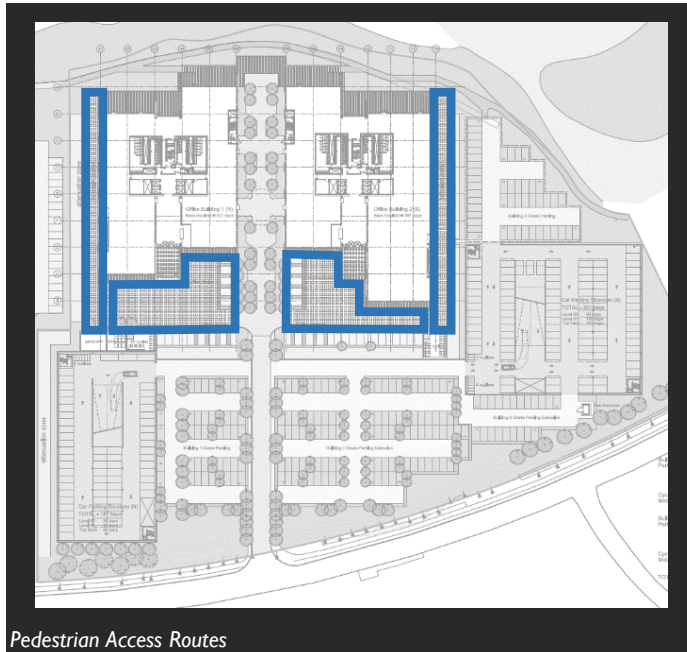
The luminaires also have high colour rendering performance allowing colours to be seen more naturally and creating a more comfortable environment.

As can be seen from the images, the LED source has a strong coverage across the range of the visible spectrum.

At night the eye sensitivity changes to what is known as the dark adapted eye which becomes more sensitive to the blue end of the spectrum, meaning we can see better under white light sources.

The benefits of improved colour rendering results in a visually improved night time environment with an enhanced feeling of safety and recognition.

4.2 Lighting Proposals – Site Perimeter



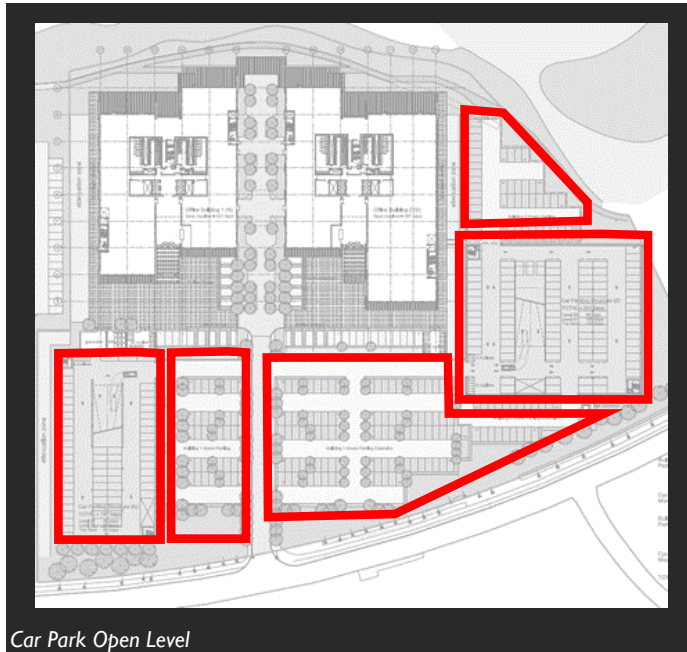
Building Perimeter

The perimeter of the site, in particular adjacent to the green belt surrounding the site will be lit to a low level of illumination. This will be in keeping with the lighting level hierarchy running across the site, emphasising the central area.

Keeping the lighting low to this area will also ensure minimal light spill will occur onto the adjoining land around the site.

The intensity for the lighting will be to provide illumination for navigation only, with the predominant use of bollards in key locations such as path junctions.

4.3 Lighting Proposals – Car Park Top Deck



Car Park - Open Level & External

The main requirement for this lighting element is to allow safe navigation for vehicles entering and leaving as well as pedestrians traveling to and from their vehicles .

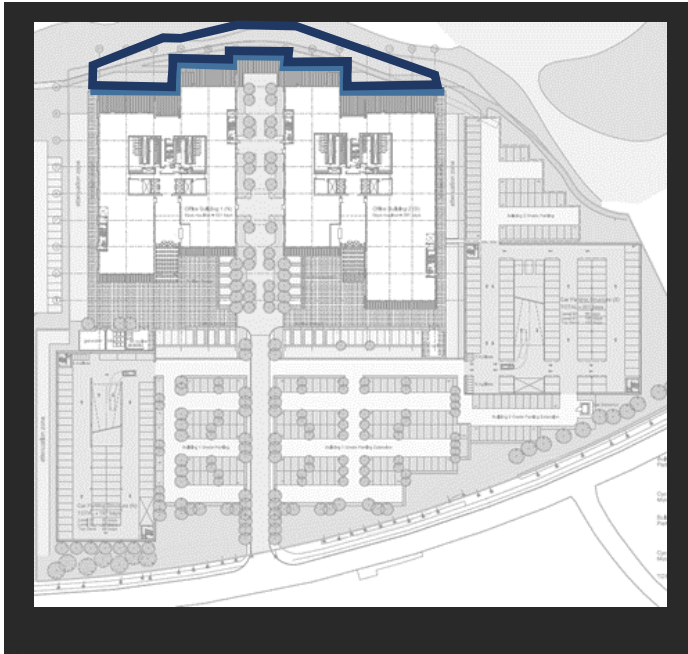
To provide this general illumination it is proposed that column lights are utilised, as they can offer a good level of uniformed illumination with the minimum number of luminaires.

We propose the lighting columns do not exceed 6 metres in height to keep a more intimate 'human' scale and prevent light spill outside the boundaries of the car park.

The adjacent image is a typical luminaire that would be proposed of this task.

The lighting levels proposed for this development would be an average illumination of 10lux, suitable for a 'medium traffic' car park.

4.4 Lighting Proposals – Building Rear/Lakeside



Rear of building – Lakeside

The green areas to the rear of this development have been identified as an ecology sensitive area due to the proximity with the lake edge and semi-natural habitats. Therefore no external lighting is being proposed.

A very low level of light will be expected close to the perimeter of the building to aid access for maintenance and emergency egress. Measures will be taken to ensure this lighting is shielded and directed downwards. Controls will be provided to ensure lighting here is used only when necessary in emergency situations.

Audit Sheet

Rev.	Description	Prepared and checked by	Reviewed by	Date
01	Initial Issue	SN	DW	11/02/16
02	Revised Issue	SN	DW	15/02/16
03	Updated Layout	SN	DW	07/03/16

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