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Mitsubishi Electric Guide to The London Plan 2021

Information Guide 72

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Mitsubishi Electric Guide to The London Plan 2021

This is an independent guide produced by Mitsubishi Electric to enhance the knowledge of its customers and provide a view of the key issues facing our industry today.

This guide accompanies a series of seminars, all of which are CPD certified.

Contents

Introduction

At over 600 pages, the 2020 London Plan[1] is a substantial document. There are 12 key sections covering Design, Social Infrastructure, Sustainability and Monitoring among others. This Guide examines some of the main areas that impact specifically on the design, delivery and operation of building services.

The London Plan is a comprehensive vision of London's objectives for its economy, environmental performance, transport and social structure. London is Europe's biggest city with a total area of 1,572 sq km and a population that is set to reach 10.8 million in 2041.

Introduction

The most recent London Plan was finalised in February 2021. It is the third entirely new plan, known as a 'Replacement Plan' (previous new plans were published in 2004 and 2011), rather than an alteration or update. This iteration will run from 2019 to 2041, with the intention of providing long-term goals.

It contains more than 1,500 updates - some small, but others with significant impact on the built environment. Key areas addressed include affordable housing, sustainability and a healthy environment for the city's inhabitants.

As London Mayor Sadiq Khan writes in the introduction: **"This London Plan is fundamentally about taking a holistic approach and utilising all the levers we have in London to shape our city for the better, built around the needs, health and wellbeing of all Londoners. It combines a purpose and a vision. But we need everyone to do their bit, including boroughs, developers, land-owners, existing residents, architects and, of course, the Government."**

This Guide examines some of the main points of the London Plan that impact specifically on the design, delivery and operation of buildings and building services in the city. The requirements of the London Plan are active now, so designers need to understand their implications for projects with immediate effect.

Good Growth - a vision for London's future

The Mayor of London has used this new Plan to set out an approach to development in the capital that he refers to as 'Good Growth'. He writes: **"What we need is growth that allows us to build thousands of genuinely affordable homes at the same time as creating a more inclusive, greener and safer city that supports the health and wellbeing of all Londoners."**

A number of Good Growth objectives are identified in the Plan:

GG1:	Building strong and inclusive communities
GG2:	Making best use of land
GG3:	Creating a healthy city
GG4:	Delivering the homes Londoners need
GG5:	Growing a good economy
GG6:	Increasing efficiency and resilience

Good Growth - a vision for London's future

Some of these Good Growth policies will impact on the design and operation of homes and non-dwellings in the city. For example, *Creating a health city* includes improving London's air quality; and *Growing a good economy* involves the transition to a circular economy.

GG6 Increasing efficiency and resilience has a number of significant policies which includes ensuring that buildings in the capital make efficient use of energy and water, while reducing the impact of natural hazards caused by global warming such as flooding and heatwaves.

One important point to note is that throughout the London Plan, there is reference to 'moving towards a zero carbon city by 2050.' It is noted that where the term 'zero carbon' is used this refers to 'net-zero', and is defined in the Glossary as 'activity that causes no net release of carbon dioxide and other greenhouse gas emissions into the atmosphere'. The term 'carbon' is used in the Plan as a term to include all types of greenhouse gas. The city's carbon accounting is measured in CO_2 equivalent.

The London Plan does not operate in isolation from national legislation relating to the planning or design of buildings. So updates to Part L and Part F of the Building Regulations, and other legislation such as the Future Homes Standard, will affect buildings in the capital. However, for some types of project, the London Plan sets higher targets than required by legislation, so it is important to bear this in mind when considering projects in the capital.

Carbon from construction to demolition - being lean, clean, green and seen

In previous versions of the London Plan, a three point energy hierarchy pointed the way to sustainable development: Be Lean, Be Clean, Be Green. In other words, developments should use less energy; ensure that energy is supplied efficiently; and use renewable energy where possible.

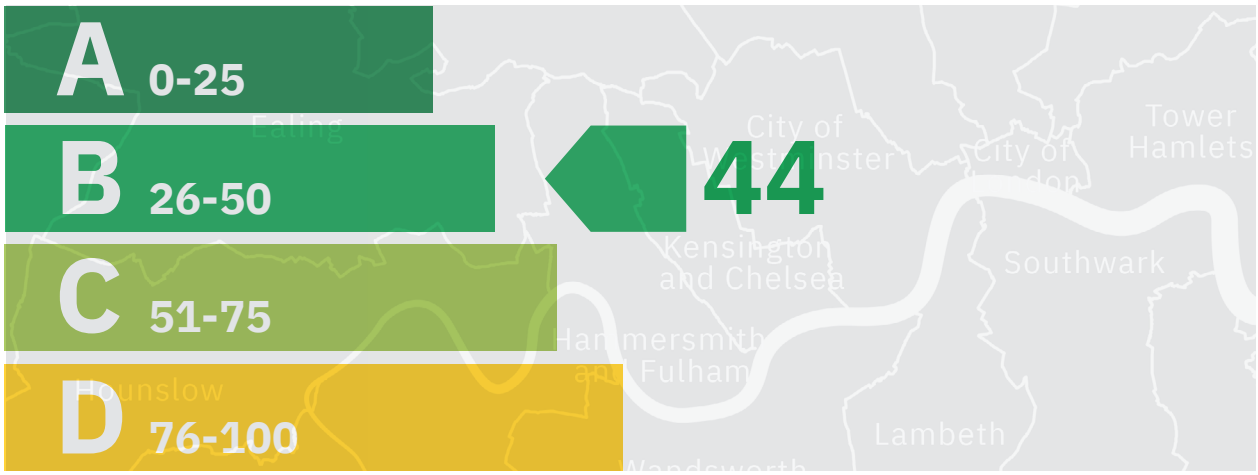
In the new London Plan, there is now a fourth requirement: Be Seen (Figure 9.2 in the Plan). The Plan acknowledges that the shift to a zero carbon city needs to be supported by clear monitoring and feedback on energy use and emissions. This ensures that planning commitments are being delivered, and avoids the common problem of buildings that perform sustainably on paper but not in delivery.

The use of Display Energy Certificates (DECs) will be required on 'all major developments'. These are defined as projects where 10 or more dwellings are to be provided (or where the site area is 0.5 hectares or more); and for non-dwellings over 1,000m^2 (or the site area is 1 hectare or more).

In addition to the requirement for a DEC, major projects will have to provide energy monitoring data for five years to a GLA online portal. This is so that the Authority can identify good practice and report on the overall operational performance of new developments in London.

This long-term approach to monitoring buildings is reflected in the Plan's emphasis on a whole life-cycle approach to monitoring carbon emissions. As the document states: "Operational carbon emissions will make up a declining proportion of a development's whole life-cycle carbon emissions as operational carbon emissions more stringent."

With this in mind, whole life-cycle carbon emission assessments are required for development proposals referable to the Mayor. An assessment will cover carbon emissions resulting from the construction and use of a building over its entire life, including demolition and disposal. Guidance on the process for producing these assessments is due to be published in Summer 2021.



Improving air quality

Poor air quality is a pressing issue for cities around the world. Sadiq Khan labelled London's air 'filthy, toxic'. Poor air quality is increasingly linked to premature deaths and long-term health issues such as heart conditions, dementia and asthma.

The London Plan therefore targets improved air quality as a significant objective. The Plan requires that new developments in the city do not 'lead to a further deterioration of existing poor air quality.' Development proposals must be (as a minimum) 'air quality neutral'.

Pollutants from buildings themselves must be reduced. New buildings in an area with an existing heat network, for example, should first be linked to the existing network (if possible) to reduce emissions from energy centres.

Also, if the plans show that ultra-low NOx boilers are assumed, then planning requires provision of the details of the installed plant prior to building occupation. Post emissions tests should also be required to ensure the modelled parameters are achieved.

Sustainable development - targets for homes and non-dwellings

London's homes and workplaces are responsible for 78% of its greenhouse gas emissions. With this in mind, the Plan sets out ambitious targets on carbon for all types of building

Building regulations are regarded as a 'baseline' for energy and carbon performance. Major development proposals must now include a detailed 'energy strategy', based around the energy hierarchy, to show how the project will achieve its targets.

The new London Plan requires that major development should be 'net zero-carbon'. This requires projects to reduce greenhouse gas emissions in operation as well as minimising annual and peak energy demand by following the "Be Lean, Be Clean, Be Green, Be Seen" hierarchy.

Credits gained as part of the Building Research Establishment Environmental Assessment Method (BREEAM) will be accepted as demonstrating that energy efficiency targets have been met. The London Plan encourages the boroughs to include BREEAM targets in their plans where appropriate.

The London Plan requires a minimum on-site carbon emissions reduction of at least 35% beyond current Part L (2013) requirements (see section on upcoming changes). For homes, at least 10% of that must be achieved with energy efficiency measures; and for non-dwellings 15%.

If a project 'clearly' demonstrates that it cannot achieve these targets, then it has two options, which must be agreed with the borough. Either:

1. Through a cash-in-lieu contribution to the borough's carbon offset fund; or

2. By offsetting the carbon off-site, but this must be via a provable scheme with certain delivery.

Sustainable development - targets for homes and non-dwellings

As part of the London Plan, boroughs are required to establish carbon offset funds which must be ring-fenced or projects that deliver carbon reductions. Funds will be monitored with annual reports.

The London Plan suggests (Section 9.2.8) that boroughs should set a price for offsetting carbon through a nationally-recognised mechanism or with **"a price based on the cost of offsetting carbon across the borough". The Plan further states that the "nationally-recognised, non-traded price of £95/tonne"** would be reasonable.

The Plan requires project proposals to include details of how a site will be future-proofed to achieve zero carbon on-site emissions by 2050. So, even if it is possible to demonstrate that a site cannot immediately achieve net-zero, designers must take a long-term approach to the development with that goal in mind.

One important point made in the new London Plan is about carbon emission factors in the Building Regulations. These are considered "outdated" and likely to cause "uncertainty" (Section 9.2.6). Interim guidance has been published in the Mayor's Energy Planning Guidance[2] on the use of appropriate emissions factors. This will be updated in line with Building Regulations to help provide certainty to developers on how these policies are implemented.

New dwellings and business premises - meeting growing demand

One of the main challenges that London faces is providing more affordable homes, and this is one of the key issues addressed in the London Plan.

The London Plan sets targets for new home development for all of its boroughs, and focuses on what it terms 'Opportunity Areas'. These are described in the Plan as areas of the city that have the development capacity for new housing, commercial development and infrastructure. Opportunity Areas contain the capacity for at least 5,000 net additional jobs or 2,500 net additional homes, or a combination of the two.

Under the 2021 London Plan, boroughs must identify their Opportunity Areas and ensure that they "maximise the delivery of affordable housing and create mixed and inclusive communities."

Alongside any planning for new homes and business premises, the boroughs must also develop energy masterplans, with the aim of identifying opportunities to use sustainable technologies such as energy centres and low or ambient temperature heat networks

The London Plan includes a city map of Heat Network Priority Areas (Figure 9.3 in the Plan). This shows a significant area of the city has the potential for harnessing the benefits of heat network technology.

Cooling and heating in the city - new approaches

London faces a number of environmental challenges which are becoming more pressing. One of these is the rising average temperatures experienced in the UK. The impact on London of hotter summers is more noticeable as the heat island effect causes inner city temperatures to be several degrees higher than in the home counties, for example.

As the Plan states: “These environmental threats are real and present, and London must be prepared for them. London’s homes and infrastructure must be protected against the likelihood of heatwaves.”

The Plan requires that design for new buildings mitigates against overheating and that passive measures such as cross-ventilation are available to occupants. Use of CIBSE’s dynamic overheating modelling is recommended. Over-reliance on mechanical and active cooling methods is to be avoided, and the Plan includes a ‘cooling hierarchy’:

1	**Reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure**
2	**Minimise internal heat generation through efficient design**
3	**Manage the heat within a building through exposed internal thermal mass and high ceilings**
4	**Provide passive ventilation**
5	**Provide mechanical ventilation**
6	**Provide active cooling systems**

Cooling and heating in the city - new approaches

CIBSE TM59 (domestic developments) and TM52 (non-domestic) are recommended as sources of guidance on assessing and mitigating overheating risk in new domestic and non-domestic developments.

The Plan concedes that use of passive ventilation must be weighed against the problem of air quality in the city and used appropriately. And if active cooling systems are unavoidable, then they should be designed to use the waste heat that they produce.

Heating continues to be one of the UK's largest sources of emissions and London is no exception to this. **Natural gas used for space and water heating accounts for 37% of London's greenhouse gas emissions - and 22% of its NOx emissions.** The UK's national switch towards a clean electric economy based on generation from renewables is also having an effect on how the capital sees its heating future.

The Mayor recognises that in order to achieve net zero carbon, the focus must be on improving existing building stock, particularly reducing the reliance on fossil fuel heating systems. This is not only being driven by low carbon goals. NOx emissions from existing gas boilers contribute to London's poor air quality, particularly affecting those on lowest incomes, the elderly and the young.

Use of district heating has been growing in London, and the new Plan continues to encourage this technology for homes and non-dwellings, particularly in its Heat Network Priority Areas. Here, use of communal low-temperature heating systems are encouraged.

The hierarchy for use of communal heating systems focuses on the source of heat:

1	They should first connect to local existing or planned heat networks
2	Use zero-emission or local secondary sources, in conjunction with a heat pump if required
3	Use low-emissions combined heat and power (CHP) - but only where there is a case for CHP to deliver an area-wide heat network and meet the development's electrical demand
4	Use ultra-low NOx boilers

CHP is now regarded as a less desirable heating technology than it has been in the past. This is due to the declining savings from gas engine CHP systems, and increasing evidence of adverse effects on air quality. However, as the Plan points out, many of London's existing heat networks are based on CHP systems.

Existing CHP-based networks will need to produce decarbonisation plans under this new Plan, including the identification of low and zero-carbon heat sources for the future with the goal of being zero carbon by 2050. The mayor intends to offer support to boroughs and network operators to help them achieve this.

Overall, the switch to electric heating is seen important for achieving a low-carbon city, with heat pumps regarded as an important technology. Direct electric heating is regarded as less desirable due to its lower energy efficiencies. **And the UK government has already committed to an end to gas boilers in homes from 2025, which is a rule that will apply in London**.

Cooling and heating in the city - new approaches

A 2020 report from the Carbon Trust[3], commissioned by the Mayor to inform the London Plan, states that: "London's carbon targets cannot be met unless there is a rapid transition to low carbon solutions such as heat pumps and low carbon district heating." This means not only applying heat pumps in new buildings, but also retrofitting them into existing homes and non-dwellings.

The Trust points out that due to their high efficiency, and the ongoing rapid decarbonisation of grid electricity, heat pumps have the potential to deliver **CO_2 savings of 60% to 70% compared to conventional electric heating; and 55% to 65% compared to an A-rated gas boiler**. And as the grid decarbonises, the Carbon Trust expects savings delivered by heat pumps are expected to increase towards 90% to 100% emissions reduction by 2050.

The GLA had already researched the impact of heat pump installations in its 2018 report Zero carbon London: A 1.5ºC compatible plan 4. The publication points to a goal of **120,000 heat pump installations** a year in London by the 2030s.

While supporting the use of heat pumps as a primary technology choice for decarbonising heat in existing London buildings, the Carbon Trust points out that other support is needed. This includes improving the thermal efficiency of existing buildings with government financial support.

The Trust also recommends an early focus on retrofitting heat pumps into building types 'where there is already a strong financial case'. This would include buildings which are already electrically heating, or those with a high cooling demand and aging communal and district heating systems.

The London Plan in context

As already stated, the London Plan operates alongside national legislation that affects the design and operation of buildings. In 2020 and 2021 there have been some important developments, driven by the UK's commitment to net zero carbon emissions by 2050.

The Ten Point Plan for a Green Industrial Revolution

The UK government set out its roadmap for achieving the national net zero goal. The Plan covers a range of issues from transport to finance and technology. Greener buildings are also on the agenda, with a focus on increased standards for homes and non-domestic buildings.

The Plan also aims for **600,000 heat pump installations per year by 2028**, supported by a number of new funds and grants. There will also be grants to improve the energy efficiency standards of new homes.

Future Homes Standard

In February 2021, the government announced, 'rigorous new targets for a green building revolution'. The Future Homes Standard will require all new homes to have low carbon heating (i.e. no use of gas boilers) and to be 'zero carbon ready'. This means they will produce **75% to 80% lower carbon emissions** compared to homes built to current Part L of the Building Regulations. And homes built from 2021 will be expected to produce **31% lower carbon emissions**.

Government has also announced a consultation on higher performance targets for non-domestic buildings which will mean they will need to be zero carbon ready by 2025. As of February 2021, government has begun a consultation on Part L and Part F of the Building Regulations with a view to setting new standards on energy use and ventilation. That consultation closes in April 2021.

The outcome of these consultations will impact the London Plan, because of the requirement for on-site carbon emissions reduction of at least 35% against Building Regulations.

Government had previously stated its intention to prevent local authorities setting energy efficiency requirements for new homes that go beyond national legislation. However, in its February 2021 response to consultation on the Future Homes Standard 5 it states: "To offer some certainty in the immediate term, we will not amend the Planning and Energy Act 2008 which means local authorities will retain powers to set local energy efficiency standards for new homes."

Conclusions

In conclusion, this new London Plan aims to change the pace at which the UK's capital city embraces a low-carbon future. There is a strong focus on environmental and energy issues, with goals and plans being put in place to deliver better outcomes for the environment and the people who live and work in London.

The requirements for net-zero projects are now in force, which means that projects need to start meeting these requirements with immediate effect. The Plan itself is highly detailed, and developers working in the city have a range of ambitious targets to reach. There is also now a clear financial cost for not achieving carbon goals, with carbon offset funds being established by all boroughs.

But simply paying to offset carbon is not the answer it may appear to be. Major projects will be monitored for several years after completion, and each must also have a plan in place to reach zero carbon by 2050. Better to design in the use of sustainable, energy efficient technologies from the start.

As Sadiq Khan states in the introduction to the Plan: **"Unlike previous versions of the London Plan, which have often read as sweeping statements of ambition rather than concrete plans for action, this document places a specific focus on tangible policies and planning issues and provides greater clarity over how the plan will be implemented and where in London major development and infrastructure should be delivered."**

References

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2. Mayor's Energy Planning Guidance

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https://assets.publishing.service.gov.uk/government/up-loads/system/uploads/attachment_data/file/956094/Government_response_to_Future_Homes_Standard_consultation.pdf

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MITSUBISHI ELECTRIC
Changes for the Better

Telephone: **01707 282880**

email: **livingenvironmentalsystems@meuk.mee.com**
web: **les.mitsubishielectric.co.uk**

@meuk_les
@green_gateway
Mitsubishi Electric Living Environmental Systems UK
Mitsubishi Electric Cooling and Heating UK
mitsubishielectricuk_les
mitsubishielectric2
BLOG thehub.mitsubishielectric.co.uk

UNITED KINGDOM Mitsubishi Electric Europe Living Environment Systems Division
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, England
General Enquiries Telephone: 01707 282880 Fax: 01707 278881

IRELAND Mitsubishi Electric Europe Westgate Business Park, Ballymount, Dublin 24, Ireland
Telephone: Dublin (01) 419 8800 Fax: Dublin (01) 419 8890 International code: (003531)

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