



THE KENSINGTON SOCIETY

WINTER NEWSLETTER 2021

The net zero challenges

How to replace 26 million gas boilers

How to insulate 16 million homes

How to decarbonise land transports

How to decarbonise aeroplanes

How to decarbonise ships

What is the council doing?

pages 12-27

The chairman's report

pages 2-3

Planning news

pages 4-10

The North Kensington towers

page 11

The chairman's report

There never seems the right time to write the chairman's report for either the annual or the newsletter. There is always some major planning application which is just about to be determined or we are in the middle of a consultation or the government has yet again changed some major aspect of planning policies without consultation. So much has happened since we reported in the last annual and at the 2021 AGM. Then in many ways nothing has happened.

The government's threatened changes in their much-heralded white paper remains in the inbox of the new housing secretary, Michael Gove. We can only hope - with the benefit of hindsight and new eyes and all the work we and others put into opposing the aggressive and questionably legality of the changes - that they now will never see the light of day. There is the question, though, how such absurd policies were ever contemplated.

RBKC planning

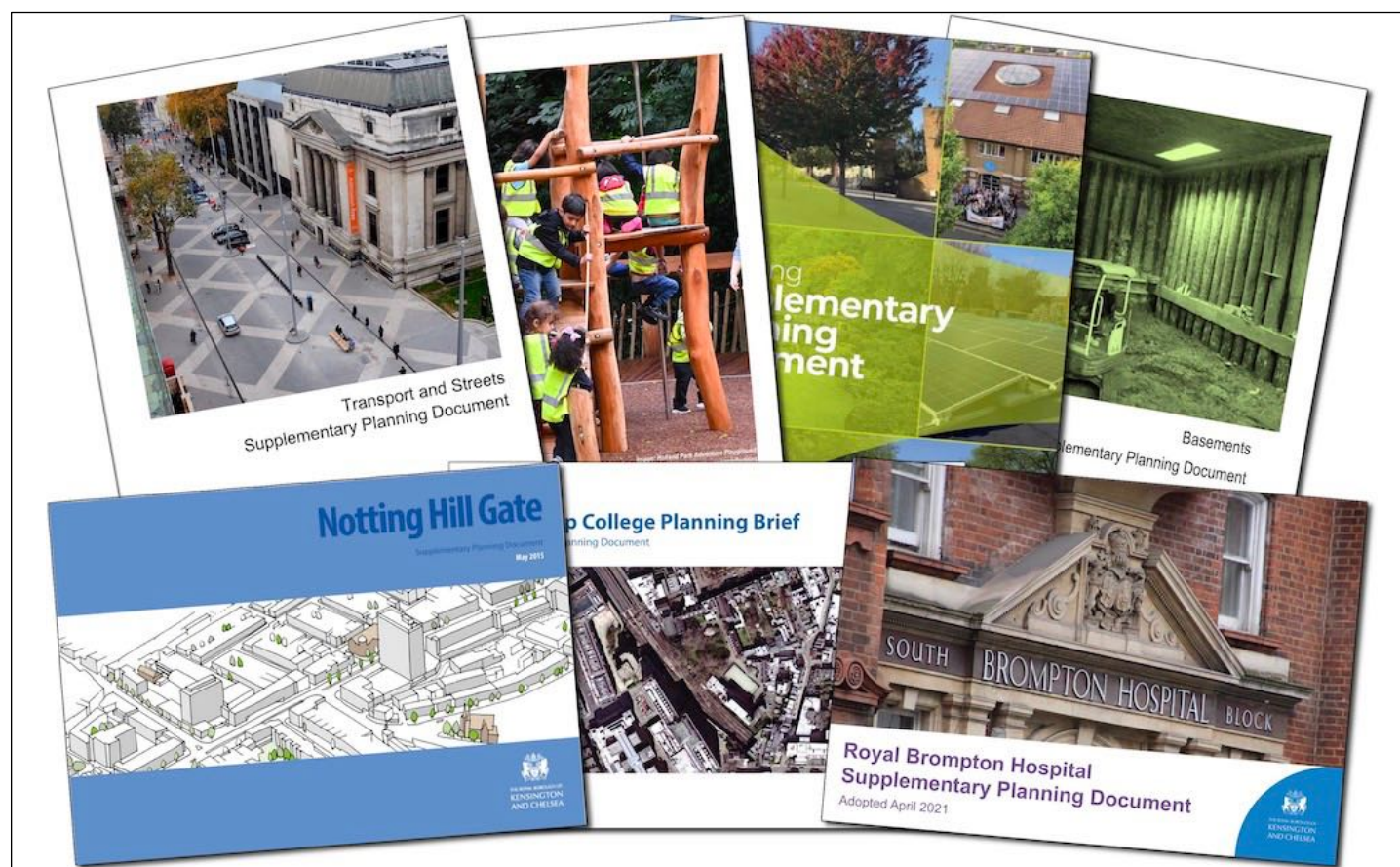
The council's planning department organised a consultation exercise on what should be in the proposed new local plan – the document that sets out the policies that the council will follow in deciding planning applications. We are now awaiting a comprehensive new draft. Our current local plan was produced in 2010. There were some minor updates in 2019, mainly to the sections on housing following the Grenfell disaster. It is now in need of a much wider rewrite, to take into account the many changes over the last fourteen years, especially as regards the climate crisis.

Supplementary planning documents (SPDs) do not have the same weight and legal status as the local plan, but add context to it. They are, as the tin says, "council guidelines". Some cover areas of general policy; others set out what the

council would like to see by way of development in particular areas. The latter have often been flawed and the latest one produced by the council - the Kensal Canalside opportunity area SPD - is no exception. When we were consulted on it, we opposed many of the initial proposals, but the final version is still seriously flawed as regards scale and housing density.

The council has also recently issued a "Greening" SPD, a monolith of 140 pages. We commented at length on the draft. What finally emerged is an extremely technical document mainly concerned with major new construction schemes where it is possible to build in environmentally friendly features as part of the construction. We made the point to the council that most of the borough consists of Victorian housing where it is much more difficult to introduce features like Scandinavian-style insulation and ground heat pumps. We are happy to say that the council did respond by producing a separate parallel and more simply written householder guide to SPD.

The Greening SPD covers most areas concerning the climate crisis, with guideline for action. However, until the local plan is finally approved, some 2 years away, controls and policies over the climate remain in the dark ages.



The council consults on a number of supplementary planning documents (SPDs) and other documents every year. Some are good, but many are flawed, and the consultations usually don't result in any significant changes of them.



The campaign to stop the the 344-350 Old Brompton Road project, which will seriously harm the views from the listed Brompton Cemetery, was unfortunately not successful, in spite of more than 380 objections. (CGI image from the application)

Need for meaningful public engagement

An issue I addressed at the virtual AGM is the council plan for 2019 to 2023 (this covers the whole area of council activities, not just planning). In the plan, the council admitted there was need for change, with the leadership promising that residents would be at the heart of everything. They undertook to communicate better with residents, to involve local people in decisions, and to be sensitive to local needs and differences of the local people. We need to hold the council to their promises on this.

Impressive actions have been taken by the council in some areas. It has taken on the problem of housing numbers and developed three sites with more in the pipeline for new combined market and affordable housing. Actions taken quickly and with care when a large number of Afghan refugees, including children, landed in the borough and had to be accommodated and the children got into schools. There is a programme to tackle air pollution through stopping engine idling with 706 enforcement action taken this year. The council supported the bid for Notting Dale in Kensington as one of two neighbourhoods awarded funding as part of the London mayor's "Future Neighbourhoods" programme.

But as for planning, there remains a serious problem with major schemes. Council officers work with the developers to devise what they – the officers – consider to be an acceptable scheme before a final application is submitted. But there is no opportunity for the community to feed into the officers' work. As a result, too often there is overwhelming opposition to the schemes when they see the light of day. Over 480 objected to the proposal recommended for approval by the planners for a massive commercial building by the Wellcome Trust of the narrow Pelham Street, even allowing on site

servicing to move to the street. Another big project at 344-350 Old Brompton Road was recommended and approved with over 380 objectors.

There were over 2,600 who objected to a planning application for a major reconfiguration of the area around South Kensington Station. Fortunately on that occasion, the planning committee responded to the concerns of objectors and refused the application. However, it would have been far better if it had never come forward in such an objectionable form in the first place. The Kensington Society has been pressing strongly for tripartite engagement between developer, planning officer and the community at the pre-application stage – preferably before the scheme has been designed in any detail – so that community concerns can be taken into account at the formative stage. The council agreed to this in principle for major schemes back in 2019, but has been dragging its feet, and the first such "development forum" took place only last month, for the Kensal Canalside project, which was by then unfortunately at such an advanced stage of design as to make any significant community input nugatory.

We have had productive meetings with Councillor James Husband, the chair of both the planning applications committee and the planning committee (which was the former major development committee). We have met with Councillor Johnny Thalassites, who leads Planning, Place and Environment, to review our concerns about the lack of consultation, the validation process for planning applications and the pre-application process. But progress remains glacial. We, as well as the residents, continue to

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The plan for South Kensington Station would have meant that the iconic station would have been squashed between very large and modern buildings, but more than 2,600 objections helped the planning committee decide to refuse it. (Image from the application)

remain objectors instead of contributors and co-designers. Covid cannot be an excuse as virtual meetings have continued with ease.

We now hope to schedule our first meeting with the planners in over two years. We are also pleased that the council is at our urging organising an amenity society/ resident association forum in the new year, to allow us all to discuss planning issues with council officers.

So is this borough listening? Yes, councillors are listening, actively participating and in many ways there is major changes for the better but as for working with the planners on specific developments...the answer remains NO.

The July flooding

The flood in July is another issue in which we have participated with our members. We have pressed press for both the council as well as our MP to take action against Thames Water. Felicity Buchan has been particularly active, convening a meeting with Thames Water for residents to make their points direct – a clearly uncomfortable experience for the Thames Water people attending the meeting. It is time for their shareholders to make less profit and for our sewers, water supply and infrastructure to be not just repaired but adequate to accommodate the growing needs of RBKC. We also will be making representation to the planners to do more to flood-proof basements.

Our planning work

We have our own an excellent planning committee of selected trustees, headed by Michael Bach, with each member handling specific issues. Our constitution requires us to strive to “to preserve and improve the amenities of Kensington for the public benefit”.

However, we cannot review or comment on every individual

planning application, though we do try to assist when time allows. We also assist and work with our affiliated societies when needed and ask that they call on us more often and earlier in the process. The workload is such that we must concentrate on the larger projects or where a damaging precedent could be prevented.

Help needed

The trustees all work very hard and many of us have been here for a very long time. The help we need is broad and varied.

Annual editor: Michael Becket, our most wonderful editor of the annual, has given his notice. He has been the editor since 2012 and over this time the annual has gone from strength to mega-strength. He does wish to still produce some of his noted articles particularly his photographic section and hopefully the blue plaques. But we need someone to step forward as his replacement.

Planning: the level and complexities of planning has grown such that we need help with various areas. I have held the fort on environmental issues but the subject is such that it needs someone who can take it on as a single issue. Someone who is interested in planning and policy would be helpful in reviewing some of the applications which we feel need reviewing and commenting on.

Membership and treasurer: Martin Frame became the membership secretary in 2011 and the treasurer in 2013. He finds the combination of the membership with the treasury an advantage with record control. However, having done this job for over ten years, he has now asked for help with treasuring and membership.

If you are interested in helping us, please get in touch.

AMANDA FRAME

The planning report

2021 has been an eventful year in many ways. There has been the changing national and London planning policy context, the first steps in articulating policy options for RBKC's new local plan, proposals for a massive new development at Kensal Canalside, evolving policy for tall buildings, and progress on some major projects. To say that Kensington Society's planning committee has been very busy would be an understatement.

The impact of policy changes

Planning white paper: Following the shock of the government's planning white paper of August 2020, the government's response and the anticipated planning bill are now expected "in the early part of next year". The proposals have been roundly criticised, especially the changes which would have restricted public consultation to proposals for "growth areas" and to limit public consultation on planning applications. The delay in publishing the government's response suggests that they may be having second thoughts and over the last few months there have been signs of a climbdown. The new housing secretary, Michael Gove, has already indicated that there will be changes to the proposals, as well as interesting appeal decision for a large development in Brighton and for the 305m high "Tulip Tower" in the City of London.

Housing figures: The government's manifesto promised to build 300,000 new homes per year, of which 93,579 homes would be attributed to London, with RBKC contributing 3,247 new homes per year.

The main threat to Kensington and Chelsea has been the government's ridiculous "housing requirements" target. The figure of 3,247 homes per year was stoutly challenged by our MP, Felicity Buchan, the council, the Kensington Society and others. As a result, although the government did not change the overall London housing target, the target for RBKC was reduced last December to a still impossible amount of 1,347 new homes per year.

The government, however, insists that these numbers are just the starting point, and that the mayor and/or the boroughs should set local targets, reflecting local constraints. For RBKC, this will come down to the lack of sites and their constraints. Last month, however, the planning minister, Christopher Pincher, said that *"the government does not set local housing targets. Housing requirements are decided by local authorities when they write their local plan, taking account of constraints they face locally."* RBKC's proposed new local plan will be a first reality test. Our density alone is a constraint.

This compares to the mayor's 2021 London Plan target of 52,000 new homes per year for London as a whole, with the RBKC target being 448 per year, which reflects the limited number of sites available. Fortunately, the housing secretary needed to sign off the London plan in March, so, until the mayor produces the next London plan, the borough's target will remain a "deliverable" 448 new homes per year.

Unfortunately, with the government pressing for a higher target, the council has been influenced to consider increased number of homes, especially for Kensal Canalside. (See more below.)

Use classes order and permitted development rights: The government's proposal to group most business and commercial uses in a single use class became law on 1



After the developer won an appeal in August 2020, everything has gone quiet about the plans for the Heythrop College site.

September 2020. This new E use class, which encompasses retail, restaurants, surgeries and even nurseries. was in August 2021 followed by the introduction of permitted development rights (PDRs), which enable almost all E use class uses to change to housing, subject only to a list of criteria. As 75% of the borough is covered by conservation areas, only the loss of "shopfront" uses may be protected - at least for now - where this would harm the character of the conservation area. However, this would still leave upper-floor uses, especially offices, at risk from conversions to housing.

The council's current borough-wide protection of offices, first introduced in 2013, is due to expire at the end of July 2022. The council has applied for an Article 4 direction to extend this protection, covering not only offices but also other business and commercial uses. The Kensington Society has supported the council in this action. If the exemption is not extended, the government's changes could have a severe impact on our streetscape, lead to a loss of neighbourhood shops to housing, and could also have a severe impact on RBKC's new local plan review and the continued supply of offices in the borough.

Local plan review: The council launched the consultation on the "Issues and Options" for the new local plan in July, with responses due on 4 October. This was a major piece of work. The consultation was very structured - and understandably so, with such broad-ranging and complex issues - starting with "Introduction and Key Concepts", then on to "Places", "A Zonal Planning System", "Future Development Sites", "Blue-Green Future", "Homes", "Town Centres", "Business and Culture", "Social and Community Uses", "Transport", "Streets", "Parks and Outdoor Spaces", and last...but not

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least..."Conservation and Design". Each of the thirteen main topics had specific questions. Our response was 45 pages long and can be found on the Kensington Society website.

The importance of this exercise and future involvement by KS as well as our affiliates will be paramount to the success of the new plan. RBKC has a good local plan now, but it is out of date and attention must be paid to ensure that the new plan is fit for the future.

Opportunity areas: The government's proposed "housing requirement" figure within the white paper "Planning for the future", published in February 2021 put huge pressure on the council to build high-density, high-rise housing. The Government has not yet published its response to the consultation and is currently under review by new housing secretary, Michael Gove.

With the two major opportunity areas, Earl's Court and Kensal Canalside, the numbers proposed could present major changes to this borough. As Hammersmith & Fulham withdraw from a large portion of the Earl's Court scheme, a new masterplan is required. Though Delancey purchased the site in November 2019 no discussions, meetings or even informal consultations has occurred. They propose to draw up a new masterplan, but no one has seen it yet.

The housing "targets" for these two opportunity areas have still to be "tested", a term used by planners to reassess their capacity and confirm the resulting numbers. This is important. The London Plan requires the borough to reassess the capacity to accommodate the number of both the housing and jobs. Kensal Canalside is in a location with poor public transport, as there will be no Elizabeth Line station, whereas Earl's Court, with two TfL stations, is highly accessible. The Kensington Society has been pressing for realistic approach to the development of these two opportunity areas, with revised targets to be brought forward through our new local plan.



The 344-350 Old Brompton Road development (outlined in red) is the first phase in the development of the former Earl's Court exhibition site, and there is a real fear that the vast empty space will be filled with very tall buildings. (Image based on Google Earth)

Tall buildings: What is a tall building? According to the London Plan, any building over 30m tall is considered "tall".

The 2021 London Plan, published in March, gave the boroughs the rights to define in their own local plans where tall buildings might be appropriate. The council first considered tall buildings and suitable locations in RBKC in the Building Height SPD in 2010. It classified conservation areas as "inappropriate" locations for tall buildings, areas immediately adjoining the conservation areas as "highly sensitive" to tall buildings and some of the remaining areas as possibly suitable, depending on their public transport accessibility. With over 75% of the borough in conservation areas it was obvious that suitable locations for tall buildings were limited.

The 2021 London Plan - reinforced by a letter from Robert Jenrick, the then housing secretary, to the mayor - now makes the location of tall buildings a matter for the council to determine through the proposed new local plan, not for the mayor, let alone through an SPD.

Recent housing secretary decisions have shown increased weight given to design, impact on heritage issues and, most recently, a building's life-cycle CO₂ emissions (from demolition and construction to operational use). The combination of changing policies and growing public opposition to tall buildings, has led to the suggestion that tall buildings have passed their peak. Recent research by Prof. Francesco Pomponi suggests that high-density, high-rise buildings have a 142% higher life-cycle CO₂ emissions compared to high-density, medium-rise buildings.

New major developments

The Earl's Court opportunity area: Delancey has applied for planning permission for two towers covering the entire site of 344-350 Old Brompton Road. The site is partially in the opportunity area and partially in a conservation area and directly across from the Royal Park's Brompton Cemetery. The corner building is 34.5m tall. Although it went against the council's own supplementary planning document (SPD) on tall buildings, a letter from the housing secretary to the mayor of London on borough's needing to identify suitable locations for tall buildings, and was strongly opposed by many local associations, including the Friends of Brompton Cemetery and the Kensington Society, the council approved the application. This height is a clear indication of what the new master plan will propose.

The Kensal Canalside opportunity area: The SPD for the two sites (one on the north side of the railway and one on the south side) was adopted in July and is based on a London Plan proposal of a minimum of 3,500 homes, although the SPD explored the possibility of as many as 5,000.

However, the northern site is an "island" with a single access point off Ladbroke Grove, which currently goes to the large Sainsbury's store and the site of the former gasworks. The 2021 London Plan suggests that the site has an indicative capacity of at least 3,500 homes and 2,000 jobs and that the actual capacity should be reassessed by the borough through the next local plan. However, this assumption was based on the site having a station on the new Crossrail/Elizabeth Line. But there is now no prospect of a such a station.

The site is landlocked and simply cannot support 3,500 homes without a rail or tube station, let alone 5,000 new homes. A proposed foot bridge over the canal to Kensal



The Kensal Canalside development will be very dense, with several very tall buildings next to Kensal Green Cemetery. However, it will lack public transport, as the intended Crossrail station between the two sites won't happen. (Image based on Google Earth and the SPD)

Green Cemetery may be nice, but the idea that it could serve as a usable route to Kensal Green tube station, nearly 1km away, is inexcusable. More buses on Ladbroke Road is also not the solution. Sometimes site restrictions are such that no matter what the will is, it is unsustainable. development. However, the developers are pushing for the highest possible density.

Another problem is that the height and massing would totally overshadow Kensal Green Cemetery as well as the Oxford Gardens Conservation Area., and concern over this has been expressed by Historic England.

Last month, the KS planning committee met the representatives of the two developers sharing the northern site, St William/Berkeley Homes and Ballymore/Sainsbury's. Their combined proposal is for more than 4,000 homes, mainly to be accommodated in high-density, high-rise buildings, mainly 12, 15 or 20+ storeys, but with three at 35 or 36 storeys. The tallest would be over 110 metres tall, taller than Trelick Tower's 98 metres.

In addition, both developers submitted a "scoping" application for assessing the content required for an environmental assessment. We commented on both, highlighting our concerns over the density, the transport issues, the services supply (including water and potential flooding), and the lack of open space.

In a recent development forum meeting arranged by the council, Ballymore's representative tried to justify the proposal by naming a new, expanded Sainsbury store as a public benefit. There is already a store there and no crying need for a larger one, except perhaps the need to service the increased housing on their own site. The proposed affordable housing was to be 28%, far below the 35% required by the London Plan. The reasoning for such low affordable housing was the cost of removing 2 metres of

contaminated soil. We want to know where that soil is going.

Both schemes fail to meet both the London Plan and the local plan because of the height and density of development in a location with such poor public transport. This also applies to the employment proposals, which require much higher public transport accessibility levels.

Meanwhile the council has commissioned a "characterisation" study, which seems to be an attempt to replace its own building height SPD from 2010 and seeks to justify tall buildings not only in the two opportunity areas, but also close to other existing tall buildings.

We are extremely concerned that the council, feeling under pressure from the government's "housing requirement" target, may be no longer seeking to limit the number and scale of tall buildings in the borough. The current local plan seeks to deliver higher densities, but without resorting to tall buildings. The current policy CL12 is "to resist buildings significantly taller than the surrounding townscape other than in exceptionally rare circumstances, where the development has a wholly positive impact on the character and quality of the townscape".

What needs to be questioned is how did this get so far without any meaningful scrutiny? Is this the future with Earl's Court?

Update on important developments

South Kensington Station: The application by Native Land, in partnership with TfL, to redevelop the site surrounding South Kensington Station seems a never-ending saga. The Rogers+Stirk Harbour proposals, having twice been withdrawn for further changes, still failed to meet the objections by the Kensington Society and the surrounding residents' associations.

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The latest changes, submitted in August, were no more than cosmetic, with some material changes and reducing the height of buildings by no more than 1 metre!

When objecting to the application, the residents' associations and local ward councillors concentrated on the scale and design of the buildings in relation to the conservation area; the architecture, which paid no respect to the surrounding conservation area; the impact on listed buildings and views from the South Kensington museums; as well as to the servicing arrangements.

The Kensington Society concentrated on the main issue: the requirement for a safe station. By TfL's own admission in 2016, the station required urgent action to address safety issues. Since then, the station has continued to be unsafe with the only access via steep steps and limited capacity for an already overcrowded station. The officers recommended a Section 106 Agreement, presenting it as the guarantee for the developer to deliver of a step-free station. This agreement would have allowed the developer to first build the Thurloe Street and Pelham Street buildings, clearly the most profitable part of the development, without any works to the station. Only when Native Land would have completed those buildings and if they decide to proceed to the construction of the Bullnose and Thurloe Bridge, would the developer be required to address the station upgrade.

Native Land has the controlling interest (51%) and is therefore the decision maker. The company could easily and quite legally decide not to build any further, as there are no means, legal agreement or not, to force it to build phase 2 and, therefore, no means to enforce the delivery of a step-free, safe station. These proposals are a sham.

Having been deferred twice, the planning committee considered the latest application on 18 November. The scale and range of the objections meant that the chairman, Councillor Husband, agreed to objectors being given 30 minutes to address the committee. The developer had equal time to make their case, which was largely descriptive and made no real response or concessions to the objections.

The committee mainly questioned the applicant, who at the very last minute reluctantly conceded that they would accept a legal agreement to complete step-free access before the buildings in phase 1 could be occupied.

The committee, however, after each member had expressed their views, went to a vote – and it was then all over, they unanimously decided to refuse consent for both the planning application and the listed building consent. The reasons for refusal related to the nature of the scheme, the impact on the conservation area and listed buildings and the lack of step-free access.

This was a very well-organised campaign, in which the local residents' associations used consultants to help make their case, enabling them to provide an assessment of the scheme in terms of planning policy, an assessment of the scale, bulk and design, its impact on heritage issues, and transport and traffic issues. The appearance before the committee was well coordinated and was a model in terms of its execution. We were very pleased that the officers were prepared to receive presentations from the residents at various stages over the last year whilst the application was "changing".

63-81 Pelham Street: The Kensington Society also supported local residents objecting to this South Kensington scheme by the Wellcome Trust, which involved a proposal to demolish a large office building and replace it with a taller building with a 116% increase in volume. The key issues



The replacement of a large office building at 63-81 Pelham Street with a much taller one, instead of refurbishing the existing one, will be both environmentally unsustainable and unsuitable for the location. (CGI image from the application)



Nothing has been heard from developers since the Newcombe House development in Notting Hill Gate, with its controversial high tower, was granted consent in June 2020. Have they sold or plan a revision? (CGI image courtesy of Brockton Capital and U+I)

were the height and scale of the scheme, the unsustainability of demolishing a building that should be reused, and the use of the public road as servicing deliveries.

The planning committee, however, chose to accept the officer's recommendation that the scheme be granted planning consent. The sustainability issue, in terms of life-cycle greenhouse gas emissions, will, however, become a significant material consideration as planning policy evolves to articulate a net-zero strategy.

Heythrop College: Following a successful appeal by the developer in August 2020, everything has gone quiet. Rumours of financial difficulties, and problems in agreeing terms with TfL for a raft over the District and Circle Line, have meant that there has been no progress on this project.

Newcombe House: Despite being granted consent by the housing secretary in June 2020, there is no sign of any work starting. There are rumours that it has been sold.

Odeon cinema site: Following consent, the new owners., Lodha, have already excavated and created the housing for the basement levels which contain the cinemas. There was concern recently that the developers have removed the old cinema façade. This has been dismantled following the discovery of "Regent Street disease", whereby the ironwork which holds the decorative frontage together has failed. All of the sections are in storage and will be reassembled when the façade is reconstructed.

Kensington Forum Hotel: Following call-in by the housing secretary in January, a public inquiry was due to take place in May. However, after receiving submissions of our statement of case for inquiry, the developers withdrew their application. We still do not know why they withdrew nor

whether they are considering a further application, but we and local residents' groups will take that as a win.

The Academy, 57 Princesdale Road: This pub has now been closed since October 2016, although it seems a lot longer! Several schemes, seeking to break up the pub building into a smaller pub, much of it in the basement, to convert the two upper floors into housing and add further housing next door, have failed. After a long fight, the latest scheme was refused by the council on 25 August, because it would compromise the operation, future flexibility and viability of the pub, and fail to protect this asset of community value. This was a major victory for the Kensington Society and the local community, but the war will continue until we manage to secure the reopening of a viable pub.

RBKC enforcement team has acted against the unlawful occupation of the upper floors of the pub.

Notting Hill Police Station: The council and the Kensington Society are moving fast to safeguard the future of Notting Hill Police Station, which was announced for sale by the Mayor's Office of Policing and Crime (MOPAC) in August. As an asset of community value (ACV), there is a moratorium on the sale until January 2022. The council is exploring potential viable community uses for the building, including key worker housing, adult social care, policing and NHS services.

After an initially warm reception from City Hall on the council's plans to bid for the building, we now hear that MOPAC will open a competitive bidding process in early 2022. This is disappointing, but the building's ACV status and the council's policies means the site will need to demonstrate community and social benefit regardless of who purchases it.

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Other issues

Al fresco dining: The government introduced the “Business and Planning Act 2020” as a response to the Covid pandemic and its affect on the hospitality industry, allowing fast-tracked licensing for pavement and street dining facilities. The scheme has been extended until September 2022. It is likely that the government will introduce further legislation to make such arrangements possible on a permanent basis.

RBKC has decided that it would like to encourage hospitality business to trade out-doors during summers after the extension, whether or not the government goes ahead with its own legislation. It has therefore drawn up a set of proposals “for the continuation of ‘parklet terraces’ during British Summer Time (late March to late October).” The assumption, based on limited consultation, is that al fresco dining and “parklet terraces” have proven popular and people would like them to continue. The rationale has moved beyond Covid safety (although this may be an ongoing factor) and towards the vitality of our streets and neighbourhoods as set out in the local plan’s policy CR9.

The documents set out a series of principles and a three-step application process.

The consultation runs until 31 December 2021 and the Kensington Society has responded as follows:

The Kensington Society supports the council’s initiative to encourage and continue with parklet terraces in general terms but has some concerns and comments:

- 1. The proposals move from a temporary/ emergency initiative to something which will be semi-permanent. Therefore, higher standards of design, amenity and consultation must be applied through the planning process.*
- 2. Every location will need to be considered on its merits and with full local consultation.*
- 3. There should be more detailed design guidance available to applicants. Conservation areas require special attention.*

- 4. Environmental controls need to be more rigorous than proposed. We would argue that heaters should be banned. This is, after all, a summertime proposal. We agree that such parklets must contribute to urban greening.*
- 5. Loss of parking spaces will be an issue. Each site should be considered in relation to the degree of parking stress in the immediate area.*
- 6. The cost of dealing with applications, monitoring, loss of parking income etc must be fully covered by the fees for planning and licensing.*
- 7. Monitoring needs to be regular and thorough. Breaches of planning and licence conditions must lead to rapid and strong enforcement action.*
- 8. The proposal to grant five-year licences should be reviewed as much can change in 5 years. Perhaps an annual review should be built in with the ability to terminate should local conditions change.*

Strategy for our high streets: In the last year, in part in response to Covid, but also in response to initiatives from the business community and the threats from government policy, the council has started to think about how to manage the revival of our main high streets. This has led to initiatives from the Cadogan Estate, to create business improvement districts (BIDs) for the King’s Road and Brompton Road, and from the Kensington Business Forum for a BID for the Kensington High Street area.

BIDs are a management body consisting of businesses and landowners, who pay an annual levy to pay for additional services and projects to improve the attractiveness of these centres. Each BID will produce a programme for which it seeks approval from its members. The Brompton Road BID was approved in September, the ballot on the King’s Road BID closed on 21 November, but the Kensington High Street BID will not hold a ballot of its members until early 2022.

MICHAEL BACH, AMANDA FRAME, SOPHIA LAMBERT
HENRY PETERSON, BARRY MUNDAY



The council wants to encourage more pavement and street dining during the summers and is currently running a public consultation about it. (Image from The Chipping Forecast website)

North Kensington is being encircled by tall buildings

Apart from proposals for Kensal Canalside, the steady destruction of the borough's north-western skyline has come from decisions by Hammersmith & Fulham council, City Hall's OPDC, and Ealing council.

Until ten years ago, Erno Golfinger's listed Trellick Tower (31 floors, grade II*) was the tallest building in Kensington. London's first wave of high-rise residential towers in the 1950s and 1960s largely ended with the Ronan Point collapse in 1968 and the recognition that Le Corbusier's visions of "streets in the air" did not work as well in real life as they do on an architect's drawing.

Imperial College's 35 floor towers in Wood Lane were granted planning consent by Hammersmith & Fulham in 2013 after a long campaign of opposition by North Kensington residents. The cluster of very tall buildings at White City, alongside the West Cross route between Westway and Holland Park Avenue, has subsequently changed views from Norland and Notting Barn wards. Latest additions at this already dense location will be at 44 floors.

Further west along the A40, the increasingly notorious "North Acton cluster" continues to prompt the question "when were we, London's residents, ever asked if we wanted this?" Since 2015, the planning authority for North Acton has been the GLA's Old Oak and Park Royal Development Corporation (OPDC). A deal was struck between former London mayor Boris Johnson and Julian Bell (then leader of Ealing council) that applications at North Acton would continue to be delegated to, and decided by, Ealing council. The results are now all too evident.

"One West Point", at 54 floors, is almost finished and is marketed as "a landmark residence in prime position". The developers claim it as the tallest residential building outside Canary Wharf and the 16th tallest in London. But this dubious badge of honour will not last for long.

55 floor tower approved and 56 floors applied for

In August 2021, the "4 Portal Way" twin tower received planning permission. Its highest tower, a hotel, is 56 floors tall, the other is a residential tower with 45 floors.

And on 18 November, Imperial College submitted a planning application at the nearby site "One Portal Way" for a seven building scheme which includes a 56 floor residential tower. Outline planning permission is also sought for two further buildings of 51 floors. This is a purely commercial investment proposition by the College's Endowment Fund, with no university buildings involved.

CGI images of these developments at North Acton show a new part of London that bears scant resemblance to the policies in Ealing's outdated local plan from 2013/14.

The first ever OPDC local plan is limping through the final stages of its examination, four years behind schedule. Even this new OPDC plan speaks only of "a range of heights" at "appropriate locations" in North Acton. The concept of "planned development" has proved a myth for this part of west London.

Those Londoners who come from far afield to walk on the expansive space of Wormwood Scrubs are now surrounded



CGI image of North Acton's cluster of tall buildings. which has just been made even more compact and taller with the addition of Imperial College's application for seven buildings, whereof two towers have 51 floors and one is 56 floors tall.

by a skyline with very tall buildings in every direction. Apart from North Acton there is the near completed "Oaklands Rise" in Old Oak Common Lane, and construction is imminent at "North Kensington Gate" and "Mitre Yard" to the north west on Scrubs Lane. OPDC's "modified" local plan includes a new "cluster" immediately north of Little Wormwood Scrubs. The new buildings at White City fill what used to be the view to the south.

Poor public transports considering the size

Apart from North Acton (with its already overcrowded Central Line station), these developments share a common feature with those planned for Kensal Canalside: all have low levels of access to public transport and a longish walk to the nearest underground or overground station. The opening of the HS2/Crossrail interchange on Old Oak Common will help a bit, but most of these sites will not be in easy walking distance even when the station opens sometime between 2029 and 2033 (assuming no more changes to the HS2 project).

As mentioned earlier in this planning report, there are signs that this second era of tall buildings in London is peaking. The public (and some developers) are recognising that "Nine Elms Disease" is a real phenomenon south of the Thames, with unsold apartments and developments that may never be completed. Government and planning authorities are increasingly aware that zero carbon commitments and respiratory pandemics do not combine well with high rise buildings dependent on lifts and mechanical heating and cooling.

The hope is that 'peak tall buildings' will arrive in time to enable the Kensington & Chelsea council to maintain its longstanding resistance to inappropriate buildings at unsuitable locations. Kensal Canalside and Earls Court will be the crucial test cases on whether developers, or elected councillors supported by the voices of local residents, decide the future built form of the borough.

HENRY PETERSON

THE NET ZERO CHALLENGES

Making Britain carbon free by 2050:

Big challenges – but also big opportunities

In May 2019, Parliament passed a Labour motion declaring an “environment and climate emergency”, and although the government didn’t want to declare an emergency, it agreed that radical action must be taken. As a consequence, Theresa May’s government made an amendment in June 2019 to the Climate Change Act, enshrining in law a commitment to reduce the UK’s net emissions of greenhouse gases by 100% relative to 1990 levels by 2050. And Boris Johnson has declared that his government will stick to that plan and if possible make things happen ever quicker. Further commitments are expected to be announced after the recently held COP26 conference in Glasgow.

The two main greenhouse gases are CO₂ (carbon dioxide) and methane. Together they account for 90% of the world’s greenhouse gas emissions. Most of it (80%) is CO₂, but methane has more than 80 times the warming power of CO₂ during its first 20 years in the atmosphere. So although CO₂ has a longer lasting effect, methane sets the pace for global warming in the near term. This is why many scientists want to focus on a quick reduction of methane.

The two main man-controlled emitters of methane is the production and distribution of fossil fuels (due to escaping natural gas) and livestock (i.e. cows and sheep burping and farting). These two account for almost 63% of all man-made methane emissions (escaping natural gas 33% and livestock 30%). The third largest methane emitter is waste (landfills and wastewater treatment) which accounts for 18%, and the fourth largest (15%) is plant agriculture, mainly rice paddies.

The commitment

In 1990, Britain emitted 809.1 MtCO₂e (million tonnes carbon dioxide equivalent)**, according to the government’s latest estimates of UK greenhouse gas emissions, published 24 June 2021. Reducing the net emissions of greenhouse gases “by 100% relative to 1990 levels by 2050”, basically means to get man-made emissions down to zero, using the 1990 emissions as a baseline - and then keep them at zero. As some man-made emissions will be unavoidable, all remaining emissions must be compensated by removing the equivalent amount of CO₂ from the atmosphere - that’s what “net zero” means.

To achieve this, all greenhouse gas emissions that can be stopped must be stopped, and the remaining must be offset by removing CO₂ from the atmosphere – mainly by growing CO₂-eating trees and peat bogs and installing equipment that captures CO₂ in factory chimneys (or sucks it from the air around us) and then stores it underground - or use it to make something else.

Why 2050? Well, the 2015 Paris climate agreement, reached at UN’s COP21 conference and since ratified by 194

of the 197 participating countries, states that, in order to protect the world from major climate disasters, the temperature increase since the start of the industrialism must be prevented from reaching 2°C, but should ideally be limited to 1.5°C, by the middle of this century. We’re now at 1.2°C.

Since then, experts have agreed that if the world begins to drastically lower CO₂ emissions immediately, and reaches net zero by 2050, it is possible to stay within the 1.5°C limit - but it would be increasingly impossible if it’s delayed any further than that. Most signatories have since decided to go for net zero in 2050 and have agreed to cut emissions by 45% by 2030 as an interim goal.

It was also in Paris it was agreed that the 1990 emissions should be the baseline each country should use as a yardstick - which was fortunate for Britain, as our emissions in 2019 were “only” 454.8 MtCO₂e, i.e. almost half of what they were in 1990, mainly due to the switch from coal to gas at our power stations during the last 20 years.

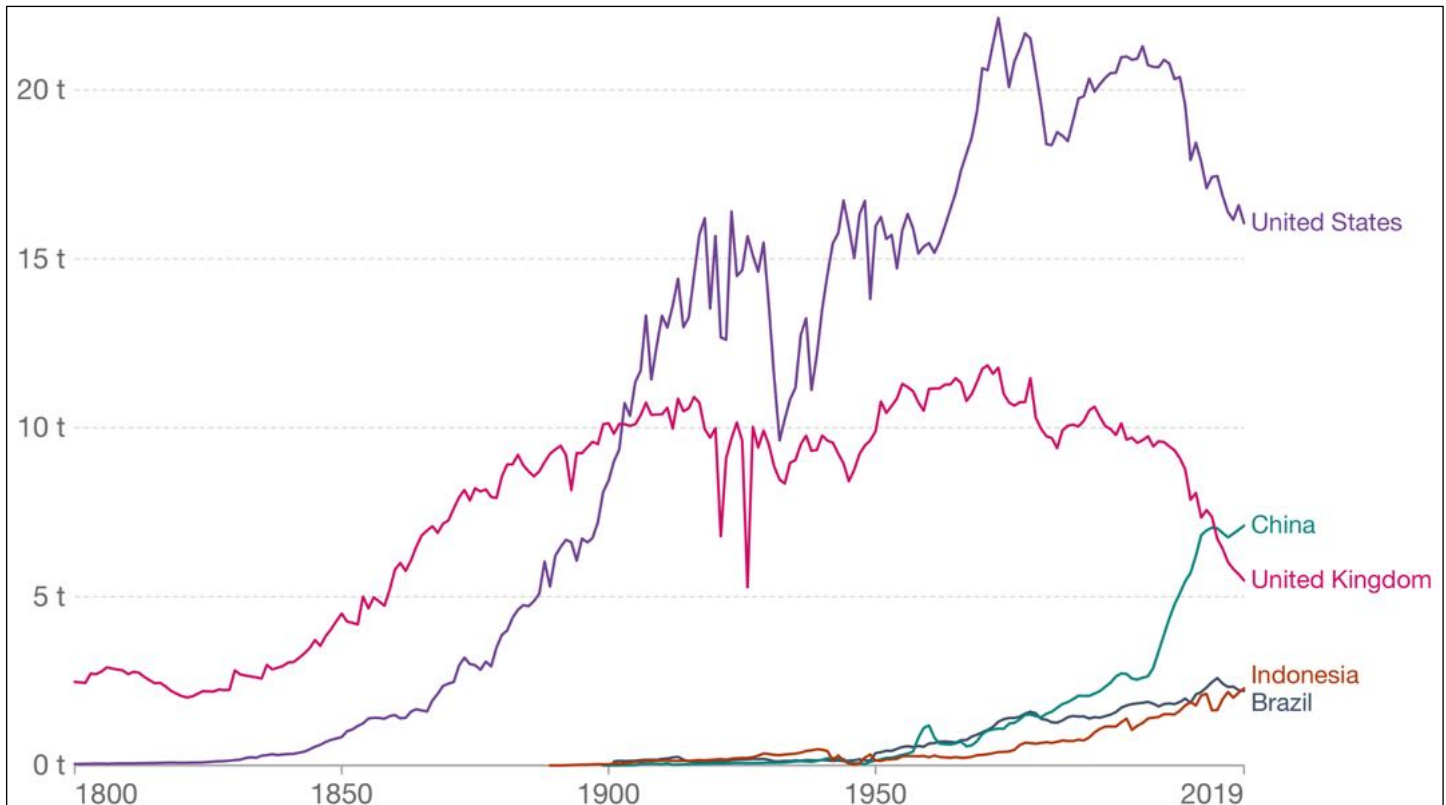
Consequently, the UK doesn’t have to cut as much as countries with much higher emissions today than in 1990, such as China, India, Brazil, Indonesia and Australia. For China the growth has been enormous: in 1990 the Chinese emitted 2.5 billion tonnes of CO₂, by 2019 this had grown to more than 10 billion tonnes! China has committed to reach net zero by 2060, so in order to achieve this, China has to lower its emissions with 250 million tonnes every year for the next 40 years, i.e. every two years China has to do what the UK has committed to do over the next 30 years.

Britain was one of the first countries to commit to the 2050 target in law, and most other countries have since made the same commitment, although most not yet in law. However, China and Russia have said that they need an extra 10 years to get there, and India says it needs 20 more years. Australia committed to 2050 just before the start of COP26 in Glasgow, but hasn’t yet revealed any plans for how to reach that, except stating that it expects future technical inventions to sort it out.

What it will mean in practice

But what will the commitment mean in practice for the UK and Kensington? The various reports made by CCC (the Climate Change Committee) - the government’s advisory body in this matter - set a number of target dates that needed to be met in order for the 2050 goal to be reached. The government has since then revised some of them and more are expected to be revised over the next few years.

*** Greenhouse gas emissions are usually measured in MtCO₂e or TtCO₂e, i.e. million or trillion tonnes carbon dioxide equivalent, a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.*



While there has been much talk about China being the largest emitter of CO₂, it is somehow more interesting to see emissions per capita, i.e. in relation to the population. (Diagram from Our World in Data)

This was the official UK timetable in November 2021:

Cars, vans and motorcycles: From 1 January 2031, new petrol and diesel cars, vans, motorcycles and traditional hybrids may no longer be sold, but plug-in hybrid cars and vans are allowed to be sold for another five years.

From 1 January 2036, new plug-in hybrid cars and vans may no longer be sold, so from that date all new cars and vans must be fully electric.

HGVs and buses/coaches: On 10 November it was confirmed that all new heavy goods vehicles (HGVs) in the UK must be zero emission by 2040. There is yet no date set for buses, but as local buses are already being electrified and as there is already some electric coaches in the UK, that date will probably be set for buses and coaches as well.

For many years, industry experts said that hydrogen would be the only sensible solution for lorries and buses. But nobody knows if or when hydrogen would ever become feasible, so even before any governmental deadlines, most manufacturers have decided not to wait.

All major European lorry and bus manufacturers are busy launching electric lorries and coaches, including heavy long-distance HGVs. Several of the manufacturers expect that more than half of their vehicles will all electric by 2030.

There is also a growing refurbishment industry that can replace existing diesel engines in heavy lorries and coaches with electric propulsion.

Homes and businesses: Already in 2020, the government removed support for new LPG and oil heating systems for homes and non-domestic buildings in England and Wales that are in areas off the gas grid (over 4 million homes and some 278,000 non-domestic buildings).

From 1 January 2026, new homes and commercial

buildings may no longer be connected to the gas grid and, whenever possible, new buildings must be timber-framed to lock in the CO₂ found in trees, and traditionally made concrete will be discouraged as building material (as the production of concrete emits enormous amounts of CO₂). The new buildings must also be well insulated and have at least double-glazed windows.

From 2035, no new gas boilers may be sold, thus forcing homes and businesses built before 2026 to switch to a non-carbon heating systems when their existing gas boiler needs to be replaced.

No fixed date has been set for improved insulation of existing buildings, but most British homes and commercial buildings built before 2026 will need to be refurbished with much better insulation and equipped with a minimum of double-glazed windows. There are three reasons for this: 1) heat pumps don't work well unless a house is well insulated, 2) insulating the housing stock will somewhat limit the enormous need for more electricity, and 3) insulation will help homeowners and businesses to keep their fuel bills down.

Electricity: By 2024, Britain's four remaining coal power stations are to be closed, and by 2035, UK electricity is to be fully decarbonised. The total need for electricity is expected to double during the next 30 years, so for that reason, numerous new offshore wind farms are under construction around the UK, several high capacity electric cables are currently being laid from Norway and Denmark to link Britain to Scandinavia's large hydropower network, and at least two more hydrogen power plants are expected to be built.

At the same time, electricity production will see a massive decentralisation, moving away from a handful of companies

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THE NET ZERO CHALLENGES



After having spent several years experimenting with all electric flight, Airbus presented three concept designs for liquid hydrogen planes in late 2020. This one is the most radical looking: a turboprop plane capable of flying up to 200 passengers at least 3,700km (2,300 miles) in a "blended-wing body". Airbus aims to have a hydrogen plane in service by 2035. (CGI image from Airbus)

to thousands of smaller suppliers - and many communities will produce their own electricity and become more or less independent of the big electricity companies. This, in itself, will revolutionise the UK electricity market.

However, in order to accommodate much higher electricity usage, large segments of UK's electrical grid, as well as the feeds into most homes, will also have to be upgraded.

Aeroplanes

In October 2021, the International Air Transport Association (IATA) committed to reach net zero emissions by 2050, following a slew of net zero commitments from large European and US airlines. However, aeroplanes are the trickiest thing to decarbonise, but at the same time one of the most urgent segments to sort out, as global commercial aviation already accounts for more CO₂ emissions than a country like Germany and could triple by 2050, given the projected growth of passengers and freight.

Experiments with electric propeller planes are ongoing, and some hope that liquid hydrogen one day can replace kerosene as jet engine fuel. In the meantime, the industry puts its hopes on something called "sustainable aviation fuel" (SAF), as an interim solution. But SAF costs up to eight times more than kerosene and it probably can't even be produced in the volumes required. Another solution could be synthetic aviation fuel, often called e-kerosene, made from CO₂ and hydrogen, but that is even more expensive and difficult to produce at scale.

So perhaps long-haul air travel will revert to what it was in the 1930s: a very exclusive form of travel only affordable occasionally by the very rich.

Ships

Although sea freight is much more environmentally friendly than land and air freight per tonne transported, global marine transports have CO₂ emissions equalling that of Japan and must be made much cleaner. However, as oceangoing ships

don't require high speeds and low weight, and can fairly easily be repurposed, due to their size, this actually shouldn't be too difficult.

There are already a few large electric ships in existence, and several interesting projects making use of new forms of propulsion. We may soon see oceangoing ships using a combination of batteries, solar panels and advanced sails instead of dirty bunker fuel.

As sea transports definitely can be made carbon free, perhaps passenger ships will once again become the dominant form of passenger transport between continents?

Battery development

Another problem may be the availability of batteries, for vehicles as well as for storing wind and solar electricity, but the battery production is rapidly gearing up across the world, with very large battery plants being built in several countries, including the UK. There are also a number of new battery technologies being developed, which may result in much larger storage capacity, very much faster charging times and less dependency on rare minerals such as cobalt. Some of these new technologies may reach the market within the next five years.

It can be done - and in time

To do all this within the next 30 years, and some of it already within the next ten years, may seem an impossible task. But much of the work is already happening and exciting new developments are just around the corner. Yes, it will be very expensive and require enormous resources, just like a war. And according to many, we need to regard it a war - for the survival of this planet. And it's a war that will transform our homes, cities and industries - hopefully for the better.

On the next 13 pages we take a closer look at some of the different challenges. A few more articles will come in the 2022 Kensington Society Annual in the spring.

THOMAS BLOMBERG

Challenge 1:

To replace 26 million gas boilers in 30 years

Britain has an estimated 29 million homes, whereof 26 million have gas boilers and 15 million of these also have gas hobs or gas cookers. The heating and cooking in these homes make up 15% of Britain's greenhouse gas emissions. In order to get rid of this very large chunk of emissions, no new homes will be allowed to be connected to the gas grid from 1 January 2026, and no gas boilers will be allowed to be sold from 2035.

This may seem an impossible task, but as the average lifespan of a gas boiler is 13 years (provided it's serviced every year), Britain has for years been replacing more than 2 million gas boilers every year. So, if all households from 2022 began switching to another solution when their current gas boiler is due to be retired, this whole job could theoretically be done by 2036.

Of course, some may decide to delay the inevitable switch as long as possible, by continuing to replace old gas boilers with new ones until 2035, when it becomes impossible. However, replacing old gas boilers with new ones will probably not be a good idea for very long: the regular price of gas is expected to increase for every year and the value of non-converted homes will soon begin to drop, as prospective buyers realise that non-converted homes will require lots of additional costs and work.

The government has recently announced that it expects banks to demand that a home is "green" in order to provide a mortgage. If it isn't, the new owner will have to add a substantial additional sum to the mortgage in order to make it green. So, already now it is probably a smart move to to "green" a home before selling it.

One additional problem with gas boilers, which isn't mentioned very often, is that they also emit large volumes of nitrogen oxides (NOx) - the main source of harmful air pollution. Gas boilers are responsible for approximately 20% of London's NOx emissions, so removing the gas boilers doesn't only cut down greenhouse gas emissions, it also reduces air pollution that is estimated to cause 12% of all deaths in Europe.

The gas hob

Replacing the gas hob is the easiest step. Many British gas hobs have already been replaced by induction hobs, which are much more energy efficient, quicker, safer and easier to keep clean than gas hobs. Already today, when electricity still costs much more than gas per kWh, induction hobs are cheaper to run than gas hobs.

But what are the alternatives to a gas boiler?

Alternative 1: Heat pumps

The solution dominating the current discussion is to install a heat pump. The main advantage of a heat pump is that much less electricity is needed when heating the home than a pure electric solution. A heat pump can be described as a fridge or an air conditioner running in reverse, producing warmth instead of coldness by using a refrigerant. A refrigerant is a liquid in a closed system which transfers warmth and coldness between two mediums with the help of a



An air source heat pump sits outside and can be connect to a central heating system, underfloor heating and a hot water cylinder.

compressor. The compressor and their fans or water pumps (depending on type), need electricity to run, but the electricity needed is supposedly only 25% of what would be needed with straight electric heating.

There are five main types of heat pumps:

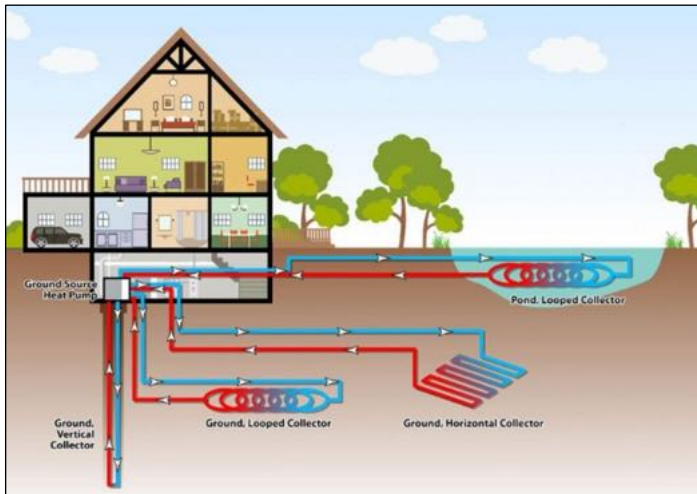
1) Air source heat pumps (ASHP). These are in turn divided into two types: air-to-water or air-to-air. Air-to-water pumps collects and increases the warmth in outdoor air and delivers it to a home's wet radiator system or under-floor heating, while air-to-air pumps deliver the result as warm air to homes heated through forced air ducts (uncommon in Europe, but common in the USA, where it is known as HVAC).

2) Ground source heat pumps (GSHP). These consist of two types: the horizontal one, which collects the near constant warmth in soil a metre below the surface by pumping water through many metres of dug down pipes, and the vertical one, which collects the constant warmth in groundwater or the bedrock itself through deep drill-holes. GSHPs are almost always of the ground-to-water type and are much more efficient that ASHPs.

3) Water source heat pumps (WSHP). These are similar to ground source pumps, utilising the near constant warmth in

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THE NET ZERO CHALLENGES



A ground source or water source heat pump sits inside the property and is connected to a collector pipe, which can either be laid flat under ground (1-2m) in various configurations, go down in a drill hole (30-100m), or be laid under water in a nearby lake, large pond or river. These are more costly to buy and install than air source heat pumps, but are also much more efficient.

lakes and large ponds a few metres below the surface. These are also much more efficient than ASHPs.

4) Solar-assisted heat pumps (SAHP). These turn heat from the sun into hot water with the help of solar collectors (which look like solar panels). In the UK they are mainly installed only to provide heat for domestic hot water, but they can also be used to heat the whole home.

5) Exhaust air heat pumps (EAHP). These catch the warmth in warm air escaping from a building and returns it as air-to-air or air-to-water. Sounds good and have been used for some time in large social housing projects, but they have had a lot of technical problems.

In Britain, the most suitable heat pump type for replacing a gas boiler is the air-to-water ASHP, as few homes have access to a large area of land for a horizontal GSHP or a large pond for a WSHP.

However, vertical GSHPs can be a good alternative, as they don't need a large garden. They cost much more than ASHPs to install, but are much more efficient, especially in winter. The drill-holes are usually around 100 metres deep. SAHPs can also be an alternative to the gas boiler in the UK, provided the building has enough space for lots of solar collectors.

Installation of an ASHP costs around £9,000 to £15,000, installing a soil GSHP costs £14,000 to £19,000 and installing a vertical GSHP costs £25,000 to £30,000.

Drawbacks

However, all heat pumps have one big problem: the refrigerant used. Most existing heat pumps use HFC (hydrofluorocarbon) refrigerants with a very high GWP (global warming potential). These release large volumes of greenhouse gases if they leak out - and the more heat pumps there are, the more common leakages will be.

Consequently, there is a big race to move to refrigerants with a very low GWP which are as efficient as HFCs. The big problem isn't finding low GWP chemicals, but how to practically use them. Many of the best low GWP refrigerants are highly flammable or toxic if they escape, and are thus

hardly suitable in household heat pumps. Others require new types of heat pumps, yet to be developed.

Replacing gas boilers with air source heat pumps have six additional drawbacks:

1) They can not achieve the same radiator water temperatures as a gas boiler, so larger radiators are needed to achieve the same room temperature.

2) If they replace combi boilers, a separate unvented and indirect hot water cylinder will be needed.

2) The heat they achieve isn't enough to heat the hot water, so the hot water cylinder will need an electric immersion heater that tops up the heat to the usual 60-65°C.

3) All though ASHPs can extract heat even when air temperatures are as low as -15°C, they work best in summer - when they are least needed - and must work much harder during winter, which leads to higher electricity bills.

4) Fan noise. ASHPs can be a bit noisy when the fans are running, just like air conditioning units. This can be a problem for flat owners who are contemplating installing an ASHP on the balcony. Also, the larger the property, the larger the ASHP needs to be.

6) Just like gas boiler systems, most heat pumps need an annual service.

Alternative 2: Electric heating

Throwing out the gas boiler and the whole central heating system and replacing it with energy efficient electric radiators and an unvented cylinder (or the new kind of on-demand electric water heaters) can have its advantages. It is a very quick and straight forward solution, and once installed it is virtually maintenance free (i.e. no annual service) and totally silent. Also, as the electric radiators aren't linked like wet radiators, each room will have its own 7-day or 14-day thermostat, allowing for very individual settings for each room.

Also, installing an air source heat pump is currently not really an option for most leaseholders living in flats, as most have very limited (if any) space outside, so in those cases, going fully electric may be the only option.



Energy efficient electric radiators, filled with a heat retaining material, is an alternative to heat pumps, especially for those living in flats. Used together with a compact on-demand water heater (also filled with heat retaining material) or an unvented cylinder.



District heating is in many ways the best alternative, but it requires an infrastructure of large pipes running between the heating plant and the many households connected to it - and blocks of flats require a truly central heating that it can connect to. (Image from Wikipedia)

The big disadvantage in going all electric is the cost of mains electricity - at the moment. The electricity price is currently lumbered with 23% environmental and social levies on top of the actual price, while gas bills currently only has 2% such levies on top. In addition, the cost of electricity is still very much depending on the wholesale price of gas, as 30% of UK electricity is still made from gas. However, there is much talk about moving those 23% levies away from electricity (by moving some onto gas and other onto the tax bill). By 2035 Britain's electrical grid should be totally carbon free, making it unaffected by gas prices. In addition, UK's electricity capacity is scheduled to increase drastically over the coming years. This should lead to much lower production prices, as the running cost of wind farms is very low.

So, although switching to an all electric solution will lead to higher running costs right now, chances are good that mains electricity will be much less expensive in a few years time.

If mains electricity is only used as a backup to solar panels, a totally electric solution may be more attractive already today - although the investment in solar needs to be added to the installation cost. It also requires a decent amount of roof space (and approval from the planning department if one lives in a conservation area).

Alternative 3: District heating

While heat pumps and electric heating are possible solutions for individual households or their landlords, district heating is most efficient when done on a large scale, for many thousand homes and businesses, and is therefore usually planned and installed by utility companies. It is, without any doubt, the best solution for new developments, while it can be complicated and expensive to install in existing houses - especially in Britain, where most older blocks of flats have individual central heating for each flat, instead of a whole-block central heating situated in the basement.

District heating is very common across the rest of Europe, but almost unknown in the UK, covering only some 200,000 homes. In most of Eastern Europe, Sweden, Denmark and Finland large district heating networks supply more than half of all households with heating.

So what is district heating? Well, it's simply a network of insulated pipes that carry steam or hot water from one or more heating plants to the basements of numerous homes and businesses, where it is hooked up to the building's central heating system. If the heating plant runs on biomass, natural gas, nuclear power or refuse, it sometimes produces electricity as well, but there are also pure heating plants, which use electricity, heat from solar collectors, industrial scale heat pumps (utilising water in rivers, sewage treatment works outfall or heat from large data centres or even grocery stores), geothermal heat (especially in Iceland and New Zealand), or utilise waste heat from nearby industries or nuclear power stations.

District heating networks can be very big, serving a whole city (such as the two soon to be merged networks covering much of Stockholm, Sweden through some 2,800km of pipes), while others are very small, serving 3-4 blocks of flats or a single commercial building (such as the district heating network only serving Heathrow's Terminal 2).

The main advantage of district heating is that it is much more energy efficient than heating each home or business individually. Another advantage is that it can utilise sources of fuel that can't otherwise be used, such as household refuse. It is also much more environmentally friendly, as heating plants usually filter any dirty exhaust and can be equipped with carbon capture equipment which captures any CO₂ from the exhaust and then disposes of it in a safe way.

So, in short, district heating is in principle a great solution for cities, but a large portion of UK blocks of flats can't connect to it without very costly and disrupting refurbishments, as they don't already have a communal central heating system that can connect to it.

Conclusion

Which alternative to choose will consequently depend on each household's circumstances, but in much of Kensington it's likely that going all electric will be more common than installing a heat pump.

THOMAS BLOMBERG

Challenge 2:

How to build net zero houses from 2026 and insulate 16 million draughty homes by 2035

There are two big problems with the British housing stock: 1) Britain and Ireland have the draughtiest homes in northern Europe, because of historically poor building standards and years of relatively inexpensive fuel, and 2) we build our homes and offices almost exclusively with bricks, concrete and steel. Both issues need to be addressed when moving to net zero, but for different reasons.

Around 16 million homes in England, 66% of the total, are at EPC (Energy Performance Certificate) band D or worse. Poor insulation in itself isn't causing greenhouse gases, but our draughty buildings means that we use much more energy to keep our homes and offices warm than the most of Europe. So if we don't insulate better, Britain will need much higher production of electricity and more investments in the electrical grid when we move away from carbon-heated homes. And as electricity will continue to be more expensive than natural gas per kWh/h for quite some time, heating a poorly insulated home will also cost more for the homeowner. This is even more of an issue for homes with a heat pump, as heat pumps don't work as well as intended unless the building is well insulated.

The most important issue is the windows: while double-glazing has been the norm in most of northern Europe since the 1950s and triple-glazing since the 1980s, most of our homes and offices still have single glass windows, and much of our heat goes straight through them.

The problem with bricks and concrete

Using conventional bricks and/or concrete creates lots of greenhouse gases, as the production of both bricks and cement emits huge CO₂ emissions.

When the bricks are fired in kilns at 1,000°C, most of that heat is generated by coal or natural gas. In the UK, where most of the brick industry switched from coal to natural gas several years ago, the production of 1,000 bricks releases on average 626kg of CO₂ into the air, according to the 2020 sustainability report by the UK brick manufacturers' association. In countries where coal is still the predominant heat source, the emissions are very much higher.

The biggest problem, however, is cement - used to glue bricks together and a main component of concrete. World cement production generates around 2.8 billion tonnes of CO₂ per year - equivalent to 10% of the global total. If the cement industry was a country, it would be the third largest carbon dioxide emitter in the world, surpassed only by China and the United States. 90% of all that CO₂ is emitted when ground limestone - calcium carbonate (CaCO₃) - is converted to calcium oxide (CaO) through high heat (1,200°C). 40% of the CO₂ comes from the heat source used for that process, and the remaining 60% is the rest product when CaCO₃ is split into CaO and CO₂.

Using steel is also a problem right now, as the steel industry emits on average 1.85 tonnes of CO₂ for every tonne of steel produced from scratch, i.e. almost twice as much as the steel

itself. The reason is the enormous amount of heat needed in a two stage process to turn iron ore into pig iron and then into steel, and that heat is almost exclusively created by burning coal or gas. Fortunately, almost 50% of steel is nowadays made from recycled scrap steel, and that process emits only 20% as much CO₂.

Although bricks, steel and cement eventually could be made with carbon-free heat sources, the huge release of CO₂ when CaCO₃ is converted to CaO is still an unresolved problem, which makes concrete a questionable material as long as that isn't resolved.

Building net zero from 2026

The government's plan is that all new buildings from 2026 must be net zero. Building environmentally friendly and better insulated homes will not be technically difficult, as there are well established ways to do so. The problem is mainly to get the building industry to learn to do things differently and to make conservative house buyers realise that houses built in a different way often are much better than what we're used to.

Both the Royal Institute of British Architects (RIBA) and the Royal Institution of Chartered Surveyors (RICS) have produced reports outlining how this can be done. They both advocate Britain to move to a much higher degree of modular off-site construction and much more use of wood as a building material - basically the way houses already are built across most of northern Europe. This will result cheaper houses of much higher and consistent quality and much quicker build times.

Triple-glazed windows should be standard, preferably fitted with low-e glass, as it already is in most of northern Europe, and building material should be recycled as much as possible. Every time one single brick from an old building is used instead of a new one, CO₂ emissions are lowered with 0.63kg - and as the average sized UK home built today uses 5,180 bricks, 3.2 tonnes of CO₂ emissions can be avoided for each new home by using recycled bricks.

The key is to use much more wood

Since the 1970s, concrete has increasingly replaced timber in building frames in the UK, and this has made things even worse, as timber is a great CO₂ sink: as long as the timber exists, the CO₂ used by the tree to create its wood doesn't go back into the atmosphere. For this reason, the Committee on Climate Change states in its 2019 report "UK housing: Fit for the future?" that whenever possible, new houses should have timber frames instead of concrete or steel frames.



The Dalston Lane ten-floor 121 flat complex in Hackney is a British example of a wooden building. It was made in cross-laminated timber (CLT), but was clad in brick at the end, in order not to scare conservative British minds. (Pictures courtesy of Daniel Shearin)

“Using wood in construction to displace high-carbon materials such as cement and steel is one of the most effective ways to use limited biomass resources to mitigate climate change. New policies will be needed to support this. Increasing the number of new homes built in the UK each year using timber frame construction systems from around 27,000-50,000 in recent years to 270,000 annually could triple the amount of carbon stored in UK homes to 3 million tonnes every year”, the report concludes.

Using wood?! Well, it's neither dangerous nor very strange. Many think that wooden buildings are a fire hazard and that wood will rot. However, in countries with lots of wooden buildings, fires are no more common than here, and the glue in modern laminated timber tends to act as a fire retardant. As for the rotting, it's all down to proper building techniques. In Scandinavia there are numerous wooden churches still in use that were built more than 900 years ago.

Glulam and CLT wood

In Scandinavia and Canada they are now increasingly building even tall buildings of wood, more than 15 stories high, using glued laminated timber (glulam) or cross-laminated timber (CLT) for frames, floors and walls. Building with wood is much cheaper, quicker, lighter (i.e. less need for heavy concrete foundations) and cleaner. In addition, timber is a much better insulation material, as it doesn't transfer temperature the way brick and concrete does.

Press reports about illegal logging in Brazil and Africa has made some people confuse that activity with the kind of managed forestry that is the norm all over the northern hemisphere. Managed forestry means that a cleared area in a forest is immediately replanted and within 40-100 years (depending on tree type and locality) the area is ready to be

cleared again. Managed forestry is very similar to farming wheat or potatoes, but on a much longer time scale.

However, beside increasing wood as a building material, there is much research and development going on to create better bricks and concrete with less CO₂ emissions, such as sundried bricks and concrete containing much less cement.

Insulating existing homes

Improving the insulation of existing homes will be much more tricky. Most of Britain's housing stock consists of houses built before the 1980's and much of it is a hundred years old or more. In areas such as Kensington, the housing stock is dominated by either quickly and speculatively built Victorian houses from the late 19th century, when London grew enormously, or equally quickly built houses from the 1950's and 1960's in the wake of the devastation after the war. Most of these houses are very poorly insulated and have single glass windows.

The government's goal is that as many existing homes as possible should reach EPC Band C by 2035. Government funding to achieve this will largely go to social rented homes, so most of us are expected to finance insulation refurbishments ourselves.

At the moment there is much talk about whole house retrofits, such as the Passivhaus system, which basically requires the fitting of insulation to all external walls and the roof, in addition to new and better windows. Yes, in an ideal world that would be best, but to implement this for every house and within 15-20 years would be impossible: Britain has some 24 million homes in need of improvement, and a whole house retrofit takes months and requires 8-10 workmen. And while the work is going on, the family must usually move out, as well as all the furniture. Even if the million of workers needed can be found, how many families can afford to stay in a hotel for perhaps four months, on top of a refurbishment that often will cost £50,000 or more?

Insulating in stages instead of all at once

However, in reality much of this can be done in stages, allowing the family to stay in place and spreading the cost over several years.

Most house owners and flat leaseholders in Kensington live in terraced houses or blocks of flats, where the windows are the main cause of heat loss. Up to 50% of the heat loss in homes with single glass windows is through the windows.

So start with upgrading the windows to at least double-glazing with low-e glass, but ideally triple-glazing. The window replacement can also be done in stages, i.e. one side of the house or flat one year and the other side next year. If replacing Crittall style steel windows with aluminium copies, ensure that the new ones have thermal breaks, to avoid temperature transfer through the aluminium.

Once the windows have been replaced, check how much better fuel economy has been achieved and start thinking about insulating the external walls. This can also be done in stages. Finally, check the heat loss in the walls facing the neighbouring buildings. If that loss is noticeable, which it can be if it's a cavity wall, it may be worth insulating that as well. House owners should also consider loft insulation, of course.

THOMAS BLOMBERG

THE NET ZERO CHALLENGES

Challenge 3:

How to replace all fossil fuelled land transports

On 14 July 2021, the government published its plan to decarbonise all modes of domestic transport by 2050. This will happen in stages: by 2035 all new cars, motorcycles, mopeds, vans and heavy goods vehicles (HGVs) up to 26 tonnes must be emission-free; by 2040 all new HGVs over 26 tonnes must be emission-free, as well as all domestic flights. All diesel-only trains must be also be removed by that year, and by 2050 all train operations must be net zero.

What's missing at the moment is a clear plan for buses, but it is expected soon, following a consultation that ended in April, and will probably follow one of the plans for HGVs, i.e. no new diesel buses would sold after 2035 or possibly 2040.

Cars, vans, motorcycles and mopeds

From 1 January 2031, new petrol and diesel cars, vans, motorcycles, mopeds and most hybrids may no longer be sold. However, a few PHEVs (plugin-hybrid electric vehicles) with "significant zero emission range" may be allowed to be sold for another five years.

From 1 January 2036, all new cars and vans "must be zero emissions at the tailpipe", which in practice means be BEVs (battery electric vehicles).

The switch to electric cars will probably be the easiest of all the net zero challenges - and it will happen almost by itself, as all major manufacturers are busy switching their production to BEVs. So even if the world's politicians would suddenly go back on the net zero commitment, there will very soon be no new petrol or diesel cars to buy.

Britain's acceptance of electric cars has been slow, compared to many other countries in Europe, but UK registrations of BEVs and PHEVs (plugin-hybrid electric vehicles) are now picking up and are expected to reach one million in the beginning of 2022, the majority being BEVs, while the sale of conventional petrol and diesel cars is dropping fast. Two million BEVs are expected to run on our roads by 2025 and more than three million by 2029. By 2031 that figure is expected to reach four million.

Because of this total and fast switch to BEVs, prices are dropping fast: according to recent forecasts the investment bank UBS and BloombergNEF, electric cars will be cheaper

than their conventional equivalents perhaps as early as 2024 or at least by 2026, due to the large scale production and cheaper batteries.

At the moment, there is no deadline for the use of petrol or diesel cars and vans, nor for the sale of used such vehicles. However, as the average age of cars on the roads is only 8 years and the average scrappage age of car is 14 years, the government expects almost all cars and vans on the roads to be electric by 2040, and by 2050 there should be hardly any left. That forecast is probably right, because prices of petrol and diesel are expected to increase drastically before the 2030 cut-off, so most buyers of used car and vans will soon only be looking for second hand BEVs or PHEVs. In addition, there will probably be very difficult to find petrol or diesel pumps in most parts of the country in 30 years' time.

So what about hydrogen cars and vans? Well, in spite of enthusiastic plugging from some motor journalist and millions in support from both the government and the fuel industry since they were first launched in the UK in 2014, less than 200 have been sold so far. Why? Because they are very expensive, both to buy, but especially to use. Today, their only advantage is that their tanks are filled as quickly as those in a diesel or petrol car - if one can find somewhere to do it: there are currently only eight public hydrogen filling stations in England (whereof six around London), one in Wales and two in Scotland (both in Aberdeen). Hydrogen cars are electric cars, which instead of a battery have pressurised tanks of hydrogen and a fuel cell, in which the hydrogen is converted to electricity.

Except for the only two manufacturers currently offering them in the UK (Toyota and Hyundai, with one model each), all other car manufacturers have basically turned their back



Almost all car manufacturers are launching electric cars right now, with the Mini Electric being just one example.



TfL's red buses are also being electrified, such as this Enviro400EV, made by Alexander Dennis with motor from Chinese BYD.



Close to 30,000 charge points have been installed in the UK in 2021. This EV charging station in Stretford outside Manchester, with eight 150kW charging points, was opened in early November 2021 by independent forecourt operator MFG. (Image from MFG)

on hydrogen cars, although many of them have spent millions on research and development for the past 20 years.

In the early days of electric cars, the range that the batteries offered was very limited and that was the main reason why hydrogen was an attractive idea. But since then battery capacity has increased dramatically. Most newer electric cars can run more than 200 miles between charges, some more than 350 miles, and a few over 400 miles. And if charged at a ultra-rapid charge station, it only takes 15 minutes to charge the battery from 5-6% to 80%, which in many cases means another 200 miles of driving.

Lorries, buses and coaches

All new heavy goods vehicles (HGVs) over 26 tonnes must be zero emission from 2040, and those under 26 tonnes already by 2035. There is yet no date set for buses, but as local buses

are already being electrified and as there is already some electric coaches in the UK, one of those two dates will probably be set for buses and coaches as well.

For many years, industry experts said that hydrogen would be the only sensible solution for lorries and buses. But nobody knows if or when hydrogen would ever become feasible, so even before any governmental deadlines, most manufacturers had decided not to wait. All major European lorry and bus manufacturers are busy launching electric lorries and coaches, including heavy long-distance HGVs. Several of the manufacturers expect that more than half of their vehicles will all electric by 2030.

As HGVs are very expensive and usually have a long service life, there is also a small but growing refurbishment industry which replaces engines and fuel tanks in existing lorries with new electric motors and battery packs, thus offering the owners a way to become fossil fuel free for a much smaller cost than buying a new vehicle. The lorry manufacturers themselves will probably offer the same kind of service eventually, as a way to maintain customer loyalty.

Growing network of charging stations

In the UK, many seem to think that slow over-night pavement charging, via lampposts or special charging points, is part and parcel of having electric cars in cities, so they worry how this will work when all cars parked along a street become electric. While slow home charging probably is here to stay for those having off-street parking, as it's very convenient to be able to charge the car at home over night, but for the third of UK car owners who don't have off-street parking, pavement charging is only a makeshift solution while there is



Swedish Scania has recently launched a series of medium-sized 29 tonne all-electric lorries. (Image from Scania)

Continues on next page

THE NET ZERO CHALLENGES



Hitachi is one of the UK manufacturers offering regional electric trains. The Hitachi train can quickly switch between overhead wires and batteries without stopping, and can run exclusively on batteries for 90km (55 miles). (CGI image from Hitachi).

a lack of dedicated charging stations equipped with super-fast chargers.

Most petrol stations will soon start adding ultra-rapid EV chargers to their forecourts - and as the need for petrol and diesel drops, their unused petrol and diesel pumps will be replaced by chargers. This is the main reason why companies like BP and Shell are heavily involved in building charging networks, as it ensures that their franchisees will continue to have something to sell the motorists.

There are also several new entrants on the charging station network market without links to the petrol station networks: not just Tesla, with their network of “Supercharger” stations, but also VW, Siemens, Ionity, MFG, Instavolt, Gridserve and others, who are building new charging stations, collaborate with other companies (such as VW’s installation of EV chargers at Tesco forecourts), or provide depot chargers for owners of bus or lorry fleets. Ultra-rapid chargers with a charge speed of at least 350 kWh will soon become standard at charging stations, as these can top up a battery to 80% in around 15 minutes.

Running electric trains on non-electrified tracks

While most railways in other European countries have been electrified for a long time, that’s not the case in the UK. Various attempts to electrify Britain’s railways since the beginning of the 20th century have been very slow and extremely uncoordinated. We have currently as three different delivery systems (overhead wires, third rail and fourth rail) which deliver seven different voltages of DC and one for AC. The only good thing is that Network Rail in 1956 standardised on 25 kV AC, delivered on overhead wires, so by now 64% of the electrified network use that system.

However, the electrification since 1956 has been extremely slow, consisting of short bursts of work, following long periods of inactivity. As a consequence, only 38% of Britain’s railway lines are currently electrified. However, in practice the situation isn’t as bad as it sounds, because the electrified routes carry most of the traffic - so most of the tracks not yet electrified consist of low volume railways in the countryside.

So how are British train operations to reach net zero by 2050? Although the government has promised a much higher electrification of the rail network over the next 20 years, much will still not be electrified by 2050. So the solution is to use electric trains that rely on batteries or hydrogen fuel cells when they run on segments that haven’t yet been electrified.

Both technologies are being trialled or are already in use (at least abroad).

Hitachi Rail (which already builds several different types of trains for various British train franchises in County Durham) has developed a regional battery train which can quickly switch between overhead wires (where those exist) and batteries. It can run exclusively on batteries for 90km (55 miles), but whenever the motor gets its electricity from overhead wires, the batteries are being topped up as well. Existing Hitachi electric-diesel combo trains can easily be converted by replacing the diesel engines with battery packs.

Vivarail in Warwickshire, which specialises in reengineering retired London Underground D78 Stock into regional trains, has launched a system mainly intended for lines without any existing electrification. Fully charged, the batteries can run the train for up to 65km (40 miles), and at each end of the line a big battery bank automatically recharges the batteries within 10 minutes.

Porterbrook, the train and rolling stock leasing company in Derby, is trialling an electric train based on old Class 319 stock and marketed as HydroFLEX, which was showed at Cop26 in Glasgow. It has been developed in collaboration with the University of Birmingham and can switch to overhead wires, like the Hitachi train, but can also switch to 750V DC third rail. When there is no external electricity available, the electric motor gets its electricity from a battery pack which in turn gets it from a fuel cell, which is fed from four high-pressure fuel tanks containing 20kg hydrogen.

THOMAS BLOMBERG



EasyJet collaborates with Los Angeles-based Wright Electric in the design of an electric short-haul plane which could be in service by 2031-32. The plane would have 186 seats and would be intended for European short-haul flights. (CGI image from Wright Electric)

Challenge 4:

How to replace fossil fuelled aeroplanes

Aeroplanes are the most difficult thing to decarbonise, due to the need to keep them light, provide them with lots of power, and enable them to travel long distances between refuelling. At the same time air transport is one of the most urgent segments to sort out, as global commercial aviation already accounts for more CO₂ emissions than a country like Germany and could triple by 2050, given the projected growth of passengers and freight.

An additional problem is that although aviation “only” accounts for about 2.5% of global CO₂ emissions, its warming impact is actually far larger, owing to the other gases and particulates it emits at high altitudes. According to some researchers, these could be tripling the climate impacts of aviation compared with CO₂ alone.

So, in order limit the global temperature increase to 1.5°C, air traffic must be carbon free by 2050. In October 2021, IATA (the International Air Transport Association) committed to this, following net zero commitments from a number of large airline members in Europe and the USA.

But how would it be achieved? Propeller planes could be made electric, by having electric motors turn the propellers, instead of piston engines using high-octane petrol, but jet engines get their thrust from the gases of burning kerosene.

Electric propeller planes by 2030?

Experiments with electric propeller planes are ongoing, but the progress is slow and not until 2026-27 are any commercial versions expected to be operational - and these will only take 15-18 passengers and be suitable as short-haul island hoppers.

Medium-sized electric passenger planes probably won't be operational before 2040, although EasyJet's collaboration with Los Angeles based startup Wright Electric could result in them taking delivery of electric 186-seaters by 2031-32.

The plane, called Wright 1, would be used for EasyJet's European short-haul flights lasting up to an hour. It would have a large battery pack underneath, to be replaced within minutes at each airport, and would have 10 motors delivering 2MW each, giving it the same power as an A320 Airbus, the manufacturer claims. Wright Electric hopes to have a 100 seater prototype in the air by 2026, which will be a reconfigured BAe 146 with four of their electric motors fitted in its jet engine housings.

However, current battery technology makes it impossible to construct very large electric planes or long-haul ones, due to the weight of all the batteries needed to achieve this. One solution could be to use pressured hydrogen which is converted to electricity in a fuel cell. However, so far nobody has managed to create a functioning prototype plane, in spite of many attempts and millions in investments.

Liquid hydrogen planes?

For these reasons, Airbus seems to have given up on electric for the time being and is instead focussed on jet and turboprop engines fuelled with liquid hydrogen, with the stated aim to have a hydrogen airliner in the air already by 2035.

While theoretically possible, using liquid hydrogen as aeroplane fuel is immensely complicated, as it requires the

Continues on next page

THE NET ZERO CHALLENGES



In 2020, Airbus presented three concepts for liquid hydrogen planes: one turboprop for up to 100 passengers and at least 1,800km, and two turbofan planes for up to 200 passengers and at least 3,700km - one with a "blended-wing body". CGI image from Airbus)

hydrogen to be kept at -253°C in pressurised and thermally insulated tanks. Another problem is that the energy density of liquid hydrogen is only a quarter of that of kerosene. This means that for the same amount of energy a hydrogen plane needs four times as much space for storing fuel. Consequently, planes may either have to carry fewer passengers, to make space for the tanks, or be made significantly larger. It also requires the airports have an infrastructure that can handle liquid hydrogen. Most experts doubt we will see any long-haul hydrogen planes this side of 2050 - and when we do, they will be extremely expensive to use.

Can biofuel and e-kerosene be the answer?

Because of these difficulties, the airlines and manufacturers like Boeing are instead busy promoting aviation biofuel - which they prefer to call "sustainable aviation fuel" (SAF) - as an interim solution that can be used by existing aeroplanes.

Aviation biofuel can be made from non-fossil-fuel feedstocks, including cooking oils and agricultural waste, and could cut carbon emissions as much as 80% compared with kerosene, according to IATA. The plan is to gradually mix more and more biofuel into the kerosene and eventually, after modifications, run the jet or turboprop engines on biofuel only.

However, SAF costs up to eight times more than kerosene



Wright Electric aims to fly "Wright Spirit" by 2026, a reconfigured BAe 146 fitted with four electric motors in its jet engine housings.

to produce and probably can't be produced in the volumes required unless vast areas of farm land is created for it - which in turn can lead to more deforestation in sensitive areas like the Amazon.

Another solution could be synthetic aviation fuel, often called e-kerosene or e-fuel, which can be made from CO_2 and hydrogen through three stages. However, the process requires large amounts of electricity in each stage (plus the stage to create the hydrogen), and will be even more expensive than biofuel - and many doubt it can be produced at scale.

The end of mass air travel?

So, with future ticket prices becoming perhaps ten times higher than they are today, it looks likely that air travel, especially long-haul, will revert to what it was in the 1930s: a very exclusive form of travel, only affordable by the very rich - and London would only need one airport with one single runway. Mass tourism will instead move to trains and passenger ships, just as it was before the 1960s...

The much higher prices will probably also put an abrupt end to the enormous air cargo boom that the world has experienced since the 1990s. No more cut flowers or fresh herbs flown in from Kenya and sold at lower prices than those grown in the Netherlands or the UK...

THOMAS BLOMBERG



In August 2021, DHL ordered 12 electric Alice eCargo planes from US-based Israeli company Eviation, for delivery 2024.



Swedish-Norwegian RoRo shipping company Wallenius Wilhelmsen announced in early 2021 that they hope to launch "Orcelle Wind" in 2025 - a 200m long carrier for 7,000 cars, which will have retractable rigid sails. (CGI image from Wallenius Wilhelmsen)

Challenge 5:

How to replace fossil fuelled ships

Shipping should be easy to make green, as it doesn't require high speed or has to be concerned about space or weight. However, the shipping industry has been very reluctant to go green, so during COP26 the British government, together with 21 other nations, made something of a coup which hopefully will kickstart the delayed conversion of shipping.

When COP03 in 1997 created the Kyoto Protocol, it didn't mention aviation and shipping, as those two transport forms were international and the protocol was focussed on plans for individual nations. Instead, the problem with greenhouse gas emissions from shipping was referred to another UN organisation, the International Maritime Organization (IMO).

But not much happened with shipping emissions during the following 21 years, mainly because influential organisations representing ship owners and ship operators managed to convince the IMO that shipping would be uniquely difficult to make green.

So, when the IMO finally managed to broker an emission agreement between its 170 member states in 2018, it was extremely modest: the member countries agreed to lower shipping emissions by 2050 to half of what they were in 2008, i.e. for shipping it would be no net zero goal at all. In fact, the shipping companies would be free to increase emissions further until 2040 - and most big ships use the worst kind of fuel: very dirty (but cheap) heavy fuel oil with high sulphur content in addition to CO₂.

The Clydebank Declaration

However, just a few months earlier, experts in OECD's International Transport Forum had concluded that the shipping industry could achieve 95% decarbonisation already in 2035 by "maximum deployment of currently known technologies". So the technology is there, but obviously not the will to implement it.

The lame IMO agreement infuriated a number of countries,

as it would make any attempts to limit the global temperature increase to 1.5°C by 2050 impossible. So, with the UK government taking the lead, a group of countries got together during the COP26 conference and created an agreement christened the "Clydebank Declaration", which was signed on 10 November by 22 countries, among them the UK, the USA, Australia, France, Germany, Spain, Italy, four of the five Nordic countries, the Netherlands, Belgium and Japan. The list includes seven of the ten leading maritime nations, with China and South Korea among those still missing. More will hopefully sign the agreement shortly.

Green shipping corridors

The Clydebank Declaration says that the signatories are committed to work together to create six global green shipping corridors for net zero ships already by 2025 and "many more" by 2030, by providing the needed technology, expertise and port infrastructure.

The idea is based on a recent report by the Getting to Zero Coalition, which consists of 12 large shipping companies and ports. The possible fuels for the participating ships are green methanol, green ammonia, green hydrogen and synthetic diesel.

The whole point of the exercise is to show the shipping industry what is possible and what works best. The main fear from the shipping industry is that the higher costs will be disliked by their customers, but several big shipping clients, such as Amazon, Microsoft, Ikea, Procter & Gamble and

Continues on next page

THE NET ZERO CHALLENGES



The cruise ferry *Viking Grace*, which runs between Stockholm in Sweden and Turku in Finland (317km/198 miles), was in 2018 equipped with a 24m rotor sail which has reduced the fuel consumption by 20%. (Image from Wikipedia)

Unilever, have already committed to using only zero-emission shipping by 2040, and they realise that this means higher shipping costs.

And while many shipping companies drag their feet, some do not. Danish Maersk, the world's biggest shipping company, which is part of the Getting to Zero Coalition, announced in August 2021 that they had ordered eight large ocean-going container ships from Korean HHI to be delivered in 2024, with an option of four more in 2025. All of them will be able to run on green methanol as well as low-sulphur fuel oil, as there is still uncertainty if they can find green methanol in every port.

Other forms of propulsion

However, green fuels for diesel engines isn't the only solution. There are also several trials going on with electric propulsion, often through a combination of batteries, solar panels, rotor sails and wave power - and there are also interesting experiments with electronically controlled rigid sails (which also can be covered with solar panels).

The large Swedish-Norwegian RoRo shipper Wallenius Wilhelmsen, which specialises in global car transports, hopes to launch a large car carrier in 2025 which will use five very large rigid sails as its main propulsion. The anticipated speed when using only the sails is 10-12 knots.

Rotor sail is an invention first used in 1924, which recently has become interesting again. On the Swedish-Finnish ferry route Stockholm-Turku, the LNG-powered cruise ferry *Viking Grace* was in 2018 equipped with a 24m tall rotor sail that reduced fuel consumption by 20%, and *M/V Copenhagen*, which runs on the Danish-German ferry route Gedser-Rostock, was in 2020 equipped with a 30m rotor sail.

In many ways, ships are easier to make green than most other forms of transport, as ships aren't reliant on high speeds, aren't very sensitive regarding size and weight, and can fairly easily be repurposed. Adding a few tonnes of batteries to a freighter weighing 400,000 tonnes wouldn't

change its goods capacity very much, and there is usually ample space in the engine room for all sorts of modifications. And at the top, all sorts of additional gadgets can be erected, such as rotor sails or electronic sails.

Sails tend to be forgotten, but when the wind was right, 19th century clippers were as fast as modern ships. Their big problem was that they needed a very large crew to hoist and change the sails quickly, and if the wind disappeared or came from the wrong angle they could be stuck for days in the middle of the ocean. However, a combination of electronically controlled rigid sails, solar panels and a large bank of batteries can enable future sailing ships to move around with a minimum of crew even when the wind isn't being cooperative.

Ocean liner revival?

As long-haul aviation looks likely to become extremely expensive in the future, we may see a big return of ocean liners, green of course, enabling those of us who aren't immensely wealthy to occasionally travel in style to other parts of the world - just like millions of people did before the 1960s. Yes, a trip from London to New York would take 3-4 days, but it would be a much more comfortable trip than in a jumbo jet.

In an article from 2008 in the online "Low-tech Magazine", the author concludes that a ship the size of the only remaining ocean liner (although used as a cruise ship nowadays), *Queen Mary 2*, would be able to take 500,000 passengers if they were packed as densely as in a plane. Today *QM2* takes 2,700 passengers plus 1,200 crew, but has also 15 restaurants and bars, 5 swimming pools, a casino, a ballroom, a theatre, a planetarium and lots of shops. If half of those amenities were replaced with cabins, she could carry 30,000 passengers who would still have plenty of space and lots of restaurants to visit. To fly 30,000 passengers requires 65 jumbo jets...

THOMAS BLOMBERG

What RKBC is doing about global warming

While national governments have the means and resources to push for a greener world, there is a limit to what local councils actually can do, as they can't make laws or raise enormous amount of money through new taxes or loans. However, there is no limit to what they can aim for.

In 2019, the RBK council made a climate emergency pledge to make its own activities carbon neutral by 2030, and a more lofty pledge to make the whole borough carbon neutral by 2040. For this purpose, the council launched its Green Plan in 2020.

This plan states, among other things, that:

- All residents should have a charging point for electric vehicles within 200m from their home by April 2021.
- The council must ensure that all major developments are built according to net zero standards in accordance with the council's Greening SPD, which was adopted on 9 June 2021.
- All vehicles used by the council and its contractors should be electric by the end of 2022.
- All community schools should have decarbonisation plans and climate action plans by 2022.
- Lancaster West Estate should become a model to illustrate how all estates can be carbon neutral by 2030.
- All council operations should be net zero by 2030. This includes all buildings owned by the council, i.e. offices as well as all council-controlled housing.

Outdated information

It all sounds promising, and the council's website has one page devoted to the Green Plan and another page, called "Climate change", consists of links 12 pages with more specific content, such as "Solar Together London", "Green Fleet Strategy and Action Plan", "Greener living" and "Carbon performance".

However, several of those special pages are seriously outdated, containing advice leaflets written 8-10 years ago, or offering improvement schemes that are no longer available.

For instance, the "Carbon performance" page states that the council has been producing an annual carbon performance report since at least 2010, and that since 2011 it is obliged by the government to also produce an annual greenhouse gas report.

However, no new reports have been added on that page since 2015, and its text (and a diagram showing how the council's carbon emissions have been lowered since 2008) is obviously also from 2015 (although a line at the bottom of the page states that it was updated on 11 March 2020).

And the "Greener living" page is dominated by a 44 page leaflet (Greener Living Guide), which is undated but obviously published by the council before 2014. That leaflet is in turn a revised version of a leaflet produced by the Haringey council in 2010, and tells people to apply for the government's "Renewable Heat Premium Payment scheme", which was abandoned in 2014.

It talks about ground source heat pumps (which very few RBKC residents can use in their small gardens (if any), but doesn't mention air source heat pumps (which now seems to be the big thing), as those hardly existed eight-ten years ago.



The council's heat map shows how well or poorly each building in the borough was insulated in February 2015.

Instead, it tells people to replace their boilers with condensing boilers - which will not be allowed to be sold after 2035.

But there are two items on the Climate Change page well worth a visit:

Heat map of your building

One is "Heat loss in your home", which contains a fascinating heat map of RBKC. It was made on 1 February 2015 and shows the heat emitted by every single roof in the borough. By typing in your post code or street name in a search field, you will be taken directly to the area of your home. You can also drag the map to the desired area can zoom in or out by using the plus or minus buttons. The houses are coloured according to heat loss, and a click on a building displays its heat loss classification for more details.

Although heat loss through the roof isn't a perfect measure (a large, unheated attic would probably lower the heat loss through the roof, and a roof on a block of flats can't show the situation for flats several floors down), the map can provide a good general indication of the heat loss. The window displaying building's heat loss classification has a link to a page on the excellent Energy Saving Trust's website, which unfortunately throws up an error, but once on that website, most people will probably find lots of useful information.

Free telephone consultations

The other useful item on the page is "Free home energy service - Homes4Health", about the Groundwork charity and its Green Doctors offshoot, which during the Covid pandemic gives free 45-60 minute telephone consultations to help people reduce their energy bills, improve their wellbeing and save energy. Anyone who is over 65, or is on a low income, or has a long term health condition or disability is entitled to get the consultation. Once the pandemic is over, the Green Doctors will probably resume their free 2 hour home visits.

THOMAS BLOMBERG

Happy Christmas from us and John Callcott Horsley

Christmas cards are nowadays an integral part of Christmas celebrations round the world - and the whole tradition began in Kensington 178 years ago.

From 1823 until his death in 1903, the painter John Callcott Horsley lived in 128 Kensington Church Street (known as 1 High Row, Church Lane until the 1870s). He had moved in there with his family when he was only six years old.

In early December 1843, when he was an unknown but aspiring artist of 22, Horsley was approached by a family friend, the entrepreneur Henry Cole, who also lived in Kensington and eventually became known for creating the Great Exhibition together with Prince Albert and creating the whole museum area in South Kensington. He also became the first director of the V&A.

Christmas was a busy time in the Cole household, with unanswered mail piling up, and Cole was an energetic man with lots of ideas popping up all the time: "What if I could print a card with a nice illustration, that I and my wife could just sign and address, instead of writing hundreds of personal Christmas notes?" So Cole asked young Horsley for help.

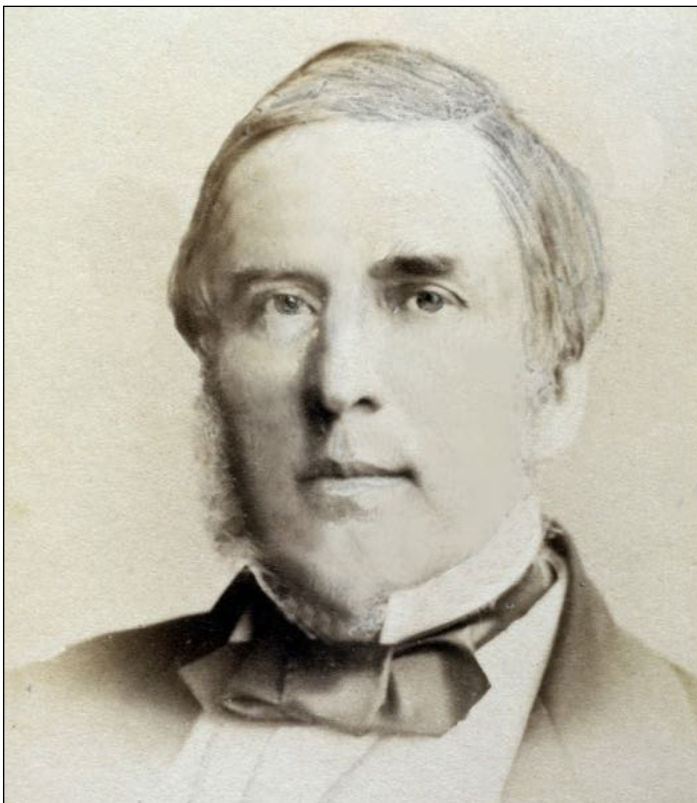
On 17 December, Horsley came home to Cole with his design: three generations of the Cole family raising a toast, surrounded by a decorative trellis and black and white scenes depicting acts of giving: a message of celebration and charity. Cole was delighted and commissioned a printer to make a thousand copies that could be personalised with



There can be no more fitting Christmas card for us in Kensington than the one John Callcott Horsley created in 1843. Through our very good contacts upstairs, we asked John to send a card to all Kensingtonians living 178 years later – which he was delighted to do...

a hand-written greeting. The cards not needed by Cole's family were offered for sale at a shilling a piece, which was a very high price at the time. However, each card was hand-coloured, which explains it.

These were the first printed Christmas cards, and when inexpensive chromolithography colour printing was introduced from France a few years later, the Horsley-Cole card idea was quickly copied by every other publisher and printer, and soon thousands of different Christmas cards were available every year.



John Callcott Horsley as he looked in 1857, 14 years after he made the Christmas card.



Formed in 1953, the Kensington Society strives to ensure that our part of London retains its magnificent heritage of buildings, parks and gardens alongside the best of contemporary architecture and design.

With 700 members and some 40 affiliated societies, we are very active in planning issues and able to exert a real influence on planning decisions in the Royal Borough of Kensington & Chelsea. We also have a programme of lectures and talks, which covers a wide range of subjects, both historical as well as informative. The events offer the chance to meet your Kensington neighbours.

Interested in joining? It only costs £20 per year.

Membership form and booking form for events can be found on the Kensington Society website.

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Kensington Society is a registered charity (number 267778)

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