Ealing Front Gardens Project
www.ealingfrontgardens.org.uk

What happens to front gardens when pavement crossovers (kerb drops) are approved?

A report on research conducted in 2017

Contents

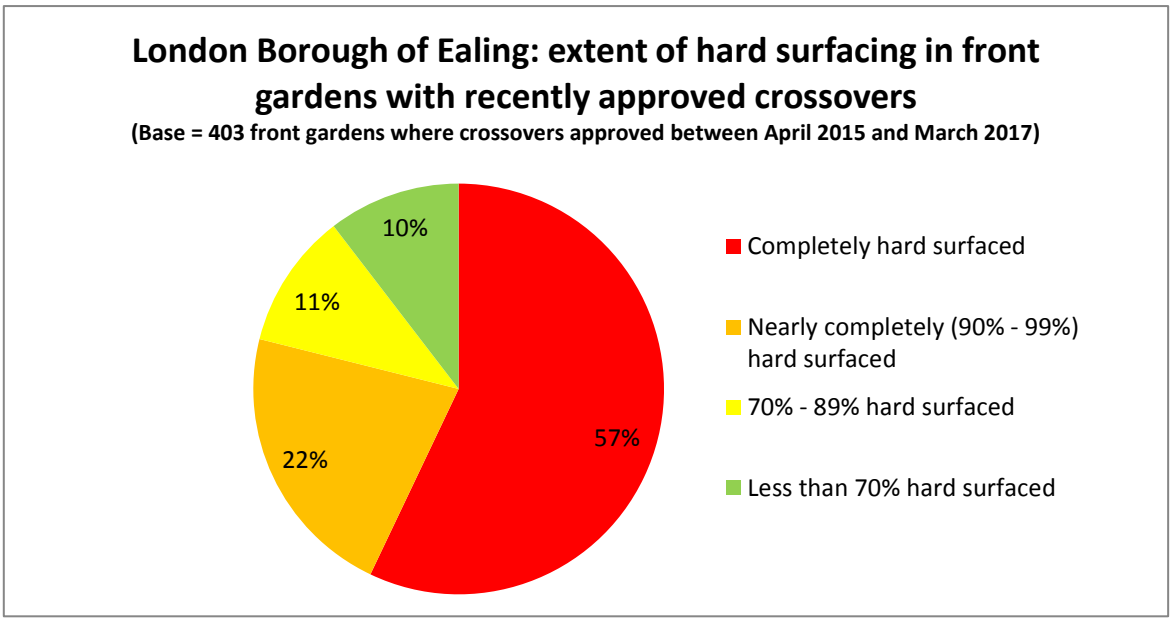
1. Summary of key findings

- This research shows what happened to the front gardens of just over 400 properties in the London Borough of Ealing when pavement crossovers (kerb drops) were approved between 1 April 2015 and 31 March 2017 under permitted development regulations.

- Four in five (79%) of the front gardens where the crossovers had been approved were fully or nearly fully covered with hard surfacing.

- Over half (57%) were totally covered; a further quarter (22%) were nearly totally (90-99%) covered.

- Only ten percent had an area of less than 70% hard surfaced.



- As far as could be ascertained, in at least 77% of the front gardens the hard surfacing was new. We can't know for sure what the front gardens were like before their crossovers were approved, but the newness of the surfacing suggests that most was put down as part of allowing vehicle access.

- This means that, in four in five cases, putting in a pavement crossover to allow parking results in the front garden being more or less completely hard surfaced.

- The most frequently-used hard surfacing material was brick, used in half the front gardens. Stone blocks were used in a fifth (19%); concrete and gravel/loose stones in ten percent each.

- In at least a quarter of the front gardens the legality of the surfacing was questionable. The 2008 regulations state that front garden hard surfacing of more than five square metres must either be of porous material or, if impermeable, must make provision for

run-off. Yet we found 28% had no obvious run-off provision despite apparently impermeable surfacing. A further ten percent had drainage grilles either ineffectively positioned or not running the full length of the hard surfaced area.

- The vast majority (97%) of the new crossovers were for the original property. Only a very small number were for new builds and redevelopments such as conversions to flats (so probably occupied by more people than originally).

- Putting in a crossover and hard surfacing is often accompanied by boundary structures (walls, fences, railing, hedges, gates) disappearing, especially at the front of the garden – so the garden and the pavement become contiguous.

- The boundary structures at the sides of the garden, if present, are usually hard walls or railings rather than green structures. This is probably because the extent of the hard surfacing leaves little room for plants, let alone hedges.

Implications

- Putting in pavement crossovers under permitted development regulations leads to front gardens being extensively covered with hard surfacing for parking.

- Precautions to reduce flood risk are often not being complied with.

- Under a **business-as-usual scenario**, there is not likely to be any let-up in applications for crossovers, due to rising numbers of vehicles per household, slow roll out of controlled parking zones and the Domino Effect reducing on-road parking.

- But a switch to an **electric vehicle(s) + home charging scenario** is likely to make the situation considerably worse. It will cause (a) more applications for crossovers and (b) more extensive hard surfacing per garden, for multiple vehicles to be charged overnight.

- Hard surfacing front gardens causes serious problems, including worsening flood risk, heat island effect, climate change, air pollution, biodiversity and neighbourhood desolation. Only one of these (flood risk) is addressed by current regulations.

- Urban and suburban front gardens are likely to be lost to hard surfacing fairly quickly, and already-widespread problems made much worse, unless there is urgent regulatory change.

- Householders need to be required to maximise green space and minimise hard surfaces when using for parking. Statutory nuisance should be considered.

- Our 2017 demonstration project conducted jointly with the Royal Horticultural Society (reported separately) shows that front garden parking + maximum green space can be achieved cost-effectively.

2. Introduction

This research, conducted during Autumn 2017, explores what happens to front gardens when householders put in pavement 'crossovers' to use the garden for parking.

To park in a front garden, a dropped kerb or pavement 'crossover' is supposed to be in place. Ealing Council[1] defines a crossover as "*an alteration to the footway. It involves lowering the kerb and laying new foundations to the paving to enable a car to be driven onto the front area of a property"*.

In 1995, pavement crossovers were allowed as 'permitted development' under John Major's Conservative Government's relaxation of planning controls. Since then, a householder wanting to park in a front garden with no pre-existing crossover is supposed to apply to the appropriate local authority for approval to construct one. Applications are approved if the front garden is large enough and the position of the proposed crossover is considered safe and unobstructed. (Of course, some householders do not do make an application and put in crossovers regardless, while others just drive across the pavement).

Our 2005 survey of front gardens in the London Borough of Ealing showed that, ten years after the permitted development changes, hard surfacing of front gardens was widespread. And the majority of such gardens were being used for car parking.[2]

There is increasing concern throughout the country about the many detrimental effects of front gardens being covered with hard surfaces. But crossovers are still allowed as permitted development, and the only change made to the 1995 permissions has been some flood risk mitigation in 2008 (see Section 2.1 below).

The Ealing Front Gardens Project has long been concerned that the policy of permitting crossovers is encouraging widespread destruction of urban green surfaces at a time when they are needed more than ever. And the introduction of electric cars, most of which are currently charged at home[3], will make matters worse as householders seek to park close to their domestic electricity supply.

In this 2017 research we examine what has happened to the front gardens of the just over 400 properties in the London Borough of Ealing where pavement crossovers were approved by Ealing Council in 2015-6 and 2016-7 and subsequently installed . A list of approvals was obtained under a Freedom of Information request, and the front gardens of the relevant properties were surveyed, from the pavement, by volunteers (for further details, see Appendix D).

2.1 Legislation

Pavement crossovers have been allowed as 'permitted development' since 1995, under Article 3 of the Town & Country Planning (General Permitted Development) Order 1995. This enabled front gardens to be used for car parking.

[1] Ealing Council website, accessed 1 February 2019
[2] The extent of hard surfacing of front gardens in the London Borough of Ealing, Ealing LA21 Pollution & Public Health Project Group, November 2005, www.ealingfrontgardens.org.uk
[3] Future Insight: Implications of the Transition to Electric Vehicles, Ofgem, 2018, cites 2018 research showing that 87% of electric vehicles were being charged at home.

Until 2008 there were no controls on the types of surface that could be used in front gardens and (as shown by our 2005 research) many front gardens in the London Borough of Ealing (as elsewhere) were being totally covered with impermeable hard surfacing. Subsequently the Town and Country Planning (General Permitted Development) (Amendment) (No. 2) (England) Order 2008 required front garden hard surfacing of more than five square metres in area either to be made of porous material or, if impermeable, to *"direct runoff to a soakaway area or rainwater storage within the property's boundary"*, or to require planning permission.

Local councils have powers to require that planning permission is obtained for any amount of paving of front gardens, if they believe this would be justified in response to a particular problem[4].

Guidance[5] was produced on appropriate surfacing for front gardens used for parking.

There have been no further regulatory changes despite accumulating evidence of increasing hard surfacing and accompanying detrimental effects (see Section 4.2).

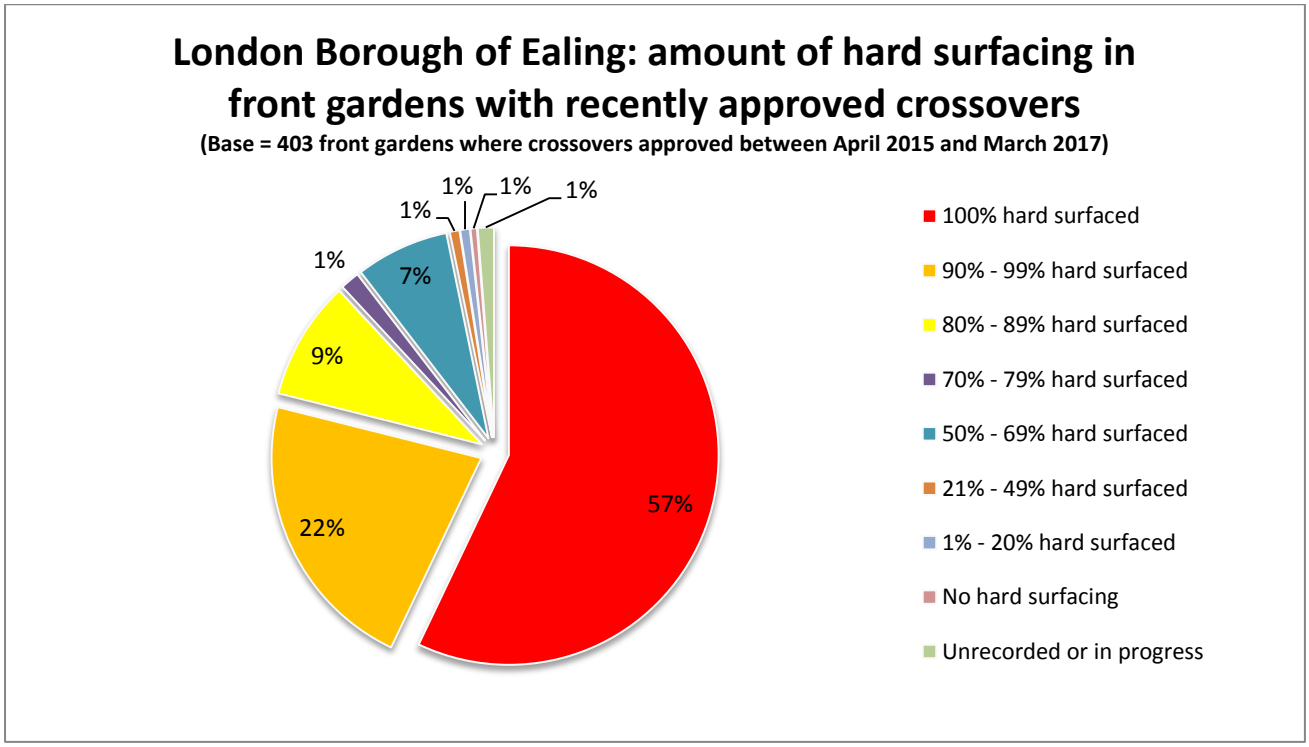
[4] Department for Communities and Local Government, letter from Greg Clark MP, Minister for Decentralisation, 27 May 2011.
[5] Guidance on the permeable surfacing of front garden, Department for Communities and Local Government / Environment Agency, September 2008

3. Survey results

3.1 Amount of hard surfacing in front gardens where crossovers approved

The survey found that over half of the front gardens where crossovers had been approved between April 2015 and March 2017 were completely covered in hard surfacing. A further quarter were nearly completely (90-99%) covered. So four-fifths of these gardens were completely or nearly completely hard surfaced.

An additional ten percent were over two-thirds (70-89%) covered. Only a handful had less than half their area hard surfaced. See chart and table below.



% of front garden hard surfaced	Total	*% of total*
100% hard surfaced	230	*57*
90% - 99% hard surfaced	88	*22*
Subtotal: 90% or more	**318**	***79***
80% - 89% hard surfaced	37	*9*
70% - 79% hard surfaced	6	*1*
Subtotal: 70-89%	**43**	***10***
50% - 69% hard surfaced	29	*7*
21% - 49% hard surfaced	3	*1*
1% - 20% hard surfaced	3	*1*
No hard surfacing	2	*<0.5*
Subtotal: less than 50%	**8**	***2***
Unrecorded or in progress	5	*1*
Total properties	**403**	***100***

3.2 Type of property

Nearly all the properties where crossovers had been allowed were the original one.

A small proportion were conversions or redevelopments of the existing property and in all of these the front garden was completely or nearly completely hard surfaced – probably to accommodate multiple vehicles if the redevelopment has led to more people in the property.

An even smaller proportion were new builds, and in more of these the front gardens were less fully hard surfaced. See table below for details.

Type of property	**Total**	***%***	**Front garden 90%+ hard surfaced**	***%***	**Front garden <90%% hard surfaced**	***%***
Original property	390	*97*	310	*97*	80	*94*
Conversion / redevelopment of existing property e.g. into flats	7	*2*	7	*2*	0	*0*
New build	4	*1*	1	*<0.5*	3	*4*
Unsure	2	*<0.5*	0	*0*	2	*2*
Total properties	**403**	***100***	**318**	***100***	**85**	***100***

3.3 Role of crossover

In nearly all cases it seemed that the crossover had been installed, as expected, to provide vehicle access to the front garden where none previously existed. A small number were less clear, being incomplete at the time of surveying or apparently for another purpose such as extending access already in existence, e.g. from a shared driveway. See table below for details.

Role of crossover	**Total**	***%***	**Front garden 90%+ hard surfaced**	***%***	**Front garden <90% hard surfaced**	***%***
Provide vehicle access to the front garden area where none previously existed	387	*96*	310	*97*	77	*91*
Other including work in progress	10	*2*	8	*3*	2	*2*
Extend existing vehicle access e.g. from driveway	2	*<0.5*	0	*0*	2	*2*
Unsure	4	*1*	0	*0*	4	*5*
Total properties	**403**	***100***	**318**	***100***	**85**	***100***

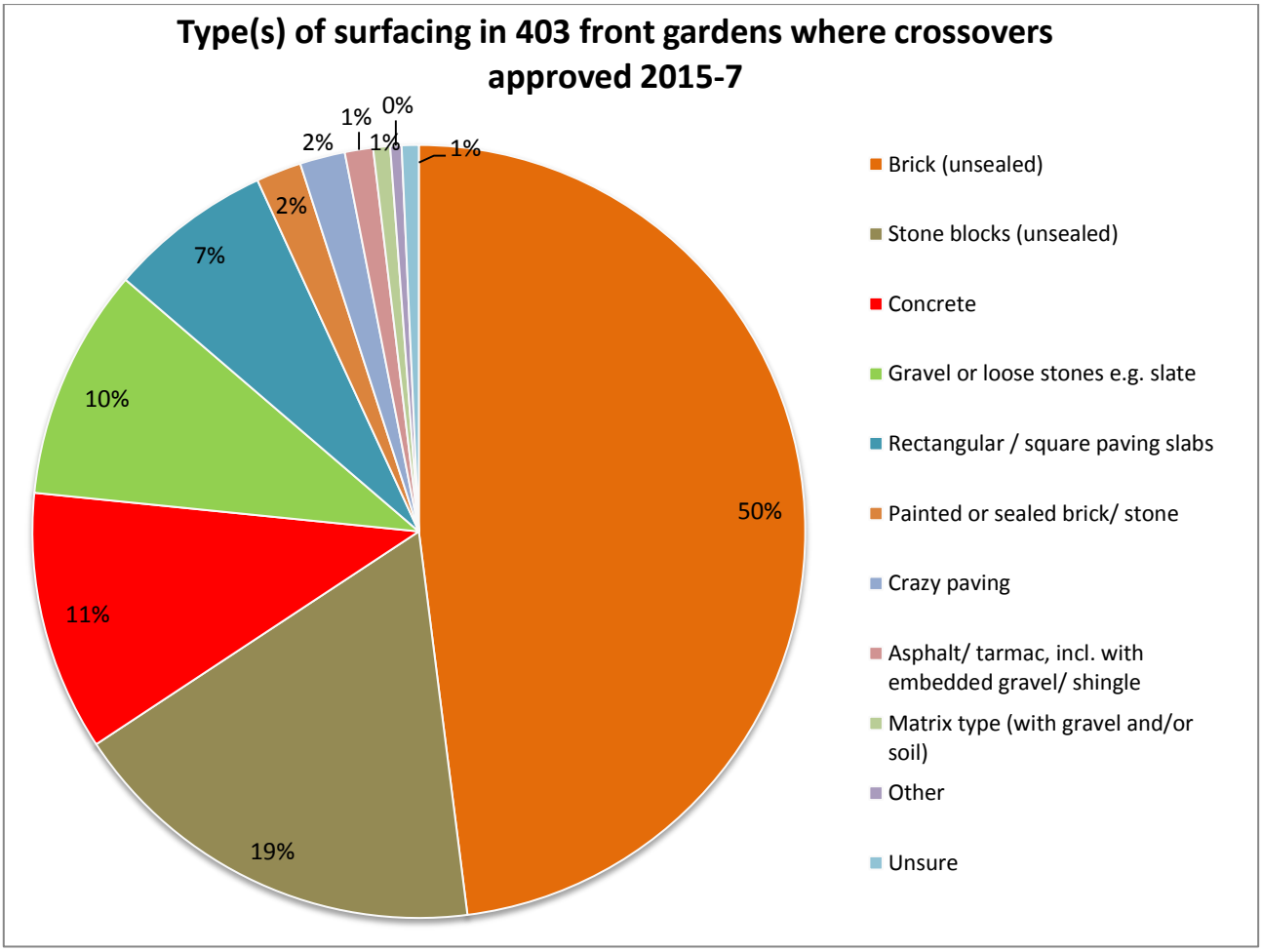
3.4 Types of hard surfacing

The type of hard surfacing used can make a great difference to the permeability, amount of run-off, heat absorption and presence of plants in a front garden.

The most popular surface was brick, used in half of all cases and over half in front garden which were fully or nearly fully hard surfaced. Stone blocks were the next most popular. Neither of these have a sealed surface so may be permeable but may have been placed on top of a concrete or other impermeable base – one cannot tell without testing.

Concrete (which is impermeable), gravel/loose stones and paving were fairly frequently used – the permeability of the latter two again cannot be established without testing. Impermeable surfaces such as painted brick/stone, crazy paving and asphalt were relatively little used, but neither were permeable matrix types which can offer many benefits.

See chart and table below.



Type(s) of hard surfacing used	Total	%	Front garden 90%+ hard surfaced	%	Front garden <90% hard surfaced	%
Brick (unsealed)	203	*50*	170	*53*	33	*39*
Stone blocks (unsealed)	75	*19*	58	*18*	17	*20*
Concrete	46	*11*	34	*11*	12	*14*
Gravel or loose stones e.g. slate	41	*10*	28	*9*	13	*15*
Rectangular / square paving slabs	29	*7*	22	*7*	7	*8*
Painted or sealed brick/ stone	8	*2*	6	*2*	2	*2*
Crazy paving	8	*2*	4	*1*	4	*5*
Asphalt/ tarmac, incl. with embedded gravel/ shingle	5	*1*	3	*1*	2	*2*
Matrix type (with gravel and/or soil)	3	*1*	2	*1*	1	*1*
Other	2	*<0.5*	2	*1*	0	*0*
Unsure	3	*1*	0	*0*	3	*4*
Total	**403**	***100***	**318**	***100***	**85**	***100***

3.5 Age of hard surfacing

In three-quarters of cases the hard surfacing appeared to be newly put down, while in 10% the pre-existing surface was used; in the rest the surveyors were unsure. There was no difference between the more or less completely hard surfaced front gardens and those which were less extensively hard surfaced in this respect. See table below for details.

Likely age of hard surfacing	Total	%	Front garden 90%+ hard surfaced	%	Front garden <90% hard surfaced	%
New	312	*77*	247	*78*	65	*76*
Pre-existing	42	*10*	32	*10*	10	*12*
New + pre-existing	2	*<0.5*	2	*1*	0	*0*
Unsure	47	*12*	37	*12*	10	*12*
Total	**403**	***100***	**318**	***100***	**85**	***100***

3.6 Adherence to 2008 regulations (run-off provision)

As outlined in Section 2.1 above, the 1995 regulations allowing pavement crossovers as permitted development were modified in 2008 to mitigate flood risk by requiring newly hard surfaced front gardens to have some arrangement for run-off (or to have planning permission).

Our volunteer surveyors recorded whether an impermeable-looking surface appeared to have a means for run-off and hence whether or not the hard surfacing appeared to contravene the 2008 regulations. Obviously one cannot tell without testing whether either surfaces or their underlying sub-base layers are permeable, but the below results give an indication of whether provision for run-off has been made.

Most of the front gardens were considered to have impermeable-looking surfacing. Of these, the majority had some run-off arrangement: a grille in most cases, less often soil, grass or flower bed. But 30% of the extensively (90%+) hard surfaced front gardens had no obvious provision for run-off, and in a further ten percent a grille was present but likely to be ineffective because its coverage was incomplete or not at positioned at the lowest point (see table below).

This is worrying, because it is those very gardens which potentially create the most run-off.

Run-off provision	**Total**	***%***	**Front garden 90%+ hard surfaced**	***%***	**Front garden <90% hard surfaced**	***%***
Impermeable-looking surfaces:						
• with grille across entire width of hard surfaced area	174	*43*	151	*47*	23	*27*
• with no obvious provision for run-off	111	*28*	95	*30*	16	*19*
• with grille across partial width of hard surfaced area	33	*8*	24	*8*	9	*11*
• with run-off into soil or flower bed(s)	31	*8*	13	*4*	18	*21*
Grille not at lowest point, or otherwise positioned so as unlikely to be fully effective re. runoff	9	*2*	8	*3*	1	*1*
Permeable-looking surface, so no need for run-off provision	40	*10*	27	*8*	13	*15*
Unsure	5	*1*	0	*0*	5	*6*
Total	**403**	***100***	**318**	***100***	**85**	***100***

Based on their observations, our surveyors estimated that about a quarter of the front gardens with recently approved crossovers appeared to be contravening the 2008 regulations (see table below). As noted above, this cannot be definitive but could be indicative.

Appears to contravene 2008 regulations?	**Total**	***%***	**Front garden 90%+ hard surfaced**	***%***	**Front garden <90% hard surfaced**	***%***
Yes	97	*24*	83	*26*	14	*16*
No	291	*72*	227	*71*	64	*75*
Unsure	15	*4*	8	*3*	7	*8*
Total	**403**	***100***	**318**	***100***	**85**	***100***

3.7 Boundary structures

Boundary structures (walls, fences, gates, hedges etc.) at the front and sides of front gardens serve many purposes. They act as wind-breaks and contribute to privacy and security, and if plant-based help support wildlife, absorb CO_2 and pollution and reduce heat island effects.

In three-quarters of the front gardens, and over 80% of the extensively hard surfaced ones, there was no boundary structure at all at the front of the garden, i.e. no break between the garden and the pavement. In most of the rest, partial or complete boundary structures were present, but nearly all were hard surfaced walls, fences, railings etc. and very little in the way of soft hedges or green material. See table below.

Any boundary structures at front?	**Total**	***% of total***	**Front garden 90%+ hard surfaced**	***%***	**Front garden <90% hard surfaced**	***%***
None at all	299	*74*	263	*83*	36	*42*
Along part of length only: hard	62	*15*	32	*10*	30	*35*
Hard: wall, fence, railings, gates etc.	27	*7*	15	*5*	12	*14*
Soft: hedge; structure with climbing plants	8	*2*	6	*2*	2	*2*
Some hard, some soft	3	*1*	1	*<0.5*	2	*2*
Along part of length only: soft	2	*<0.5*	1	*<0.5*	1	*1*
Unrecorded	2	*<0.5*	0	*0*	2	*2*
Total	**403**	***100***	**318**	***100***	**85**	***100***

At the sides of the garden, only a few (5%) had dispensed with boundary structures completely, but the majority had only hard surfaced structures in place. Just a fifth (19%) had any green elements at either side. Again, the more extensively hard surfaced gardens were less likely to have any green elements – probably because the amount of hard surfacing allows little space for any plants at all, let alone a hedge. See table below.

Any boundary structures at side?	**Total**	***% of total***	**Front garden 90%+ hard surfaced**	***%***	**Front garden <90% hard surfaced**	***%***
Hard: wall, fence, railings, gates etc.	268	*67*	217	*68*	51	*60*
Some hard, some soft	42	*10*	24	*8*	18	*21*
Soft: hedge; structure with climbing plants	32	*8*	23	*7*	9	*11*
Along part of length only: hard	31	*8*	28	*9*	3	*4*
None at all	21	*5*	19	*6*	2	*2*
Along part of length only: soft	5	*1*	5	*2*	0	*0*
Unrecorded	4	*1*	2	*1*	2	*2*
Total	**403**	***100***	**318**	***100***	**85**	***100***

4. Discussion

Private gardens account for about a quarter of Greater London's total area, and front gardens in turn account for about a quarter of this garden total.[6] So they cannot be dismissed as insignificant, especially in the context of wider concerns about loss of green space in urban areas.

4.1 Our research evidence

Our research shows pretty conclusively that, if a pavement crossover is allowed as permitted development, the front garden nearly always ends up extensively hard surfaced. While this research was conducted only in the London Borough of Ealing, anecdotal evidence and observation suggests that the same situation applies in many other urban and suburban centres throughout the country.

The research also indicates that much of the hard surfacing being put down is impermeable, and that provision for run-off appears to be lacking in up to a third of cases – in contravention of the 2008 regulations.

We already knew from observation that, in this borough, these regulations are not being strictly enforced, but this research sheds light on the scale of the problem. In the current funding climate many local authorities are probably in a similar position.

4.2 The main problems caused by hard surfacing front gardens

Flood risk

The aforementioned 2008 regulations were an attempt to address just one of the problems caused by hard surfacing front gardens: flood risk. This followed widespread flooding in England in the summer of 2007 and the realisation of the risk posed by extensive hard surfacing in urban areas, including in front gardens.

As our research has found, these regulations are not always adhered to. In any case the solution usually adopted (a drainage grille) often has limited effectiveness. Even if they are correctly positioned, such grilles can soon get blocked with leaves and weeds so cannot cope with heavy downpours. Most soil under the hard surfacing becomes very dry so even less able to cope with flooding, and also creates a subsidence risk (see next page).

But flooding is far from the only problem (though the only one where any regulation has been attempted).

Heat island effect

The urban heat island effect is also a serious problem. Removing plants and street trees contributes to making cities dangerously hot during heatwaves, as hard surfaces absorb heat in the day and release it at night; green surfaces do not. Climate change is making cities hotter. The danger was investigated by the House of Commons Environmental Audit Committee in 2018[7]. It reported that

[6] Smith, C., Dawson, D., Archer, J., Davies, M., Frith, M., Hughes, E. and Massini, P., 2011. From green to grey; observed changes in garden vegetation structure in London, 1998-2008, London Wildlife Trust, Greenspace Information for Greater London (GIGL) and Greater London Authority.

[7] House of Commons Environmental Audit Committee, Heatwaves: adapting to climate change, Ninth Report of Session 2017–19, House of Commons, HC 826, July 2018

"Green spaces have been proven to reduce the urban heat island effect, however urban green space has declined in England" and recommended that *"the Government should aim to increase urban green space to 2001 levels, and higher if possible"*.

Front gardens were not specifically mentioned but clearly have a role to play.

Climate change, air pollution and biodiversity

Plants and trees absorb carbon dioxide, air pollutants and dust. Removing front garden plants, plus grass verges and street trees to make way for pavement crossovers, means less reduction of atmospheric CO_2 and air pollutants at a time when both these issues are becoming critical.

Also becoming critical is loss of biodiversity. In addition to the removal of plants and trees, dried out soil under hard surfacing supports far fewer microorganisms which are an essential component of biodiversity.

Desolate neighbourhoods

Green, attractive front gardens and street trees have benefits for people and wildlife. For people a green environment is proven to be calming and stress-reducing, which benefits their well-being and mental health[8]. A green front garden can provide screening, creating a private green oasis for enjoyment, and help build community cohesion by give neighbours more opportunity to meet. For birds, pollinating bees and other insects, front gardens and street trees provide food and shelter.

All this is lost if front gardens are hard surfaced and residential streets are turned into extended car parks. In addition, by reducing or preventing rainfall getting into the ground, hard surfacing can cause subsidence damage to buildings, especially on clay soils. And streets without parked cars encourage drivers to speed.

A full list of all the problems that front garden hard surfacing can cause is in Appendix C.

4.3 The future: a threat from electric vehicles?

Neither government nor local authorities are likely to amend the permitted development status of pavement crossovers in future. After nearly twenty-five years, householders' expectations have become entrenched and the number of hard surfaced front gardens is now so great that it is becoming the new normal. Research conducted for the Royal Horticultural Society in 2005 and 2015 indicated that three times as many front gardens were totally hard surfaced in 2015 than in 2005, and that the number with no hard surfacing halved over the same period[9].

In the London Borough of Ealing, the average number of crossover applications per year over the period 1999-2017 is 383. The number has fallen gradually over the period but picked up in the last few years (see Appendix A).

If **business as usual** continues, loss of front gardens will continue. Rising numbers of vehicles per household, slow roll out of CPZs and the Domino Effect caused by loss of on-road parking to

[8] Urban green spaces and health. Copenhagen: WHO Regional Office for Europe, 2016
[9] Why we all need 'Greening Grey Britain', Royal Horticultural Society, 2015

crossovers[10] will cause this. But it will still be within the bounds of acceptability to many and therefore tighter regulation is unlikely.

However, a change is coming which could make the situation considerably worse: **the switch to electric vehicles**.

Electric vehicles are being rapidly rolled out and have considerable benefits: they are much less polluting and noisy compared to fossil fuel powered vehicles, and, as battery technology improves, may also be used to store electricity and feed it back to the grid. Currently, the majority of the relatively small number of electric vehicles in the country are charged at home[11]. The government plan is for this to continue, and the Office for Low Emission Vehicles (OLEV) is offering grants of up to £500 to householders to install home charging point for up to two electric vehicles.

But this requires off-street parking. The OLEV guidance[12] states:

In addition to being the registered keeper, leasing or having primary access to an electric vehicle, the customer must have off-street parking facilities suitable for chargepoint installation (a survey prior to installation should be conducted by the installer). The installation address must have designated private off-street parking with good access for an eligible vehicle to be charged safely. The customer must be able to access the designated private off-street parking space at all times. We may require additional supporting evidence, such as the customer's property records (e.g. the property's land registry) and/or evidence from the customer's local authority to ascertain that the parking space is off-street, designated and private.

The implications for front gardens do not appear to have been considered. In practice, as householders switch to electric vehicles, there will be more applications for crossovers to allow these vehicles to be driven across the pavement and charged close to the house, i.e. parked in the front garden.

One can envisage the following scenario:

1. Householders switching to electric vehicles who currently park all of their fossil fuel vehicles on road will apply for a crossover, put down new hard surfacing or expand the existing hard surfaced area, and park the electric vehicle(s) in the front garden.
2. Householders who already have a crossover and use the front garden for parking some of their fossil fuel vehicles will need more front garden parking to charge **all** the electric vehicles, so the amount of hard surfacing in the front garden will have to be extended.
3. At the same time, the increasing number of crossovers will reduce the available on-road parking still further, so fewer of the road's residents will be able to park in it. They will resort to parking in their front gardens and therefore apply for crossovers, thus setting up the Domino Effect.
4. The number of hard surfaced front gardens will increase steadily, and to accommodate the electric vehicles the hard surfacing will be more extensive. This will worsen all the problems associated with front garden hard surfacing, and may create some unanticipated ones too.

[10] For explanation of the Domino Effect, see http://www.ealingfrontgardens.org.uk/crossovers---domino-effect
[11] Future Insight: Implications of the Transition to Electric Vehicles, Ofgem, 2018, cites 2018 research showing that 87% of electric vehicles were being charged at home.
[12] Office for Low Emission Vehicles, Electric Vehicle Homecharge Scheme, Guidance for Customers, January 2019, version 2.3

5. The praiseworthy policy of encouraging people to switch from fossil fuel to electric vehicles will create a large swathe of problems, some of which could undermine the self-same policy.

It is possible that this is already happening if the increase in applications for crossovers in London Borough of Ealing (see Appendix A) is by householders wanting to charge their vehicles. We can't tell this from our research because it was conducted during daytime when vehicles are often elsewhere. We didn't ask volunteers to look for home charging points but in any case these are not needed to charge a vehicle – it can be, and is being, done by a lead connecting to the indoor electricity supply.

4.4 Conclusions and recommendations

As things stand at present it seems very likely that the demand for parking in front gardens will increase considerably in the coming years, as electric vehicles and home charging take off. Therefore, a strong case can be made for tighter planning regulation to address the multiple problems that the otherwise inevitable hard surfacing will cause.

Only the minimum amount of hard standing for parking, using cellular paving, should be permitted and the rest of the garden given over to green surfaces, i.e. plants. Our 2017 Front Garden Demonstration Project (separately reported) has shown how this can be done at no greater cost than conventional hard surfacing, and can be very low maintenance. Others including the Royal Horticultural Society have also developed similar designs.

The current regulations are limited and weakly-enforced. Because of the difficulties local authorities face in enforcement and the wide ranging problems that hard surfacing causes, adding heavily hard surfaced front gardens to the list of statutory nuisances should be considered.

Making the installation of home charging points conditional on off-road hard surfacing being minimal should also be considered.

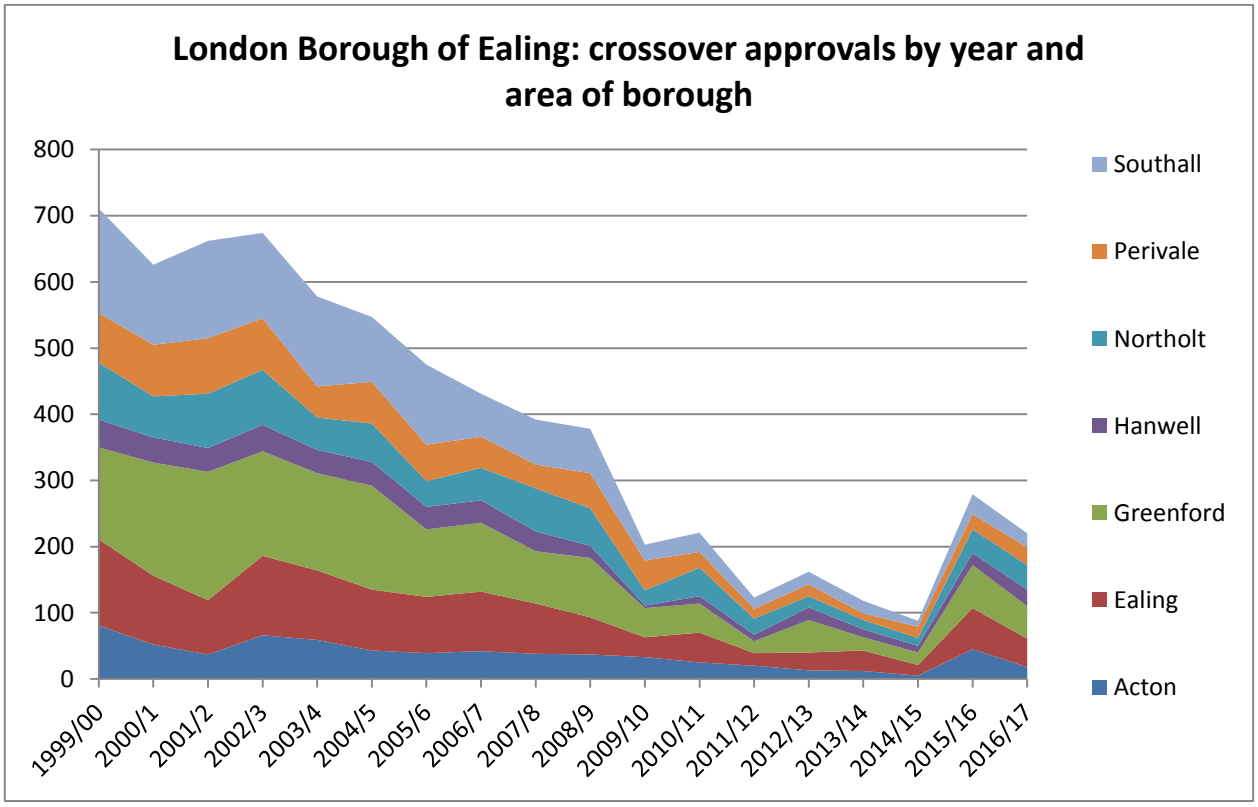
If there is no regulatory overhaul, and the current limited and weakly-enforced regulation is allowed to continue, it seems inevitable that there will be very few green urban and suburban front gardens in the country in another ten years' time.

20 May 2019

5. Appendices

Appendix A: Numbers of applications for pavement crossovers in London Borough of Ealing 1999 – 2017

Numbers of crossover applications to Ealing Council since 1999-2000 are shown below. These data have been provided at various times by Ealing Council staff, though records for the years immediately following the introduction of permitted development in 1995 are no longer available. From over 700 applications in 1999-2000, applications gradually fell, but picked up again in 2015-6. The annual average over the period is 383.

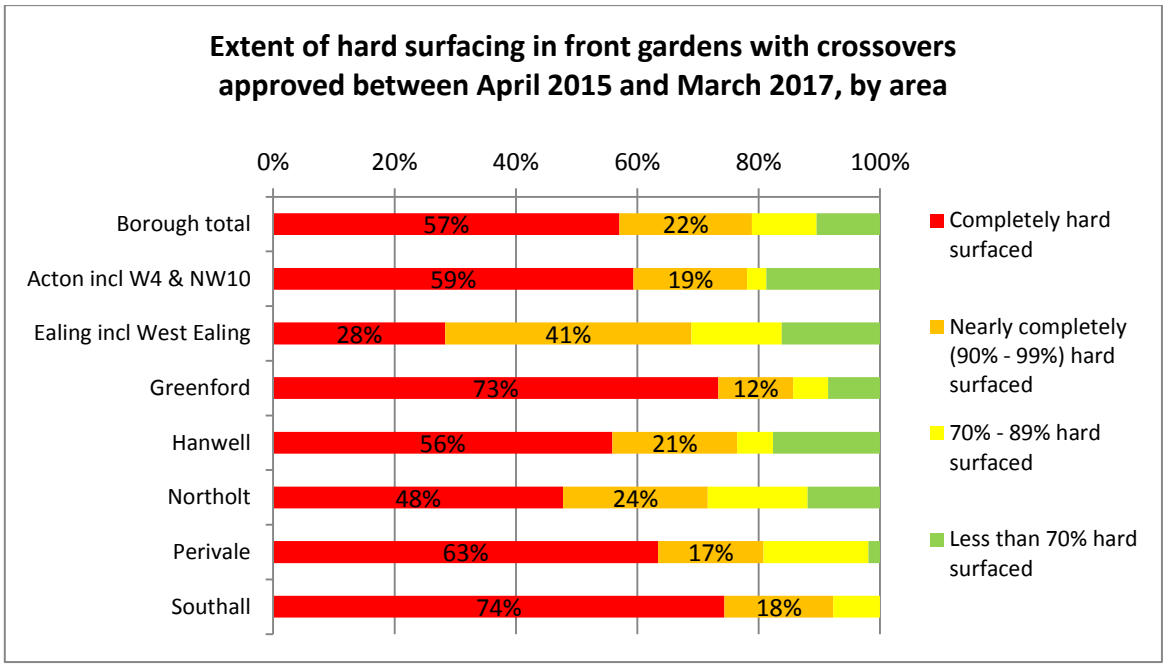


	1999-00	2000-1	2001-2	2002-3	2003-4	2004-5	2005-6	2006-7	2007-8	2008-9	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Acton	81	52	37	66	59	43	39	42	38	37	33	25	20	13	12	5	45	18	665
Ealing	130	104	82	120	105	92	85	90	76	56	30	45	19	27	31	16	62	43	1,213
Greenford	139	171	194	158	147	157	102	104	79	90	44	44	18	49	20	19	65	49	1,649
Hanwell	42	38	36	40	35	36	34	34	30	18	4	11	10	19	12	10	18	25	452
Northolt	86	62	82	83	49	58	39	49	65	57	23	43	24	17	14	12	36	37	836
Perivale	75	78	84	78	47	63	55	47	36	53	45	24	15	18	10	17	23	27	795
Southall	158	121	147	129	136	98	121	65	68	67	24	29	17	19	19	9	30	21	1,278
Borough total	711	626	662	674	578	547	475	431	392	378	203	221	123	162	118	88	279	220	6,888

Appendix B: Survey results by area of borough

The London Borough of Ealing is divided generally into seven towns or areas: Acton, Ealing, Greenford, Hanwell, Northolt, Perivale and Southall. Acton includes part of Bedford Park in W4 and a small part of the NW10 postal area; Ealing includes West Ealing.

The summary chart and table below show that there are some differences by area in the extent to which front gardens are hard surfaced when crossovers have been approved. Residents in Southall and Greenford are the most likely to go for total coverage, while those in Ealing and Northolt the least likely.



	Borough total	Acton incl W4 & NW10	Ealing incl West Ealing	Green-ford	Hanwell	Northolt	Perivale	Southall
Total properties with crossovers approved April 2015 – March 2017	**403**	**32**	**74**	**105**	**34**	**67**	**52**	**39**
% distribution	*100%*	*8%*	*18%*	*26%*	*8%*	*17%*	*13%*	*10%*
Extent of hard surfacing:	%	%	%	%	%	%	%	%
100%	57	59	28	73	56	48	63	74
90% - 99%	22	19	41	12	21	24	17	18
80% - 89%	9	3	9	5	6	15	17	8
70% - 79%	1	0	5	1	0	1	0	0
50% - 69%	7	9	12	4	15	10	2	0
21% - 49%	1	0	3	1	0	0	0	0
1% - 20%	1	0	0	1	3	1	0	0
None	<0.5	6	0	0	0	0	0	0
Unrecorded or in progress	1	3	1	3	0	0	0	0

These differences are partly due to relative sizes of garden. From our 2005 research[13] we have estimates of the numbers and average sizes of front gardens in each of the Borough's seven areas. These are shown in the upper part of the table below.

Front gardens in Ealing and Northolt are, on average, among the largest, so even if used for parking don't need to be totally hard surfaced and can provide space for planting. In contrast, those in Southall, Acton and Hanwell are smaller, so there is less space. Those in Greenford are on average large but do vary a lot, which could explain to some extent the high level of complete hard surfacing.

Another factor (discussed in more detail in our 2005 report) is greater dependence on cars in Greenford, Northolt and Southall, because public transport is less widely available compared to other parts of the borough.

London Borough of Ealing: key front garden statistics

	Borough total	Acton incl W4 & NW10	Ealing incl West Ealing	Green-ford	Hanwell	Northolt	Perivale	Southall
Estimated total no. of front gardens in each area	74,300	12,200	19,900	10,300	7,200	6,500	3,900	14,200
% distribution of total	*100%*	*16%*	*27%*	*14%*	*10%*	*9%*	*5%*	*19%*
Estimated average size of front gardens in area (m^2)	41	36	49	47	26	50	44	34
Total properties with crossovers approved April 2015 – March 2017	403	32	74	105	34	67	52	39
% distribution of total	*100%*	*8%*	*18%*	*26%*	*8%*	*17%*	*13%*	*10%*
% with complete (100%) hard surfacing:	57	59	28	73	56	48	63	74

[13] Estimates derived from a sample of 7,675 front gardens reported in The extent of hard surfacing of front gardens in the London Borough of Ealing, Ealing LA21 Pollution & Public Health Project Group, November 2005, www.ealingfrontgardens.org.uk

Appendix C: Problems caused by hard surfacing of front gardens

1. Run-off

Impermeable hard surfacing causes more rain water to run-off. This causes greater fluctuations in amount of water going into the roadside storm drains and from there to local streams and rivers. This in turn leads to:

- An increased risk of flooding, especially flash flooding.
- Erosion and damage to riverbanks and hence to their habitats.
- Increased pressure on roadside storm drains and the drains system.
- In some areas, particularly London, this leads to increased pressure on sewers, even leading to forced release of sewerage into rivers, as occurred in the River Thames in August 2004.
- Localised flooding of streets, pavements and nearby properties.

As it runs off, rain water picks up oil and heavy metals from the hard surfaces beside and close to roads, plus pesticides, herbicides and other chemicals used in gardens. This leads to:

- More pollution of local watercourses, which has a range of detrimental effects on water quality and on wildlife.
- Polluted rivers & streams, which are unattractive and therefore less used by people for leisure activities, leading in turn to neglected areas which are more prone to vandalism – a downward spiral of deterioration, vandalism and hostility sets in.

More run-off means less rainwater percolating through the soil.

- This means less water purification and removal of pollutants from ground water by soil percolation processes.
- It also means soil drying out, leading to it being less able to support micro-organisms which are important for biodiversity.
- Soil drying out also leads to greater risk of building subsidence.

2. Non-absorption of heat, noise, dust

Hard surfaces are non-absorbing which creates multiple problems:

- They absorb more solar heat, so contributing to making built up areas hotter (the **'heat island'** effect). Hotter towns and cities affect people's health and increase death rates, as demonstrated in Paris, London and elsewhere in Summer 2003. This will worsen with climate change.
- To keep cool, people use more air conditioning, which uses more energy, often derived from fossil fuels.
- Both the heat island effect and the increased use of fossil fuels contribute to global warming, a very serious concern.
- Hard surfaces absorb less noise, which means more noise from traffic and other sources, especially for people living at ground floor level.
- Hard surfaces don't absorb dust. This means more dust in the atmosphere, leading to increased air pollution (particulates).
- Hard surfaces don't absorb dirt and spills, leading to a dirtier, less appealing environment for people to live in.

3. Accommodation of parked vehicles

- More pavement crossovers (kerb drops) make pavements uneven and corrugated, and walking becomes more difficult, especially for people who have difficulty walking, for small children and for people pushing buggies and wheelchairs or driving mobility scooters. These are often forced to use the road instead. It is also more difficult for two people to walk and talk together side by side.
- Vehicles being driven across and reversed across the pavement creates risks to pedestrians, especially children.
- Parked vehicles overhanging the pavement means less space on the pavement for pedestrians.
- Vehicles parked in front gardens are higher and more solid than garden vegetation, which means pedestrians are less able to see around them. This makes for a more dangerous pedestrian environment especially for children (whom we are trying to encourage to walk to school etc.)
- Using front gardens for parking often creates a net gain in car parking spaces, which therefore contributes to generating greater volumes of traffic – contrary to Government policies to reduce traffic.

4. Reduce road space

Increased numbers of pavement crossovers (dropped kerbs) to allow front garden parking causes a corresponding reduction in the number of on-street parking spaces available. That's because people shouldn't or don't park in front of a pavement crossover, thus effectively reserving that section of the road for the sole use of the dwelling with the crossover.

- This leads to more pressure for parking spaces, so more people apply for pavement crossovers to enable them to park in their front gardens, and so on, leading to a **Domino Effect** as more front gardens converted to parking.
- 'Parking wars' cause rows between neighbours and damage neighbourhood relations.
- Less on street parking reduces the control that the highways authorities have over parking, e.g. controlled parking zones (CPZs) become less effective and more controversial.
- Fewer cars parked on the road creates a wider road with improved visibility, which encourages traffic to speed, thereby creating a more dangerous environment for residents, especially children, and pedestrians.

5. Removal of trees and plants

As this report has shown, hard surfacing of front gardens often means that most or all of the garden's vegetation is removed. This creates yet a further set of problems.

- Fewer plants means less carbon dioxide absorption, therefore more contribution to global warming, the effects of which are becoming increasingly evident and alarming.
- Loss of shade created by plants and the cooling effect of plants' evapo-transpiration leads to a hotter local environment and so contributes to 'heat islands' (see also non-absorption above).
- There are fewer habitats for wildlife (both above and below ground level): front gardens, though often small compared with back gardens, can nevertheless make a difference to the amount of wildlife an area can support, i.e. biodiversity.
- Fewer plants and less animal life lead to less biodiversity. In particular, fewer flowering plants means fewer pollinating insects.
- Removing or reducing the garden also means less or no gardening activity. Gardening at the front of the dwelling provides opportunities to chat to and get to know neighbours and passers by informally. Hard surfacing is a significant factor in reducing 'community cohesion'.
- The removal of grass verges to accommodate pavement crossovers also has an adverse effect on plant and animal life, contributes to global warming and increases run-off etc. by replacing with hard surfacing, in the same way as described above.

- Replacing grass verges with hard surfacing also changes the character of a road and leads to loss of aesthetic appeal (see below).
- When street trees are removed to accommodate pavement crossovers, there are fewer trees to absorb pollutants, leading to more air pollution and a range of damaging effects on people's health.
- Fewer trees also means loss of habitat for birds, insects etc., so there are fewer birds in the vicinity.

6. Changes to the aesthetics and character of roads and neighbourhoods

- Many people are upset by the changed appearance and aesthetic appeal of their neighbourhood once front gardens are hard surfaced, and soft green areas and trees are replaced by cars and hard, often unattractive surfaces.
- The visual appearance, attractiveness and entire character of a neighbourhood are altered when front gardens are hard surfaced, and the sense of balance and values that derive from front gardens being in keeping with the houses that they front, is lost. Instead, the hard surfaced jars with the traditional architecture.
- This in turn leads to changing street characteristics, unhappy residents and a reduction in community cohesion.
- In addition, it is clear that, when most or all of the front gardens in the street have been hard surfaced., house prices fall, reflecting the less attractive environment.
- Fewer plants and trees also means a more stressful, tense neighbourhood. It is well established that trees have a calming effect on neighbourhoods and that removal of green space has an adverse effect on people's mental health.

7. Removal of boundary structures (hedges, fencing etc.)

- There are fewer barriers to wind, leading to higher levels of dust and hence particulate air pollution.
- The loss of boundaries and demarcation can cause tensions between neighbours.
- Removing the barrier between the pavement and the dwelling increases the risk of trespass, graffiti and vandalism.

8. Sourcing of hard surfacing materials

- Stone, gravel, slate chips etc. are natural resources which use energy to extract and often cause environmental damage in the process. Taking pebbles from beaches reduces sea defences and causes erosion and flooding.
- Transporting heavy materials long distances uses fossil fuels, contributing to global warming. Some stone is imported from as far away as India and China.

The above list has been compiled from a variety of sources.

Appendix D: How the research was conducted

The addresses of properties granted approval for crossovers in 2015-6 and 2016-7 were obtained from Ealing Council via Freedom of Information request. No other information was provided.

The lists were inspected; a few duplicates and non-residential premises (shops and other commercial premises, schools, churches etc.) were removed, together with a very small number of addresses with missing postcodes, non-existent names or otherwise garbled information. This left 403 residential properties in scope.

The addresses were sorted into the main areas of the borough and ordered by postcode, then allocated to volunteer surveyors together with an appropriate number of pre-piloted recording forms (see overleaf). Some of the volunteers had worked on our 2005 research; those that hadn't were briefed in person.

All surveying was conducted from the pavement and volunteers worked their way from one address to another in any order they chose. They were provided with an explanatory letter in case of queries from anyone.

The surveying was conducted between August and November 2017. Completed forms were returned for data entry and analysis.

Acknowledgements and thanks

We are very grateful to the following who did the majority of the surveying: Virginia Fassnidge (Hanwell), Mike Tyzack (Acton), Maggie Wilson (West Ealing), Magdalena Flynn (Perivale), Celia Roberts (Ealing), John Gilbert (Greenford), Andy Lyon (Northolt, Southall, Greenford).

Andy Lyon did the data entry and preliminary analysis. Christine Eborall did recording form design, further analysis and reporting.

Ealing Front Gardens Project

April 2019

Ealing's Front Gardens Project: survey of crossovers approved 2015-17 : Recording Form

Leave blank

Recorder name: ……..…. Date ……..……2017

Address of property: ……
(no need for full postcode)

Area of borough: Acton & W4 ☐ West Ealing/W13 ☐ Greenford ☐ NW10 ☐ Southall ☐
Ealing ☐ Hanwell ☐ Northolt ☐ Perivale ☐

1. Is the property: New build ☐ Conversion / redevelopment of existing property/ies e.g. into flats ☐
Original property ☐ Other (describe) ☐

2. Does the crossover : Provide vehicle access to the front garden area where none previously existed? ☐
Extend existing vehicle access e.g. from driveway? ☐
Other (describe) ☐

3. Estimated % of front garden hard surfaced: ……....% *Record information for **garden area only**: exclude driveways and equivalent areas which lead direct to garages even if they are not delineated from the garden. Hemispherical driveways: garden = area not required for in-out vehicle movement. Exclude basement "areas" below street-level. Assess garden surface only: ignore plants in pots, troughs etc*

4. Type(s) of hard surfacing used in the front garden:

Brick (unsealed)	☐	Rectangular / square paving slabs	☐
Stone blocks (unsealed)	☐	Concrete	☐
Gravel or loose stones e.g. slate	☐	Asphalt/ tarmac, incl. with embedded gravel/ shingle	☐
Matrix type (with gravel and/or soil)	☐	Crazy paving	☐
Painted or sealed brick/ stone	☐	Other (describe)	☐

5. Run-off provision (tick all that apply)

Impermeable surface with grille across entire width of hard surfacing area	☐	Impermeable surface with run-off into soil or flower bed(s)	☐
Impermeable surface with grille across partial width of hard surfacing area	☐	Impermeable surface with no obvious provision for run-off	☐
Grille not at lowest point or otherwise positioned so as unlikely to be fully effective re runoff	☐	Permeable surface, so no need for run-off provision	☐

6. Is the hard surfacing new, i.e. likely to have been installed around the time the crossover was installed, or is it pre-existing ?

New ☐
Pre-existing ☐
Unsure ☐

7. Does the hard surfacing appear to contravene 2008 regulations i.e. has the front garden more than 5 square metres of new impermeable surfacing with no provision for run-off? (add any notes here)

Yes ☐
No ☐
Unsure ☐

8. Are any boundary structures present ***at the front*** of the front garden area? (as you face the property) (tick all that apply)

Soft: hedge; structure with climbing plants ☐
Hard: wall, fence, railings, gates etc. ☐
None ☐

9. Are any boundary structures present ***at either side*** of the front garden area? (as you face the property) (tick all that apply)

Soft: hedge; structure with climbing plants ☐
Hard: wall, fence, railings, gates etc. ☐
None ☐

Please write any additional notes overleaf, and take a photo if helpful. When completed please return to Christine Eborall or Andy Lyon. Many thanks!