



Statement on De-paving in Southwark

October 2023

Contents

1. Why should Southwark create a de-paving strategy?
2. What are Southwark's current obstacles to de-paving?
3. Examples of successful systemic de-paving strategies employed by local authorities
4. De-paving action: what Southwark should do now



Making space for biodiversity:

De-paving for the Octopus Garden, Dunton and Lynton Roads, 2022 / The garden view from Lynton Road, 2023

1. Why should Southwark create a de-paving strategy?

Systematic de-paving is a powerful strategy in moving our community towards climate preparedness, carbon net zero, and better conditions for biodiversity. The associated increase in greenery can also be very effective in improving citizens' physical and mental health, increasing community pride and engagement, as well as improving land values.

De-paving opens up greater opportunities for Southwark to comply with the public authority biodiversity duty (see below). De-paving also has a very strong alignment to the goals of the

Southwark Council Climate Change Resilience and Adaptation Strategy, whose priorities include heat island and flood risk, and a better local food economy. Southwark's Nature Action Plan (2020) calls for Southwark Council Homes to "Retrofit sustainable drainage systems to create enhanced wildlife habitats and green spaces." (p28).

Reduced run-off and flood resilience

Areas of Southwark are already prone to surface water flooding and flash floods, and flood events can only be expected to increase with the acceleration of global warming.

Vegetated land attenuates and allows infiltration of rainwater at a much higher rate than hard surfaces. A [SuDS study in northeast England](#) found that the installation of only 6 trees, including only 2 structural tree pits designed for maximum rooting capacity, reduced peak flow between upstream and downstream manholes by 25-30%.

Reduced heat island effect

Vegetated land absorbs and stores much less heat than paved surfaces, a critical consideration as we face increasing temperatures. De-paving land creates space for larger-canopied trees to be planted, giving them a healthy environment to establish and mature, so that cooling benefits provided through evapo-transpiration and shade are maximised over time.

Carbon sequestration and pollutant filtration and absorption

Sealing the soil with hard surfaces stops plant growth from sequestering carbon and sends valuable rainwater into the sewage system, along with pollutants such as tyre particles and motor oil. Stressed trees, without enough rooting volume to be drought resilient, [cease photosynthesizing and become carbon sources rather than sinks](#).

The production of cement, a vital ingredient in concrete and other paving, accounts for 8% of carbon emissions worldwide, so the less new hard surface we require for public realm improvements, the better.

Encouraging social engagement, active travel and discouraging personal vehicle ownership

A vast area of land in Southwark is currently used for the parking of privately owned vehicles. Dovetailing with Southwark's push towards an increase in car clubs and the reduction of privately owned vehicles, we need a clear strategy for much of this current car-park land to be de-paved, to create healthy green corridors for active travel and pleasant areas for public interaction.

The statutory biodiversity duty

Creating new green spaces and semi-natural habitats would help Southwark to demonstrate its compliance with the public authority biodiversity duty. The guidance under this duty (<https://www.gov.uk/guidance/complying-with-the-biodiversity-duty>) includes suggestions to create new areas of habitat for wildlife. Under-used paved areas represent an opportunity in Southwark where the space for additional habitats is otherwise highly constrained by a wide range of competing uses. Commencing work soon would allow inclusion of depaving activity in Southwark's first biodiversity report, due to be published before January 2026.

Biodiversity: Plants, insects, and birds

Protecting and restoring biodiversity is not just about iconic species in far-away places. It is about the soil, plants and living organisms and water quality in our local environment. Furthermore, not all local greening is equal from a biodiversity standpoint. It is important to include as many site-appropriate UK native plants as possible in a new planting, and to include as many UK- wildlife-friendly species as possible. SNAV recommends that any new plantings consist of at least 50% UK-native species and 80% wildlife-friendly species at a minimum, in order to support local wildlife populations. Plantings should also ideally consist of several layers of a variety of native/wildlife friendly plants, including groundcover, native grasses or herbaceous plants, and a woody / structural layer that will provide architecture and cover for larger animals such as birds. Many organisms are not generalists - they depend on a symbiotic co-dependent relationship with specific plants. Lose our native plants, and we lose the micro-organisms, invertebrates and animals that depend on them. Let's recover the soil-based environments they all need to live.

Other ideas to improve conditions for biodiversity have been outlined in the 2020 Southwark Nature Action Plan.

Biodiversity: Soil health

The microorganisms that live in the soil perform essential ecosystem roles that we are not always aware of. Studies of [phage therapy](#) (using bacteria-specific viruses for a more targeted antibiotic), bacteria that digest methane or radio-active waste, [root-nodule bacteria that help plants fix nitrogen](#), cyanobacteria that produce oxygen, [the depleted gut and skin biomes of urban dwellers](#) -- all these point to the vital functions performed by microorganisms in the soil. Healthy soil biota rely on aerobic reactions and carbon and nutrient cycling involving plants, which are severely impeded by soil sealing and compaction.

Mental and Physical Health

There is now much well-established [evidence that access to greenery improves health outcomes](#), and that above and beyond this, [the ability to hear or see wild birds improves mood](#).

Community Pride, Engagement, and Food Production

De-paved land provides more opportunities for communities to gather and engage in nature-based activities such as food production, wildlife gardening, or just observation of natural processes, such as seasonal changes in plant, bird, and insect life.

Many people in Southwark are particularly interested in food production, but the current number of allotments is not sufficient to meet demand. De-paving land can potentially make it more suitable for the development of community allotments or orchards, with bordering habitat for beneficial predatory and pollinating insects.

Land Opportunity

There is a huge amount of wasted land in Southwark - potentially life-supporting soil that is currently trapped beneath little-used hard surfaces. We have created [this map](#) identifying several sites with unnecessary paving, within a small sample area of Camberwell - 1,255m² within 1.25 square kilometres. [Extrapolating this number](#) to the borough as a whole, there may be approximately 28,965m² (approx 3ha) of little-used, unnecessary hard surface

readily available for depaving in Southwark, even without reducing the number of car parking places. De-paving even this relatively small area of land would make a great difference for the pedestrian and resident experience, biodiversity, and flood resilience.

Including land dedicated to parked vehicles greatly increases the area under consideration. [Lambeth's kerbside strategy](#) calculated that its kerbside area alone, currently 94% of which is used for parking, is equal to 194 football pitches, or 1,158,000m² (116ha, over twice the area of Burgess Park).

De-paving also creates the opportunity to join up larger parks with nature corridors, which also can be walking/cycling routes.

Social benefits

The maintenance costs of paved areas are low, but this hides an opportunity cost - that is the potential value of the greenspace that could occupy that area instead of paving. The value per square metre of de-paved land, as calculated through natural capital accounting methods, is potentially significant when taken in aggregate across the borough, considering the land's improved value in terms of contributions to biodiversity, urban cooling, flood resilience, and improved air and water quality. This potential value should be taken into account alongside the inherent and unquantifiable benefits of biodiverse greenspace.

Recycling availability

[FM Conway](#), Southwark's main highways contractor, and [Tarmac](#) both have facilities which can recycle used tarmac and concrete into new paving and other infrastructure products.

2. What are Southwark's current obstacles to de-paving?

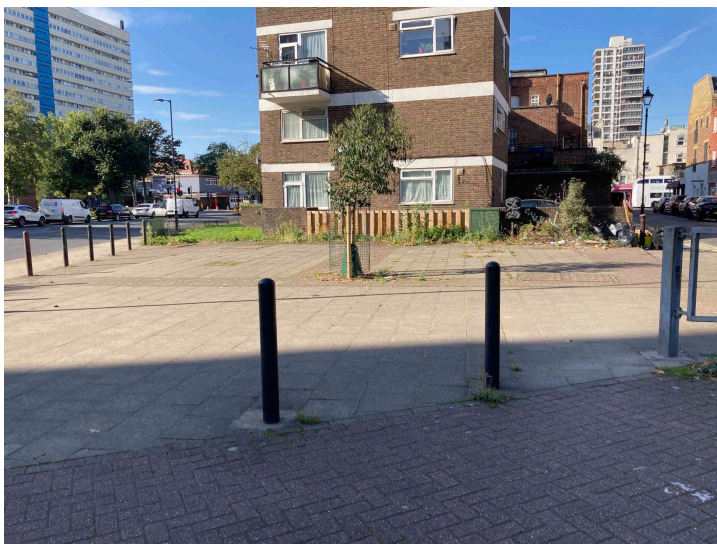
Lack of joined-up thinking / Lack of prioritisation of de-paving and SuDS

Even now, redevelopment and streetscape projects are currently being built with vast areas of unnecessary hard surface and little to no accommodation for biodiversity, bio-infiltration, or bioattenuation - a poor legacy which will not serve the borough well in years to come. While Southwark's Tree Section is diligently working to plant more trees, often these trees are being placed awkwardly or inappropriately, in tiny tree pits which do not allow sufficient mature rooting volume or provide significant wildlife benefit. Some of these plantings would offer much greater benefit and long term survival rates if coordinated with well-designed de-paving and SuDS.



New barren pavement island installed on treeless Maltby Street

De-paved, planted areas need to be prioritised and incorporated as part of the redesign of each area, including consideration of habitat value. This can be accomplished with just a little forethought, without necessarily adding to budgets. Indeed, planted areas can often be less expensive than hard surfaces depending on design and materials.



A lone eucalyptus tree awkwardly placed in a tiny tree pit within a sea of little-used pavement. Could we de-pave more of the surrounding area, and create more flood resilience and real habitat? The Southwark Streetscape Design Manual (2020) states that "Tree pits should be constructed as large as possible given the constraints of the site."

With the acceleration of global warming, increased flooding events are to be expected. Sustainable urban drainage systems such as bio-infiltration zones, bio-attenuation zones and planters, rain gardens, green roofs, and rainwater capture and storage systems (above or below ground) are urgently needed throughout the borough to avoid overloading the existing drainage network, and should be incorporated in every site to the extent possible, as soon as possible.

Southwark's new "Streets for People Strategy" has suggested that at least 10% of every Highways scheme footprint should be dedicated to planting and nature-based solutions, and calls for a plan for SuDS implementation to be developed "by 2024" (sections 12.2, 12.4).

SNAV would like to point out that 10% for biodiversity is much less than would be appropriate in many schemes (see Liverpool Grove), and 2024 is in only two months from now.

Currently, it appears that highways pedestrianisation projects are being built with no consideration for run-off reduction or habitat creation. While [Southwark's Developer's Guide for Surface Water Management](#) calls for post-development site discharge rates to be equal to greenfield rates, the same standards do not seem to be applied to streetscape pedestrianisation projects. Although the [Southwark Streetscape Design Manual \(2020\)](#) states that "SUDS design must be integrated into new schemes with careful consideration of the maintenance and management responsibilities," and "Tree pits should be constructed as large as possible given the constraints of the site," it does not state a runoff or peak flow reduction requirement or engineering parameters, or any other firm softscape requirements. Note that even permeable paving still has much higher run-off rates than vegetated surfaces.



Liverpool Grove pedestrianisation - a missed opportunity for SuDS and biodiversity. This mostly impermeably paved project is directly adjacent to a large churchyard green space and park. The small amount of planting provided is non-native.

The goal for each redeveloped site should ideally be 100% local infiltration or return to greenfield conditions. If hydrogeologic conditions do not permit local infiltration, well-designed bio-attenuation in order to significantly reduce peak runoff. [Susdrain recommends a goal of 50% reduction of peak runoff](#) for each redeveloped site, and provides information on different land area and storage requirements needed to meet this goal for the most frequent to less frequent rainfall events.

Costs

Southwark's Flood Risk Management Strategy aims to promote the use of SUDS (draft for consultation June 2023), but identifies that funding is an issue. However, it is important to

note that there is a difference between de-paving and SuDS (de-paving simply means that the top hard surfaces are removed, and soil which allows plants to grow is exposed or installed -- while SuDS may include engineered substrates, storage and piping systems, in addition to simpler run-off reduction measures). Schemes incorporating less paving do not necessarily add costs, if site works are already being undertaken.

There are also currently many outside funding streams available for de-paving and climate resilience-related improvement schemes, for example:

<https://www.gov.uk/guidance/natural-flood-management-programme>

<https://www.london.gov.uk/programmes-strategies/environment-and-climate-change/parks-green-spaces-and-biodiversity/green-space-funding>

At the Elmington Estate, site improvement costs in 2021 came to approximately £233 per m², including VAT, site protection, health and welfare, de-paving, excavation and disposal, replacement soil to approximately 80cm depth, new concrete edging and unit paving where required, reduction of dropped kerbs, and custom installation of three rain butts.



Some of the Elmington Estate de-paving and landscape improvements (Housing and Flood management joint scheme, through the Great Estates Program)

SNAV was also able to obtain the following recent quote from a professional arborist: For a 1800mm square pit using standard kerbs, new backfill, irrigation tube and stakes, the cost would come to approximately £2000 ex VAT, plus £225 for 3 years watering. Price based on common small tree species such as amelanchier (some species will add £ hence the estimate). Highways team for Local Authority to confirm services and provide permit to

work. Additional costs could include root ball anchoring, upgraded mona irrigation system (reduces ongoing cost though), tiger mulch (or other) permeable surfacing.

Obviously, the cost per m² is much higher for smaller, isolated projects such as a lone small tree pit. **It is much more cost-effective to de-pave and plant larger, more joined-up areas.** In addition, with a larger root zone, the trees have a greater chance of survival, good growth and long life.

More costs for various SUDS interventions are collected in this [2015 DEFRA cost estimation for SUDS](#).

Consideration of underground utilities locations and need for access

Areas with utilities close to the surface are not suitable for planting of woody species, however shallow rooted herbaceous species may still be considered for overplanting, depending on the type and location of lines. Some lines are actually better accessible for service when set in easily replaced herbaceous planting than if buried in concrete; other lines may require hard surface protection. Investigation for de-paving is an occasion for more accurate mapping of underground lines.

Need for vehicle access

Not everywhere can or should be de-paved. It is essential that de-paving and pedestrianisation projects are thoughtfully and professionally designed, with concerns for pedestrian convenience and amenity, biodiversity/habitat/greening, and necessary vehicle accessibility in mind. Where hard surfaces are essential, consider the use of [Grasscrete](#) or similar products which allow both specified vehicle loading and vegetative growth.

Land contamination

Prior to de-paving, soil sampling is advised. If heavy contamination beneath existing paving is detected, measures must be taken so that toxic materials do not become loose in the environment.

Effects on local drainage

In most cases, de-paving improves drainage conditions, increasing attenuation times, reducing peak discharge, improving possibilities for localised infiltration and transpiration, and reducing dependence on overloaded infrastructure. Existing drainage structures can often be maintained or adapted as overflow devices, with proper de-paving design.

However, when de-paving it is important to thoroughly consider local conditions, any re-directed flows, and the possibility of over-saturating an area, leading to undesirable ponding or even instability of local structures. Drainage should be directed away from buildings and any designated infiltration zones should be designed by professionals, generally not to be located within 3-5m of foundations.

Maintenance/management

Not every de-paved area needs to be expensively planted and maintained. With proper initial design, it is possible to create green spaces with very high biodiversity value, and acceptable aesthetic value, through initial seeding of wildflowers, tolerance of volunteer

plants, annual mowing, and ongoing litter picking. Public awareness and increased tolerance of “weeds” is already underway as part of the reduction in spraying of glyphosate throughout the borough. Any de-paved areas engineered as SuDS will have minimal additional maintenance requirements such as periodic unblocking of drains, similar to conventional drainage systems.

The encouragement, definition, and development of Public-Common Partnerships, as suggested in the Southwark Land Commission Report, where local community organisations share responsibility for land management with Southwark as landowner, has great potential to increase community engagement while potentially lightening some of Southwark’s burden of management. For example, Southwark’s 18 community allotment sites are all currently managed by local voluntary organisations.

Dust and allergies

Allowing a healthy plant community to cover a de-paved site protects the soil and reduces airborne dust and pollution particles, which are the most common source of allergies. Unfortunately, many of the plant species which have been found to have high allergenicity also are the most common, popular, and beneficial for wildlife, such as plane, birch and hazel trees. To reduce the problem of wind-borne pollen, plants and trees that are pollinated by insects could be chosen, such as those from the Rose and Malus families which include Apple and Hawthorn.

It has been shown that [higher levels of air pollution in urban areas exacerbates the effects of common pollens](#). When considering allergies, SNAV recommends that Southwark focus on reducing air pollution rather than reducing vegetation.

3. Examples of successful systemic de-paving strategies employed by local authorities

In Portland, Oregon, USA, local government has [partnered](#) with community organisation [De-pave](#) to successfully carry out community de-paving projects for over ten years, so far removing over 22,000m² of hard surface and reducing Portland stormwater sewer loading by over 60,000,000 litres.

In the small town of Douai, France, [systemic implementation of SuDS strategies](#) has reportedly led to the saving of 1 million euros per year, or the equivalent of 30 to 40% of budget compared to a regular rainwater management system of a town that size. (Herin et Dennin, 2016)

[Lambeth’s kerbside strategy](#) calculated that its kerbside area was equal to 194 football pitches, and that “Currently, 94 percent of the borough’s kerbsides (the bit of the road that is immediately next to the pavement) is used for car parking, despite the fact that the majority of Lambeth households don’t actually own a car.” [The strategy](#) proposes to reduce this area currently occupied by cars and replace the use by more pedestrian-centered uses,

including grants for residents wishing to implement kerbside mini-parks, and trees at least every 25m.

Lambeth worked with residents in Kennington, supplying skips and labour to [help residents remove unwanted hard surfaces](#) from private space front gardens / driveways. They have provided a council phone number and email address for other interested residents to get in touch.

Hammersmith and Fulham have produced a [Flood Mitigation Report](#) which proposes an annual public de-paving programme, similar to Lambeth's program in Kennington, and a budget of £6M for other SuDS measures throughout the borough, among other measures.

The city of Amsterdam in the Netherlands has a [de-paving programme](#) where the city supports any resident wishing to de-pave outside their unit.

The London borough of Enfield has established a ["dig-once" programme](#), leveraging the Mayor of London's Infrastructure Coordination Service to incorporate de-paving, suds, and streetscape improvements with already-scheduled necessary subgrade utilities improvements, thereby reducing cost and disruption.

4. De-paving action: What Southwark should do now

In order to make use of the powerful tool of de-paving against the biodiversity and climate crises, SNAV recommends the following actions:

1. Make a program of technical guidance and support available to any residents wishing to de-pave their own private land. Any de-paved private land will benefit the public realm through reduced stormwater run-off. A scheme to fund and incentivise private depaving could be set up by the council in partnership with DEFRA, Thames Water, insurance companies and environmental NGOs like the London Wildlife Trust alongside the local community.
2. Employ an internal design review process to ensure that any new streetscape or housing projects incorporate green SuDS and wildlife habitat to the maximum extent possible, and benefit from community input, possibly through an appointed commission of local volunteer designers, ecologists, and engineers.
3. Source and allocate funds to identify and implement public realm de-paving and SuDS projects throughout the borough, in over-paved sites such as those identified in [the SNAV de-paving study area map](#), including LTN barrier zones. The council's role should be at a minimum to:
 - a. On each site, design, de-pave, edge, and replace soil as required
 - b. Apply a well-adapted native UK seed mix / starter planting, and
 - c. Make it feasible for any interested local residents to adopt de-paved sites.
 - d. If any sites are not adopted, the council would then be responsible for annual mowing and strimming as required, and to continue with regular litter removal as on any public site.

4. Ensure clear communication, liaison, and sharing of resources between Southwark's Flood Risk Team, Ecology / Tree Section, Highways, and Housing, to maximise de-paving programs.
5. Incorporate depaving into council policies/strategies, grants and funding schemes e.g. CGS/Highways/Housing/Tree programmes/Planning policy.
6. Establish a strategic approach to depaving and nature corridors between Southwark's larger parks and green spaces, with a strategic vision for north/south and join-up across boroughs.
7. Coordinate any scheduled infrastructure projects which involve digging or depaving to access subgrade utilities with permanent improvements to improve permeability and increase public green space.