

# Update to the Environment & Regeneration Scrutiny Committee

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The tree service has been asked to provide response to the following questions in relation to the state of Islington's trees after the drought:

1. To what extent has the summer drought weakened tree roots and branches?
2. How will the trees recover from drought to withstand autumn/winter storms and high winds?
3. Is there any 'emergency' inspection of Islington's trees planned?
4. How many trees are lost each year %?
5. How many young trees have been lost due to a lack of watering?
6. There was a suggestion to bring the watering of trees "in house", is this viable? Will this improve their survival?

## **To what extent has the summer drought weakened tree roots and branches?**

The prolonged drought and record high temperatures have adversely affected most of our trees to a varying degree. The extent is largely determined by the:

- individual species genetic drought tolerance,
- the trees health and
- how recently they have been transplanted.

A tree where these factors combine is more likely to be severely impacted or die during a drought.

It is not just the lack of rainfall having an impact upon our trees but also the increase in temperature and the urban heat island effect that causes greater soil desiccation and stress to our trees.

Most of our trees are expected to recover fully from the impacts of the drought. Any trees roots and branches weakened by the lack of rain and heat should respond well after a period of Autumn rainfall and there should only be a slight elevated risk from tree failure.

The Summer drought weakened our trees in two ways:

- direct drought stress - not enough water to maintain evapotranspiration (water movement through the tree) and maintain photosynthesis, or
- drought stress reducing the trees ability to maintain defences from disease.

The drought stress is apparent with trees dropping leaves prematurely to reduce water requirement and in worse cases leaves browning off while attached to the tree and branches or whole trees dying. Trees that die from drought stress will only have an immediate elevated risk of falling over or shedding branches if they've already got wood decay.

Many of our trees coexist for a long period with different fungal diseases and defects, these are monitored by our inspection regime and trees are only removed when the risk to the public is elevated. A tree's main requirement to maintain defences against fungal decay is water pressure. Tree cells generally having a greater pressure than the fungal cells can tolerate. Drought will weaken tree defences, increasing the likelihood of existing fungal decay to spread and we are expecting a higher number of trees will need to be removed as they will suffer the effects of wood decay in the following three years.

Following a period of drought branches can be weakened to an extent that a condition called 'Summer branch drop' (SBD) occurs.

All trees will drop twigs and small branches naturally throughout their life. Summer branch drop is a very rare phenomenon where large branches on mature trees fail with no prior indication or clear reason. Its exact cause is unknown but following a period of drought some mature trees (predominantly oak, beech, horse chestnut, and cedar trees, although it does occur in other species) can 'shed' limbs. There is a growing body of evidence that suggests that it is more likely after heavy rainfall following dry periods longer than three to four weeks and in the early afternoon, often in calm conditions, immediately following the rainfall.

So, after this prolonged drought, when we have some heavy rainfall there may be an elevated risk from SBD. The risk is however still very small.

Recently transplanted trees are very vulnerable to drought stress due to their limited rooting system, restricted rooting volumes and having been already stressed from being moved. Trees have not evolved to cope with being transplanted.

The full extent of the impact of the drought and high temperatures is unknown. Trees have been weakened, some have died, and we should expect a heightened mortality rate in the coming year/s.

#### **How will the trees recover from drought to withstand autumn/winter storms and high winds?**

In Autumn we expect to get the rain required for our trees to largely recover from the drought stress. Most of our trees are deciduous and will lose their leaves over winter, reducing the likelihood of windthrow. Our main periods of concern from storms are when they are unseasonal and occur when the trees have leaf, in early Autumn and late Spring.

A significant concern is that drought and high temperatures become the norm. The long-term impact of this on our trees stock will be a change in the tree species we see. Those trees which are not tolerant to drought will eventually die out and be replaced.

In the medium to long-term we'll ensure that our trees stock can recover from drought and withstand storms and high winds through the appropriate species selection when planting.

We're aiming to do this through taking evidence-based decisions, increasing tree numbers and canopy cover in the borough by planting "the right tree for the right site", maintaining use of native trees for biodiversity, promoting species diversity, planting in areas where the council can maximise

the benefits that trees give to the community. This is not something the council can do alone, and we will need community involvement, private landowners, and other public bodies to work with us. To ensure the council's trees are protected and leave a legacy through its tree planting the council will maintain biosecurity and continually review its practices for better tree planting and aftercare. We'll measure progress and build the evidence base for future decision making by maintaining its detailed recording of tree planting in the borough and improving on this wherever possible.

The following considerations will help us to achieve the canopy cover, species diversity, climate change adaption and establishment success rates we want to see in Islington:

### **Species diversification.**

To make sure that we're planting trees that will thrive in the predicted climate change weather patterns, we've been trying to future proof our tree stock by planting a diverse range of species from different parts of the world. My predecessors in the tree service started this nearly 20 years ago, initially to protect the tree stock from the impact of incoming pests and diseases which can wipe out individual species and then as a response to climate change predictions as well. There are only 27 species of trees native to the UK, we have nearly 300 different tree species growing in Highways and Parks in Islington.

### **Future species selection.**

Right tree for the right site. In determining the tree to be planted, consideration is given to the species, available space, location, and constraints of the site. We adopt the principal of responsible planting, identified in the London Plan as 'Right Place, Right Tree' (GLA, 2016). A great new source of guidance for tree species selection is TDAGs [Tree Species Selection for Green Infrastructure](#). Species selection is looked at for every location. The correct tree being sourced for the spaces available and the existing conditions above and below ground. We aim for the trees to thrive and to reducing future maintenance costs by choosing trees that are suitable for each site.

Colleagues and I from the London Tree Officers Association (LTOA) met with the new Head of Tree Collection at Kew Gardens recently to discuss how we can steer tree nursery production to ensure we have the volume and species of trees available that we want to plant in the coming years. It's predicted that to match the changing climate in London we need also need to switch to sourcing a wider variety of non-native trees from the Mediterranean Climatic Zones. Mediterranean regions are defined by their unique climate which is characterised by a hot drought period in summer and cool wet period in Winter. They partly cover the Mediterranean Basin but also include California, Southern Australia, Central Chile and Southern Africa. So, we will continue to diversify our species palette to find trees that have already adapted to the climate we predict we will have.

### **Biodiversity and native range.**

After the 'right trees for the right place' another main consideration for us is to plant trees for biodiversity. Native trees are the best for biodiversity and support the greatest number of host species. We're now looking to source native species trees but from trees at the extremes of their native range. For example, the English oak grows across Europe and the English oak trees growing in Turkey look the same as ours but have adjusted over millennium to be more resilient to drought.

Bringing samples of these trees and growing them on in the UK takes time as they need to be tested for disease, have good form and then developed in the nursery as stock in large numbers. We expect

to have a greater range of 'native trees' grown from non-native stock where the climate is more like we predict ours to be in 50 years' time. These should hopefully become available from the nurseries within five years. Tree planting has moved up the agenda in the last couple of years and the numbers being planted are accelerating. The nursery industry is yet to catch up and species selection from the nursery is difficult as the number of trees being produced doesn't match demand.

### **New policy and strategy.**

We review species selection and young tree establishment annually as part of each new planting season to see how we can improve on previous years planting but we're also in the process of developing a new Urban Forest Management Plan which we hope will replace the 2012 Islington Tree Strategy by 2024. An aspect of this will be a new Tree Planting Strategy for Islington. This will allow us to develop, formalise and publicise our tree planting plan. In 2019 we looked at what we've got and where we should plant, please see the attached reports. We are working in the Planning department to ensure that new trees are a consideration on all planning applications and that those trees are also the correct species, right location etc.

### **Resources.**

Several years ago, the main constraint to tree planting was funding. We didn't have a tree planting budget for years. Tree planting is now on the Capital programme, with more funding coming from Cllr contributions and grant funding for trees (Urban Tree Challenge Fund 75k match funding for tree planting 2021 -23). This success will enable us to plant trees, but we don't yet have the resources to maximise our tree planting efforts. We've identified that a new tree planting and engagement officer post needs to be created to deliver the tree planting commitment, public engagement and to manage the tree warden scheme/ Greener together tree volunteers and tree donations process. We have applied to the Woodland Creation Accelerator Fund (WCAF) for funding to pay for this post for 2 1/2 years (146k) and we should hopefully hear back from DEFRA soon.

### **Monitoring and evidence-based decisions.**

We're monitoring our tree losses, looking at the numbers of each species we're losing every year to see if certain species are failing more frequently and should be avoided/ adjusted in the future. We currently lose an average of over 300 trees per year to end of life, pest/ disease, vandalism, storms etc.

We're looking to update our asset management database and have had two demonstrations from alternative software providers this year. We need to have a system that is more interactive, can display information to the public and can analyse our stock to a greater level than our current asset management system.

### **Is there any 'emergency' inspection of Islington's trees planned?**

We're going to undertake a 100% check on all of trees planted in the last three years in September of each year to see what our losses are over Summer and enact the establishment guarantee with the tree planting contractor. All newly planted trees are purchased with a guarantee and will be replaced by the contractor should they fail in the first three years. This means that although we will

have sadly lost an elevated number of young trees this Summer, they should all be replaced this Winter.

We're not planning an emergency inspection of our established trees. Our current inspection regime, to inspect every Islington tree once every three years was increased 5 years ago. The inspection frequency was increased because of recent case law.

This along with ad-hoc inspections as trees are reported to us via enquiry and complaint along with passing inspections as officers move through the Borough should be sufficient to pick up losses.

### **How many trees are lost each year %?**

We have 39,800 publicly owned trees in Islington ([Islington Tree Inventory Report 2019.pdf](#)). Over the last ten years we've lost an average of 313 trees per year, that's less than 1% of our tree stock per year. This is an acceptable figure given that trees are dynamic, living structures with finite lifespans which are frequently living in conditions far from optimum for healthy tree growth.

Tree loss in the next three years is likely to rise as an impact of the drought and high temperatures. A secondary impact will be an increase in subsidence claims that will follow in about 6 months' time once the insurance companies catch up with the new claims. The drought and extreme heat will result in increased desiccation and shrinking of clay subsoils, resulting in damage to property and allegations that the surrounding vegetation is a primary cause of the damage.

Our response is always to challenge subsidence allegations and adopt rigorous defence of the trees and demand an appropriate level of evidence ([Joint mitigation protocol](#)) but trees do damage buildings and an increase in claims following a drought is inevitable.

This will have a knock-on effect to the tree management budgets as we put more trees on a crown reduction cycle to reduce the risk of damage to property and to remove trees where causation is proven.

Another risk is as the climate changes we'll see an influx of new pest and diseases that while not currently suited to our climate and weather patterns will follow as our climate changes. The average annual tree loss is expected to rise following the drought and to rise with effects of climate change and influx of pests and diseases.

### **How many young trees have been lost due to a lack of watering?**

The mortality rate for transplanted trees is much higher those that are established. So far this year, we've got reports that we've lost 43 of the trees 1397 trees planted in the last 3 years over the summer (3%). I expect this number to double at the very least and potentially even quadruple. We will know the exact number when we undertake the 100% audit in the second week of October.

A mortality rate for transplanted trees in of 5% in inner city London is broadly thought of as acceptable due to the harsh conditions and incidence of vandalism, vehicle damage etc.

It may be that some of the trees that have dropped their leaves due to drought stress may survive and recover if we have an early, wet Autumn. All young tree losses should be replaced this Winter under the existing 3-year establishment guarantee.

New trees introduced on development sites are not monitored for watering and establishment and figures for protected private trees are not available.

**There was a suggestion to bring the watering of trees “in house”, is this viable? Will this improve their survival?**

We are in the process of looking at the viability of bringing aspects of tree planting and maintenance in-house. This is in collaboration with the Tree service and Highways.

Bringing the watering of trees in-house could improve our control over the timing and recording of watering data. We’ve yet to establish if there would be a cost saving.

Taking the responsibility for the watering recently planted trees would void the ir guarantee. In house watering will be trailed next Summer.

If properly resourced, then bringing watering of trees in house could improve young tree survival.

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