

National Tree Officers Conference Tree Establishment Opinion Survey Results & Discussion

Introduction

Supported via a bursary from Fund4Trees, a survey of Tree Officers was carried out at the National Tree Officers Conference. The survey aimed to form a cursory impression of existing post-planting maintenance programmes and the perceived sufficiency of revenue funding available for such programmes. The researcher also wanted to know whether Tree Officers perceive these factors as worthy of further research and whether there are other factors they would investigate in relation to urban tree establishment success.

The conference was held on 9th November in Telford. There were ninety Tree Officers listed as attendees in the conference programme. During the day the researcher distributed sixty information slips with a QR code linking to the survey and a flyer about the Fund4Trees research strategy. The survey was announced by the session chair to all attendees after lunch and advertised through certain social media pages and via specific industry mailing lists.

The survey was open for twenty-three days after the conference. Twenty Tree Officers completed the survey. It is not possible to calculate an accurate response rate as a target participation number was not determined. The response rate in the first week after the conference was incredibly low (just two responses), which led to responses being encouraged via social media and mailing lists. Because of this, it was accepted that responses may be included from Tree Officers who were not at the conference. This survey was just a taster activity to aid the development of a larger investigation, and was not designed as to be interpreted as a statistically robust, scientifically representative survey - readers should be mindful of this when considering the results in this report. All respondents answered all questions on the survey apart from Question 4, which one respondent only answered partially.

Multiple Choice Survey Results

Question 1

Tree Officers were asked whether all newly planted trees, excluding woodland plantings, receive a specified post-planting maintenance programme within their Local Authorities. Sixteen out of twenty respondents (80%) said their trees did receive a specified post-planting maintenance programme and four respondents (20%) said they did not.

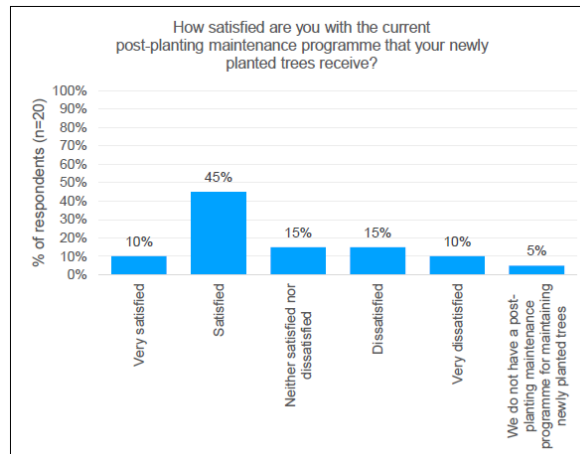
Figure 1:



Question 2

Question two asked how satisfied Tree Officers were with the current post-planting maintenance programmes that their newly planted trees receive. The modal (most frequent) response was “satisfied” and 55% of respondents answered either “satisfied” or “very satisfied” (see Figure 2). 30% of respondents answered either “dissatisfied”, “very dissatisfied”, or that “they did not have a post-planting maintenance programme for newly planted trees”.

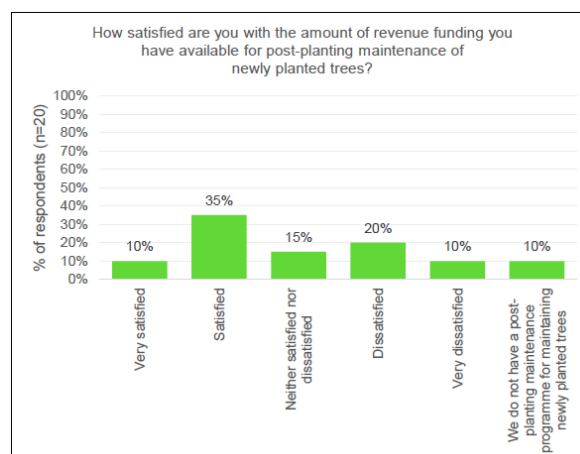
Figure 2: How satisfied are you with the current post-planting maintenance programme that your newly planted trees receive?



Question 3

In Question three, Tree Officers were asked how satisfied they are with the amount of revenue funding available for post-planting maintenance of newly planted trees. Again, “satisfied” was the modal response, with 45% answering “satisfied” or “very satisfied”. 45% answered either “dissatisfied”, “very dissatisfied”, or that “they did not have a post-planting maintenance programme for newly planted trees”. See Figure 3 for results.

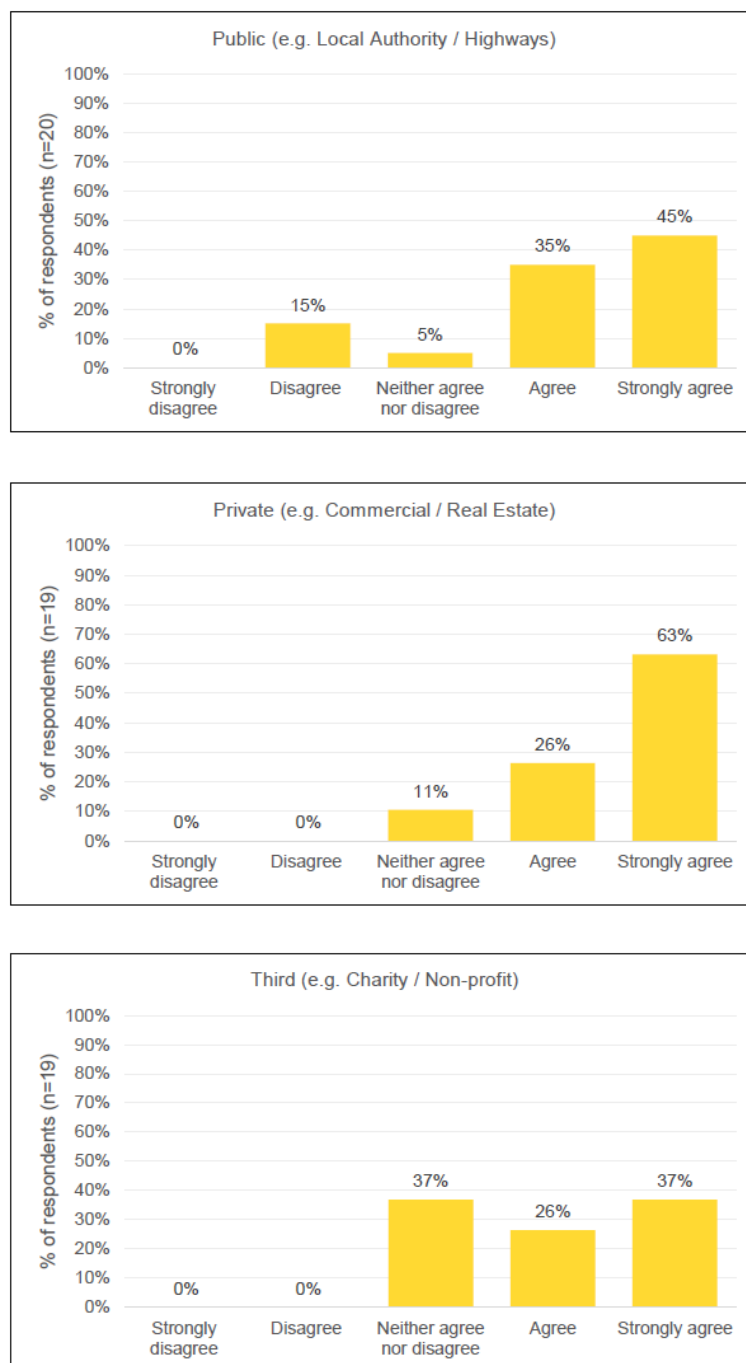
Figure 3: How satisfied are you with the amount of revenue funding you have available for the post-planting maintenance of newly planted trees?



Question 4

The fourth question asked Tree Officers to consider the UK as a whole, rather than just their own Local Authority. They were asked to consider whether they agreed or disagreed with the statement, "*A lack of revenue funding to ensure post-planting maintenance is an issue impacting successful tree establishment.*" within the Public (e.g. Local Authority / Highways), Private (e.g. Commercial / Real Estate), and Third (e.g. Charity / Non-profit) sectors. The skewed distribution of responses demonstrates agreement that this is a perceived issue across all three sectors. 89% of respondents agree or strongly agree that this is an issue in the private sector. 80% agree or strongly agree that this is an issue in the public sector, and 63% of respondents agree or strongly agree that this issue also affects the third sector. Frequency data as a percentage for each response is shown in Figure 4.

Figure 4. Agreement with the statement "*A lack of revenue funding to ensure post-planting maintenance is an issue impacting successful tree establishment*" by sector.

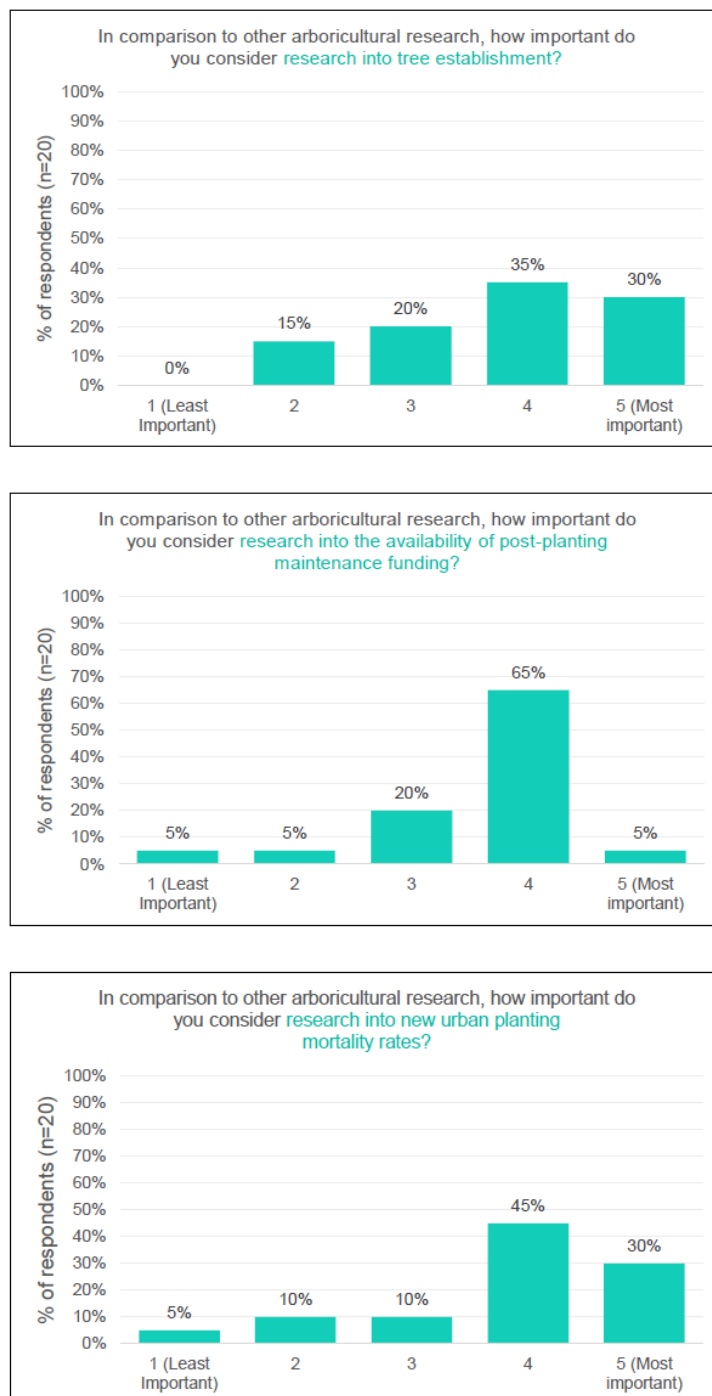


Question 5

The final multiple-choice question sought to discover how important, in comparison to other arboricultural research, the Tree Officers consider research relating to tree establishment, research into the availability of post-planting maintenance funding, and research into new urban planting mortality rates.

Percentage frequency data for each response is shown in Figure 5. The skewed distribution of all three responses indicates respondents generally considered the topics of some importance. Of the three, 'research into new urban planting mortality rates' had the highest mean score of 3.85 (where a score of 1 signified least importance, and 5 signified highest importance). Research relating to tree establishment had a mean score of 3.80. Research into the availability of post-planting maintenance funding had the lowest mean score at 3.60.

Figure 5. Perceived importance of research into various tree establishment strands



Open Answer Question Result

Question 6

Question six was an open-answer question asking Tree Officers to list any questions they would ask if they were investigating:

- a) new urban tree planting survival rates
- b) the efficacy of tree establishment in urban environments

18/20 respondents filled something in for 6a and 13/20 respondents contributed a response to Question 6b. Participants often responded in prose about the topic or listed features worthy of investigation in regard to the topic as opposed to specific questions; nonetheless, there were interesting responses and ideas proposed. Responses containing questions or full sentences are listed below (with spelling, grammar and abbreviation corrections, minus any identifying information) and a list of *all* responses (verbatim, minus identifying information) can be found in Appendix 1.

6a: What questions would you ask if you were investigating new urban tree planting survival rates?

1. *What species were being planted? Planting site criteria and suitability*
2. *Survival rates after 5 years are these exact, a sample or an estimate*
3. *Percentage thriving after 5 years against percentage dying and/or merely surviving*
4. *What is the mortality rate of newly planted trees in various different settings? For example, in parks, highways soft verges, highways tree pits etc.*
5. *Was drainage and soil data of pit tested before planting? What planting medium was used? Was establishment maintenance carried out? Especially, what quantity and frequency of watering? What species are surviving/ not?*
6. *Mortality rates by species? Mortality rates by tree planting sizes?*
7. *Post-planting site investigation such as previous land use - Planting specification - Planting time of year - Aftercare schedule - Proof of tree receiving aftercare - Mulch application depth - Irrigation system type, water volume tree received and irrigation cycle*
8. *Were the trees planted bare root, root balled or container grown?*
9. *What were the size, species, source and type of planting sock? What aftercare and watering were in place? Reason for failure e.g. drought, damage, mowing, chemicals or lack of physical support. Planting environments e.g. basic tree pit into existing soil, verge, landscaped area, purpose-built tree pit wit/without structural soil volumes etc.*
10. *How many trees did you plant? How many trees needed replacing? How many times did you water them?*
11. *Describe planting situations and specs and collate information accordingly rather than lumping all together inc type of pits, tree staking, protection, watering etc*
12. *Number of years and irrigation/maintenance visits per tree? Cost per visit? Average stem girth size? Delivered in-house or externally? Vacant or new sites? Species? Stock type?*
13. *Size of tree pit (m3)? Type of tree pit (Stockholm, soft ground etc)? Frequency and volume of watering? Size of planted trees (whips, standards or bigger)? Species used? Local environmental and soil conditions?*
14. *What proportion of councils post-inspect approved landscape schemes on large residential development? What percentage of trees proposed as mitigation for established trees removed to accommodate development are actually located in small residential gardens, and what are their realistic chances of contributing to canopy over in the longer term?*
15. *Coming into the first season what was the planting medium? Were species selected randomly or specifically? How soon did watering start? How much watering did they receive?*

6b: What questions would you ask if you were investigating the efficacy of tree establishment in urban environments?

1. *What long-term maintenance is in place?*
2. *How long is the "establishment" phase? Is there a correlation between certain major operations and survival rates? Also compare different years as weather has a big effect which may override other factors.*
3. *How many years post planting do you water and volume of water used?*
4. *How do managers monitor the success of planting programmes? How is technology currently used in delivering tree planting programmes and aftercare maintenance?*
5. *Do you encourage ownership?*

6. *Post-establishment development. Size vitality after a period of 5, 10, 15 years etc.*
7. *How much water did you apply? How often did you apply the water? How many years do you continue to water?*
8. *Part of a tree strategy? Is canopy cover data available? Is survival measured, years 1, 3, etc*
9. *Are the trees in good health and are they likely to become mature healthy trees?*
10. *What proportion of newly created open space and associated tree planting over the last 10 years is managed by third-party management companies? What proportion of highway trees which are removed are actually replaced? Are the management companies and associated service charges (additional to council tax) applied to homeowners on these estates contributing and delivering sustainable tree coverage?*

Conclusion:

The results from Question one are encouraging (80% of trees receiving post-planting maintenance), but this response should not be interpreted as a representation of the whole country as a different sampling methodology would be needed to accurately represent that. Prior to surveying at the NTOC, the risk of collecting un-generalisable data had already been discussed by the researcher. There is a possibility that the councils who can afford to send Tree Officers to the conference (and furthermore, who have dedicated Tree Officers at all) may be better resourced Local Authorities.

This survey showed a high level of agreement among surveyed Tree Officers that, across the UK as a whole, “A lack of revenue funding to ensure post-planting maintenance is an issue impacting successful tree establishment”. The private sector was perceived to be most affected, followed by the public sector and then the third sector.

In comparison to other arboricultural research, 75% of Tree Officers surveyed agree that “urban planting mortality rates’ is an important subject for further investigations. 70% of Tree officers agree that urban tree establishment generally is an important topic for future research and 65% agree that research into the availability of revenue funding is important.

When looking at the results of Question 6; themes of ‘physical factors at the time of planting’ (such as species selection, soil condition, and tree stock size), and ‘monitoring’ (such as mortality rate by year) were very prevalent. Another prevalent theme was physical factors associated with maintenance (such as watering volume and frequency). The theme of accountability for maintenance was also evident.

Discussion:

One of the concluding remarks in Gilbertson and Bradshaw’s 1985 investigation into newly planted urban tree mortality was:

Considering the huge capital outlay involved in providing large numbers of trees in inner cities, it would seem worthwhile contemplating changing the emphasis towards greater care in planting and maintenance, with careful monitoring of tree performance to understand what is happening to the trees rather than see a large percentage of investment lost by tree death and expensive renewal programmes, as well as by overall poor growth.

Similar concluding remarks were made about the results from *Trees in Towns II*. Published in 2009, *Trees in Towns II* was a comprehensive survey of urban trees in England and their condition and management. Question C10 asked respondents to estimate the percentage of their Local Authority’s newly planted trees that received post-planting maintenance. Results revealed that, when the survey was conducted in mid-2004, only 40% of local authorities were providing post-planting maintenance for 90% or more of their trees, and 22% were only able to maintain less than 20% of their newly planted trees. Authors wrote:

The question needs to be asked why these Local Authorities are continuing to plant trees when there is very little or no provision for maintenance to ensure the trees survive.

This sentiment has repeatedly been articulated by highly experienced arboricultural consultants and nursery professionals throughout the last decade; most recently by Keith Sacre and Kenton Rodgers in their Arboricultural Association articles and conference seminars dedicated to addressing the UK’s “planting by numbers” problem. It is surprising, that despite all the subsequent advances in monitoring technology, we don’t

currently have a consistently accurate picture of how, and to what extent, mortality rates of new tree planting are being measured by Local Authorities.

Further investigation into typical newly planted urban tree mortality is both timely and necessary for quantifying expected ecosystem service contributions. Comments generated during this investigation suggest that there are professional working groups with representatives from the urban arboricultural sector working on this presently. Respondents indicated that they were open for a short interview and should be followed up on so further research into tree establishment by Fund4Trees can be designed to complement existing research strands.

Although approximately half of Local Authorities in the UK now have Tree Strategies (Doick et al., 2022); that in itself is not necessarily synonymous with Local Authorities having a specified post-planting maintenance programme, or whether such a programme conforms to BS8545 standards, or whether the outcomes of post-planting maintenance are being monitored with the aim of improving survival and growing healthy trees. Questions posed to local authorities regarding tree mortality in Trees in Towns II should be reinvestigated today in order to see how results compare over a decade later.

Whether the availability of revenue funding for new planting maintenance influences newly planted tree mortality is not currently known. It is also not known whether currently captured data would make investigating this feasible in all Local Authorities, but this should be investigated further as it is clearly perceived by arboricultural professionals to be an issue affecting the private and public sectors, and likely the third sector too.

Twenty-seven arboricultural professionals responded to the survey; however, seven responses were omitted from the analysis as they were not currently employed by a Local Authority as Tree Officers. Although omitted from this analysis, their responses, particularly comments on Question 6, will still be considered by the researcher in relation to further proposed research, as many have verifiable professional arboricultural experience which makes their comments valuable.

The researcher would like to extend gratitude to all those who made undertaking this micro survey possible; to Fund4Trees for the bursary, the National Tree Officers Association Conference for allowing us to survey at the conference and to the Institute of Chartered Foresters for assistance following up responses. Final and important thanks must also go to Dr. Mark Johnston for his ongoing guidance, including suggesting not to over interpret these initial survey results but use them to develop further robust research in this area, which is certainly needed.

References and Resources

Gilbertson, P., & Bradshaw, A.D. (1985). *Tree Survival in Cities: The Extent and Nature of the Problem*. Arboricultural Journal, 9, 131-142.

Britt, C. and Johnston, M. (2008) *Trees in Towns II: A new survey of urban trees in England and their condition and management*. Department for Communities and Local Government: London.

Kathryn L. Hand, Harriet Rix, Jon Stokes & Kieron J. Doick (2022) *The creation, content and use of urban tree strategies by English local governments*, Arboricultural Journal, DOI: 10.1080/03071375.2022.2072623

Keith Sacre and Kenton Rogers (2022), *Planting By Numbers* – article accessed online 15/1/23 via Arboricultural Association website - <https://www.trees.org.uk/News-Blog/Latest-News/Planting-by-numbers>

BS8545:2014 Trees: From Nursery to independence in the landscape

Appendix 1: All answers to question 6:

Q6. Please list any questions you might ask if you were investigating a) ...new urban tree planting survival rates:

1. Coming into less in the first season What was the planting medium Were species selected randomly or specifically How soon for watering start How much watering did they receive
2. What proportion of councils post inspect approved landscape schemes on large residential development? What percentage of trees proposed as mitigation for established trees removed to accommodate development are actually located in small residential gardens, and what are their realistic chances of contributing to canopy over in longer term?
3. Spp, size, root protection, watering,
4. Size of tree pit (m3) Type of tree pit (Stockholm, soft ground etc) Frequency and volume of watering Size of planted trees (whips, standards or bigger) Species used Local environmental and soil conditions
5. Number of years and irrigation/maintenance visits per tree Cost per visit Average stem girth size
6. Delivered in house or external Vacant or new sites Species Stock type
7. Describe planting situations and specs and collate information accordingly rather than lumping all together inc. type of pits, tree staking, protection, watering etc.
8. How many trees did you plant how many trees needed replacing how many times did you water them
9. What were the size, species, source and type of planting stock. What aftercare and watering were in place. Reason for failure e.g. drought, damage, mowing, chemicals or lack of physical support.
10. Planting environments e.g. basic tree pit into existing soil, verge, landscaped area, purpose built tree pit wit/without structural soil volumes etc.
11. As part of an ... on species selection, we are currently working with specialists at ..., ... and UK tree suppliers to ascertain if a base line for mortality rates can be established from existing data and how provenance of seed, along with species selection (including poor species selection) will influence this urban tree planting. Post planting site investigation such as previous land use - Planting specification - Planting time of year - Aftercare schedule - Proof of tree receiving aftercare - Mulch application depth - Irrigation system type, water volume tree received and irrigation cycle
12. Mortality rates by species? Mortality rates by tree planting sizes?
13. Was drainage and soil data of pit tested before planting What planting medium used Establishment maintenance carried out, especially Q and frequency of watering What species are surviving/ not
14. What is the mortality rate of newly planted trees in various different settings. For example, in parks, highways soft verge, highways tree pit etc.
15. We need to increase the survival rates
16. The use of old tree pits without having them properly excavated with a proper tree pit construction
17. Percentage thriving after 5 years against percentage dying and/or merely surviving
18. Survival rates after 5 years are these exact, a sample of an estimate

Q6. Please list any questions you might ask if you were investigating b) ...the efficacy of tree establishment in urban environments

1. See above, but also long term impact assessment
2. What proportion of newly created open space and associated tree planting over the last 10 years is managed by third party management companies? What proportion of highway trees which are removed are actually replaced? Are the management companies and associated service charges (additional to council tax) applied to home owners on these estates contributing and delivering sustainable tree coverage?
3. Are the trees in good health and are they likely to become mature healthy trees.
4. As above
5. Part of a tree strategy? Canopy cover data available? Is survival measured, yrs 1, 3, etc
6. As above describe and analyse by different specs
7. How much water did you apply how often did you apply the water how many years do you continue to water
8. Post establishment development. Size vitality after a period of 5, 10, 15 yrs etc.
9. It is increasingly hard to tell what is bad aftercare, what is poor species selection or stock and what is an environmental factor that has caused decline. Access to good soil is paramount to enabling species to achieve full potential but difficult in the a city - the aftercare needs to be so intense in many circumstances, to enable establishment, that the care needs to be a collaborative efforts of those nearest the trees, contributing to the nurture of it. I have found that the workload for the operatives is an important consideration. The skill in planting and the skill in recording may not interlink and the lack of good data capture, and furthermore the general distance within the industry from an automated data capture system during these tasks, means that the labour task is now half the journey. In fact, in cases the reality of the task may get overlooked due to the data-monitoring becoming more important - in some cases. Therefore the cost of the whole process needs to increase, since the care in monitoring, recording and feeding-back to the client will incur more time, but is essential to the monitoring, action and success of ever increasing urban planting programmes across large areas.
10. How do managers monitor the success of planting programmes? How is technology currently used in delivering tree planting programmes and aftercare maintenance?
11. How long is the 'establishment ' phase? Is there correlation between certain major operations and survival rates, also compare different years as weather has a big effect which may override other factors
12. The volume of planting which is undertaken merely as an exercise in numbers
13. What long-term maintenance is in place