MEETING NOTES

1. Introduction

Opening remarks by Owen O'Riordan:

First, Owen mentioned Public Meeting #2 that will take place at Morse School on March 7th at 6:30 pm. He then noted the new Amendment to the Tree Protection Ordinance that has been passed by the City Council. This requires a permit for anybody who proposes to take down a "Significant" tree on private property. No permits will be issued unless one of the following conditions is met: the tree is dead or dangerous; it's an emergency situation; it's a significant utility project with state or federal funding; it's a city park project; or the tree could have significant impact on a structure. The amendment becomes effective on 11th of March. If anyone is found in violation of the ordinance, the person may be subject to a fine of $300 per day and also be subject to the mitigation replacement cost.

This is the 9th meeting, there will be two other meetings and then there will be a draft report in summer. The final report will be published in fall.

TF: Does this committee sign off on the report?

Owen: Not as such. We do have detailed minutes of our meetings recording your comments. We could have a meeting in the fall if you were all willing and able to come back.

2. Design Team Presentation

At the last meeting, we talked about the policies and didn't get to the practice section. Today, we will present the broad principles, planning approach, design concepts and practices. We started to narrow down the ways of describing what this process leading us towards. Then, how we get from principles to implementation.

PRINCIPLES

We looked at Envision as a model of how to articulate "Vision and Core Values" [slide 4]. We are interested the broad statement and detail statements and how these align well with our discussions, such as livability of the city, diversity and equity, sustainability and resilience, health and wellbeing, learning and education.

Core Concepts
In terms of core concepts, we have these draft layouts to discuss [slide 5]. The three broad statements:

Value the forest as a public resource [slide 6]

The urban forest is a public resource and has measurable value and impacts to everyone. It provides shade to cool our environment, gives scale and character to our streets, provides habitat for diverse species, improves our air quality, reduces stormwater impacts, and improves our health and well-being.
To shift the trend from increasing loss to sustainable growth, we must manage the urban forest as urban infrastructure (like water, sewer, power) investing for the long term, managing resources collectively, and understanding the value (i.e., ecosystem services) of the canopy.
To balance the value of the forest with the complex needs of the city, we should focus on the performance of the forest as a system over the specific value of individual trees.

Invest in canopy in the public realm [slide 7]

The urban forest is felt most strongly in our public realm and common spaces (sidewalks, parks, schoolyards, and commercial and institutional campuses). Enhancing the canopy within the public realm, where the impact of loss is felt most strongly and the significance of gain is most equitably distributed, deserves our primary attention and investment.

Prioritize canopy corridors and areas of canopy deficit and equity.
Canopy corridor: A resilient, connected ecosystem that enhances shading and cooling along networks and connects green spaces across the City, which relies on thriving trees within the public right of way, publicly accessible spaces, and front yards and private lands that front on the public realm.
Areas of canopy deficit and inequity: A more evenly distributed forest increases equity in the distribution of canopy cover, reduces disproportionate impacts from urban heat island effects, and increases the well-being of vulnerable populations.

Share responsibility for a healthy forest [slide 8]

A thriving urban forest requires the mutual care of many parties, including city government, homeowners, businesses, developers, local organizations,

institutions and state agencies.

Policy should be balanced and fair, linking the interests of all parties around smart solutions that encourage tree preservation, planting of new trees, and effective maintenance. The city should support education efforts as a catalyst for partnerships between interest groups to encourage stewardship of the urban forest.

The ways to enact these values are multi-pronged. There is no one single cause for canopy loss in the city and no one single response to it. We grouped it under three categories: Curb loss, grow canopy and encourage alternative approaches that advance the goals of the Urban Forest Master Plan [slide 9]. In the next two meetings we will focus on prioritizing which of these items are most important.

Let's pause here for discussion.

TF: I am concerned about the emphasis on the public realm. You identified that most of the available space to plant is on the private property. Even if we maximize the public space, it will probably not get us there. So, given that there is more opportunity on the private property, we should educate people about the importance of their backyard trees. So, they understand the importance of the trees and they won't cut them down.

Response: That's a great point, and we have to be careful about the language we're using. Because in our mind, the front yards are part of the public realm. Even though they're privately owned they have a huge impact on a day-to-day experience. We could consider tax incentives to encourage people to retain their trees and plant more.

TF: The front yards are almost nonexistent in Cambridgeport. I am concerned about the city penalizing tree removal. And by focusing on investing in canopy in the public realm, we are closing the door to tax incentives for private owners. Curb loss will not extend beyond the curb into private property?

Response: Curb loss is about stopping the loss of tree canopy in the city. One strategy is creating "Exceptional trees" category, in addition to "Significant trees". Another is increasing the cost of removals.

The goal for next time is to take all of the options we've looked at, look at the cost benefit analysis, and prioritize. This list is not a finished product.

TF: There is no language around supporting the small landowner. We should say

something about education, community building, and also encouraging owners to plant or maintain trees not only on front yard but at the back yard too. We should find language for how we find money to support small owners and also to directly invest.

TF: There needs to be a program, because for many people, it costs money to maintain the trees. There might be ways such as tax credit.

TF: I didn't see anything on the importance of diversity of the forest. The challenges that street trees face might limit the diversity. Also, the value of design and aesthetics was not mentioned.

TF: We should add to the language about trees as urban infrastructure that trees are living, they're harder to move than pipes. They are "living infrastructure." They are residents without a voice.

TF: I feel we should be focusing on the public realm. We have 14,000 tree wells and I would like to see where they are.

TF: We should discuss what the plan is for filling the tree wells.

TF: The language is important. To justify the public realm focus, you wrote "the urban forest is felt more strongly in the public realm" but we need to talk about the real canopy values, how trees function. And just because it is felt more strongly in the front, we shouldn't miss the opportunity to get the people on board. The innovative stuff is how to crack private property. It would make a big statement to invest in canopy in the private realm and also prioritize public trees to create canopy corridors.

TF: New developments don't have any front yards, so maybe this is about the zoning.
Response: We will talk about private space in Design section, but also being more aggressive about making space in public realm. We are trying to push the City to be more aggressive.

TF: Paris has civic spaces that allows for planting. Cambridge is denser, and people want more housing. This push to infill with development puts pressure on the public realm. The message to invest in the public is important.

TF: If we say that we want to increase the number of trees, we will fall into a status

quo of how we do things. I would like to see a document that came out as radical as possible, in a strong language as possible. Then we can draw back from that, because it is going to be drawn back.

TF: Make no small plans.

PLANNING APPROACH

We showed you this strategy matrix [slide 11] before which talks about policy, planning/design, practice and outreach.

Looking at the priority map [slide 12] showing the priority areas and corridors, there is a pattern that comes both from CCPR and cool corridors but also our attempt to make connections between public open spaces and parks. Priority areas are an overlap of environmentally vulnerable populations, areas of heat island concern and community infrastructure (schools and hospitals) [slide 13]. When you layer them together, two or more layers makes the high priority areas, which is the darker red color and when there is only one layer, it is the priority areas, which is the lighter color.

Our two strategies are curb loss and grow canopy.
Curb loss is the "do not harm" category across the city. Even in the places where there are not many trees, we want to keep them [slide 14].

 We want to focus our energy and resources on the areas on the map [slide 15] that are shaded that has less than 30% canopy cover. The white spots are either parks that have enough canopy or don't fit into the data.
And there are also the canopy corridors [slide 16].

We developed a way of categorizing the city according to conditions and uses [slide 17]. It is descriptive of opportunities or limitations of planting trees. The categories include mixed use with setbacks 10' or greater, residential with limited setbacks, residential with no setbacks, parking lots, large blocks with limited/no setbacks, large lots with open space, mixed use with no setbacks, DCR land, institutional and development zones.

Mixed use with setbacks 10' or greater [slide 18]: Most of this type is in West Cambridge where there is sufficient canopy. These have sufficient space in the front yards. This kind of typology needs education for planting.

TF: Are you using setback not as a zoning term but as an urban design concept?
Response: Good question. Yes, we use setback here to mean distance from back of sidewalk.

Residential with limited setbacks [slide 19]: These are areas that have less than 10' and limited setbacks. There is not enough room to plant trees. This typology is seen in Cambridgeport, Mid-Cambridge and the canopy relies on the street trees.

Residential with no setbacks [slide 20]: East Cambridge and The Port have this kind of typology, where the building face is built up to the edge of the sidewalk. These areas rely on the Right of Way [ROW] trees. The focus here should be on the street design.

Large blocks with limited or no setbacks [slide 21]: These areas are mostly in East Cambridge, The Port, Area 2 / MIT. These large commercial buildings don't have any setback and there isn't any room for trees. They also have very harsh conditions such as wind, heat and drought and trees require additional maintenance to survive in this environment. Parking lots create an opportunity to add canopy to these areas.

TF: The parking lots are privately owned, how do we do that?
Response: Most of the parking lots are privately owned but through zoning changes, there are opportunities. There is currently a requirement in Zoning Ordinance to plant one tree in every 10 spaces. We could propose to increase that ratio.

Mixed use with no setbacks [slide 22]: Along heavily trafficked pedestrian corridors such as Central square, Porter square, Mass Ave etc. These are areas where the only canopy is the public realm and in need of street design or alternative strategies.

Owen: Protected bike facilities are a priority in these areas, and it is challenging to accommodate multiple interests.

Large lots with open space [slide 23]: Large spaces such as schools, hospitals and fields that might be opportunity to plant trees especially on the edges.

Institutional [slide 24]: This is an ownership type rather than use type. Encouraging canopy growth at MIT, Harvard and other institutions will require partnerships and outreach.

Development Zones [slide 25]: These are currently developing areas such as Alewife area and North Point. Zoning is important for these areas.

DCR Land [slide 26]: DCR Land is also in ownership category. Again, this will require outreach to try to develop a partnership.

The open space map [slide 27] shows the comparison of overall city canopy cover in open spaces, (43%) and DCR canopy (36% along Memorial and 55% along Alewife).

For each of these areas, how do we deploy our strategies [slide 28]? What will be the most effective based on the specific conditions in these areas?

TF: In this matrix, I think #3 should say "Changing Planning and Zoning" rather than "Clarifying."
Response: Yes, we will revise that language.

TF: Yes, I think we should be making recommendations to the Zoning Task Force.

DESIGN CONCEPTS

We focus on "how we start to impact the public realm" in this section [slide 30].

Where you plant trees but also where you don't plant trees are important questions so as not to waste resources. We need to ask ourselves, where the sidewalk is very narrow and there is not much soil [slide 31], is this a place for the City to spend energy?

TF: And even if there was enough soil, the tree would need to be fastigiate [columnar] which is not a large canopy.

We recognize the soil volume is important to the long term health of a tree [slide 32]. If the sidewalk is only 6' wide, in order to get the minimum soil volume of 750 cubic foot [cf], the minimum space between the trees needs to be 40', and for 8' wide sidewalks, the space between the trees needs to be 30'. This increased soil volume would increase the cost of planting in Cambridge exponentially, and we will model that as part of our cost/benefit analysis.

TF: Does this include permeable pavers?

Response: Yes, it could. Or it could be planted.

When you plant a tree, in a very limited space between the sidewalk and the curb, there is not much space for the roots to grow [slide 33]. The soil medium needs to go under the sidewalk and where there is front yard on the other side, it is connected to it. It could include permeable paving or it could include a standard sidewalk with soil going underneath.

We are also working with Kleinfelder to develop integrated systems where the soil volume is part of a stormwater management system connected to the catch basins [slide 34].

There is also this comparison of savanna and forest and how we want to get a hybrid typology within the city [slide 35]. Planting trees 40' apart, disconnected by soil volume and not having the other layers of vegetation is not how trees have evolved in the northeast. We want to look at more complicated and nuanced ways of planting.

We looked at the condition of street trees around the city within different neighborhoods [slide 36], and then we also looked at the condition of street trees on sidewalks 8' or greater [slide 37]. We thought those trees on wider sidewalks would do better, but we found that most of the wider sidewalks are streets with no setback where the trees have no adjacent soil to draw from. This may be why trees on wider sidewalks are struggling more.

TF: Also those are small tree pits.
Response: Agreed.

So then we looked at the sidewalk width distribution to understand where in the ROW there are areas that front yards will be valuable to plant trees [slides 38-40].

The checklist shows how we propose to respond to various sidewalk widths with different strategies [slide 41].

These ROW Canopy maps [slide 42] show the 2018 canopy with street trees (dark green) roughly differentiated from non-street trees (yellow) in West Cambridge and East Cambridge. The point of these maps is to convey how different neighborhoods rely differently on City's street trees for canopy coverage. East Cambridge's tree canopy is very dependent on street trees while West Cambridge's much less so.

The following street axons show a set of existing prototypical conditions for street trees within the city [slide 43].

Major commercial street with a wide sidewalk, parking and bike lane
[slide 44]

First alternative: without changing the curb, the whole volume under the sidewalk becomes soil volume, aeration and drainage support the soil [slide 45]
Grove of trees, multiple stories of vegetation supporting each other, with pervious pavement on the surface [slide 46-48]
Suspended grate instead of a pavement, with vegetation underneath that support multiple layers of vegetation [slide 49]

Major commercial street with a narrow sidewalk, with a bike lane [slide 50]

A single planting strip with permeable pavement [slide 51]

Major street with commercial buildings [slide 52]

Creating cutouts within the buildings, having varied edges and landscaped spaces, including multiple stories of vegetation in verges [slide 53].

TF: Here you show the bike on the street. Could you show the bike lane on the sidewalk instead?
Response: Yes, we can show an option more like the new Western Ave design.
TF: And then you could extend the soil under the bike lane?
Response: Yes, absolutely.

Narrow residential streets with no setback [slide 54]

Removing pavement and shifting two-way traffic to one-way, pushing the curb out to get a wider planting zone [slide 55]
Shared street, moving the curb so that everyone gets a front yard, which might happen in dead end streets, (Longfellow road, implemented by the City)
[slide 56-8]

TF: How do you take into account if you create more one-way streets, that the cars would be on the road longer and would increase the CO_2 emissions?
Response: These are broad strategies we think have value but each individual

street would need a traffic study to understand how to best design a pattern of one-way streets.

TF: The denser neighborhoods tend to have one-way streets.
Owen: Except East Cambridge. If you remember during our big snow year, we converted East Cambridge to one way streets due to the amount of snow in the street.

TF: There are also places where you create one wide lane, wide enough for two cars go by. It is more a residential model. Like Upton Street.

TF: Shared street makes a narrow street and vehicles move slowly, where children can play, people can hang out, this helps to create a community.

Owen: Street design is a community process. We need buy-in from all residents. It's easier to reach consensus on a short street.
TF: Was Longfellow Road a DPW project?
Owen: Yes, we brought the design to the residents.

Narrow residential streets with front yard [slide 59]

Making connection between the planting strip soil and the front yards and encouraging people to de-pave their front yards [slide 60]
Taking some parking spaces and turning them into spaces to plant trees [slide 61-3]

TF: Raising the curb in such areas would help with the soil compaction because people would not step on it
Owen: We have this on Albany Street, but there's no adjacent parking. Also did it on parts of Western Ave.

Narrow residential streets with wide front yard [slide 64]

Encouraging the front yard planting when there is not enough space for street trees (Partnerships and Funding) [slide 65]

TF: I think we should be radical. The public realm is for all residents of Cambridge.

TF: Can we tie this work into stormwater infrastructure?

Owen: Tree pits can allow for some stormwater management, but it's not sufficient volume to prepare the city for climate change.

TF: Another data layer worth looking at would be overhead wires which limit what we can do. It would be a radical policy direction, but can we move them underground?

TF: What percentage of the canopy is in these different typologies?
Response: We don't have that info currently but we could do that analysis.

TF: On slide 65, where's the fence?
Response: A fence could be at the back of sidewalk. We didn't draw one, but you could certainly have a fence.

PRACTICE

The City of Cambridge forest management practices are generally aligned with best industry practices [slide 68].

To curb loss and grow canopy, enhanced practices fall into four categories [slide 69]:
Improve monitoring and responsiveness
Remediate causes of decline
Improve planting and soils details
Expand routine maintenance

Monitor [slide 70-2]
Increase frequency of city-wide tree assessments
Expand pest/disease monitoring
Expand Cartegraph tracking to monitor success of practices

Remediate [slide 73-5]
Treat private trees during city-wide severe pest/disease outbreaks (EAB)
Remediate soils with liquid biological amendments
Remediate soils through decompaction/aeration

Plant [slide 76-9]
Enhance soil specs
Ensure proper drainage
Plant bare root trees

Maintain [slide 80-6]
Formalize a City-wide management plan
Implement structural pruning for young trees
Expand watering program
Expand mulching program
Annual soil treatment with liquid biological amendments
Investigate alternative de-icing methods
Create management risk zones

Each of these will have high and low version in the cost benefit analysis.

TF: What's the city's ability to do liquid biological amendments?
Response: City is starting a compost tea program and they are currently investing in the brewer. City has a small maintenance area in Fresh Pond Reservation for the brewer, and in the spring this year they will start treating new trees.

 TF: Is it possible to change the tree pit size?
Response: Yes, we are looking to make it bigger.

TF: Are there any places to make a bare root nursery in the city?
Response: The golf course at the Fresh Pond can be used for this.

TF: How much space do you need for bare root nursery?
Response: 8,200 sf is required to store 456 bare root trees, they are very close together.

TF: I would love to see tree protection for new trees in high pedestrian areas.

TF: Are you going to make a recommendation about how many city employees are required to achieve these goals?
Response: We will not make a recommendation but, when possible, we will assess the costs of the labor required for each practice option in the cost benefit analysis.

TF: What about the cost of not doing anything?
Response: We will be calculating lost value as part of the analyses.

TF: What about the cost of professional training programs for DPW staff?
Response: We will factor that into the budget calculations.

TF: How do you assess the cost of design?
Response: Linear foot costs of constructing a shared street, linear cost of removing two parking spaces etc. This is something City can provide and has a database. RH is developing the spreadsheet for this right now and will work with the City.

TF: Before treating the trees, we first need to understand the needs of trees in the city. It doesn't make sense if you keep mulching a poor tree, if it actually needs irrigation.

3. Public Comment Period:

Speaker 1: Will you commit to putting numbers to how much these recommendations will reduce loss by next week for the public meeting?
Response: No, as much as we can, we're trying to estimate how much these options could reduce loss, but we won't be able to do it by next week.

Speaker 2: I'm the executive director of Green Cambridge, and I want to express our support for these public realm changes. The city should serve the residents where they live. Regarding the beautiful precedent images, I say "Be Barcelona." We're in the process of redesigning Allen Street with the residents. And anyone who wants a tree in their front yard can call 617-349-6433 and leave their name and address.

Speaker 3: I'm concerned about equity. You could consider leaf surface area against the number of residents as an equity metric. Open space needs prioritizing and should be balanced against affordable housing. I'm on the Resilient Zoning Task Force and we need your input to drive zoning decisions. The Green Factor zoning would weight mature trees over young trees.

Speaker 4: I'm an interested observer from Watertown. Thank you for the effort you're putting into this. I'm thinking of this as a call to arms. We could recruit high school students to come to the public meeting next week to show support? They are an army in waiting.