19

MANCHESTER | URBAN DESIGN | LAB

MUD-Lab Toolkit
Legibility Analysis

In this handout you will be introduced to Kevin Lynch's mental maps introduced in his classic The Image of the City in 1960, which represents the basis of legibility analysis. The handout will highlight the importance of legibility in urban design, how to create legibility maps and finally how to use them in the analysis, design and presentation stages.

MANCHESTER 1824
The University of Manchester

Toolkit Published 2020

The MUD-Lab Toolkit

Series Editor: Dr Philip Black

Series Graphics/Software Editor: Dr Taki Eddin Sonbli

This toolkit is authored by: Dr Taki Eddin Sonbli

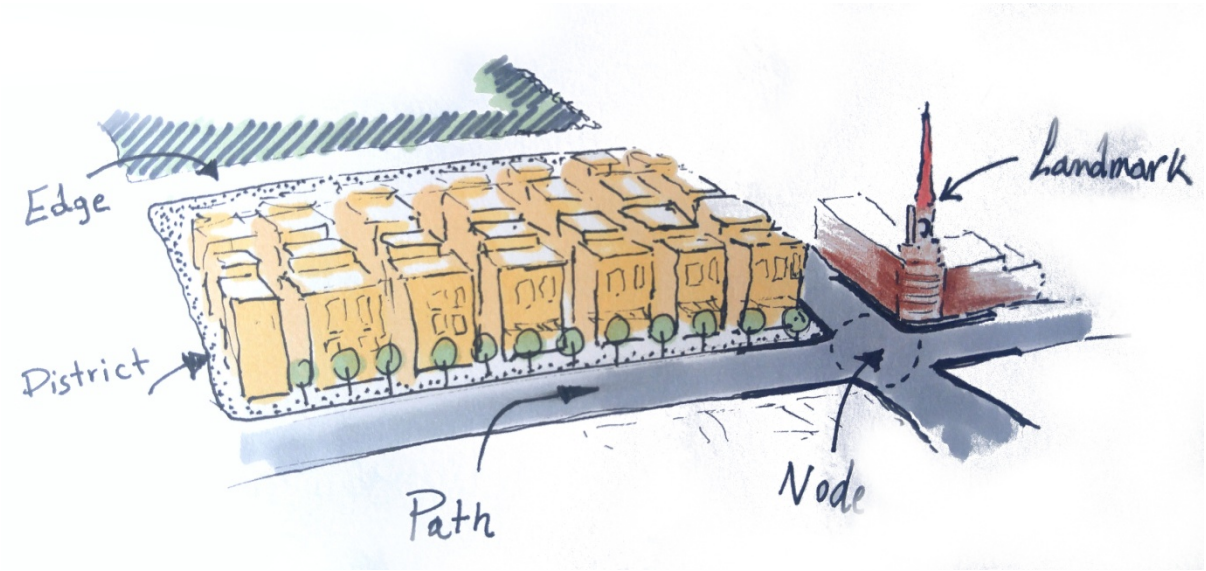
To reference this MUD-Lab Toolkit please use the following:

'Manchester Urban Design LAB (2020) '***MUD-Lab Toolkit: Legibility Analysis***' accessible at www.seed.manchester.ac.uk/mudlab

1-INTRODUCTION

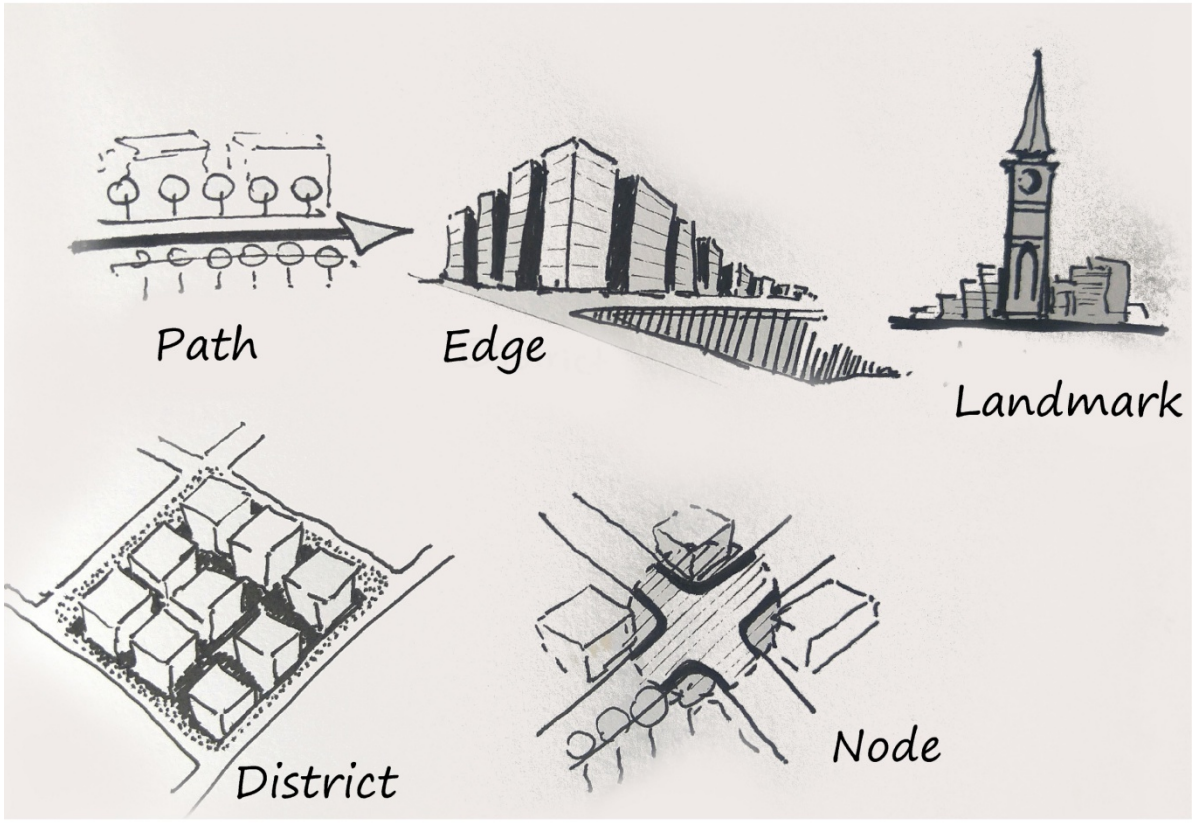
Urban Designers tend to illustrate ideas through images rather than text. Lynch's City Image is a mental model of the city that approaches urban design mentally and focus on **legibility** (the apparent clarity of the city). It is a part of a wider geographical movement called "psycho-geography" which aimed to understand spaces around us based on how we cognitive them, rather than the rigid objective physical description. Legibility for Lynch means the ease by which its physical parts and components can be recognized and organized into coherent pattern. The city should be easily grasped as related patterns of recognized symbols. **Legible city is a place that its pathways, landmarks and districts are easily recognized and can be grouped into a coherent pattern.**

Lynch's legibility map concept is a result of five years of experiments on how people understand the city's physical structure as they navigate through it. He aimed to collect the mental images of the city which is held by its citizen. He concluded that people understood their surrounding cityscape in predictable ways creating mental maps of five physical elements: **Path, Edge, District, Landmark** and **Nodes.**



The five physical elements that contribute to structure a legible space

These five elements **when properly designed and organized** in space represent an assurance that the design is legible:

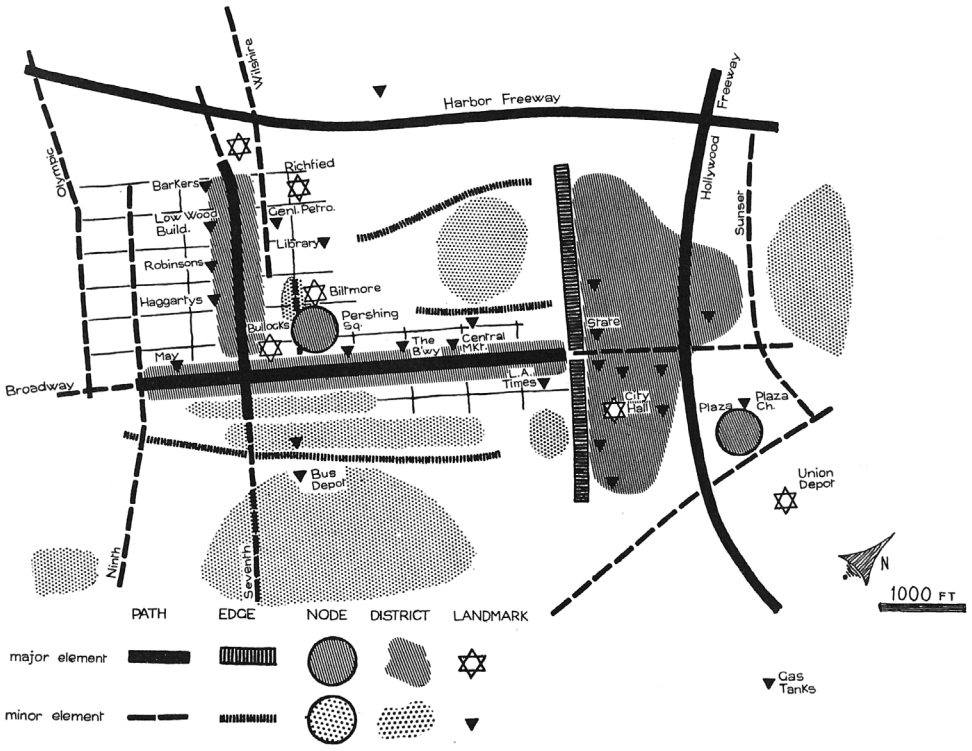


Path, Edge, Landmark, District and Node as defined by Lynch.

- **Paths**: Streets, sidewalks, trails, and other channels in which people travel. Paths can contribute to legible design when they have a ***distinguished character***. For pedestrians, it is a rout that encourages ***walking*** through and ***cycling***, ***attractive, entertaining*** and ***safe***. It is surrounded by ***active frontages*** for example. It gives a sense of ***enclosure***. It may also connect between two important areas to increase the number of users.
- **Edges**, perceived *boundaries* such as walls, buildings, and shorelines;
- **Districts**, relatively large sections of the city distinguished by some identity or character. This can be its architecture (old, modern, high/low building, dark/pale colors...etc), its use (residential, commercial...etc) or any special features that characterize it.
- **Nodes**, focal points, intersections or loci;
- **Landmarks**, readily identifiable objects which serve as external reference points. It can be a high monument or even a famous shop.

After exploring the urban space, these elements, which have strong character, are finally illustrated on a mental map to show how they are framed together to structure the space:

FIG. 14. *The visual form of Los Angeles as seen in the field*



Kevin Lynch's cognitive map. Source: Lynch (1960)

This map is not scaled and it **is not scientifically true and it is not based on an actual geographically correct basemap**. It is an abstract representation. Obviously, the map elements do not stand alone; they overlap to shape the space. So a district might have a landmark inside it, and a path can penetrate a district.

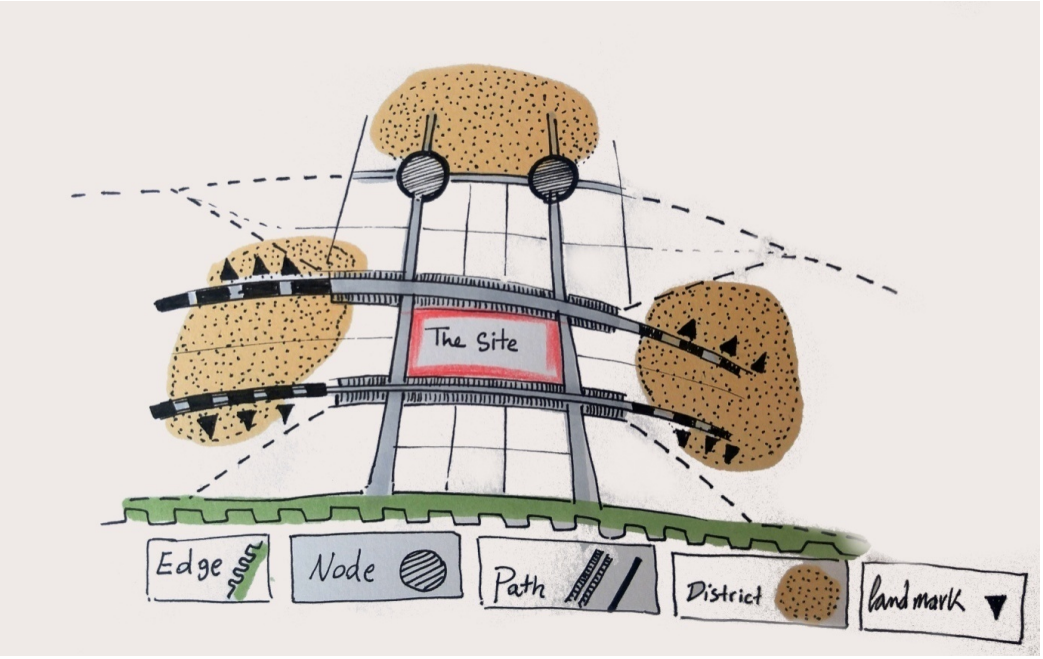
2-LEGIBILITY MAPS IN THE ANALYSIS STAGE

The aim behind creating a mental map is not presenting the map itself, but creating a legible urban space: **familiar** and **distinct**. Legible space or, as Lynch calls, ''**Imageable''** space can give a **sense of emotional security** when it reduces the fear of disorientation for users. It can also **organize activities,** according to Lynch, by giving possibility of choices and starting point for collecting further information about the surrounding environment**.** Everything is about a **clear image** of the cityscape. Whether the design is regular square gird or an organic grid, legibility should be guaranteed.

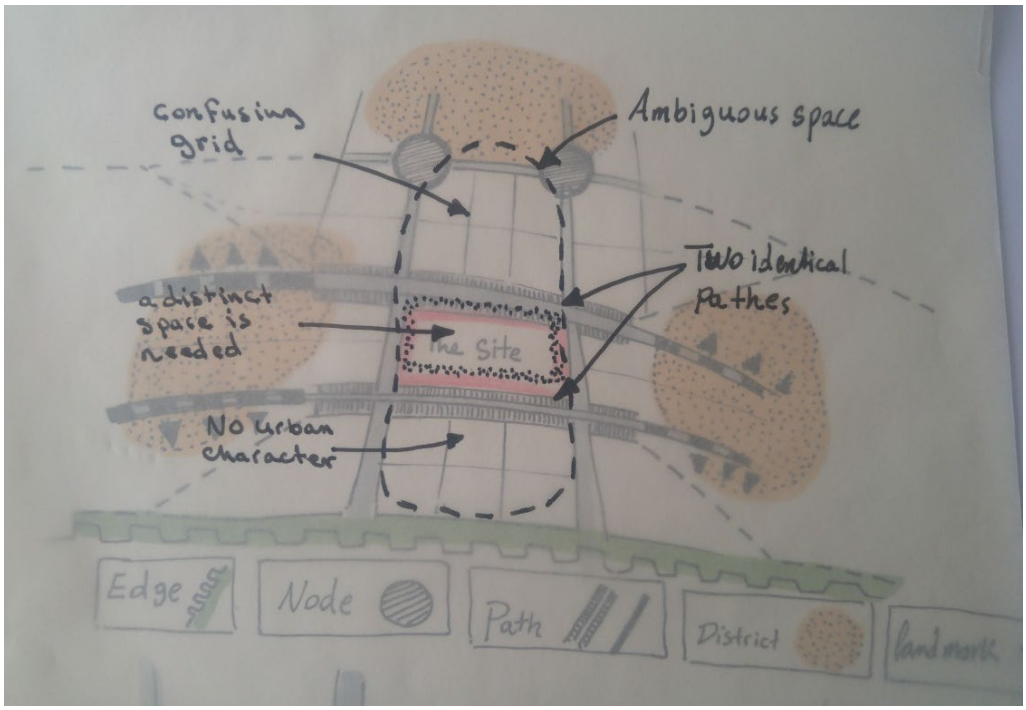
Legibility maps can be very useful in the analysis stage as they may inform design and can give you a very good idea about how the space is structured. Follow the following tips to start your analysis:

1. Start by exploring the urban space around your site. Go through the main streets, spend enough time in exploration and write down some notes about the ease of movement. Then start an ''imageable'' journey and try to remember the space and its main features.
2. **Sketch this on your sketch book without tracing an actual basemap** and give the map a clear key of the 5 elements: **nodes, districts, paths, edges** and **landmarks** similar to Lynch map above. This map is now a cognitive representation of the space in terms of its legibility. It can be very useful in your SWOT analysis.
3. Ask yourself:
    - **Is the space legible? Do you remember the journey you made throughout the space?** This is the most important question in your legibility analysis.
    - **Does it have distinct paths, nodes, districts, edges and landmarks?**
    - **If it does not, what are the aspects that made the space hard to remember? Fragmentation? Grid pattern? Lack of landmarks? Single use? etc.**

Have a look at the simple example below:



This example is a mental map of a space surrounding a land plot. You are analyzing the urban space for legibility purpose which may inform your design at the site in the middle. With this map and the notes you took during your filed exploration you are ready to start legibility analysis. Put a tracing paper above the map and add your notes:



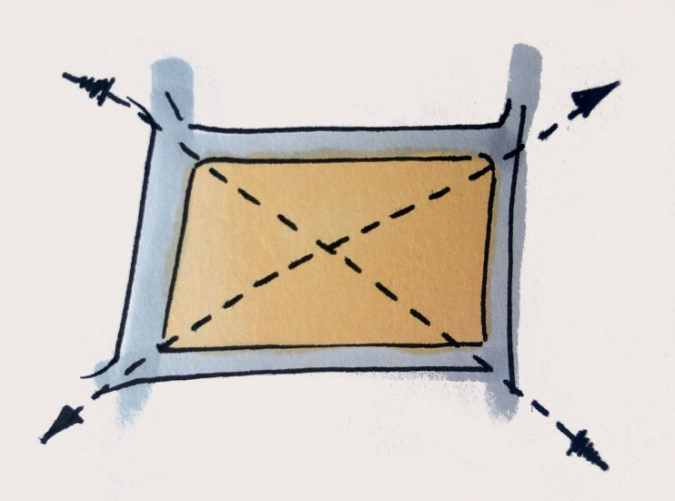
The map suggests that the existing condition of the space lacks legibility. It is adjacent to *two identical paths* with *weak character*. The plots to its north and south have a regular square grid with a weak character which makes the space even more confusing. The whole space is ambiguous and your design should take this into consideration. Possible design intervention is explained in the next section.

3-LEGIBILITY MAPS IN THE DESIGN STAGE

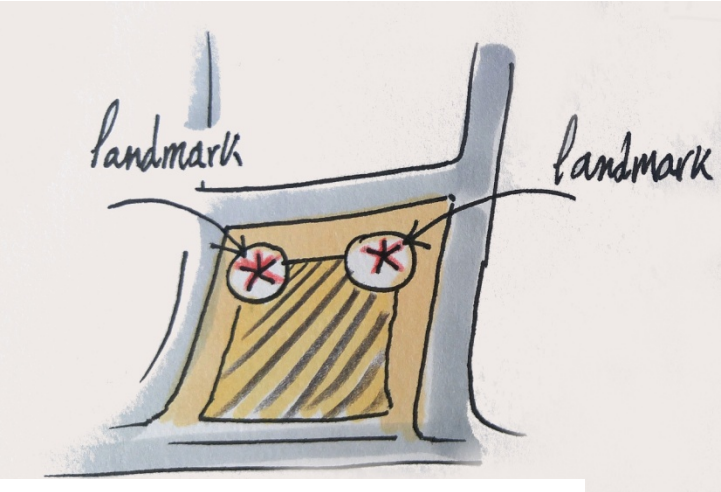
Your design should be informed by your analysis. When your analysis suggests ambiguous space then your design should respond to this problem. You already identified the main issues that make it illegible.

In the example above, the space surrounding your sight has a confusing grid and lacks landmarks and a distinguished urban character. Your project location is essential to solve this problem. Your design of the central site may suggest for example:

1- A new grid, different from the surrounding areas:



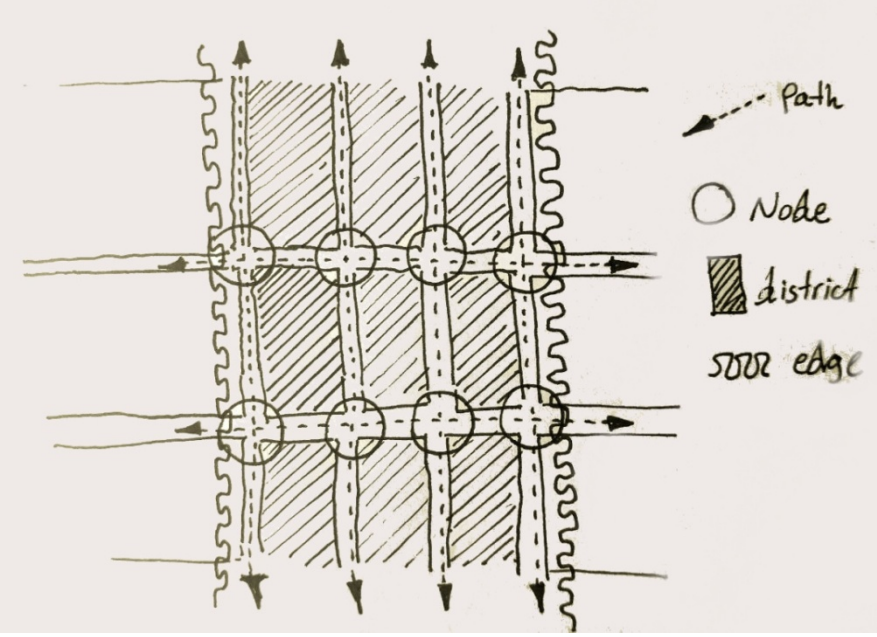
2- And two landmarks on the corners to make the adjacent path more distinct:



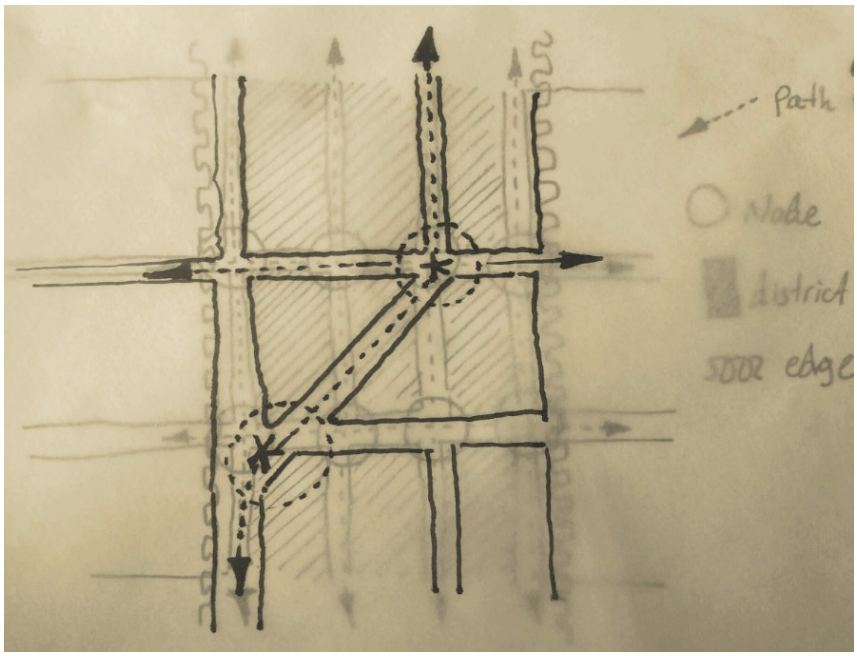
Other issues can be suggested, including a distinct land use if applicable. Those design concepts are based on the legibility map and they are well justifies by the surrounding context. However, they are also based on the rest of your analysis which might support or dismiss some suggestions (for example, can you change the land use here? Can you create different heights? Would area character be affected? Can you propose a different grid or would this affect movement in the surround area? All of these are informed by other pieces of analysis). The design now works in relation to the whole urban space, rather than thinking about the middle site itself only.

Example 2:

This imagined legibility map below (figure 8) suggests that the design in option 1 which it works in relation to connectivity and permeability, it may have an ambiguios space. Repeated regular square grid, eight similar nodes, nine similar districts and confusing pararell pathes. This design can be improved by either adding distinct corners, landmarks and buildings heights/types, or if if this is not possible , due to the nature of the scheme for example, then a change in the urban grid might solve the issue as in option 2.



Option 2 below is a different version of the same concept with a different grid pattern to avoid illegibility. The grid is changed in one area to create two distinct nodes. Two landmarks are suggested on the new corners to make the space more legible.



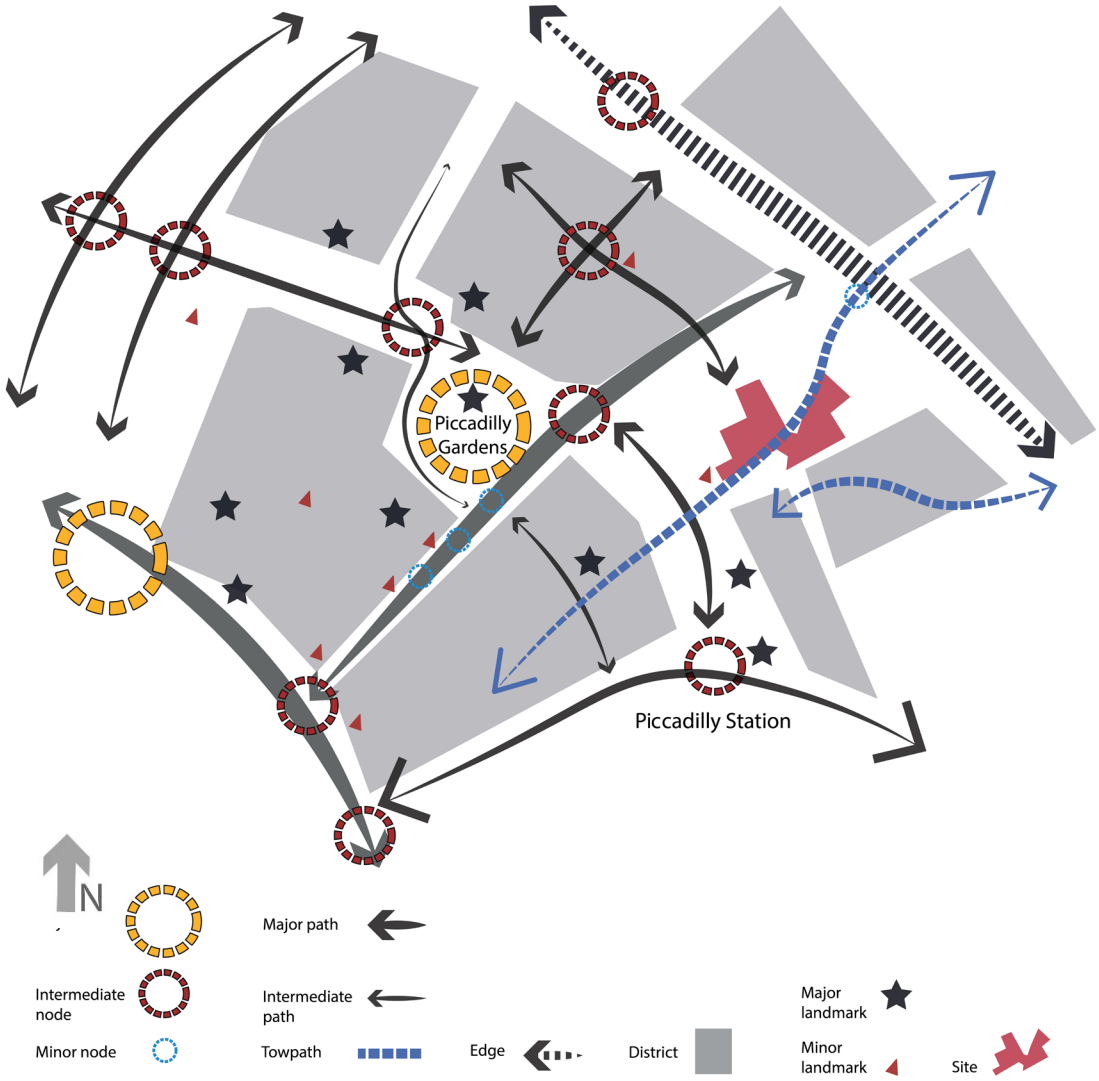
4- HOW TO PRESNT LEGIBILITY MAPS

Your legibility map is a key part of your area analysis profile, and it could also be presented in a later stage to show how the proposed design improved area legibility (i.e. testing the design against legibility).

You can present your legibility map simply as a sketch if it is clear and readable. It is suggested to use colored markers such as Copic and Chartpack as they give rich and broad lines. However, we highly suggest digitalizing your work for easy reproduction and modification.

Let us have a look at the legibility map below from Black and Sonbli (2019). This map is done with Adobe Ai. Notice how the map is presented:

- First, note that the legend includes only five categories (in addition to the site). These are the five elements that define space legibility.
- We have up to three hierarchy of each element
- Most colors are shades of grey as in the classic legibility analysis done be Lynch.
- There is no basemap, simply a white space. The well-defined districts represent the background of the map.
- There is text on the map, but minimal. Use it foe key paths, key landmarks…etc.
- The site is clearly highlighted
- The map, as a mental representation of space, is NOT based on an actual geographically-correct basemap.



The map is technically done using simple tools in Adobe Ai:

- Curvature tool for the paths, they were given a tapered profile.
- Circle for nodes, they were given dashed stroke.
- Star tool for the landmarks
- Districts are outlined and given no stroke with light grey fill.