Juxtaposition of realities in transformation areas

Case NDSM Amsterdam

Colophon

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Juxtaposition of realities in transformation areas
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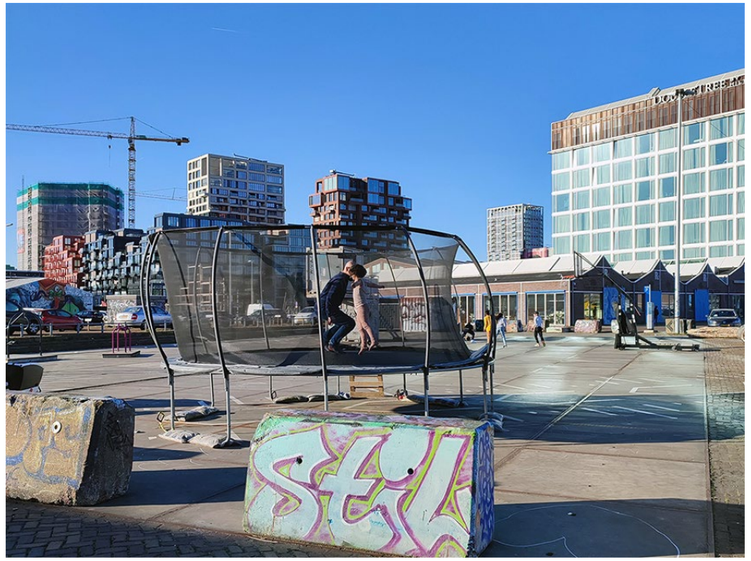
Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody.

(J. Jacobs, 1961, The Death and Life of Great American Cities)



Source: Own photographs

TABLE OF CONTENTS

1

Introduction

1.1 Abstract

The shortage of housing stock and the deindustrialization of cities have rendered many areas prone to severe transformations. Many sites across the country have been characterized as transformation areas. In an effort to battle the housing crisis, urban redevelopment processes have been initiated or are under examination for a plethora of industrial sites. Former port piers start to transform into residential and mixed-use areas. Many of the locations though, house active manufacturing facilities that are forced to be relocated without appropriate planning. Is there a way to diversify our cities while permitting new forms of co-existence between new and existing functions? What are the transformations of the urban fabric that could facilitate this?

Usually, those areas are dealt with a tabula rasa mentality, not respecting the communities and the productive landscapes that are embedded within. This often results to fancy but uniform, new residential areas that fail to meet the identity of the place that was already there. The active displacement of the communities leads to phenomena of gentrification and raises questions about diversity and social inclusivity. At the same time, the lack of a cohesive approach results in a fragmentary urban fabric. Spatial discontinuities come along with concerns about the liveability and resiliency of the desired urban growth.

Through research by design, the thesis will try to provide a new perspective for the future, where working and living environments could harmoniously co-exist. Interventions and proposals suggested will be built upon the basis of co-creation with existing communities. An interscalar approach will be sought, ranging from the city scale to the neighborhood level and the public space within.

Key words:
transformation area, mixed-use inclusive urbanism, place identity, working communities, urban manufacturing, patterns

1.2 Mixed-use city

During the last decades, the concept of mixed-use development has increasingly gained ground in European and North American planning. This is an effort to step forward from the ‘Functional City’ paradigm promoted by CIAM (Congre`s Internationaux d’Architecture Moderne) in which the four main city functions (housing, employment, recreation and transport) were clearly distinct (Hoppenbrouwer & Louw, 2005). A pioneer and strong advocate of mixed-use cities is undeniably Jane Jacobs. In her book The Death and Life of Great American Cities , originally published in 1961, she states that a fine-grain mix of different uses is the key to vibrant neighborhoods; a balanced mix of living, working and service activities contributes to a vibrant, stimulating and safe public realm.

According to Grant (2002), there are at least three conceptual entities regarding mixed-use objectives and strategies; increasing the intensity of land use, enhancing the diversity of uses and integrating segregated uses. The last one mostly refers to the overcoming of regulatory impediments regarding environmental concerns, such as noise and traffic (Grant, 2002). As such, it becomes clear that the context of mixed-use can vary ranging from design and social to environmental and institutional (Hoppenbrouwer & Louw, 2005). Among the reasons in favour of mixed-use, is the diminishing of travelling time which comes as a result of having amenities in proximity. Another crucial reason is its contribution to urban diversity and vitality. It offers fertile ground to ameliorate the liveability of an area, by improving the spatial quality and attractiveness and enhancing the sense of security (Hoppenbrouwer & Louw, 2005). Economists put emphasis on the synergy and cluster effects between different but interdependent activities that mixed land use offers (Nijkamp et al., 2003).

Although mixed-use is connected to economic prosperity, social equity and increased spatial quality (Grant, 2002), its effect is hampered in environments where cultural and economic forces promote the opposite. Undoubtedly, such a loud economic force is the real estate market (Hoppenbrouwer & Louw, 2005). Developers consider mixed-use development insecure and prefer the less risky and reliable investments that can yield safe profit (Coupland, 1997). Also, there is the trending belief that some activities need to be separated from others. One striking example is the incompliance of industry and housing. Nevertheless, in the age of robotization, digital fabrication and automation, industries are becoming cleaner and quieter and thus, more compatible with residential areas. Achieving a mixed-use development is not merely an urban design task. As Hoppenbrouwer and Louw (2005) put it, it incorporates non design elements, ‘such as the urban experience, the nature of uses, definitions of public and private, conflict and security’. Lynch (2002) also stresses the human component by stating that, although the diversity promoted by mixed-use is desired, this cannot be identified and measured without acknowledging peoples’ perception.

2

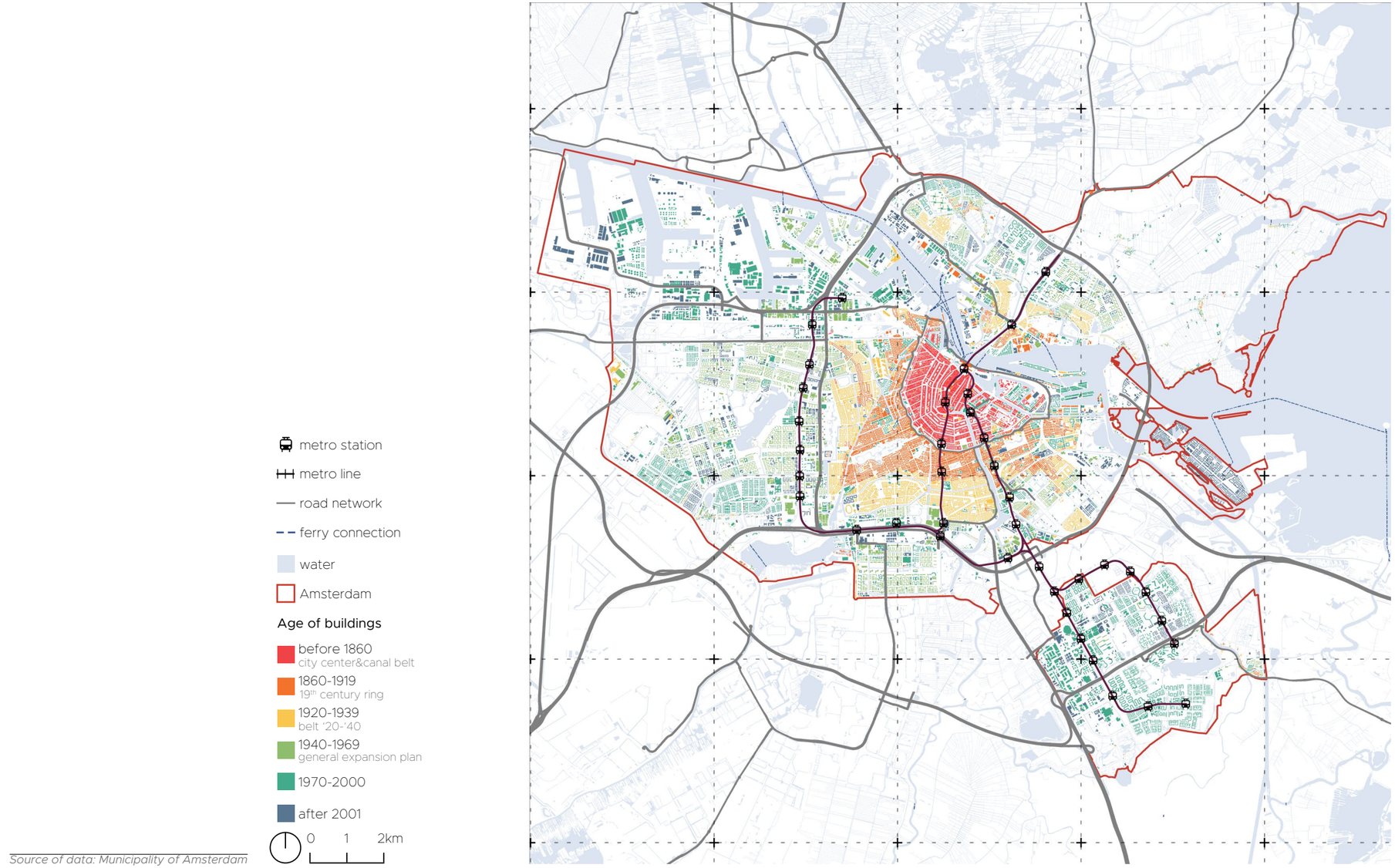
Problem Field

2.1 Urbanization Patterns

The city of Amsterdam has grown enormously over the course of history. Nevertheless, there are certainly limitations regarding how far east, south and north can expand without intruding other towns or posing at risk the scenic landscape. Annexing adjoining areas, a common practice until 1960, is no longer considered a viable option. Hence, future growth is nowadays synonymous to intensification of available land. Aligned with this, the city's latest plans are laid out in the *Koers 2025: ruimte voor de stad* (Target 2025: room for the city). The densification program aims for at least 50000 more dwellings with the majority of them realized within the 'Ring Zone' (Bijlsma et al., 2019).

In order to highlight the urbanization patterns of Amsterdam, a series of historical maps has been made. Over the next pages, some key moments in time are further elaborated. The focus of this analysis lies on the relationship between working and living environments. Their status quo ranges from being distinct entities to interconnectedness and proximity. The next sub-chapters try to highlight how the presence of water and the infrastructure have always played a crucial role in the formation of the urban fabric.

The findings are based on the book of Henk Engel, Esther Gramsbergen, Reinout Rutte called *OverHolland 20* (2019) and more specifically on the chapter *The expansion and city centre formation of Amsterdam, in two map series* (Bijlsma et al., 2019).



Source of data: Municipality of Amsterdam

1850

In 1850, Amsterdam was extensively surrounded by water, bordering IJ river in the north, Haarlemmermeer to the south-west and Zuiderzee to the east. The digging of the Singelgracht canal in the 17th century still defined the boundary between city and countryside. Except from the working areas within the city boundaries, a big number of industrial mills could be found in the west edge of the city, between Singelgracht and Kostverloren Vaart canals (Bijlsma et al., 2019).

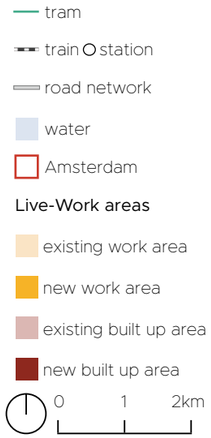
During the previous decades, the government had commissioned huge infrastructural projects in order to enhance Amsterdam's role as a trading center. Regarding water transportations, the construction of the North Holland canal in 1824 facilitated the north-south water connection, while in 1825, the navigability of the Amstel River was improved. However, the introduction of the railway was one of the most critical works that rattled the long-standing dominance of water transport. Firstly, in 1839, the line between Amsterdam and Haarlem was inaugurated and later in 1843, Amsterdam was also connected with Utrecht (Bijlsma et al., 2019).

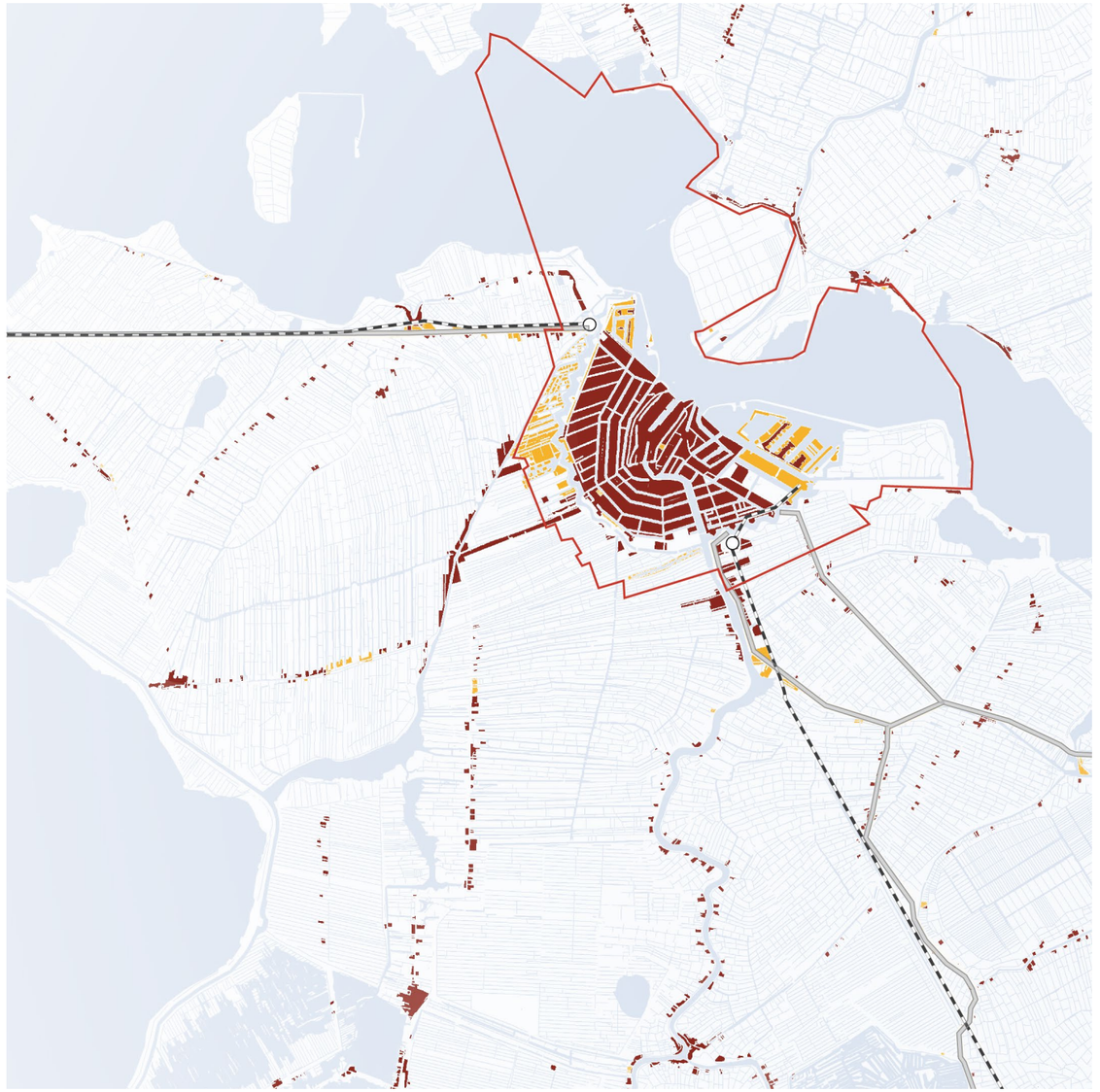
As it can be easily seen in the map, work areas occupy waterfront locations, in the edge of the city. The presence of the railway has not still affected greatly the location of the work areas. Nevertheless, the road network and thus the accessibility has been an influencing factor regarding work locations.

Finally, the main public institutions were situated in the medieval part of the city forming its core. In a similar manner, the main social welfare institutions were clustered in the south part of the medieval city, usually taking up the sites of former religious buildings (Bijlsma et al., 2019).

Source of table and map adapted from: (Bijlsma et al., 2019)

	1850
Residents	224.035
Dwellings	50.986
Residents per dwelling	4,39
Total built-up area in hectares (ha)	792
Residents per ha	283





1850-1910

The years between 1850 and 1910 the city saw great economic and spatial growth thanks to civil engineering works that improved issues of safety and accessibility. Critical to reduce the risk of flooding were the drainage of the Haarlemmermeer Lake and large parts of the IJ River. Simultaneously, the construction of the North Sea Canal rendered the port of Amsterdam even more accessible from the North Sea. Moreover, what contributed to the scarcity of land and the population increase, were the creation of man-made harbor islands, the drainage of land in the north and the southward extension of the city boundaries. These hydraulic projects alleviated the demand for land through significantly increasing the surface area of the city (Bijlsma et al., 2019).

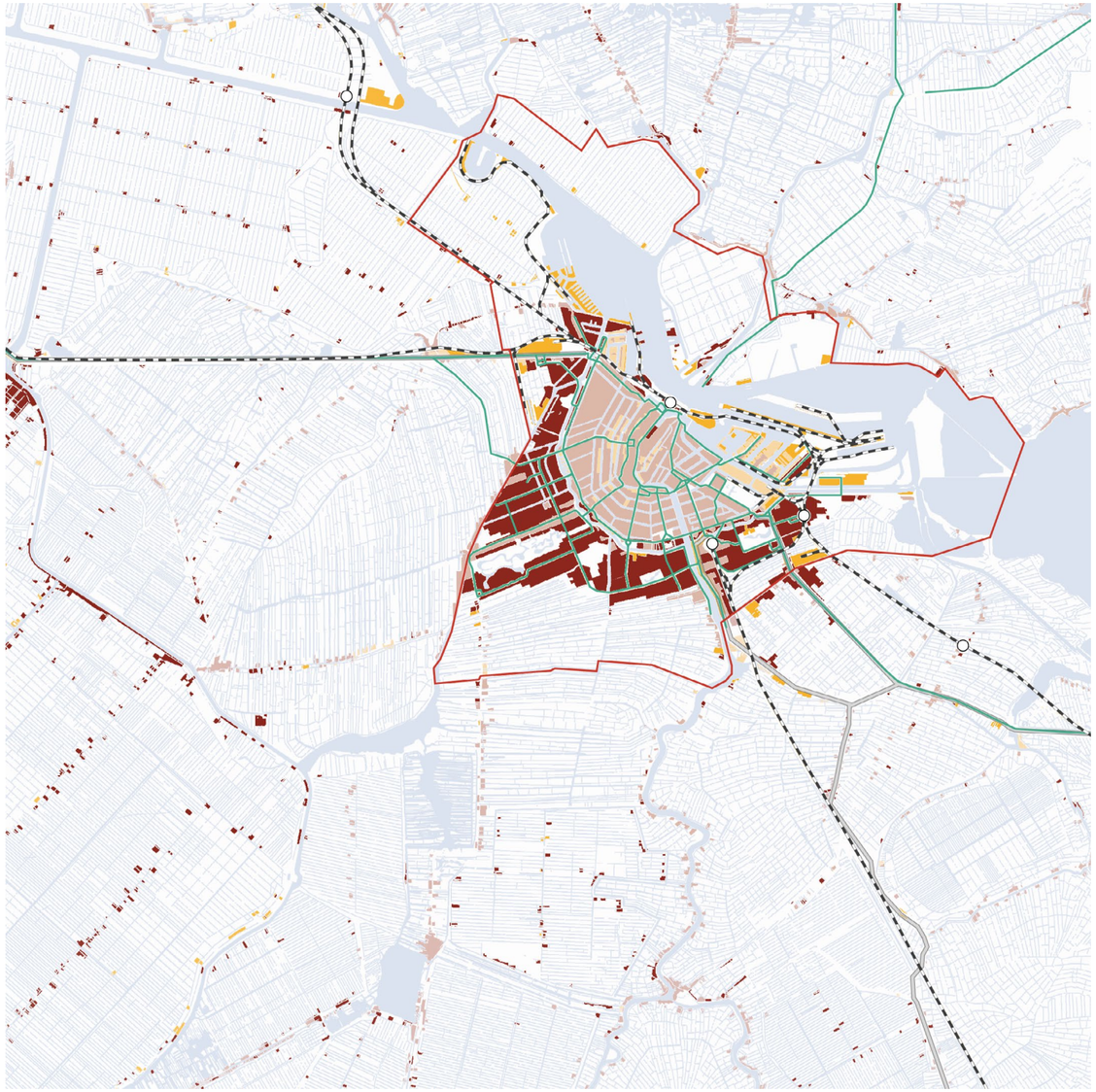
Efforts were also made towards the construction of a railway network. The central train station was also built on an artificial island in the IJ River giving thus, direct access to the historic city center. This was crucial for the consequent development of the city but also, enabled the connection of the new lines to Hilversum and Zaandam with the existing ones to Haarlem and Utrecht (Bijlsma et al., 2019).

As it has been illustrated in the map, the railway network has started gaining extreme significance for the establishment of new work locations. As such, the riverbank area of IJ river is proven ideal as it manages to combine both access to the waterfront and proximity to the railway network. This undoubtedly acts as an attractor for industries who flocked massively to the riverbanks transforming the character of the area.

Furthermore, it was the first time after the 17th century that the city developed urban expansion plans. Following Jan Kalff's 1877 plan, a concentric ring of new residential districts took shape outside the Singelgracht canal. A series of new monumental buildings in this area gave the city a fresh allure while the former bastions were almost completely replaced by new constructions. Urban parks' importance was highlighted alongside the urban growth (Bijlsma et al., 2019).

Source of table and map adapted from: (Bijlsma et al., 2019)

	1850	1910
Residents	224.035	597.689
Dwellings	50.986	143.067
Residents per dwelling	4,39	4,18
Total built-up area in hectares (ha)	792	2.000
Residents per ha	283	299



1910-1940

In the start of the 20th century, the city decided to develop the part north beyond the IJ River. These were the polder areas of Buiksloterham and Nieuwdammerham. In the following decades, the shape of waterfront was changed into harbors and many industrial buildings were constructed alongside. Even further in the north part of the city, a few garden cities were developed. Up to that moment, this part of the city was functioning separately and was only connected to the city center by ferry.

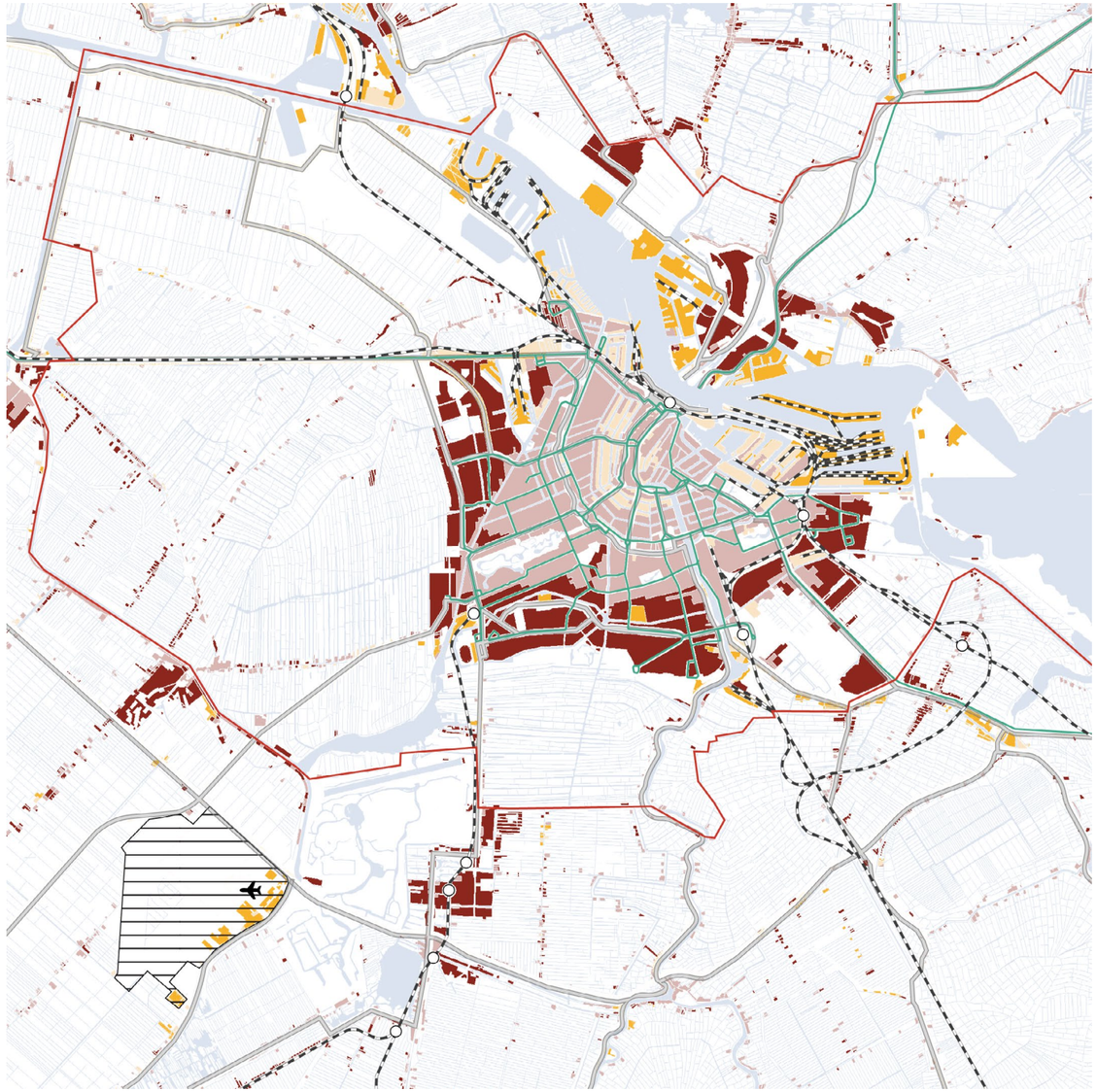
On the opposite side, towards the inland, a new residential area was developed on the logic of the previous one, namely circling the existing city. This expansion combined with the growing presence of motor traffic led to radical changes in infrastructure. Two of the most important ones were the national road 4 connecting Amsterdam with the Hague (1938) and the 'eastern rail' project (1932-1934). The eastern expansion of the railway line was built on a raised dyke to minimize level crossings. This facilitated the accessibility of the new districts to the city centre. The south edge of the city also saw the opening of the new Haarlemmermeer station. Moreover, in 1920 the first airport of the country, Schiphol was opened. What started quite small in size, over the course of the 20th century, expanded greatly across the Haarlemmermeer polder (Bijlsma et al., 2019).

The period also marked the appearance of new forms of urban buildings, such as exhibition centers and whole-sale market halls. As these new typologies demand bigger surfaces, there were put either in the newer urban sections or in the city fringes where space was still adequate and available. In contrast to this trend, the affluent 17th and 18th century building stock within the city's concentric system of canals, gradually started being transformed into offices. This led to the emergence of a central business district in proximity also with the main financial institutions (Bijlsma et al., 2019).

As it can be concluded from the map, although the waterfront areas remain the preferable ones for new businesses, the city center of Amsterdam is gradually shaped into a mixed area, including both residential and working parts. The expansion of the public transport network remains critical for the further development of the areas.

Source of table and map adapted from: (Bijlsma et al., 2019)

	1910	1940
Residents	597.689	803.073
Dwellings	143.067	234.082
Residents per dwelling	4,18	3,43
Total built-up area in hectares (ha)	2000	5.739
Residents per ha	299	140



1940-1970

After World War II, the city's expansion was based on the General Expansion Plan (AUP) of 1935, with the adjustments made in 1958 and 1965 included. In 1966, neighboring districts were annexed according with the plans for North and South-East Amsterdam. The difference between the compact pre-war part of the city and the spread-out layout of the post-war garden districts was evident. The boundary between the two identified roughly with the inner ring road, built along a dyke (Bijlsma et al., 2019).

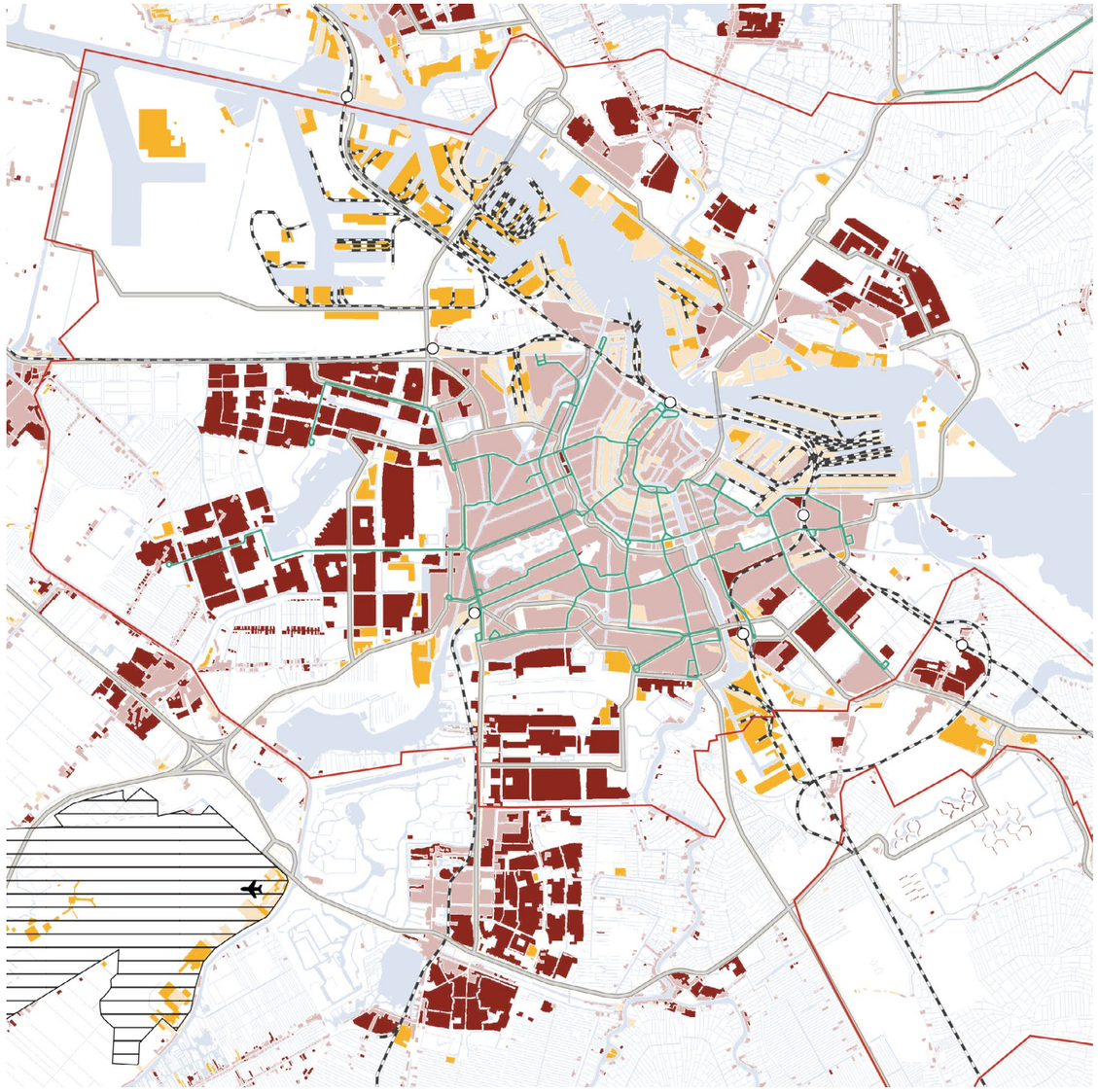
The connection with Amsterdam North and consequently with the whole province of North Holland was greatly facilitated by the construction of bridges and tunnels, namely Schellingwoude (1957), Coen tunnel (1966) and IJ tunnel (1968). The first sections of today's A10 and A9 motorways that were completed in the late 1960s set the foundations for the inner A10 and outer A9 ring roads that were developed later (Bijlsma et al., 2019).

Following the AUP's guidelines, the western port area faced great expansion from the 1950s and on. A smaller work area was also developed in the south. Common characteristic of the two industrial areas was the connection to the railway network. Access to the west harbors was still problematic as everything with south direction had to cross the central station. A circular railway line around the city was already planned in the turn of the 20th century and the construction of the first dyke had already started in 1921. Nevertheless, it was only in 1978 when trains started using the part of the route, from Schiphol airport to South Amsterdam station (Bijlsma et al., 2019).

As seen from the map, the riverbanks of the IJ River were still attractive for industries and other businesses, the function of which was facilitated by a system of railway lines and the access to the waterfront. Apart from that, new work locations arose mainly in the fringes of the city and in proximity to major roadways. It becomes clear that infrastructure related to accessibility and transport, is a critical aspect for the work locations across the city.

Source of table and map adapted from: (Bijlsma et al., 2019)

	1940	1970
Residents	803.073	831.463
Dwellings	234.082	290.747
Residents per dwelling	3,43	2,86
Total built-up area in hectares (ha)	5.739	11.597
Residents per ha	140	72



1970-2000

During these thirty years, Amsterdam expanded to a great extent but without annexations of nearby towns this time. The main area of focus was the construction of the Bijlmermeer estate. A big amount of new building stock was also realized in Amsterdam North and in the western garden cities.

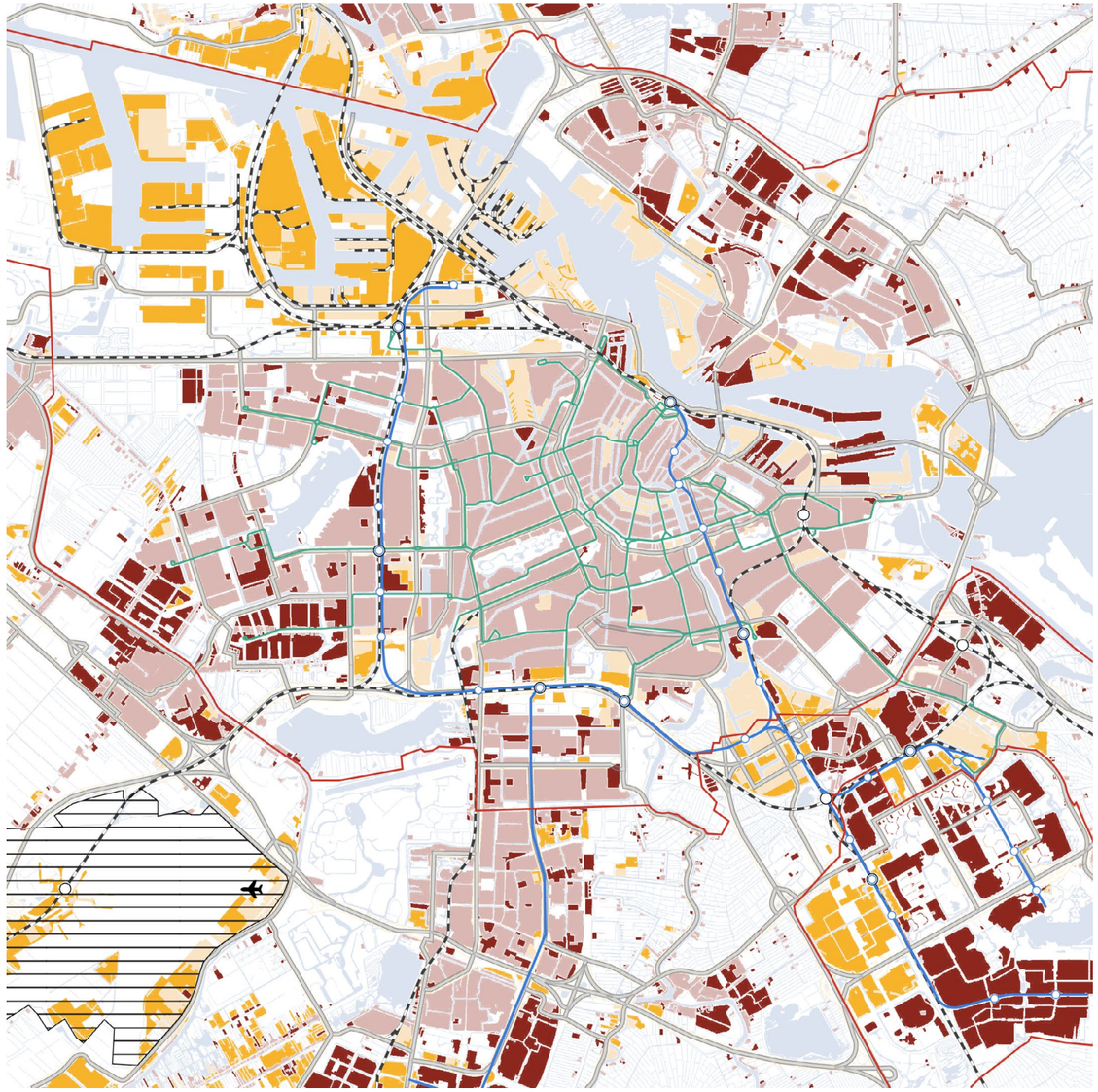
Extensive renovation of the existing housing stock also took place, but it is not visible in the map as it refers to many small urban-renewal projects. However, the larger urban-renewal areas can be clearly seen in the map. These refer to the 17th century western and the 1970s and 1980s eastern harbor islands. Also, extensive transformation of the eastern port area into a residential district from the 1990s and onwards was aligned with the expansion of the western port area, as the latter was defined in the AUP (Bijlsma et al., 2019).

Again, road and rail infrastructure played a crucial role as the circular railway and the A10 ring road came into effect at this time. Another crucial milestone was the operation of Schiphol's line and the opening of South Amsterdam station. This was followed in 1986 by the western branch of the rail network that permitted the connection of the central station with the airport. Nevertheless, the expansion of the city brought forward the need for an internal transport system. In 1968, the decision for a metro system was taken with the first trip becoming possible in 1977. Within the city, lines were built underground whereas outside viaducts and dykes were constructed. In 1997, a second metro line that followed the traces of the circular line started operating (Bijlsma et al., 2019).

As it can be concluded from the map, this is the first time that residential development takes over the space from former industrial areas. Waterfront locations for residential purposes start gaining attraction during this time period. Undeniably, this trend is still undiminished and ongoing. Proximity to the city center and accessibility secured by the IJ tunnel rendered the Amsterdam North area increasingly a considerable housing option for the city's inhabitants. The transformation of the IJ riverbanks started taking shape through the clearance of industrial estates and related infrastructure.

Source of table and map adapted from: (Bijlsma et al., 2019)

	1970	2000
Residents	831.463	731.288
Dwellings	290.747	379.797
Residents per dwelling	2,86	1,93
Total built-up area in hectares (ha)	11.597	14.122
Residents per ha	72	52



2000-2030

The scale of new building projects has considerably reduced over the past twenty years. The tendency of constructing complete districts has now given its turn to smaller-scale projects spread throughout the city. An exception though was Ijburg, a new housing district in the east, built on a series of artificial islands across the IJ river. The political decision was taken in 1996, with the first dwellings being occupied six years later (Bijlsma et al., 2019).

The key infrastructural project of the previous period was the improved accessibility to IJburg. This was marked by the construction of the Piet Hein tunnel (in 1997), road bridges (around 2000) and finally the links to the A1 and A9 motorways at the Diemen intersection in 2004. Emphasis has also been given on the public transport. Major changes are already programmed for the Amstel, Sloterdijk and South Amsterdam stations. Another milestone was the much-anticipated construction of the North-South metro line. The project, which was completed in 2018, after almost two decades of construction works, created for the first time a proper connection between Amsterdam North and the rest of the city. Moreover, a series of new public buildings, such as the Eye film museum and the Palace of Justice, show that the center of Amsterdam has lately been shifted towards the IJ river. The convenient location of the Ring Zone has given Amsterdam the opportunity to grow into a polycentric city (Bijlsma et al., 2019).

The hatched areas in the map indicate the expected building projects of the near future. It is evident that the Ring Zone and the riverbanks of IJ will continue to play a crucial role. More specifically, it seems that now is the turn of the port areas across the north riverbanks and the outdated parts of the western port area to be intensified. Moreover, changed ideas regarding the combination of housing and work areas, make employment areas in the eastern and western Ring Zone rather obsolete. These, owing to their privileged location and accessibility, are also expected to be prime locations for the development of high-density urban environments in the following years (Bijlsma et al., 2019).

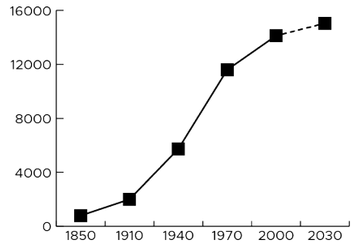
Source of map and adapted from: (Bijlsma et al., 2019)

Conclusions

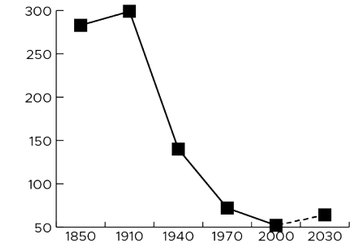
The analysis of the previous maps highlighted the urbanization patterns of the city of Amsterdam. It is evident that the role of the water and the presence of infrastructure have been the catalyst of change throughout its history.

As Musterd and Sallet put it, ‘there is a lot of urban development happening in the edge of the traditional city, and the original city is no longer the exclusive focus of urban activity’ (Musterd & Salet, 2003). The IJ river has stopped being the physical boundary of the city for a long time now. On the contrary, its riverbanks have been increasingly attracting attention in the last decades. Especially now, it seems that the focus is being shifted solely towards them. Looking through the maps, one could even argue that the IJ riverbanks will be mainly responsible for the future image of the city. More specifically, crucial role for future developments will play the port areas along the northern riverbanks and the oldest parts of the western port area.

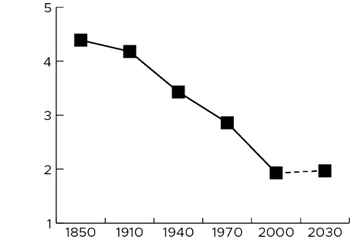
A trend that has been outlined is former work areas being transformed into high-density urban environments. This tough does not come without repercussions as it means that certain types of work environments are constantly pushed to the edges of the city. Consequently, the proximity of living environments to work areas has increased. This puts at risk the internationally unique characteristic that Musterd and Sallet had identified in the book ‘Amsterdam Human Capital’, which is the ratio of jobs to resident workforce in the center being about one to one (Musterd & Salet, 2003).



Total built-up area (ha)



Residents per ha



Residents per dwelling

Densification across the northern riverbanks of IJ/ NDSM West (Own photograph)

2.2 Housing Crisis

https://www.dutchnews.nl/news/2021/09/thousands-march-in-amsterdam-for-an-end-to-the-housing-crisis/

https://www.iamexpat.nl/housing/real-estate-news/urgent-call-big-cities-government-tackle-dutch-housing-crisis

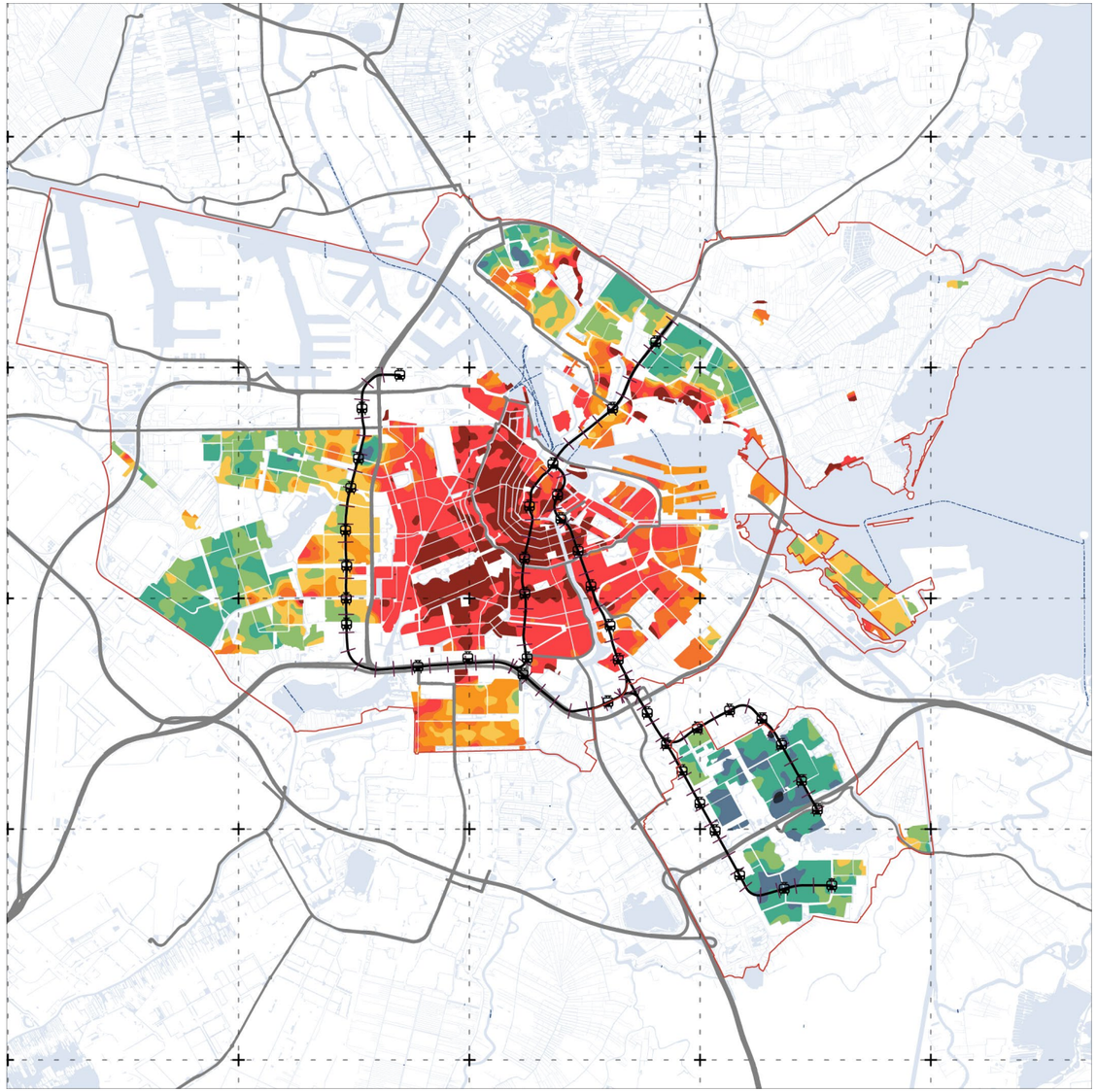
https://www.ft.com/content/04dc1e93-2e1e-4e5a-9c5c-b472b406bd42

Housing shortage is an open wound for many Dutch cities, with Amsterdam being no exemption. Prices keep increasing both for renters and buyers in most of the major cities. During the economic recession, housing production and urban development in general hit their lowest point (Bijlsma et al., 2019).

Nevertheless, the city's population is increasing at an average of 11000 new inhabitants per year. This growth though, is not depicted in accommodation options. The housing shortage was worsened by the economic crisis of 2008 which led the construction sector to a pause. Also, the Amsterdam's increasing popularity as a tourist destination lead to an even bigger competition among residents as many properties are turned into short-term lodging, like AirBnB.

According to the Statistics Netherlands (CBS), Amsterdam faced an increase of 11.5% (9.4% inflation-adjusted) in the prices of existing houses in 2021. The average price hit the record of €569,890 after eight consecutive years of annual rises. The prices have skyrocketed to the extent that Amsterdam is not considered a viable option anymore for a growing number of people.

Source of data: Municipality of Amsterdam



New development plans

2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	TOTAL	
3116	1913	2812	3778	6077	3533	4582	3593	2405	1903	2210	1958	1186	590	1068	796	855	3154	45529	Social rent
1117	1228	575	3504	4226	2871	4228	2920	2743	1680	1559	1633	1198	528	1038	762	524	2915	35249	Mid-price rent
1423	2550	1177	1619	957	527	166	90	0	40	189	0	0	0	0	0	0	0	8738	Expen-sive rent
2911	1434	1368	2002	900	598	761	111	173	16	59	46	137	0	123	0	0	90	11143	Buy
0	0	0	1523	3152	2215	2317	1974	1921	2172	1324	991	1037	338	737	654	524	1932	22811	Exp. rent or buy
0	0	0	89	132	0	214	0	564	0	0	0	0	0	0	100	0	400	1799	To be de-termined
8567	7125	5932	12515	15444	9744	12268	8688	7806	5811	5341	5042	3558	1456	2966	2312	1903	8491	124969	

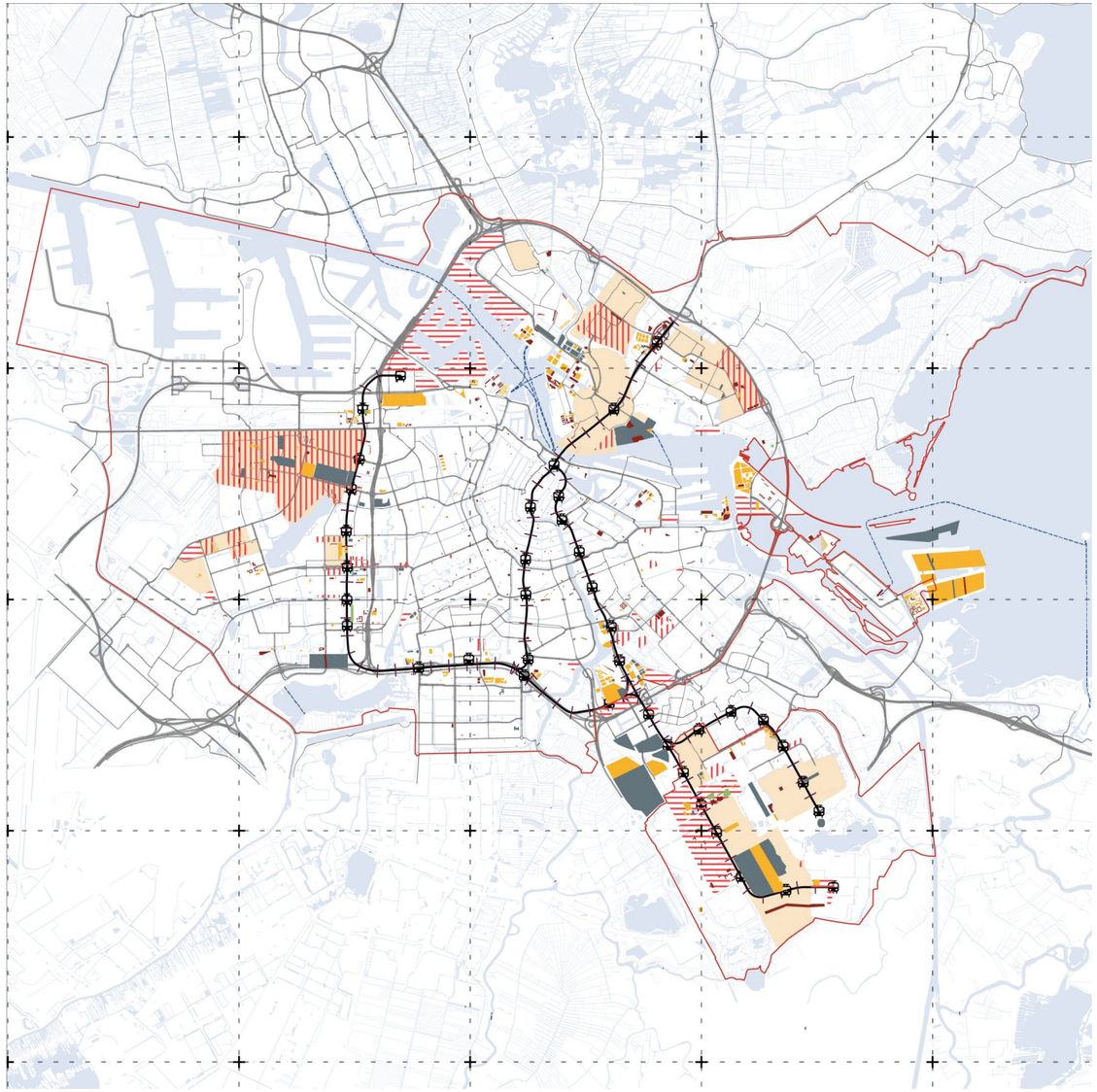
Projected housing plans till 2030 (Source of data: Monitor Housing plans, Municipality of Amsterdam)

Urbanization is a strong trend across the globe. For a country such as the Netherlands which has to deal with land shrinkage, the problem is sharpened. For the case of Amsterdam, densification is the main approach sought rather than expansion. From 2016, the city's main focus is to densify its existing urban fabric. Aligned with circular ambitions and aiming for a high life quality, the municipality via the *Koers 2025: ruimte voor de stad* (Target 2025: room for the city') program, is targeting to a minimum of 50000 new dwellings.

The majority is expected to take place within the Ring Zone; across the A10 motorway, the circular railway and the IJ river. In the following years, this area is expected to function as the 'link between the center and the districts outside the ring, and the gateway to the city from the surrounding region' (Koers, 2025).

Article about the displacement of chemical factory in Amsterdam North for residential development (Source: https://www.ft.com/content/04dc1e93-2e1e-4e5a-9c5c-b472b406bd42)

Source of data: Municipality of Amsterdam

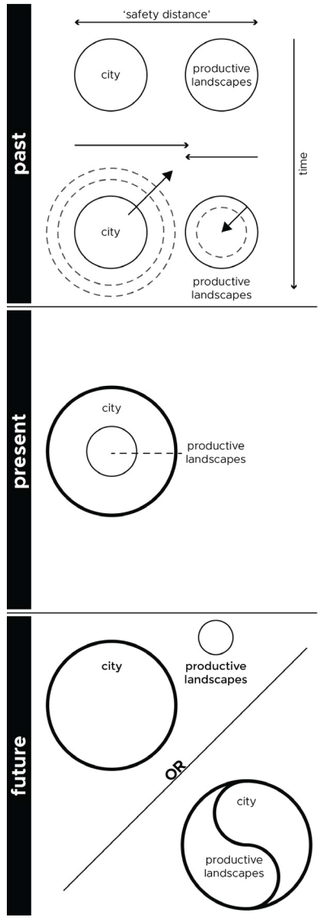


Conflicts

As it has already been illustrated, densification across the IJ river is taken for granted. Nevertheless, it is important to note that these areas are not empty plots, waiting for a new life. They mainly consist of various work environments and house many industrial and productive landscapes.

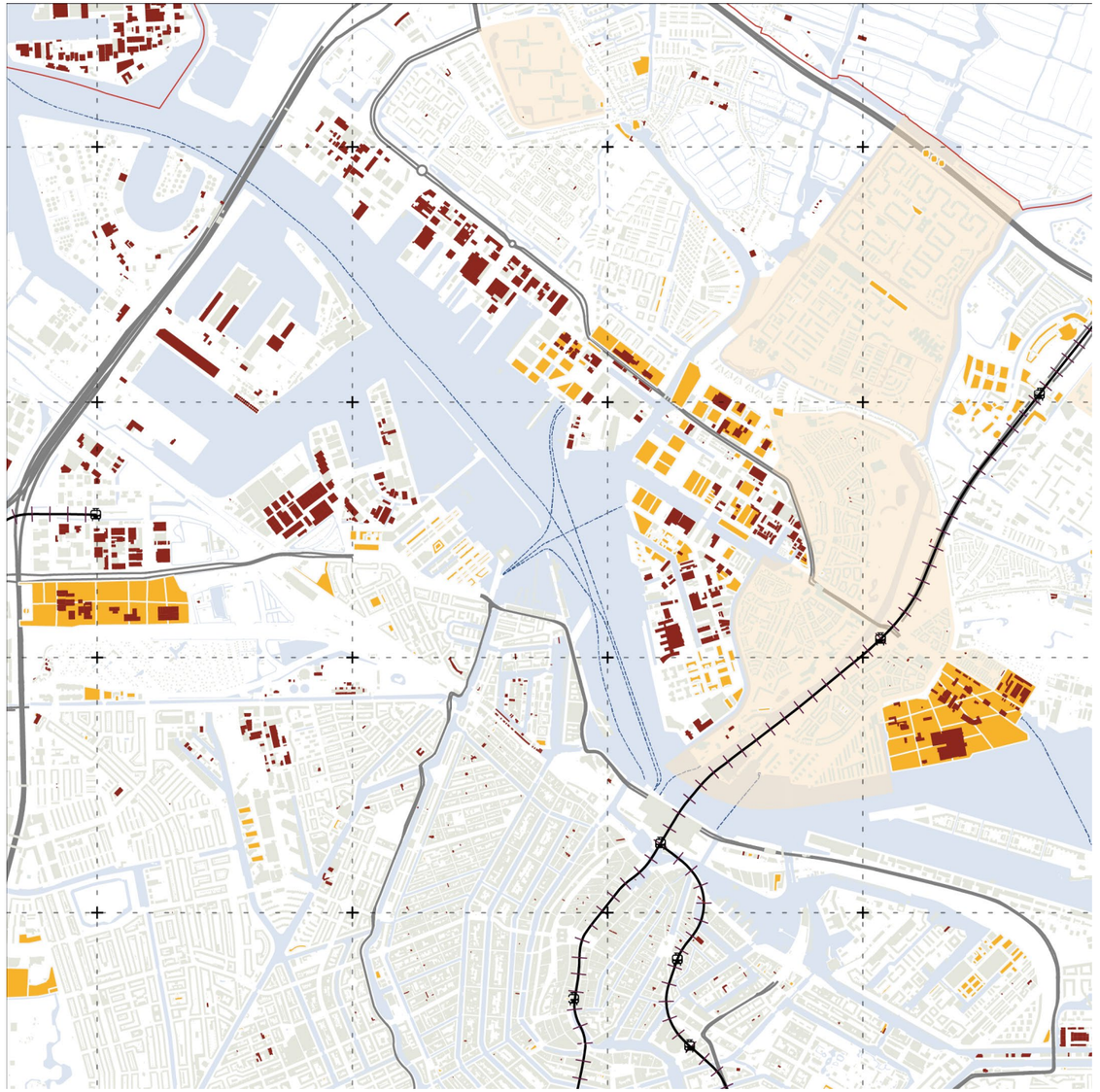
In the past, city and industry used to be two distinct entities in close proximity. Over the course of time, Amsterdam exponentially grew while the industry either shrank or remained stable. At the moment, we have reached a point where manufacturing landscapes are enclosed by the urban fabric while the maximum capacity of the city is at its limit. This leaves us with two main options, one being actively pushing manufacturing landscapes outside of the city centers and the other one discovering what potentials for the future a co-existence might have.

Taking a closer look in the north riverbanks, we can clearly see that the municipality is pointing towards the first option, meaning thus that we are facing an active displacement. As it can be clearly seen in the map, many of the new development plans overlap with existing industrial buildings. This is only the tip of the iceberg, as it can be easily imagined that these new developments will gradually alter the character of the area, forcing sooner or later the remaining businesses to displacement.



top: Diagram showing the industry-city relationship over the course of time (Source: author)

right: Source of data: Municipality of Amsterdam



2.3 Displacement of Working Communities

Displacement has been identified as an integral outcome of gentrification practices. However, usually the discourse on gentrification, focuses solely on residential displacement and the subsequent change in the demographic characteristics of the population, leaving aside the displacement of manufacturing businesses. Despite living and working are equally important aspects of community, the latter has received much less theoretical and empirical focus. It is crucial to understand that this phenomenon is not a natural-evolution one that comes as a consequence of the revitalization of the urban centers. On the contrary, it is rather incited by city policies to accomplish deindustrialization clearing the way for those who have the capital to make profit through investments. As Curran sharply puts it, 'industrial displacement is not simply an unfortunate consequence of the revitalization of the inner city. Displacement is an active process undertaken by real estate developers, city planners, policy-makers, landlords and even individual gentrifiers' (Curran and Hanson, 2005; Zukin, 1989). As Curran astutely remarks, in working-class urban areas in proximity to city centers that have historical stocks of industrial space, it is the gentrification-induced industrial displacement that remakes urban landscapes (Curran, 2007).

At the same time, the experience of those facing displacement and the repercussions on the communities and the urban economy, have not yet been put enough on the spotlight. The conversion of industrial land into residential, makes businesses face various displacements, forced downscaling or even closure. Except from the endangered position of existing businesses, this also hinders the attraction of new entrepreneurs in city centres. The ramifications of this are not restricted within the neighborhood itself but, as many scholars have stated, impact the economic and social structure of the entire city (Sassen, 1991; Smith, 1996, 2002; Zukin, 1989).

Starting from the 1970s and onwards, most cities faced great deindustrialization. Production was moved overseas leading to deskilling of labor. This fundamental restructuring of urban economies has resulted in a polarization of workforce, meaning employees accumulated either at the highest or lowest of skill and payment ladder (Castells, 1989; Sassen, 1991). Aligning with the thought of Curran, a distinction between the reason of businesses' displacement needs to be made. Instead of focusing on deindustrialization as a result of global economic forces, the scope of this work concentrates on industrial displacement caused by real estate pressure and local urban policies.

Those businesses do not face the challenges that big players come across, like increasing labor costs and international competition. The biggest adversary of those smaller scale businesses is the rising real-estate pressure that renders their land attractive for residential redevelopment (Curran, 2007). Another term that needs to be considered here is the rent gap (Smiths, 1996). This refers to the difference between the actual rent of industrial space and the potential rent of a residential unit in the same premises. Although many cities across the globe face such urgencies, the Netherlands especially is confronted with the extra burden of land scarcity and housing shortage. This explains why the heated real-estate market has such an interest in the potential profit industrial areas have.

The shift towards a more service economy is here to stay. Nevertheless, certain aspects of urban manufacturing are resistant to change and continue to thrive as they serve niche markets. They might be smaller nowadays, but they still contribute to the urban economy. These small manufactures also benefit from urban locations for a plethora of reasons. Proximity and accessibility to suppliers, customers and labor markets are crucial for their vitality as they rely on urban locations for their success (Curran, 2007). Relocation would mean that they lose their business advantage and systems and networks of operation. As it has been long ago mentioned by scholars, place is extremely important for small business owners (Hanson and Pratt, 1992; Romo and Schwartz, 1995). Reasons that lead in their displacement are the increasing land and rental cost, lack of sufficient space, as well as changes in policies and zoning. Finding appropriate space in proximity is very complicated. This is because cities rarely develop new industrial space in urban areas, leaving manufactures without choices. At the same time, the gentrified area affects also the prices of the surrounding areas, making thus the relocation in vicinity and survival of businesses in city centers impossible. Besides that, in the event of relocation, the disruptions caused by moving are severe. Especially affected by this are smaller businesses that have fewer human and financial resources to support a move. For some businesses, the need for transition even predisposes their closure. The loss of permanent manufacturing jobs in city centers contributes to the suburbanization of this type of employment that destabilized urban economies in the 1970s and 1980s (Curran, 2007).

Undoubtedly, gentrification-induced displacement of smaller businesses and their employees, puts at risk the diversity of the economy (Curran, 2007). According to Cohen and Zysman (1987), a strong manufacturing sector is a prerequisite for a thriving economy in order to withstand economic diversity and protect from fluctuations in other sectors. Moreover, workers employed in manufacturing businesses stand higher chances to be unionized and as such they succeed better than those in service sector to ensure their rights accordingly (Phillips-Fein, 1998). Also, the multiplier effect of manufacturing jobs usually scores higher than other economic sectors. For instance, in a report for New York published in 2001 (PICCED, 2001), the manufacturing multiplier effect was accounting for 1.77, meaning that 777 jobs in other sectors were provided for every 1000 manufacturing jobs. The multiplier effect for business services was 1.41 while for retail it was 1.2. As such, the economic impact of displacement goes beyond the number of jobs lost per se. In fact, it affects a whole network workers, suppliers, customers and other businesses (Curran, 2007). In-person interaction and shared contacts constitute the fabric of a business community which is threatened by displacement (Amin and Thrift, 1994). In this fragile network, the loss of a player or a small manufacturer, means that the whole interrelated system is at risk. Thus, the number of businesses forced to relocation signifies a threat for the local economy of the neighborhood. Consequently, indirect displacement also poses a threat to even businesses that are not threatened by immediate physical displacement. Another disruptive factor is the insecure environment caused by inconsistencies in the policy frameworks. This cultivates a deterring business climate for small manufacturers (Curran, 2007).

2.4 Site Focus

The thesis focuses in transformation areas across the riverbanks of IJ river in Amsterdam and more specifically in the former NDSM wharf area. All these areas share common characteristics as a result of their industrial past. Generally, such areas have attracted businesses and industries, the operation of which was facilitated by the presence of water and the related harbor infrastructure. Manufacturing has been a significant factor of growth for most Western cities in the late 19th and early 20th centuries. Nevertheless, the transition to a service economy turned manufacturing into a weaker activity. As such, it became increasingly under pressure to justify its place in the city.

Although the whole area is undergoing rapid transformations, the NDSM East rather forms the last untouched cluster. This of course has to do with the fact that part of its territory has been listed as monumental buildings. This stands as a reminder of the glory past when it was the largest ship-building company of the world and shipbuilding was one of the main industries of the NL. This is also depicted in most of the street names found in the area. Many of them (Ondinaweg, Ms. van Riemsdijkweg, Neveritaweg, Vasumweg, Oslofjordweg, Ibisweg and Melaniaweg) are named after tanker and vessels built in the shipyard of NDSM.


Het Parool

Nederland | Wereld | Kunst & Media | Sport

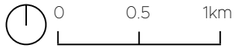
Plus Achtergrond

Plannen voor woningen bij chemische fabriek in Noord: 'Dat gaat problemen geven'

Rond chemische fabrieken is het advies om woningen op minstens 700 meter afstand te houden. Toch wil Amsterdam in Noord woontorens bouwen op 150 meter van chemiebedrijf Albemarle.

Bart van Zoelen 7 september 2021, 10:47

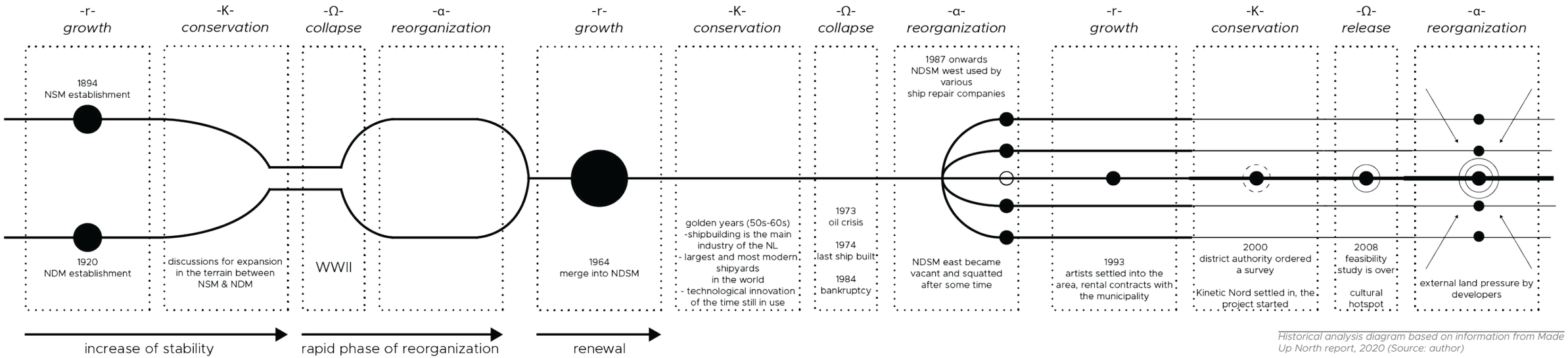
Article about the displacement of chemical factory in Amsterdam North for residential development (Source: https://www.ft.com)



Historical Analysis

Aerial view 1967 (Source: NDSM-werf Museum)

Aerial view today (Source: Google Earth)



Historical analysis diagram based on information from Made Up North report, 2020 (Source: author)

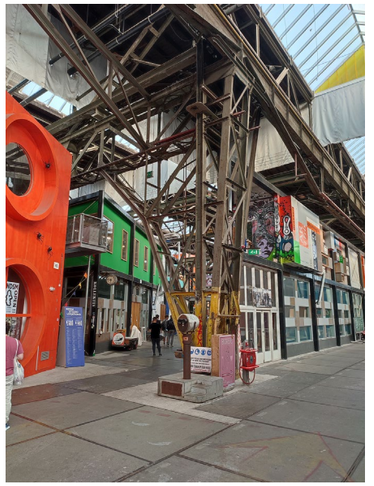
Working environments

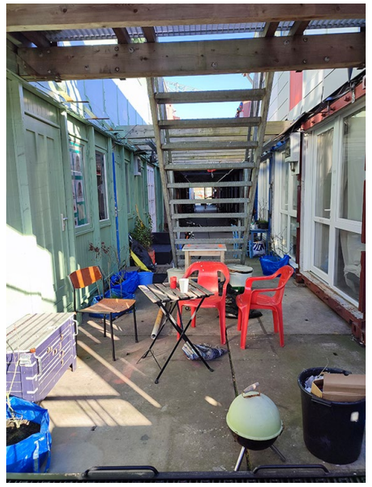
Except from the historical assets, the place also comes with embedded communities which also face the risk of displacement. These communities form the identity of the place. The strong tradition of manufacturing is still evident today, both in terms of people still involved in smaller scale shipbuilding activities, such as repair, but also a community of makers and artists that first appropriated the place after abandonment. Currently, there is a diversity regarding the spatial manifestation of these working environments. There include individual studios of various sizes, warehouses and spaces for outdoor work and storage.

These working environments and their people contribute to the character of the area. The industrial buildings and the 'informal' look have shaped the identity of today to such an extent that the place has been inscribed in the collective memory of the city as a cultural hotspot among others.

The residential pressure in the neighboring area of NDSM West though, clearly poses a threat to the working environments found in the area. In the current development model promoted, these look rather incompatible.

Various working environments in NDSM (Own photographs)





Various working environments in NDSM (Own photographs)

Current development model

In the meantime, taking a look at the types of development promoted in the area, the pursuits of the municipality are rendered clear. Densification seems to be of utmost importance. In this setting, it becomes clear that synergies with manufacturers are difficult to achieve. Judging from the pictures, maximizing profit through high-end housing with waterfront views seems rather the priority of developers.

The outcome seems rather uniform although the marketing campaign strives for the opposite. Taking a look at how the projects are being advertised, it is evident that they want to make the future resident feel a part of the transformation process. The reality though is quite different. The existing people of the area and their ecosystems of work remain invisible, while the overall process is characterized as a top-down approach. Thus, one could even say that the place-making strategy is rather a marketing hype to mask gentrification.

Living in an urban pioneer district.

A new city is emerging on NDSM. A district for urban pioneers. Living in the place where once mammoth tankers rolled into the IJ and artists found freedom. Here it is ragged, unruly and cinematically beautiful.

The buildings have a sturdy design, matching the monumental sheds of the yard. In the green courtyard, residents can meet each other or enjoy the peace and quiet. In addition to apartments, there will also be an office, catering and shops in Nautical NDSM. The sale of the apartments in Nautisch NDSM is expected to start in the autumn of 2021. The first residents will move in early 2024.

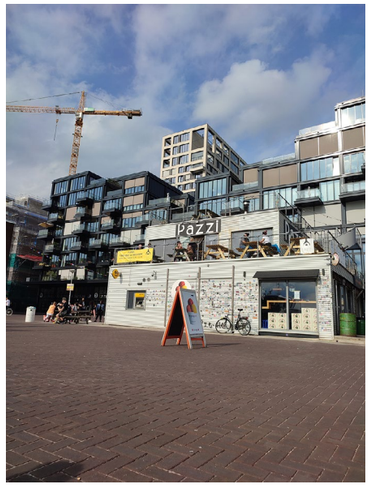
NDSM - Amsterdam

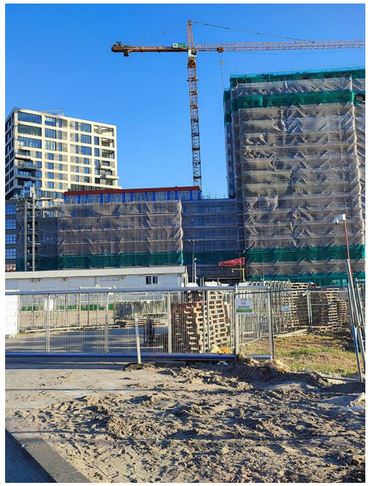
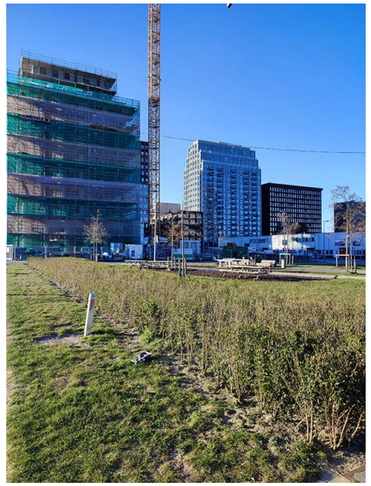
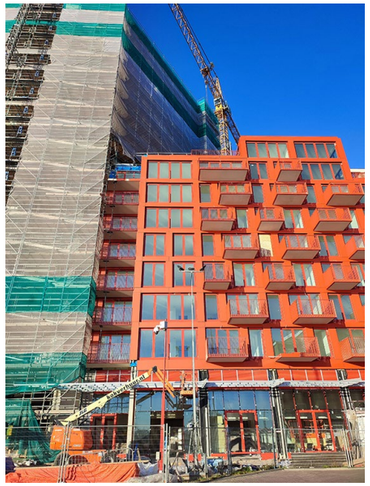
NDSM will be a 24/7 city district with a mix of functions; intensive and contrasting, lively and different. Directly on the IJ, on the sunny side of Amsterdam. It is buzzing with cultural, commercial and innovative activities, of people who want to contribute to the area and to each other.

The former NDSM wharf is in a transformation process in which no static final image has been recorded. After all, the makeable city does not exist, it is created! By not defining the final image, but rather seeing it as a source of inspiration, NDSM slowly finds its contours through organic growth at an urban pace. NDSM is never finished and is always on the move. NDSM is a Self-made City.

The monuments and site relics form the basis for the future interpretation. The future is being built on the principle of mix-to-the-max. Mixing functions, people and activities within the area, on a plot but also within a building. There is room at NDSM for special initiatives. We like an experiment.

Screenshots of the advertisements of different developers involved in the area, underlying how they try to mask gentrification (Accessed: September and October 2021, underlined by author)



New residential developments in NDSM (Own photographs)

2.5 Problem Statement

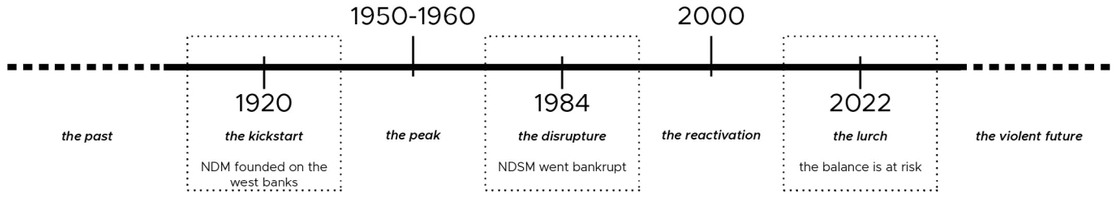
NDSM, has been a working area since its early development, with working-class residential areas in proximity. In recent years the real estate pressure is altering its skyline profoundly with severe repercussions for the embedded communities. The area provides the critical physical landscape devalorized enough to maximize developers' profit as well as the geographical benefits and amenities the incoming population is looking for. The reasons that NDSM is appealing for new residents rendering it prone to gentrification are the same ones that lead to its industrial growth: proximity to city center, accessibility and a waterfront location. Its industrial character was also one of the early attractors that put the area on the map, firstly for the art scene and much later as a cultural hotspot. Currently though, the replacement of industrial land with high-rise block of flats results in a rather fragmentary landscape while displacement of working communities intensifies. The area is undergoing a crisis identity and thus, the thesis will explore ways to diversify our cities while permitting new forms of co-existence between new and existing functions. The transformations of the urban fabric that could facilitate this co-presence will be sought in a co-creative manner with the embedded communities.

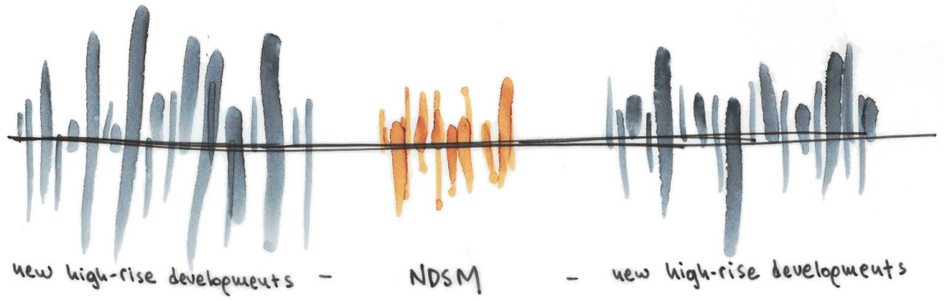
Research Aim

The research aim of this graduation project is threefold. Firstly, it is to criticize the current urban development practice that is resulting in gentrification-induced displacement. The tabula-rasa mentality that is being promoted sees the area under question as an empty plot, ideal for maximizing profit. On the contrary, the thesis promotes an alternative reading of the area in which the main focal point is the embedded communities that lie within.

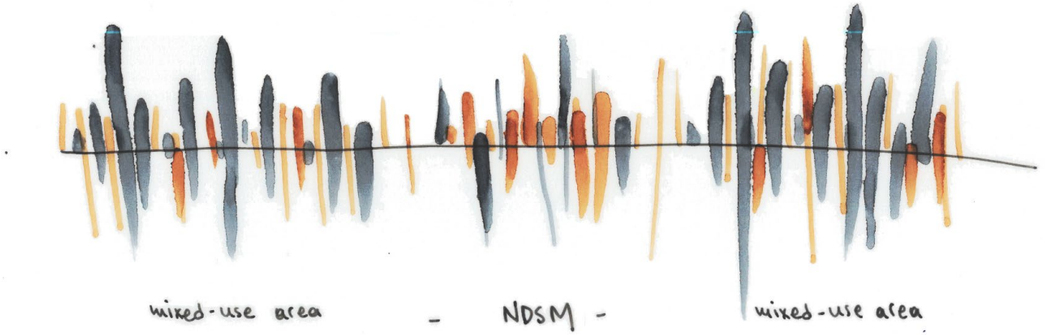
Through people, places and networks, the identity of the place is highlighted. In that way, the thesis suggests that the city's future development lies in the inclusive juxtaposition of present and future realities. Based on the long-standing working character of the area, the thesis also aims to understand the potential of the return and enhancement of urban manufacturing within urban centers. The graduation thesis explores how the NDSM manufacturing and creative cluster can contribute to the economic growth of the city of Amsterdam. The goal is to increase social innovation capacity while ensuring a better integration of the incoming population group, based on co-presence and co-creation with the existing communities.

Finally, through process design, the thesis will try to operationalize the procedure and provide a framework for later use in similar projects.





from antithesis to symbiosis



3

Methodology

3.1 Research Questions

Main Research Question

Which spatial adaptations could be made in transformation areas, such as NDSM, to support local makers' communities and build upon the place's current identity?

Sub Research Questions

-1- CONTEXT

PLACE EXPLORATION

1.1_What constitutes a place's identity? What makes a place for makers? How is this expressed in NDSM?

1.2_What is the role of manufacturing in Amsterdam? How has the position of NDSM within this context changed throughout time?

1.3_What are the driving forces behind gentrification-induced displacement of working communities? Who are the displacers and who are the displaced?

1.4_What are the current value and potential benefits of the NDSM manufacturing and creative cluster in relation to local identity, social innovation and economic growth?

-2- DESIGN

PROJECTING FUTURES

2.1_Which hypothetical scenarios could generate solutions which serve as an opportunity for an inclusive, liveable and resilient urban growth? What are the disruptors?

2.2_What are the urban configurations and spatial qualities that could facilitate a harmonious co-presence in the future? How is this expressed in the urban fabric?

-3- OPERATIONALIZATION

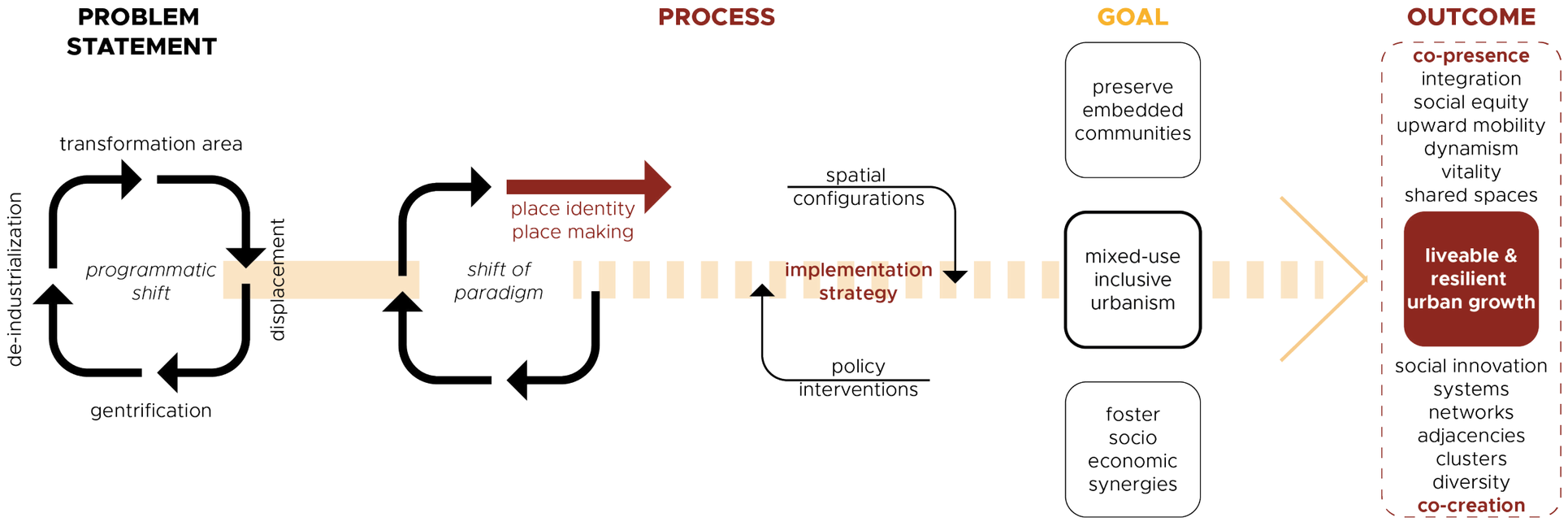
PROCESS DESIGN

3.1_Are there policies and regulations that promote a mixed-use urbanism which preserves and mixes manufacturing and creative sector with housing and other functions?

3.2_What are the needs of all the involved actors? What are their power-interest relations and how to activate them?

3.3_What changes in development framework are needed to ensure this kind of inclusive redevelopment?

3.2 Conceptual Framework



Key Concepts

-place identity as an **opportunity** to achieve mixed-use inclusive urbanism

-mixed-use inclusive urbanism as a **means** for a liveable and resilient urban growth

-NDSM, as a former industrial site, as the **spatial backbone** to support such initiatives

3.3 Methods

Literature review
Literature review is used to identify the main theories related to this thesis and shed light on the current discourse. Its role is not limited to providing a contextual background but it actively informs the problem statement, shapes the research approach through books, articles, documents and reports and guides the formulation of patterns.

Historical analysis
Historical analysis is used to understand the urbanizations patterns of the city of Amsterdam. More specifically, a series of historical maps explores the relation between live-work environments, their dependence on infrastructure and the role the water has played in the course of time in order to speculate future trends.

Multiscalar mapping
The built environment is characterized by complexity and interrelations across different scales of scope. Multiscalar mapping contributes in understanding the complexity of urban phenomena. The scales that this thesis touches upon range from the scale of the municipality of Amsterdam to the street profile in the area under question.

Fieldwork
Fieldwork enables to engage with the location more intuitively and as such, it provides a better understanding of the dynamics expressed on site and its atmosphere. Photo documentation, notes and sketches help in contextualizing readings, identifying the main challenges and brainstorming potential interventions. Given that communities and place identity form the basis of this thesis, various site visits, in different times in weekdays and weekends and during special events, are important to experience the place fully.

Document and policy review
Document and policy review is critically used to understand the current direction of urban development models in metropolitan, city and site scale. The goal is to examine the status-quo regarding mixed-use development and live-work environments, the municipality's priorities and efforts in supporting existing businesses in transformation areas and its intentions towards safeguarding industrial space and maintaining affordability. There are plenty of documents available, like strategic frameworks, environmental visions, area plans and policy documents that reflect and outline the ambitions for the area. The document and policy review highlights their existing limitations, restrictions and conflicts.

Stakeholders' analysis
Identification of key stakeholders is crucial to unravel their roles and power-interest relationships in the development process. Understanding their intentions is a first step towards mobilizing potential synergies and mitigating conflicts.

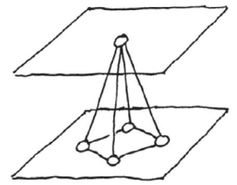
Interviews
Interviews add to the understanding of the area by outlining the perceptions of the people involved. They give first-hand knowledge of people's concerns and highlight aspects that might have been overlooked. It also enables communities and end-users to be heard. Having a variety of interviewees such as public and private bodies, third-parties and end-users, gives a multi-dimensional understanding of the necessities and requirements of live-work environments. In this sense, interviews contribute greatly to the formulation of the patterns.

Scenarios
Scenarios can be described as stories about the future, since they have a strong narrative character, even if they employ quantitative methods (Salewski, 2012). Scenario construction involves the identification of the main drivers that shape future conditions. It can inform the strategies and the design of the outcomes. Scenarios are an inherent part of research by design, generating hypothetical solutions for comparative analysis in order to gain insights into possibilities and scale of the task. Such research helps to recognize limits and crucial decision points (Salewski, 2012).

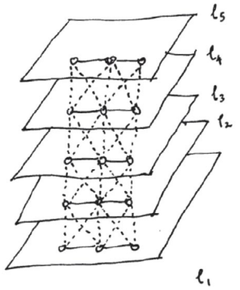
Research by design
Research by design is a method of inquiry that uses design thinking to answer potential problems. In this thesis, the method is used to understand the interrelation of the patterns that shape design choices and test out the scenario construction.

Patterns
Patterns were first introduced in the book 'A pattern language: Town, Buildings, Construction' (1976) as an 'archetypal language' to deal with problems of the built environment. Patterns consist of a broad set of ingredients and provide possible solutions that can be applicable to various conditions. The main contribution of this systemic approach is that it 'breaks down complexity into easily understood bodies of knowledge' (Hill, 2020). Patterns are not stand-alone products but are linked instead to other patterns either in terms of complementarities (solutions) or possible tensions (forces). This is referred by Alexander (et al) as *pattern language*.

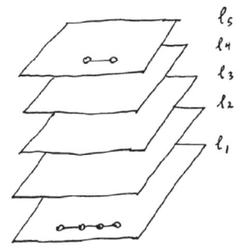
Salingaros specified in his book 'Principles of urban structure' (2005) five ways in which patterns can be connected:
1.one pattern contains or generalizes another smaller scale pattern
2.two patterns are complementary and one needs the other for completeness
3.two patterns solve different that overlap and co-exist on the same level
4.two patterns solve the same problem in alternative, equally valid ways
5.distinct patterns share similar structure, thus implying a higher-level connection



Patterns on one level combine to help define a new pattern on a higher level



Hierarchical connections show how patterns on higher levels depend on those on lower levels



Two groups of patterns are too far apart in scale to connect effectively

Source: Salingaros (2000)

Patterns are connected to each other in the same or different scale level. They constitute a method to bridge the gap between research and design. In this sense, they form the guidelines for the design as well as criteria for its evaluation.

The patterns share a standard structure for consistency and clarity purposes. Each pattern consists of a brief statement that summarizes the hypothesis of what this pattern represents. In this thesis, patterns derive from literature, remarks from interviews and empirical findings and fieldwork observations. It is important to mention, that the patterns developed in the book 'Foundries of the Future' (Hill, 2020) formed the basis towards the exploration of mixed-use environments and more specifically regarding the integration of urban manufacturing. As a result, many of the patterns can be found in this book, while others are made specifically for the context of NDSM.

Finally, the patterns can be used as a process tool in steering conversations among involved stakeholders in a setup of a workshop. Although this has not been possible in the timeframe of this thesis, the development of the patterns is a transferable project that can be applied either in later phases of the project or in similar ones.

1.scale of action

(P) program
(B) building
(S) block/street
(N) neighborhood
(T) transcalar

2.title

3.appears in

■ literature
▼ empirical findings/ fieldwork observations
▲ interviews

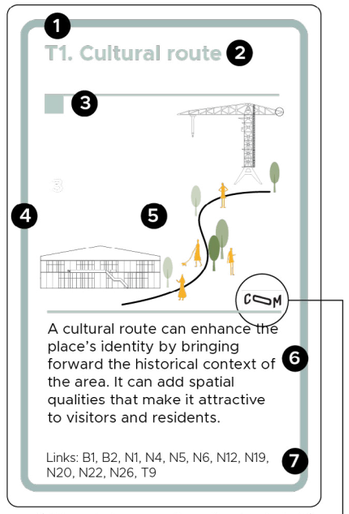
4.category

identity/ local conditions
spatial configurations
policy interventions

5.illustration

6.hypothesis

7.links to related patterns



if this symbol appears, the pattern is adapted from *Foundries of the Future (2020)*

Pattern explanation

The methodological diagram above provides an indication of how the methods described above have been used to answer the research question which were posed earlier. To facilitate the reader, these are also repeated here.

Sub-Research Questions

1.1_What constitutes a place's identity? What makes a place for makers? How is this expressed in NDSM?

1.2_What is the role of manufacturing in Amsterdam? How has the position of NDSM within this context changed throughout time?

1.3_What are the driving forces behind gentrification-induced displacement of working communities? Who are the displacers and who are the displaced?

1.4_What are the current value and potential benefits of the NDSM manufacturing and creative cluster in relation to local identity, social innovation and economic growth?

2.1_Which hypothetical scenarios could generate solutions which serve as an opportunity for an inclusive, liveable and resilient urban growth? What are the disruptors?

2.2_What are the urban configurations and spatial qualities that could facilitate a harmonious co-presence in the future? How is this expressed in the urban fabric?

3.1_Are there policies and regulations that promote a mixed-use urbanism which preserves and mixes manufacturing and creative sector with housing and other functions?

3.2_What are the needs of all the involved actors? What are their power-interest relations and how to activate them?

3.3_What changes in development framework are needed to ensure this kind of inclusive redevelopment?

3.4 Intended Outcomes

The research aim of this graduation project is threefold. Firstly, it is to criticise the current urban development practice that is resulting in gentrification-induced displacement. The tabula-rasa mentality that is being promoted sees the area under question as an empty plot, ideal for maximizing profit. On the contrary, the thesis promotes an alternative reading of the area in which the main focal point is the embedded communities that lie within.

Through people, places and networks, the identity of the place is highlighted. In that way, the thesis suggests that the city's future development lies in the inclusive juxtaposition of present and future realities. Based on the long-standing working character of the area, the thesis also aims to understand the potential of the return and enhancement of urban manufacturing within urban centres. The graduation thesis explores how the NDSM manufacturing and creative cluster can contribute to the economic growth of the city of Amsterdam. The goal is to increase social innovation capacity while ensuring a better integration of the incoming population group, based on co-presence and co-creation with the existing communities.

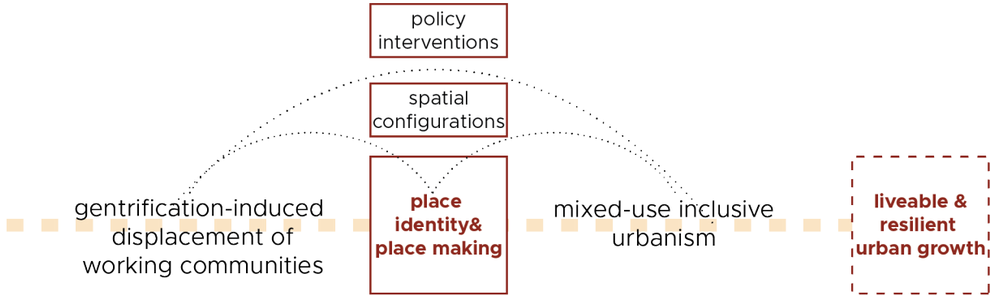
Finally, through process design, the thesis will try to operationalize the procedure and provide a framework for later use in similar projects.

Products

1. Design proposal, guidelines and patterns that can be used and adapted in similar situations

2. Policy recommendations/interventions that support mixed-use inclusive urbanism by preserving embedded communities and building upon established structures

3. Operational framework and strategic toolkit on how to apply scenarios and construct a framework



3.5 Scientific and Societal Relevance

Until now there has been little evidence on how a 'weaker' land use, such as manufacturing, could be combined with other functions, such as residential and commercial ones that are considered more financially attractive both by many private and public actors. How would a transformation area look like if the key drivers of change are collective memory and place identity, remains rather unexplored. The thesis will provide greater insight of the steps needed to achieve this. It will try to bridge the challenging scientific gap in terms of design, planning, policies and regulations.

Active displacement of industries and manufacturing facilities is inextricably linked to the communities of people working there. This displacement tears apart the community networks and systems built by them which are often strongly tied up with the place itself and form its identity. Also, while diversification of employment is a key ingredient for a vibrant economy, the mainstream urban development trend leaves out of the equation many sectors that could contribute to a thriving future. The thesis will try to unlock potential futures through integration of working in living environments. This could act as a case study for future reference and application in other cities as well.

4

Theory

4.1 Place Identity

The primary foundation lies in geographical sciences but with the essential support from sociology, psychology and environmental sciences, it becomes relevant for several other domains such as government or spatial policy (Peng et al., 2020). Usually, the accompanying research questions regarding place identity circle around 'where the place identity represents, whose place identity it is, what the place identity is, and how the place identity is affected' (Peng et al., 2020).

Place identity is a broad concept that explores the relations between humans and their environment by shedding light on people's perception of geographical space. Hence, it provides valuable insights for spatial planning as it does for a plethora of other disciplines, such as environmental psychology, geography, sociology and public administration among others (Haartsen et al., 2000). The term of place identity can be traced down to Proshansky (1978) who initially conceived it as 'those dimensions of self that define the individual's personal identity in relation to the physical environment by means of a complex pattern of conscious and unconscious ideas, feelings, values, goals, preferences, skills, and behavioural tendencies relevant to a specific environment'. Another well-established explanation derives from Paasi's articles where he makes a distinction between the place identity of a place and people's place identity (Paasi, 1986, 1991, 2002c, 2003, 2009a,b). The first refers to the characteristics of culture, nature and people that make a place unique while the latter refers to the way individuals identify themselves with a place. Those early leading scholars have contributed to the formation of the term's meaning to a great extent.

Consequently, the meaning and theory of the term has been widely enriched by many other scholars over the course of time. The extensive scientometric analysis of Peng, Strijker and Wu revealed that over the last forty years and especially after 2006, publications related to place identity have become an increasingly trending topic in academic journals (Peng et al., 2020). Nevertheless, in most cases the conceptual base revolved mainly around one of the two distinctions Paasi originally made, failing to embrace both sides of the term (Peng et al., 2020). Paasi himself, in an effort to connect the two aspects of the term, talked about 'subjective identity of a region', referring to the images held by individuals (Paasi 1986, 2002c). This assumed that the images held by individuals, both living inside and outside of the area, formulate the regional consciousness.

Later, Rijnks and Strijker suggested that the way people identify with a place is mirrored in the identities they give to the place themselves and as such it is ascribed into their own identity (Rijnks and Strijker, 2013). The strong connection of place identity with other interrelated fields from environmental psychology, such as place dependence (Stokols and Shumaker, 1981), place attachment (Giuliani and Feldman, 1993), sense of place (Lalli, 1992) and rootedness obstructs a clear understanding of the concept (Lewicka, 2011; Xu et al., 2015). As Peng, Strijker and Wu astutely remark, 'the emerging increment of publications in which numerous roles of place identity have been claimed makes it tough to grasp a coherent intellectual landscape of this area, if it exists' (Peng et al., 2020). For this reason, the work of the aforementioned scholars becomes extremely valuable as they have thoroughly analysed the different understandings of place identity in order to trace knowledge connections.

People's Place Identity

A crucial first step is to acknowledge that human beings are firstly and foremost shaped by relationships that range from social, cultural to environmental and others (Peng et al., 2020). The place undoubtedly affects these relationships and as such, it holds a strong role in the formation of the individual's identity (Basso, 1996). Apart from this individualistic approach, places also have significant potentiality to nurture the sense of collective being and belonging (Bonaiuto et al., 1996; Devine-Wright and Lyons, 1997; Dixon and Durrheim, 2000). According to Hauge, place embraces symbols that are charged with personal meanings and represent various social categories. Hence, place is representative of an identity that manifests itself at various levels and dimensions (Hague, 2007). For Hernandez et al. (2007) place identity and place attachment are different, as the latter develops first. Hernandez et al. (2010) argued that 'place attachment is an affective–emotional bond with residence places, whereas place identity is a cognitive mechanism, a component of self-concept and/or of personal identity in relation to the place one belongs to.' Despite the given confusion over the distinction between the terms, the idea that physical environment forms the background of identity formation has been brought forward (Bonaiuto et al., 1996; Hauge, 2007).

Adapted from: Peng et al., 2020

	PEOPLE
external looks	**Physical appearance** (dress, hair, skin); **Behaviour** (dialect, diet, traditional practice, skill)
internal thoughts	**Attitude** (patriot, goal, preference); **Feeling** (importance of elements of a place to self, identification with places of different spatial scales)

Place Identity of a Place

People ascribe identities to places in order to differentiate them from others. 'It is, to some extent, if not entirely, a subjective social construct based on objective physical settings'. Everything that makes a place distinguishable within the spatial system falls into the category of place identity (Peng et al., 2020). Perception of place identity among humans differs as it is based upon different elements that have to do with experiential bonds, cultural aspects, historical interconnections, physical elements and so on (Peterson, 1988). It thus becomes clear that equally important to the material basis that constitutes the place identity, is a 'mental sphere' (Knapp, 2006). Following the thought of Passi (1991), place identity occurs when the place has reached a settled status both in social consciousness and in the spatial system of the society. Consequently, identities are attributed to a place by social actors who do not share common interests, understanding or power (Peng et al., 2020). Especially in the political rink, the way identities are constructed gives an indication about the power equilibrium between claimants (Haartsen et al., 2000; Paasi, 2002c, 2003). Place identity should be conceived as a dynamic process (Haartsen et al., 2000; Paasi, 2001). Its formation identifies with the formation of territorial boundaries and symbolism (Paasi, 2003). The discourse on place identity comprises interpretations of past memories, current images and often, future utopias (P aasi, 2001).

	PLACE
external looks	**Physical** (territory, landscape, building, land use) **Symbolic** (landmark, dialect, name of the place, boundary on the map); **Institutional** (government, firm, neighbourhood)
internal thoughts	**Individual perception** (place boundary in mind, representative elements of a place in mind, holistic image of a place); **Collective perception** (place marketing, discourse about a place)

The role of place identity

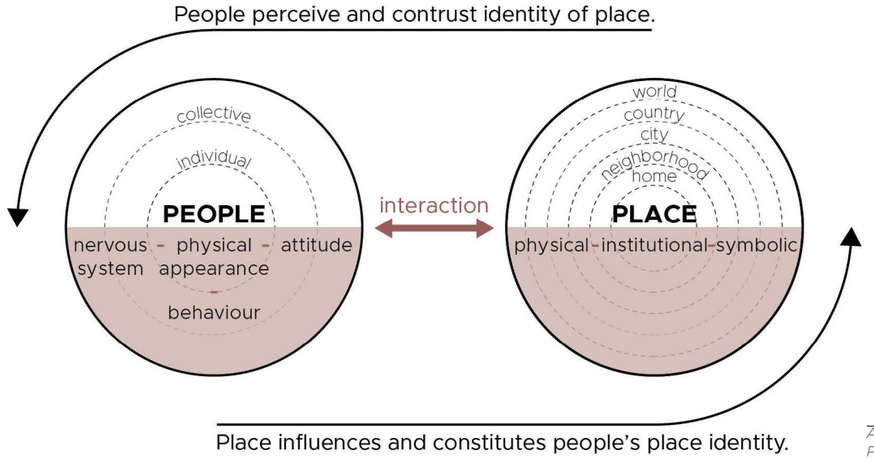
According to Peng et al. (2020), political forces play a crucial role when it comes to regional development. Based on their analysis, place advertising and marketing are fundamental methods in achieving regional development. Spatial identities are formulated by a plethora of stakeholders at various spatial scales. Mechanisms employed for place promotion and local development include landscape elements, symbols and other place features. The moulding of memory relies on plenty environmental and socio-spatial factors, like architecture, history and culture which frequently overlap. Any alteration in the given socio-spatial environment can disturb existing memory and emotional ties to a place (Peng et al., 2020). It is only when people's sense of place becomes endangered that they start to become aware of place identity (Proshansky et al., 1983). Vainikka (2012) found that citizens' perception of place identity often differs from the one shaped by media, administrative bodies and others. In his research, he grouped humans' perceptions derived from interviews in three categories; how something works constitutes an economic functional image, what this means forms a socio-cultural image and how it looks like shapes a visual and symbolic image.

People develop strong emotional ties to specific places or environments and this influences their interaction with the physical world. There have been many explorative efforts on the role of place identity. For the scope of this work, the focus is on the role that place identity can have in formulating collective values and consequently its power, opportunities and burdens for collective action. The findings of Manzo and Perkins (2006) support that community social consistency, organized participation and community development are linked with specific perceptions and emotional bonds to places. In a similar approach, Forester (1987) remarks that emotional attachment to a place can constitute the basis for collaborative actions and community synergies. At the same time though, he points out that this could also be the reasoning behind a conflict among the community.

The scientometric analysis of Peng et al. (2020) revealed that regional development is strongly associated with a place's identity. More specifically, innovation and entrepreneurship are encouraged through the embodiment of the image people hold of their place. Terluin (2003) emphasizes on leading actors' capacity as a prerequisite for place identity building. According to her, actors' strong presence enables the emergence of self-help capacity which in turn, encourages co-operation and can turn weak points into development assets. Nevertheless, the role of place identity in fostering regional growth, remains to a great extent unexplored by scholars (Peng et al., 2020). An integral characteristic of the term though, remains the resistance to globalization forces concerning regional development. Aligning with Hurrell's (1995) terminology, regionalization is seen as the growth of societal integration within a given territorial border. The way an area is established in the overall process grows together with people's awareness and consciousness of the place distinctiveness Peng et al. (2020).

Place identity has also become a frequent encounter in place making. A shared place identity recognition by social stakeholders nourishes expectations, which can act as a collective mobilizing force (Terluin, 2003; Knapp, 2006). Narratives built on place identity have long been instrumentalized by politicians and policy makers for place-making purposes. (Paasi, 2009b). When the reality described includes social actors' pursuits and thus is accepted by the public, it can generate action (Paasi, 2002a).

Despite the several approaches to the term, place identity serves as an outlet to bring together social cognition and physical reality Peng et al., 2020). It enables the embracement of less tangible meanings that render a place distinctive and valuable for the communities embedded in it. Undoubtedly, people interact with the place and this interaction influences both the collective and the personal identity of people (Nario-Redmond et al., 2004). As Raagmaa (2002) puts it, this identity consists of physical, symbolic and institutional among other components. Since this interdependence among people and places is a dynamic and continuous procedure, the establishment and nurture of place identity is also a circular, reciprocal and dynamic process (Ramos et al., 2016).



Adapted from: Peng et al., 2020

4.2 The working city

Urban Diversity

Over the last two centuries, the relationship between cities and industries has been turbulent. Undeniably, the role of industry lies central both in the physical form of the city as it does in the economy and culture. As Howard Davis (2020) remarks, over the course of time, 'it has defined cities' identity, provided opportunity, and been a source of innovation.' The gradual weakening of industry across Western cities has taken its toll on the middle class, intensifying social segregation and political turmoil. Lately, the few remaining manufacturing units that have not been offshored, are considered unwanted function that should rather remain out of sight, not occupying active parts of the city. This is of course aligned with the view that Western cities work nowadays mostly as 'service' and 'knowledge economies' and not as an economy in which things are made. In contrast to popular belief though, industry remains vital for cities as are the people who work with their hands. An economy where people have a close attachment to their surrounding physical objects remains valid.

It is true that a city is much more beyond a physical entity. Despite being invisible to the naked eye, a city has many integral functions without which it cannot function. These include processes, economic transactions and social synergies and networks. Cities are complex adaptive systems and as such, production is necessary. According to Howard, within this 'socioeconomic ecosystem', the added value that production gives to materials, resembles the biological ecosystems. As organisms need input of energy and nutrients to support their growth, cities need production.

Jane's Jacobs advocacy on urban diversity is extensively embraced by urban designers and architects. Her book *The Death and Life of Great American Cities* leaves no room for questioning her statement. As Emily Talen astutely remarks, diversity is a prerequisite for a place's vitality. A component of this vitality though, comes from economic health and as such, it is fostered by a plethora of interactions that urban diversity enables. Moreover, Talen refers to the need of diversity to enable resilience while she also points out that equality of opportunity that is offered through diversity promotes social equity (Talen, 2008).

Nevertheless, Howard pushes this thought one step further by introducing the notion of 'deep diversity', which he identifies with the condition of urban inclusion. He states that it is primarily the socioeconomic interaction of people that maximizes particularly economic opportunity. In urban economies where diversity is sustained, reciprocally beneficial socioeconomic synergies emerge. For Howard, this notion of diversity is deeply structural, including various interactions on multiple levels. Still though, these 'social and economic and social interactions are supported by urban diversity, which is itself supported by the built environment'. Understanding of the individual parts is not sufficient for understanding the behaviour of the entire system. As a parallelism, cities consist of a hyper plethora of actors, who act individually. Although their acts take place against a background of a finite number of socially-defined rules and systems, the result is that cities remain unpredictable regarding the details of their emerging forms. Consequently, a city's specific growth cannot be predetermined; it depends on continuous energy inputs and its form results from a number of rules acting locally; thus, the city is an open-ended system concerning its physical boundaries and its constituent subsystems (Howard, 2020). Cities house socioecological habitats that are made up from social, professional and trading relationships.

4.3 Urban Integration of Manufacturing

Urbanization is a world-wide ongoing trend. It is estimated that by 2050, two thirds of the world population will live in cities. Currently cities consume 60-70% of the world's resources while they are responsible for half of the waste produced, but most probably, these numbers will increase. It becomes clear thus that cities play a crucial role in the much-desired turn towards sustainability and circularity. Although cities have started publishing policies regarding their circular ambitions, truth remains that the space and instruments for their realization are still lacking.

Undoubtedly, industrial environments and manufacturing are intrinsically connected with processing big amounts of materials. Urban manufacturing and the people associated with it have a great potential in achieving circularity ambitions through their skills, knowledge and technology. Processing materials, repairing practices and the tendency for innovative technology align with circular economy goals (Domenech, 2020). Nevertheless, Western cities have been faced with the offshoring of manufacturing since the 1960's (Urry, 2014). Manufacturing spaces have given their place to service-oriented and mono-functional spaces. This has led in the distinction between production and consumption spaces with support from linear systems usually found in the hinterland (Hausleitner et al, 2021).

Although the urgent calls for actions and the number of policies and ambitions (Hill et al., 2018), the progress is rather slow without signs of radical change on the way (Circle Economy, 2020). There is of course an obvious explanation for this which is no other than the scarcity of large sites in combination with the urban real-estate being expensive (Van den Berghe & Vos, 2019; Williams, 2019). Other reasons have to do with the need of new forms of collaboration (Sposato et al., 2017), the need for policy change and consumption habits (Sesini et al., 2020). As Hill et al. (2018) explicitly remark, even cities that are now considering industrial scale-production for addressing locally circular economy, are challenged with a plethora of complex question regarding the how, where and what will be required to accomplish (Hill et al., 2018).

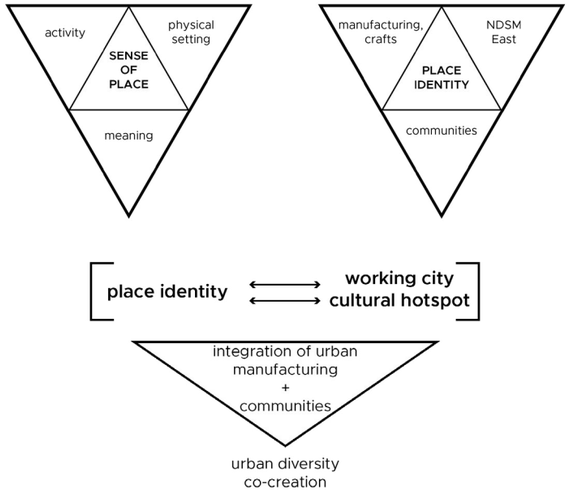
Urban manufacturing is a multifaceted topic and as such, it must deal with a variety of complex issues, like 'logistics, resource management, urban planning and design, business and entrepreneurship, financing and innovation (Hausleitner et al, 2021). Convergence among actors of different backgrounds remains a challenge. A bridge needs to be made between academics, practitioners and local actors in order to traverse the boundaries.

Integration

Integration of manufacturing in the urban context can be beneficial in various ways. Sustainability commands, urban metabolism and circular economy ambitions that characterize contemporary cities, signal the need for a reinterpretation of the urban space. Urban areas are the most suitable environments to provide the conditions for such approaches. Cities have the potential to limit linear practices by investing in closing inner loops through repair and maintenance or outer loops through refurbishment and recycling. However, cities have also to provide the physical space needed to support such initiatives. Although, a manufacturing base is still maintained in cities, its full diversity and capacity are rather compromised by improper approaches regarding policy and planning. The distance between production and consumption hinders a regenerative productive base within the city's boundaries and needs to be addressed accordingly (Hausleitner et al, 2021).

4.4 Conclusions

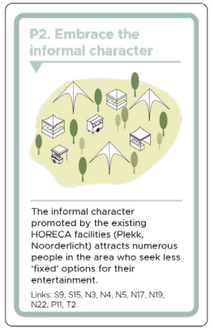
The previous chapters highlighted the role of place identity in urban development. The aim of the theory chapter was to understand what constitutes the sense of place and accordingly what be interpreted as place identity. This thesis examines the term broadly, extending its meaning from the morphological and other material entities. It considers the activities and the communities and businesses taking part in them as an integral party of this identity that needs to be safeguarded. These activities have to do with manufacturing and creativity. Also, the presence of many creatives has rendered the place a cultural hotspot that is strongly embedded in the collective consciousness. Summarizing, it is stated that place identity can constitute the basis for collaborative actions and community synergies.

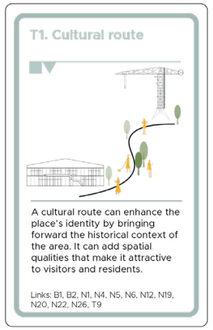


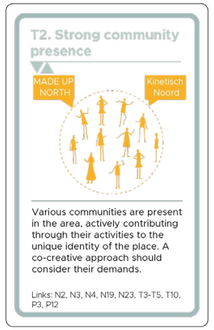
Top: Components of place (Based on Punter, 1991)
Bottom: Conclusions' diagram

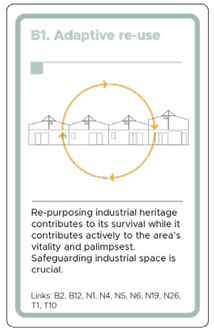
Identity/Local conditions Patterns

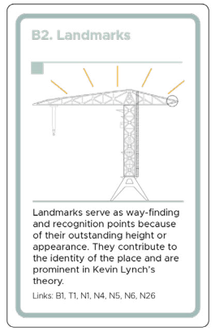
Informed by theory, a list of patterns focusing on identity and local conditions is developed.

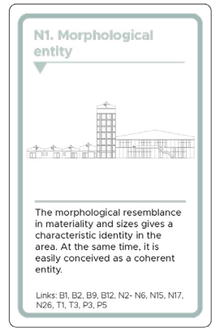


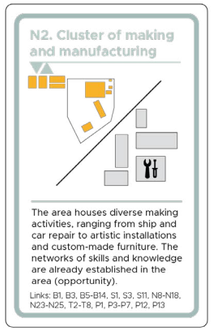


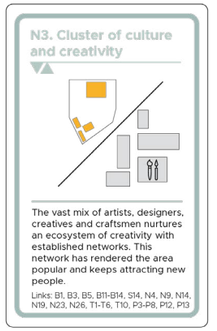


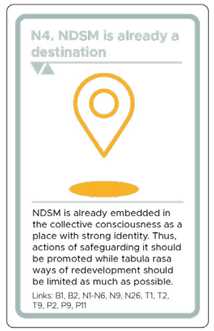


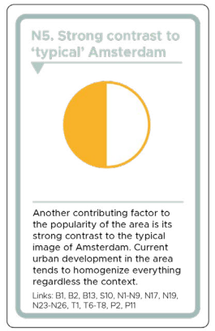


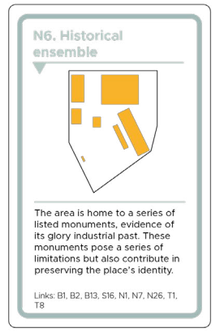


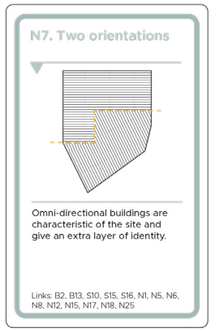


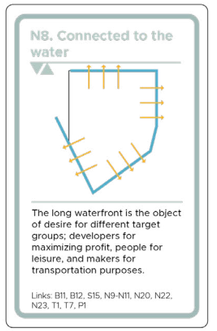


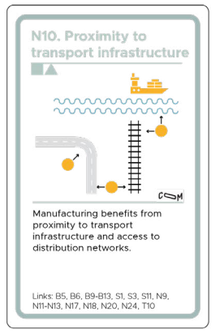


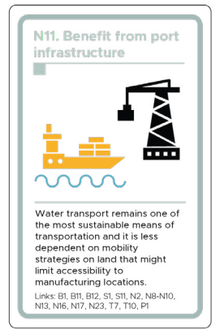


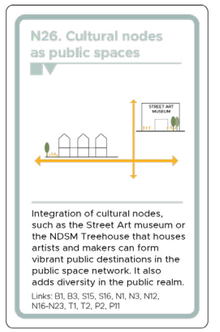


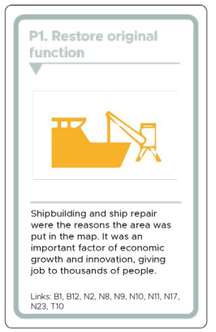












5

Spatial Site Analysis

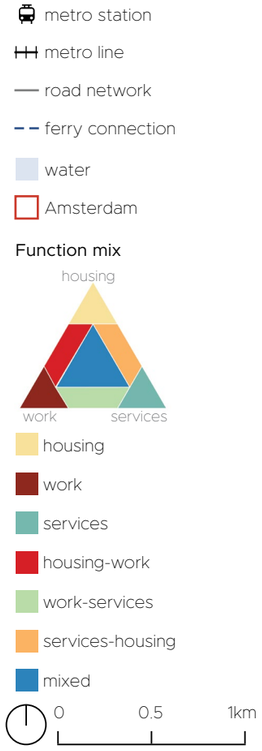
5.1 Urban Form

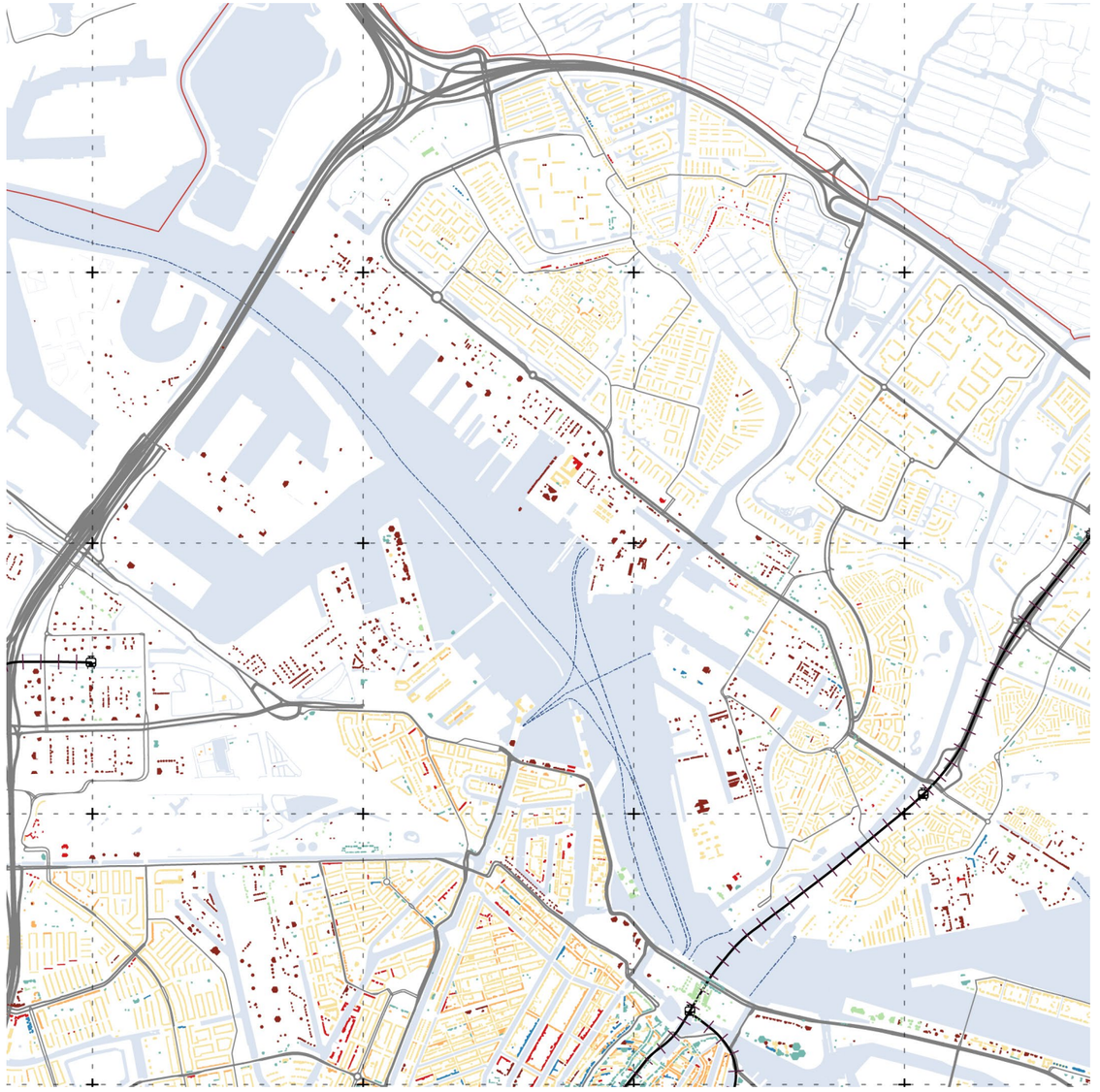
Mixed-use city

The concept of compact city has been central in the Dutch planning policies of the last decades, aiming to prevent urban sprawl and enhance urban renaissance. Intensification of land use and mixed-use development was integral part of this policy from the 1980s. In large cities such as Amsterdam, the focus was mainly on mixing housing with employment as a reaction to the monofunctionality of previous eras (Hoppenbrouwer & Louw, 2005). In the draft structural plan 'De stad centraal' (Focus on the City) published in 1984, the municipality of Amsterdam officially included as policy goals mixed-use development and compactness. The reason behind this policy was to control the decreasing number of inhabitants by offering an improved level of employment within the city, while also increasing the quality and quantity of housing stock (Hoppenbrouwer & Louw, 2005).

Moving forward to the present, Musterd and Salet in their book 'Amsterdam: The Human Capital' (2003) cleverly remarked that the ratio of residents to employee workforce in the center was about 1:1. Having people inhabiting the city center offered a valuable dynamic. Nevertheless, what stated by the aforementioned scholars and has been even more intensified by then, is that recent years have seen the arising of new urban development in the fringes of the traditional city. At the same time, the original city is not anymore the exclusive focus of urban activity. On the opposite, 'what we have, in effect, is a variety of functional spatial networks working at different scale levels, giving rise to new agglomerations or concentrations' (Musterd & Salet, 2003).

The question of Gunn and Morris in 2002, on what are the new identities to be developed in such shifting historical conditions of space and place, is still present. Amsterdam, like its other major European counterparts, is struggling to find its identity and cohesion in the disjointed city (Marcuse and Van Kempen, 2000). NDSM, with the heavy industrial past and the extreme residential pressure, forms the exemplary location to explore questions like this.

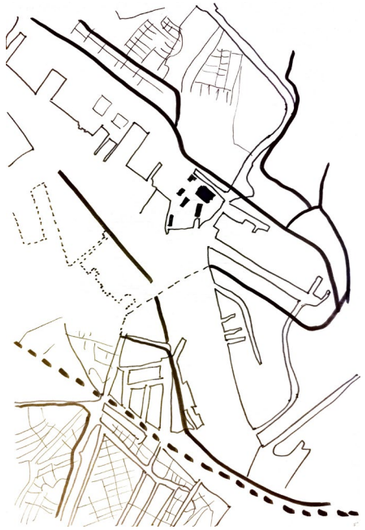




Adaptability in Time and Space

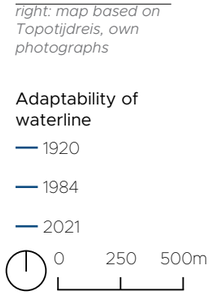
Degrees of Transformation

Places/elements of permanence/persistence/ addition and subtraction

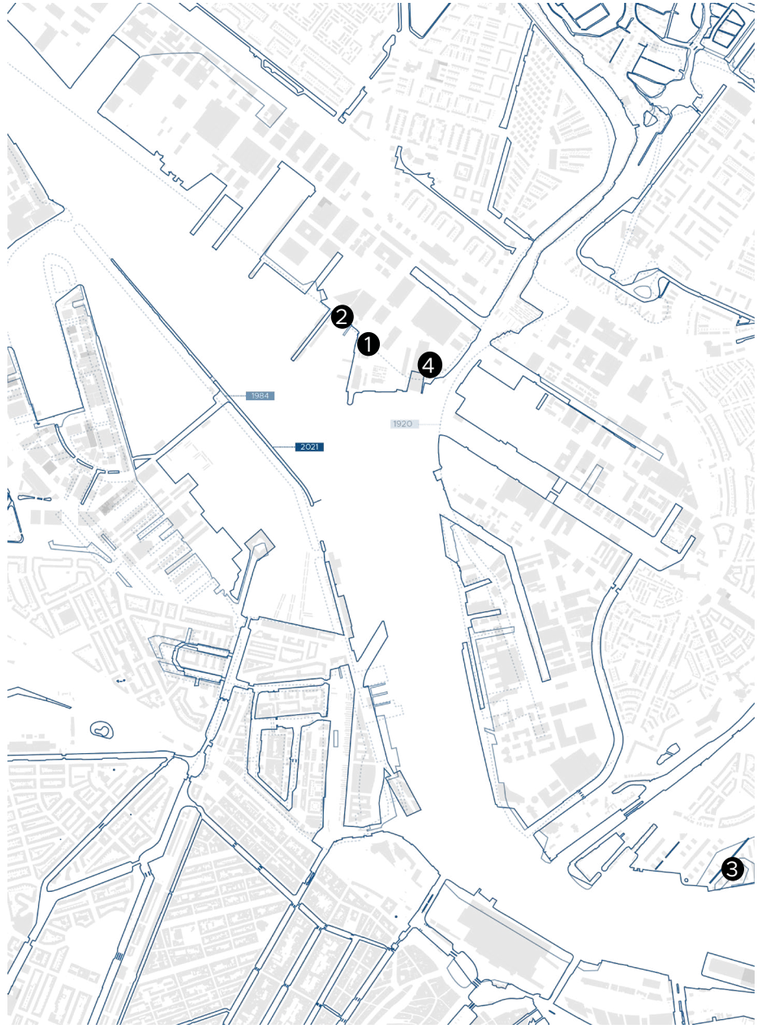


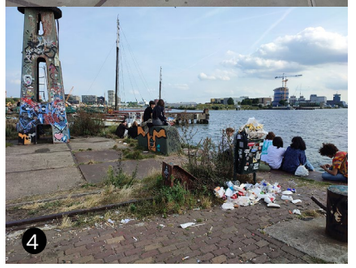
Places of longue durée

Across the years, waterfront areas have attracted businesses and industries, the operation of which was facilitated by the presence of water and the related harbor infrastructure. Nevertheless, it is a well-known fact, that the riverbanks of IJ river in Amsterdam have been prone to rapid transformations over the course of time. Specifically in recent times, the riverside areas have been assigned to partly alleviate the severe housing crisis. As a result, former industrial landscapes have been torn down and transformed into smaller plots to be developed mainly for residential purposes. In fact, the proximity to water has proven to be a strong attractor also for new residents. As such, the rising development pressure nowadays leads to a constant fight for the waterfront among the survived companies and the developers who are seeking for the most profitable investments. Many working areas are gradually becoming almost monofunctional and dense residential ones, actively displacing manufacturing outside the city. At the same time, the waterfront is an attractive point for people who enjoy it and appropriate the riverfront public space, even if it was not planned for this. The waterfront itself proved to be one of the most adaptive components throughout time.



right: map based on Topotijdreis, own photographs

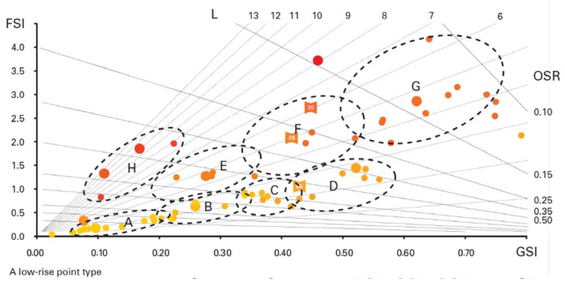




Network Analysis

Angular Choice Analysis at City scale (Source of data: Berghauser Pont et al., 2019)

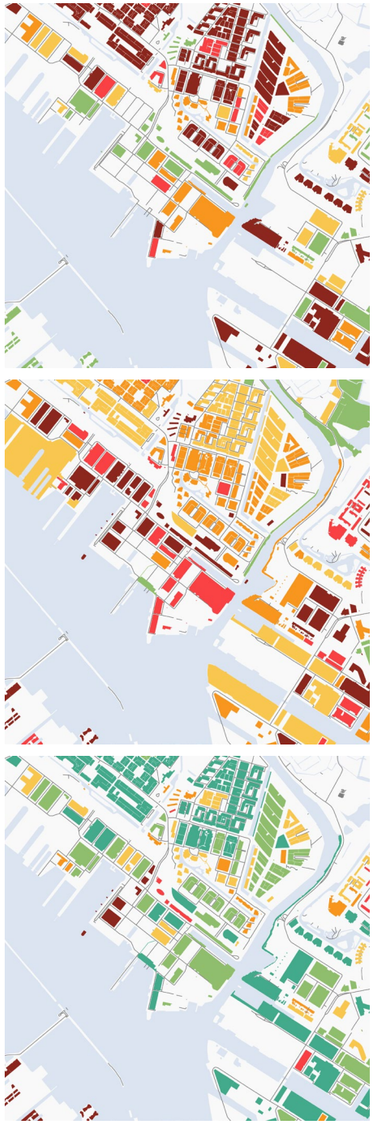
Block Scale Analysis



A low-rise point type
B low-rise strip type
C hybrid low-rise strip/block type
D low-rise block type
E mid-rise strip type
F hybrid mid-rise strip/block type
G mid-rise block type
H hybrid high-rise point/strip type

top: Building types in connection with FSI, GSI, OSR and L (Source: Berghauser Pont & Haupt, 2010)
down: Parcellation (Source of data: Kadastrale)
right: Spatial densities on block scale (Source of data: RUDIFUN dataset, PBL, 2019)

Parcellation



5.2 Embedded Productive Landscapes

The area houses a broad productive landscape. The goal of the following classification is to find potential interconnections and synergy effects between different but related fields of activity. In this way, the wider productive ecosystem and the spatial requirements can be rendered explicit. Based on this, the analysis revealed the dominant clusters which have to do with furniture making, repair activities, creative sector and food production. Also present, but less strong, are manufacturing activities related to the provision of equipment and manufacturing related to the chemical industry.

Manufacturing activities are place dependent and have a wide variety of spatial needs. Accessibility and infrastructure issues are crucial for most of them. There are other spatial characteristics though that can differ. Some of them are the plot size, the amount of open space needed, the kind of building, the street profile and network centrality. Also, some activities benefit from adjacencies while others pose limitations to who can settle in their proximity. In the age of digitization, the profile of many manufacturing businesses, like 3d printing and design, changes into a hybrid form who benefits from shared premises, smaller units and knowledge exchange (Hausleitner et al., 2021).

Source of data: Liveable manufacturing, Hausleitner, 2021

Cluster of furniture and other related manufacturing activities, such as manufacture of glass, metal products,lighting devices, paints and varnishes

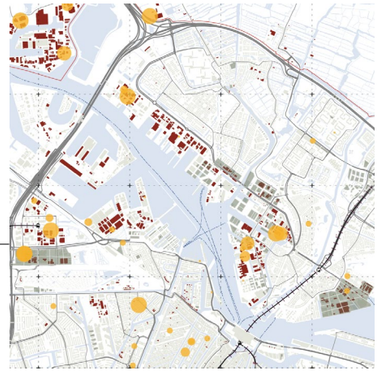
Furniture

Cluster of manufacturing activities around food, such as bread, beverages, dairy products, vegetable oils but also manufacturing of paper and cardboard products

Food

Cluster of activities based on repair, such as trade in auto parts and accessories, metalworking but also repair of consumer goods, machinery and equipment

Repair

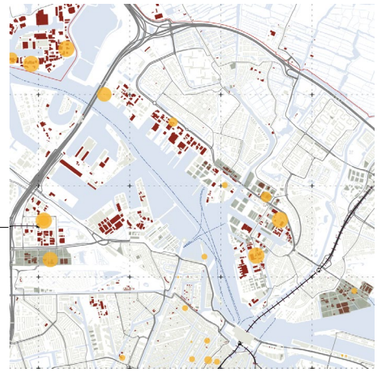


Cluster of manufacturing activities that center on equipment, such as machines and tools for specific purposes or general use, medical devices, optical instruments, agricultural and forestry machinery, navigation and monitoring equipment among others

Equipment

Cluster of manufacturing activities with a creative character, such as clothing, textile products, ceramics, musical instruments, articles of wood, games and toys

Creative



Cluster of manufacturing activities that rely on chemical processes, such as manufacture of plastic, chemical or pharmaceutical products, detergents and cosmetics, fertilizers etc.

Chemical

Creative Sector

The creative industry has been a driver of economic growth in the Netherlands for a long time now. It forms one of the fastest growing and most impactful sectors in the country. The 'Creative Industry Monitor', a biennial study published by 'Media Perspectives' gives an overview of the economic development of the creative industry and ICT in the whole country by comparing cities' growth, finding internal strengths of creative branches and spotting emerging subsectors. It makes thus a valuable asset regarding strategy and policy in the creative industry of the Netherlands.

The last report 'Monitor creatieve industrie 2021' published in early 2022 (Media Perspectives, 2022) gives an overview of the last decade while also, depicting the consequences of the Covid-19 pandemic. More specifically, the study revealed that the sector remains a strong job engine for the country although it has been impacted more of the pandemic than the rest of the economy. The annual growth percentage in the number of jobs in the creative industry in the years 2010-2020 accounted for 2.4%. This average of 2.4% annual growth in the creative industry is three times higher than the average job growth in the same period.

The number of companies in the creative industry surged from 86000 in 2010 to 206000 in 2020. Creative companies stand for 16.1% of the total Dutch companies, while the related jobs represent a 4.1% of the total jobs. Small-scale is an important characteristic of the creative industry. A finding from the study is that the average company size is 1.8 jobs, while the general size average stands at 5 jobs. This can be partially explained by the great amount of self-employed people. This number rose to 49% in 2020, compared to 32% in 2010.

Amsterdam remains the largest creative cluster of the country counting for more than 114000 jobs in the creative sector and ICT in 2020. Nevertheless, an alarming finding was that the city, as of 2017, no longer holds the highest rate of job growth. The annual job growth of Amsterdam (3.4%) has lately been surpassed by Rotterdam (5%), Utrecht (4.2%) and the Hague (3.6%). According to the report, the reason behind this is twofold. On the one hand, the reduced business climate of the city is to be blamed and on the other hand, the real-estate pressure that constantly increases the land prices either for purchase or rent. Nevertheless, in absolute numbers, the creative industry is still growing strongest in Amsterdam, with 6000 jobs in the period 2017 to April 2020.

The creative sector has suffered a lot since the Covid19 outbreak, as it reported 25% loss of its added value in 2020, amounting to € 4.7 billion. The most impacted subsector is though the art and heritage where the loss was more than 60% in added value. Undoubtedly, number of jobs and turnover have also declined significantly. Again, the fact that half of the industry consists of freelancers was crucial as these people have benefited much less of compensative schemes.

The creative sector is strongly interlinked with other aspects of the economy. Recent years have seen a growing interest in how creative services can be embedded in companies and institutions of other fields to become more competitive. Statistical reports from CBS showed that in 2018, slightly above the half (51%) of the creative products and services were supplied to other companies and institutions and the rest are offered to the public. This intermediate consumption between companies shows how often a creative input from one company is used for the production process of another. It renders explicit thus how the structure and functioning of the creative industry is crucial for the whole society and economy. It is common of creative businesses, especially the ones related with communication, design and architecture, to provide input for fellow companies in the field or even outside of the creative industry. For instance, performers, who are usually self-employed, provide their services to performance producers, who respectively sell them in theaters and event venues. Another example, audio-visual producers provide services to broadcasters or film distributors who then supply cinemas. With a 51% of intermediate consumption when the corresponding general number for companies in the Netherlands only stands for 38%, it becomes clear that creative industry forms an ecosystem strongly interconnected with many aspects of the economy and the society. As the director of Media Perspectives remarks, 'due to the many internal deliveries in the creative industry, the sector has proved vulnerable. This makes the sector more sensitive than other sectors to a drop in consumer demand and customers from other sectors. The backward domino effect is causing relatively large damage across the sector.'

Creatives of NDSM Loods (Source: https://ndsmloods.nl/broedplaats/)

Incubators

name	description	surface	studios	type	initiative	allocation	property
1.NDSM Warf	Former industrial hall of the shipyard NDSM providing approximately 80 leases. Artists and creatives also work on the site and on the slopes X and Y outside the shed	13500 m^2	200	Atelier/ workplace	Kinetisch Nord Foundation	Kinetisch Nord Foundation	Municipality of Amsterdam
2.Concertgemaal	workplace for creative entrepreneurs and artists from the area and the 1st stage for classical music in North	110 m^2	2/29 workplaces	Workshop/ stage	City restoration/ Floor Ziegler	Concertgemaal Foundation	Water Board Hollands Noorderkwartier
3.Modestraat	Former horeca establishments in the Boven 't IJ shopping center turned into studios and flexible workplaces where creative entrepreneurs, designers and residents work	350 m^2	5	Atelier/ workplace	Broedstraten Foundation & Bureau Broedplaatsen Amsterdam	Broedstraten Foundation	Municipality of Amsterdam
4.The Ceuvel	an abandoned and polluted former shipyard that was turned into an ecohub for creative and social enterprises through a community-driven development	1578 m^2	16	Atelier/ workplace	Ceuvel Foundation	Ceuvel Foundation	District of North / Municipality of Amsterdam
5.Berberisstraat	workspaces located in an old school building with a large garden in the middle of a working-class neighbourhood	1100 m^2	15	Atelier/ workplace	Bureau Broedplaatsen Amsterdam	de IJsbrand-Foundation	District of North / Municipality of Amsterdam
6.Chrysantenstraat	former industrial building in use since 2006	286 m^2	6	Atelier/ workplace	Association Workshops 74	Association Workshops 74	PB Real Estate Management
7.A lab	former Shell Lab, it offers space for freelancers, small companies and foundations and it facilitates various creative	5000 m^2	45	Workplace	A Lab Foundation	A lab Foundation	District of North/ Municipality of Amsterdam
8.Muziekstraat	foundation where artists and musicians collaborate with local residents and local initiatives in the Vogel and IJpleinbuurt area	450 m^2	10	Living/ working premises	Broedstraten foundation & Bureau Broedplaatsen Amsterdam	Foundation Broedplaatsen	Stadgenoot housing corporation
9.Bonte Zwaan	Floating building with studio and business spaces, home to a rich mix of CAWA-approved artists and creative entrepreneurs	2750 m^2	31	Atelier/ workplace	De Key/De Principaal housing association	Buurtcentra Foundation	Kunstwerk Loods 6 & De Bonte Zwaan
10.Incubator Xpositron	affordable studios for independent creatives, fully supported and run by the tenants themselves (around 80 creatives work in all disciplines with a waiting list)	3880 m^2	25	Living/ working premises	Xpositron & Bureau Broedplaatsen Amsterdam	-	Municipality of Amsterdam / Maeyveld
11.Wittenstraat	visual arts, photography, graphic design, theater & performance, sound, screen printing, architecture and cultural production	1200 m^2	15	Atelier/ workplace	Rochdale housing association	Wittenplaats Foundation	Rochdale housing association

name	description	surface	studios	type	initiative	allocation	property
12.Westerdok	new construction project housing project with incubator spaces on the ground floor	1800 m^2	15	Atelier/ workplace	Bureau Broedplaatsen Amsterdam	Urban Resort Foundation	Eigen Haard & Ymere housing corporations
13.Oud Nico	former fire station that has been restored in collaboration with Stadsherstel NV and has partly been used as an incubator for 20 years (2006-2026)	530 m^2	3	Atelier/ workplace	NV Stadsherstel	CAWA	NV Stadsherstel
14.Mediamatic	former shipyard that now serves as a coworking space for young makers in the fields of art, design and sciences	1424 m^2	-	Atelier/ workplace	Bureau Broedplaatsen Amsterdam & Mediamatic	Mediamatic	Municipality of Amsterdam
15.Pakhuis De Zwijger	offices, studios and workshops for cultural entrepreneurs with a focus on 'urban culture', such as designers, program makers, editors and producers of various types of media	1500 m^2	45	Atelier/ workplace	Foundation De Zwijger	Broedplaats Amsterdam, Foundation De Zwijger	Stadsherstel Amsterdam NV
16.Pakhuis Wilhelmina	In 1994, the building was facing demolition threats and thanks to the group of artists occupping it, the building was saved and kept its cultural character. After renovation, it offers studio space to many artists, craftsman and non-commercial cultural venues.	8500 m^2	100	Atelier/ workplace	Wilhelmina Foundation	Wilhelmina Foundation	Wilhelmina Foundation
17.Quarantainegebouw	the building was decided to be transformed into a breeding ground respecting the living/working spaces of artists who were in this area before the redevelopment of the Eastern Docklands	1020 m^2	12	Atelier/ workplace	De Key housing association	CAWA	Stadsherstel Amsterdam
18.Krelis Louwenstraat	former school building transformed into office spaces for small-scale entrepreneurs	1500 m^2	25	Atelier/ workplace	Bureau Broedplaatsen Amsterdam & Amsterdamse Compagnie	Association Ateliers Hendrick de Keijser	Amsterdamse Compagnie
19.Stage Mosaic	It aims to promote the interaction between cultures, to offer opportunities to (new) cultural entrepreneurs and to stimulate intercultural forms of expression.	780 m^2	15	Atelier/ workplace	Multicultural Stage Mozaiek Foundation	Multicultural Stage Mozaiek Foundation	Stadgenoot housing corporation
20.Kempenaarstudio	preference is given to starting (cultural) entrepreneurs, specifically within the performing arts and related businesses	1373 m^2	22	Work premises	De Kempenaerstudio Foundation	De Kempenaerstudio Foundation	Municipality of Amsterdam/ Real Estate
21.Petersburg	New commercial building with studio space for high-level audiovisual artists, organizations and companies.	1507 m^2	23	Atelier/ workplace	Stadsdeel Centrum – Municipality of Amsterdam	CAWA	Municipality of Amsterdam

Source: https://www.amsterdam.nl/kunst-cultuur/ateliers-broedplaatsen/over-broedplaatsen/broedplaatsenkaart/?bigmap=true

NDSM East

Disclaimer: the material of this page has been found in the online article 'These are the cultural organisations of NDSM', posted by Eric Seleky on 25 June 2021.
(Available at https://www.ndsm.nl)

Illustration of NDSM East (Source: https://www.ndsm.nl)

1. NDSM Loods is a community of artists, craftsmen and creative makers, managed by the Foundation 'Kinetisch Noord'. Art City, a cultural and artistic breeding ground with around 80 self-designed and self-built 80 workspaces, covers around one third of the building's immense surface. There work painters, draughtsmen, sculptors, architects, inventors, web designers, graphic designers, product designers, furniture makers, photographers, film makers, theater makers, set designers, lighting specialists, musicians and many others. The other parts of the warehouse are rented out for film- and photoshoots, music shows and theatre performances, exhibitions, auctions, company and dance parties, markets and conferences among others.

2. X-slope is the oldest slope of NDSM, built in 1922 and expanded with workplaces in 1955 (1900 m^2). Since 1993 it has been self-managed by artisan artists who work with their hands.

3. Y-slope also houses house artists, musicians and other entrepreneurs in studios under the slope. The slope has also been into useas a festival location since 2017 with a capacity of 10000 people.

4. Treehouse NDSM rents studios to 150-200 professional painters, writers, musicians, theatre performers, (fashion-) designers, graphic designers, video artists, sculptors, etc. Around the central square you can find several exposition and performance spaces where artists and other creatives regularly exhibit their work.

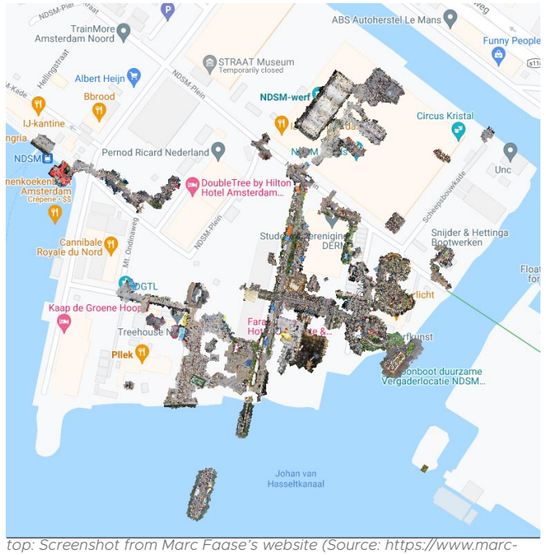
5. Moving Arts Center Amsterdam (MACA) is a new creative workspace for filmmakers and audiovisual artists. An inspirational space for the film and AV community to meet, learn and share work and knowledge. The warehouse rents work and event spaces and we will host public and community-based workshops, film nights, and exhibitions.

5.3 Embedded Communities

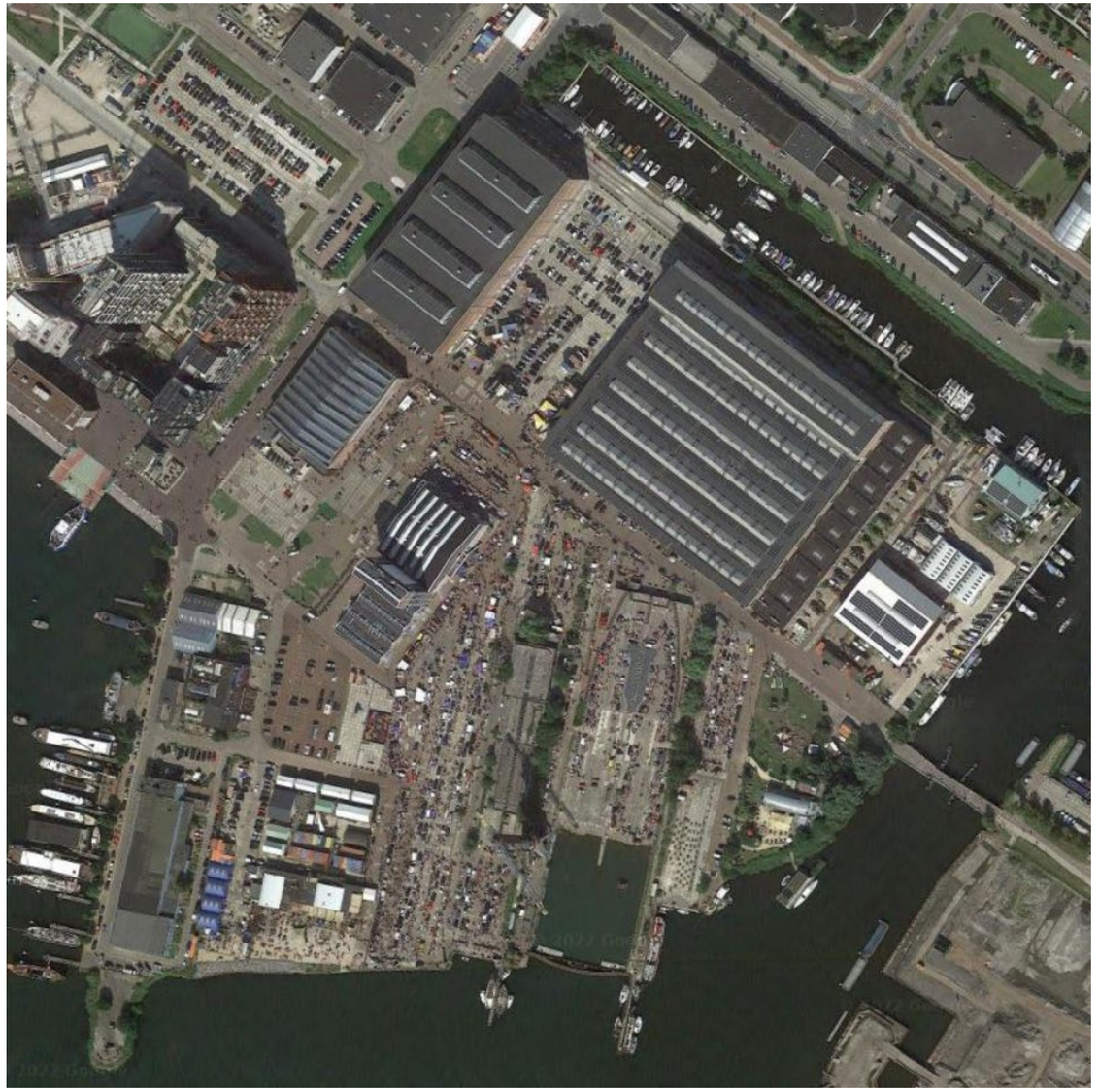
NDSM in the collective consciousness

In this point, it needs to be made clear that NDSM is not just a vacant piece of land, resulted from de-industrialization. It has been embraced by the local population a long time ago. This started with the incoming of artists in 1993 who first embraced the area and gradually contributed to its current image. The establishment of a creative community in combination with lower land values, rendered the area increasingly attractive to others as well. Nevertheless, it was the presence of the creative community that put the area again on the map. Steadily, a plethora of cultural institutes and a variety of cafes and restaurants also appeared. Currently, it is embedded in the collective consciousness of the city as a cultural hotspot. Some of the most popular events, like the Amsterdam Dance Festival and the largest regular flea market in the Netherlands and one of the biggest in Europe, take place here. NDSM's fame extends way beyond its geographical boundaries. People flock from the whole city to enjoy the waterfront, the open-air terraces and the vibe of the area. Even tourists of Amsterdam choose to spend some time in NDSM to discover the alternative side of the city. It is undeniable that the former industrial shipyard is currently inscribed in the collective consciousness as a vibrant social space. This is also captured in the aerial photo on Google maps, apparently taken on the weekend of the flea market, where the public space is fully activated and occupied by people.

This is also nicely illustrated in the work of Marc Faase, named *Playground (Speeltuin) NDSM*. In a time period of 7 years (2007-2014), he took a plethora of photos during events which he layered over google maps. His problematization behind the project was the rapid pace of transformation of the site. His contribution is valuable because he examines and archives how people appropriated the space

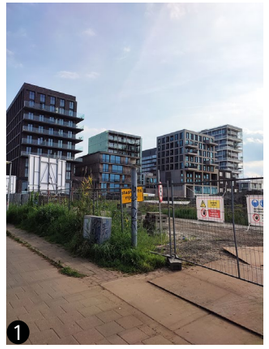


top: Screenshot from Marc Faase's website (Source: https://www.marc-faasse.com/ndsm.html)
down: Physical print exhibited (Source: own photograph)

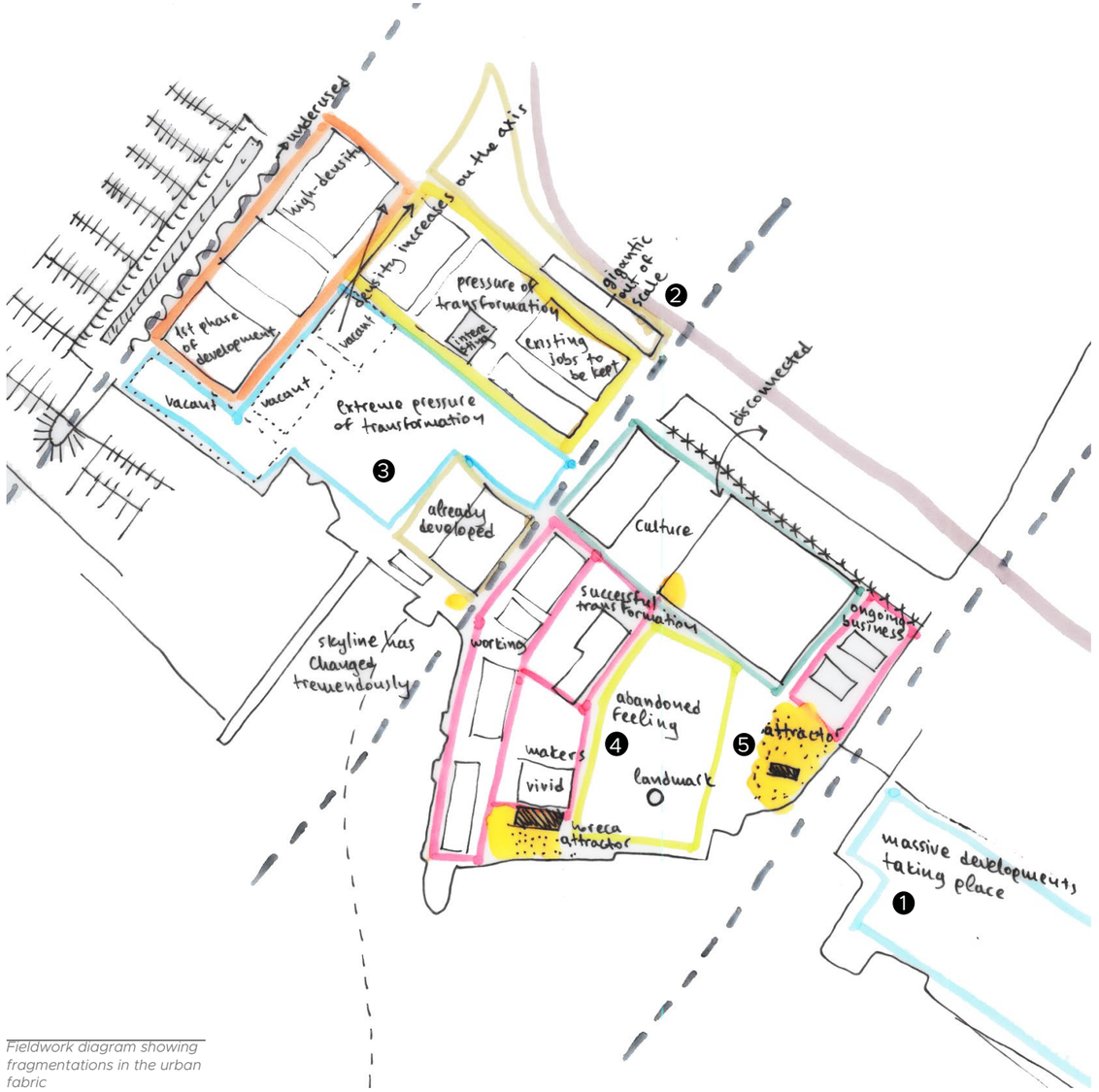


over this time period. His goal is to depict an ideal image of NDSM, as an inclusive playground for everyone. As he says, *'I sketch my ideal image of the NDSM, namely the terrain as a playground for everyone. It will be a photomontage of different activities on one card that I want to show what an inspirational place is the NDSM. Let's keep that!'* A photomontage of his juxtaposition of activities can be seen physically in the entrance of the NDSM main building, as well as in his website where you can zoom deeply through a scroll function.

Coming to the present, the concerns of Marc Faase are more alarming than even before. The whole area of NDSM is under extreme transformation pressure with residential projects rapidly altering the skyline of the area. On the other hand, the east part of the NDSM area has remained untouched, still having the 'original' atmosphere. Nevertheless, as long as this part gets surrounded by out-of-scale residential projects, the identity of the place is at risk. The housing shortage expedites such kind of urban redevelopment, but the question of identity remains. The fieldwork revealed a fragmentary urban fabric with sharp contrasts.



Fieldwork photographs 1-5 (Source: own photographs)



Fieldwork diagram showing fragmentations in the urban fabric

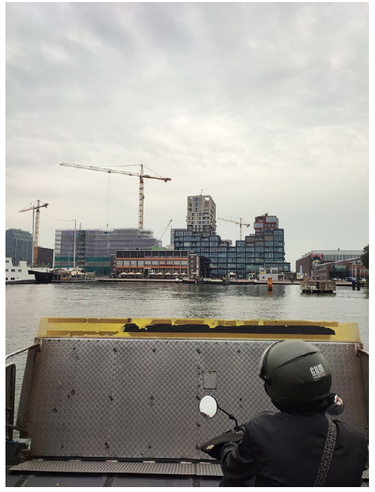
visitors

businesses

creative groups and individuals

developers

new residents



Spatial claims by
different communities

- visitors
- businesses
- creatives
- new residents potential
- area developers potential

0 50 100m

5.4 Interviews

Given the complexity of such a development model that the thesis strives for, unlocking the point of view of the involved actors is crucial. Semi-structured interviews can shed light on the dynamics expressed in the field by highlighting nuances that may have been left out by oversight. Thus, the interviews of Jamila K. Jones for her thesis report *Making space for light industry* were re-interpreted and built upon (TU Delft, 2021). Although her scope of interest was solely the integration of light industry in NDSM, inevitably the possibility of its proximity to housing was touched upon by the majority of the interviewees. Hence, it provided valuable feedback on this topic also.

The definition of light industry in this thesis 'covers a broad range of activities such as urban manufacturing (traditional and advanced), makers in the creative production sector, repair and refurbishment services, and supporting activities like distribution that can be integrated into a live-work environment' (Jones, 2021). The interviews examined the feasibility of the integration of light industry in urban mixed-use developments as part of transformation projects. Given the increasing demand for mixing function in the city, it is crucial to identify whether and where is mixing possible, what are the needs of the manufacturers and which are the framing conditions set by the planning authorities. The interviews shed light on the conditions that enable mixing, the arising conflicts and solutions already found.

Based on the interviews, a profile for each participant is made. The goal is to highlight the key points that every interviewee brings forward in order to outline the common ground and the potential conflicts. A summary of the people interviewed can be found in the table of this page.

	ORGANIZATION	STATUS	PARTICIPANT
END-USER	Bicycle Making Studio	Business recent relocated outside of NDSM-Werf	Bike Maker
END-USER	Visual Arts & Welding Studio	Business currently operating in NDSM-Werf Oost	Craftsman/ Visual Artist & Activist
END-USER	Interior Building/Set Design Business (Fiction Factory)	Business situated outside of NDSM-Werf	Representative of Fiction Factory
THIRD PARTY	ORAM	Business Association	Director
THIRD PARTY	Made up North	Foundation (NGO)	Co-Founder
PRIVATE	BMB ontwikkeling	Area Development Firm / Leaseholder	Project Developer
PRIVATE	Lingotto Development	Real Estate Development Firm/ Leaseholder	Real Estate Developer
PRIVATE	COD Development Pioneers	Real Estate Development Firm/ Leaseholder	Real Estate Developer
PRIVATE	CHASE Brand Activation Agency	Brand Activation Company/ Leaseholder	Owner of CHASE/ Leaseholder

Research participants in the interviews (Adapted from: Jones, 2021)

profile/
visual artist/welder

-present in X Helling, NDSM for 21 years

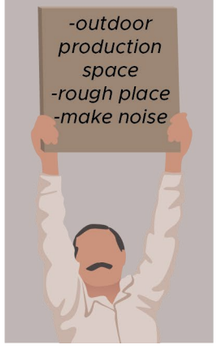
-one of the first to benefit from *broedplaats*

-mixed practice, commercial welding and art installations

-not dependent on local population as his business is quite specific

-hobby: part-time researcher focusing on the area

-has witnessed the transformation of the whole area from industrial to leisure-oriented



general

-*broedplaats* was a **reaction** against the **disappearance** of squat building in the city center towards the end of the 1990's (squatting not only as a political act, but also as a representative of mixed-use functions that also disappeared then)
-the whole area used to be a **coherent** structure of living, working and leisure (taken into account the garden cities surrounding the shipyard)
-**community outweighed the state** in the first **spontaneous** transformation in 1985; people themselves created the environment of working together
-advocate of keeping industry as it remains embedded in the original **historical context** of labor and industry of NDSM

spatial needs

-100m² indoor shared with another person and 100m² outdoor
-ability to work **outdoors**
-**'rough'** place, comfort is not a priority
-**noisy** activity

concerns

-working outdoors will become a problem, creative spaces tend to turn more into **office** buildings
-opposed to current urban development practice that puts public function in the plinth since this is usually reduced only to a **commercial** function; monofunctional urbanism aiming to maximizing **profit** for the **developers**
-lack of **public guidance** in private developments
-the spatial planning department does not leave **room** for arguments that are not listed as priority
-NDSM was branded as *Mediawharf* but this was not based on the reality of the terrain; it was a **top-down planning** that wanted to have office headquarters and not types of industry or production
-the successful **mixed-use tradition** that Amsterdam had will be lost
-**neoliberal** approach cleans all the land, buys off the people and stops giving permit for industry

suggestions

-cities need to find the balance; need to be both consumers and producers of things
-the north IJ riverbank should be public and **open** and **accessible**, as a **memory** place to remind the past
-politics need to step in to **safeguard public interest** instead of letting private parties deciding what urban planning should be
-need of a **vision** regarding mixed-use strategies
-function could be aligned to the **heritage** in the case of NDSM
-mix of **functions** in every street, combine production spaces with residential units
-mix of **dynamics** and **rhythms** to remain active **throughout** the day
-need to accept that an inclusive city will **cost** you money

profile/
Fiction Factory representative

-established in 1989 and has since almost always been located in the north river-banks

-started small but now it employs 70 people

-longterm ground lease (*erfpacht*)

-participating in Made Up North initiative

general

-when a product/service offered is custom and bespoke, a lot of **communication** is needed
-**smart, creative** people are needed
-there are many young people who prefer to work with their **hands**
-the **connection** of people to the physical components of life needs to be restored

spatial needs

-location in a **dense** environment within the **ring** and in proximity to **train** station and the **airport**
-8000m² plot size, hosting four companies
-**vertical transport**
-in manufacturing, multi tenant works because companies work quite similar but they have different competences

concerns

-employees have to **live further** and further away over the last decade because they cannot **afford** a closer option
-dense urban environments always come with **turmoil**
-**manufacturing** is becoming a **minority** in the area, green becomes more important because of the number of incoming people
-if the **government** doesn't **regulate** enough and keeps letting people do what they want, **money** will always come **first**
-change of **political** situation every 4 years makes it difficult in the longterm
-a better use of space requires intense **curating**
-need to find the balance: **location** depends on the **size** of the company
-developers see shop as a business, but for a manufacturer, a store is an **outlet**

suggestions

-**traffic, price, size, logistics, pollution, safety and noise** need to be solved
-sequence of actions and communication: **integration** of living units in **existing** manufacturing location seems **easier** than the other way around
-given the ground price it is more economical to make **multiple floors** suitable for manufacturing
-smart design for an **even distribution of functions during the day**, spaces that could serve a different purpose in the night or in the weekend
-machinery **sharing** or other **co-working** facilities
-**diversify** the businesses in mixed-use areas
-raise **awareness**, connect it with **education**
-safeguard manufacturing by **allocating space**, **cap the lease price**

profile/
bike maker

-assembly, research, drawing, prototyping on his own

-laser-cutting and CNC bending outsourced

-formerly located in NDSM East (13m²), now moved to a more bottom-up initiative that is more affordable (60m² for the same price)

-working in design for 30 years but recently started a new company to do innovative things

general

-benefits of small-scale production include operating without financial support, ability to customize based on client's needs, product **adapted** accordingly to demands and trends
-mixed-use environments permit a more **personal connection** between the maker and the user
-**clustering** helps creating a makers' **community**

spatial needs

-needs to be **seen**
-location in a **busy** urban environment helps having people stopping by
-influx of new population forms a new potential **target group**
-scarcity of space does not let you have storage; you order day-by-day upon need
-as a maker, your life is organized around your materials and tools; you are **place dependent**

concerns

-a sustainable and viable economy doesn't constantly push for upscaling, accuses current model of constantly pushing you to grow, multiply and make everything bigger
-CAWA and *broedplaats* have been **commercialized**; CAWA specifies a limit to the lease price but it does not have a limit of m² leaving thus, room for profit (the more the CAWA registered renters, the more the subsidies the landlord gets)
-NDSM is now a commercial site and people in the creative scene **are used** to make the area attractive
-Treehouse (organized by NDSM Foundation) provides the smallest unit size with the maximum lease thus, it is mainly **profit oriented**
-fragile **balance**: if it is too cheap, people won't leave and new energy won't come in the workspace; if it is too expensive, people cannot afford it
-temporary workspaces lack registered work addresses for deliveries and correspondence with government
-landlords want to push you out to **increase** the lease

suggestions

-improvements in CAWA and *broedplaats*, more **inclusive** criteria selection
-the operation and success of **shared** facilities, machinery and tools needs strong **organization**
-it is complicated to do **innovative** projects in an existing company, so it is better to start from scratch
-front desk with delivery point in shared workspaces
-change in consumption habits and shift to **circular** production is an **opportunity**
-maker space should be given for **free** and there should also be housing provision for makers

profile/
Made Up North representative

-a big plan of the area in NDSM East has been developed

-cluster of makers

-happy even with half of the plan they proposed

general

-80 partners in the network, half of them with a maker background and small enough to **stay in the city**
-75% of companies comes from **Amsterdam North** and half of them are either still in NDSM or have been **pushed out** in the last decade and want to **return**; the rest 25% comes from other transformation areas
-light industry/creative makers
-initiative aiming in building a **community of makers** specifically embedded in the **historical context** of NDSM East
-oriented towards the future generation
-aligned to the themes of **sustainability** and **circularity**

spatial needs

-warehouse >250m²
-more workspace for alumni and young makers who usually work in a **co-making** style
-**waterfront** location to be less affected of **mobility strategies**
-need to be close to each other, to form a **critical mass**
-**storage** space besides production space
-places for **social interaction**
-**central** location, accessibility
-proximity to **end consumers**
-**active role** in the making of place

concerns

-currently more companies are remaining in the undeveloped plots of NDSM West but they are with temporary contracts
-when **machines** are involved in making, practically it is **difficult** to mix it with living at building scale due to **nuisance**
-since the **housing** in the West got **doubled**, it was decided that space in the East should be reserved for **green**
-**lack** or urban development **vision** and **strategy** for the whole area
-too many partners involved, **coordination** is difficult, politics makes it hard
-**high-end** housing comes with more **complaints** from residents

suggestions

-larger production is outside of the city but **innovation** should remain **within** to attract **talents** and build **interconnections**
-in Made Up North's proposal housing is not included but they are not against it
-student housing or **live/work** type of development might be more **compatible** with the nuisance
-**vertical transport**
-enable makers to have a saying in the **spatial requirements**
-**municipality** should either **coordinate** or organize a small fund for complex urban development (maybe together with developers and entrepreneurs) to **appoint** someone/an organization for coordination
-need for **stakeholders management**, private-public partnership might help
-use **turnover** of the building to **lower rent** for makers/ **double-use** spaces/ rent **part** of them to minimize rent

profile/
ORAM

-largest business network in the Amsterdam Metropolitan Area

-connecting local entrepreneurs in the business to business industry

-main focus to create enough space for production companies and services

-exerting influence on policy issue

-fully private; neither public funding nor public interests

- largest part of income comes from industry and port companies

general

-**typology** of businesses based on **mixability** of functions (published report)
-accuses Amsterdam of dealing with planning like a **spreadsheet**, interested only to allocate numbers and failing to add **spatial qualities**
-**regional issue**: municipalities point at each other for the solutions of the problems they don't want to address

spatial needs

-**relocation** of companies could have **dramatic effect** for the company
-patchwork of **ownership** types makes it very **difficult** for the municipality
-service-oriented companies demand 20m²/person while light industry 250m²/person
-**division** of logistics and people commuting
-provision for **noise** and **smell** requirements

concerns

-*Ruimte de Economie van Morgen* paid no interest for **economy** at all
-companies face high **insecurity** regarding their location, both **space**-wise and **permit**-wise and this **ruins the investor and business climate**
-Amsterdam is **expanding** but at the same time it is **diminishing** the areas of work and (light) industry
-municipalities neither have the **space** to relocate the companies nor the **money** to move them
-transformation should start with what is **already there** instead of just cleansing and creating something on top of what was there
-an industrial area turned into housing will **never transform** back
-creative jobs can be easily mixed **theoretically but not financially**
-politicians and civil servants **underestimate** the consequences of a company's relocation
-civil servants involved in urban planning are not really **aware** of environmental categories

suggestions

-need to address what **kind** of work can be realized in **dense** built environments
-the issues of **circular economy** and **energy transition** demand space and this space should **grow accordingly** with the city's growth
-be specific on what you can mix, **establish policies** and **find alternatives** for the unwanted companies (maybe developers who make profit out of it could be charged for the relocation of companies)
-**quality** is missing in a quantitative approach; density needs green, sports facilities among others
-need to include both working and living as a **starting point** in redevelopment since a **later** integration in more **complicated**
-a city is an ecosystem grows, develops and changes and thus needs **flexibility** and **resilience**
-build massive housing outside of the city and leave the **economic motor** and **skilled labor** of industrial areas untouched
-municipality and province are the most important **stakeholders** but it's all about money and **developers** need to have some kind of **return**

profile/
BMP developers

-big area developer

-in charge of the redevelopment of the B-blocks in NDSM West

-responsible for the commercial selling of houses

-part of Volker-Wessels building company

general

-inner city developments and transformation areas form the main scope
-usually focusing in just one or two plots every time
-emphasis also on the context of the building since its success gives you credits in the future and adds value
-obliged to follow rules, design guidelines per plot (*kavelpaspoort*) and timeline set by the municipality
-sometimes involved in appeals to the zoning plan (*bestemmingsplan*)
-as area developers they have regular contacts with entrepreneurs

needs/rules/ guidelines

-currently the selling of the units is done internally but maybe in the future a broker is needed as the quantities increase
-in the past a broker campaign has been used to attract international buyers and achieve a better deal
-since everything is under ground lease, the municipality, as the owner, can set the rules and price the ground; otherwise, if you own the plot, you just need to follow the *bestemmingsplan*
-municipality gives discount on the type of the housing that wants to promote
-you need to find the buyer before you start construction in order to be able to pay the ground lease
-municipality decides the mixing of functions in the area by plot

concerns

-since NDSM West doesn't have enough space for playground and sports, the municipality tries to accommodate these in NDSM East
-NDSM East is a culture, festival area which has already become smaller due to the West being shaped into a residential area
-municipality does the phasing, developers receive contract, if they accept it they get the *kavepaspoort* and they develop studies on the plot with architects and construction companies
-every time they have to solve every problem in the plot from the beginning to prove their position: waste of time and money
-every new plot gets extra rules
-in East initiatives are being tested but their success doesn't guarantee a permanent space
-existing businesses compromise the quality of their premises to keep the rent low, they couldn't afford the quality and rent of a new building and/or they prefer to spend money on other things

suggestions

-feasibility study ability to afford the rent in the new building
-municipality should engage financially; give discount on ground lease
-the developer would like to explore mixed-use initiatives but people must afford it
-place-specific business case; it doesn't work on every place
-everybody ants the nice, innovative making industry in their development
-you need to test the space to find potential customers
-hybrid functions (ex. production and shop) increase and thus the municipality needs to become more flexible on what is allowed
-you have to mix with development initiatives that make money

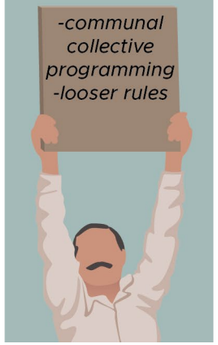
profile/
COD Development Pioneers

-founded 10 years ago, very productive the last 3

-one of the first developers who started housing in NDSM (De Werf, 1000 apartments in one block)

-young team, based in RAI hotel (own development), focusing in housing but also involved in a range of projects, from hotels to offices

-planning to turn existing light industry facilities into housing or mixed-use with commercial functions in NDSM West



general

-named themselves 'development pioneers' as they are not afraid to step into new areas and start redeveloping
-they don't have strong work division (ex. commercial and technical) as their bigger counterparts, only a technical project manager for the realization phase
-light industry within city centers or close to them is a smart long-term investment because most probably these areas will profitably turn into housing
-the city wants to keep the art initiatives
-analysis on what is missing from NDSM (mid-rent, communal function that could host various courses/studios, neighborhoods behind not connected)

spatial needs

-they propose 100% mid-rent apartments that are underrepresented in the area; emphasis on communal spaces to compensate for small apartments
-change of facade every 20m to have diversity
-due to rules apartments are getting smaller and smaller to remain feasible

concerns

-plethora of owners makes collaboration difficult but municipality demands to work together and present a common plan; conflict between the interviewees who are only planning to develop and leave and private owners who are going to stay in the area and feel like their property worths a lot but this is not based on real evidence since an agreement about the future redevelopment has not been reached; private owners (art studio) might decide to stay in the existing light industry hall and they are not involved in the redevelopment
-rules changed against them after having bought the plot as the area was getting very dense and they limited the maximum m^2 allowed; decline from 70% to 30% in free-sector apartments and reduction in the overall volume
-companies are given money to move out of the area, they invest them in nearby locations which are more spacious and they are not coming back
-difficult to find a party that specializes in various markets in order to sell a mixed-use building
-change of political stream affects proposals and decisions
contradictory policy: municipality wants its share in the growing market but at the same time, it hardens the rules
-a column-free space suitable for manufacturing increases sharply the cost

suggestions

-benefits arise from collaboration in the development (ex. you can get a parking entrance from the neighbor that wouldn't be allowed otherwise)
-a business case that would require a small logistics hub (ex. in-city grocery deliveries) could work in the new developments
-transparent ground floors that don't act like a barrier but as a connector
-if municipality wants to keep light industry, different smaller volumes aren't convenient; in Hamerkwartier light-industry halls of 1000-1500m^2 are imposed in the plinth of residential towers
-ensuring temporary relocation of companies during redevelopment doesn't become permanent
-cannot be solved on building or block scale, need to allocate spaces broadly
-different dynamics of functions is attractive

profile/
CHASE brand activation company

-established in 2012, moved in NDSM in 2014 but currently relocated 800m away to have bigger facilities

-current area also to face the same challenges as NDSM in the next decades

-also involved in a small project group (3 parties) for the development of a small plot in NDSM West

-one of the first to receive permit with very small ownerships (compared to the big players of the area)

general

-the area has become the **center of Amsterdam**
-every plot has its own **project group**; in this case the group is formed by the interviewee, the municipality and a commercial party
-planning to realize **living/working units** in the ground floor
-the housing component can be **sold** either **individually** to end customers or **as a whole** to an investor

needs/rules/ guidelines

-**warehouse** needed if your agency is in charge of the **execution** of operations
-as an agency doing creative production and events they were attracted to the **'vibe'** and the **'DNA'** of NDSM: the area has a lot of **craftsmanship** and a tradition of **bringing things to life**
-the price in the area might be 100-125€/m² for a warehouse while in other areas it is 75€/m²

concerns

-an industry needs **trucks** (moving, parking, loading) but the NDSM area is being transformed into a nearly **car-free area**
-the **sustainability demands** are difficult to be met with industries
-the area needs facilities for **indoor sports** but these have a high demand of **bike parking**
-the **vision** of the municipality is **romanticized** regarding the industrial feeling of the area that **cannot be implemented** in reality, transportation and **logistics-wise**
-the ground price (*erfpacht*) is very expensive: companies in need of warehouse/storage facilities won't return in the area; most likely only the office-based parts of creative agencies or other companies can afford
-industry has much more **noise and odor nuisance** than regular office buildings
-craftsmanship has periods of **low profit** which makes **survival** in expensive places unaffordable
-too **many** different and conflicting **agendas** within the municipality
-**rules** are constantly changing **in favor** of housing
-offices and production facilities are **depicted in visuals** but are not really elaborated **further** on in the process
-the design is not meant for families with cars: for commercial apartments is 0.6 and for social housing 0 parking spots

suggestions

-production needs good **infrastructure**, possibility of **parking**, ability to make **noise**, **waste disposal**
-low price/m² as you need to stock stuff that **won't bring in money**; if it's very expensive, then it would be affordable only for **high-value products**
-the **more the parties** involved in every plot, the more **difficult** to reach **common ground**
-need to find a **temporary** location for the companies **during** the development
-the municipality sets a **limit** in the m² for HORECA but doesn't have a **specific demand** regarding small creative or production agencies

profile/
Lingotto Development

-inner city developers

-mainly involved in Hamerkwartier

-recently also involved in a smaller project in NDSM

general

-they are not focusing specifically in housing; they adjust the program depending on the specific location
-they represent themselves as a kind of creative company; they care about money but maximizing profit isn't an end in itself

spatial needs

-the plot under redevelopment has a car repair and a snack bar that doesn't want to leave
-important to have a good mix to keep the area active throughout the night
-program and functions are imposed by the municipality

concerns

-production needs good logistics and roads among others so they prefer to focus more on things that fit more easily in a city
-NDSM will become one of the boring, typical inner city developments while in Hamerkwartier light industry is really being reinforced
-Amsterdam keeps growing but it still demand spaces like car repair
-maybe they will introduce something similar to the *broedplaats* but without the involvement of the government
-different working groups within the municipality with contradictory views
-meeting high sustainability demands comes with a high cost and negotiation is needed
-commercial companies that earn too much need to give back to the city

suggestions

-mixing functions is important
-differentiation on the ground price depending on the future function can help achieving a good mix
-the municipality has the right instruments to make the city they want
-municipality needs to enforce the direction needed
-*Ruimte van de Economie voor Morgen* tries to differentiate the businesses throughout the city and it's considered by the interviewee a well-planned document

Conclusions from Interviews

END USERS

common ground

-current urban development model is **private-led** and thus profit-oriented
-the role of politics is crucial, **municipality** needs to step in and **regulate** the situation
-lack of a **vision** regarding mixed-use strategies
-manufacturing is becoming minority
-urban dense environment can be beneficial
-mix of rhythms and dynamics: even **distribution of functions during the day**
-affordability and adequate space with possibility of storage, shared facilities, vertical transportation
-need of **curating** to achieve the organization needed
-improvements in CAWA and *broedplaats*

potential conflicts

-traffic, price, size, logistics, pollution, safety, smell and noise nuisance

THIRD PARTY

common ground

-the consequences of a company's **relocation** are **underestimated**
-lack of **vision** and **strategy**
-stakeholders' management is crucial
-companies need to have a saying in the spatial requirements
-warehouses >250m2

potential conflicts

-when machines are involved in making, practically it is difficult to mix it with living at building scale due to **nuisance**
-ways to **generate profit** are needed

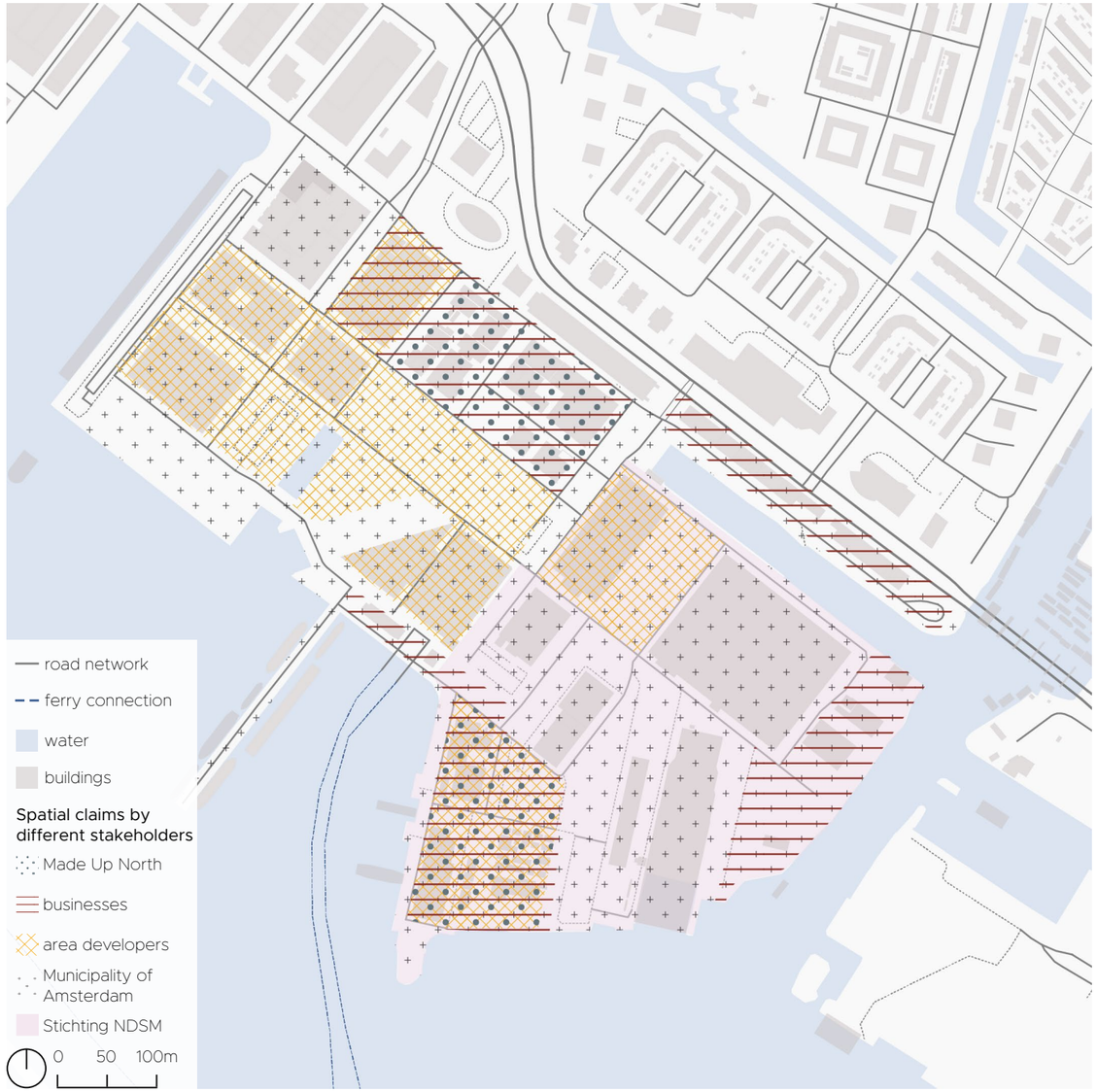
PRIVATE

common ground

-**ground lease price** (*erfpacht*) set by the municipality is too high
-every new plot assignment comes with extra rules and design guidelines from the municipality (kavelpaspoort)
-rules might change upon the acquisition of the plot
-the vision of the municipality is **romanticized** regarding the industrial feeling of the area that cannot be implemented in reality

potential conflicts

-traffic, price, size, logistics, pollution, safety, smell and noise nuisance
-NDSM area is being transformed into a nearly car-free area
-the **sustainability demands** are difficult to be met with industries
-plethora of owners makes **collaboration** difficult



5.5 Policy review

Equally important for the topic was the position of the public authorities concerning live-work environments. Conducting a policy review on different scales was necessary to understand the municipality's priorities in retaining existing businesses and its intentions towards safeguarding industrial space and maintaining affordability. For the following chapter, the findings of Jamila K. Jones for her thesis report *Making space for light industry* were re-interpreted and built upon (TU Delft, 2021). Although coming from an area management approach, her scope was similar as it was the area of focus, namely NDSM in Amsterdam.

Public authorities have published a plethora of policy documents over the course of time. In the next pages, a scanning of documents ranging from regional to site scale, was made. For the scope of this thesis, the emphasis when examining these is threefold. Firstly, to understand the status-quo regarding mixing industry in live-work environments. Secondly, to render explicit the efforts towards safeguarding industrial space and maintaining affordability. Finally, to clarify municipality's intentions in retaining and supporting existing businesses in the NDSM Werf area.

The main points of each document concerning the aforementioned are noted down and presented in the respective tables in the following pages.

General

VNG (Vereniging van Nederlandse Gemeenten) is an association of the Dutch municipalities. In 2009, they published a handbook named *Bedrijven en milieuzonering: handreiking voor maatwerk in de gemeentelijke ruimtelijke ordengspraktijk* (translated as: Businesses and environmental zoning: guidance for customization in municipal spatial planning practice). In this, a classification of environmental categories for businesses was established. Aspects considered were danger, dust, odor and sound. The level of nuisance arising from these, forms the target distances listed below. Although this document does not have any statutory standing, the documentation analysis revealed that the majority of municipalities, including Amsterdam, is following the standards provided.

Metropolitan regional scale

MRA released in 2020 this updated document to cover the years up to 2024. The main reason behind this was to address the extreme population growth and thus the subsequent housing shortage compared to the original agenda in 2015.

Regarding the scope of this project, it is important to note the desire for transition to circular practices regarding production and consumption. Also, the agglomeration effect in Amsterdam due to limited availability of space and real estate pressure, is acknowledged. Moreover, the shift in labour market because of the advance of technology and automation is taken for granted, realizing that current job positions will become extinct soon. Thus, connectedness between industries and academic institutions and the government are desired.

Given the housing crisis, MRA is expected to complete many residential projects in inner-city locations aligning with the requirements set by governmental bodies. Important to note, is the fact that the document realizes that the limited space also poses a challenge for smaller-scale businesses like artists, makers and start-up companies especially in Amsterdam. This leads to conflicting interests (living versus working). It becomes clear that competing for the same space is only intensified while the housing demands fail to be met.

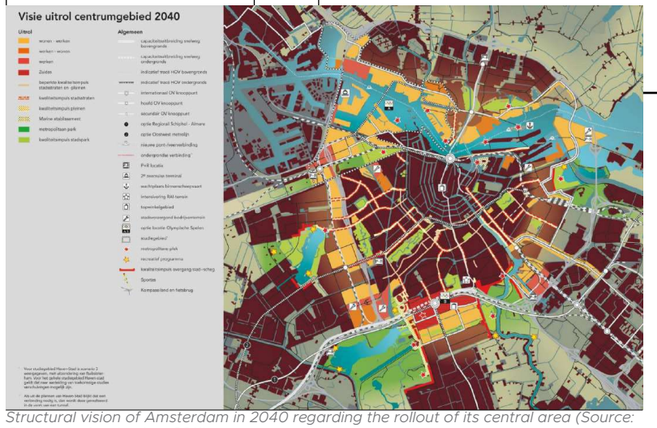
	Category	Odor	Dust	Sound	Danger	Greatest Distance
Manufacture of Textiles						
Processing and spinning of textile fibers (Weaving)	3.2	10	50	100	30	100
Weaving of textiles:						
Number of looms < 50 textiles	3.2	10	10	100	0	100
Finishing companies	3.1	50	0	50	10	50
Manufacturing of textile goods	3.1	10	0	50	10	50
Manufacture of knitted and crocheted fabrics and articles	3.1	0	10	50	10	50
Manufacture of Clothing; Preparing & Dyeing fur						
Manufacture of leather clothing	3.1	30	0	50	0	50
Manufacture of clothing and accessories (excluding leather)	2	10	10	30	10	30
Preparation and dyeing of fur; manufacture of articles of fur	3.1	50	10	10	10	50
Manufacture of Leather & Leather goods (excluding clothing)						
Leather goods factories (excl. Clothing and footwear)	3.1	50	10	30	10	50
Shoe Factories	3.1	50	10	50	10	50
Wood Industry & Manufacturing of Articles of Wood, Reed, Cork						
Sawmills	3.2	0	50	100	50	100
Wood preservation companies:						
- with saline solutions	3.1	10	30	50	10	50
Veneer and panel material factories	3.2	100	30	100	10	100
Carpentry factories, manufacture other articles of wood	3.2	0	30	100	0	100
Carpentry factories, manufacture other articles of wood, po <200 m	3.1	0	30	50	0	50
Cork goods, reed and wickerwork factories	2	10	10	30	0	30

Examples of business activity types and their respective environmental category designations and assigned distances per nuisance extracted from VNG, 2009 (Source: Jones, Making space for light industry, 2021)

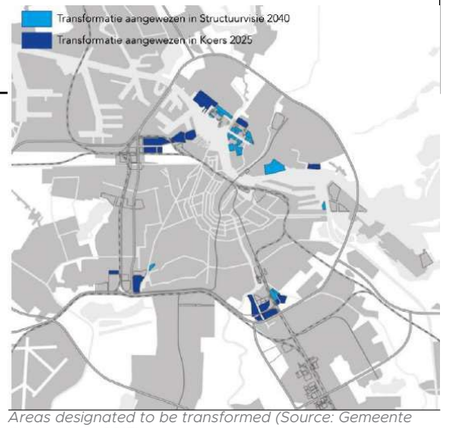
City scale

document	year	main points
Kleinschalige Bedrijfshuivesting (Accommodation of Small-scale businesses), Municipality of Amsterdam	1999	-definition of small-scale businesses (<50 employees) -the scope includes offices, consumer services and craft companies; there is intention to mix -protection, compensation and implementation of counteracting measures to ensure the intented function of space
Wonen tussen de bedrijven door (Living between Businesses), Municipality of Amsterdam	2003	-intention to mix work and living in monofunctional areas, such as industrial lands under transformation -light industry businesses are listed possible for integration in mixed urban blocks -suggestion to address specific target groups for housing in mixed-use blocks and ensure design guidelines for workspaces such as access and layout -stressing the need to inform end-users of the the implications of the transformation -emphasis on the transition zone between industrial facilities and residential neighborhood highlighting the role of public space in ensuring cohesion
Handboek Kleinschalige bedrijfsruimte Amsterdam (The Small Business Space, Municipality of Amsterdam	2008	-providing typologies, references and trends for increasing workspace surface for small-scale creative businesses in residential areas -it is recognized that small-scale businesses tend to remain within city boundaries in contrast to the relocation patterns of their larger counterparts -significant increase in creative industries that are comprised of both office and production space -remark of the tendency of clustering in multi tenant business premises instead of the plinth of mixed-use buildings as these are usually occupied by higher valued uses (retail, facilities, offices)
Structuurvisie Amsterdam 2040: Economisch Sterk en Duurzaam, Municipality of Amsterdam	2011	-in order to alleviate the housing shortage within the city boundaries, relocation for companies is considered an option -land scarcity still poses a threat to economic activities in the city (motto translated from dutch: a good city for people is a good city for companies and the reverse is equally true) -northern banks of IJ river marked for housing purposes -NDSM area is depicted in the vision plan as a live-work district, with housing prioritized bytaking up minimum 50% of any new development -aim to realize minimum 5 s.m. of workspace for small-scale businesses per any new house built -Amsterdam has imposed the guidelines from VNG (Association of Dutch municipalities) regading environmental categories concerning nuisance and mixing possibilities
Koers 2025, Municipality of Amsterdam	2015	-short-term strategy merely focusing on the realization of 50.000 new houses in a decade -intention to allocate more housing in industrial estates (230 ha) that were not designated in the previous document
Ruimte voor de economie van Morgen (Space for the Economy of Tomorrow), Municipality of Amsterdam	2017	-establishment of live-work neighborhoods -it is stated that in industrial estates under transformation, space for a range of economic activities and businesses is a priority -distinction between office areas, live-work environments and production zones -what is necessary to ensure economic viability: suitable live-work ratio, accessibility/logistics for businesses, density, network connectivity, established entrepreneurial and business presence -NDSM Werf area listed as Creative Neighborhood (creative offices and co-working spaces) -Cornelius Douwes, Buiksloterham & Hamerkwartiek along the IJ listed as Productive Neighborhoods where small-scale production spaces and hybrid businesses are most suitable

document	year	main points
Bedrijvenstrategie (Business Strategy 2020-2030), Municipality of Amsterdam	2020	-recognition that the transformation of industrial estates into mixed-use districts for housing purposes will have severe implication for businesses that the city needs -the increasing demand to house industrial activities, such as production, storage, repair and distribution, to meet circular and energy transition ambitions leads in a mismatch between supply and demand -distinction between different types of industries and classification -definition of business space (bedrijfstruimte): minimum 70% of the gross floor area (GFA) is designated for business activities, like production while the rest can be used as an office -intention to mix business space for industrial activities in proximity with housing, with the ground floor of mixed-use buildings in transformation areas reserved for such uses and the upper floors available for residential purposes -implementation of measures and incentives to alleviate displacement in manufacturing, craft and repair sectors: 1.zoning measures that prioritize provision of industrial space 2.co-operation with existing entrepreneurs on the desired work character of the transformation area under question 3.establishment of a body to match potential businesses looking for temporary location to operate with available premises 4.research on the possibility of a plinth cooperative 5.exploration of shared business facilities to cluster various small-scale industries and their industrial activities
Omgevingsvisie Amsterdam 2050, Municipality of Amsterdam	2021	-emphasis on manufacturing, crafts, logistics, distribution and repair -increase in the housing stock includes the transformation of 450ha of industrial facilities and port areas in the city -this signifies a lack of at least 150ha of business space by 2040



Structural vision of Amsterdam in 2040 regarding the rollout of its central area (Source: Gemeente Amsterdam,2011)



Areas designated to be transformed (Source: Gemeente Amsterdam, 2017)

Site scale

document	year	main points
XXL Urban Plan, developed by Rapp+Rapp; commissioned by Municipality of Amsterdam	2002	-ambition to turn the former shipyard into a dense urban area by housing different types of businesses and urban functions (housing not a pressing issue at that moment) -priority for new constructions was given on the west part of the area -variety of flexibility elements, such as adaptable floor layouts, tall ceiling height -one building typology for 8 blocks laid out in a grid street layout -only one building realized, now know as Block B6 -municipality's priority shifted onwards
Investeringsbesluit NDSM-Werf (IB 2013), Municipality of Amsterdam	2013	-spatial framework including key guidelines and rules for the NDSM Werf's development which got divided in 3 sub-areas (NDSM West, East and North) -it was based on a study conducted by De Architeckten Cie. in which a housing development for NDSM East (on a very abstract level) was captured in the vision proposed; this was on very abstract level since at that moment housing was not intented for NDSM East but it was stated as a possibility for the future -the document, now known as IB 2013, formed the basis for the later land use plans (Bestemmingplans) -the underlying reason for the redevelopment of the area was to hamper the informal development by makers and creative industry that started taking place in the vacant shipyard -NDSM West envisioned as a dense, mixed-use area, including living, working and facilities (aligned with 'Structuurvisie Amsterdam 2040' issued in 2011) -adaptive reuse was proposed for the monumental buildings of NDSM East -NDSM North (area between Klaprozenwef and tt. Vasumweg) was beyond the scope of active development measures -majority of plots were owned by the municipality of Amsterdam and were under ground lease, while certain plots in the east part were listed temporary and thus rented for a specific time period; the northern plots were under long ground leases with external parties and thus municipality's active involvement is limited -requirements per land use category were specified: 1. creative sector: 10000 m^2 reserved for creative purposes, already occupied in NDSM East 2.housing: minimum 870 and maximum 1500 houses (100 m^2 GFA/house) in NDSM West 3.retail: maximum 2200 m^2 not to impact existing shopping facilities in the surrounding area and only retail related to the nautical character permitted 4.businesses with office space covering less than half of their premises are excluded from the maximum office limit (116011 m^2 GFA according to the Office Strategy of 2011) -municipality emphasizes on the creative sector as the area was becoming an attractor for media companies and a popular ground for the creative and cultural community who were informally established in the vacant shipyard -the document recognized the role of NDSM in the collective consciousness as place hosting famous events all year round and limited the amount of intervention nearby and the allocation of housing in this area; it was stated though, that noise and size limitations will be imposed to the event
Bestemmingsplan NDSM-Werf Oost, Municipality of Amsterdam	2013	-adopted in 2013 without any revisions that the NDSM West part had -frozen since 2017 and municipality plans to keep it like this until 2028 for a plethora of reasons -3.1 environmental category also applied here -total 110000 m^2 GFA for mixed-uses (creative offices, event spaces, workshops etc.) were proposed, of which the 65000 m^2 were already realized -all blocks are listed as mixed (gemengd) like NDSM West but here housing is not permitted in any block

document	year	main points
Bestemmingsplan NDSM-Werf West, (original) Municipality of Amsterdam	2014	-at the time NDSM West consisted of 8000 m^2 GFA including a mix of housing and other functions -the document allowed an additional development of 390000 m^2 GFA, with housing taking up 212250 m^2 GFA and the rest left for facilities uses -whole area set under environmental category 3.1, prohibiting any heavy industrial activity; exceptions were made for existing businesses on the condition that housing is not realized nearby -proposals for housing in the north plots of NDSM West would be permitted only if the operation of existing businesses was not affected; keeping these businesses was thus a priority throughout the transformation process of the area
Bestemmingsplan NDSM-Werf West, (uitwerkingsplan) Municipality of Amsterdam	2018	-the goal of this elaboration plan was issued for the development of Block B9 and namely for the development plans of Pontkade 1,2 and 3 by BMB ontwikkeling and VolkesWessels -the focus was now manly residential permitting the realization of craft businesses, retail and HORECA activities on the ground floor -it was revealed that the intention was more targeting in creative offices rather than creative production or makers' activities
Bestemmingsplan NDSM-Werf West, (revision) Municipality of Amsterdam	2020	-notable increase in the designated quantities for housing to 414000 m^2 -non residential functions/facilities reduced to a maximum of 130000 m^2 -3.1 environmental category remained

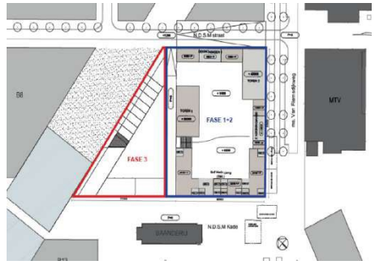
left: XXL Urban Plan developed by Rapp+Rapp (Source: Rapp+Rapp, 2002)

right: XXL Urban Plan developed by Rapp+Rapp (Source: Rapp+Rapp, 2002)

left: Investeringsbesluit NDSM-Werf with phasing plan (Source: Gemeente Amsterdam, 2013)

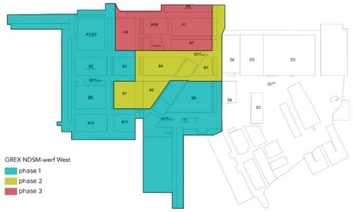
right: Spatial Plan of Investeringsbesluit NDSM-Werf (Source: Gemeente Amsterdam, 2013)

document	year	main points
Actualisatie Investerings-besluit NDSM-Werf 2020, Municipality of Amsterdam	2020	-update of the *IB 2013* as the amount of housing suggested in the original *Bestemmingsplan for NDSM-Werf West* was already surpassed in 2020 -the public space was improved to cater for the needs of the increasing incoming population while remains of the past got preserved as constitutive elements of the identity of the area -to meet the growing housing demand, blocks with operating businesses that were not originally part of the transformation, are now due to be redeveloped sooner than expected -housing significantly increased to 414000 m^2, non residential 130000 m^2 resulting to a total of 515000 m^2 for the entire NDSM Werf area -realization of 2 primary schools instead of 1 in specific B blocks -live-work ratio ranging from 41/59% to 55-45% now shifted to a range between minimum 75/25% and maximum 85-15% residential/non residential -although the municipality thinks that the area can still work as an attractive live-work district, the work element is severely limited with implications around the corner -since there is a minimum of 30% of non-residential functions in the entire area that is not depicted in NDSM West, this will have to be realized in the remaining parts -competition for space likely to become unbearable for weaker land uses, such as manufacturing -Klaprozenweg to be transformed in a lively urban corridor aligned with the *Ruimte voor de economie van Morgen document* of 2017 -linkages with surrounding neighborhoods are desired and the provision of specialized place for a sort of creative activities and incubator operations is needed also for the wider area -emphasis to house hybrid businesses (maximum 50% office and the rest used for production/ industry activities) in the plinths of newly constructed buildings -retail increased from 2500 m^2 to 2750 m^2 GFA while total area for breeding grounds was outstandingly decreased to 1000 m^2 from the 10000 m^2 secured in *IB 2013* -since listed a central urban environment, 85000 m^2 of green space are required to meet the green standards -it was decided to initiate phase 2 of the NDSM West while phase 1 is not complete before 2025 to address the housing demand -A blocks to be included in the land development focus as phase 3 as various ground leaseholders and limited municipality's involvement make the project complex
NDSM Maakstad, Made Up North	2020	-NDSM Maakstad (makers' district) proposed by Made Up North (NGO foundation representing makers especially in Amsterdam North) -contrasting to the 'Creative Neighborhood' designation of the *Ruimte voor de Economie van Morgen* (2017), they counter-proposed the 'Creative Production District'; a clustering of various production businesses, start-ups and others in NDSM East, where the existing industrial character can be enhanced -aim is to provide affordable workspaces for small and medium-sized businesses involved in creative and production sector as this is lacking in inner-city locations -it is acknowledged that profit-oriented elements are needed to make the proposal attractive but addition of housing would require additional research -environmental category 3.1 is respected, in line with the municipality's rules -design elements include an average of 20m building height, accessibility by car and water and green spaces

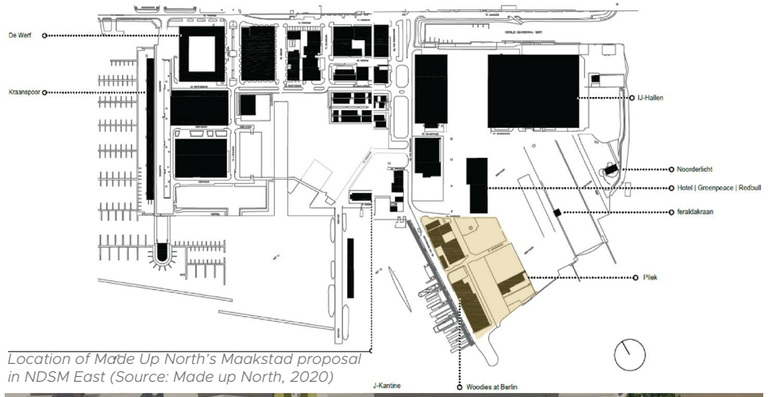


right: Approved development for Block B9 Pontkade (Source: Gemeente Amsterdam, 2018)

Comparing sub-area division within NDSM Werf (Investeringsbesluit NDSM-Werf from 2013 vs Actualisatie NDSM-Werf 2020) (Source: Gemeente Amsterdam, 2020)



Updated development phasing for NDSM West (Source: Gemeente Amsterdam, 2020)



Location of Made Up North's Maakstad proposal in NDSM East (Source: Made up North, 2020)

Visualization of the Maakstad proposal (Source: Made up North, 2020)

5.6 Stakeholders' analysis

National government
Specific issues, such as spatial planning, land development, economic affairs and mobility, fall under the responsibility of the assigned ministries; not directly involved in the NDSM area but responsible for the bigger picture

Province of North Holland
Same as previous; intermediate administrative level in charge of spatial development and regional economy matters; not directly involved in the NDSM area

Metropool Regional Amsterdam (MRA)
Agglomeration of 32 municipalities that forms the country's most robust economic region aiming to achieve high-quality of life in a resilient and balanced metropolis; not directly involved in the NDSM area

Municipality of Amsterdam
Urban Planning department is responsible for urban development and public space as well as the issuing of the 'kavelpaspoort' for every block redeveloped

Land Development department is responsible for spatial affairs including the ground lease (erfpacht) and the coordination among leaseholders

Economic department caters for the business climate in the city as well as any other affair that its economical aspect is expressed spatially

Area developer
The area is under extreme transformation pressure to develop into a dense residential neighborhood with high-rise apartment buildings. BMB ontwikkeling is the main developer of NDSM area working together with VolkerWessels for the remaining B blocks

Other leaseholders
These refer mainly in the transformation process of the A blocks that only recently got included in the development scope

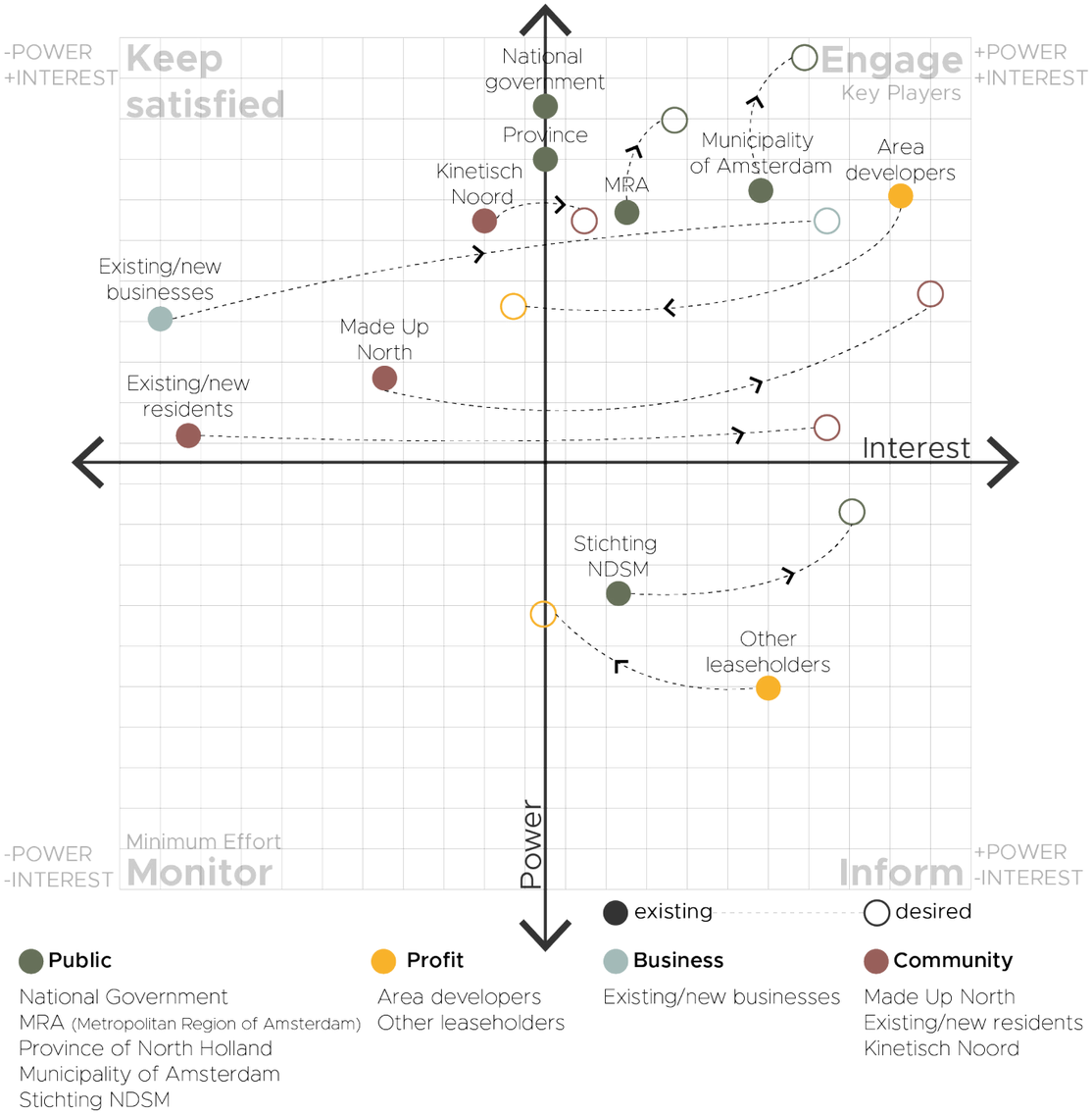
Made Up North
NGO Foundation representing the makers' community, especially in Amsterdam North; they have published a design proposal towards the creation of a creative production district in NDSM East

Stichting NDSM
Foundation, partially funded by the municipality of Amsterdam; main objective is the cultural and event programming in the NDSM East

Kinetisch Noord
Kinetisch Noord Foundation is the owner and manager of the NDSM Loods. The foundation was established in 2000 to re-develop the former NDSM Scheepsbouwloods into a center for art, culture and crafts. Their main goal is to realize affordable workspaces and studios in collaboration with the tenants.

Existing/new residents
Referring to the existing people as well as the great number of incoming population as a result of the extensive residential development

Existing/new businesses
Referring to businesses still operating in NDSM area, those that were forced to relocate and those that could potentially move their facilities in NDSM



right: Power-Interest Stakeholders' matrix comparing existing situation with the desired one

5.7 Conflicts and Disruptors of co-presence

Policy change
The legal establishment of urban manufacturing could lead to new spatial organization. Integration of working and living environments affects the local built environment.

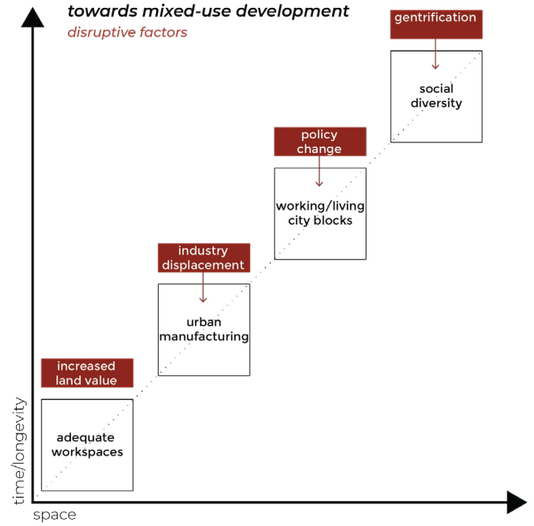
Gentrification
Increased land values could put pressure in the existing industrial landscape, potentially leading to industry displacement. New influx of residents will probably demand the closure of active workspaces.

Accessibility to waterfront
If the waterfront becomes occupied by more profitable land uses, a crucial mode of transport will be irreversibly lost. This limits the efficiency of the production landscape.

Technological innovation
A technological breakthrough could affect the physical space needed for production. It could be drastically decreased permitting easier integration in the urban fabric. Smaller workspaces could proven to be sufficient. Update of equipment to meet the latest development may prove to be economically unsustainable for smaller companies.

Economic crisis
Economical instability could shake the existing situation. Adaptivity of people would be crucial to survive. By broadening their scope of expertise, new opportunities could arise.

Change in material flows
The degree of decentralization of production could alter material flows. The dependency for resources could be switched from national to local level and vice versa. The change in mindset could affect the culture of making.



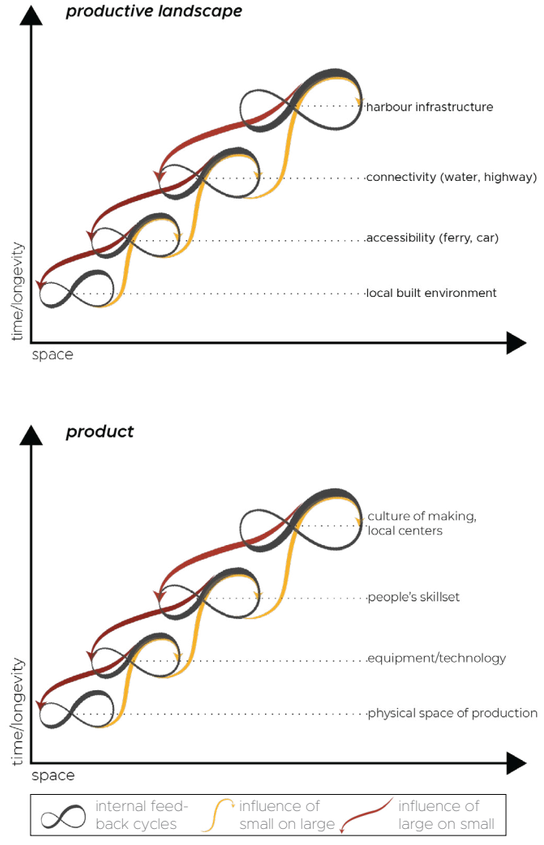
Disruptive factors towards mixed-use development

Manufacturing locations of NDSM: NDSM Loods and Y-slope (Own photographs)

5.8 Synergies

Integration of urban manufacturing within city centers is a complex task and as such, it requires elaborated research. Based on previous findings, the aim of this chapter is to draw connections between actors with different interests, expertise and knowledge. Each one of them have their own institutional and disciplinary background which affects problems' interpretation and solution. Any actor involved has different focus, priorities and mindset (Hausleitner et al., 2021). Although this pluriformity increases complexity, it also provides fertile ground for dialogue, cooperation and even coalitions if nurtured (Ramadier, 2004).

For this reason, a TOWS matrix, as seen in the opposite page, was used. This tool is a variant of the classic SWOT analysis method whose aim is to develop strategic options from an external-internal analysis. External environment refers to threats and opportunities, while weaknesses and strengths are identified in the internal environment. The disruptors of the previous chapter as well as the main adaptive cycles of productive landscapes and products shaped the contents of the TOWS matrix.



Main adaptive cycles and related times of change (Adapted from Holling (2001), Panarchy: Understanding transformation in human and natural systems and Davis (2020), Working Cities)

right: TOWS Analysis as a variant of the SWOT Analysis (Source: www.mindtools.com/rs/TOWS)

TOWS Matrix

	External Opportunities (O)	**External Threats (T)**
	1. shift to circular economy **2.** potential of urban manufacturing **3.** change in consumption habits **4.** reshoring of businesses	**1.** real estate pressure, increased land value **2.** housing crisis, ideal location for high-end housing **3.** manufacturing occupies a lot of space **4.** not every part of product cycle is profitable
Internal Strengths (S) **1.** location, proximity to city center, waterfront accessibility **2.** place identity **3.** strong makers' community **4.** clustering of manufacturers	SO -integration of urban manufacturing -highlight the need of space to achieve circular ambitions -enhance culture of making -build upon place identity through placemaking -empower makers' community Maxi-Maxi Strategy	ST -limit developers' power -alter the ratio in living/working city blocks -land protection zones -enhance vertical mix possibilities Maxi-Mini Strategy
Internal Weaknesses (W) **1.** policy change **2.** gentrification-induced industrial displacement **3.** shift in population consistency **4.** informal settlements regarded as unwanted	WO -change of policy regarding material flows -incentives to attract businesses -foster co-creation with embedded communities Mini-Maxi Strategy	WT -change of policy regarding mixed-used city blocks -subsidies to businesses -attract specific population groups Mini-Mini Strategy

Policy Interventions Patterns

Based on previous findings from the interviews and the document and policy review, several strategic options were developed. In order to support these, a list of patterns regarding policy interventions is made.

The policy intervention patterns are also classified in categories regarding their potential order of appearance.

P11. 24/7 active neighboorhood

A neighborhood that remains active throughout the say and night increases the feeling of safety and adds diversity in the public realm. Mixed use functions with varying operating hours should be enforced.

Links: B2, B8, B14, S2-S16, N2-N5, , N9, N12, N15, N20-N26, T1-T6, P2-P13

T3. Assured security of space

Businesses need a climate of trust regarding their long-term access to their space in order to invest in resources, equipment, staff and local networks.

Links: B1, B3, B7, B11-B13, S3, S10-S15, N2-N4, N11, N14-N20, N23-N25, T2-T10, P3-P13

T4. Assured affordability

Business premises that are not privately owned but rented need assurance in long-term affordability. Setting caps in lease prices, especially in transformation areas gives reliability.

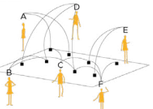
Links: B3, B5-B7, B11, S3, S10-S14, N9-N16, N23-N25, T2-T6, T9, T10, P8, P12, P13

T5. Curator

An assigned person with the organizational role of fostering partnerships, aligning interests, communicating needs, protecting community interests and exploring interconnections helps businesses and neighborhoods.

Links: B1, B2, B8, N2-N4, N14-N17, N19, N23-N25, T1-T4, T6-T10, P2, P5

T6. Availability of diverse jobs in the city



A distribution of job opportunities throughout the city enables businesses to employ local workforce while enabling people to fit their skills and interests in a plethora of locations.

Links: B3, N2, N3, N9, N14, N23-N25, T2-T10, P1-P13

T7. Circular city

Industrial urban areas are seen increasingly as a crucial prerequisite to achieve circular economy and close material loops (Van den Berghe & Verhagen, 2021). Diminishing such space hinders circular ambitions.

Links: B1, B3, B5-B8, B11, B12, S11, N2, N10, N11-N13, N20, N25, T3-T10, P4, P6

T8. Incentives for research

Cities should act as the breeding ground that stimulates research and development that fuel the urban economy through potential added value. Incentives help attracting new businesses and retaining the established ones.

Links: B1, B3, N2-N5, N24, N25, T2-T7, T9, T10, P5, P6, P13

T9. Visible making

Increasing the visibility of making enables manufacturers to better connect their products and services with the local market. Also, it raises general public's awareness regarding the added value that making has for the city.

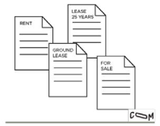
Links: B14, S2-S8, S10, S12-S14, N2, N9, N12, N14, N15, T6, T8, T10, P3, P5-P7, P13

T10. Meet makers' requirements

Makers have specific needs such as logistics, safety, workspaces that are bigger than 250 m², storage spaces, affordability, climate of trust for investments.

Links: B1, B3, B5- B7, B9-B12, B14, S3, S10, S11, N2, N9-N18, N23, T2- T10, P3, P12, P13

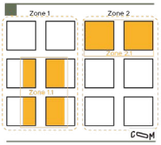
N14. Diverse tenure models



Availability to choose from a variety of land and property tenure models gives businesses with diverse financial status and needs more accessibility to proper space.

Links: B3, B5, S12, N2, N3, N13, N20, N23-N25, T3-T7, T9, T10, P3, P8, P12

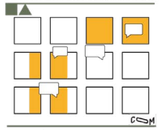
N15. Microzoning



Strategic zoning exceptions enables experimentation in mixing land uses and building types. It can also protect weaker land uses that are at risk.

Links: B1-B3, B8, B13, S10, S15, N2-N7, N14-N19, N20, N23, N25, T3-T6, T9, T10, P11

N23. Negotiated qualities and environmental criteria



Communication among stakeholders from the early stages of the process can iron out potential conflicts and unintentional consequences, especially regarding the environmental impact of manufacturing.

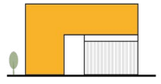
Links: B1, B3, B5-B14, S1, S10, S11, N2-N18, N20, N24 ,N25, T2-T10, P1, P5, P13

N24. Mix diverse economic activities and related services

Mixing diverse economic activities and related services nurtures various socioeconomic ecosystems and provides fertile ground for resource and knowledge synergies through cross-sectoral innovation.

Links: B1-B14, S1-S16, N1-N23, N25, N26 T1-T10, P1-P13

N25. Experimentation in mixing old and new



Enforcing experimentation in mixing existing structures with new developments in transformation areas can give interesting results in the urban fabric while hindering the displacement of the current users of space.

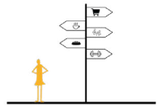
Links: B1-B3, B13, S15, S16, N1, N2-N9, N12, N15, N17, N19, N23-N26, T2, T6, P11

P7. Support small scale economic activities

Small scale economic activity is referred as 'the lubricant of the city' in Amsterdam's structural vision for 2040. This type of activity mostly benefits from being in mixed urban districts (Meyer, 2021).

Links: B3, B11-B14, S1-S16, N2, N3, N9, N10, N12-N15, N8, N23-N25, T2-T10, P9, P11-P13

P9. Provide amenities



The high influx of new residents in NDSM West calls for a plethora of amenities in proximity to their living environment.

Links: B3, B9-B12, B14, S2-S16, N12, N14, N20, N22-N25, T1, T3-T7, P10, P11

5.9 Scenario Construction

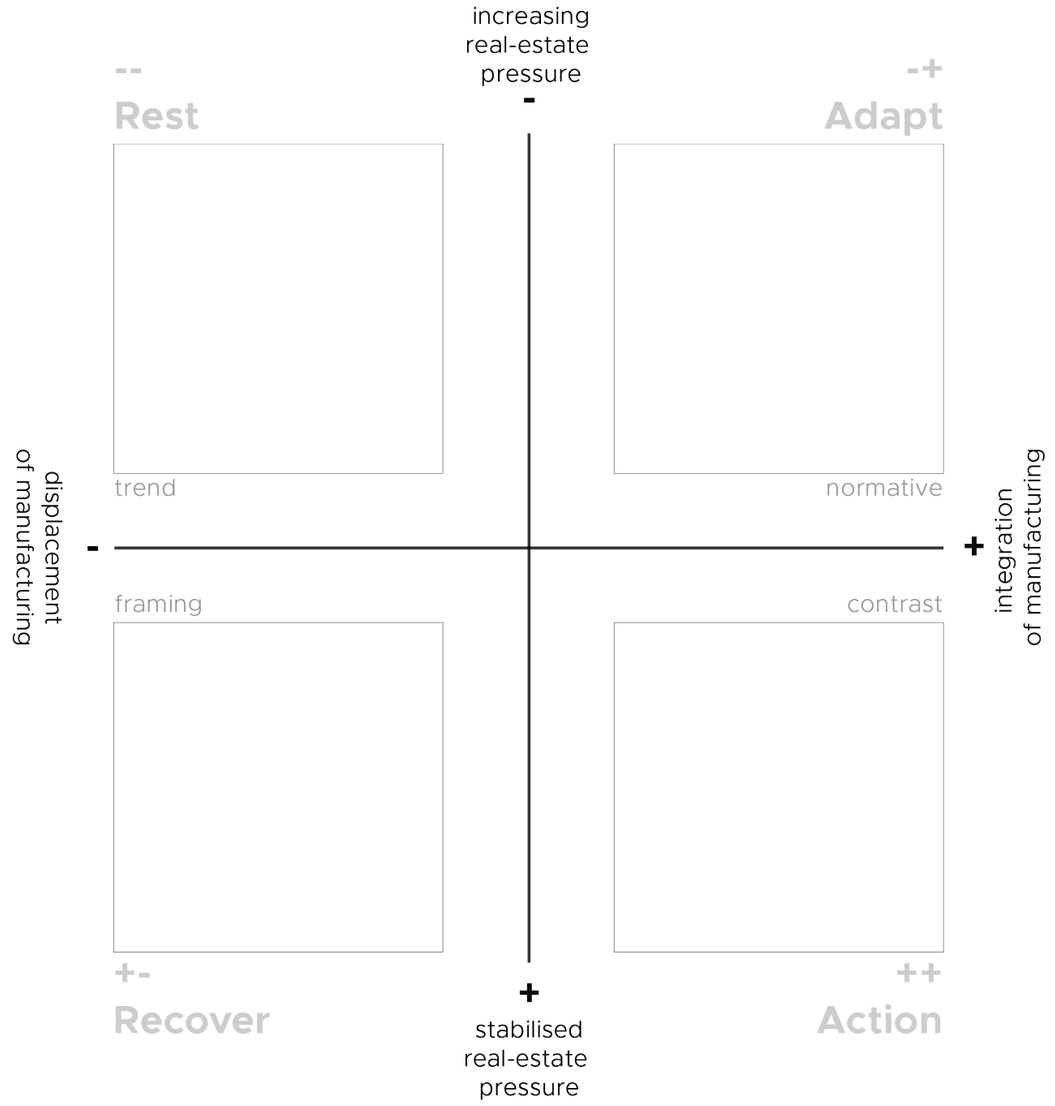
Spatial scenarios are explorative tools towards the speculation of future spatial development. They have been described as an appropriate way to communicate rather complex and slow processes, as urban development is. The level of unpredictability is shaping future societies is high though, and as such, scenario construction has been criticized for being unscientific (Salewski, 2010). Nevertheless, through constructing a series of alternative scenarios, potentialities are rendered explicit. This facilitates the discussion among the involved actors and contributes to the definition of shared goals, conflicting interests and interdependencies. Understanding the common ground contributes to reach consensus on a spatial strategy for the desirable future.

Scenario construction requires an observation of current trends in order to realize possible and probable futures and thus structure the strategies accordingly. Scenarios are integral part of the research by design. Their hypothetical state helps to identify the scale of the task, its limits and crucial points.

For this thesis, the formulation of the scenarios is based on the observed trends, the spatial analysis, the policy review, the phasing of expected developments and the stakeholders' analysis. The main observed trend in the area is the increasing real-estate pressure that leads to industrial displacement. The identification of the scenarios was based on the classification presented in the book Dutch New Worlds. Scenarios in Physical Planning and Design in the Netherlands (Salewski, 2010) and can be seen in the table. This was then informed by a scheme in the EMU Spring semester 2020 Collective studio report. Combining both, a scenario construction diagram, as seen in the opposite page, adjusted to the research scope of this graduation project is made. For the three of the scenarios described, descriptive narratives are written, and characteristics names are given accordingly. Also, a map of potential spatial impact is made. A speculative degree of influence is depicted in the map, with the darkest color referring to the highest level and the lighter color to the lower level.

type of scenario	aim(s) of scenario	premise(s) of scenario	used pathway
trend scenario	tries to determine a possible future	supposes the permanence and predomination of heavy trends	examines the future progress of these trends and their exploratory mechanisms
framing scenario	wants to delimit the space of possible futures	supposes the permanence and predomination of heavy trends	makes extreme variations of the hypotheses regarding the evolution of these trends
normative scenario	tries to produce one image of a possible and 'desirable' future; establishes a path connecting this future with the present	supposes that one can define right from the start a set of possible objectives for realisation	makes a synthesis of these objectives for realization and connects this image of the future to the present
contrast scenario	sketches a 'desirable' future at the limits of the possible	supposes that one can define right from the start a set of objectives for realisation, getting rid of objectives of reference	makes a synthesis of these objectives for realization and connects this image of the future to the present

source: Salewski (2010) Dutch New Worlds. Scenarios in Physical Planning and Design in the Netherlands



right: Scenario construction diagram (Built upon: Salewski (2010), Dutch New Worlds. Scenarios in Physical Planning and Design in the Netherlands and EMU Spring semester 2020 Collective studio report)

Trend scenario/Rest
Enough is never enough!

The area of NDSM has been attracting people from the creative industry for a long time now. However, this is currently being commercialized to maximize profit. Under the guise of densification, massive development takes place, transforming rapidly the former industrial plots. The identity of the place is thus, at stake. The needs of the current users tend to remain out of sight. The focus is almost mainly residential apartments to attract upper-class young professionals, enchanted by what is branded as the creative neighborhood of Amsterdam.

Following other examples of industrial transformation areas, the fear of gentrification is clear. If the process of densification continues in the same rhythm, the human geography will be altered dramatically. The buildings of NDSM will remain as monuments but most probably they will be lacking the vibrancy of today as the makers would have disappeared due to increased land value. The area will be a no-man's land or rather a playground for the new residents.

Normative scenario/Adapt
Self made future

The industrial past of the area gets enforced. Allying with *Made Up North*, the goal is to achieve a 'creative production district', where urban manufacturing is not leaving but is present in an innovative way. Foundational economy that support daily city activities lies central in the scenario. Circular ambitions are given space to get expressed spatially. Artists and makers are given space to stay in the area. Workshops from 250 m^2 to 1000 m^2 are high on the programmatic agenda. Community is encouraged to participate actively in the transformation process. The manufacturing industry remains and gets enhanced as a major component of economic growth for the city. Creative industry and vocational training find a place alongside with the makers. Art and culture are forming the place's identity. Affordability is a key aspect.

Gentrification is haltered since a big part of the original population remains in the area. New forms of working and living are arising, secured by the adapted policy framework. Mixed-use city blocks permit manufacturing activities not forcing to displacement thus, the embedded networks and ecosystems. The residential component icreases the profitability of the project, rendering it attractive for developers. Getting everyone on board is a crucial step towards co-creation.

Contrast Scenario/Action
Point of reference

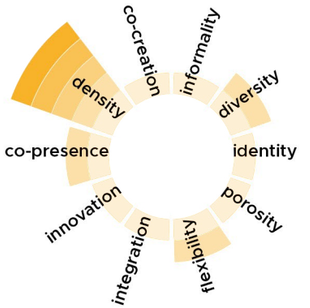
The area becomes an innovation cluster, where high-tech manufacturing and education play a crucial role. Aspects of manufacturing that relate to high-value urban activities, such as R&D, design and culture lie central in this approach (Hausleitner et al., 2021). The housing component is limited compared to previous scenarios. Thus, diverse mixing strategies are encouraged. The role of the area is expanded beyond the district's boundaries, serving metropolitan purposes. The area becomes a point of reference for further studies. A set of patterns and guidelines becomes available as well as an operationalization framework that acts as a case study.

Previous chapters have illustrated the role of NDSM area regarding the working element of the city. It is undeniable that manufacturing activities are place-dependent and relate to the qualities a place provides (Hausleitner et al., 2021). NDSM has the spatial backbone to support such an approach. For this reason and given the potential of urban manufacturing towards a liveable and resilient urban growth, the scenarios that will be elaborated further are the ones where urban manufacturing is integrated and thus, present in the urban fabric.

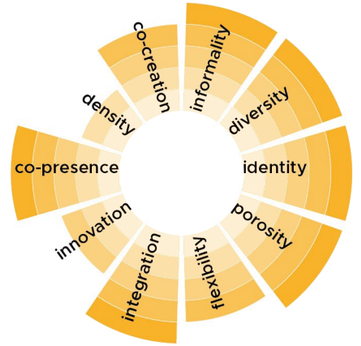
Key spatial elements to be explored are the layout of spaces, the volume and the flexibility of the structures, accessibility and logistics issues, streets and networks, environmental qualities (Hausleitner et al., 2021). Emphasis will also given on the public street and space. Co-presence is sought through a process of co-creation. Social and economic diversity are considered crucial for a mixed-use inclusive city.

After analyzing the spatial claims of the key stakeholders and the embedded communities as well as the policy state regarding the NDSM Werf area, it is decided to focus more specifically in the NDSM East area. Nevertheless, interconnections with the surrounding area and mutual levels of influence are expected as well.

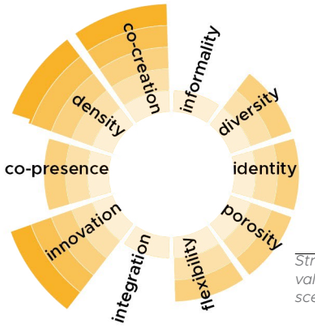
Enough is never enough



Self-made Future



Point of reference



Strength of values per scenario

6

Design Testing

6.1 Mixability

Current image

There are small-scale initiatives housed in the bigger monumental buildings of NDSM, such as the X and Y ramps. Similar conditions can be found in the NDSM Loods, where workspaces can be rented from the Foundation ‘Kinetisch Noord’ that manages the building. One of the most recent additions is the NDSM Treehouse that offers affordable studio space for budding artists. The main target group is painters, musicians, cultural entrepreneurs, writers, sculptors, visual artists, theatre performers and designers. Activities that need bigger space of heavier equipment are mostly found in the first two. Besides that, there are also several cultural foundations across the waterfront. For instance, the southernmost block houses the Foundation NDSM, the MACA (Moving Arts Center Amsterdam) and the Foundation ‘Butterfly works’, a social design studio focusing on the use of co-creation towards social change. The block lying north of the previous one houses the ‘Nieuw Dakota’ exhibition space for contemporary art and the ‘Beautiful Distress’ art organization.

Other strong attractors in the area are the horeca facilities on the waterfront, Plekk and Noorderlicht. What the two businesses have in common is their flexible layout that allows visitors to appropriate the space in informal ways, resembling an urban beach and a park respectively. Moreover, sustainability lies central in both their agendas and Noorderlicht is also active in ‘supporting many creative and cultural initiatives, ecological and circular projects as well as social and community programs’. Moreover, in the north part that borders with Klaprozenweg there is a cluster of businesses that trade building materials, flooring, wholesale glass and sun blinders. Although a few car and ship repair companies are also present in the northeast part of NDSM East, these are mostly found in the NDSM West.

Mixing possibilities

Mixed-use development hits the headlines increasingly often in recent years. Despite the term has appeared in planning literature extensively, it has not been explicitly defined. This becomes an even more complicated task given that mixing can happen at various scales; Jacobs (1961) refers to neighbourhood level, Coupland (1997) to the level of a building complex and Grant (2002) to the local scale. Except from scale, functions can also be mixed in time, with longer timeframes permitting larger mixings (Hoppenbrouwer & Louw, 2005). Rowley (1996) built a conceptual model that incorporated some key aspects, such as grain, density and permeability. The grain refers to the way different elements are mixed in space; density of intensity refers to the numbers of users and uses; permeability refers to the freedom of choice in pedestrian movement through. Hoppenbrouwer and Louw (2005) enriched the previous model. Rowleys’ model was identified as the horizontal dimension while the scholars also included other dimensions, namely shared premises, vertical and time. The division of scale was also updated.

Nevertheless, current urban development shows a different reality. The term is usually superficially used to indicate developments that mix housing with low-maintenance and highly profitable activities, such as retail or offices. When the discussion shifts to the inclusion of productive activities, the spatial requirements vary greatly. Although there have been some studies regarding urban manufacturing, the extent to which it can be combined with housing remains rather unexplored. The few realized examples come from organic development of cities, such as in the historic center of Amsterdam, where the course of time created the affordances to support such activities.

On the contrary, new developments rarely mind the hassle. As it has also been highlighted in the interviews, developers have very little experience on how to deal with such a building, both in the construction phase and in ways to make profit out of it. Usually the buildings are managed by developers whose expertise is either the housing market or other activities, such as office spaces or retail ones. Hence, a building which targets both potential residents but also businesses seems already complicated. When this seems already complicated, one can easily imagine,that including manufacturing activities is a daring experiment for most of them. The risk is indeed hard to be taken, especially when there is lack of supportive frameworks and political decisions to promote such a development.

Thus, the thesis aims to fill the knowledge gap by providing an understanding towards inclusive mixed-use development. It is clear that ‘productive activities’ is a broad term and as such, one-size-fits-all approaches are not sufficient. For this reason, a mixability analysis was done. The starting point for this was the specified environmental categories and zoning regulations, specified by law. Hence, heavy industrial activities that are totally incompatible with housing, such as chemical production, concrete factory, power plant and waste processing have been left out. For the rest, an extensive profile was built based on nuisance levels, spatial requirements and potential added value.

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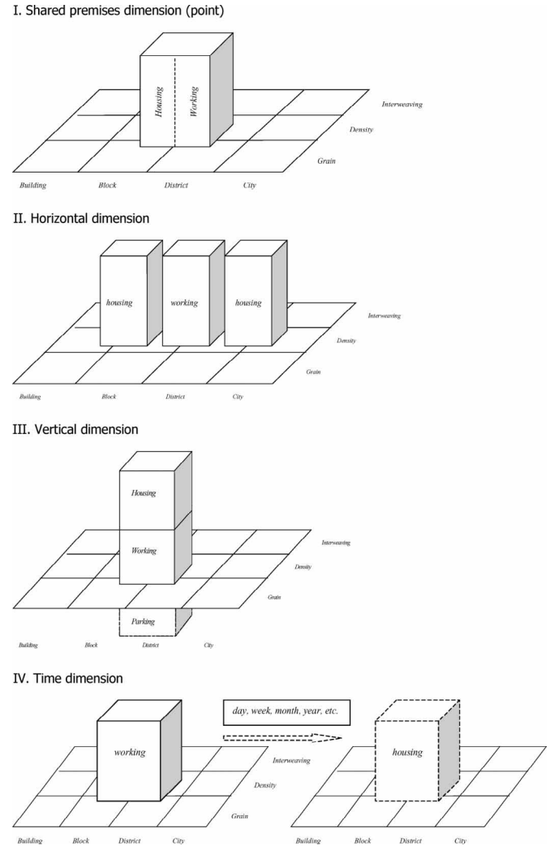


Four dimensions of mixed use (Source: Hoppenbrouwer, E., & Louw, E., 2005)

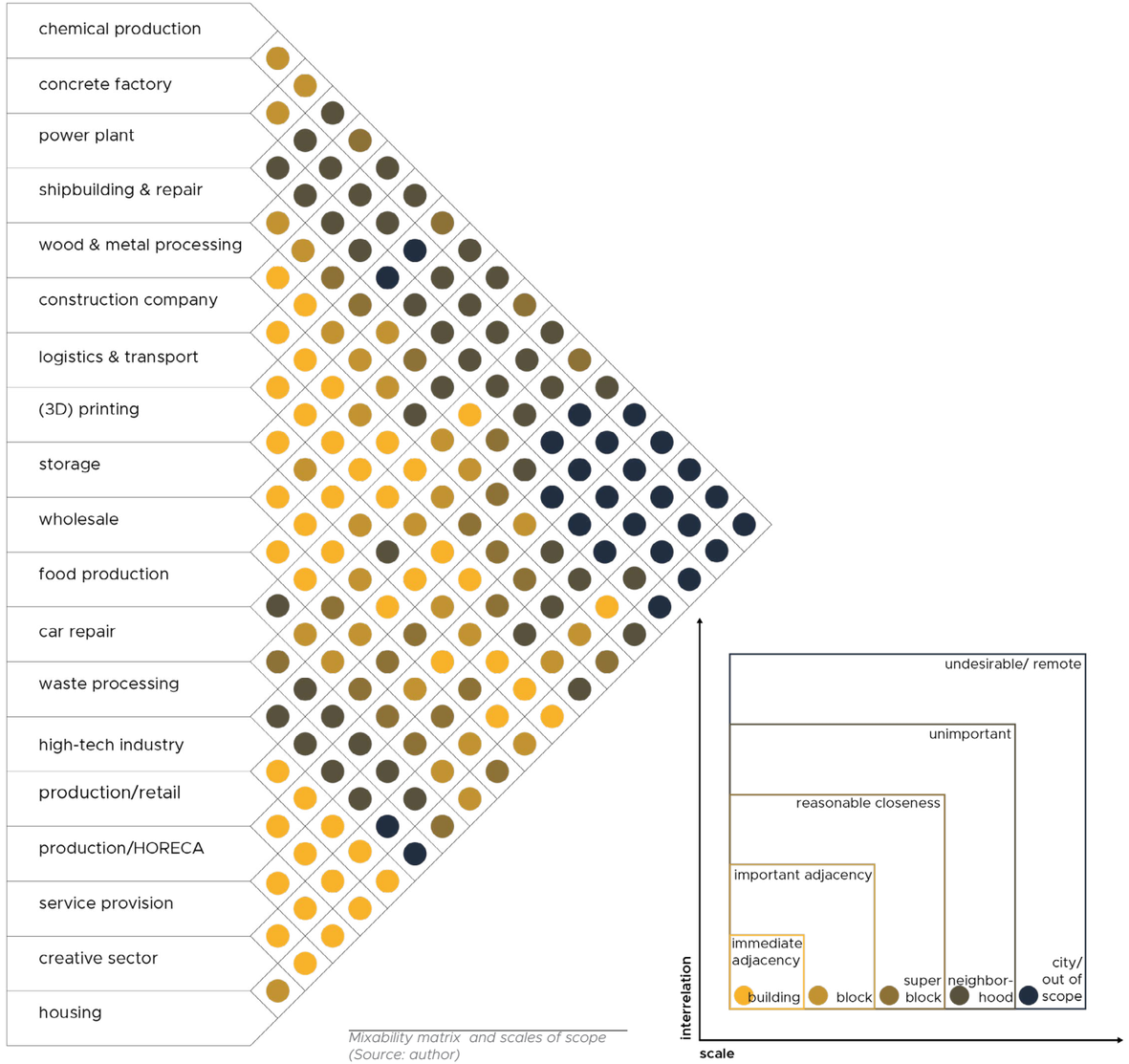
The following analysis was based on the report *Werken aan een Nieuw Amsterdam* published by ORAM in 2019. Nevertheless, a few other categories were added to fit better the scope of this thesis. These can be seen with a different color in the table of the next page.

Regarding the nuisance, the aspects that were examined had to so with sound, odor, light, soil, water, overall safety and need for logistics. The last often entails heavy and frequent use of trucks and is generally regarded as a burden in mixing with housing. As far as it concerns the spatial conditions, a plethora of aspects were examined. These included categories such as footprint, need of outdoor space for storage, need of buffer zone to mitigate nuisances and preferred means of accessibility among others. It also explored the possibility of stackability, the need for visibility and the potential benefit from shared facilities among others. These defined the mixability scale in which successful synergies may arise. The last component of the table explored the potential added value that a successful mixing could bring forward. These have to do with the availability of jobs, the provision of services and their relevant scale, the possibility of an educational character and their contribution to resiliency in terms of material loops.

It was also decided to include hybrid functions that either have production as a component or provide facilities that are under-represented in new developments. The goal of the table is to shed light on the mixing possibilities and the effective synergies that could arise.

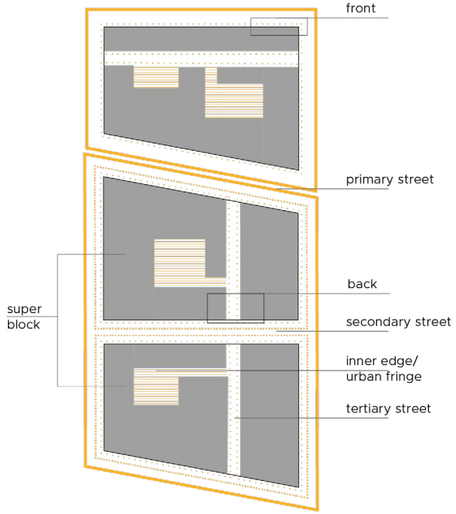
Mixability analysis (Adapted from ORAM (2019), Werken aan een Nieuw Amsterdam)

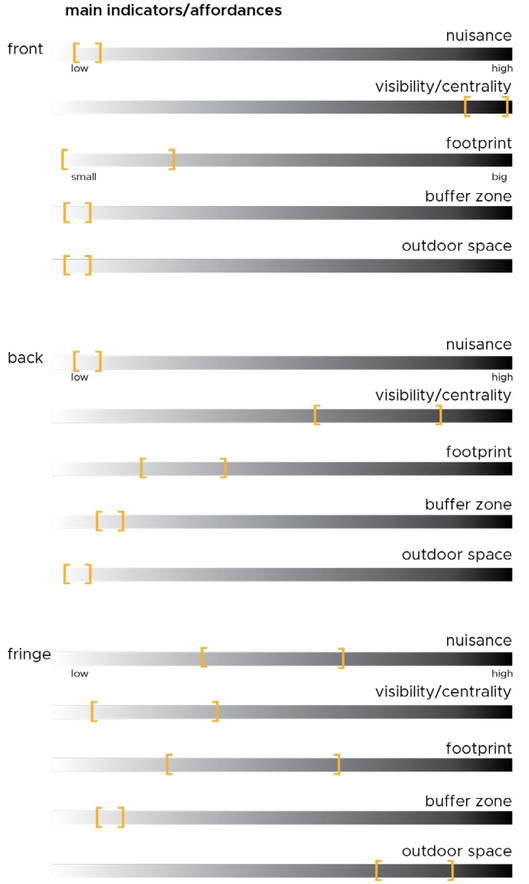
PRODUCTIVE COMPANIES	NUISANCE							SPATIAL CONDITIONS									POTENTIAL ADDED VALUE			
aspects / sectors	sound	odor	light	logistics	safety	soil	water	accessibility	location	footprint	buffer zone	stackable	visibility	outdoor space	shared facilities	mixability scale	jobs	services	education	loops/ resilience
shipbuilding & repair	+++	++	+++	+++	++	++	++	water	port	M/L	+++	X	X	+++	+++	neighb.	+	region	++	++
wood & metal processing	+++	+++	++	+++	++	+	+	highway, water	fringe	L	+++	X	+	+++	+++	super block	++	region, city	++	+++
construction company	++	+	++	+++	+	+	+	highway	fringe	M	++	X	++	+++	++	super block	++	region, city	+++	+++
logistics & transport	++	++	++	+++	+++	+++	+++	highway, road, water	fringe	L	++	✓	+	++	++	super block	+++	region, city, neighb.	+	++
(3D) printing	+	+	+	++	+	+	++	public transport, highway, road	front	S/M	+	X	+	+	+++	building	++	region, city, neighb.	+++	++
storage	+	+	+	++	+	+	+	highway, water	out of city, fringe	S/M/L	+	✓	+	++	+	block	+	region, city, neighb.	+	+
wholesale	+	+	+	+++	+	+	+	highway, road	back, fringe	L	+	✓	+	+++	++	block	+++	region city	+	++
food production	+	++	+	+++	+	+	+	highway	front, fringe	S/M	++	✓	+	+	+	super block	++	region, city, neighb.	++	++
car repair	++	++	+	++	++	++	++	public transport, highway, road	back	S	+	X	+	+++	++	block	+	city, neighb.	+	+
high-tech industry	+	+	+	+	++	+	+	public transport, road	front, fringe	S/M	+	✓	+	+	+++	building	+++	region, city	+++	+++
production/shop (ex. bike repair, shoemaker, tailor, key cutter, jewelry)	++	+	+	+	+	+	+	roadway, public transport	front	S	+	X	+++	++	+	block	+++	region	+	++
production/HORECA (ex. repair cafe, brewery, pastry shop, bakery, urban farming restaurant)	++	++	+	+	+	+	+	roadway, public transport	front	S/M	+	X	+++	+++	+	neighb.	++	city	+	+
services sector (ex. hairdresser, dry cleaner, beauty salon, fitness studio, nutritionist, physiotherapist)	+	+	+	+	+	+	+	public transport	front, back	S/M	+	✓	++	+	+	neighb.	+	region	+	+++
creative industry (ex. creative agency, media company, graphic designer, film distribution, advertising)	+	+	+	+	+	+	+	public transport	front, back	M/L	+	✓	+	+	+++	neighb.	+	region	++	++
creative initiatives (ex. fashion design, crafts, musicians, performance, installations)	++	+	+	++	+	+	+	public transport	back, fringe	S/M	+	✓	+	++	+++	super block	++	region, city	++	+++



Mixability matrix and scales of scope (Source: author)

The findings of the mixability analysis are useful in outlining the diverse profiles of productive and other companies. By specifying the main families of indicators, a first sketch of how these could hypothetically develop in the urban fabric was explored. The matrix on the left explores potential combinations of productive and other activities as well as, their scale of scope.





Exploration of family indicators and affordances (Source: author)

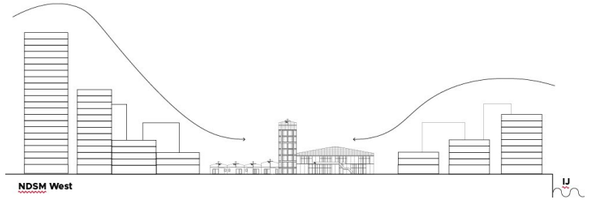
6.2 Spatial Configurations

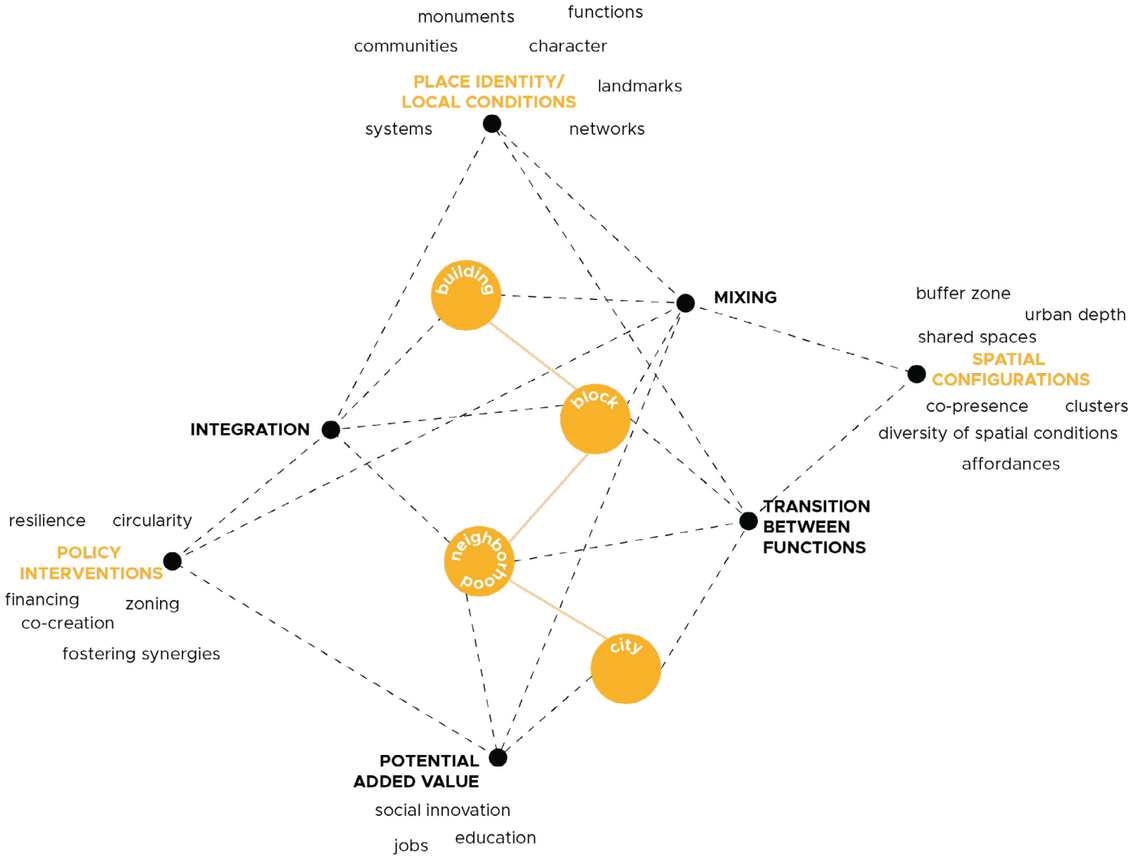
Based on previous findings, a list of spatial configurations patterns is made. The aim is to achieve a mixed-use development, through successful integration of existing working communities and transition between diverse functions. The patterns emphasize mainly in the work component as the housing is considered given. As for the development of the policy intervention patterns, the book *Foundries of the future* (Hill, 2000) was extensively consulted. The focus in this is the integration of urban manufacturing. However, this thesis extends the scope to include also other activities that are relevant in a dense urban environment, such as NDSM. This includes activities in the creative sector, provision of services and other retail functions.

Nevertheless, the integration of urban manufacturing is one of the main challenges in the effort to respect the identity of the area and its working communities, as this has been described in the previous chapters. As the diagram on the next page illustrates, the critical points towards a successful live-work environment in NDSM have to do with the mixing of activities, the integration of existing ecosystems of work, the transition between compatible and incompatible functions and the nurture of potential synergies that add value.

Neighboring with the high-density urban environment of NDSM West while respecting the scale of the monuments in NDSM east also calls for adjustments in terms of the densities used.

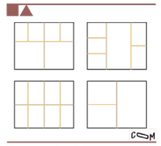
Density diagram





Pattern development diagram, based on (Hausleitner et al., 2021)

B3. Varying unit sizes



Variation of unit sizes serves better a variety of businesses types. It also enables them to face alterations in their sizes (growing or shrinking) without having to leave an established neighborhood.

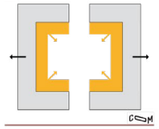
Links: B1, B5, B6, S1-S15, N5, N7, N14, N15, N23-N25, T3-T7, T10, P3, P7-P12

B4. Enclosed elevated collective space

Enclosed elevated collective space inside new urban blocks strengthens the community bonding between residents while providing outdoor space in close proximity with housing. It shapes a semi-public area.

Links: B10, B13, B14, S16, N12, N16, N17, N21, N22, T1, P11, P12

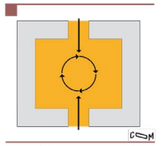
B5. Making around courtyards



Manufacturing around courtyards scores better in logistics, transport and safety. Businesses can make noise, dust, take advantage of the outdoor space inside the block. They can also be combined with some forms of mixed use.

Links: B3, B4, B6-B14, S1, S3, S11, N2, N9-N17, N23, N24, T3-T8, T10, P3, P4, P12, P13

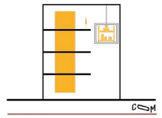
B6. Yard for logistics



Yards with sufficient space for turning and parking can facilitate safe loading and unloading, without disruption, in high density areas.

Links: B3, B5, B7-B12, B14, S1, S3, S11, S15, N2, N9-N17, N23-N25, T3-T7, T10, P3, P4, P12, P13

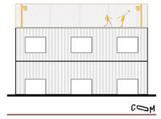
B7. Enable vertical making



Vertical making in multi-storey buildings allows intensification of industrial space and deals with scarcity of available space.

Links: B1, B3-B14, S1, S3, S10, S11, S15, N2, N9-N17, N23-N25, T3-T7, T10, P3, P4, P13

B8. Use the rooftop



Roofs complement the performance of a building or intensifying land use, allowing for climate adaptation, food and energy production.

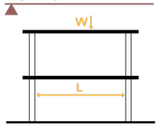
Links: B3, B4, B10, B13, S16, N9, N13, N15, N16, N19, N22, N25, P10, P11

B9. Large openings

Large openings, entrances and lifts enable vertical and horizontal movement and transportation of goods, materials and large equipment.

Links: B5-B7, B10, B12, B14, S10, S11, N15, N16, N23, T10, P3-P5, P13

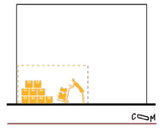
B10. Structure capacity



Increasing load bearing capacity and column span is of paramount importance to manufacturing who benefit from vertical making and open plan.

Links: B3, B7, B8, B11, B12, B14, T4, T10, P3

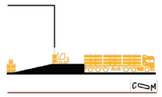
B11. Space for storage



Manufacturing has high needs in storage facilities for stock of raw materials etc. Smart storage solutions contribute to efficient use of space and production processes.

Links: B1, B3, B5-B7, B9, B10, B12, B14, S1, S3, S11, T7, T10, P4, P13

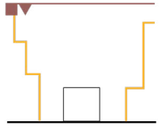
B12. Easy loading and unloading



Loading docks and ramps are essential when heavy goods are integral part of the business.

Links: B1, B5-B7, B9-B11, S1, S3, S10, S11, N2, N10-N13, N16, N23, T10, P1, P3, P4, P13

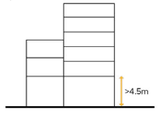
B13. Density transition



A gradual transition in volumes contributes in a cohesive integration of lower density existing urban blocks. Also, setbacks of building volumes above the plinth restore the human scale on the street level.

Links: B3, B4, B14, B8, S12-S15, N1, N17, N25, P11

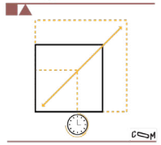
B14. High ground floor



Higher plinth height in new buildings allows multiple adaptations of space thus, rendering it appropriate for a plethora of businesses.

Links: B3, B9, B10, B13, S5-S14, N9, N14-N16, N23, T4, T9, T10, P9, P12

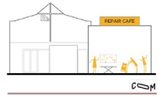
P3. Flexible spaces for making



Multi-functional spaces accommodate different user needs over time, allowing thus, for better adaptations in the course of time.

Links: B3, B5-B7, B9-B14, S1-S8, S10, S11, N2, N9-N18, N23, N24, T2-T10, P5, P13

P4. Re-use and repair centres



Promoting re-use and repair helps reducing materials, energy use and waste while also, providing job opportunities. Moreover, people benefit from knowledge exchange and community building.

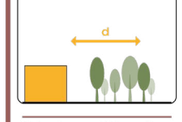
Links: B5, B9, B11, B14, N2, N3, N9, N16, N23, T1, T5-T10, P5, P6, P13

P5. Community hub in making locations

A hub strengthens the community bonding, fosters collaboration, encourages knowledge exchange and nurtures a context-specific network of makers with a space to discuss common concerns.

Links: S10, N2, N3, N16, N24, T2, T5-T10, P4, P5, P13

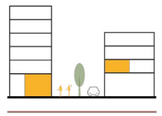
S1. High nuisance needs buffer zone



High-nuisance activities, as the ones that involve the use of heavy machinery or frequent opening of metallic doors, are often a cause of complaint. Thus, a buffer zone between them and housing is necessary.

Links: B1, B3, B5-B14, S3, S16, N2, N8-N17, N23, T5-T8, P10

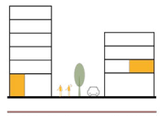
S2. Functions with most capital on high street



Mixed-use activities along high streets benefit from the best regional accessibility, the highest amounts of pedestrian flows and thus, visibility. Cost of space though is increased.

Links: B3, B11, B12, B14, S2, S5, S6, S8 S10, S12, N4, N9, N12, N18, N22, N24, T6, P9, P11

S3. Functions with less capital behind/away



Activities that cannot afford their presence along the high street should be given the possibility to allocate in the back of it. The degree of proximity to high street can vary.

Links: B3, B14, S1, S3, S7, S11-S14, N2, N13, N14, N18, T3, T4, T6, T10, P7, P9, P11

S4. Corner premises for higher capital

A corner location benefits from even more increased flows. At the same time, it serves as a reference point. Corners should not be blind but instead, their potential should be maximized.

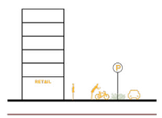
Links: B3, B9, B11, B12, B14, S2, S5, S6, S8 S10, S12, N4, N9, N12, N18, N22, N24, T6, P11

S5. Retail benefits from centrality

Activities that include retail, such as a hybrid company that produces and sells at the same time, benefit from centrality as they depend on increased flows for their survival.

Links: B3, B9-B12, B14, S2, S4, S6, S8, S10, S12, S16, N9, N12, N18, N22, N24, T6, T9, P11

S6. High frequency, short stay benefit from parking



Activities that are characterized by a 'stop, shop and go' way of functioning benefit from parking facilities nearby that enables their customers to visit easily.

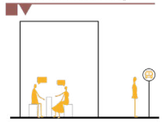
Links: B3, B9, B11, B12, B14, S2- S14, S16, N4, N9, N12, N18, N22, N24, T6, T9, P9, P11

S7. Services with appointment, less central

Activities of the service sector that work on an appointment basis have less need for visibility and centrality as they form already a destination for their clients. They can also be easily located in upper floors.

Links: B3, B5, B14, S1-S14, N9, N24, N25, T3, T4, T61, P7, P9, P11

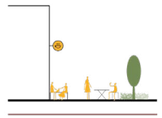
S8. Customer contact needs accessibility



Functions that depend on customer contact benefit from good accessibility.

Links: B3, B14, S2-S7, S10-S14, N9, N12-N18, N22-N25, T3, T4, T6, T9, P7, P9, P11

S9. HORECA benefits from outdoor space



HORECA establishments that have the possibility to serve their customers in outdoor space have a comparative advantage. This is even stronger when they can take advantage of the sun.

Links: B3, B14, S1-S6, S10, S12, S16, N4, N5, N9, N12, N15, N18, N19-N26, T3, T6, P2, P4, P11

S10. Public face

Activities that have a public face have better chances of being accepted and embraced by the neighborhood. They also benefit from higher exposure to clients. As such, conflicts are less likely to arise.

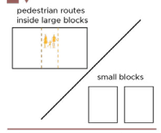
Links: B3, B14, S2-S9, S10, S12-S16, N4, N5, N9, N12, N16, N20-N26, T1-T6, T9, P5, P9, P11

S11. Back of the high street

Locating productive activities behind high streets facilitates transportation and storage of goods and provides flexibility to makers. At the same time, proximity to related services and networks remains feasible.

Links: B3, B5-B7, B11, B12, B14, S1, S3, N2, N5, N9, N10, N12, N13, N16, N18, N23-N25, T3, T4

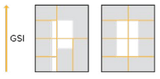
S12. Fine-meshed pattern of streets



A fine-meshed pattern of streets contributes to the liveability of the plinth, while it also adds diversity on the street level.

Links: B3., B4, B8, S2-S11., S13, S15, S16, N7, N12, N15, N18, N22-N26, T1, T9, P11

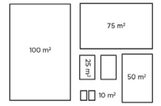
S13. Higher granularity and GSI



High granularity of ownership and higher GSI have proven to benefit small-scale businesses (Hausleitner, 2019).

Links: B3, S2-S12, S14, N9, N12, N14, M15, N18, N22-N25, T3, T4, T6, T9, P7, P9, P11

S14. Face shortage of small-scale premises



Small-scale premises are rarely found in new urban development projects. Enabling such businesses to operate though, gives vitality on the block and street level.

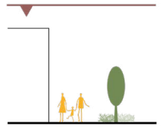
Links: B3, B13, S1-S13, S15, T2-T10, P3-P13

S15. Refine the edge

Strategic interventions in the edges of existing urban blocks can fill in incomplete parts of them while restoring continuity in the urban fabric and giving a new face on the street.

Links: B13, S4, S10, S13, N15, N24, N25, P7, P9

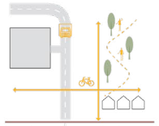
S16. Soft edges



As a former industrial site, greenery is limited in NDSM. Introducing soft edges along streets can mitigate the negative effect while adding environmental quality. It brings back the human scale and is pedestrian friendly.

Links: B2, B4, B10, B13, B15, S1, S9, S10, N12, N16, N19, N21, N22

N12. Design flows and routes



In a mixed-use area, simultaneous logistics flows and daily commuting can cause a lot of friction. Trucks and presence of children illustrate the two extremes. This needs to be carefully elaborated.

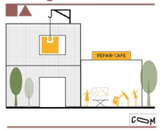
Links: B2, B4, B8, S1-S16, N1-N11, N13, N16-N18, N20, N23-N26, T1, T5, T7, T9, P9-P11

N13. Clustering of high nuisance activities

High nuisance activities are difficult to be integrated in proximity with other functions, especially housing. Thus, a clustering can help to mitigate the negative effects.

Links: B1, B3, B5-B7, B9-B12, S1, S3, S11, N2, N9-N12, N16-N18, N23-N25, T2, T3, T7, T10, P1

N16. Quality urban environment in making areas



A high quality public realm is beneficial for everyone; employees, clients and potential visitors. It increases the feeling of safety and provides fertile ground for mixed use environments.

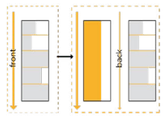
Links: B1, B13, B15, S10, S12, S16, N12, N15, N23, N25, T1, T5, T10, P5, P11-P13

N17. Transition zones

Transition spaces are necessary to ensure a smooth transition between unconventional land uses, such as manufacturing locations and residential complexes.

Links: B2, B12, B13, S1-S16, N2, N3, N10-N16, N21, N26, T10, P1, P2, P9-P12

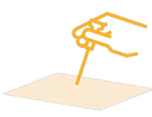
N18. Street hierarchy



The arrangement of a new block in front of an existing one can alter the hierarchy of the street network thus, creating different urban fronts and backs.

Links: B5, B6, B12, S1-S16, N2, N3, N9, N10, N12, N15, N22, T1, P3-P7, P9, P11

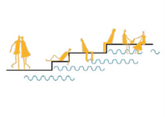
N19. Urban acupuncture



Using strategic small scale interventions to transform the larger urban context, such as bottom-up initiatives that harness community skills and ideas in effective ways.

Links: B1, B2, B4, B8, S15, S16, N12, N14, N15-N20, N22, N25, T2, P2, P11

N20. Activate the waterfront



The long waterfront should be designed in a way that renders it accessible, inclusive and lively. Routes designated for strolling, areas for relaxation and points that serve businesses need to be mixed in creative ways.

Links: B1-B2, S1, S10-S13, S16, N5, N8, N12, N15-N19, N21, T1, P2, P9, P11

N21. Park in proximity

Easy accessibility to greenery increases the liveability of the area and adds environmental quality. A park can also function as a transition zone between conflicting functions.

Links: B4, B13, S1, S16, N9, N12, N13, N16, N17, N20, N22, N26, T1, P11

N22. Public space network

Create a network of interconnected public spaces, such as parks, squares and public areas of buildings. Design pedestrian friendly routes and provide attractive destinations along routes.

Links: B2, B4, B8, S9, S12, S16, N9, N12, N16, N26, T1, P2, P8-P11

P6. Space for development and education

Providing educational space is necessary to improve the capacity, efficiency and quality of production. A range of such spaces, from colleges to simple community spaces, contributes to developing relevant skills.

Links: S10, N2, N3, N16, N24, T2, T5-T10, P4, P5, P13

P8. Temporary workspaces

Flexible office spaces are a good alternative for freelancers that cannot afford a permanent option. Such solutions can be found in semi-public locations, like community hubs and multi occupancy buildings (Meyer, 2021).

Links: B3, B5, B11, B13-B16, S2-S8, N9, N14, N23-N25, T2-T6, T10, P3, P7, P12, P13

P10. Sports facilities

Provision of indoor and outdoor sports facilities is beneficial for residents and adds to a diverse mixed use environment.

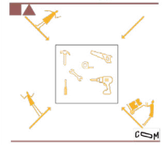
Links: B3, B4, B8, S1, S3, S11, N9, N12, N14-N17, N21-N25, T6, P11, P13

P12. The work home

A diversified housing stock that takes into account diverse live-work concepts can be beneficial for diverse businesses, micro-manufacturing and freelancers.

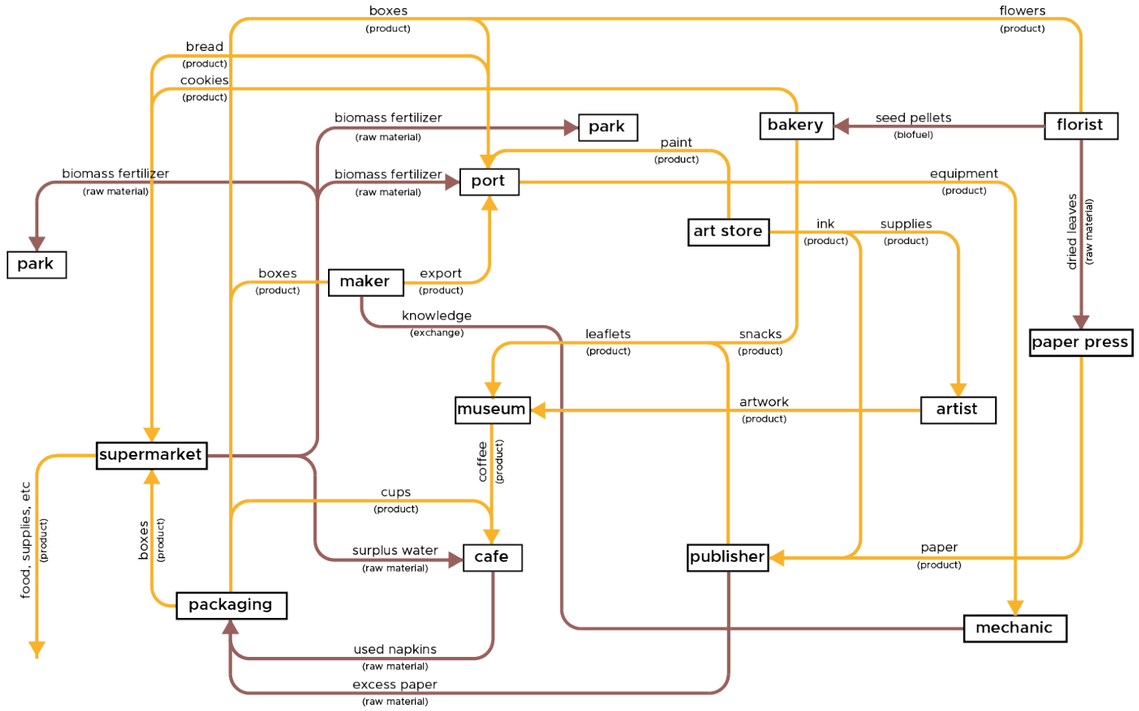
Links: B3-B5, B13, B14, S10-S14, T2, T4, T6, T10, P3, P7, P9, P11

P13. Shared facilities and technology



Shared facilities can increase accessibility to expensive equipment and contribute to more effective use of technology. Social interaction also encourages the transferability of knowledge among makers.

Links: B3, B5-B12, S10, N2, N3, N9-N17, N23, N24, T2-T10, P3-P8



Potential systems of exchange int the productive landscape of NDSM (Based on: The vertical urban factory, Rappaport, 2019)

6.3 Scenario Development

As it has been stated before, the scenario construction led to the formulation of three distinct scenarios. However, for the scope of this thesis, only the two of them, that have the intention of integrating manufacturing and other productive activities, are elaborated further. Hence, below follows a description of the normative and contrast scenario. These will be referred from onwards as 'Self-made Future' and 'Point of Reference' respectively.

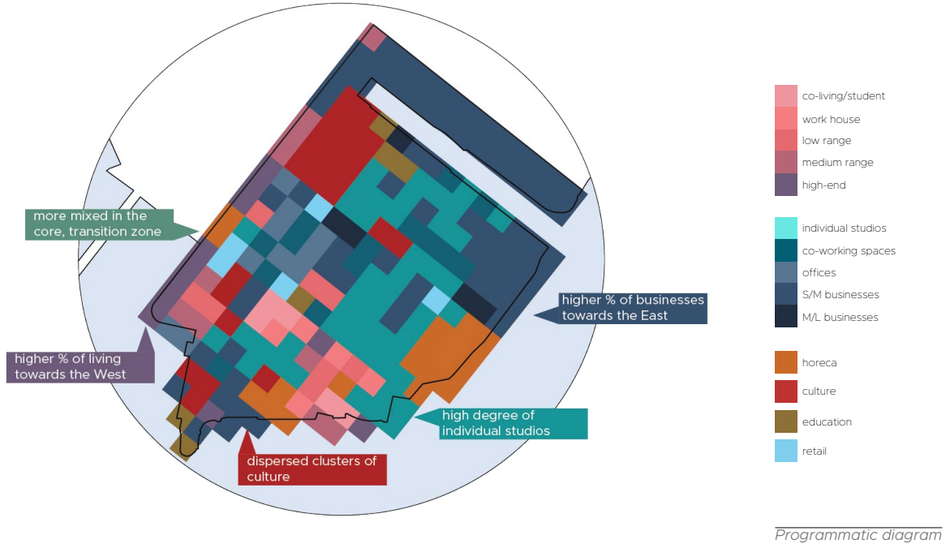
Self-made Future (SMF)

The place-making strategy of the redevelopment is based on the current image of the area and the strong pluralism arising from the different communities and various businesses operating within.

It is clear that the people, communities and businesses operating in NDSM vary vastly. Nevertheless though, this is the reason that NDSM is already a destination on the map. The strong contrast compared to 'typical' Amsterdam becomes the spark of redevelopment. Diversity adds value to the society and thus, safeguarding and maintaining the existing modus operandi of people and businesses becomes a crucial priority. Hence, this scenario strives for an inclusive approach, where focus is given on the integration of existing communities and of their ecosystems. More specifically, artists and makers are given space to stay in the area. Assured security of space and affordability are key aspects. Workshops from 250 m^2 to 1000 m^2 are high on the programmatic agenda as well as, smaller premises. The creative and making industry remains and gets enhanced as a major component of economic growth for the city. Gentrification is haltered since a big part of the original population remains in the area. Art and culture are forming the place's identity. Mixed-use city blocks permit manufacturing activities not forcing to displacement thus, the embedded networks and ecosystems. New forms of working and living are arising, secured by the adapted policy framework. The residential component increases the profitability of the project, rendering it attractive for developers. Investors can make profit out of housing but they have to provide different housing possibilities and to give something back to the public; financing parks or collective spaces, or providing workspaces in the plinth.

Emphasis is also given on the social co-presence of this diverse demographic composition. Hence, collective and public spaces are designed in ways that facilitate spontaneous interactions that cause barriers to break down and new relations to arise. It becomes clear, that urban acupuncture and the realization of strategic interventions is highly prioritized. Experimentation in mixing old and new structures is strongly encouraged.

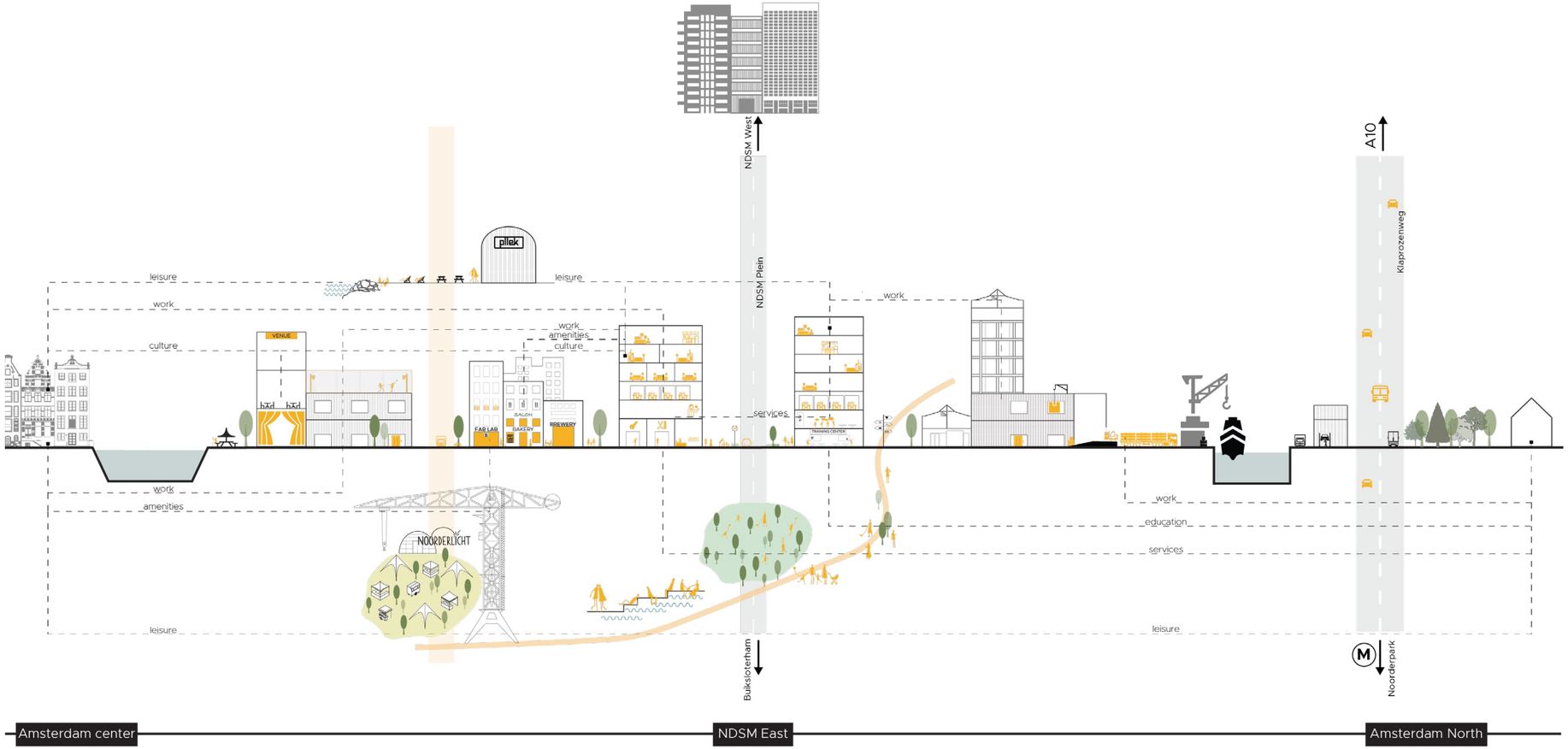
Getting everyone on board is a crucial step towards co-creation. Community is encouraged to participate actively in the transformation process. Regarding the redevelopment process, the public and collective spaces form the foundation for further work. Established those before the arrival of buildings secures the identity and the public realm.



Programmatic diagram

Mass study

SMF Systemic Section

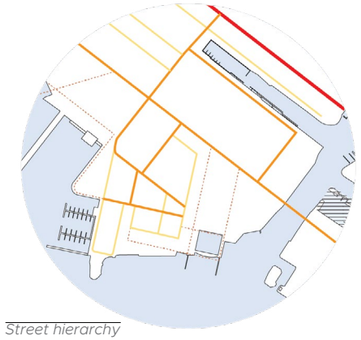


SMF Masterplan

The list provides a small overview of some patterns used while developing the masterplan. A more complete overview can be found in the next chapter.

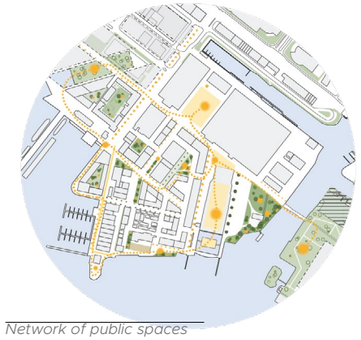
Pattern used in the masterplan:

B1. Adaptive re-use
B5. Making around courtyards
B6. Yard for logistics
B12. Easy loading and unloading
S1. High-nuisance needs buffer zone
S2. Functions with most capital on high street
S3. Functions with less capital behind/away
S9. Horeca benefits from outdoor space
S15. Refine the edge
N1. Morphological entity
N2. Cluster of making and manufacturing
N3. Cluster of culture and creativity
N10. Proximity to transport infrastructure
N11. Benefit from port infrastructure
N13. Clustering of high-nuisance activities
N15. Microzoning
N18. Street hierarchy
N26. Cultural nodes as public spaces
T1. Cultural route
T2. Strong community presence
P1. Restore original function
P2. Embrace the informal character
P4. Re-use and repair centers
P5. Community hub in making locations
P6. Space for development and education
P7. Support small scale economic activities

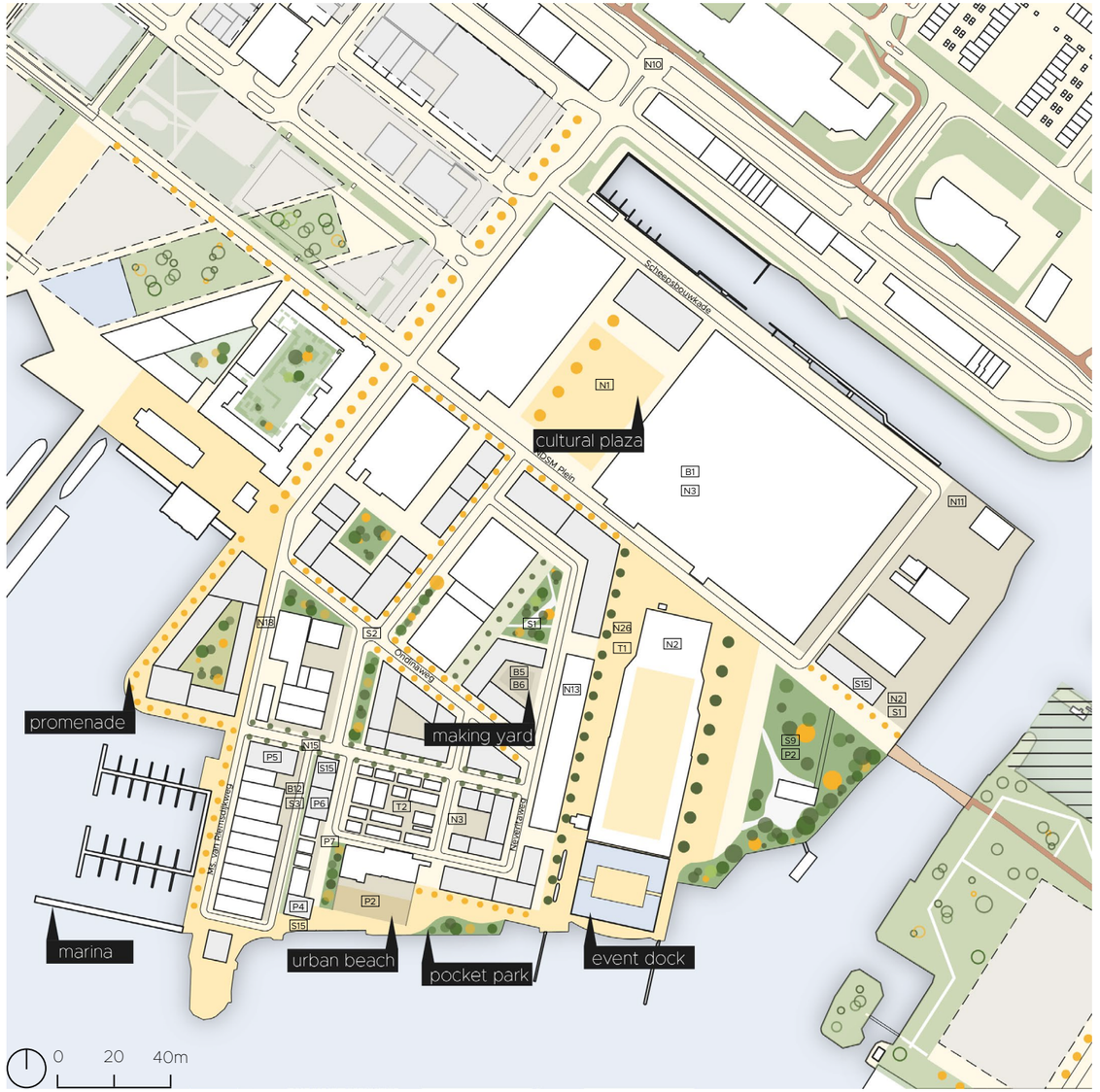


Street hierarchy

Green network



Network of public spaces



Point of reference (POR)

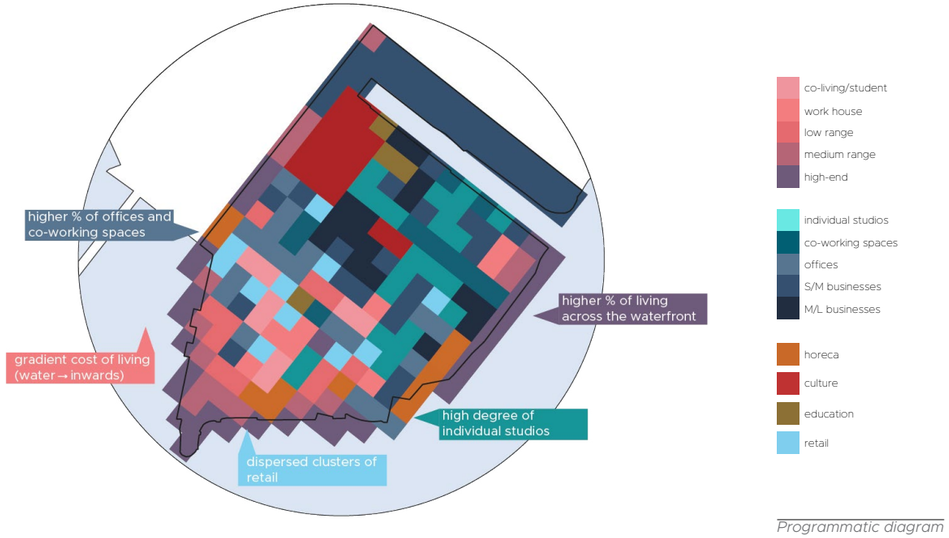
The place-making strategy in this case centers upon the innovation tradition of the area. The technological innovations that led the former shipyard becoming worldwide famous returns in a refined version, adjusted to today's demands. The area becomes an innovation cluster, where urban manufacturing is not leaving but is present in an innovative way in which high-tech manufacturing and education play a crucial role. Aspects of manufacturing that relate to high-value urban activities, such as R&D, design and culture lie central in this approach. The role of the area can be expanded beyond the district's boundaries, even serving metropolitan purposes.

Given that the real estate pressure remains unceasing though, the competition for land grows stronger. The only existing activities that are kept are the ones that have the potential to bring added value to the area either through their upscaling or through prospective synergies and interactions. This potential added value could be interpreted in many different ways, such as availability of jobs, education and services. Another added value lies in terms of resiliency and material loops. It is important that circular ambitions are given space to get expressed spatially, aligning with Amsterdam's sustainability goals.

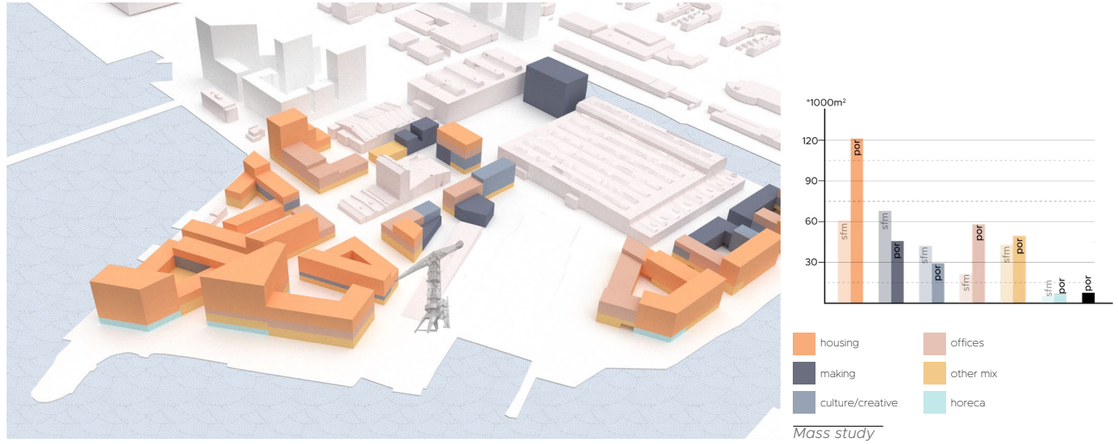
As implied before, the focus is on activities with higher capital and making of high-value products. Hybrid making and companies that benefit from shared facilities and technology are the main target group. Digitalization, robotization and automation has altered the spatial requirements of businesses, rendering them more nuisance-free. As a result, this makes them easily compatible with housing, allowing diverse mixing strategies. Office-type environments are also easily stackable opening up possibilities for vertical making. In this context, startup companies and incubators are given fertile ground to grow. Incentives are given to attract them to the area. A dense mixed use environment is sought.

Many parts that currently house temporary structures are the first to be redeveloped. On the contrary, the listed monuments are protected and kept. However the activities inside are open to change. In order to mitigate the negative effect of displacement, current activities can be housed in the new blocks based on their mixability status and spatial requirements. The programming of the new blocks ensures that many of the current users are given the option and are incentivized to return in the area. Security of space and affordability is controlled through policy. In this way, the knowledge, skill sets and networks already established in the area stand higher chances to be embedded in the redevelopment.

The industrial heritage helps promoting the branding of the area and investments in this are expected to yield strong returns. The waterfront gets activated to increase flows.

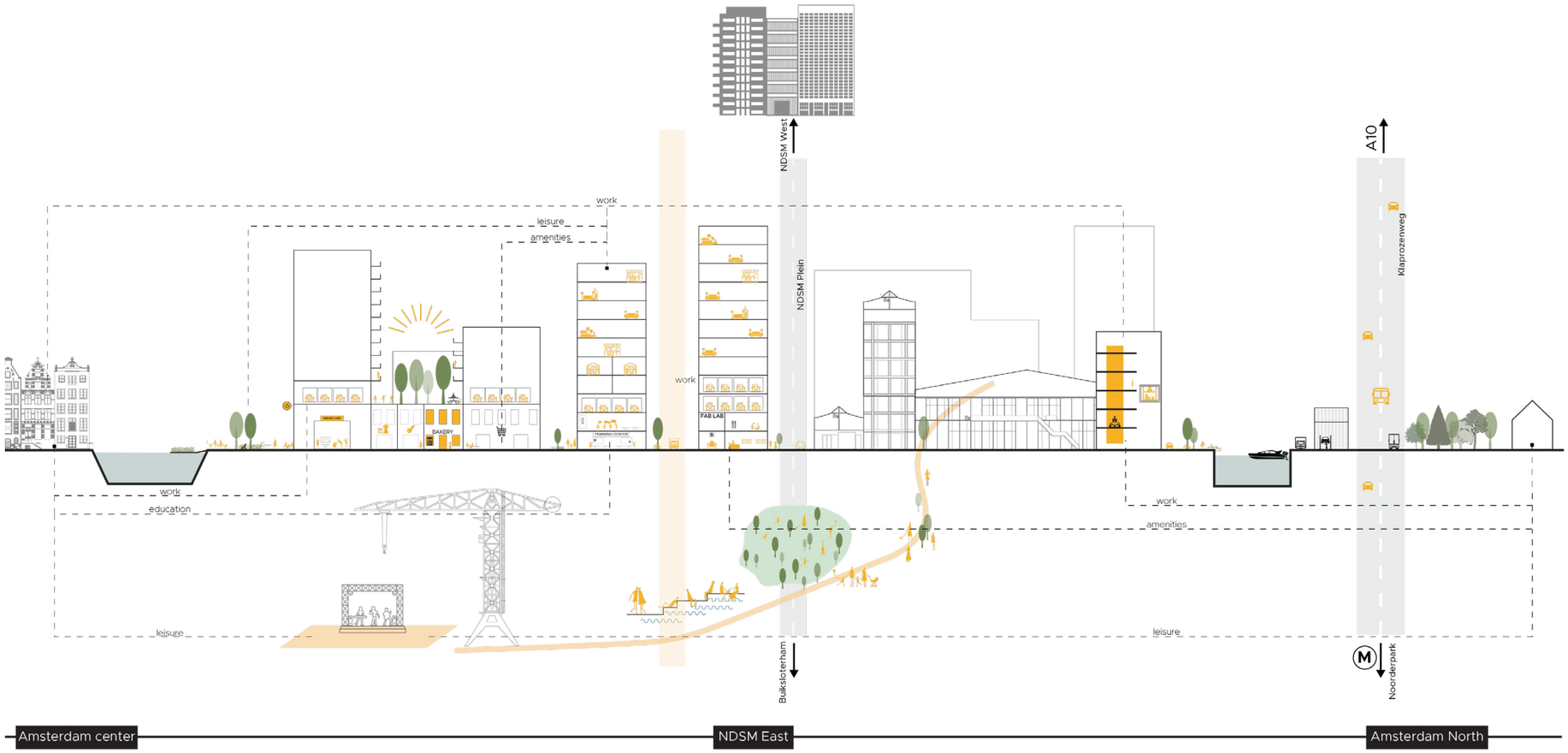


Programmatic diagram



Mass study

POR Systemic Section

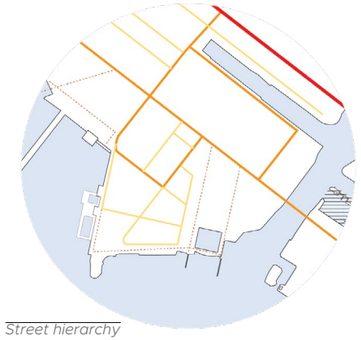


POR Masterplan

The list provides a small overview of some patterns used while developing the masterplan. A more complete overview can be found in the next chapter.

Pattern used in the masterplan:

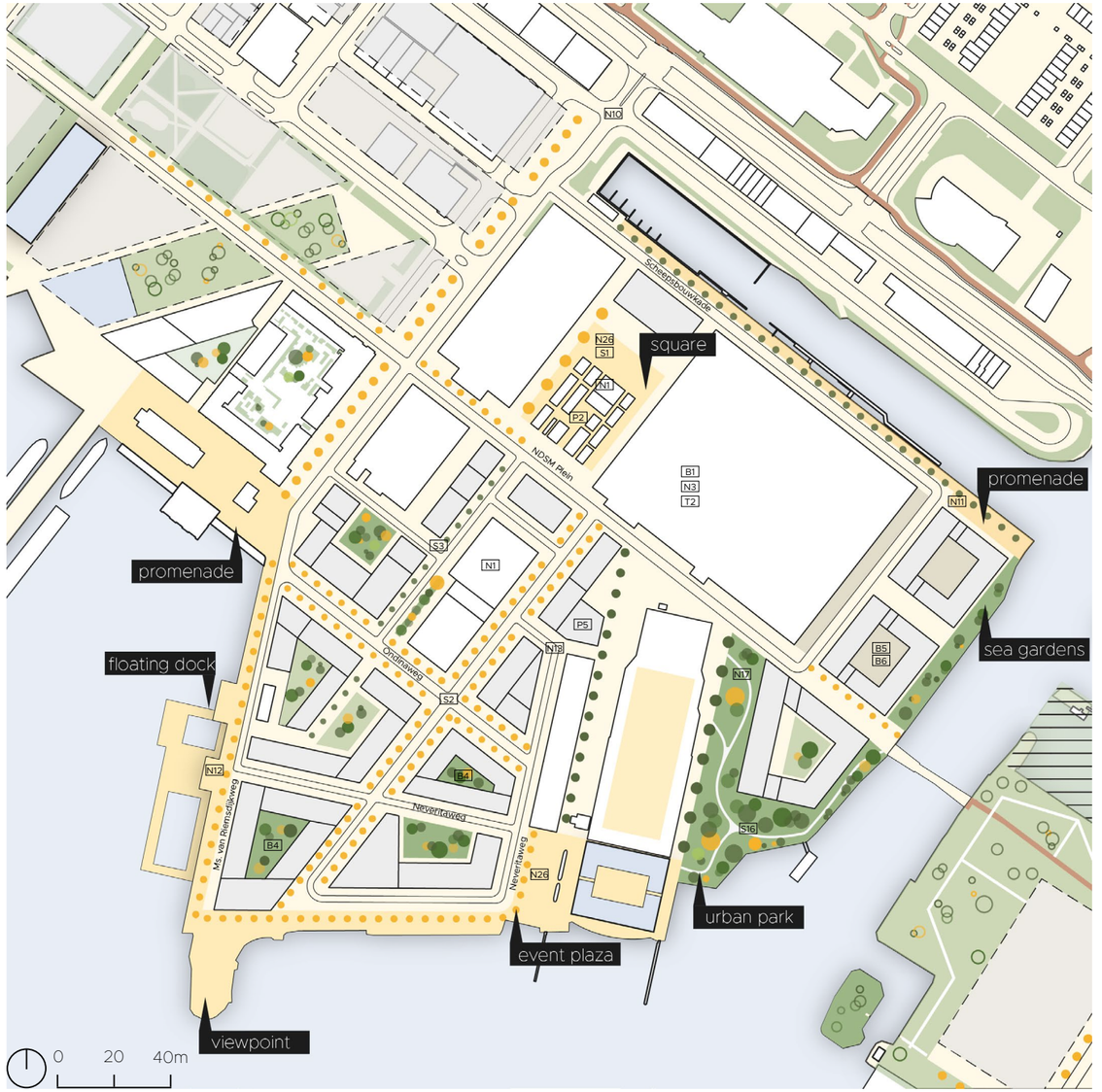
B1. Adaptive re-use
B4. Enclosed elevated collective space
B5. Making around courtyards
B6. Yard for logistics
S1. High-nuisance needs buffer zone
S2. Functions with most capital on high street
S3. Functions with less capital behind/away
S16. Soft edges
N1. Morphological entity
N2. Cluster of making and manufacturing
N3. Cluster of culture and creativity
N10. Proximity to transport infrastructure
N12. Design flows and routes
N13. Clustering of high-nuisance activities
N26. Cultural nodes as public spaces
T1. Cultural route
T2. Strong community presence
P2. Embrace the informal character
P5. Community hub in making locations
P6. Space for development and education



Street hierarchy

Green network

Network of public spaces

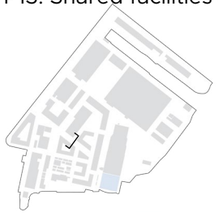


6.4 Spatial profiles

SMF High street

The high street in the self-made scenario houses activities that promote the extroversion of the area. These include cultural venues where the creatives can exhibit their work. Also, shared co-working spaces that nurture collaborations and potential synergies are found. The housing component is limited only in the upper floors where some medium and high-range apartments are located.

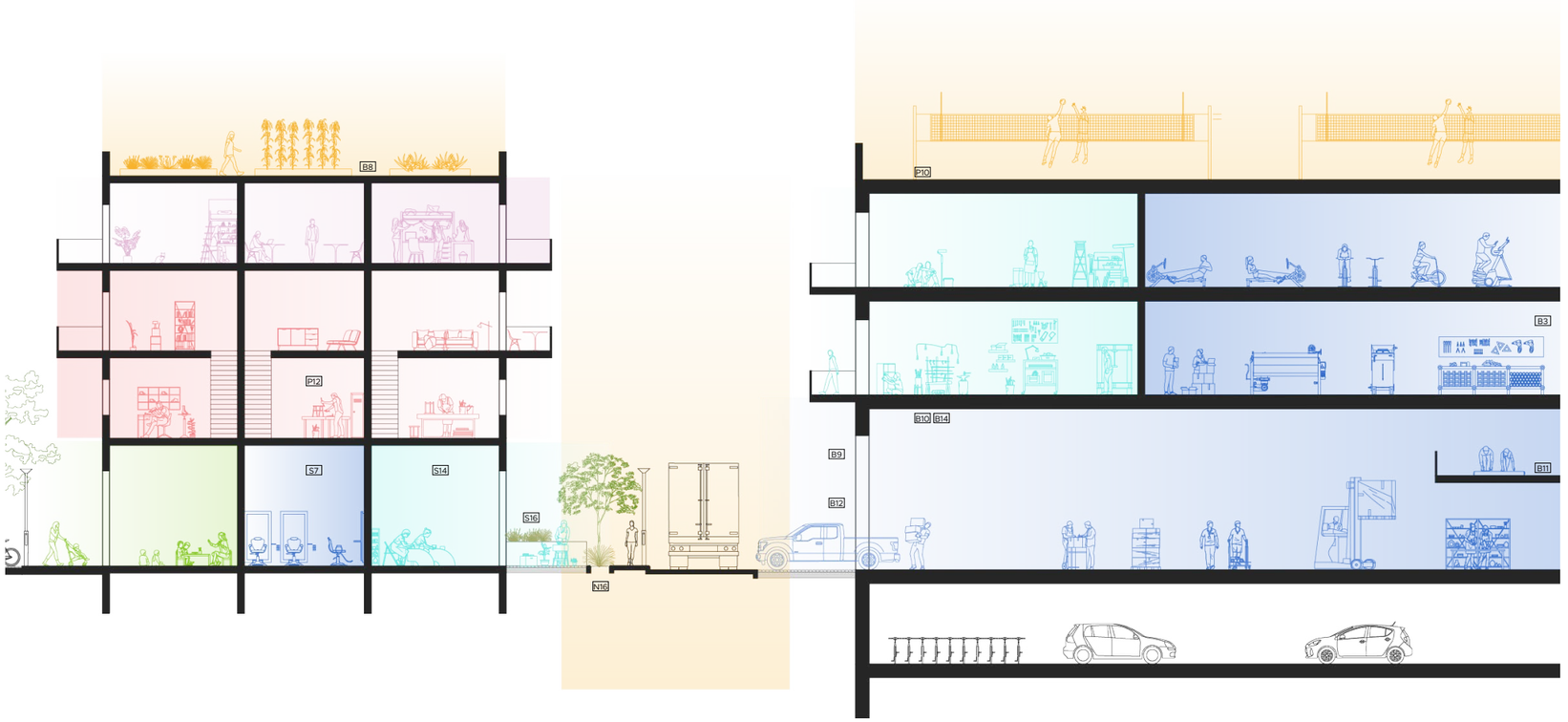
Patterns used in the section:
B1. Adaptive re-use
B2. Landmarks
B13. Density transition
S2. Functions with most capital on high street
S3. Functions with less capital behind/away
S6. High-frequency, short-stay benefit from parking
S10. Public face
N5. Strong contrast to typical Amsterdam
N12. Design flows and routes
T1. Cultural route
T2. Strong community presence
P4. Re-use and repair centers
P5. Community hub in making locations
P6. Space for development and education
P8. Temporary workspaces
P13. Shared facilities and technology



SMF Back street

In the back street of the self-made scenario priority is given to businesses with lower capital and creative individuals. The street profile has been developed in such a way that enables working outside, while it also facilitates transportation and unloading. Regarding the housing component, this is limited to a live-work typology in direct proximity with smaller businesses and some affordable student/ co-living units. The rooftops are activated and are open to the residents. The density is low to achieve better integration with existing buildings.

Patterns used in the section:
B3. Varying unit size
B8. Use the rooftop
B9. Large openings
B10. Structure capacity
B11. Space for storage
B12. Easy loading and unloading
B14. High ground floor
S7. Services with appointment, less central
S14. Face shortage of small-scale premises
S16. Soft edges
N16. Quality urban environment in making areas
P10. Sports facilities
P12. The work-home

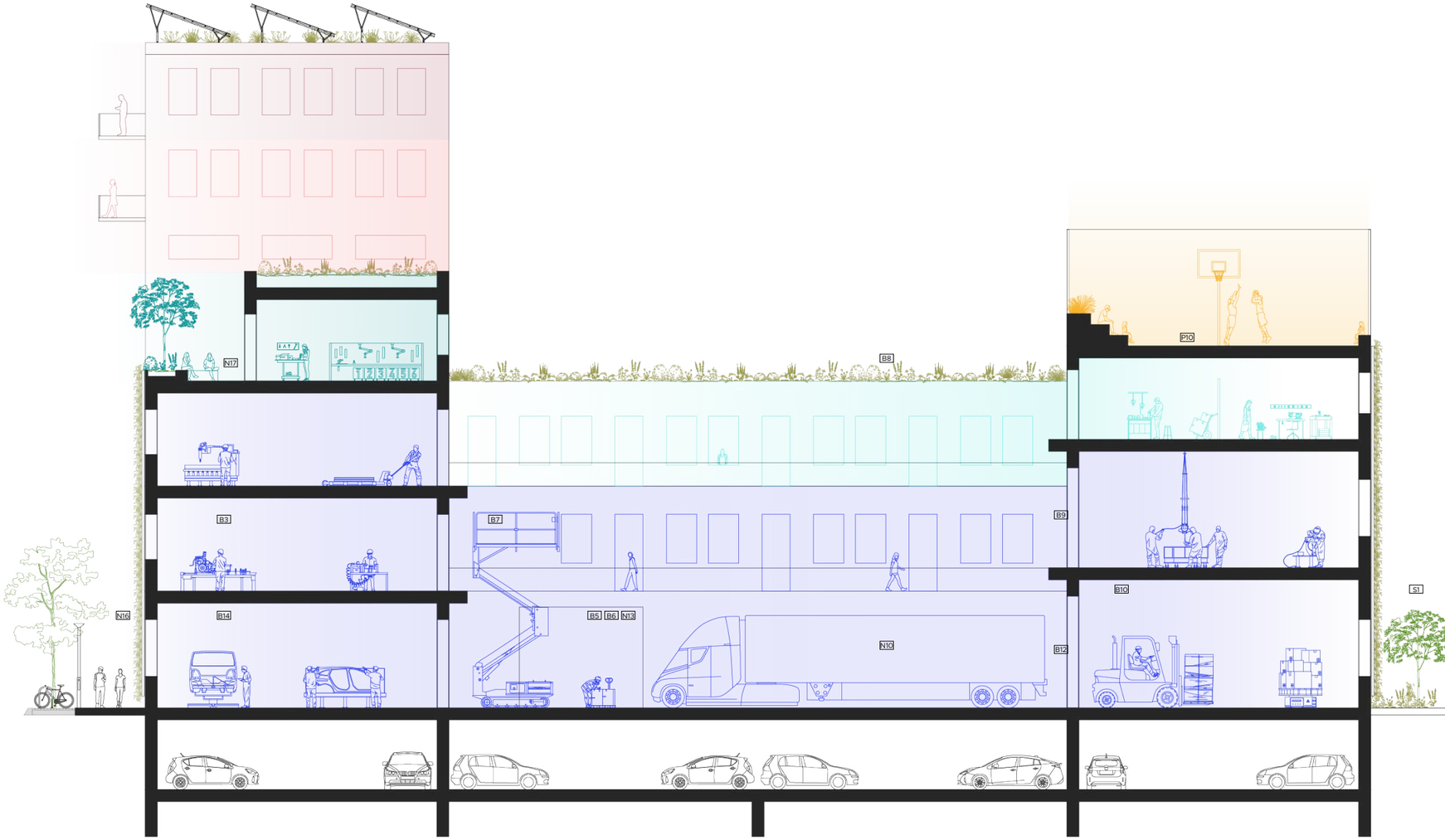


SMF Courtyard

In the self-made future, the courtyard enables the concentration of similar activities that can collectively make use of the courtyard for logistics and safe unloading. The courtyard can also house individual creative studios that act as a buffer zone between the noisy activities and the housing. Housing is limited and serviced by separate entrances. The rooftops can house sports facilities or green roofs.

Patterns used in the section:
B3. Varying unit sizes
B5. Making around courtyards
B6. Yard for logistics
B7. Enable vertical making
B8. Use the rooftop
B9. Large openings
B10. Structure capacity
B12. Easy loading and unloading
B14. High ground floor
S1. High-nuisance needs buffer zone
N10. Proximity to transport infrastructure
N13. Clustering of high-nuisance activities
N16. Quality urban environment in making areas
N17. Transition zones
P10. Sports facilities

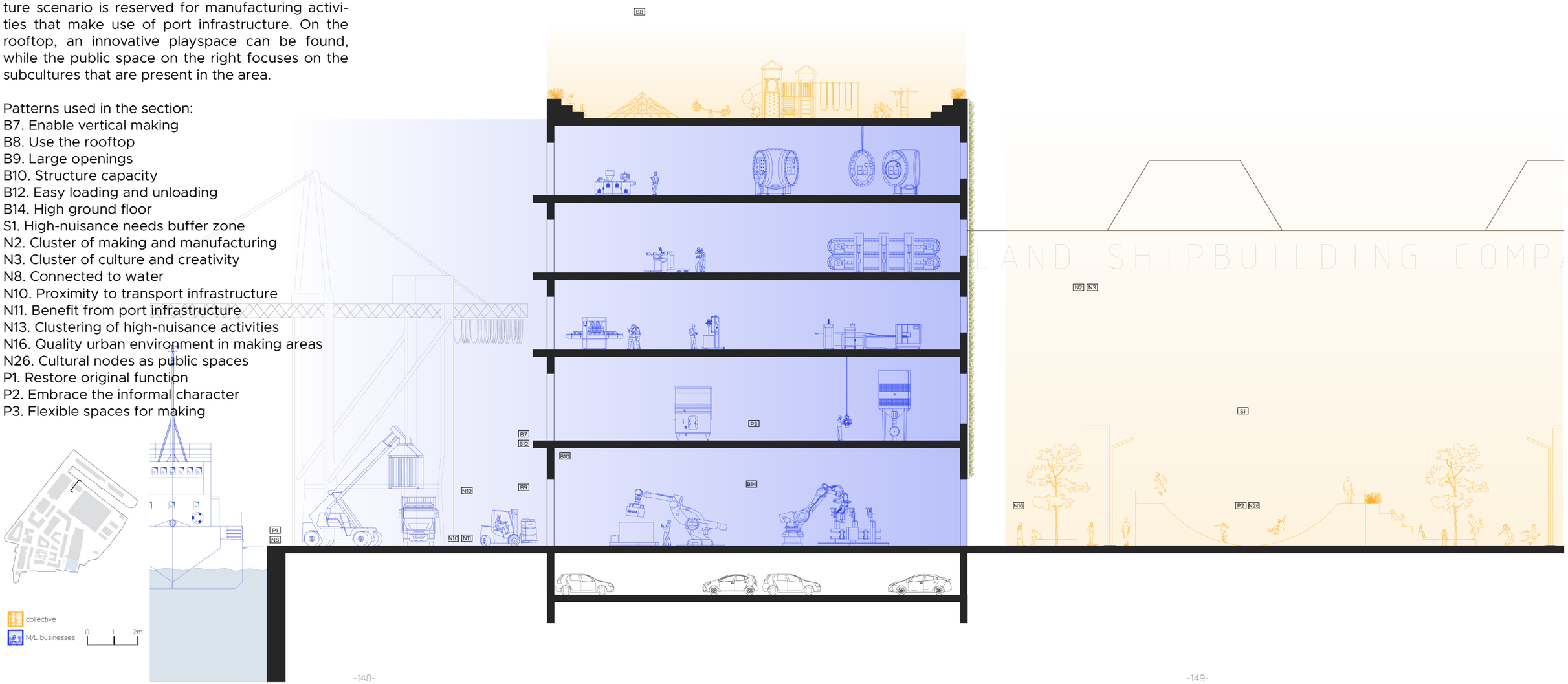
co-living/student
work house
low range
medium range
high-end
individual studios
co-working spaces
offices
S/M businesses
M/L businesses
horeca
culture
education
collective
0 1 2m



SMF Industrial front

the industrial front in the case of the self-made future scenario is reserved for manufacturing activities that make use of port infrastructure. On the rooftop, an innovative playspace can be found, while the public space on the right focuses on the subcultures that are present in the area.

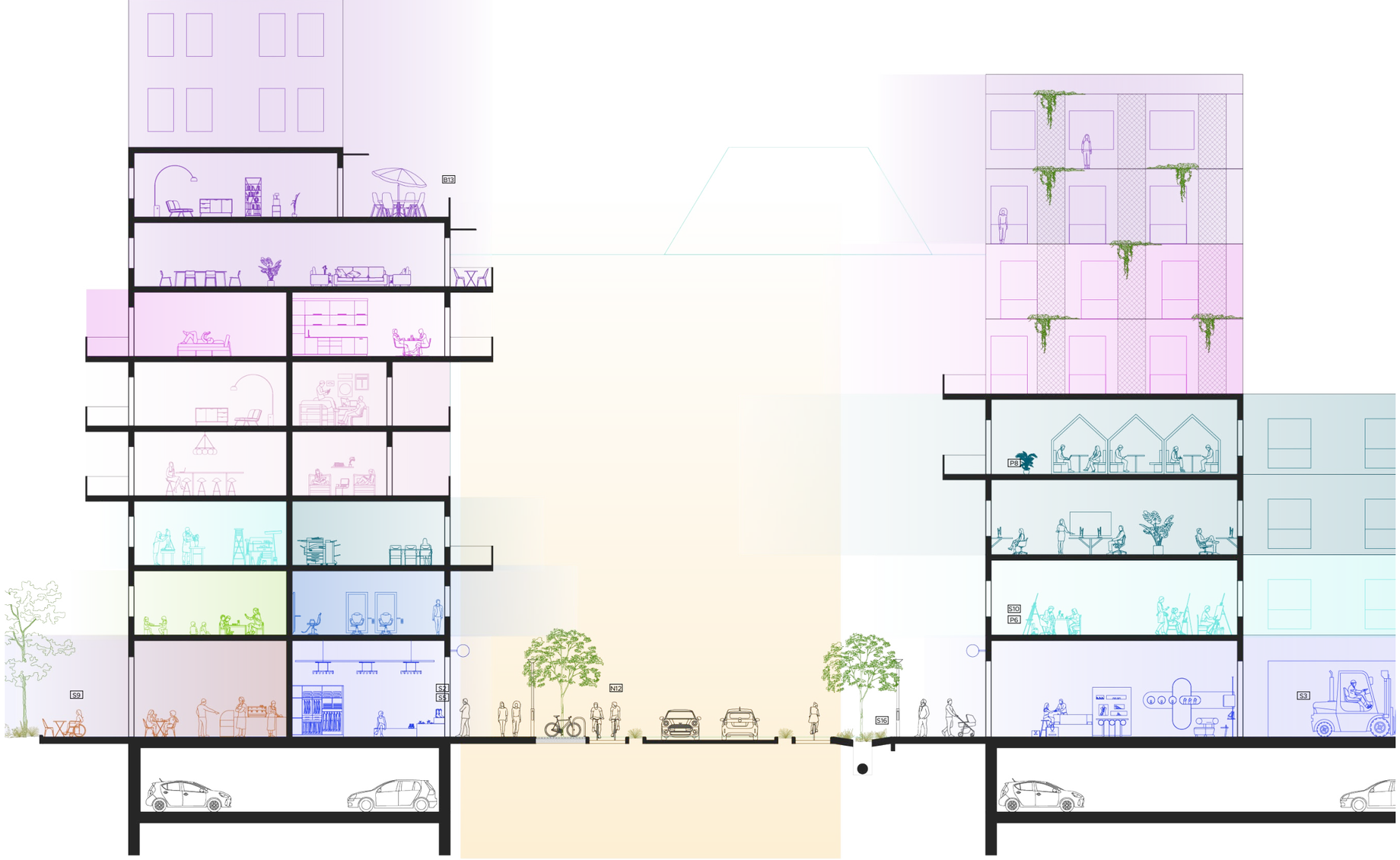
Patterns used in the section:
B7. Enable vertical making
B8. Use the rooftop
B9. Large openings
B10. Structure capacity
B12. Easy loading and unloading
B14. High ground floor
S1. High-nuisance needs buffer zone
N2. Cluster of making and manufacturing
N3. Cluster of culture and creativity
N8. Connected to water
N10. Proximity to transport infrastructure
N11. Benefit from port infrastructure
N13. Clustering of high-nuisance activities
N16. Quality urban environment in making areas
N26. Cultural nodes as public spaces
P1. Restore original function
P2. Embrace the informal character
P3. Flexible spaces for making



POR High street

The high street in the point of reference scenario, proposes different densities. Here, the plinths are reserved for retail functions with higher capital and occasionally exhibition spaces. The work component in this case consists mainly of office-type environments. These are more compatible with housing which takes up the most space available. The presence of higher-value housing is high.

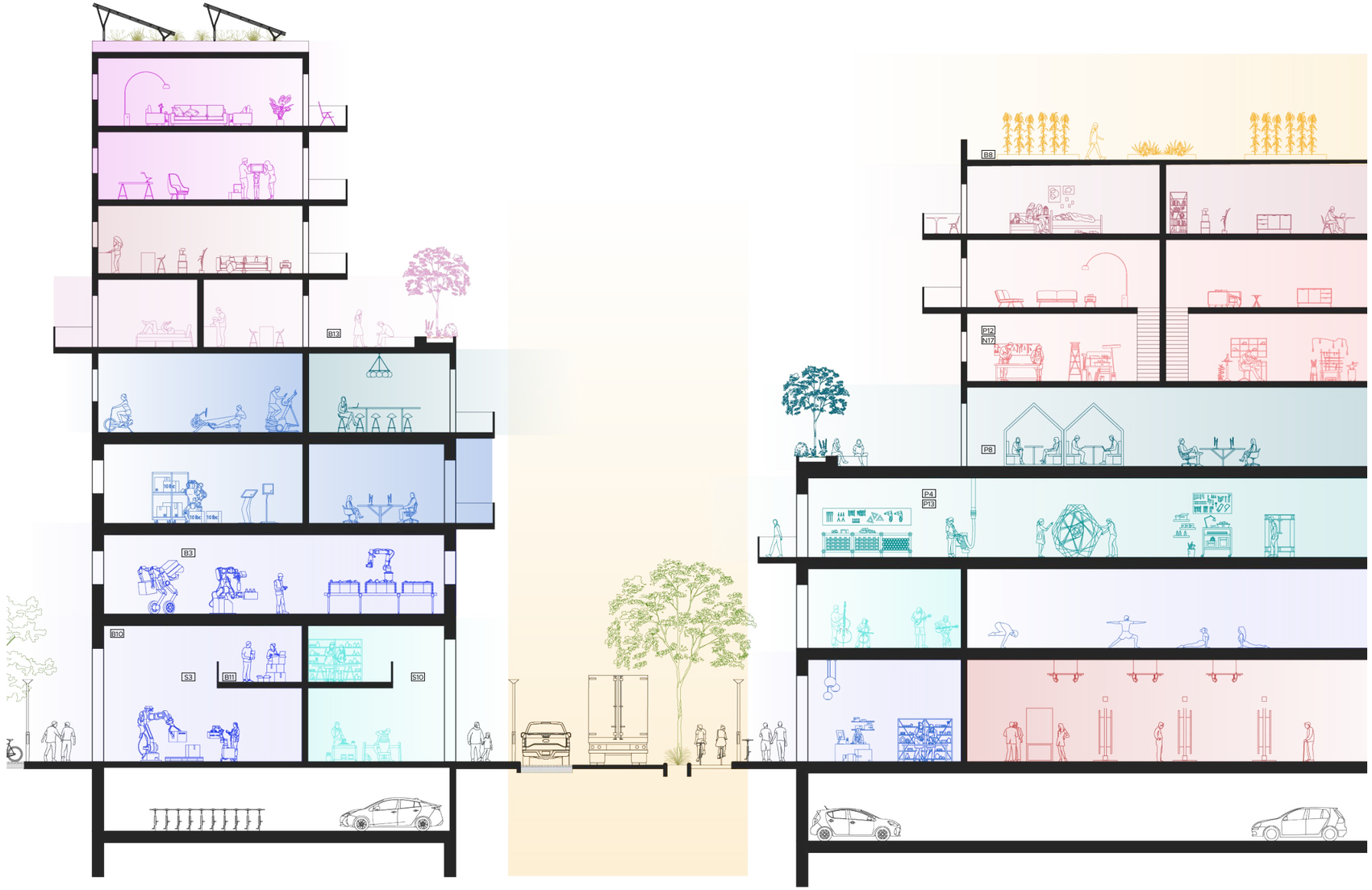
Patterns used in the section:
B13. Density transition
S2. Functions with most capital on high street
S3. Functions with less capital behind/away
S5. Retail benefits from centrality
S9. Horeca benefits from outdoor space
S16. Soft edges
S10. Public face
N12. Design flows and routes
P6. Space for development and education
P8. Temporary workspaces



POR Back street

The back street in the point of reference scenario focuses more on high-tech manufacturing that relies on digitization. It also targets hybrid businesses that combine production with retail. The housing is more present than before but there is lack of high-end options. The buildings are higher since all the existing short structures have been removed.

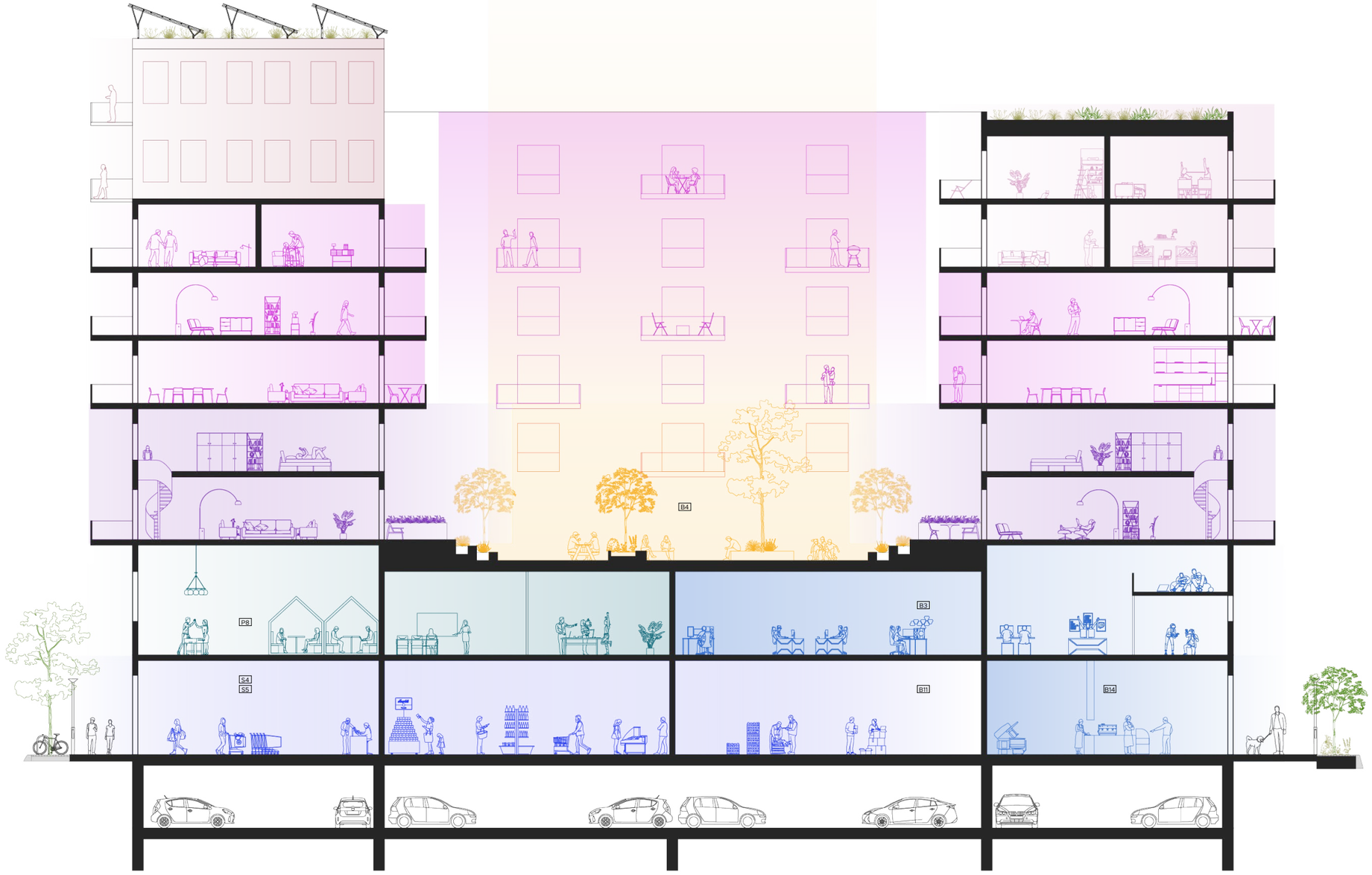
Patterns used in the section:
B3. Varying unit sizes
B8. Use the rooftop
B10. Structure capacity
B11. Space for storage
B13. Density transition
S3. Functions with less capital behind/away
S10. Public face
N17. Transition zones
P4. Re-use and repair center
P8. Temporary workspaces
P12. The work-home
P13. Shared facilities and technology



POR Courtyard

In the typology of a courtyard in the point of reference scenario, the double-level plinth covers the whole outline of the buildings and as such, it can accommodate functions that need bigger surfaces, such as a supermarket. It also permits the layout of housing units around an elevated collective space that increases their value but also offers a place of interaction for the residents.

Patterns used in the section:
B3. Varying unit sizes
B4. Enclosed elevated collective space
B11. Space for storage
B14. High ground floor
S4. Corner premises for higher capital
S5. Retail benefits from centrality
P8. Temporary workspaces



POR Industrial front

in the point of reference scenario, the waterfront is also used for recreational purposes and forms part of a promenade. The plinth in this case houses a hybrid company, such as a brewery that combines production with Horeca facilities. A rooftop bar that enjoys the IJ skyline is also to be found on the roof-top, increasing the profitability of the project.

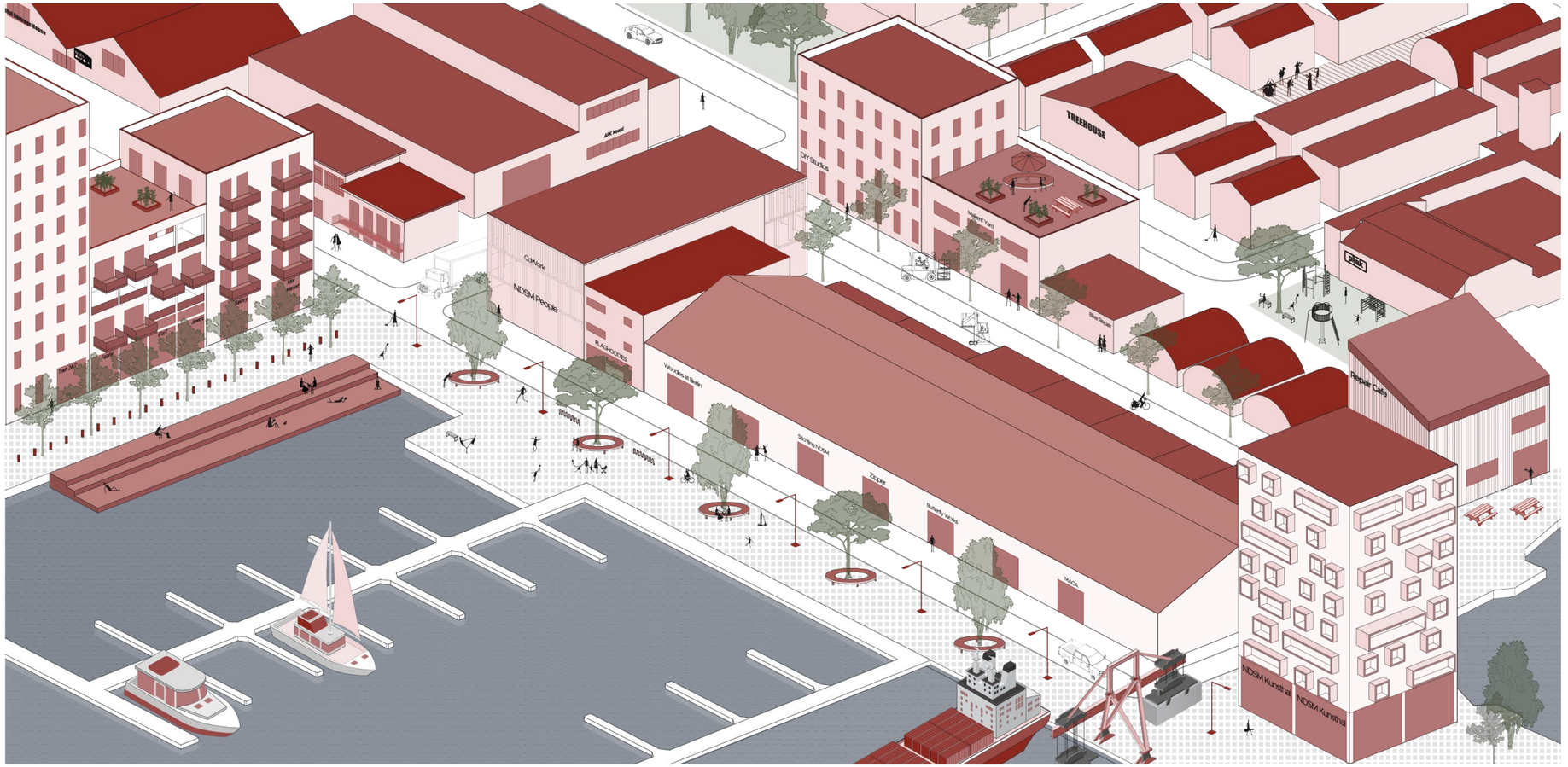
Patterns used in the section:
B7. Enable vertical making
B8. Use the rooftop
B9. Large openings
B10. Structure capacity
B12. Easy loading and unloading
B14. High ground floor
S1. High-nuisance needs buffer zone
S9. Horeca benefits from outdoor space
N2. Cluster of making and manufacturing
N3. Cluster of culture and creativity
N8. Connected to water
P3. Flexible spaces for making

SMF Visualization

The self-made future scenario strives for a future where existing and new functions harmoniously co-exist, blurring the distinction between old and new. All the existing ecosystems of work have been kept, while urban acupuncture lets the new buildings blend in the urban fabric.

The new developments offer extra diversity in the workspaces available. The plinths offer premises of various sizes to support small-scale economic activity. New live-work typologies are introduced. Smaller scale interventions let the working communities get expressed spatially. For instance, the NDSM Treehouse opens up in the neighborhood increasing thus, the visibility of the artistic community. The central space is used for exhibitions and events. The cultural organizations, such as the MACA, the Beautiful Distress House and the Nieuw Dakota institute remain in the waterfront, shaping its identity. A series of buildings that bring together the community complete its image. These provide space of interaction and strengthen the community bonding. A network of makers and manufacturing activities is found throughout the area.

The waterfront is designed in a way that reflects the diversity of the area. There are places reserved for pedestrians but also, places that facilitate the manufacturing community. In the edge, a new cultural building acts as the new lighthouse of NDSM East. Its morphological characteristics make it a landmark across the IJ riverbanks that communicates its identity.



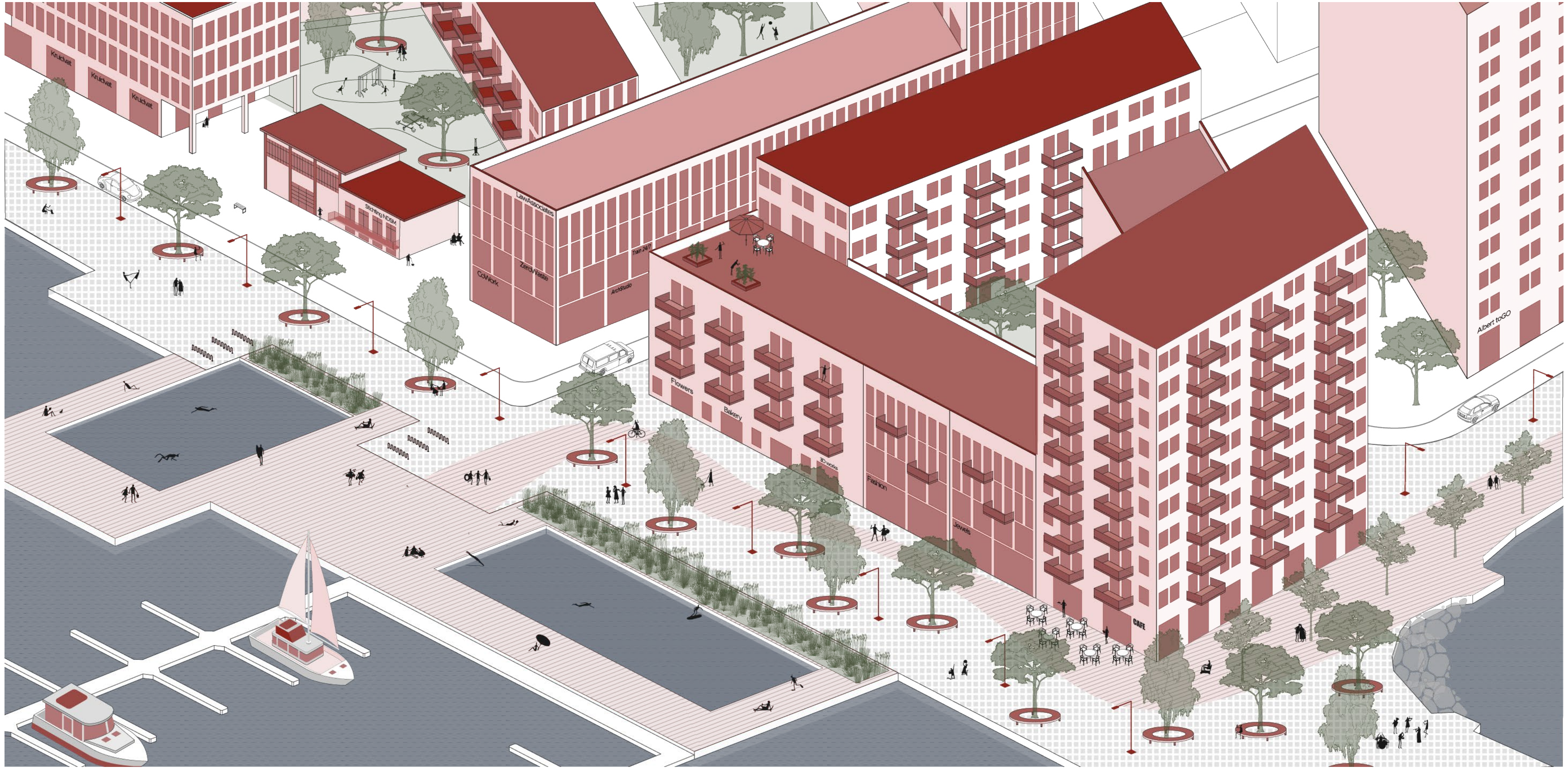
POR Visualization

In the point of reference scenario, the densities proposed are bigger. In this case, housing is more dominant as the real-estate pressure remains unceasing and as such, the housing shortage is severe.

Nevertheless, the plinths house a variety of work environments, including retail spaces and horeca facilities. Various companies can also be found in the new buildings and innovative ideas are nurtured in start-up companies and shared working spaces. Low-nuisance manufacturing activities are mixed with housing in fresh, unconventional ways.

The waterfront is occupied by new blocks, except from the listed monument. The small building has been reused and now houses the NDSM Foundation. In the majority of new building blocks, the upper floors are reserved for housing. The inside of the blocks offer collective public spaces that serve as meeting point for the residents and visitors.

The waterfront is used exclusively for recreational purposes. Residents from NDSM West and East, as weel as, from Buiksloterham, enjoy the waterfront promenade alongside the IJ riverbanks. Two swimming pools and a small marina of leisure boats become the attraction of NDSM East.

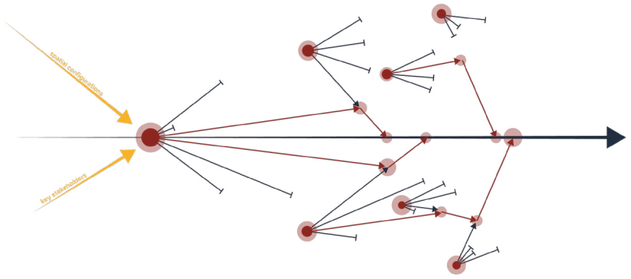


6.5 Operationalization

The following chapter provides an overview of the operationalization of the scenarios. As mentioned before, the patterns form a tool that can be used in a co-creative approach to engage involved stakeholders and steer the dialogue. Organizing such a workshop would have been the next step of this thesis, if time was more. It is important to mention that the outcome of these workshops often broadens the scope of the task and are not always fruitful. Nevertheless, the application of pattern language for analysis, visioning and design remains of utmost importance. Conducting thus, a series of pattern workshops in different phases of the redevelopment process is crucial.

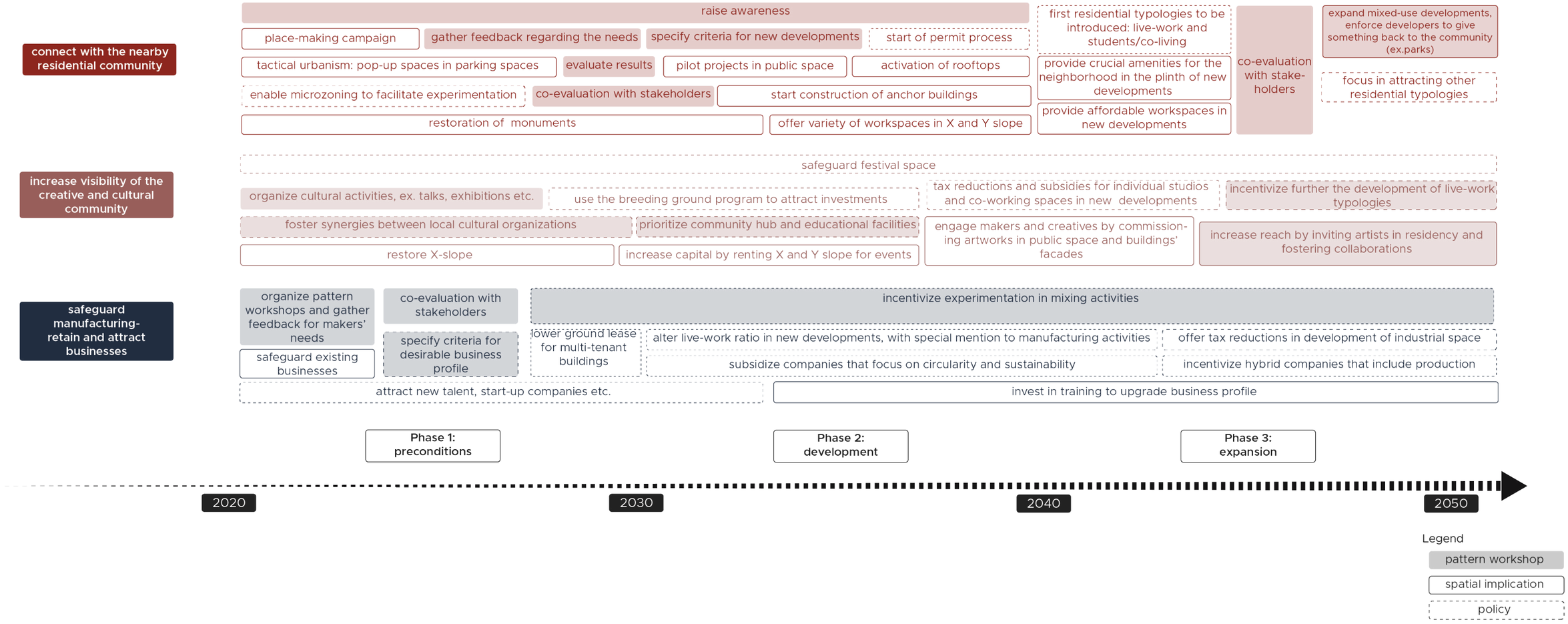
In the diagram of the next page, an indicative timeline is presented. The starting point is the set of preconditions that are necessary to spark off the changes discussed in the scenarios. Then, the execution of pilot catalytic projects can provide insight for the further development. A positive outcome would then result in the expansion of local networks. These in the course of time contribute in establishing local synergies. The policy interventions patterns have been included in the diagram as they outline potential milestones for each phase.

Furthermore, for each of the scenarios the main objectives/goals are elaborated more precisely regarding their phasing timeline. In this, the actions are divided in those that have a spatial implication, those that are more policy-related and the ones where a pattern workshop, as it has been described above, would be beneficial.



left: Operational framework (Adapted from: Babu, 2021)
right: Indicative timeline of policy intervention patterns

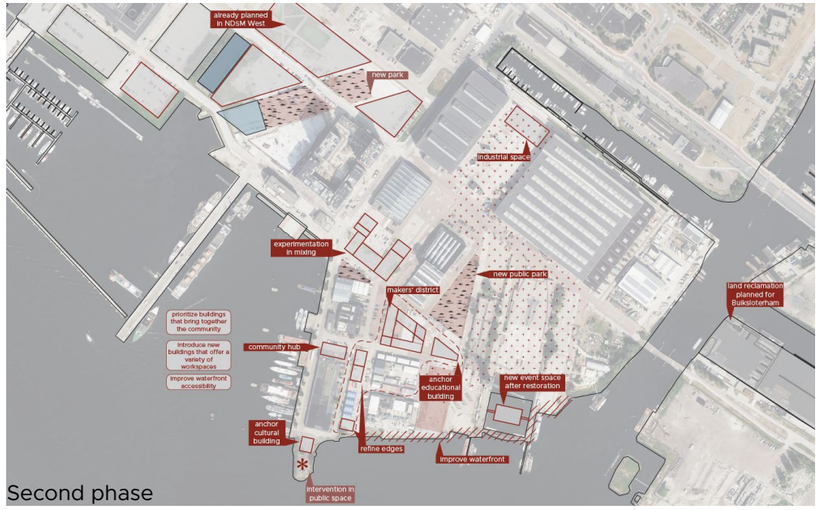
SMF Phasing timeline



SMF Phasing maps

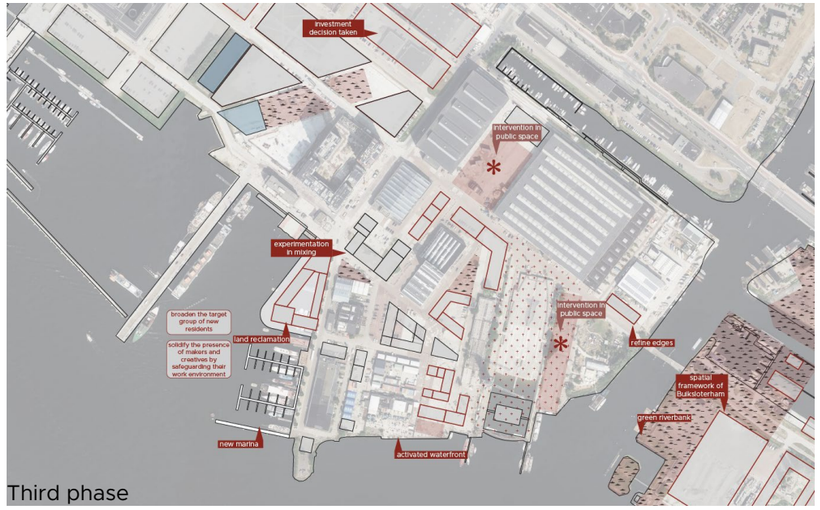
First phase

In the first phase of the self-made future scenario, the focus is on fostering synergies between existing cultural organizations. Pop-up spaces in parking lots curated by local creatives also appear. Renovation works start in X-slope.



Second phase

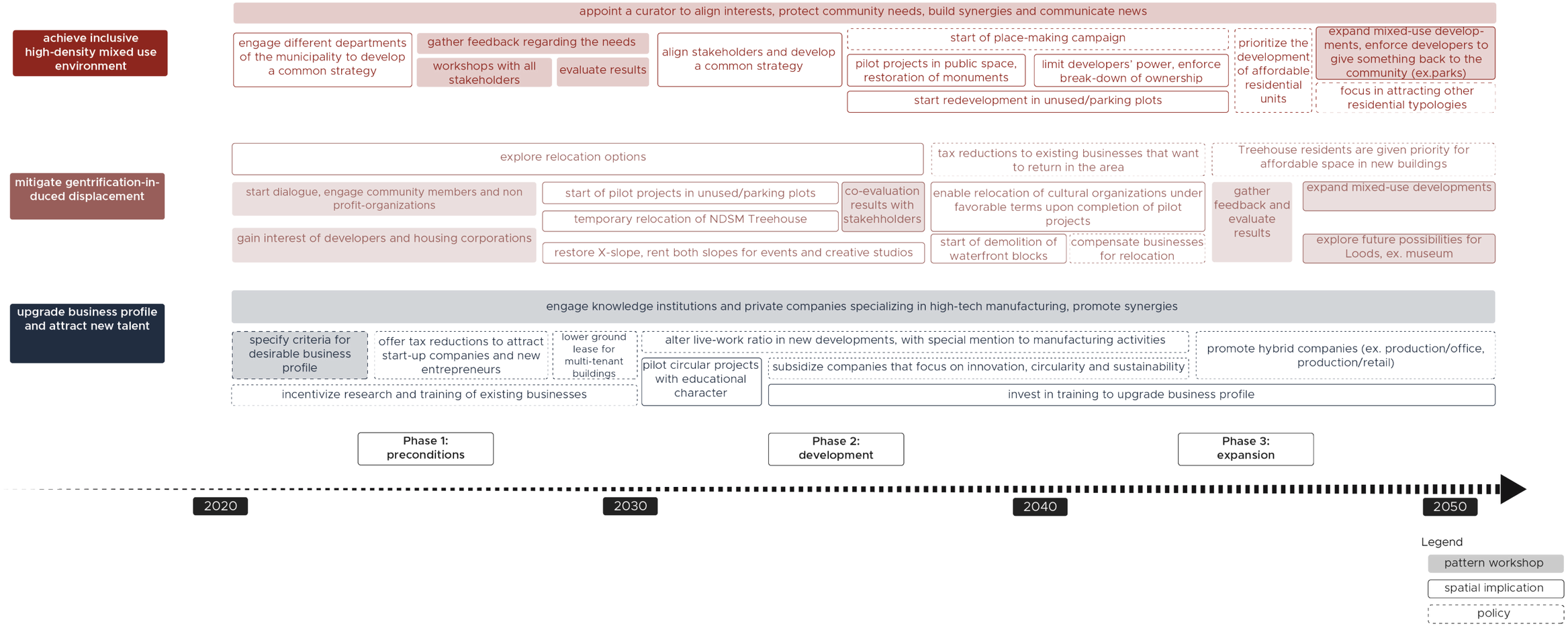
The second phase empathizes on prioritizing buildings that bring together the community, such as an anchor cultural building that can be used collectively. There are also introduced new buildings that offer a variety of working spaces.



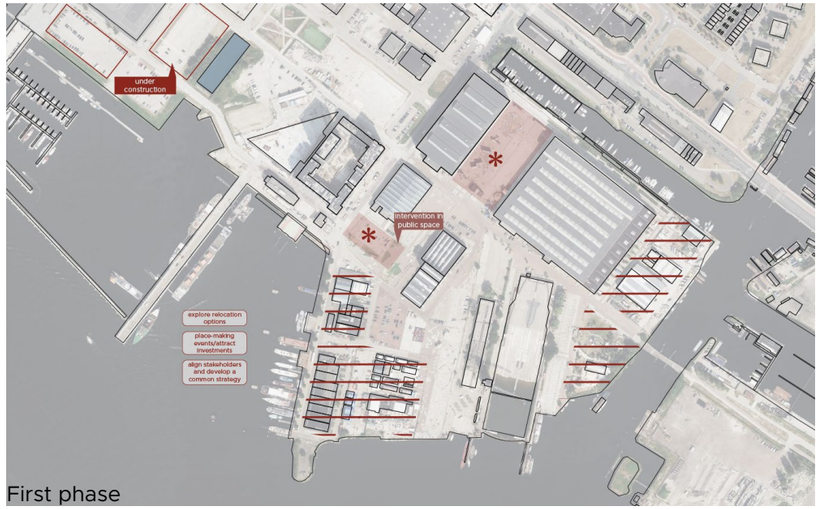
Third phase

In the final phase of the self-made future scenario, the presence of makers and creatives has been established ant their work environment is safeguarded. The target group of potential new residents gets broadened.

POR Phasing timeline

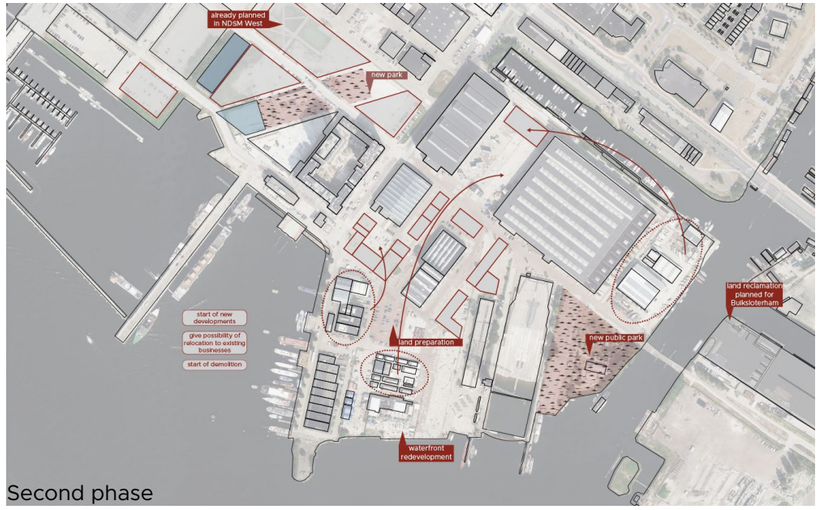


POR Phasing maps



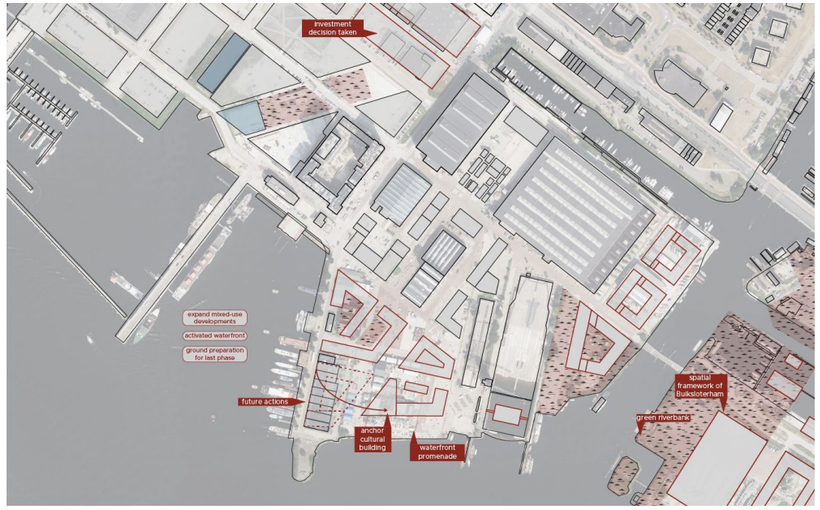
First phase

In the first phase of the point of reference scenario starts the exploration of relocation options for existing businesses. A place-making campaigns aims in attracting investments. The goal is to align stakeholders and develop a common strategy.



Second phase

In the second phase, the demolition starts marking the beginning of new developments. This enables the relocation of cultural organizations under favorable terms upon completion of pilot projects.



In the final phase of the point of reference scenario, the waterfront is completed and serves as the main meeting point. Also, ground preparation works start for the final development phase.

7

Conclusion and Reflection

7.1 Conclusion

The main question that the thesis posed was ‘Which spatial adaptations could be made in transformation areas, such as NDSM, to support local makers’ communities and build upon the place’s current identity?’

In order to answer it was crucial to define what constitutes the place’s identity. The thesis goes beyond the morphological and material entities that usually the term place identity entails. Indeed, the place identity can be physical, institutional or symbolic, but the contribution of this work is that it stresses the importance to include the people’s perception of place. Place influences and constitutes people’s place identity but also, people perceive and construct the identity of the place. Hence, this mutual interaction includes also immaterial entities that are usually overlooked. In the case of NDSM East, this identity is strongly shaped by the established working communities, their systems and network of operation. In this sense, NDSM’s place identity is not only restricted to the industrial heritage monuments with their specific materialization and morphological elements. On the contrary, the term is used broadly to reflect the vibrant working ecosystem of this former industrial area.

However, this ecosystem is located in a transformation area and is surrounded by extreme residential pressure. Although this results in a strong fear of displacement, the effect of this on the communities and the urban economy, have not yet been put enough on the spotlight. Such a situation not only affects existing businesses, but also hinders the attraction of new entrepreneurs in city centers, posing at risk the economic and social structure of the whole city. Instead of an approach that focuses on maximum densification for residential purposes, the thesis sees a hidden potential in the productive landscape of the area and looks for new ways of co-existence.

Thus, the thesis explored possible futures that built upon the place’s current identity, as this has been described above. This exploration was made possible through the development of the scenarios. The indicators that shaped each of them were based on the degree of real estate pressure and the will to include manufacturing activities in the transformation process. The place identity was interpreted differently in each scenario, following though the same line of inquiry. In both cases, emphasis was given in the development of live-work environments. The specific types of working environments and their subsequent needs varied per scenario and thus, resulted in different spatial conditions.

Given the complexity of the task and the difficulty in achieving a live-work environment that includes manufacturing activities, emphasis was given in the mixing possibilities. A thorough analysis was used to render clear what are the spatial conditions that enable potentially successful synergies and where conflicts were arising. These were explored through a combination of methods, taking into account findings from literature, semi-structured interviews and fieldwork observations. As part of the research by design, these findings were also tested in the framework of the scenarios in sections and masterplan.

One crucial finding that was common in the two scenarios was the need to design the transition zones between conflicting functions. Different ways were explored. For instance, clustering of high-nuisance activities proved beneficial, especially when this was accompanied with a buffer zone. This buffer zone though can vary greatly though. In cases where there is higher need for logistics and the use of heavy equipment is involved, bigger distances are needed. A park or a square in proximity, in combination with proper design of the routes and flows, can address most of the problems. In other cases, the allocation of specific functions can provide adequate space for mitigation of nuisance. For example, office-type environments can provide a critical buffer zone between housing and other activities when exploring vertical mixing. The same can happen if specific live-work typologies are developed accordingly. In the same logic, certain living environments are more compatible than others with specific work environments. For instance, student housing and co-working spaces can bring forward interesting dynamics.

It is obvious that this list can extend much more. Nevertheless, for the sake of conclusion, it is important to summarize the contribution of this thesis towards the understanding of mixed-use development. Addressing both the living and the working component, not as one entity but on the contrary, as an umbrella term that has many segments, revealed a plethora of mixing possibilities. Each of the segments has different spatial needs and thus, can respond differently to the requirements posed by the built environment. It is after all, within the role of the urban designer to unlock the hidden potential of live-work environments that leads to inclusive and resilient cities.

7.2 Reflection

The relationship between research and design

Research by design is an integral component of the Urban Fabrics studio and as such, the thesis relies heavily on a continuous back and forth. The research, through literature review, interviews, and multiscalar mapping, informed the design by providing knowledge on how to make it context-specific and functional. A solid outcome of this was the formulation of patterns. The design testing then spatially demonstrated the findings of the research and gives insights on how to solve future problems. Research and design complete each other in mutually beneficial ways.

The relationship between graduation topic, the studio topic, the Urbanism track

The thesis explores which spatial adaptations could be made in transformation areas to support local communities and build upon the place's current identity. The *Design of the Urban Fabrics* studio studies the interrelation between physical elements of the built environment and other rather intangible notions in cities and as such, the thesis is a good fit.

Also, the graduation topic is very much aligned with the framing theme of the studio, 'At Home', if interpreted broadly, and the call to tackle social diversification and inequality urgencies. The integration of working in living environments questions the elasticity of the existing urban fabric, seeking diversification of spaces. The respect for the place identity and the current working communities also calls for co-creation with the involved actors, aligning with the multi-actor and multi-disciplinary methods of the Urban Fabrics studio. In this studio, design is used throughout the process as a method of inquiry to investigate potential futures and interpret the affordances provided by the built environment.

Finally, my graduation topic falls under the theme of Diverse Cities and Productive Landscapes, which is on the agenda of the studio. Usually the term of productive landscapes refers to peri-urban environments. On the contrary, the contribution of this thesis is the exploration of productive landscapes within urban centers. On top of that, the thesis considers this productive landscape as the key to achieve diversity in an area that tends to gets homogenized due to extreme residential pressure. In this sense, the thesis sees the respect to place identity as the means to achieve inclusive and diversified cities.

The thesis is also within the scope of the MSc in Urbanism as it deals with concepts regularly brought up during the master's program. More specifically, mixed-use development, live-work environments and densification of urban centers form some of the main challenges urbanists have to face today. Choosing to test these on-site, for the city of Amsterdam which is confronted with unprecedented growth, gives insight into how different future scenarios could impact the spatial manifestation of identity and under which circumstances a liveable and resilient urban growth can be achieved. Although the area is a product of deindustrialization, the approach proposed does not see it as a brownfield. Instead, the thesis strives to identify the established ecosystems of work and provide the conditions under which these could successfully interact with new developments. In this way, phenomena of gentrification-induced displacement are mitigated and synergies are nurtured. Last but not least, retaining industrial spaces within city centers is crucial for circular ambitions. Closing material loops is the key to a resilient future. Urban manufacturing is a valuable tool towards this direction.

Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work

Literature review informed the project in multiple ways. Although one could list endless fields of inquiry relevant to the topic, given the timeframe of the thesis, three domains were mainly identified. These have been the role of place identity in urban development practice, the working city as a prerequisite for urban diversity and the current discourse regarding the urban integration of manufacturing. If time had been more, an additional field of interest would have definitely been the theories on social sustainability and liveability. Some aspects of them are taken into account in the design phase of the project but are never elaborated on in detail.

Given the complexity of such a development model that the thesis strives for, unlocking the point of view of the involved actors is crucial. Semi-structured interviews can shed light on the dynamics expressed in the field by highlighting nuances that may have been left out by oversight. This part was based to the interviews conducted by a fellow student a year before. Although her scope of interest was solely the integration of light industry in NDSM, inevitably the possibility of its proximity to housing was touched upon by the majority of the interviewees. Hence, it provided valuable feedback on my topic also. A new round of interviews, focusing on some additional topics and issues could be carried out in the future to inform follow-up research and design.

Equally important for the topic was the position of the municipality concerning live-work environments. Conducting a policy review on different scales was necessary to understand the municipality's priorities in retaining existing businesses and its intentions towards safeguarding industrial space and maintaining affordability. This, in combination with the remarks from the interviewees, helped to solidify the position and power of the municipality regarding the future of the area.

The previous outcomes and trends informed the two main indicators for the scenario construction. These have to do on the one hand, with the political decision of either integrating or displacing manufacturing and on the other hand, with the extent of real-estate pressure. Through research by design, two hypothetical scenarios were elaborated further to explore potential futures. The differentiation of the scenarios was used to render explicit the two extremes and which choices can be made respectively. It is recognized that the complex nature of such a project would result in a combination of elements from both scenarios. The role of the scenarios is thus, to support future decision-makers.

Moreover, a list of patterns was also developed in parallel, with the ambition to form a tool for a co-creative method of design. The development of a pattern language aligns with the methodical line of inquiry of the Urban Fabrics studio. Nevertheless, up to now, the use of the patterns has been limited to the thesis itself. The set of patterns though, build upon and contribute to the greater discourse regarding mixed-use environments with emphasis on the integration of urban manufacturing.

Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.

Until now there has been little evidence on how a

‘weaker’ land use, such as manufacturing, could be combined with other functions, such as residential and commercial ones that are considered more financially attractive both by many private and public actors. How would a transformation area look like if the key drivers of change are collective memory and place identity, remains rather unexplored. On the contrary, those areas are dealt with a tabula rasa mentality, not respecting the working communities that are embedded within. The usual outcome is uniform, new residential areas that fail to meet the identity of the place that was already there. The active displacement of the communities leads to phenomena of gentrification and raises questions about diversity and social inclusivity. Such a situation not only affects existing businesses and working communities but also hinders the attraction of new entrepreneurs in city centers, posing at risk the economic and social structure of the whole city.

The choice of the site came early in the process as an ideal location to test the aforementioned concerns. NDSM East forms the last untouched cluster of the northern riverbanks of IJ since part of its territory has been listed as industrial monuments. This tradition is still evident today in people involved in smaller-scale manufacturing activities but also in a community of other makers and artists that first appropriated the place after abandonment. These groups have formed the current identity of the place.

At the moment, this identity is at risk. The location of the area renders it extremely attractive for new residents while the municipality’s main priority is to deal with the housing shortage. The surrounding area has already been completely transformed and the rest has the look of a fragmentary urban fabric. At the same time, existing businesses and makers feel the threat of displacement by increased land values. Thus, the conceptual framework of the thesis starts from the required shift of paradigm. Here, place identity is presented as an opportunity to achieve mixed-use inclusive urbanism. This in its turn is conceived as the means for a liveable and resilient urban growth. Finally, NDSM, as a former industrial site has the spatial backbone to support such initiatives, and thus, it forms the area of focus. The thesis tries to unlock potential futures through the integration of working in living environments. This could act as a case study for future reference and application in other cities as well.

Ethical issues and limitations

The main concern that I encountered while elaborating on the design was the lack of interaction with the involved stakeholders. The initial plan was to develop the design in a co-creative approach, making use of the patterns I developed. Unfortunately, due to time limitations, this has not been possible. The design elaboration was done individually, considering though the findings from the literature study, interviews and fieldwork. Although everything has been dealt with due diligence, it is acknowledged that the thesis would have been more complete if some of the design decisions derived from an active dialogue with users of the area and key stakeholders. Nevertheless, the list of patterns developed is a stand-alone product that can be used to facilitate concerned actors to address similar challenges in the future.

Regarding the limitations of this work, it is also acknowledged that each scenario comes with advantages and disadvantages. Especially in the point of reference scenario, the whole ecosystem of work is posed at risk. The established communities will most probably disappear from the area in the course of time as they will not feel related by the surroundings any more. Although compensation for relocation has been specified as a method in the phasing process, this cannot guarantee the emergence of a similar productive landscape elsewhere. Nevertheless, an actual dialogue with stakeholders, where the weaker ones are given voice, could help better address their needs and concerns. In this setting, the pattern language set can proven extremely beneficial as it helps to break down the complexity to easily understandable bodies of knowledge.

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