

Pursuing a Green Economy: Institutional Policy Narratives  
and Vancouver's Urban Industry in the False Creek Flats

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### Abstract

Since the most recent 2022 IPCC World Climate report it is evident that meeting the goals set in the 2017 Paris Agreement requires quick and comprehensive action (Gao et al. 2017: 1; IPCC 2022: 7; UN News 2022). Building a green economy in this context can serve as a more sustainable approach to achieve economic growth within the constraints of urban areas (UNEP 2011: 7; Bathen et al. 2019: 15). The case study of Vancouver with its growing green economy presents a promising avenue toward this aim (VEC 2018a: 1–7). Beginning with the 1990s the regions expected growth and geography encourages the continuation of the 1975 introduced concept of transit-oriented planning (Metro Vancouver 1994: 9–16). Considering these regional considerations, the City of Vancouver begins to reframe the role of industrial land as crucial to house to city-serving, port related and clean industry (City of Vancouver 1991: 16–17). This policy direction for industrial land can be observed in the False Creek Flats industrial area where a new high-tech sector is meant to coexist with city-serving light industrial uses to meet the needs of the Downtown core (City of Vancouver 2001: 3–7). By the mid-2000s the region and city then extended their efforts around the problem setting of climate change in order to maintain the quality of life in the area long term through a policy direction pursuing sustainability through different avenues (Metro Vancouver 2010d: 9–13). In the following years the next step in this direction was laid in extending the concept to the local economy culminating in the 2012 Greenest City Action Plan (City of Vancouver 2012a: 10–15). The industrial and service-oriented businesses in the False Creek Flats area showed continuous growth throughout this shift despite several smaller rezonings favoring non-industrial uses (see Chapter 4.4). However, at this point it has also become evident that the demand for industrial land and industrial space is bound to outgrow the regional supply (City of Vancouver 2012a: 59–69). With expansion into the periphery off the table new multi-level industrial structures around transit nodes are now offering a promising new perspective for urban industrial land (Metro Vancouver 2011b: 13–21, 2014: 4–8). With the Covid-19 pandemic taking hold in early 2020 the wide range of employment opportunities provided within the False Creek Flats are in

addition increasingly seen as a means to pursue policy direction focused on inclusive growth in response to the effects of the pandemic (Canadian Inclusive Economy Initiative 2021: 1; VEC 2021b: 1). To realize this new direction the issues with the intensification and densification of industrial land such as use compatibility and the economic viability of multi-level industrial structures need to be solved quickly (see Chapter 4.5). In this regard the False Creek Flats are already showcasing its potential as a proving ground and beacon for a policy driven urban transformation to address a steadily growing list of outstanding issues (Canadian Inclusive Economy Initiative 2021: 1).

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### **Abbreviations**

CD – Comprehensive Development

CEAP – Climate Emergency Action Plan

CAC – Community Amenity Contribution

CAD – Canadian Dollar

DCL – Development Cost Levy

FSR – Floor-Space-Ratio

FCF – False Creek Flats

GHG – Greenhouse Gas

GCAP – Greenest City Action Plan

IPCC – Intergovernmental Panel on Climate Change

km<sup>2</sup> – square kilometer

m<sup>2</sup> – square meter

UN – United Nations

UNEP – United Nations Environment Programme

VEC – Vancouver Economic Commission

RGS – Regional Growth Strategy

SDG – Sustainable Development Goal

## 1. Motivation

Since the most recent 2022 IPCC World Climate report it is evident that the impacts of climate change necessitate comprehensive action to adapt and mitigate its impacts (IPCC 2022: 7). In this regard the 2017 Paris climate agreement goal of limiting global warming to less than 1,5°C (Gao et al. 2017: 1) is becoming an increasingly difficult task with a ticking clock (UN News 2022). Failing this task is considered to be the catalyst for an effectively unstoppable chain of events that will change the whole planet dramatically as predicted by the Club of Rome's Business-As-Usual scenario (Herrington 2021: 3–4). This Business-As-Usual scenario is considered to be on track and is what UN Chief Guterres refers to as a “highway to hell” (UN News 2022). The predicted increase in the average global temperature is accompanied by a variety of phenomena such as the increase in extreme weather events like flooding and extreme heatwaves that lead to issues for infrastructure, agriculture but also challenges people's health (IPCC 2022: 11–21). Action is therefore not only required to address these arising issues but also to significantly change the trajectory of greenhouse gas (GHG) emissions (Herrington 2021: 1). In the case of Metro Vancouver this means reducing carbon pollution globally by 45% below 2010 levels by 2030, and reaching net zero by 2050 (City of Vancouver 2020c: 2). As Hans Jonas environmental ethics argue it is in fact our human responsibility to take action in order to avoid the destruction of those ecosystems that create the ecological conditions that enable human life (Morris 2013: 187). This responsibility and the understanding that natural ecosystems cannot entirely be substituted through innovation and technical solutions are the motivation to for the following research (DKN 2022: 7–9). This concept of strong sustainability in combination with the concept of inclusive wealth also dictates the underlying goal for it (DKN 2022: 7–9). It is the goal to identify and analyze avenues to use natural capital effectively in exchange for inclusive wealth that benefits the greatest number of people. The United Nations Environment Program provides a roadmap for this overarching aim with its 2011 *Towards a Green Economy* report that outlines directions and recommendations for economic sectors for both a reduction in the overall output of GHG but also for social inclusiveness within these sectors

(UNEP 2011: 7). These aspects bring forward renewed interest in introducing green economy sub-sectors to cities where they can benefit from knowledge spillovers from neighboring uses, circular economies (UNEP 2011: 259–269) access to a large labor pool, close customer base, shorter transport routes, and other factors that enable innovation and GHG reductions (Grodach & Martin 2021: 1–4). Attempting to utilize urban locations for a greater variety of land uses in this way is a sentiment that can run contrary to the well-established post-industrial idea of not supporting light and heavy industrial uses in urban areas (Logue 1998: 3) and actively pushing them into the periphery of cities (Webster et al. 2014: 1). In order to better understand how such a pivot can therefore be pursued in an urban setting the Metro Vancouver region and the municipality City of Vancouver are selected as policy makers based on their combined focus and success in cultivating an urban green economy that includes wide a range of business types (VEC 2014: 9, 2018b: 1–7). The False Creek Flats district is for these purposes used to review the impact of the policies adopted for industrial land which can accommodate a range of light industrial use types such as manufacturers, distributors, wholesalers as well as other uses that are conducive to the idea of the green economy (City of Vancouver 2015a: 58; Bursey 2020: 7). Initiatives such as the “productive city” as part of the Leipzig Charta in Germany (Europäische Union 2020: 6–7) make the False Creek Flats in this context a valuable object of research from a German perspective as both pursue similar goals regarding the creation of a wide span of employment opportunities in urban areas (Europäische Union 2020: 1; VEC 2021b: 1). The case study is particularly relevant with respect to challenges that a strong real estate market and zoning regulations bring that would normally not allow for many industrial uses to exist in urban areas despite the social contributions and other benefits they can provide for the local population and economy (Bathen et al. 2019: 14; Cox 2022: 7). Since the problem setting for urban industrial land is quite ubiquitous and its centrifugal movement applies to many cities around the world this thesis outlines a succession of institutional policies with shared narratives that is intended to offer inspiration for policy makers aiming to both safeguard urban

industrial land and establish a green economy. The case study is led by the research question and three related sub-questions:

**How did institutional policy narratives affect the firm population in the False Creek Flats since 1990?**

1. Which policy narratives and policy directions are used and how have these changed in the 1990 to 2022 time period?
2. How has the firm population of the False Creek Flats changed in their typology in the time period?
3. To what extent do changes in firm population correspond to the changes in policy narratives and policy directions?

## **2. Policy Trends**

The following chapter intends to further show how the green economy can be established on urban industrial land, what motivates this idea in recent times and why the case study area is relevant in this regard.

### ***2.1 Climate Change, the Green Economy and Industrial Land***

The European Commission in its Megatrend Hub outlines trends for the future development of the world (European Commission 2022). Among these global trends are climate change, urbanization and growing consumption that still require policy initiatives to be addressed (ibid.). The United Nations sustainable development goals (SDGs) target these among other issues as part of the 2030 Agenda for Sustainable Development that was officially adopted in 2015 (United Nations 2015: 6). Out of the 17 SDGs the goals No Poverty, Decent Work and Economic Growth, Industry, Innovation and Infrastructure,

Sustainable Cities and Communities and Sustainable Consumption and Production are intrinsically linked to the green economy pursued by the United Nations Environment Programme (UNEP 2022). For the purposes of this thesis the understanding of the green economy is that it consists of green jobs that according to the UNEP are defined as “*activities that contribute substantially to preserving or restoring environmental quality [...] reduce energy, materials and water consumption [...] decarbonize the economy and minimize or altogether avoid generation of all forms of waste and pollution*” (UNEP 2008: 3). This focus on activities to define what is green is different from what others describe as the green sector, which refers to economic activities in sub-sectors such as clean energy, green buildings, carbon finance or environmental protection (Globe Foundation 2010: 6–12). In another UNEP report from 2011 an additional list of much broader sectors is formed, which are selected based on the greatest potential for greening or in other words sectors that could facilitate the greatest increase in green jobs, which are manufacturing, transport, buildings, energy, vegetation and landscape, food, waste, infrastructure and digital technology, and tourism (UNEP 2011: 9). Each of these sectors is then reviewed and assigned a more or less accurate pathway to a greener state with the underlying goal of pursuing sustainability as it is described in the SDGs (ibid.). These cross sectoral goals for the green economy also extend to urban areas in which over half of the world’s population resides in and by 2050 as much as 68% of it likely will (United Nations 2018). This makes urban areas the place where the green economy is faced with the challenges it is meant to address that go beyond climate change, urbanization and growing consumption with issues such as inequality and poverty (European Commission 2022).

One pathway to pursue a green economy in urban areas is light industry that is compatible with other more vulnerable land uses such as housing. Light industry is one of two categories of industry that are defined by the emissions they create. Unlike light industry, heavy industry has significant emissions that make it unsuitable to be located in close proximity to other uses as it is usually the case in urban areas (Logue 1998: 4–5). As Bathen et al. put it light industrial production activities such as “*urban farming,*

*urban handcraft as well as urban industry contribute to opening up new economic perspectives and new attractiveness in urban districts*” (Bathen et al. 2019: 5). An urban green economy can in theory therefore not only assist in an absolute decoupling of environmental pressure and economic growth (UNEP 2011: 250–251) but it also allows for a decoupling of international supply chains, which in Jane Jacobs “The Economy of Cities” occurs through a replacement of imports through local production (Jacobs 1970: 166–203). Replacing imports is in this regard also an avenue to generate employment opportunities, economic growth and reduce transport related GHG emissions (Bathen et al. 2019: 14).

Arranging industrial businesses in so-called eco-industrial parks can also provide additional locational, economic and environmental benefits (IPCC 2018: 763–764). For example, eco-industrial parks encourage and facilitate by-products exchanges and infrastructure sharing, as well as joint purchases of machinery or collective investment in renewable energy systems (ibid.). Successful cooperation in such industrial parks therefore reduces the cumulative environmental impact, the total consumption of virgin materials, waste and improves the efficiency of companies and their competitiveness (ibid.). This potential is driving the discussion around the circular economy and industrial symbiosis (Loiseau et al. 2016: 15–16), which is building on top of the concept of industrial clusters.

Individual entrepreneurs in the green economy in such parks that are actively pursuing change beyond their own business are referred to as policy entrepreneurs and can beyond that drive a mobilization toward a change of regimes that can further redefine and restructure industrial areas for greater economic and social benefit (Wilder 2009: 24–25). Such a regime change is considered to be a result of co-production which in theory unlike top-down approaches for the planning of industrial clusters may have a higher degree of success and act as a roadmap for future policy making (Hassel 2015: 6).

Beyond the idea of clustering and innovative resource sharing concepts there are also plethora of industrial businesses that are necessary for the servicing of urban areas or follow business models that benefit from an urban location (Grodach & Martin 2021: 5–7). Businesses such as waste management, support services or more generally businesses in the production, distribution and repair (PDR) sector can profit greatly from close proximity to the urban areas they service and their customers (ibid.: 14-16). The PDR sector also includes so-called “low-tech” and “high-touch” manufacturing that requires a great amount of manual labor that adds significant value (Grodach & Martin 2021: 5–7). With an urban location these types of businesses are able to directly cater to local demand, access a greater pool of available labor and as a result create greater impact in the local economy (ibid.) in spite of a higher land price or rent in more central areas (Webster et al. 2014).

However, activities that are part of a green economy are diverse in their business models (Globe Foundation 2010: 6–12) and as a consequence of this also in their spatial demands (Baldwin 2005: 11–14) and associated emissions (Metro Vancouver 2018b: 2). As a result, those requiring industrially zoned land (ibid.) are facing similar problems in urban areas now as their non-green counterparts have faced with the beginning of the post-industrial era. The post-industrial era is characterized by a push for redevelopment and rezoning of those urban areas that used to permit heavy industries and high emissions (Grodach & Martin 2021: 14). This creates a global phenomenon showing a centrifugal force at different stages that pushes industry with lower economic impact and unwanted emissions from their central locations into the periphery of urban areas (Webster et al. 2014: 316–317; Bathen et al. 2019: 12). What these initial industrial land uses are often replaced with are high value light industries, financial services or high-tech businesses that are part of the Industry 4.0 agenda (Bathen et al. 2019: 12; Grodach & Martin 2021: 1). This development is only spurred on by factors like a growing urban population that creates the demand for additional housing or speculation in the real estate market (Webster et al. 2014: 318; Cox 2022: 2). As a result, redevelopment of urban industrial land has become

extremely profitable in major housing markets which then reduces the industrial land supply and with it opportunities for light industrial green businesses in urban areas (O'Connor et al. 2019; Cox 2022: 2).

## ***2.2 Covid-19 and Industrial Land***

Currently post-industrialism and the resulting lack of flexibility and productive capacity is becoming an apparent problem with the Covid-19 pandemic and associated issues including lock-downs (Chowdhury et al. 2021: 1–2). The result is in some instances a reconsideration of the status quo of the global economy and its supply chains (British Columbia 2022a: 6). Early on in the pandemic it became clear how vulnerable international supply chains are and how easily they can break down or become unpredictable (Michie 2020: 302–303; Chowdhury et al. 2021: 1–2). What has been demonstrated to small businesses and even large companies is that being flexible in their operations has become necessary and any reliance on international supply chains can become a detrimental as shipments are cancelled or delayed. Due to these uncertain circumstances in global trade industrial businesses that are independent from such global supply across oceans offer prospects for a more resilient local economy (Michie 2020: 302–303). The businesses that managed to maintain their activities through the pandemic have been making changes to how they are working as well. Working from home is now not something people and companies were forced to do but perks even top industry talents are looking out for that could reduce the volume of commuter's long-term reducing demand for office space that motivates their conversion to other uses (Florida and Ozimek 2021). The need for more social inclusion has become another important takeaway from the pandemic as inequality rapidly increased during the pandemic (Ferreira 2022). An economy that offers low entry jobs with a “livable” wage that is enough for housing and sustenance in urban areas is in this regard becoming more and more relevant to allow for inclusive growth of cities and social mobility of its citizens (Canadian Inclusive Economy Initiative 2021: 1). Such low entry jobs can be found in labor-intensive light and heavy industrial uses (VEC 2021b: 1). Industrial manufacturing or distribution uses for example are found in specific locations that are chosen



based on a variety of factors (Baldwin 2005: 11–14). One such factor is industrial land because as a zoning category it accounts for the externalities of these activities such as truck traffic, noise or smells through spatial buffering and use compatibility considerations (Logue 1998: 4–5; King 2018: 3).

Therefore, protecting industrial lands and their activities despite market pressures can not only help in being more flexible to shocks through a more diverse mix of land uses and economic activities but is also considered to increase the resilience of a local community if inclusive growth is ensured (Canadian Inclusive Economy Initiative 2021: 1; British Columbia 2022a: 6). Efforts for the economic recovery from the pandemic should therefore also consider utilizing this potential of industrial land alongside a green policy trajectory to mitigate effects of climate change.

### **2.3 Industrial Policy**

A way to navigate existing challenges occurring in an industry and on industrial land can be the creation of an industrial policy. Industrial policy in this thesis is defined as “*an attempt by government to influence the composition of firms within its jurisdiction. It involves some combination of regulation, fiscal policy, and, in some cases, monetary policy instruments*” (Wilder 2009: 2–3). This means an industrial policy can address challenges by providing a long-term strategy that stakeholders should adhere to. The government's role in this is to create support programs for businesses that are willing to and have the competence to reorganize their production to be part of a specific direction for example the green economy but lack the means to feasibly do so (Wilder 2009: 4–5). In this context both existing and new businesses are incentivized through funding to align with the policies goal. However, governments across the globe and particularly those in North America have been tentative about calling something an “industrial policy” as the term has a negative connotation (Wilder 2009: 13–17) that originates from past endeavors of prolonging the life of so-called “sunset industries” that are essentially doomed in a financial sense (Wilder 2009: 10–11). A contemporary example would be the industries related to the extraction and use of coal, which may be financially beneficial but do not match the overall development

goals of most countries targeting the 2017 Paris Agreement goals (Gao et al. 2017: 272–278). In spite of this the adoption of industrial policy hasn't gone away as a result instead it has become more implicit (Wilder 2009: 17). Considering the issues outlined earlier the here and now requires a long term redistributive industrial policy that supports a green economy that can both generate the innovations and manufacture the products necessary to further sustainability in other economic sectors (Wilder 2009: 13). For this reason, the thesis will highlight the implicit industrial policy of the City of Vancouver and surrounding region that developed into facilitating this direction.

## **2.4 Looking to Vancouver**

Creating an industrial policy that aims to facilitate and direct industry is an approach (Wilder 2009: 13) that has gathered recognition in Canada in order to address the current transformation challenges at hand in major Canadian cities (Wilder 2009: 1). Why this is now necessary is shown in Logue's work focused on elucidating periods of policy adoption for industrial land in the City of Vancouver. The cities policy direction for industrial land in the past is broken down into three periods in Logue's work (1998). The first period ranges 1968 to 1976. It is characterized by the displacement of industrial land in the City of Vancouver as well as a post-industrial sentiment that accompanies these changes (Logue 1998: 53–59). The second period ranges from 1977 to 1986 and is characterized by declining economic conditions in the city and region that led to a renewed focus on industrial activities to create economic growth that is accompanied by a growing tertiary sector (Logue 1998: 61–65). The third and final period ranging from 1987 to 1991 is again characterized by a post-industrial sentiment that combined with an urgent need for further housing in the city led to an unprecedented disappearance of urban industrial land through rezoning in favor of both office uses and housing (Logue 1998: 70–77).

With this in mind the mid-1990s protective measures (City of Vancouver 1991: 16–17) for a decreasing supply in urban industrial land on a municipal level indicate a diverging direction from Logue's most

recent period. What follows are policies and market conditions that set the city on a course to become the third greenest city with the fourth most innovative clean-tech sector worldwide by 2018 (VEC 2018b: 1–7). A look at this development alone suggests a new period with a different implicit policy direction. Gathering insights on how this success came to be therefore might highlight avenues to reproduce and further facilitate this success. A likely contributor for this apparent success in the City of Vancouver is the Vancouver Economic Commission (VEC) founded in 1995 (VEC 2022a). With the 2011 Economic Development Plan its major aims are “*1. Creating a Healthy Climate for Growth and Prosperity; 2. Supporting Local Business, New Investment and Global Trade; 3. Focusing on Talent: Retaining and attracting Human Capital*” (VEC 2011: 2). In this role the VEC evolved to become a facilitator of a green, circular and inclusive economy working as a conduit between public and private (VEC 2011: 4).

Monitoring as part of this three-pronged pursuit shows that Vancouver's green economy grew by 35% from 16,706 green jobs in 2010 to around 24,714 in 2016 (VEC 2018b: 5). These green jobs are located in such sectors as “*local food, green building design and construction, clean technology, alternative energy and green building products, green infrastructure, transportation and planning, sustainability services and education, land and water remediation and environmental consulting and materials management and recycling*” (VEC 2014: 4). Through low taxes for businesses and its green economy the city has marketed and positioned itself to generate further growth of its green economy (VEC 2018b: 1). The role of industrial land situated in this economically important urban area is therefore a key aspect for new light industrial green businesses in these sectors that are drawn in by this development. To better understand the situation of industrial land and its users in the City of Vancouver it is important to understand the context that it is situated in. The city serves as the urban core of the Metro Vancouver region (City of Vancouver 2017a: 1), which is accommodating half of British Columbia's population and makes up 60% of the province's GDP (Deloitte 2020: 8). Its role in the national context is as a western terminus for the Canadian rail network acting as a gateway for trade across the Pacific Ocean for the

country as a whole (City of Vancouver 2017b: 1; Deloitte 2020: 9). This function also emphasizes the established role of port related light industry that is necessary for the storage, distribution and transport of goods (ibid.). The geographical location of the region and its amenity early on attracted people and businesses plotting a course of continuous growth.

This is exemplified by Figure 2 as shown in the 1996 Livable Region Plan, which is built around the expectation that the regional district will grow from 1.6 million in 1991 to roughly 2.7 million people in 2021 (Metro Vancouver 1996: 25). The number of households as well as available jobs were expected to nearly double in the time frame while largely maintaining the same urban boundary to safeguard the surrounding natural areas and the 130,000 hectares forming the agricultural land reserve put in place to sustain the growing population (Metro Vancouver 1994: 9–16, 1996: 10; City of Vancouver 2013c: 22). This 30-year prediction holds true in the year 2021 with roughly 2.5 million people living in the region that are working roughly 1.25 million jobs (Metro Vancouver 2013: 7; Macrotrends 2022). Industrial land in this context first off accommodates a quarter of all employment in the region which corresponds to roughly 310,000 jobs (Metro Vancouver 2013: 10). Additionally, 24% of all businesses in the region are located on industrial land (ibid.). Secondly in 2010 industrial land accounted for 11,430 hectares or 28,200 acres of the region of which 2,685 hectares or 6,600 acres were vacant. This is a result of five years in which 100 hectares or 1200 acres of vacant industrial land were absorbed each reducing the vacant land supply (ibid.: p. 4). The key issue facing the region with respect to industrial land becomes obvious by looking at the projected demand for vacant industrial land. Considering the total supply of 11,430 hectares in 2010, of which 2,670 hectares are vacant. The projected demand is ranging between scenarios of 1,578 and 3,035 hectares by 2031 as shown in Figure 3 (Site Economics Ltd. 2015: 63–65). This means demand is considered to likely exceed this supply as early as the mid-2020s. This early date and outcome are supported by the character of the remaining vacant land which is considered to be in unsuitable locations and suffering from other constraints that make only fraction usable for industrial

users that require large lots (ibid.). This particularly applies to those businesses that are dealing with trucking and large volumes of goods such as a number of port related businesses. By 2017 the region is calculated to have 804 vacant hectares available to the market while the municipality City of Vancouver is left with none (Aderneck 2012: 2). This explains the average regional vacancy rate for industrial space of 3,6% in the region in 2015, while numbers go as low as 0,1% in the City of Vancouver (Colliers Canada 2022). As a result prices for a limited amount of industrial space are skyrocketing by as much as 22,5% year over year (ibid.). The issue in Vancouver is exacerbated as Canadas real estate market is currently the third least affordable (Cox 2022: 7) creating a pressure cooker situation that forces unique decisions and solutions to maintain the existence of comparatively lower value industrially zoned land (Webster et al. 2014: 317). Industrial lands therefore demand attention and action as they are significant to the economy and operations of the city and region. Also, as British Columbia's economy declined in 2020 based on the negative impacts from the Covid-19 pandemic that pushed economies all over the world into deep recessions (Ministry of Finance 2021) there is additional value, as hinted at earlier, in looking at Vancouver's response to the recession and specifically the role industrial land is intended to play as a means for social inclusion (City of Vancouver 2022e: 13–14).

### **3. Methods**

The underlying approach for the selection of the methods that guide the research is a data triangulation (Flick 2010: 281). The aim of a data triangulation is to utilize three different methods that create three separate data sets that are then ultimately corroborated to provide increased accuracy of the results (ibid.: 283). First the policy overview in combination with the narrative policy framework approach provides data on the issues at hand and the policy direction chosen for industrial land both in general and specifically in the False Creek Flats (Jones et al. 2014: 19). These framework elements spanning a timeline from 1990 to 2022 are then analyzed using issued business licenses and spatial data as an indicator and second dataset to confirm the implementation of specific policy directions based on the

number and type of businesses present in the False Creek Flats case study area (Reidsma et al. 2011: 604–606). Finally, interviews with local business stakeholders and policy experts provide the third dataset through their statements on the subject matter that then corroborate policy impact, outline current challenges and more (Kallio et al. 2016: 5).

### 3.1 Case Study

The data triangulation is framed through a case study that lends itself to create an overview of policy and NPF in two ways: Firstly, it enables the creation of a “*fully contextualized problem definition*” (Pal 2022: 10), which can then in theory be used as basis to formulated more reliable solutions. The case study in this context is only used to spatially limit the area of effect of policy efforts since 1990 (GLTN & IFAD 2019: 19). The case study thereby limits policies to those that address industrial lands in general or the False Creek Flats specifically. It is not unusual to use a single case this way to illustrate a broader phenomenon according to Pal (2022: 234). Specifically, the phenomenon that is created by the institutional intentions for industrial lands in the City of Vancouver and region. Additionally, “*the use of cases to cast light on new developments or emerging realities is often a strategy used when an entire system is not yet developed or available for analysis*” (ibid.) which is the case as the pursuit of the green economy and carbon neutral economy is an ongoing process on a global level with a 2050 deadline (MGI 2022: 1).

### 3.2 Policy Overview

The policy overview in the context of this thesis shares many similarities with a literature review. By similarly gathering relevant documents and summarizing the content the policy overview aims to show the problem setting and the in response selected policy direction that has addresses industrial land and the land uses it contains (Grant & Booth 2009: 97). The review of literature has its origin in social science and a plethora of approaches exist to provide policy makers with the necessary data regarding

specific concerns (Grant & Booth 2009: 91–92). However as pointed out by Grant and Booth the time required for the creation of a more substantial systematic review makes it often unsuitable for its use in policy making (Grant & Booth 2009: 92). Additionally, Cairney shows that the analysis of policy requires an efficient approach to gather necessary data in face of resource and time constraints (2021, p. 23). Taking this to heart the process of a systematized overview will be followed for the thesis rather than that of a systematic literature review to serve as preparation for the following narrative analysis. An overview is a reference to any summary of literature that aims at showing its characteristics to those unfamiliar with the matter at hand (Grant & Booth 2009: 99). The systematized nature of the overview is in this case derived from the selection criteria for inclusion and exclusion of documents allowing for a transparent and a reproducible corpus of literature, which among aspects are aspects that the more in-depth systematic literature review builds on (Grant & Booth 2009: 91–92).

The first two selection criteria are based on the term policy documents. Firstly, the documents need to be a policy to be included which means it has to match the following definition as “*a set of decisions, strategies and actions designed to achieve a desired outcome*” (Logue 1998: 5) that has in written form been either adopted or published by the City of Vancouver, the Vancouver Economic Commission or Metro Vancouver. With this approach the provincial and national level are excluded to limit the scope of the review to the regional boundary of the Metro Vancouver region (Cairney 2021: 17). The regional level is relevant as Metro Vancouver is the regional planning authority that is making decisions for industrial lands through large scale land designations and strategic policy (Metro Vancouver 2011b: 2). Furthermore, it is also responsible for the organization and provision of public services according to part 14 of the local government act (Province of British Columbia 2022). The City of Vancouver is on the one hand tasked with realizing regional policy within their municipal jurisdiction (City of Vancouver 2013b: 7–8) and on the other hand has the authority to pass by-laws such as zoning schedules in accordance with the Vancouver Charter to guide among other aspects its urban development (British Columbia 2022b).

The policies are further differentiated by type into three categories following El-Haggar and Samaha:

- planning systems, which includes strategic policy and strategic plans that include the False Creek Flats general area,
- regulatory tools, which includes zoning and development by-laws
- and financial instruments used like development cost levies (2019, p. 14).

Thereby excluded is the information category which in this context includes guideline policies in order to limit the scope of the overview to policies with direct connection to industrial lands rather than those contingent on other policies (City of Vancouver 2022h). The second criterion is based on Logue's work using the time periods created in his work that characterize past policy efforts guiding industrial land (1998, pp. 70-77). The most recent of the three time periods describes a rebirth of post-industrialism that extends to 1991 where the scope of his work ends and where the thesis and policy overview continues (ibid.). Following these aspects, the second criterion is that the policy documents should not be older than 1990 as a starting point for the policy overview (Cairney 2021: 17).

The third criterion is also based on this existing work as only "*policies with implications for Vancouver's industrial land base are part of the review*" (Logue 1998: 6). Industrial land is in this effort therefore defined as a piece of land that is zoned to include at least one permissible industrial use type. For the purposes of this thesis this includes the following use types:

- *"light and heavy industrial production (e.g. cement manufacturing, food and beverage manufacturing, furniture manufacturing, metalwork and fabrication, sawmills);*
- *distribution (e.g. warehousing, industrial storage, and freight trucking, intermodal couriers);*
- *repair (e.g. autobody shops, truck and trailer repair, consumer goods repair)*
- *construction materials and equipment (e.g. building supplies and specialty trade contractors, heavy equipment rental and leasing);*
- *infrastructure (e.g. public utilities such as wastewater treatment facilities and pumping stations, works yards, rail / port terminals);*



- *storage activities (e.g. outdoor and container storage); and*
- *wholesale (e.g. merchant and logistic wholesalers)” (Metro Vancouver 2018b: 3)*

For further clarity businesses are considered industrial users or industrial businesses if they match one of these use types within their application and entry into City of Vancouver's open data business license database (City of Vancouver 2022a). Other use types that may be approved conditionally or outright even within light industrial zones like I-2 or I-3 are considered non-industrial (City of Vancouver 1997b, 1999c). Following these definitions and selection criteria, the overview is being generated based on online literature searches centered on institutional websites, some archival research at the City of Vancouver Archives and through interviews with policy experts.

### **3.3 Narrative Policy Framework**

The use of the Narrative Policy Framework (NPF) is to a great extent owed to the fact that Logue's work describes the creation of his periods only as an identification and discussion of prevalent policy trends (Logue 1998: 8). This approach provides few guidelines to follow whereas work by Grodach, which similarly addresses industrial land and related policy, makes mention of the concepts of policy narratives and policy imaginaries to outline periods characterized by specific and targeted policy actions (Grodach & Martin 2021: 2; Grodach 2022: 4–7). The creation of a policy narrative is crucial in order to effectively convey the needs of businesses or groups (Grodach 2022: 7). Producing a coherent narrative can in this way structure agenda items and legitimize a policy direction and ideally succeed in competition with diverging or contradicting policy initiatives (ibid.). This makes narratives a powerful tool in public discourse and shapes consequent actions that are being taken. Because of this inherent value and Logue's work on policy directions for industrial land as well as Grodach's work on illuminating policy narratives in San Francisco the assumption can be made that throughout the period from 1991 to 2022 additional policy directions and narratives have been utilized for industrial land and the case study area. The NPF is used for precisely this purpose as the value attributed to narratives or

simply of stories as part of policies is also reflected in the NPF method (Jones et al. 2014: 1). The NPF was formally introduced by name in 2010 as a means to provide greater objectivity to the analysis of a shared social reality (Jones et al. 2014: 3–4). Despite this attribute this work on the NPF also acknowledges that the interpretation of a narrative is to a high degree unique for each individual. This problem of narrative relativity poses a significant challenge that is at least in part addressed by the operational strategy of analysis that makes up the method (Jones et al. 2014: 4–5). The NPF is therefore founded on the understanding that a narrative is not entirely relative to an individual and that the narrative elements that structure a story or in other words policy can be identified with less subjectivity (ibid.). By identifying the setting, characters, plots and the moral of the story as individual elements a more generalizable structure is created that reduces the subjectivity inherent in the interpretation and analysis of a policies narrative (Jones et al. 2014: 6–7).

The first element is the setting and describes the context in which a policy is being implemented. This element contains for example *“taken-for-granted facts characterized by very low levels of disagreement, unquestioned (or at least unmovable) legal and constitutional parameters ...”* (Jones et al. 2014: 6).

The second element of the framework is based on the characters that are part of the narrative such as groups, stakeholders or other entities that are either involved in the decision-making process or are the subject of it. In a simplified way these are referred to as the heroes or villains of the story (ibid.).

The third element is the plot that usually has a beginning, middle, and end. In essence the policy narrative plot connects the characters to the context or problem setting outlined previously. Of course, plots can do this in different ways. As recommended by Jones et al. work by Stone is for this element used as a guiderail that contains the most common types of policy plots that can then be assigned (Stone 2011). Stone defines stories in her book *Policy Paradox* as *“Narratives with heroes and villains, problems and solutions, tensions and resolutions”* (Stone 2011: 159) and then broadly separates the most common plots used into those pertaining to change or to power. The plots related to change are those that describe rise and progress or decline and stymied or illusory progress. The plots related to power are

those of control, helplessness, conspiracy and blame-the-victim (Stone 2011: 159–163). These options are used or combined to represent the policy narrative. The final element, the moral of the story contains the policy solution which for example can be lists of goals or actions that are to be taken to that address the initial problem setting (Jones et al. 2014: 6–7). The NPF in the thesis a macro-level NPF according to Jones et al. as it looks at institutional policies over a longer period (2014, p. 19). This sub-method describes the examination of how institutional policy narratives develop over time in the narrow context of industrial lands related policy content (ibid.). The process of creating the NPF ultimately consists of assigning the relevant content of the selected policy documents to the NPF elements in order to allow an overview and comparison of these elements over the time period and across individual documents (ibid.). The narrative element problem setting is in this context meant to portray what the policy is motivated by and a diverging problem setting from previous policies indicates a changing narrative. This goes back to Cairney and the methodology of policy analysis which builds on an initial problem setting (Cairney 2021: 12) that is both the end and beginning of a policy cycle (Bundeszentrale für politische Bildung 2021). The narrative element moral of the story as part of the policy documents is then analyzed for new policy directions that are being implemented in the False Creek Flats and on industrial lands in general to address the problem setting (Jones et al. 2014: 6–7). The element is used similarly to the problem setting to showcase shifts in the policy narrative as a whole toward a new policy direction with which in theory a singular loop in the policy cycle is concluded followed by a monitoring phase (Bundeszentrale für politische Bildung 2021). The characters element is not relevant to this work as the potential characters are assumed as either the general public or institutions that are dictated through the policy selection criteria. As a result of this the plot element is also limited in its potential but is used to sum up policy narratives and indicate changes within the narrative elements these contain to simplify and improve their comparison within the timeline in combination with the added policy type description.

In summary the NPF is used in order to create periods with shared narrative elements that provide the answer to sub-question one: Which policy narratives and policy directions are used and how have these changed in the time 1990 to 2022 time period?

### 3.4 Firm Population Analysis

The analysis of the firm population of the False Creek Flats is done in ArcGIS Pro with data from the City of Vancouver's open data portal to ascertain the potential impact of policy directions identified in the narrative policy framework on the case study area (City of Vancouver 2022b). The procedure roughly follows the sustainability impact assessment (SIA) framework approach to show policy impact on industrial land in China (Reidsma et al. 2011: 604–606). The pre-modeling step is realized through the narrative policy framework providing both a problem setting and policy direction as a future scenario to address the problem setting, which is elaborated in chapter 4.3. This step also serves as argumentation for the selection of reference years that are analyzed for alignment for the policy direction. This “ex-post” or “after the event” policy impact approach aims to evaluate data of at least two reference years before and after the introduction of changes to narrative elements such as a new policy direction (Cairney 2021: 11). Following exchanges with institutional stakeholder four a suitable time span to effectively gage the impact of a policy in the Metro Vancouver region is at least five years, which is another guiderail also in part used to determine the selection of reference years (see Appendix VI). In addition to these factors the city makes available its georeferenced version of the business license database starting in 1997 and extending to 2021 as the last completed dataset at the moment of data extraction (City of Vancouver 2022b). This data availability limitation therefore dictates where the analysis can start and end. The case study description is realized in chapter 4.1 and outlines the spatial area for which the data is gathered as shown in Figure 4. Regarding indicator selection business licenses in the City of Vancouver are issued every year and each business is required to renew it every year (City of Vancouver 2022d). As the license is required for business operation a non-renewal means that the business is inactive for a variety of potential reasons and will therefore not be counted toward the firm population. The term firm population is in reference to McKenzie and Sud and comes from a perspective of ecological succession of businesses (Audretsch et al. 2021: 6). In the context of the analysis a change in firm population is an influx of a new type of business such as 4.0 industries into a new space

replacing or adding to the previous population, which then theoretically results in a change to the False Creek Flats firm population. This approach is a slight deviation to McKenzie and Sud as the analysis considers all businesses within the False Creek Flats as one firm population, based on their location, that evolves over time rather than multiple firm populations based on their individual sector affiliation (ibid.). The available datasets of issued business licenses include a type of use description and the businesses' location which is accurate to the property parcel the business or businesses are located on (City of Vancouver 2022b). These characteristics make the business licenses a suitable data source to create data that allows to make judgements on the firm typology present within the False Creek Flats. This idea aligns with work done by the City of Vancouver found the City Archives (see Figure 5). The data shown in Figure 5 in spite of that cannot be used as it like refers to a previous spatial dimension of the Flats, which is later shown in Figure 8, and is evidently not georeferenced. The modelling step is realized with ArcGIS in which the business license datasets for the reference years are selected and exported from the Open Data Portal (City of Vancouver 2022b). In ArcGIS these are merged and a district boundary shapefile is created based on the 2017 Area Plan boundaries, as shown in Figure 6, to extract the relevant data for the False Creek Flats (City of Vancouver 2017e). The resulting database can then be used to compare individual reference years and their business type quantities (see Appendix II).

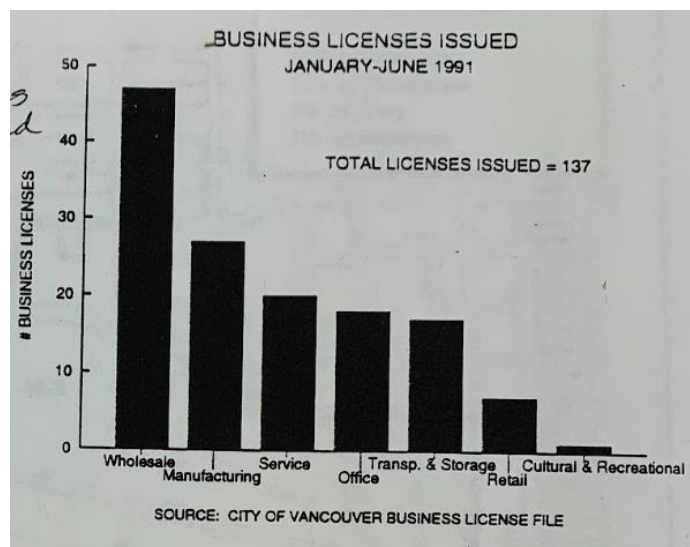


Figure 1: Business Licenses 1991 (City of Vancouver Archives COV-S697)

Within this dataset specific selections made for industrial businesses based on the 2018 definition of Metro Vancouver and the more extensive descriptions of Section 2 of the municipalities zoning and development by-law to show how the industrial part of the population in the False Creek Flats has quantitatively changed over time (Metro Vancouver 2018b; City of Vancouver 2022f). Another selection

is created based on the UNEP sectors that are suitable for contributing to a green economy. This selection includes the industry sectors manufacturing, transport, buildings, energy, vegetation and landscape, food, waste, infrastructure and digital technology, and tourism (UNEP 2011). The use types identified for both the industrial definition and the selection based on the UNEP sectors can be found in Appendix I. The latter approach is also a compromise to show the development of the green economy in the False Creek Flats as it does not consider the actual green economy activities that can occur within a fairly broad use type definition as it is outlined in Section 2 of the by-law (City of Vancouver 2022f). The VEC has also already demonstrated with a more extensive methodology including surveys and data by Statistics Canada how to assess what activities are actually green or not which is outlined in a working paper on the green economy (VEC 2012). Using this method is however not feasible as it far exceeds the scope for the thesis. As a result, the selected approach will only show the businesses that offer potential to be part of the green economy indicating a fertile ground for the developments VEC has observed (2011).

The data will be evaluated through comparison between reference years and through standard deviation to indicate outlier business types that experienced stronger fluctuation than other business types. To reaffirm the correlation of strategic policies in particular a third data source is created through interviews with local stakeholders. The procedure of which is elaborated in the following chapter and completes the utilization of the SIA framework as shown in Figure 4. Along with these evaluation methods further bar charts and other graphics are used to weigh effects of different policies on the firm population in a periodical step by step overview, which is the basis to answer the second sub question: How has the firm population of the False Creek Flats changed in their typology in the time period?

### **3.5 Interviews**

The qualitative interviews are executed face-to face in a semi-structured manner geared toward highlighting issues within the business community or institutions as well as experiences with past and

present policies (Kallio et al. 2016: 18). Three stakeholders are selected for these purposes due to their role as light industrial business owners with experience operating in the False Creek Flats, while another three interviews are with city and regional personnel that are dealing with industrial land and industrial uses in an official capacity (Cairney 2021: 17). The latter three are also selected based on the institutions they work for mirroring those selected for the policy overview, which are the Vancouver Economic Commission, City of Vancouver and Metro Vancouver (see chapter 3.2). The interview transcripts can be found in part VI of the appendix. Further following Kallio et al. due to the different role of the stakeholders and different expertise two different questionnaires are created for business stakeholder and the institutional stakeholders to facilitate the process for both parties (2016, pp. 19-20). In doing so and owed to the unpredictability of responses and the semi-structured nature an ex-post restructuring of the data is necessary to provide a full picture. To achieve this the audio-recorded interviews are first transcribed and then coded in a deductive manner identifying the questions posed and the relevant responses to them (Deterding & Waters 2021: 15–16). The codes are then again more broadly categorized to show qualitative data pertaining to:

- Their understanding of what industrial and industrial land is.
- Statements on the succession of firm types or other changes observed in the False Creek Flats area.
- Examples of successful institutional policy action and economic success on industrial land from both private and public stakeholders' perspectives.
- Problems with business operations or challenges facing institutional actors in realizing policy goals.

The resulting structure created in MAXQDA then shows the whole variety of responses regarding these aspects from diverse stakeholders despite slight variances such as responses that address an earlier or different question (MAXQDA 2022). The coded data is then summarized in order to create a description of the changes, problems and success stories in either the region, the city or in the False Creek Flats,



which can be found in chapter 4.5. The chapter in this way both serves the triangulation as well as the SIA framework and is drawn upon throughout the final parts of the Thesis. The data is accordingly used to substantiate or question conclusions made based on the policy overview and firm population analysis regarding the research question (Flick 2010: 281; Kallio et al. 2016: 20).

#### **4. Analysis and Findings**

The analysis consists of five parts, a short introduction to the case study area and its more distant past, a policy overview that includes policies from 1990 to 2021 that connect to industrial land or the False Creek Flats, the resulting narrative policy framework from which narrative periods and policy directions are derived, the analysis of issued business licenses throughout six reference years from 1997 to 2021 and finally a summary of the interviews.

##### **4.1 Case Study Area: False Creek Flats**

The selection of the False Creek Flats as a case study area has many reasons both pragmatic and scholarly. The area is in walking distance to the Downtown core, accessible by public transit through Sky-Train and bus thus fulfilling the need for an urban industrial land in the City of Vancouver. The area is also to a large part owned by the city (see Figure 6), which is due to its both fascinating industrial history and extremely problematic history in regard to the treatment and displacement of the region's native peoples (City of Vancouver 2017e: 2). In the context of this thesis the ownership situation, the artificial creation and the associated well documented planning history are aspects that also make it more likely to identify the fingerprints of institutional policy in the area. The False Creek Flats were originally part of the False Creek waterway and its surrounding tidal area that extends to the English Bay which then connects to the Pacific Ocean (see Figure 7). The waterway in its original form was crucial to the life and sustenance of the first nation people known as the Musqueam, Squamish and Tsleil-Waututh (City of Vancouver 2017e: 2). The first European reaching the general False Creek area was Captain

George Vancouver in 1792 and in 1865 the first lumber mill was erected on the southern shore of the Burrard Inlet (Donald Luxton and Associates Inc. 2013: 10). By the mid-1800s Vancouver had an established logging industry that significantly shaped the Burrard Inlet coastal area and created great wealth in the early stages of Vancouver's development as a city (ibid.). In 1881 an area of 6000 acres surrounding the easternmost parts of the False Creek waterway was given to the Canadian Pacific Railway to complement a new port development in Vancouver by creating a new western terminus for the Canadian railway network (ibid.). With that it became the largest land owner, employer and proprietor of logging activities in the area and softened the rough logging-camp reputation of Vancouver. The False Creek waterway meanwhile was utilized as a waste dump but also for transport and log storage that attracted a growing number of industrial businesses to its shoreline (Donald Luxton and Associates Inc. 2013: 10–11).

Due to this growth and an increasingly diversified industry the False Creek became a natural barrier and inconvenience for business operations. For this reason, the Main Street bridge among others was built across the False Creek splitting it in two parts. The western part of the False Creek connecting to the English Bay remained suitable for shipping due to its deep water whereas the marshy eastern part further developed into a waste dump to the point where it was seen as useless (ibid.). Instead of dredging the low water areas in 1909 the Great Northern Railway, later on the Canadian Northern Railway, received permission to cover up the eastern part of False Creek to accommodate new rail yards (Donald Luxton and Associates Inc. 2013: 12). By 1915 work began to fill the eastern part and by 1919 the marshy area transformed to building land that now extended from Clarke Drive westward past the former Main Street bridge to accommodate two rail terminals (Donald Luxton and Associates Inc. 2013: 32, 45, 69).

The False Creek Flats are for the purposes of this thesis similarly limited to the area contained by Prior Street and extended by Venables Street in the North, Clarke Drive in the East, Great Northern Way and E2nd Avenue in the South and Main Street in the West.

The firm population in the False Creek Flats has grown significantly since the establishment of the initial two rail companies in 1919 (Donald Luxton and Associates Inc. 2013: 69). By 1997 the area is the location for 175 businesses with 3,000 employees (City of Vancouver 2022b). Over the following 30 years the area then continued to grow containing up to 600 businesses with 8,000 employees (VEC 2017: 4).

Toward the end of this more recent period of the False Creek Flats the scarcity of industrial land has led a price increase of up to 50% from 2015 to 2016, which is now threatening the viability of industrial uses in the area (ibid.). The use types in the area also diversified significantly and the amount of



*Figure 2: Looking North-West from VCC Clark in South-East Corner of the False Creek Flats (Own Illustration)*

space used by businesses has consequently decreased. The False Creek Flats are despite this growth still characterized by several older structures that offer relatively cheap rents and 20% of tenants that have persisted in the area for over 40 years contributing to the continued existence of the industrial enclave (ibid.).



*Figure 3: Parker St. Studios (Own Illustration)*

## 4.2 Policy Overview

The policy overview is designed to provide the ground work for the narrative policy framework analysis and spatial analysis in the following chapters. The three methods output results that together outline conditions and characteristics of institutional actions that contributed to the current state of the False Creek Flats. The policy overview provides a short summary of every relevant policy document found to show a timeline of planning efforts spanning over 30 years beginning with the regional *Creating Our Future program* in the early 1990s to City of Vancouver's 2022 *Vancouver Plan* (Metro Vancouver 1994; City of Vancouver 2022e). The criteria for document selection are based on the definition of industrial land and other factors that are further elaborated in chapter 3.2.

### **1990-1997: Spatial Constraints, Managing Growth and Directions for Municipal Industrial Land**

The 1990 *Creating our Future* program does not only provide a connection to Logue's timeline (Logue 1998: 77) but is also a key moment in Vancouver's regional planning history. In an extensive planning process that included public participation, an outline was created that would guide the region's development for the next 30 years and integrates ideas from previous plans of the 1970s (Metro Vancouver 1994: 15). With the geographical constraints of the lower Mainland in which the Metro Vancouver region is situated as a self-evident backdrop the need for such a new planning approach became a widely accepted necessity (Metro Vancouver 1994: 16–19). This need for planning is accompanied by the desire to maintain both natural space and the quality of life in the region while the population is growing from 1,647,806 to an expected 2,676,000 (Metro Vancouver 1996: 25). This expectation drove the creation of a formal regional growth management that internalized the safeguarding and enhancement of quality of life in the region, which in turn should attract businesses and new talent to better adapt to future challenges in the region (Metro Vancouver 1994: 12–13). The planning for the region as a result is guided by four principles:

- the protection of the “green zone” which refers to the natural areas surrounding the Metro region,
- the building of complete communities that are meant to ensure an equal quality of life for a breadth of socioeconomic groups,
- creating a “compact metropolitan region” in order to accommodate additional growth but to not expand further into natural space or the agricultural land reserve
- and finally increasing the choice of transport modes beyond the car to reduce congestion and air pollution in the increasingly dense region (Metro Vancouver 1994: 16–19).

The year 1990 also marks the first acknowledgement of climate change as the *Clouds of Change Report* is presented to Vancouver's city council and the goal to reduce carbon dioxide emissions by 20 percent as

part of the actions to address global climate change issues is adopted. The report does not meet the selection criteria but does set the tone for the later efforts to address climate change with the phrase "*Atmospheric change means we have to change*" (City of Vancouver 1990: 6).

The following year the City of Vancouver first shows parallels to the regional guide rails of the Our Future planning program with its 1991 *Central Area Plan* that is meant to meet the complex planning demands of Downtown Vancouver and its neighboring districts (City of Vancouver 1991: 1–3). With the expected growth of the region in mind planners acknowledged the need for further planning to guide the transformation of industrial land.

It is also recognized that further loss can create long term issues as industrial lands provides services and support to the office uses in the downtown core (City of Vancouver 1991: 16–17). From logistical support to design and repair services these urban industrial lands were recognized to hold significant value in combination with third sector services and other office-based uses. Because of this realization appropriate locations for support activities that service the downtown area were identified and roughly mapped out to secure these types of uses in the 1991 plan. In the plan it is also pointed out that the False Creek Flats are low in residential amenities, offer a good location for industrial uses and should remain an industrial area (ibid.). As a result, the False Creek Flats are marked as “confirm as industrial” (see Figure 5). In the plan the question does remain what types of industrial uses or city-serving businesses are needed in the future, how much space they require and how close they should be to the city (City of Vancouver 1991: 16–17).

On a regional level the *Long-Range Transportation plan for Greater Vancouver 2021* plan first attempted in 1993 to address the long-term transport issue in parallel the *Creating our Future program* (Metro Vancouver 1994: 13–15). The main aim being to reign in the growing number of cars on the road associated with the region’s growth (Metro Vancouver 1993: 8). This aim was pursued through the creation of transitways, bus lanes and new infrastructure as well as a promotion of alternative modes of transport (Metro Vancouver 1993: 8–11). The plan was also an attempt to reign in the urban sprawl by

reducing car dependency in order to achieve modal splits comparable European cities like Stockholm or Zurich at the time (Metro Vancouver 1993: 9-10, 63). To achieve such a shift the speed and investment for public transit was to be increased with the option of accepting road congestion as a tool to discourage car use (Metro Vancouver 1993: 8–13). Additionally, future adjustments to zoning regulations were to be made to promote higher density complete-community developments that are meant to decrease trip length providing a tie in with the *Creating our Future program* (Metro Vancouver 1993: 9–10). The plan also considered the role of Vancouver as a port city and aimed to accommodate port related trucking (Metro Vancouver 1993: 50). The Vancouver port plays is then further highlighted in its key role for the regional economy as Canada's "primary Pacific trade gateway" (Metro Vancouver 1993: 4).

The reaction of the City of Vancouver to the loss of industrial land initially showcased in the 1991 *Central Area Plan* (City of Vancouver 1991: 22) is formalized in the *Industrial Lands Policy* that was adopted by city council in 1995 (City of Vancouver 1995d: 1). The policy provides additional protection for pockets of industrial land throughout the municipality including the False Creek Flats that are meant to contain clean industrial uses and city-serving uses (City of Vancouver 1995d: 1–4). Building on the 1991 *Central Area Plan* port-related industry is also included with this due to the Flats proximity and rail connection to the port of Vancouver (ibid.). In addition to that the policy outlines the need for future zoning adjustments and a development strategy that considers future uses, transport, infrastructure and the integration of the False Creek Flats into the surrounding neighborhoods as it is changing over time (ibid.).

Vancouver's *City Plan* adopted in 1995 is the municipality's first comprehensive city-wide plan as it is intended to have impact on all lower-level neighborhood plans. The plan with this effort also integrates the intentions for industrial land on municipal scale previously expressed in the *Central Area Plan*, *Industrial Lands Policy* as well as the four core principles of the regional *Creating Our Future program* (City of Vancouver 1995b: 31, 43, 48). It picks up on the idea of protecting industrial land for city-serving and port related uses with the idea that it should remain in close proximity to customers and its

employees' residences, whereas office, services and retail uses should be located within neighborhood centers to provide a wide range of job opportunities following the complete community concept (City of Vancouver 1995b: 43). In doing so it explicitly ends the previous direction for redevelopment of industrial land in favor of more diverse employment opportunities (City of Vancouver 1995b: 31).

The next key piece of regional planning policy is the 1996 *Livable Region Plan* that emphasizes growth within centers on a regional level thereby

refining and adopting the *Creating our Future programs* core ideas of complete communities and growth management for the region. By directing growth to these centers, the plan also intends to come through on the measures laid out in the 1993 Long-Range Transportation plan (Metro Vancouver 1996). The Green Zone was similarly integrated into the plan, as was the need for a balance in the distribution of jobs, facilities, as well as housing types throughout the region and the institutional readiness for public private partnerships (Metro Vancouver 1996: 9–12).

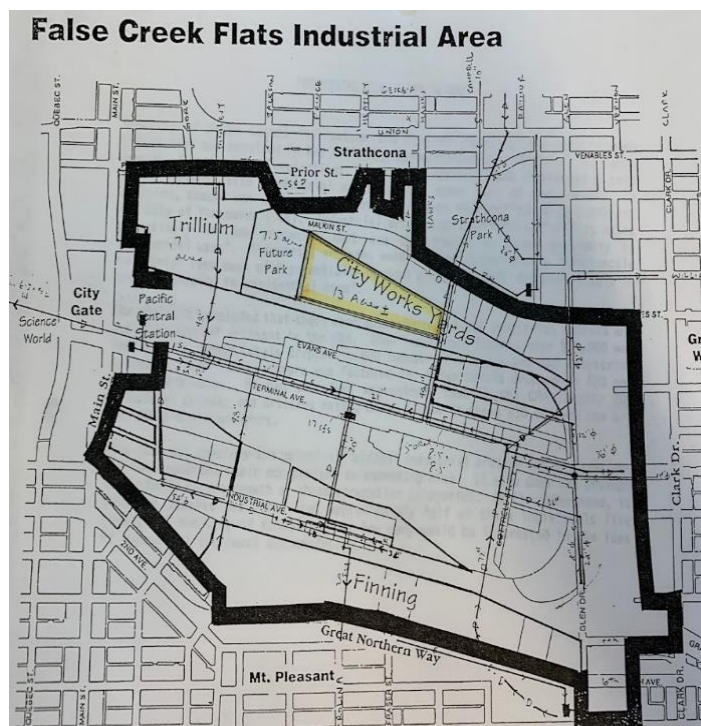


Figure 4: False Creek Flats Parcels with 1996 boundary (City of Vancouver Archives COV-S697)

In order to ensure that municipalities do not entirely deviate from the regional plan, regional context statements are required by the municipalities that document alignment with the plan through Official Community Plans or in the unique case of the City of Vancouver through a list of individual measures and policies (Metro Vancouver 1996: 14; City of Vancouver 2013b: 8).

By 1996 the need for a development plan outlined in the *Industrial Lands Policies* (City of Vancouver 1995d: 4) for the False Creek Flats was partly filled with a *Preliminary Concept Plan* (City of



Vancouver 1995c). The plan considers the M-2 zoning of the flats as unfitting as the foreseeable exodus of companies like Trillium, Finning and Canadian National leaves little to no heavy industries behind to justify the zoning in the area (see Appendix VII). The overarching idea of the *Preliminary Concept Plan* was to preserve the Flats' industrial character and its city-serving and transportation uses, while also introducing new high-tech industry, commercial uses and live-work spaces for artists (City of Vancouver 1995c). It also suggests emissions buffering, transportation corridors and public transit nodes that are necessary to better integrate the area into the city. With council approval in June 1996 the process for a rezoning to I-2 to adjust for city serving light industries and high-tech companies was put into motion (see Appendix VII).

In 1997 the City of Vancouver addressed its own congestion problems with the *Vancouver Transportation Plan* that are to come from the population increase including the potential negative effects on the movement of goods from and to industrial areas (City of Vancouver 1997a: 1–2). The actions are centered around influencing people's choice of transport from the car to an affordable public transit in a similar fashion to the 1993 *Metro Vancouver Long Range Transport Plan 2021* (Metro Vancouver 1993). More relevant is however the goods movement by rail which receives further attention and is considered crucial as it makes up 60% of transport to and from the port of Vancouver, which makes the rail infrastructure in the Flats important to the port economy and therefore to the entire city (City of Vancouver 1997a: 7).

### *Zoning Changes*

A majority of the False Creek Flats in 1990 is zoned as heavy industrial in dark blue as shown in Figure 12 which at the time was meant to accommodate “*industrial and other uses that are generally incompatible or potentially dangerous [...] when situated in or near residential districts*” (City of Vancouver Archives 2022).

On the southern edge the heavy industrial area borders on an area zoned for multiple-family dwellings highlighted in orange and an IC-3 industrial commercial area shown with a blue-red hatched pattern. The northwestern corner and eastern edge in light blue were zoned as M-1 heavy industrial which is a stricter zoning permitting industrial uses that are considered to

be slightly more compatible with housing thus creating a transition into the surrounding housing, commercial and industrial-commercial uses in the west shown in purple and red and the residential uses in the north designated in yellow (see Figure 12). The first zoning change since 1990 is the M-2 rezoning to the comprehensive development district schedule 334 on 900 Terminal Avenue in 1995 with a future retail use in mind as shown in Figure 13 (City of Vancouver 1995a: 4). A CD district schedule often has a unique list of permissible uses that differ from other district schedules and usually require approval by the municipality through the director of planning of the City of Vancouver (City of Vancouver 2013a: 1–3, 2022g). This along with the 1988 CD 232 rezoning, which aimed to extend the northern residential area into the Flats area through the establishment of social housing are rezonings



Figure 5: Zoning 1990 (City of Vancouver Archives, 2022a)

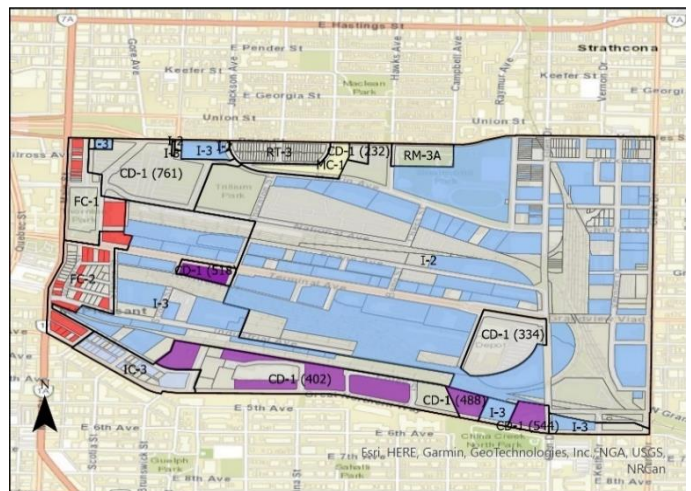


Figure 6: 2021 Zoning Districts Own illustration based on Open Data Portal (City of Vancouver 2022b)

that predate the cities protective 1995 *Industrial Lands Policies* (City of Vancouver 1988: 3, 1995d: 1–4) These two CD schedules by design no longer consider any industrial uses as permissible consequently removing the two areas from the cities industrial land supply (City of Vancouver 1988: 1–3, 1995a: 1–3). On the other hand, the rezoning from M-2 area shown in dark blue in Figure 12 to the I-2 light industrial zoning following the *Preliminary Concept Plan* in 1996 only led to a restriction of permissible uses to those industrial uses that are considered light industrial and compatible with the surrounding uses (see Appendix VII). The new I-2 and the later I-3 area in the south are designed to include both low-tech and high-tech uses, which laid the groundwork for a new direction that diverges from the False Creek Flats heavy industrial history (City of Vancouver 1999b: 9, 2001: 3).

### **1998-2001: High-Tech and reshaping the False Creek Flats**

In order to generate enough income for the city to be able to provide the necessary infrastructure for these proposed and inherently intensified uses proposed in the 1996 *Preliminary Concept Plan* a layered *False Creek Flats Development Cost Levy* (DCL) was introduced in 1999 (City of Vancouver 1995c, 1999a). A DCL is a financial tool the city can use to incentivize developers to meet the cities vision for example a developer that wants to realize a project that includes light industry or high-tech is not required to pay specific charges that diverging projects would have to pay (City of Vancouver 2004a). However, charges still remain on a level that is required to fund the necessary supporting infrastructure and utilities for the development (ibid.). A layered DCL is more specific as it provides additional financial charges specific to areas with significant expected growth and therefore requires higher investments in infrastructure. This applies to the False Creek Flats as the facilities projected to be necessary are not covered by the city-wide DCL (City of Vancouver 1999a, 2001: 3). In 2001 the *Urban Structure Plan* was approved to replace the more abstract *Preliminary Concept Plan* to provide a more certain direction for the False Creek Flats (City of Vancouver 2001: 1–3). The *Urban Structure*

*Plan* outlined the future shape of streets, urban elements and open spaces such as greenways and parks (City of Vancouver 2001: 4). This broad but more specific plan assigns plan areas and provides order to the redevelopment efforts, which delivers some planning certainty that helps in attracting potential developers. The nature of the plan was therefore intentionally precise yet loose enough to allow for adjustments throughout the following phases to match arising opportunities for new project proposals (City of Vancouver 2001: 2–3). An example for the looseness is the treatment of the rail infrastructure which is to be maintained as long as demand for rail transport exists in the future (City of Vancouver 2001: 2). Apart from defining built up and open space the 2001 plan also included directions for the development of specific properties such as the Canadian National rail terminal, the BNSF rail yard, the Finning Lands and various city other owned properties but also the proposal for the Skytrain

Station VCC Clark as shown in

Figure 15 (City of Vancouver

2001: 1–2). With the Urban

Structure Plan in place developers

have shown interest in

establishing high-tech facilities

on the former Trillium site and

the owners of the Finning land

decided to donate the remainder of the

land to the educational consortium of

UBC, SFU, BCIT, and Emily-Carr to facilitate the establishment of the Great Northern Way Campus as

shown in Figure 14 (City of Vancouver 2009: 1–2).

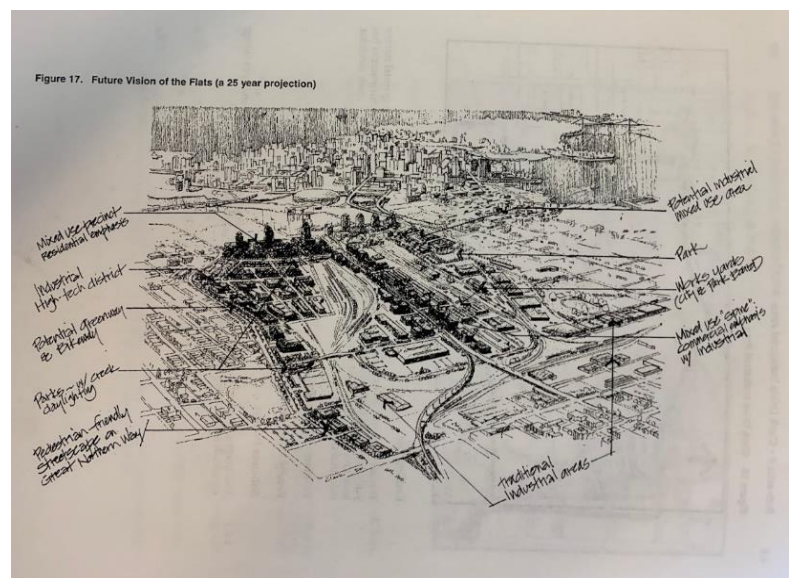


Figure 7: 2001 Plan Vision (City of Vancouver Archives COV-S697)

### Zoning Changes

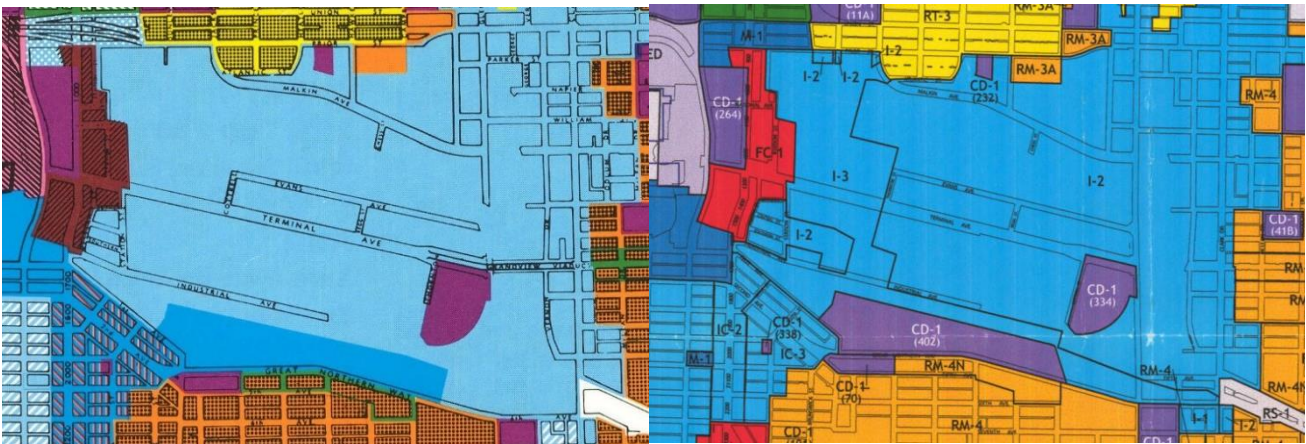


Figure 8: False Creek Flats 1998 (City of Vancouver Archives, 2022c) and 2001 Zoning (City of Vancouver Archives, 2022d)

In

1999 the former 26 acre M-2 industrial area in the south owned by the heavy machinery dealer Finning Caterpillar is rezoned from I-3 to *CD 402* (City of Vancouver 1999b: 9) with the intention of creating the Great Northern Way Campus (City of Vancouver 1999b: 1–2). The parcels owned by Finning along the Great Northern Way to the east of *CD 402* and large parts in the west of the I-2 zoned area were additionally rezoned from I-2 to I-3 in order to accommodate high-tech companies (City of Vancouver 2009: 1–2). Following the 2001 *Urban Structure Plan* the C3A Commercial District was rezoned to FC-1 with the goal to create a high-density mixed-use area of commercial, compatible light industrial and residential uses with greater height around the southern area and lower in the northern part likely to create a buffer or transition to the rest of the False Creek Area (City of Vancouver 2020e: 1–2; City of Vancouver Archives 2022).

### 2002-2006: Introducing Sustainability; Climate Change a New but Old Problem

The *Sustainable Region Initiative* introduced in 2002 formally anchors the concept of sustainability to the operations and planning of Metro Vancouver (Metro Vancouver 2010d: 8–10) in order to develop a sustainable future for the region and beyond that to become a role model in this regard (ibid.). The same year the municipal *Downtown Transport Plan* is adopted and also addresses needs for sustainability of the city's transportation sector (City of Vancouver 2002: 1). The plan intends to further support biking

and walking in the municipality to reduce GHG emissions from transport. The plan also points out that the intensive development of the False Creek Flat including the redevelopment of the rail yards could be detrimental to the rail service of the Downtown area and therefore requires additional transportation studies (City of Vancouver 2002: 57). The demand for further research on rail transport and other potential issues arising from the False Creek Flats growth sparked the creation of the 2003 *False Creek Flats planning program* with the additional aim to better integrate the area into the city fabric and in particular improve public transit access to the new high-tech I-3 areas (City of Vancouver 2009: 2–3). These issues were pertinent as goods movement and public transit via rail contributes to the city becoming more sustainable overall while reducing congestion (City of Vancouver 1997a: 7, 2002: 1). The program therefore also identifies the importance of the Burrard Inlet Line rail corridor that directly connects the False Creek Flats to the Vancouver Port (City of Vancouver 2005a, 2008c: 5). In 2004 the *City-wide Financing Growth Policy* was approved by Vancouver's city council in order to update and adjust the DCL area as well as charges to cover infrastructure cost for the planned and potential developments in the False Creek Flats (City of Vancouver 2004a). The *Vancouver Food Action Plan* adopted the same year aims to then maintain and enhance local food supply to meet the demands of a growing population and adjust food production to the anticipated effects of climate change (City of Vancouver 2004b: 3–5). This consideration is also made because of the agricultural land reserve that cannot be extended due to geographical constraints (Metro Vancouver 2011c: 8–9). The plan therefore seeks to improve the processing, distribution, production and recycling of organic waste on existing agricultural areas and utilize vacant urban land as well as industrially zoned land for these purposes (City of Vancouver 2004b: 4–5). As a result of the plan consumer awareness and prices are to be lowered while overall health of the population is to increase.

The 2004 *Climate-Friendly City plan* is adopted to reduce GHG emissions of city operations (City of Vancouver 2004d: 6). Following the 1990 *Clouds of Change* report it is the first plan in the overview timeline to again focus on climate change (City of Vancouver 1990). It outlines energy saving measures

for public buildings and other measures to save on emissions created by the city's vehicle fleet to mitigate the negative contribution to climate change of city operations (City of Vancouver 2004d: 6–8). Key goal for the plan is the 20% reduction of GHG emissions from the 1990 level that is to be accomplished for the year 2010 (City of Vancouver 2004d: 32). This goal also includes the city owned facilities in the False Creek Flats such as the cities works yard shown in Figure 10. The plan is accompanied by the *Green Building Strategy* also adopted in 2004 that outlines that city facilities are required to meet at least LEED standard silver, which throughout North America defines metrics for the degree of energy efficiency of a building (City of Vancouver 2004c: 1–2). The 2005 *Community Climate Action plan* as a counterpart considers industry activities with 5% of GHG emissions as a minor contributor in the city (City of Vancouver 2005b: 33). The focus on energy conservation and waste heat recovery despite this also extends to industrial land and industrial buildings (City of Vancouver 2005b: 30). This is because businesses and institutions are encouraged to drastically reduce their building and transport related use of energy which make up a total of 80% of the GHG emitted in the city (City of Vancouver 2005b: 6). By 2006 the *Neighborhood Energy Utility* was therefore adopted outlining a new waste heat recovery system for the False Creek area that reduces greenhouse gas emissions by 55% in comparison to conventional heating systems (City of Vancouver 2006a: 1–3). The 2006 *Guiding Principles for economic development* at the same point in time are providing the framework for future action of the VEC that is assigned to guide future economic development. This new role is meant to address the lack of economic development strategy in the City of Vancouver (City of Vancouver 2006b: 1–3). The principles are covering aspects such as growing export-oriented industry clusters, making sure spaces and land is available for businesses as well as pursuing sustainable practices, encouraging green technologies and sustainable development (City of Vancouver 2006b: 2–4).

**2007-2011: Starting a Green Economy, Regional protection for a critical supply of industrial land, PDR in the False Creek Flats**

The *Metro Core Jobs and Economy Land use Plan* adopted in 2007 picks up and integrates the guiding principles for economic development and provides a plan for the development of industry clusters (City of Vancouver 2007a: 4–8). In regards to the Flats the area's designation is updated to a “Production, Distribution and Repair” (PDR) district and further adjustments are made to the False Creek Flats vision as the city is coming up short on vacant space for both new industrial and employment lands (City of Vancouver 2007a: 7–8). In addition to this, considerations for a future major health facility are expected to drive demand for additional office and residential spaces in the area that could be met through high rises in the western part of the False Creek Flats. The plan also acknowledges a fairly limited success of the high-tech zoning as the influx of appropriate businesses did not meet expectation (City of Vancouver 2007a: 37). The ad-hoc infill in early history of the Flats is also now seen as very problematic as soil conditions are posing engineering challenges especially for underground parking, which complicates the planned high-density employment area (ibid.). The plan also includes the regional transit-oriented development concept to focus job growth near rapid transit nodes and vice versa and reinforces the necessity for job diversity including industrial uses (City of Vancouver 2007a: 8). The 2008 *Culture plan* adopted by the city of Vancouver aims to promote and assist the creative economy. The main problem in the sector being the affordability of artist space that requires action in order to not displace the creative economy (City of Vancouver 2008a: 4). It also highlights the value the creative economy can provide to the city in the shift toward a more knowledge-based economy, which also reiterates the need for the Live/Work ideas that were proposed in the *Preliminary Concept Plan* in 1996 (City of Vancouver 1995c). In 2008 the *Sustainable Region Initiative* was given further structure with the adoption of the Sustainability Framework (see Figure 18) that complemented the creation of plans that consider sustainability for each of the Metro region's responsibilities such as the management of air quality, solid waste, regional finances, drinking water, the regional food system, liquid waste, parks and greenways,



regional growth and housing (Metro Vancouver 2010d). In 2010 the first plans were adopted by Metro Vancouver including the *Integrated Solid Waste and Resource Management Plan* (ISWRMP) which pursues sustainability by minimizing the generation of waste, by maximizing the reuse and recycling of material, by recovering energy from waste and disposing the remaining waste in landfills (Metro Vancouver 2010c: 5–6). The 2010 *Liquid Waste Management Plan* pursues sustainability by managing sewage and stormwater to protect the environment and people. Using the liquid waste for heat recovery and to produce biogas is another aspect of the plan. The municipal waste heat recovery system in the City of Vancouver, referred to as the *Neighborhood Energy Strategy* notably picked up operations the same year (City of Vancouver 2020a: 3). Plan monitoring across the region is supposed to further ensure the pursuit of these goals but also identify opportunities for new systems and identify problems in the existing system (Metro Vancouver 2010b: 9). The 2010 *Corporate Climate Action Plan* aims for the adaptation of regional infrastructure and services to climate change and sets out the ultimate goal of carbon neutrality for these (Metro Vancouver 2010a: 5–7). These three plans from 2010 as well as the rest of the sustainability framework are through their targets also effectively generating demand for green technologies in variety of sectors such as waste, recycling, building technologies and more in the region (see Figure 17). As a next step in its sustainable trajectory the City of Vancouver in 2010 adopted the *Green Buildings for Rezoning policy* and an explanatory bulletin for rezonings (City of Vancouver 2010a, 2010c). This policy requires that every building project that includes a rezoning process, except those that are residential “*shall register with the Canadian Green Building Council (CaGBC) and achieve LEED Gold certification for Building Design + Construction (BD+C), or an equivalent green building rating system*” (City of Vancouver 2010c: 2).

In 2011 the regional *Metro 2040 Growth Strategy* (RGS) followed to complement the suite of plans of the *Sustainable Region Initiative Framework* (see Figure 18). It sets out goals for a sustainable economy that includes the protection of the remaining industrially zoned land in the region as a response to a reduced supply of industrial land (Metro Vancouver 2011b: 26–27). Regional land use designations for

industrial lands are implemented and intended for industrial activities that may include accessory retail and office spaces, whereas areas designated as mixed employment on the other hand allow for light industry and a larger office and retail uses. These designations importantly require a regional dialog and a MVRD board vote in order to be changed (Metro Vancouver 2011b: 57). These designations therefore provide regional protection for industrial land and industrial land users such as the manufacturing sector which accounts for 22% of jobs on industrial land followed by Transportation/Warehousing and Wholesale Trade both accounting for a 14% share of jobs on industrial land (Metro Vancouver 2013: 7). Regarding these important transportation and logistics sectors it is also acknowledged that these continue to have high demand for industrial land that is well located and serviced which requires an increased supply in order to keep the sector and the jobs tied to it within the region (ibid.). The RGS also sets out goals to increase both the number of activities on industrial properties and to increase the ratio of building to land on industrial properties (Metro Vancouver 2011b: 26–27). This approach is used as a solution to create more industrial floor space long term as urban expansion is regulated and limited through an urban containment boundary (Metro Vancouver 2011b: 9). It enhances the protection of the surrounding land in combination with the existing green zone protection and agricultural land reserve to limit urban expansion (Metro Vancouver 1994: 12–13). The *Integrated Air Quality and Greenhouse Gas Management Plan* in 2011 further outlines the responsibilities of Metro Vancouver (Metro Vancouver 2011a: 1–2). It is dealing with air pollution and GHG by addressing emitting sectors through corresponding bylaws that allow for tools like permits, compliance and enforcement in order to achieve set levels of air quality and GHG emissions (Metro Vancouver 2011a: 16–17). The 2011 *Regional Food System Strategy* is another regional strategy that is part of the regional sustainability framework. It addresses the regional food supply and its vulnerability to climate change by setting targets for improved food production both on agricultural and urban land including rooftops. It does so also to accommodate a growing population and increase resilience to extreme weather events or external supply shortages (Metro Vancouver 2011c: 2–7). The three 2011 regional plans as part of the sustainability framework

again show support of a variety of green economy sectors. These sectors are receiving further attention in the Vancouver Economic Commissions 2011 *Economic Action Strategy*. The strategy sets out goals for the creation of a healthy business climate for both local and global businesses, to attract new talent to Vancouver and for the creation of a green enterprise zone that is meant to showcase and encourage innovation (VEC 2011: 4). The strategy also aims to improve overall economic performance based on the factors of economic growth, business retention and exports (VEC 2011: 28).

### ***Zoning Changes***

One zoning change occurred during the period as parts of the I-3 area were rezoned to CD-1 488 in 2010 followed by another rezoning from part of the I-3 area to CD-1 518 in 2011 as shown in Figure 19 (City of Vancouver 2010b, 2011).

### **2012-2017: Growing the Green Economy and the Intensification & Densification of industrial land**

The goal of a sustainable economy is extended in the City of Vancouver's 2012 *Greenest City Action Plan (GCAP)* that includes goals such as doubling green jobs and the number of businesses that are green or greening their operations over the next ten years (City of Vancouver 2012a: 11–12). The green economy sub-sectors of particular interest are the clean-tech sector, green buildings and construction, materials management and recycling, local food and sustainability services including education (City of Vancouver 2012a: 12). Each of these receive their own set of action items and support as part of the GCAP. The 2012 *Climate Change adaptation strategy* adopted by the City of Vancouver expands on the energy efficiency measures outlined in the 2005 *Community Climate Change Plan* by addressing the economic burden climate change will have on a federal level by causing losses of up to 43 billion Canadian dollars (CAD) to the national economy per year by 2050 (City of Vancouver 2012b: 17). In this context it now urges businesses to adapt to the changes as it is in their own economic interest and if

viable to do so through public-private-partnerships. It also acknowledges that the quantitatively increasing extreme weather events have a negative effect on the industrial uses for example through their location on floodplains (City of Vancouver 2012b: 17–18). The cities *Transport Plan 2040* approved in 2012 provides a link to the GCAP as it elaborates on the strategy of greening the transportation sector (City of Vancouver 2012c: 3–8). This greening is to be accomplished by further reducing car dependency by creating alternative options that in turn would set free capital of residents for housing and the local economy (ibid.). Reducing the oil dependency in the transport sector and supporting production in the region in order to reduce the quantity of goods-movement related long-distance trips are further measures described in the plan. The plan also picks up the concept of diverse employment opportunities served by public transport (ibid.). The 2013 *Vancouver Food Strategy* supports all forms of urban agriculture as the city is lacking in agricultural land and empowers residents to create community food networks which goes hand in hand with the target of improving access to healthy foods and mirrors the other previously mentioned food related plans (City of Vancouver 2013c: 9–12). These targets are directing the city's support of food processing and food distribution businesses. To close the cycle and reduce food waste, composting and food banks are the final target to achieve the sustainable food supply proposed by the 2007 *Vancouver Food Charter* (City of Vancouver 2007b, 2013c). The 2013 *Regional Context Statement* shows the alignment with the regional vision and its goals as well as actions taken towards the plan as outlined in the *Municipal Act* (Metro Vancouver 1996: 14; City of Vancouver 2013b: 5–6). The creation of four mixed employment areas near public transit is an example of actions taken in response to regional efforts. Among the four new areas are the False Creek Flats, which are labelled as a high technology district (City of Vancouver 2013b: 27).

The 2014 *Downtown Eastside* (DTES) plan aims to address the needs of the area surrounding the False Creek Flats and aims to create a high quality of life for its residents and establish a sustainable economy. Bringing residents and businesses together is also used as an approach to foster resiliency and reduce poverty in the neighborhoods (City of Vancouver 2014a: 109–112). The accompanying *Community*

*Economic Development Strategy* introduces the idea of the creation of low-barrier green jobs in the DTES area that includes Strathcona as well as parts of the False Creek Flats (City of Vancouver 2014b: 32). The light industrial uses focusing on activities like recycling, upcycling and manufacturing are labor intensive and lend themselves for these purposes as the strategy identifies (ibid.). The 2014 *Flood Plain Standards and requirements policy* includes the False Creek Flats as an area threatened not only by earthquakes (City of Vancouver 2016a) but also by flooding events and therefore regulates the construction level forcing developers to match the construction level of habitation, business or storage uses (City of Vancouver 2014c: 9).

The 2015 *Renewable City Strategy* in essence updates the goals for energy efficiency set out in the 2012 *GCAP* to achieve 100% renewable energy use for the transportation and building sector. It also outlines the necessity for federal policy to assist in this ambitious goal (City of Vancouver 2015c: 11). The city pursues this target through green building policies, bylaws, plans and design standards (City of Vancouver 2015b: 5). These tools are concentrated on step by step increasing the demands for energy efficiency in transport, building and waste sector to reduce GHG emissions by 80% compared to 2007 levels by 2050 (City of Vancouver 2015b: 2–3). This approach of incremental adjustment and the 100% renewable energy target are also at the core of the 2015 *GCAP Phase 2* that emphasizes the importance of the clean energy sector as a global sector that will be worth around 630 billion CAD by 2030 (City of Vancouver 2015a: 59). Based on this the goal to create a cleantech accelerator is added to the plan which is supposed to offer support for innovators and entrepreneurs in the sector to set up and fund their businesses in the city with the goal of making Vancouver the “Mecca” of the green economy (City of Vancouver 2015a: 57). The Flats are in this context set out to be the “*greenest place to work in the world*” in which the role of the VEC is to “*work with businesses, government, community organizations and academic institutions in the False Creek Flats on four essential paths: circular economy; smart logistics; renewables and retrofits; and support for innovative green business.*” (City of Vancouver 2015a: 60).

The 2016 *Zero Emissions plan* is regulating the construction of new buildings both by setting demands for energy efficiency and for the heating systems used in new developments. A step-by-step approach is also used for these purposes to eventually reach the goals for zero emissions from energy use in buildings. New city facilities and buildings are in this context meant to act as role models and proving ground for technologies that are required for reaching the zero emissions milestone (City of Vancouver 2016c: 1). The 2016 *Electric Vehicles Ecosystem Strategy* aims to provide the necessary charging infrastructure that remains an obstacle for the widespread use of electric vehicles in order to address the transportation goals of the 2015 *Renewable City Strategy* (City of Vancouver 2016b: 1–5).

The 2016 *Regional Food System Action Plan* extends the previous 2011 strategy by outlining 160 new planned actions to realize the goals set out in the initial strategy that address future challenges to the food system. Target of these actions remain to be distribution and processing facilities as well as the review and overhaul to support the goals of the plan to create a sustainable food network that can sustain its population with healthy foods (Metro Vancouver 2016: 4). The 2017 Complete Streets framework further provides opportunity to consider other civic objectives, such as improving public life, local commerce and ecological sustainability, and better responding to surrounding land uses in urban areas (City of Vancouver 2017d: 1–2).

In 2017 the *False Creek Flats Local Area Plan* was adopted by the city council that provides a new comprehensive and more detailed vision for the future of the Flats. The plan integrates a plethora of ideas that share characteristics of previous plans, policies and strategies that outline the future trajectory for the False Creek Flats (City of Vancouver 2017e: 13–15). The False Creek Flats makes up 15% of the cities industrial land base and it is to provide 15,000 jobs by 2026 (VEC 2017: 28). By 2041 a total of 28,000 jobs are to be distributed among 1000 businesses on less than two square kilometers of plan area (City of Vancouver 2017e: 145; VEC 2017: 28). The area is additionally sub-divided into four districts that accommodate sector-based clusters such as the health hub, which is meant to accommodate med-tech industries and the New St. Paul's hospital (VEC 2017: 28–32). Together with the Creative Campus

district next to it forms a contrast to the light industrial Terminal Spine and Back of house district (see Figure 19). Thus, the plan intends to offer room for a variety of economic activities in close proximity but with a clear spatial separation allowing for the coexistence of different use types which is meant to facilitate knowledge spillovers and innovation (VEC 2017: 7).

### *Zoning Changes*

In 2013 parts of the I-2 and I-3 area are rezoned to CD-1 544 as shown in the bottom right of Figure 20 with opportunities for both industrial and non-industrial uses (City of Vancouver 2013a). Following the 2017 *Area Plan* and its proposals for rezoning, the I-2 area is divided into Sub-Areas A and B that differ by permitted uses, floor area and height in Sub-Area B (City of Vancouver 2017j: 11). While both are intended for industrial uses that are not compatible with residential Sub-Area B is adjusted for higher density intended for creative products manufacturing (ibid.). The I-3 District Schedule is also divided into Sub-Areas A and B whereas only Sub-Area A is adjusted and introduces a bonus density offer that requires community amenity contributions (CAC). So called CACs are usually charges that occur as part of a rezoning for higher density with the aim to provide community amenities (City of Vancouver 2004a: 14). This provision allows a maximum floor space ratio (FSR) of five instead of three (City of Vancouver 2017j: 11–12). The FSR outlines the ratio of the sum of the floor area of a built-up structure to the size of the property it sits on (Carey 2018). Disregarding the allowed site coverage this equates to an incentive that offers two additional floors on top of a normally three-level structure. The intent for a new IC-3 sub-area A between First and Second Avenue remains to “*permit a mix of light industrial, live arts and theatre, residential and related uses that are generally compatible with adjoining residential and commercial districts*” (City of Vancouver 2017j: 12). However, it also permits market rental and social housing in the area to provide affordable housing to accommodate people with different socio-economic backgrounds. In the same year parts of the I-2 area were also rezoned into the northern MC-1 Sub-Area A to provide space for secured market rental housing and complementary commercial or light industrial uses. This is done to provide a better transition from the residential Prior Street area to the False Creek Flats in the south through a reduction of permissible height and density (ibid.).

Following the new plan, the FC-1 area was subdivided into the northern FC-1 and Thornton Park area and the lower FC-2 area that is the result of a rezoning of parts of the I-2 light industrial and I-3 high tech zones. While FC-1 mostly remains the same the FC-2 district schedule is intended as a high-density



mixed-use neighborhood that allows for both light industry and residential uses. This area also offers a significant density bonus of 3.5 FSR if one 1 FSR is light industrial or artist space and certain CACs are met by the developers (City of Vancouver 2017j: 12–13). In addition to these adjustments a *Rezoning Policy and Guidelines* for the False Creek Flats is adopted in support of the *Area Plan* vision. The policy provides direction for three smaller sub-areas. Sub-Area A is meant to accommodate secured market rental housing to transition from the Health Hub to the residential areas in the north (City of Vancouver 2017f: 2). Sub-Area B referred to as the Railyards Heritage Hub is envisioned as a mixed light industrial area with existing cross-docking facilities and increased density (City of Vancouver 2017f: 7). Sub-Area C referred to as the Culture Hub is as the name suggests designed to house creative economy and PDR uses and is similarly using existing structures (see Figure 8) as a backdrop alongside increases in permissible FSR to 5.0 (City of Vancouver 2017f: 8).

## **2018 to 2021: Climate Emergency; Resilience & the Pandemic; Med-Tech & Social Inclusion in the False Creek Flats**

The 2018 regional *Climate 2050 Strategic Framework* sets out the goal for a carbon neutral region by 2050 as well as regional challenges that need to be addressed. The framework also outlines links to provincial efforts that can be harnessed for these purposes like the *BC Climate Action Plan and Carbon Tax* (Metro Vancouver 2018a: 4–5). The framework is also part of a new generation regional plan framework consisting of eight plans as shown in Figure 22 that is still a work in progress.

In line with this heading is the 2018 municipal *Zero Waste 2040* plan that creates a framework in order to achieve a target of zero waste disposed to landfill and incineration by 2040 which likely benefits the green economy's recycling and waste sub-sectors (City of Vancouver 2018: 2). Additionally, in 2018 the *Neighborhood Energy Utility* is again expanded to finally connect the False Creek Flats to the existing sewer heat recovery system (City of Vancouver 2020a: 2–4). The 2019 Resilient Vancouver Strategy focuses on building resilience to climate change and other external threats such as earthquakes and flooding. It also includes the local economy, industry externalities and social resilience as part of this effort (City of Vancouver 2019b: 8). The 2019 *Climate Emergency Response* adjusts the actions necessary to achieve the goal of carbon neutrality in the City of Vancouver by 2050. As such it builds on the *Renewable City Strategy* in order to meet the Paris Agreement goals of no more than 1.5°C of global warming further underlining why there is a need for a growing green economy (City of Vancouver 2019a: 1–3). The 2020 *Culture Shift 2020-2029* is an update to the 2008 *Cultural Plan* and similarly supports the creative economy in the city as well as the False Creek Flats as costs further increased but also puts an emphasis on pursuing reconciliation with the region's native peoples (City of Vancouver 2020d: 10–11).

The 2020 *Climate Emergency Action Plan* (CEAP) builds on the 2019 *Climate Emergency Response* reiterating the importance of limiting global warming to 1.5°C and sets out more ambitious goals regarding the reduction of GHG emissions and the avenues to tackle them (City of Vancouver 2020c: 2–

10). In response to the CEAP and Covid-19 VEC adopts a *Corporate Plan* for economic development with the aim of building “*a prosperous, inclusive and resilient economy for Vancouver*” (VEC 2021c: 2). Following in the same year the VEC also publishes a *Best Practices for a Just Transition* report outlining a potential path toward social inclusion and pandemic recovery (VEC 2021b: 1–3). The 2021 *Regional Industrial Lands Strategy* on the other hand is a next step in the protection of industrial land and provides further direction through a strategy for intensification, densification and optimization of the remaining industrial land supply (Metro Vancouver 2021: 1–8).

### ***Zoning Changes***

The 2021 CD-1 (761) is the result of a rezoning of I-2 and I-3 industrial land for the New St. Paul’s Health Campus (NSPHC) mentioned in the 2017 False Creek Flats area plan (City of Vancouver 2017k, 2021a).

### **2022 and The Future**

In 2022 the Provincial government released its Stronger BC economic plan that is meant to reshape the economy in the province. Of particular interest is the *Industrial and Manufacturing Action Plan*, that demands “*larger manufacturing capability, an increase in cross-sector collaboration, and the creation of new jobs and high-value, sustainable goods across sectors*” (British Columbia 2022a: 31). This plan in essence aligns with the efforts of the Metro region and the City of Vancouver regarding industrial lands and is reaffirming the overall direction toward an inclusive, low-carbon green economy and reduced dependency on international supply chains (British Columbia 2022a: 1–9). The plan could be considered as an industrial policy for the province of British Columbia, which is why despite being a provincial level policy that would be excluded normally based on the selection criteria it is part of this overview. It is also included as it is in its function unprecedented, proposes a break with previous practices and is inherently relevant in its support and direction for industrial land (British Columbia 2022a: 1).

The new Metro 2050 RGS adopted in 2022 outlines aims that continue along the same lines as the 2040 RGS as employment diversity and industrial lands protection are outlined as key aspects in the face of an additional million residents anticipated to be living in the Metro Region by 2050 (Metro Vancouver 2022a: 22, 45–47). From large scale industries, to medium and small sized industries that provide day-to-day services and goods all require additional industrial land to grow but in particular warehouses and storage are going to require significant amounts of land to grow together with the port industries (Metro Vancouver 2022a: 43). The warehouse and storage industries are because of this issue introduced to a trade-oriented lands overlay that protects industrial land from sub-division in order to ensure lot sizes continue to exist that are large enough to match the spatial demands of these industries (Metro Vancouver 2022a: 18)

The cities 2022 Transport 2050 plan aims to increase the affordability of transport that is designed to become carbon free and more reliable (Metro Vancouver 2022b: 19–23). In the context of industrial land increasing the share of freight by rail and water is key. As is making industrial land more accessible to the workforce through low emission modes of transport (Metro Vancouver 2022b: 55–59).

The 2022 Vancouver Plan is the city’s newest city-wide plan building on reconciliation with Vancouver’s native population, equity and resilience with the aim to create “*an economy that works for all*” while protecting ecosystems and the climate (City of Vancouver 2022e: 43). These aims also extend to areas like the False Creek Flats that are meant to be protected, intensified and supported in their function to provide industrial employment including low-barrier employment and to continue exploring circular economy concepts (City of Vancouver 2022e: 92, 97).

### **4.3 Narrative Periods and Policy Directions**

This chapter is a summary of the NPF content collected that can be found in Appendix IV, while a more detailed summary of the policies mentioned can be found in the previous chapter 4.2.

The early 1990s are characterized by a significant push for regional planning with a narrative centered around the problem of maintaining a high level of quality of life in a growing region without the option for expansion. The development direction for industrial land is seen in fostering industries that are clean, high value, high tech and intertwined with port-oriented industry. This push consists of such policies as the 1990 regional *Creating Our Future* program, the 1993 *Long-range Transportation Plan* and the 1996 *Livable Region Strategic Plan* (Metro Vancouver 1993, 1994, 1996). On a municipal level the 1990 *Clouds of Change* report, the 1991 *Central Area Plan*, the 1995 City Plan, the 1995 *Industrial Lands Policies*, the 1996 *Preliminary Concept Plan* and the 1997 Transportation Plan are specifying this direction (City of Vancouver 1990, 1991, 1995c, 1995d, 1997a). Part of these is an effort specific to the False Creek Flats with the aim to maintain industrial land for city-serving industry in close proximity and well connected to the urban core and to attract high-tech uses to new project sites on underutilized industrial land in the area. This policy direction continues to 2001 while the necessary actions are taken to make the False Creek Flats attractive for high-tech businesses with policies such as the 1996 *Preliminary Concept Plan* and I-2 rezoning (see Appendix VII), the 1999 I-3 rezoning (City of Vancouver 1999c), the 1999 *Great Northern Campus 402 CD* (City of Vancouver 1999b), the *Urban Structure Plan* in 2001 (City of Vancouver 2001) and an accompanying development cost levy adjustment for the area (City of Vancouver 1999a). The period from 1990 to 1997 therefore serves as a first baseline for the spatial analysis to track quantitative changes of industrial businesses that due to data availability utilizes the reference year 1997 following the disappearance of the M-1 and M-2 heavy industrial zoning from the area (City of Vancouver 2022b). The next period from 1997 to the next reference year 2001 is chosen because of the I-2 and I-3 rezonings and the *Urban Structure Plan* adoption to track the beginning of the high-tech policy direction but also the continuation of the pre-1997 clean light industry policy direction in the spatial analysis. From 2002 onward the problem setting of a growing region that cannot expand are addressed with a new policy direction in pursuit of making Vancouver a global role model for climate-friendly and introducing sustainable practices and GHG

mitigation on a regional level (Metro Vancouver 2011b: 7–11). The *Sustainable Region Framework* adopted in 2008 is in this context an evolution in addressing the quality-of-life narrative in the region by adjusting how the region provides its services long term (ibid). Measures taken on a municipal level such as at adopting the 2004 *Vancouver Food Action Plan*, the 2004 *Green Building Strategy*, the 2004 *Climate Friendly City Plan*, the 2005 *Community Climate Action Plan*, , the 2006 *Neighborhood Energy Utility* and the 2006 *Guiding Principles for Economic Development* of the VEC mark this shift toward sustainability and climate action (City of Vancouver 2004b, 2004c, 2004d, 2005b, 2006a, 2006b). These are then followed by an early green economy policy direction within the 2006 VEC *Guiding principles for Economic Development* that plots a course toward a sustainable economy (City of Vancouver 2006b). Based on this the 2006 reference year is selected to track this policy direction and those previously identified. Over the following years the green economy policy direction is supported through policies such as the 2007 *Metro Core Jobs and Economy Land Use Plan*, the 2008 *Vancouver EcoDensity Charter*, the 2010 *Green Building Policy for Rezonings*, the 2011 *Vancouver Economic Action Strategy* and the 2012 *Greenest City Action Plan* (City of Vancouver 2007a, 2008b, 2012a). The latter two are also directing the False Creek Flats toward becoming a green innovative business area while the 2007 *Metro Core Jobs and Economy Land Use Plan* designates the Flats for PDR uses and outlines goals for an increase in employment in the area (City of Vancouver 2007a: 27). Meanwhile on the regional level the 2010 plans for sustainable practices regarding liquid and solid waste are adopted that just like the Corporate Climate Action Plan and the Regional Food System Strategy in 2011 reinforce the climate change problem setting and the continuation of a regional sustainability policy direction (Metro Vancouver 2010a, 2010b, 2010c, 2011c). What also changes by 2011 with the *Regional Growth Strategy* is the recognition of the critical supply of industrial land that establishes protective industrial land designations and spurs on further considerations for an industrial economy as well as intensification and densification of industrial land on the regional level (Metro Vancouver 2011b: 26–27). The 2011 reference year is chosen because of this new policy direction for industrial land and as such forms

another relevant analysis point in the trajectory of the previously identified policy directions. From 2012 to 2017 the green economy policy direction is further enhanced along with the sustainability concept that uses climate change as a new backdrop for policies. In the municipality policies such as the 2012 *Climate Change Adaptation Strategy*, the 2012 *Transportation Plan 2040*, the 2013 *Vancouver Food Strategy*, the 2014 *Downtown Eastside plan*, the 2015 *Renewable City Strategy*, the 2015 *Greenest City Action Plan Phase 2*, the 2016 *Zero Emissions Building Plan*, the 2016 *Electric Vehicle Ecosystem Strategy*, and the 2017 *Complete Streets Policy Framework* are in line with this policy direction (City of Vancouver 2012b, 2012c, 2013c, 2014a, 2015a, 2015c, 2016b, 2016c, 2017d). By 2017 the new *False Creek Flats Area Plan* and the accompanying 2017 *Economic Strategy* and 2017 Policy and By-law amendments are adopted that establish a collage of previous policy directions making demands for high-tech, green businesses including food distributors and others in the False Creek Flats with designated areas for them (City of Vancouver 2017e, 2017k; VEC 2017). This period between the reference years 2011 and 2017 is as a consequence used to ascertain changes following the *Area Plan* adoption and again to track previous policy directions such as the green economy. From 2018 to 2022 policies outline an enhanced policy direction toward sustainability, climate action and industrial land intensification (City of Vancouver 2017c; Metro Vancouver 2021). The more drastic shift in direction however lies in recovering from the Covid-19 pandemic with a policy direction for social inclusion and equity that characterizes the most recent policies (VEC 2021b; City of Vancouver 2022e; Metro Vancouver 2022a, 2022b). The reference years 2017 and 2021 are therefore not only used to show additional data points for previous policy directions but also the likely influence of the pandemic on the firm population in the False Creek Flats (Ministry of Finance 2021).

The policy overview and narrative framework analysis in summary shows that there is a persistent narrative regarding the quality of life in the region to remain an attractive destination for people and businesses to ensure continued economic growth. Whereas the underlying problem setting that threatens this plotline is centered around population growth in a constrained urban area, which is modified around

the early 2000s towards a climate change related problem setting. Throughout the 1990 to 2021 time period different policy directions for industrial land are then taken in response to these problem settings. The policy directions however do not replace their predecessor but rather are planned additions to the initial early 90s light industry direction with specific sectors being the target that are suitable to coexist in the False Creek Flats. Whether this process of addition on paper matches the reality of the successive changes of the firm population in the False Creek Flats is illuminated in the following chapter.



#### 4.4 Firm Population Analysis

The spatial analysis is taking a closer look at six reference years with a total of 2455 business licenses issued during 1997, 2001, 2006, 2011, 2017 and 2021. As Figure 23 shows the area has had a maximum of 159 business locations that were used at some point in the 6 years. The businesses that have applied for a business license are as shown situated on different sized property parcels that in turn are located within differently zoned areas that also vary significantly by size.



Figure 9: Business Locations

The I-2 light industrial zone is the largest with 80 business location and a total area of 1.126.352 square meters ( $m^2$ ) or 1,13 square kilometers ( $km^2$ ), followed by a total I-3 area of 288.445,03  $m^2$  or 0,28  $km^2$  with 26 business locations. Third largest are the two FC zones with 24 locations and a total size of 113.965,61  $m^2$  or 0,11  $km^2$ . The IC-3 zone with a total area of 36.628,93  $m^2$  or 0,036 $km^2$  accounts for 15 business locations. The CD 402 is the largest of its kind consisting of four business locations with a total area of 114.493 $m^2$  or 0,11  $m^2$ , while MC-1, as well as the CDs 488, 518, and 544 make up for 7 business locations each of which are ranging between 10.000 $m^2$  to 12.000  $m^2$  in size.

Starting out in 1997 175 businesses were issued a business license that are located within the False Creek Flats area plan boundary as shown in Figure 23. This is not contradictory to the 159 existing business locations as more than one business can be located on one business location and as shown by Figure 23. Apart from three businesses in the northern residential area these business locations are overwhelmingly occupied by at least one business over the time period. The six reference years show an average increase in issued business licenses of 24% while the largest increase with roughly 44% occurred between 2001 and 2006 as shown in Figure 24. At the curves peak in 2017 558 businesses licenses were issued within the boundaries of the False Creek Flats. The steady growth from 1997 onward drastically stopped between 2017 and 2021 resulting in a 14% decrease leading to only 488 business licenses being issued in 2021.

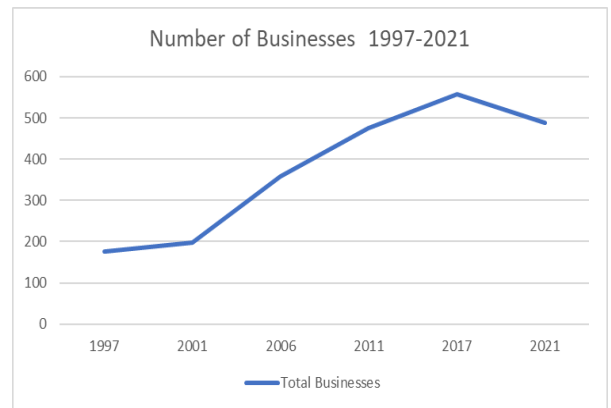


Figure 10: Issued Licenses

The firm population derived from the 2455 issued business licenses is made of 84 individual use types that are present within the False Creek Flats area. The analysis of these is limited to the 20 use types that have an average of at least 4 business licenses issued in each of the six reference years and in total have five or more entries. This is done to show the evolution over time and to limit the selection to those use types with significant presence in the False Creek Flats as shown in Figure 25.



Figure 11: Use Type Quantities

Looking at Figure 26 there are several significant shifts within the issued business licenses with a standard deviation of at least 8 issued business licenses across the six reference years. The highest value is represented through issued business licenses for the office use type that increased from 7 to 89 over five years from 2001 to 2006 as shown in Figure 25. Following this period, the number of issued licenses for this use type remained steady. Similarly, the wholesale dealer use type increased in number from 28 in 2001 to 82 in 2006 issued licenses but experienced a drop in the 2021 reference year unlike the office use type. From 2006 to 2011

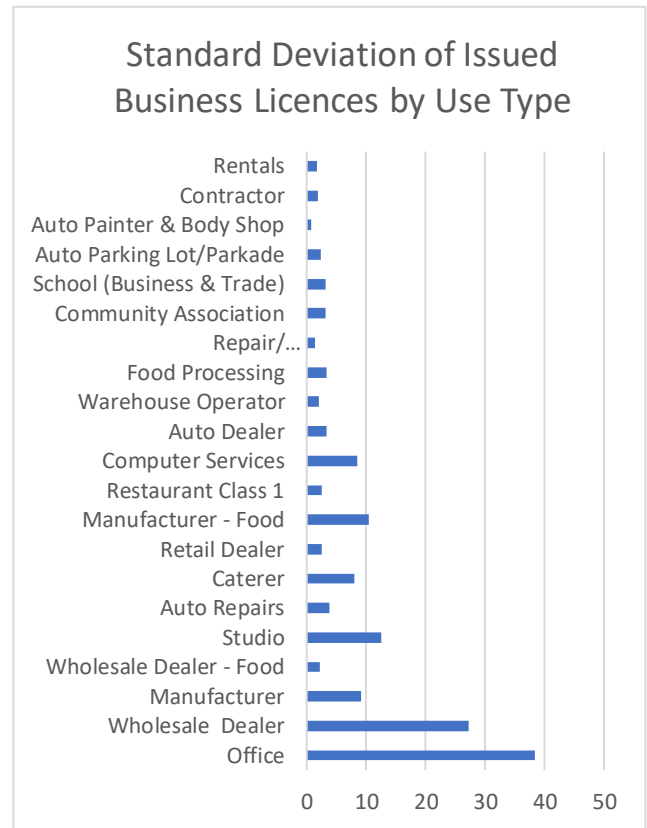


Figure 12: Standard Deviation of Use Types

the artist studios use type also drastically rose from zero to 33. From 2011 to 2017 the number of issued business licenses for food manufacturers also significantly increased from 7 to 27. The use type computer services also showed a similar shift when in 2011 the number of issued business licenses jumped to 27 by 2017. Considering the other use types with non-significant shifts the auto dealer use type sticks out as it doubled in number from 5 to 10 over the same 2011 to 2017 period. From 1990 to 2021 the other use types with non-significant shifts such as caterers, manufacturers, food wholesalers, auto repairs, retail dealers, restaurants, warehouse operator, repair/service/maintenance, community association, Auto Painter & Bodyshop, Auto Parking Lot/Parkade, rentals and contractors show slight growth and a represent a steady population in the area. As part of this effort two additional selections are made using this data following the definition of industrial and green businesses. With Metro Vancouver delivering the former and the UNEP delivering the latter (UNEP 2011; Metro Vancouver 2018b).

### 4.4.1 Industrial businesses

Out of the 175 issued licenses in 1997 118 are industrial businesses according to the definition used. Looking at the numbers for the I-2 zone 81 out of these 118 total businesses are industrial, while the False Creek Flats as a whole has a share of 67,43% of industrial businesses. By 2001 the number of industrial businesses has grown to 140 and the share of industrial businesses in the area rose to 70,71% while the initial I-2 area is split up in 1999 into the I-2 zone with 63 and the I-3 with 36 industrial businesses respectively. By 2006 the number of industrial businesses in the False Creek Flats increased from 140 to 208. The following time periods show a steady increase in the number of industrial businesses to a maximum of 282 industrial businesses in the False Creek Flats whereas their share among all business types in the area is reduced to roughly 50% in 2017 (see Figure 27). What follows by 2021 is a loss of 55 individual industrial businesses reducing their share in the Flats to 46,52%. A look at the different zone types in the False Creek Flats that permit at least some light industrial uses as shown in Figure 28 shows that

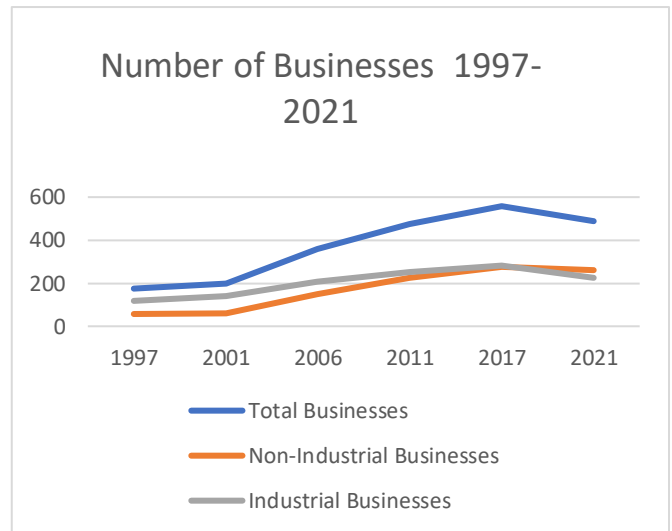


Figure 13: Use Type Selection 1

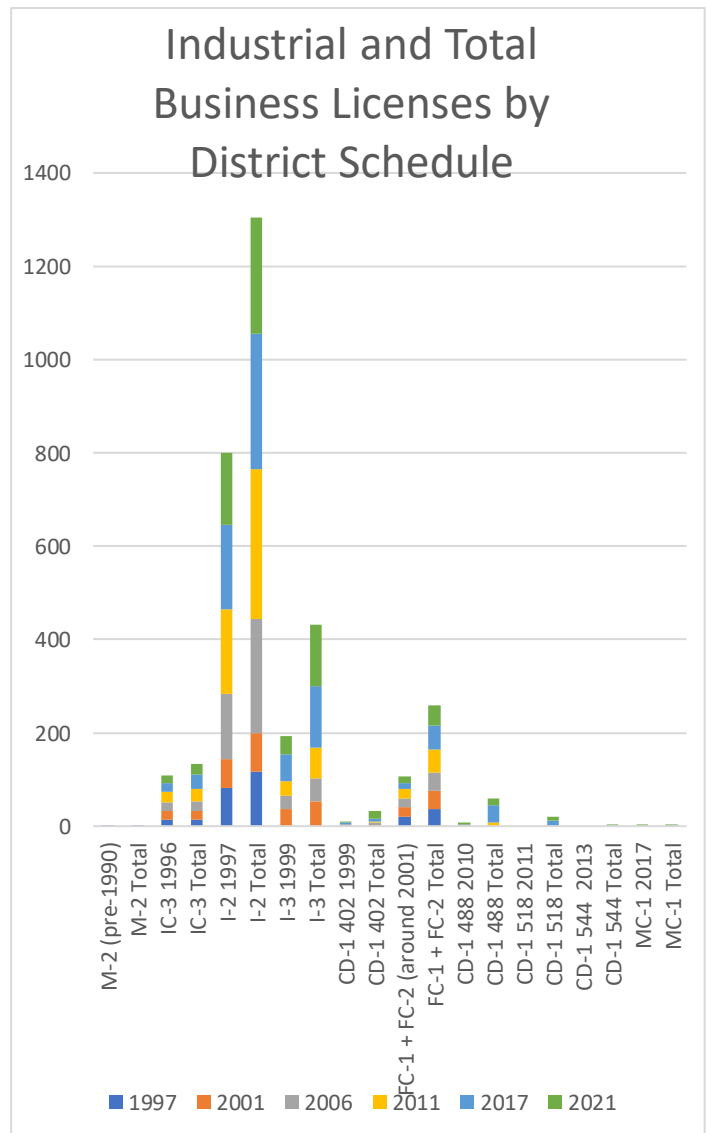


Figure 14: Industrial Use Types (with year of implementation) vs. Total Use Types by Zoning District Schedule

the share of issued business licenses for industrial use types to the total number of issued licenses is highest in the IC-3 district with 81%, followed by I-2 with a share of 61% taking into account all available reference years. Additionally, this data shows that the more recent the rezoning from an I-2 or I-3 to another district schedule is the lower the share of issued licenses for industrial use types to non-industrial use types is. An example for this trend toward a lower share of industrial uses is the 2010 Comprehensive Development Area (CD) 488 with a share of 12% industrial use types (see Appendix II). This is far lower than the 45% share of the 1999 I-3 area it was previously zoned as but the areas these percentages refer to are also different in size and number of business locations.

#### 4.4.2 Potential Green Businesses

The second selection based on the UNEP green potential sectors shows that a growing number of businesses in the False Creek Flats are allocated in sectors that are suitable for the greening measures outlined in the report (UNEP 2011). This suggests that the businesses are also suitable targets for a policy direction pursuing a green economy. Figure 29 shows that the increase of the use types selected

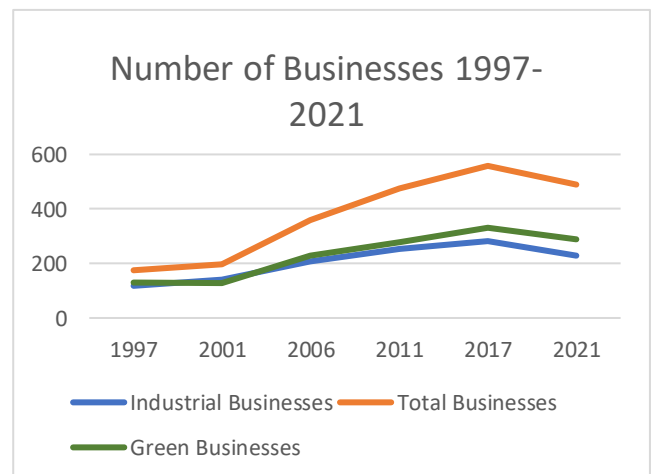


Figure 15: Use Type Selection 2

largely mirrors the numbers for industrial businesses with a slightly steeper curve from 2006 onward and a comparable dip during Covid-19. The increase of businesses that offer potential for greening is therefore also in line with the overall upward trajectory (VEC 2021a: 3) of the City of Vancouver's actual green economy outlined by VEC with a more representative methodology (VEC 2012).

## **4.5 Interviews**

The interview transcripts and the coded responses are in the following summarized, paraphrased and structured around four key questions. The interviewees are made anonymous in order to provide the greatest scope of answers possible and to respect the interviewees wishes. The initial excerpts and transcripts used can be found in Appendix V and VI.

### **4.5.1 What does “industrial” mean in your opinion?**

In response to the question business stakeholder number one defines industrial as light and heavy industrial, where the distinction lies in that light industrial uses are able to exist in urban areas including business activities such as food production, distribution and manufacturing. Business stakeholder one and business stakeholder two additionally understand industrial land as a zoning category assigned by the city. Business stakeholder two also refers to the history of the properties his business was and is located on as heavy industrial and polluted as a result of previous heavy industrial activities. The third and fourth business stakeholders clarify that their property is not heavy industrial, but light industrial which allows them to create different emissions to a different extend such as noise as a result of their business activities.

Institutional stakeholder one sees her professional responsibilities in part emanating from industrial land such as engaging and supporting the stakeholders occupying that land. The second and third institutional stakeholders see industrial land as a variety of zoning designations from light industrial I-1 to I-4 zones up to the heavy industrial M1 and M2 zones. The fourth institutional stakeholder sees industrial as a designation that exists on different plan levels to protect a critical resource.

#### **4.5.2 What has changed in the False Creek Flats?**

In regard to the question business stakeholder one mentions that some of the rail related businesses have been in the Flats for up to 60 years, while there are also businesses in different sectors that have been in the area for a long time as well. More recently there is an influx of early green economy adopters in the area including her own business. Another change mentioned is the Emily-Carr Campus that could prove useful for businesses as it is only on the edge of the industrially zoned area and because it provides opportunity for cooperation. This cooperation exists already as businesses are providing practical work experience for students that benefits both parties involved. This way research and development is also taking place that facilitates the pursuit of the green economy. The railway companies in the Flats are also seen as complementary on the one hand because they are noisy and will not move as they're crucial to the local economy. Their presence therefore provides a sense of security for nearby industrial businesses that share this non-compatibility with housing. On the other hand, they're complementary as they can be used in the future to provide a greener transportation option to conventional trucking to and from the city core. Also mentioned is the new hospital development in CD-761, which is seen as part of a more recent trend for increased interest in the medical industry that is feared to bring new housing developments with it to accommodate hospital staff. Business stakeholder two refers to the origin of the area as a tidal area that was infilled around 1910 in order to house industry. The heavy industrial uses then vacated the area by the late 80s and early 90s. From this latter development he profits from as spaces suitable for his business became readily available and some still are due to their prohibitive remediation cost. The surrounding neighborhoods around the False Creek Flats like Chinatown and the Downtown Eastside have more recently gone through a gentrification process that likely began with the 2010 Vancouver Olympics that were accompanied by significant efforts in housing development.

Institutional stakeholder one mentions a growing trend toward greening business operations that started with the adoption of the Greenest City Action Plan. Funding became available as a result and a trend developed that was reaffirmed through the first world circular economy forum taking place in 2017 in

Helsinki (Sitra 2022). This trend has since then continued to an exceptional point where five in 21 businesses in the city are greening their operations. Institutional stakeholder four mentions that before the 2011 RGS the approach to industrial land has been to largely leave the way it is used up to the industrial developer or user. Now it has become more important to direct the use industrial land for an industrial economy and protect the remaining supply, which has to be met with a new approach to encourage the intensification and densification in order to offer more space to users.

#### **4.5.3 What policy related success stories are there related to industrial land that you know of?**

In response to the third question business stakeholder number two mentions how his business aligns with the GCAP and food related policy, which in his mind makes it a favorable business for the city to partner with when selecting tenants for city-owned industrial land. He believes that there are a number of businesses in the False Creek Flats that have benefited from such policies. Business stakeholders three and four mention how public transit and the location in the False Creek Flats is a key aspect for their business. For the artists that are working in their building in particular this is an important feature and the city also contributed greatly to enabling artists and studios to be in the central light industrial area. Institutional stakeholder one mentions how supporting early-stage ventures in the field of circularity, the exchange of institutional knowledge and communicating the “wants and needs” of such ventures between public and private advances the policy direction. One necessary change has become apparent this way which is the relaxation of the regulations around allowable uses that can occur in buildings on industrial land in order to allow more flexibility in the activities a business can legally pursue in its spaces. Another aspect is the goal in attracting businesses that are complementary to the cities policy goals as an example heat pump manufacturers are mentioned as their product is necessary in large quantities in order to save on energy and emissions in building operation. Institutional stakeholders two and three mention a new approach for intensification that makes demands for the built form of buildings on industrial lands. Key to intensification are accordingly multi-level structures on industrial land that



have big floor plates and high ceilings on the upper levels that are enable a wide range of industrial activities. For example, large open spaces allow for specialized machinery that would not be suitable in other spaces and freight elevators could address some of the transportation issues that come with an upper level location. This approach is supported in a bulletin that outlines criteria developers are required to follow within I and M district schedules (City of Vancouver 2017c).

#### **4.5.4 Which institutional and regulatory problems are you facing on industrial land?**

In response to the question business stakeholder number one acknowledges that there are protective measures in place in theory but that in practice there is an encroachment on industrial land. This encroachment is occurring through the zoning that also allows residential uses. The fear is that the residents in these areas will not tolerate the traffic and emissions of the nearby light industrial uses and that their influence will lead to restrictions and displacement. Another problematic aspect is that the area is seen as underutilized by real estate developers as it holds immense theoretical monetary value if it were redeveloped entirely to housing. This fact creates forces that push for redevelopment of the remaining industrial land in the False Creek Flats.

Business stakeholders three and four share this view and emphasize that both the rising cost for industrial land and the loss of industrial land endangers the viability of light industrial activities.

Business stakeholders one, three and four also see the hospital development as most significant and problematic in their immediate surroundings as it means a loss of industrial land that is also creating greater demand for housing in the area in order to house hospital staff. Beyond that they see other uses that are not industrial in nature but located on industrial land as another problem. In particular there are recreational uses that are not bound to industrially zoned land through their business model but still profit from the comparatively lower cost for space on industrial land. There are also non-industrial uses like a non-profit soup kitchen mentioned that are not seen as an issue as they address social issues and serve the local community. A different aspect mentioned by business stakeholders three and four is that

long term tenure of the city owned property they are located on would trigger funding for their business but also regulatory mechanisms that demand prohibitively expensive upgrades for earthquake-proofing the older building they are located in.

Institutional stakeholder one mentions that institutional entities are limited to their own jurisdictions which also limits the extent to which they can succeed in accomplishing certain policy goals that are set. Another difficulty with realizing changes are the regulations that need to be adhered to in the pursuit of policy goals. An example here is given where two businesses intend to occupy the same industrial space as their business models are complementary and an exchange of materials is a fundamental idea of the cooperation however regulations make demands for a firewall between the two businesses. The result is a process spanning several years to negotiate the regulatory demands down to the compromise of a retractable structure which can separate the space during closing time and a painted line demarcating where one business ends and the other begins during operations. An approach that would benefit industrial users therefore is providing more openness in zoning, adjusting the use allowance and occupancy allowance to cater to the evolutionary character of sectors like manufacturing and in general facilitate more flexible business models. It is at the time however clear that the industrial users and their activities have developed and evolved so quickly that regulations have to catch up first. Another major difficulty pertaining to industrial land is that it contains building stock that is no longer usable for a variety of reasons including structural or service provision problems that require large investments which are not financially viable for industrial users looking to expand.

Institutional stakeholders two and three go further into the underlying problem for use flexibility referring to regulations that are excessive for individual cases such as laboratories having to make costly building upgrades to mitigate hazards that their specific activities don't create but are bound to due to their allocated use type. The protection of the remaining industrial land is also seen as crucial as just 7% of the municipality is still zoned for industrial uses. Another development is the increase in rail use which creates a conflict with residents living near rail lines that are experiencing to them unforeseen

traffic and noise. A problem with the densification of industrial land is caused by the provincial real estate assessment process. Following a rezoning or adjustment resulting in an increase of the allowable FSR the provincial institution B.C. Assessment Authority treats the increase as an existing building even if the building has remained the same. In urban areas this means that landlords distribute the new costs that arise from a higher value plot of land or structure to the same number of tenants as before which equals a significant rent increase.

Institutional stakeholder four provides a regional perspective and illustrates that there are different plans and cycles for plans and programs in place for the 21 municipalities which causes a delayed response from the municipalities to regional actions. He also mentions that developers do not believe that the municipalities are acting fast enough with approval processes required in order to begin their business activities. Municipal autonomy is also an aspect that can create problems in theory when trying to add industrial land long term as municipalities want to maintain flexibility in their zoning ability which may make them hesitant to zone something as industrial land as it could fall into protection mechanisms that would make it harder to revert to another land use later on.

## 5. Synthesis of Results

In this chapter the results of the analysis are reviewed and connections between changes in the narrative policy framework elements are put into relation with the changes in the False Creek Flats firm population.

### 5.1 Narrative Period 1: 1990-2002 Spatial Constraints and Managing Growth

The first narrative identified in the timeline is centered around the goal of ensuring a high quality of life in the region in order to attract new residents. This core narrative is also reflected in Logue's work in which this aim is traced back to the year 1974 and underlines the protection of natural and cultural amenities to ensure a postindustrial viability of the region (Logue 1998: 63). This narrative is first adjusted in the timeline with the problem setting consisting of an expected 70% growth in population occurring between 1999 and 2021 (Metro Vancouver 1996: 8) and both regulatory and geographical constraints that limit urban expansion of the region (Metro Vancouver 1996: 7). The narrative is in this context effectively used in order to justify and create urgency toward pursuing a new policy direction reflecting their functionality as highlighted by Grodach's work on policy narratives (2022: 6-7).

#### 5.1.1 Protection and Direction for Industrial Land

This new policy direction is identified through a push for regional planning in the early 1990s within the Creating Our Future program that is following up on the fundamentals of the proposed 1975 *Livable Regional Plan* (Metro Vancouver 1994: 10–15). Likely as result of this narrative the post-industrial sentiment outlined in Logue's third period extending from 1987 to 1991 is put into question during said program (Logue 1998: 77). What Logue in his work characterizes as a short-sighted push for the redevelopment of industrial land in favor of housing is by 1991 seen as increasingly problematic on a municipal scale (City of Vancouver 1991: 16–17). In the cities 1995 City Plan particularly the role of industrial land is then reevaluated and future efforts are outlined to diverge from this post-industrial

sentiment (City of Vancouver 1995b: 31, 43, 48). What is next for industrial land in the City of Vancouver is a transformation toward becoming the location for city-serving industry and future employment opportunities that based on their new and reconsidered value demand long term protection to not be displaced, which is realized in the 1995 *Industrial Lands Policies* (City of Vancouver 1995d: 1–4). With the need for housing remaining intact on both municipal and regional level, which is evident through the expected growth of more than another million residents, a new policy direction targets industrial uses that are more conducive to be included in an increasingly dense urban landscape (Metro Vancouver 1994: 13, 1996: 25). With this in mind a number of industrial areas in the City of Vancouver are being bookmarked in the cities' *Industrial Lands Policies* for different ranges of industrial uses (City of Vancouver 1995d: 1–4). Among this list of industrial areas are the False Creek Flats for which provisions are made that demand a forward-looking planning program that is to include necessary city-serving and the future proof clean industrial uses as they were first proposed in the early 1990s for greater compatibility with the required residential developments that are gradually enclosing them. This development also appears to be mirrored through the market conditions as well. As early as the 1980s the cities firm population was characterized by an ongoing trend of heavy industrial uses leaving the area as pointed out by business stakeholder two, which is also taking place in the False Creek Flats as described in the 1996 Preliminary Concept Plan for the area (City of Vancouver 1995c). With the last few heavy industrial companies leaving in the Flats in the late 1990s the newly vacant properties and structures are increasingly taken on by light industrial uses that are at that point making up the majority of the firm population. As a result of this development the area was almost entirely rezoned from a heavy industrial M-2 zoning to a light industrial I-2 zoning in 1996 to match this new reality (City of Vancouver 1995c). With the rezoning a long chapter of the False Creek Flats industrial history was closed that initially began with the infilling of the easternmost part of the False Creek waterway with the aim to accommodate a new western terminus for the Canadian rail network. The rail infrastructure of which despite being completed around 1919 in the False Creek Flats remains intact to this crucial

turning point in the mid-1990s (Donald Luxton and Associates Inc. 2013: 32, 45, 69). In doing so it acted as a guarantee for the low residential amenity of the False Creek Flats it was ascribed in the 1991 Central Area Plan (City of Vancouver 1991: 16–17), therefore acting as a layer of protection from residential redevelopment which has been corroborated in an interview with business stakeholder one whose property is adjacent to rail infrastructure.

### **5.1.2 High-Tech in the False Creek Flats**

The *Industrial Lands Policy* following its adoption in 1995 provides the groundwork for a refinement of this clean industry policy direction for the False Creek Flats that is based on the same growth and spatial constraints problem setting. This new direction respectively introduced and pushed by the 1996 *Preliminary Concept Plan* and the following 2001 *Urban Structure Plan* are high-tech businesses that are meant to be contained on the western part of the 1996 I-2 area that is for these purposes rezoned to I-3 in 1999 (City of Vancouver 2001: 3, 2009: 1–3). The new zone is positioned between the remaining I-2 light industrial in the east and the FC-1, FC-2 and IC-3 mixed use areas in the west. As a result of the regulatory adjustment accompanying the rezoning the process to establish high-tech uses in this new zone is facilitated and encouraged through FSR bonuses (City of Vancouver 2001: 7). The I-3 area is at the same time functioning as a buffer between the light industrial and the more immission prone mixed commercial areas of the False Creek Flats. Despite the separation from the I-2 zone to the east and better access to public transit the new I-3 zone fell short to meet the expectation in attracting high-tech businesses (City of Vancouver 2007a: 27). This led to an additional adjustment in 2009 leading to the outright approval of the general office use type to at the time meet demand for office space close to the Downtown core (City of Vancouver 2009: 1–3). However, the major change in the number of office use types in the Flats occurred before this when in 2001 the number of office use types jumped from 7 to 89 by 2006 (City of Vancouver 2022b). This points toward both policies falling short of their goals as office

use types remained steady until 2017 despite the 2009 efforts to meet demand for additional office space (City of Vancouver 2009: 2). The fact that the introduction of a competing higher value use type, in this

case office uses, brings with it an increase in land price for industrial land is also addressed in the I-3 area (Ohls et al. 1973: 1–3). As the consequence of this would be that light industrial users are priced out in the long-term conditions are set out within the zoning district schedule. These consist of the demand that 1 FSR out of the 3 FSR that can potentially be permitted has to be a compatible light industrial use. With this the I-3 zoning regulations adjust FSR upward incentivizing higher density and light industry (City of Vancouver 1999c). The observed change to industrial businesses as a result of the *Urban Structure Plan* does show this

to be an apparently working mechanism as the initial trajectory of growth of industrial use types continued following the 2001 reference year rather than going down as a result (see Figure 27).

Comparing this policy direction with Grodach’s work on industrial land in San Francisco clear parallels in policy direction are becoming apparent in the endeavor of attracting high-tech businesses, protecting industrial land for cleaner uses including the Live/Work concept that made its way into the early 1996 *Preliminary Concept Plan* for the False Creek Flats (City of Vancouver 1995c). The Live/Work idea meant permitting artist studio and creating a zoning use type for these on I-2 industrial land for an increasingly valuable urban creative economy. However, the actual influx of artist studios can only be traced to as early as 2011 with 33 issued licenses appearing in the database whereas there were none in

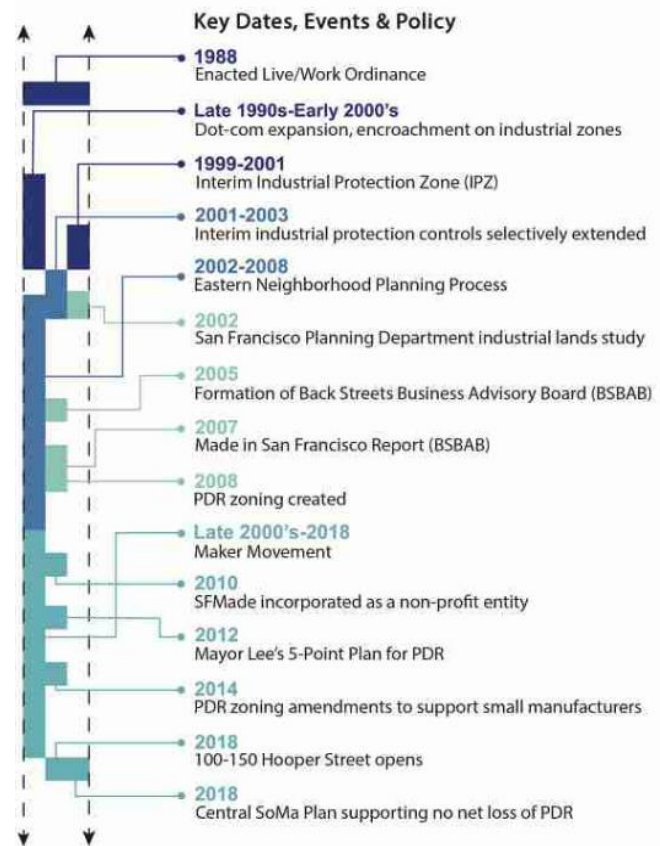


Figure 16: San Francisco Industrial Land Policy Timeline (Grodach, 2022)

the previous reference year 2006 (City of Vancouver 2022b). A potential explanation for this is inaction in pursuing this policy direction until the 2008 cities Culture Plan was adopted (City of Vancouver 2008a). The plan put forth greater support and investment for the creative economy, which would explain the later increase of the studio use type (City of Vancouver 2008a: 4). This support is confirmed by business stakeholder three and four who consider the city's efforts toward this end largely successful.

## **5.2 Narrative Period 2: 2002-2022 Climate Change**

Moving back to the early 2000s the change in firm typology toward more high-tech office uses is accompanied by an evolving problem setting modifying the initial narrative. From that point in time onward the problem settings of population growth and spatial constraints are extended with the problem setting of climate change (Metro Vancouver 2010d: 8–11). While there is the early 1990 Clouds of Change report that uses this problem setting and introduces goals that should be accomplished, the comprehensive efforts to methodically address the problem on a regional scale as recognized through the timeline are picked up over 10 years later (City of Vancouver 1990: 1–4). This second push to address climate change following the 1990 Cloud of Change reports consists of the initial 2004 Climate Friendly-City plan (City of Vancouver 2004d), the 2004 Food Action Plan addressing impacts on agriculture (City of Vancouver 2004b: 3), the 2004 Green Building Strategy (City of Vancouver 2004c) and the 2005 Community Climate Change Action Plan (City of Vancouver 2005b).

### **5.2.1 Sustainability**

The next policy direction coincides with the adoption of the 2002 Sustainable Region Initiative as it introduces sustainability as a concept to address a climate change related problem complex (Metro Vancouver 2010d: 8–11). The mitigation of climate change is from then on included in the planning suite of the regions 2008 Sustainability Framework. The framework outlines those aspects that need to be addressed in the pursuit of sustainability of its service provision and other actions (ibid.).



### 5.2.2 Green Economy

The sustainability concept then evolves into a green economy policy direction for industrial land with its early beginnings in the cities 2004 Green Building Strategy and the 2006 Vancouver Economic Commission's *Guiding Principles* plotting a course for the city to become a global leader in sustainability practices and to draw in green technology businesses (City of Vancouver 2006b: 1, 6). The *Guiding Principles* also outlined the responsibility of the Vancouver Economic Commission to act as a conduit between public and private (ibid.) which mirrors developments in San Francisco with institutions such as SFMade in 2010 meant to act as facilitators for policy implementation (Grodach 2022). The False Creek Flats from 2006 onward are maintaining their city-serving function that is reformulated and sharpened in 2007 to a production, distribution and repair function again mirroring efforts in the city of San Francisco (City of Vancouver 2007a: 27; Grodach 2022). With the 2012 Greenest City Action Plan and the Vancouver Economic Commission's Economic Action Strategy in 2011 this policy direction is adjusted and specified as the False Creek Flats are designated as a future green business hub (VEC 2011; City of Vancouver 2012a). This effort in extending sustainability to the local economy also matches what could be described as the evolution of the 1992 sustainable development concept to UNEP's 2012 green economy concept which is occurring in the same timeframe (Loiseau et al. 2016: 2). During the 2011 and 2017 period the consistent efforts to accommodate and attract businesses to a growing green economy likely resulted in an increase in issued licenses for food manufacturers from 7 to 27. Such food related businesses are located in the green economy local food sub-sector, which in 2010 already was the largest of its kind by number of green jobs followed the clean-tech and green buildings sub-sectors (VEC 2014: 47). During the interview with business stakeholder two, whose business also belongs into the local food sub-sector, mentions that policies like the Greenest City Action Plan facilitated food related businesses. These also increased the opportunities for businesses in the sector because the city was more willing to work with them. The latter part is

something business stakeholder one agrees with as the incentives for this are good. This shows that beyond the data gathered by the VEC on the increase in green jobs that this outcome wasn't entirely a market phenomenon but also result of policies that include funding like the Greenest City Action Plan Phase 1 and a more ambitious Phase 2 in 2015. Next to these policies the 2013 The Vancouver Food Strategy, the 2011 Regional Food System and 2016 Regional Food System Action Plan also likely contributed to this development (Metro Vancouver 2011c; City of Vancouver 2012a, 2013c, 2015a; Metro Vancouver 2016; VEC 2018b). Another contributing factor might also be the policies addressing climate change such as the 2010 regional Corporate Climate Action Plan, 2012 Climate Change adaptation strategy, 2015 Renewable City Strategy, the 2018 regional Climate 2050 Strategic Framework and the 2020 Climate Emergency Action Plan that likely drove up demand and incentives for products created in the green economy sub-sectors such as clean-tech or green buildings (Metro Vancouver 2010a; City of Vancouver 2012b, 2015c; Metro Vancouver 2018a; City of Vancouver 2020b). The green economy business type selection in the firm population analysis of the False Creek did also show a similar upward trajectory to the one observed by Vancouver Economic Commission for the city as a whole (see Figure 22). However, unlike the Vancouver Economic Commission's method (VEC 2012) the method used for the firm population analysis does however not allow many conclusions. The one that can be drawn from the results is that there is a slightly increasing number of businesses in the False Creek Flats that could potentially have turned into green businesses in the manner outlined by the UNEP, which is a prerequisite for the increase observed city-wide (2011). What these results about Vancouver's green economy speak for is a concentrated effort with the characteristics of an industrial policy that albeit late in the context of climate change is successfully targeting a sunrise industry (Wilder 2009: 10–11). The ambition of which is truly underlined in GCAP Phase 2 with the use of the Green Economy Mecca metaphor characterizing the City of Vancouver as a place to be with global pull for green businesses (City of Vancouver 2015a: 57).

### 5.2.3 Intensification and Densification

The analysis of the business license data shows that an intensification has been taking place since 1997 as industrial use types grew in number from 118 to 282 by 2017, while in the same period the total number of issued business licenses increased to a maximum 558 with 159 parcels being used by businesses (see chapter 4.4). With regard to the strategic policy-based intensification efforts in 2011, 2017 and 2021 and looking at the growth in issued business licenses from 2001 to 2006 following the adoption of the *Urban Structure plan* the 1996 I-2 and 1999 I-3 rezoning it appears that a maximum occupancy of roughly 600 businesses in the False Creek Flats has been reached around 2017. These results further support the already established need for densification through multi-level structures for which the M and I Districts bulletin and the 2021 Industrial Lands Strategy are providing direction. Considering the rezonings that occurred in the 1990 to 2022 period it is demonstrated that rezonings from I-2 to either I-3, FC-1, FC-2 or CD are characteristic in that they have shown a much smaller share of industrial uses as result. This hints at the introduction of non-industrial uses or a displacement of industrial uses. This development aligns with the area as a whole first showing an increase in the share of industrial uses from 1997 to 2001 to 70% that is then followed by a sharp drop to 58,10% in 2006 plotting an ongoing trend toward a 50% share of industrial uses in the following reference years. These results in summary suggest therefore that the number of non-industrial uses further increased with the rezonings without negating an increase in industrial businesses. But what these rezonings can also mean for industrial users can be illustrated through the FC-1 (City of Vancouver 2020e), FC-2 (City of Vancouver 2021b), MC-1 (City of Vancouver 2017j: 12), CD-761 in combination with I-3 Sub-Area A (City of Vancouver 2017f: 2) as well as the IC-3 Sub-Area A (City of Vancouver 2017j: 12). According to business stakeholders one, three and four these types of zones are seen as particularly problematic as these are not only intended to allow non-industrial uses but also residential uses that pose a clear compatibility issue (see chapter 4.5.4). In a resulting conflict between residential and industrial users the residents are feared to win out against industrial users as the number of complaints is expected to rise

which eventually forces the city into action to the detriment of industrial users. The latter CD 761 does make an apparent effort in avoiding conflict by locating residential and hotel type uses on the outermost edge of the False Creek Flats area and therefore spatially buffering them from the light industrial uses nearby (City of Vancouver 2021a: 2–3). However, the CD-761 hospital project at the same time is expected to increase residential uses (see chapter 4.5.4) and is used as a reason for housing in the neighboring Sub-Area A of the 2017 Rezoning Policies for the False Creek Flats that faces these more industrial parts of the False Creek Flats (City of Vancouver 2017f).

In this worst-case use conflict scenario these types of rezonings are reducing the compatibility of remaining industrial uses, while the overall increase of other non-industrial uses is encroaching in light industrial zoned districts contributing to a supply shortage for those businesses that are dependent on it based on their business activities' externalities.

An approach to address this issue lies in the definition of industrial. It's evident that the term has been used loosely in the past as many de facto non-industrial uses made its way even into the I-2 zone as observed by business stakeholders one, three, four (see chapter 4.5.4) and in the firm population analysis based on the 2018 Metro Vancouver definition for industrial uses (Metro Vancouver 2018b: 2).

Therefore, clearly delineating what industrial is and which use types associated are industrial is key to maintain and optimize the existing supply of industrial land in the future which is also further elaborated in Metro Vancouver's 2021 *Industrial Lands Strategy*. Policy development in the city is similarly moving toward concentrating those uses that are actually presenting a real-world compatibility issue on industrial land, while incrementally permitting those that do not in other non-industrial areas as pointed by institutional stakeholders two and three regarding their current efforts (see chapter 4.5.3).

Outstanding challenges still remain where uses are classified as industrial that in reality are not as problematic in their emissions as they are presented by the use types listed in the zoning district schedules. This occurrence reflects a dated understanding of the activities and emissions occurring within a given use type. The regulations also do not consider technological advancements that can be

utilized to mitigate both emissions and immissions and facilitate the introduction of a larger variety of light industrial use types into mixed use areas. The classification of use types itself is an issue as well as it is a predefined list that often cannot accurately describe the business activity, particularly newer ones as outlined by institutional stakeholders one, two and three (see chapter 4.5.4). Such non-conformity complicates registering a business and can misrepresent a business on paper and in the worst case puts it into the conditional approval section which also results in a more complicated approval process to open a new business. Further refining this process appears to be the next key step as on a municipal and regional scale the industrial land supply is going to reach a critical point somewhere between mid-2020 (Site Economics Ltd. 2015: 63–65) and 2030 (Gilmore 2015: 2). Without a suitable supply of industrial land, the growth of the regions light and heavy industries is limited. At the same time the lack of supply drives up industrial land price worsening market pressure that is already putting in question the viability of existing businesses on industrial land (see Chapter 4.5.4). Then considering the issue of outdated and dilapidated building stock that is available the picture is looking bleak for entrepreneurs intending to expand or establish their light industrial operations in the city (see Chapter 4.5.4).

Logue has been hinting at this issue as industrial land was on and off redeveloped with residential projects in the past roughly 50 years mostly as a short-term solution to meet the ever-present need for housing (Logue 1998: 51–53). With the conclusion of his work in 1991 that this will become a problem later on also made its way into the 1991 *Area Plan* and is further addressed with the following 1995 *Industrial Lands Policies* and the regional 2011 *RGS* which is taking actions that go beyond merely protecting the remaining industrial land supply. From 2011 onward in the timeline the narratives problem setting of spatial constraints and population growth is in a way recontextualized by outlining a lack of industrial land for future growth of the industrial sector. The policy direction resulting from this issue is the intensification and densification of industrial land which is sharpened through the 2014 *Metro Vancouver industrial Land Protection and Intensification and intensification policies* (Metro Vancouver 2014), while the 2017 *M and I Districts Bulletin* could be seen as a municipal effort to pursue

the intensification of industrial land including future developments in the Flats. However, to what extent these efforts for intensification and densification culminating in the 2021 Industrial Lands Strategy have if at all affected the number of businesses in the area cannot be conclusively answered as the built form and property redevelopments are not considered in this thesis.

With respect to densification, it has however been pointed out in interviews that increases in floor space ratio as of 2022 result in a higher assessment of property value through the B.C. Assessment Agency with which costs are associated that are ultimately spread amongst the same initial number of tenants. This is an issue since an increase in floor space ratio doesn't directly correlate with an actual addition of space that can be rented out and therefore results in an increased financial burden for owners and tenants (chapter 4.5.4). Another issue regarding affordability is the cost associated with the building of multi-level industrial structures. Due to a lack of data their financial viability is unclear for developers as is their suitability for industrial tenants which poses a risk factor. What also complicates intensification are regulations regarding both the permitted uses on a zoning level and the permitted uses or use allowance within specific structures. A relaxation of these regulations is needed for the co-location of business types and business activities that are in practice compatible or even complementary. As an example, a shoe manufacturer can produce but not sell shoes from the same space and a recycling center can't occupy the same space as a business dealing with deposit containers without great bureaucratic effort (chapter 4.5.4). Such a subdivision of industrial spaces requires creative work arounds for building and fire codes which hinders intensification and often does not meet the reality of what is necessary in certain aspects. It's issues like these that emphasize the need for a conduit like the Vancouver Economic Commission that can negotiate regulatory demands and the reality of entrepreneurs to facilitate or even enable in the first place the process toward reaching any future vision of the False Creek Flats.

#### **5.2.4 Social Inclusion**

Considering the impact Covid-19 had on the economy from the local to global level the need for such an institution is heightened as policy makers now focus more on the problem settings created by it. Socioeconomic inequality has increased dramatically which is threatening the quality of life in the region (Ferreira 2022). In the context of the False Creek Flats the Downtown Eastside Plan already made efforts to find ways to deal with social issues specific to the local context of the Flats and its neighboring areas such as drug addiction and poverty (City of Vancouver 2014a). Through the need to ensure social inclusion and a successful recovery from the economic downturn brought on by the pandemic the green economy concept again play a key role in this context (VEC 2021b, 2021c: 2). Early on the green economy has been ascribed potential for social inclusion as part of a “Just Transition” (UNEP 2008: 277, 288-289). The result of the new problem setting is a policy direction seeking to establish low barrier employment and training opportunities within the labor-intensive green economy sub-sectors of the False Creek Flats. This policy direction is part of the Vancouver Economic Commission’s efforts for a “Just transition” and pandemic recovery as well as the recent 2022 Vancouver Plan (VEC 2021b; City of Vancouver 2022e). For the 2021 reference year the firm population analysis showed a clear dip in the issued business licenses in the False Creek Flats (City of Vancouver 2022c) which speaks for a loss of businesses (City of Vancouver 2022d) and reiterates the need for action in order to provide a path to the recovery of industrial businesses for the success of the policy direction (see Figure 2). The dip is also displaying the inherent vulnerability to the pandemic of labor-intensive PDR type activities, whereas office type businesses slightly increased over the same period.

#### **5.2.5 Merging Directions in the False Creek Flats**

In 2017 the 2001 *Urban Structure Plan* is replaced by a more comprehensive area plan that incorporates and assigns sub-districts to the False Creek Flats area and corresponding policy directions.

### **Health Hub and Creative Campus**

The health hub introduces a med-tech sub-district around the New St. Paul's Hospital development in CD 761 (City of Vancouver 2017e: 29, 2021a). The creative campus on the other hand is designed around the Great Northern Way CD 402. In these roles their aim is to modernize the district and intensify and diversify job capacity consisting of med-tech and creative economy uses in the former and education, high-tech uses in the latter (City of Vancouver 2017e: 37–38). The direction for these types of economic activities is in part derived from the late 90s and early 2000s high-tech direction presented in the 1996 *Preliminary Concept Plan* and 2001 *Urban Structure Plan* (City of Vancouver 1995c, 2001: 1). Another part of these activities can be traced back to Phase I and II of the GCAP that includes green technology, which belongs to the broader high-tech umbrella (City of Vancouver 2012a, 2015a). In addition to the two the 2008 Culture Plan has also likely provided direction in introducing the presence of arts and culture to the area (City of Vancouver 2008a). Another key aspect of the 2017 Area Plan as a whole is that it proposes rezoning and adjustments to zoning schedules to facilitate the densification and intensification to accommodate an increasing number of businesses and jobs (City of Vancouver 2017k: 1–3). The intensification and densification of industrial lands as mentioned before can be traced back to the 2011 RGS (Metro Vancouver 2011b). The municipal 2017 M and I Districts policy in this context outlines building heights and heights for interior space as well as certain specifications and rules that support the vision of high-density mixed-use buildings including light industrial (City of Vancouver 2017c: 1–4). These efforts are meant to enable the False Creek Flats that are making up 15% of the city's industrial lands or in other terms less than two km<sup>2</sup> to accommodate another 400 businesses and 20000 additional jobs by 2040 (City of Vancouver 2017e: 145). This effort at the same time supports the anticipated regional growth of an additional 700,000 people by 2040 of which the city is expected to accommodate 130,000 while offering an additional 90,000 jobs in total, which shows both the importance of the False Creek Flats but also the potential for external pressures on the area (City of Vancouver 2012c: 6; Metro Vancouver 2022a: 22).



### **Back of House**

The back of house area is another crucial component to the new vision that is planned to accommodate the densified industrial uses that complement the high-tech, education and creative economy area to the west with its city-serving PDR functionality (City of Vancouver 2017e: 32). In principle the vision for this part of the False Creek Flats builds on the 1995 *Industrial Lands Policies*, 1991 *Central Area Plan* and 1995 *City Plan* idea which is to protect the industrial land for PDR type uses but also to intensify employment as outlined again by the 2007 *Metro Core Jobs and Economy Land Use Plan* (City of Vancouver 1991, 1995b, 1995d, 2007a). The *Area Plan* similarly to the early 90s considerations aims to further secure sufficient light industrial land that does not permit residential uses to avoid use conflicts (City of Vancouver 2017k: 12). This part of the False Creek Flats is also meant to accommodate the more low tech and labor intensive green economy uses including the food sector based on the ideas and direction of the regional and city-wide food plans as well as the GCAPs (City of Vancouver 2008a, 2012a, 2013c, 2015a; Metro Vancouver 2016; City of Vancouver 2017k: 12).

### **Terminal Spine**

The terminal spine area borrows its direction from previous regional and city-wide transportation plans, the 1996 *Preliminary Concept Plan* and the 2001 *Urban Structure Plan* as it is meant to safeguard and improve the efficiency of the rail infrastructure in the False Creek Flats (City of Vancouver 1995c, 2001: 1–3). This vision shows that the initial considerations for redevelopment in the 2001 *Urban Structure Plan* were overshadowed by an increased effort in transportation planning (City of Vancouver 2001: 1–3, 2003, 2009: 2–3) that integrates rail alongside a greater demand for rail infrastructure that connects to areas with port related industrial uses such as warehousing and distribution (City of Vancouver 2008c: 4–6; VEC 2011: 4). Looking at the second outlier in the 2001 to 2006 period the designation of roadways in the 2001 *Urban Structure Plan* (City of Vancouver 2001: 2–3) and the renewed attention

toward rail traffic following shortly after with the 2002 *Downtown Transportation Plan* (City of Vancouver 2002: 56) and parts of the 2003 False Creek Flats planning program (City of Vancouver 2003) are likely related to the increase from 28 to 82 wholesalers in the area as this use type and its city-serving function benefits from the proximity to the Downtown core and good road and rail access.

### **General Area**

The plan also considers the False Creek Flats area as a whole and outlines measures for the continued integration of the area into the city's urban fabric and the internal cohesion of the four areas (City of Vancouver 2017e: 34–37). An urban design language is therefore another aspect of the plan that is implemented through a number of zoning guidelines (City of Vancouver 2017g, 2017h, 2017i). The overall aim behind these considerations being that the False Creek Flats should leverage its history and character to create a blend that lends itself to host innovative businesses (City of Vancouver 2017e: 13). Another key part of the design is the need for public space and infrastructure that the low amenity area needs as it changes in order to encourage social interaction and support economic life (ibid.). To further encourage this in the False Creek Flats natural systems are to be reintroduced through greenery and greenway planning with the underlying region wide goal towards a resilient and healthy environment (City of Vancouver 2017e: 15). Transportation is another key aspect to integrate and connect the Flats into the city for this traffic internally needs to be improved and issues with truck and car traffic need to be addressed in part through rerouting and improvement of transportation options such as public transit, all with the underlying target of green mobility as outlined by the municipal Transport 2040 (City of Vancouver 2012c) and the 2050 regional plan (City of Vancouver 2017e: 15; Metro Vancouver 2022b). Another major issue in the city is affordability through high rents and high cost of living (City of Vancouver 2017e: 14). The Flats in the long-term vision are therefore the place where key economic initiatives such as NGOs and other services can be housed (City of Vancouver 2017e: 14, 35, 50). Affordable and secured space for these types of businesses is made available in part by leveraging higher

value uses toward these necessary conditions (City of Vancouver 2017k: 7–9). This principle is broadly oriented on the 2014 DTES plan in order to solve social issues within and in the immediate surroundings of the False Creek Flats (City of Vancouver 2014a, 2014b). With the groundwork of the 2014 DTES Plan, VEC’s just transition and the Vancouver Plan the idea of social inclusion has therefore already been a key policy direction for the False Creek Flats (City of Vancouver 2014b; VEC 2021b; City of Vancouver 2022e).

### 5.3 Addressing the research questions

The answer to sub-question number one “Which policy narratives and policy direction are used and pursued and how have these changed in the time 1990 to 2021 time period?” is provided through the policy overview and following NPF method. The underlying goal of policy making is identified to be centered on maintaining the quality of life in the region to continue to attract new residents in order to build adaptive capacity for future challenges (Logue 1998: 63). This goal guides future narratives following its integration into the 1975 version of the *Livable Region Plan* (Metro Vancouver 1994: 10–15). As a result, the following narratives were used throughout the 1990 to 2021 time period to guide the development of the False Creek Flats:

- 1st Narrative: Growth and Spatial Constraints require clean and city-serving uses on Industrial Land (1991-2022)
- 2nd Narrative: Growth and Spatial Constraints require High-Tech on Industrial Land (1998-2022)
- 3rd Narrative: Growth, Spatial Constraints and Climate Change require cross-sectoral sustainability (2002-2022)
- 4th Narrative Growth, Spatial Constraints and Climate Change require green economy (2006-2022)

- 5th Narrative: Growth, Spatial Constraints and Climate Change green economy requires industrial land and intensification and densification (2011-2022)
- 6th Narrative: Growth, Spatial Constraints, Climate Change and the Pandemics effects require industrial land for social inclusion (2019-2022)

Sub-question two “How has the firm population of the False Creek Flats changed in their typology in the time period?” has been illustrated by the analysis of issued business licensed that showed that the firm typology changed significantly toward specific use types during different periods. First with the 1999 I-3 rezoning for high-tech and the 2001 *Urban Structure Plan* towards office uses and wholesalers in the False Creek Flats between 2001 and 2006. After that there is increase in artist studios in 2011 following the 2008 *Culture Plan* and an increase in food manufacturers and processors following the *GCAPs* in 2017 and 2021. While the number of industrial businesses grew overall, their share in the area decreased to less than 50% in 2021 showing the influx of non-industrial uses in the area that are becoming an issue as the share of vacant industrial space city-wide approaches zero percent (Colliers Canada 2022) and leads to rent levels untenable for industrial users (VEC 2017: 4). The number of businesses in the UNEPs green economy sectors (UNEP 2011) grew as well, however they are only reflecting the potential for green businesses not the actual sub-sectors. The increase does show that a majority of businesses in the Flats have been suitable for the green economy policy direction and likely contributed to the sustained growth of green jobs (VEC 2022b).

The third sub-question “To what extend do changes in firm population correspond to the changes in policy narratives and policy directions?” is harder to answer. There are policy directions that resulted in regulatory changes such as rezonings that directly affected the firm population by restricting the use type that are permissible in the area. There are also more indirect strategic policy directions like the green economy that is implemented through incentives where it is rather difficult to differentiate between an

organic development of the firm population that is market based or one that has been shaped by top-down policy or even grass roots movements. The case that can be made regarding this sub-question is that it has been demonstrated that both market and policy directions had an impact on the firm population and contributed to the overall success of the policy directions identified.

Finally, to answer the research question “**How did institutional policy narratives affect the firm population in the False Creek Flats since 1990?**” the narratives with their evolving problem setting and changing policy direction have together with the overall market development led to the addition of new businesses to the False Creek Flats. The increase in businesses and jobs occurred throughout different sectors that are reflected in the policies selected for the overview and diversified use types in the district while maintaining its city-serving industrial functions.

## 6. Conclusion

The policy overview and following application of the narrative policy framework has shown that the narrative has not drastically changed but rather steadily evolved since 1990 and to this day draws on the elements used in the past. Climate change and the Covid-19 pandemic are the additions to the initial problem setting over the 30-year time period, but just as the growth and spatial constraints problem settings they introduce and justify new policy directions for industrial land in general and the False Creek Flats as a district. All of them with the underlying goal of maintaining or enhancing the quality of life in the region to attract new talent and businesses. The policy directions that are taken in response to the problem settings that threaten this underlying goal are introduced as additions to those that came before. These policy directions are reflected in the firm population analysis of the False Creek Flats as the influx of office uses, wholesalers, studio uses, food related uses and others show. Despite a steadily growing number of industrial businesses, they are making up for a decreasing share of businesses in the False Creek Flats. This unproportional growth hints at an intensification of non-industrial uses that in

turn points to the continued threat for industrial business types of being priced out of the False Creek Flats in the near future. At the same time the pre-pandemic growth of industrial use types shows in this context the effectiveness of the increasingly detailed industrial land policies through a continuous presence of city-serving PDR uses in the area.

### **7. Assessment of Research Methodology**

In the thesis a novel approach is used that is combining the Narrative Policy Framework and a literature overview with a corpus systematically created based on set criteria. With this naturally come along issues first and foremost being the one inherent to the NPF. Despite the selection criteria for policies and the operationalization of the approach to assign narrative elements there remains a degree of subjectivity that cannot be eliminated. There is also a degree of uncertainty about the list of policy documents being entirely complete. Beyond that the period creation as a result of the assigned narrative elements is also to a great degree a simplification and subjective to approximate a point in time where the influx of a new problem setting and policy direction occurred. Using the adoption year of policies as a first reference point and a later point for evaluation in this context is a pragmatic decision to somewhat mitigate this problem.

The following evaluation of narrative periods based on narrative element changes in the firm population analysis also suffers some drawbacks in its approach that are originating on the limited availability of the data going back to only 1997. The business license data also showed significant limitations in identifying green businesses making them as a data source in their current form unsuitable for this complex task. Due to the lack of precision and method used the green economy could therefore not be conclusively evaluated for the False Creek Flats district specifically beyond a potential correlation between the growth of businesses that offer greater potential for greening and green jobs growth in the city. Another aspect that could have been improved is the comparison of the individual zoning districts, which does not compare the same area and set of business locations derived from the datasets before and

after a rezoning as the boundaries are redrawn which each rezoning. This way rather than just comparing percentages between areas of different sizes the difference in total numbers before and after can provide more reliable data on changes. This is something that provides an extra level of complexity that can be addressed in future work that is building on the issued business license datasets from the cities Open Data Portal. This approach however should also include data on the volume of usable space of each property for multiple reference years. In the case of the industrial use selection it is for example helpful to be able to delineate a densification related increase of uses based on a rezoning and redevelopment of a property toward higher FSR from an intensification related increase of uses as a result of other regulatory “relaxations” to properly ascertain the effects of these tools on the firm population (City of Vancouver 2022b).

## **8. Recommendations and Outlook**

The city and region have the opportunity to continue to build an ecosystem of creatives, scholars and manufacturers in the False Creek Flats. An ecosystem that further pushes collaboration, creates education and training opportunities for a wide range of socioeconomic groups as well as opportunities for public-private partnerships with innovative businesses and other stakeholders. It is these features and diversity of economic, cultural and social activities that provide the foundation and capacity for innovation in the green economy. This is a necessary step considering the breadth of global issues brought upon by climate change that are going to affect the city and region significantly. It is also a necessary step because in this pursuit the city and region are driving competition in the global green economy toward the goal of minimizing dependency on fossil fuels. This in return offers opportunities for increased local production that can enable inclusive growth and prospects for exporting green technologies. Continuing this trajectory would also extend the lifetime of the remaining natural capital that cannot or is far more difficult to be substituted through technical means. In a global context Canada's large land mass additionally offers huge potential for revitalization measures and coinciding lucrative

carbon offsets as well as a proving ground for new green technologies. In general future research needs to continue to identify ways to facilitate and grow a green economy wherever it may be situated to contribute to its success. Looking at the False Creek Flats in the context of intensification and densification of industrial land is another potential research avenue. With rapid urban expansion and the loss of natural areas remaining unsustainable such research on the intensification and densification of historically low-density industrial land will likely become more and more relevant. This approach however needs to ensure affordability of industrial space on industrial land to not undermine and limit the wide variety of functions it is meant to serve. The issue of affordability requires comprehensive actions akin to an industrial policy with incentives and subsidies rewarding those contributing to a green economy. British Columbias 2022 StrongerBC policy shows the potential to fulfill this role but its impact is at this stage still unknown. Despite this building on VECs methodology can in this endeavor also be a way to prove green economy attributes beyond a reasonable doubt to mitigate common green-washing practices. Such a green business identifier could then also be part of the business license application which in combination with information on the space utilized by a business can then be used to evaluate both the intensification and densification of a green economy taking place in the False Creek Flats. The resulting overview could then in the future also outline which spatial demands different business types have, which are eligible to receive green economy related funding and which businesses or use types are in practice compatible and can coexist on the same parcel or within the same structure.



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City of Vancouver Archives: 1150 Chestnut St, Vancouver, BC V6J 3J9, Canada

- Reference Code: COV-S697/ File - False Creek information binder/ Box: 622-G-03 folders: 03-04/ (in public domain following: <https://vancouver.ca/your-government/get-a-copy-of-an-archival-record.aspx>)

## 10. Appendix

### I. Use Type Selections

OBJEC TID	businessype	Qt y.	UNEP 2011 - 10 Green Sectors	Industrial - MV 2018 Definition
1	Animal Services	9	no	no
2	Apartment House	7	no	no
3	Apartment House Strata	1	no	no
4	Assembly Hall	7	no	no
5	Auctioneer	5	no	no
6	Auto Dealer	43	Transport (and related serices)	no
7	Auto Detailing	8	Transport (and related serices)	yes (repair)
8	Auto Painter & Body Shop	28	Transport (and related serices)	yes (repair)
9	Auto Parking Lot/Parkade	26	no	no
10	Auto Repairs	12 7	Transport (and related serices)	yes (repair)
11	Auto Washer	9	Transport (and related serices)	no
12	Boat Charter Services	1	Transport (and related serices)	no
13	Caterer	45	no	no
14	Christmas Tree Lot	1	no	no
15	Community Association	29	no	no
16	Computer Services	49	Infrastructure and digital technology	no
17	Contractor	25	Buildings (and related services)	yes (construction materials and equipment)
18	Contractor - Special Trades	14	Buildings (and related services)	yes (construction materials and equipment)
19	Dining Lounge *Historic*	4	no	no
20	Dining Lounge/Room *Historic*	10	no	no
21	Electrical-Temporary (Filming)	3	no	no
22	Electrical Contractor	18	Buildings (and related services)	yes (construction materials and equipment)
23	Entertainment Services	4	no	no
24	Exhibitions/Shows/Concerts	6	no	no
25	Financial Services	5	no	no
26	Fitness Centre	7	no	no
27	Food Processing	19	Food and Agriculture	yes (light and heavy industrial production)
28	Health Services	2	no	no
29	Hotel	11	no	no
30	Instruction	11	no	no
31	Janitorial Services	1	Buildings (and related services)	no
32	Junk Dealer	7	Waste	yes (storage)
33	Laboratory	15	no	no
34	Landscape Gardener Liquor Establishment	5	Vegetation and Landscape	yes (construction materials and equipment)
35	Extended	2	no	no

	Liquor Establishment			
36	Standard	5	no	no
37	Liquor License Application	1	no	no
38	Ltd Service Food Establishment	18	Food and Agriculture	no
39	Machinery Dealer	10	no	yes (construction materials and equipment)
40	Manufacturer	27	Manufacturing (making something)	yes (light and heavy industrial production)
41	Manufacturer - Food	0	Manufacturing (making something)	yes (light and heavy industrial production)
42	Manufacturer - Food with Anc. Retail	70	Manufacturing (making something)	yes (light and heavy industrial production)
43	Manufacturer with Anc. Retail	6	Manufacturing (making something)	yes (light and heavy industrial production)
44	Money Services	4	no	no
45	Moving/Transfer Service	4	Transport (and related services)	yes (distribution)
46	Non-profit Housing	16	no	no
47	Office	37	Infrastructure and digital technology	no
48	Painter	9	Buildings (and related services)	no
49	Personal Services	2	no	no
50	Photographer	2	no	no
51	Plumber	1	Buildings (and related services)	yes (construction materials and equipment)
52	Plumber & Gas Contractor	5	Buildings (and related services)	yes (construction materials and equipment)
53	Printing Services	4	Manufacturing	yes (distribution)
54	Product Assembly	25	Manufacturing	yes (light and heavy industrial production)
55	Production Company	11	Manufacturing	
56	Property Management	17	Infrastructure and digital technology	no
57	*Historic*	3	no	no
58	Public House *Historic*	2	no	no
59	Public Market Operator-Annual	7	no	no
60	Recycling Depot	11	Waste	yes (distribution)
61	Rentals	26	no	no
62	Repair/ Service/Maintenance	37	Buildings (and related services)	yes (repair)
63	Restaurant Class 1	65	no	no
64	Restaurant Class 1 & Karaoke *Historic*	1	no	no
65	Restaurant Class 2	1	no	no
66	Retail Dealer	91	no	no
67	Retail Dealer - Food	24	Food	no
68	Retail Dealer - Market Outlet	4	no	no
69	Roofer	4	Buildings (and related services)	yes (construction materials and equipment)
70	Scavenging	3	Waste	yes (distribution)
71	School (Business & Trade)	22	no	no
72	School (Private)	7	no	no
73	Secondhand Dealer	6	no	no
74	Sheet Metal Works	5	Manufacturing	yes (light and heavy industrial production)

74	Sprinkler Contractor	3	Buildings (and related services)	yes (construction materials and equipment)
75	Studio	87	no	no
76	Telecommunications	2	Infrastructure and digital technology	no
77	Temp Liquor Licence Amendment	2	no	no
78	Theatre	1	no	no
79	Travel Agent	6	Tourism	no
80	Warehouse Operator	42	Transport (and related services)	yes (wholesale)
81	Wholesale Dealer	5	no	yes (wholesale)
82	Wholesale Dealer - Food	16	Food	yes (wholesale)
83	Wholesale Dealer - Food with Anc. Retail	2	Food	yes (wholesale)
84	Wholesale Dealer w/ Anc. Retail	14	no	yes (wholesale)

**II. Firm Population False Creek Flats**

<b>Business Type</b>	<b>1997</b>	<b>2001</b>	<b>2006</b>	<b>2011</b>	<b>2017</b>	<b>2021</b>
Wholesale Dealer	21	28	82	91	81	66
Office	8	7	89	92	86	89
Manufacturer	33	31	33	55	48	34
Wholesale Dealer - Food	22	25	27	25	24	20
Auto Repairs	14	19	15	20	25	22
Retail Dealer	11	12	10	14	18	14
Studio	1			33	30	23
Manufacturer - Food	2	4	3	7	27	25
Restaurant Class 1	7	8	10	9	15	11
Computer Services	1	1	2	5	23	16
Caterer				4	18	23
Auto Dealer	5	3	4	5	10	12
Warehouse Operator	4	6	10	8	6	5
Repair/ Service/Maintenance	5	5	5	3	7	7
Community Association	1	1	3	7	9	7
Auto Painter & Body Shop	3	5	5	4	4	4
Auto Parking Lot/Parkade	1	2	3	5	6	8
Rentals	2	4	5	7	4	2
Contractor	2	1	4	6	6	5
Printing Services	3	3	5	2	5	4
Retail Dealer - Food	4	4	4	4	4	1
School (Business & Trade)	2		1	2	7	9
Food Processing				3	11	5
Electrical Contractor	1	1	3	2	5	5
Ltd Service Food Establishment		2	2	3	5	5
Production Company	1	2	2	5	2	3
Moving/Transfer Service	2	2	2	5	3	
Laboratory			1	3	5	6
Contractor - Special Trades	1	1	1	4	4	2
Wholesale Dealer w/ Anc. Retail		1	2	4	4	3
Hotel	1	2	2	2	2	1
Instruction	1	1	1	2	2	2
Product Assembly		2	2	2	2	3
Recycling Depot		1	3	2	2	2
Machinery Dealer	3	3	1			
Dining Lounge/Room *Historic*	3	4				
Auto Washer			1	3	3	2
Animal Services				2	4	3
Auto Detailing	1			2	3	2
Assembly Hall		1	2	2	1	1
Junk Dealer	1	1	1	1	1	1
Public Market Operator-Annual	1	1	1	1	1	1
School (Private)		1	1	1	1	2

<b>Business Type</b>	<b>1997</b>	<b>2001</b>	<b>2006</b>	<b>2011</b>	<b>2017</b>	<b>2021</b>
Fitness Centre				1	2	4
Apartment House	1	1	1	1		2
Secondhand Dealer			1	1	2	2
Manufacturer - Food with Anc. Retail				1	2	3
Exhibitions/Shows/Concerts					5	1
Travel Agent	1	2	1		1	
Landscape Gardener			1	2	1	1
Liquor Establishment Standard			1	2	1	1
Plumber					2	3
Financial Services	1	1			1	
Auctioneer		1	2	2		
Sheet Metal Works	1	1	1	1		
Manufacturer with Anc. Retail			1	1	1	1
Money Services			1	1	1	1
Retail Dealer - Market Outlet			1	1	1	1
Entertainment Services		1		1	1	1
Plumber & Gas Contractor					2	2
Roofer			1	1	2	
Dining Lounge *Historic*			4			
Scavenging				1	1	1
Sprinkler Contractor				1	1	1
Non-profit Housing					1	2
Electrical-Temporary (Filming)	1		1			
Property Management *Historic*	1	1				
Health Services					1	1
Liquor Establishment Extended					1	1
Painter					1	1
Personal Services					1	1
Wholesale Dealer - Food with Anc. Retail					1	1
Telecommunications				1		1
Temp Liquor Licence Amendment				2		
Public House *Historic*		2				
Photographer						1
Restaurant Class 2						1
Apartment House Strata					1	
Christmas Tree Lot				1		
Janitorial Services				1		
Liquor License Application				1		
Boat Charter Services	1					
Restaurant Class 1 & Karaoke *Historic*						
Theatre						



**III. Green and industrial businesses by zoning district schedule**

Zoning	1997			2001			2006		
	Industria l	Gree n	All	Industria l	Gree n	All	Industria l	Gree n	All
I-2	81	96	116	63	53	84	139	156	244
I-3	0	0	0	36	40	54	30	33	49
IC-3	14	12	14	19	15	19	19	15	20
FC-1 + FC-2	21	21	36	20	19	39	19	19	39
MC-1	0	0	0	0	0	0	0	0	0
M-2	2	1	2	0	0	0	0	0	0
CD-1 402	0	0	0	2	1	2	1	5	6
CD-1 488	0	0	0	0	0	0	0	0	0
CD-1 518	0	0	0	0	0	0	0	0	0
CD-1 544	0	0	0	0	0	0	0	0	0
FCF	118	130	175	140	128	198	208	228	358
Boundary									
Total									
Percentage						11,62			44,69
Difference						%			%
Period Total									
Difference						23			60
Period									
Percentage			74,29			64,65			63,69
Green			%			%			%
Percentage			67,43			70,71			58,10
Industrial			%			%			%

2011			2017			2021		
Industrial	Green	All	Industrial	Green	All	Industrial	Green	All
181	192	322	182	176	290	154	151	248
30	36	66	58	83	131	39	76	131
21	17	27	20	12	30	15	11	24
19	26	51	14	23	50	14	26	44
0	0	0	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0
0	1	2	4	4	6	1	11	16
1	5	7	3	29	37	3	10	15
0	0	0	0	2	12	0	2	8
0	0	0	0	1	1	0	1	1
252	277	475	282	331	558	227	289	488
		24,63%			14,87%			-14,34%
		117			83			-70
		58,32%			59,32%			59,22%
		53,05%			50,54%			46,52%

	1997	2001	2006	2011	2017	2021		Share
M-2 (pre-1990)	2	0	0	0	0	0	2	
M-2 Total	2	0	0	0	0	0	2	1
IC-3 1996	14	19	19	21	20	15	108	
IC-3 Total	14	19	20	27	30	24	134	0,81
I-2 1997	81	63	139	181	182	154	800	
I-2 Total	116	84	244	322	290	248	1304	0,61
I-3 1999	0	36	30	30	58	39	193	
I-3 Total	0	54	49	66	131	131	431	0,45
CD-1 402 1999	0	2	1	0	4	1	8	
CD-1 402 Total	0	2	6	2	6	16	32	0,25
FC-1 + FC-2 (around 2001)	21	20	19	19	14	14	107	
FC-1 + FC-2 Total	36	39	39	51	50	44	259	0,41
CD-1 488 2010	0	0	0	1	3	3	7	
CD-1 488 Total	0	0	0	7	37	15	59	0,12
CD-1 518 2011	0	0	0	0	0	0	0	
CD-1 518 Total	0	0	0	0	12	8	20	0
CD-1 544 2013	0	0	0	0	0	0	0	
CD-1 544 Total	0	0	0	0	1	1	2	0
MC-1 2017	0	0	0	0	1	1	2	
MC-1 Total	0	0	0	0	1	1	2	1