

KIRYAT GAT 2025

PREPARED FOR: THE CITY OF KIRYAT GAT, ISRAEL

PREPARED BY: MIT DEPARTMENT OF URBAN STUDIES & PLANNING
TAU LABORATORY FOR CONTEMPORARY URBAN DESIGN

DATE: AUGUST 2012



Refigured Urbanism for the 21st Century

MIT AUTHORS

Jonathan Crisman
Rebecca Disbrow
Michael Kaplan
Noah Koretz
Jared Press
Christopher Rhie
Alice Shay
Naomi Stein
Merran Swartwood
Alexis Wheeler
Stephen Kennedy, Teaching Assistant

TAU AUTHORS

Roni Bar
Merav Battat
Michael Jacobson
Hila Lothan
Yoav Zilberdik

REPORT EDITORS

Roni Bar
Christopher Rhie
Alexis Wheeler

FACULTY ADVISORS

Prof. Eran Ben-Joseph, MIT
Prof. Tali Hatuka, Tel Aviv University

For more information, please visit our websites:

English: **KIRYATGAT.MIT.EDU**
Hebrew: **KIRYATGATTAU.WORDPRESS.COM**

(c) 2012 Massachusetts Institute of Technology and Tel Aviv University

Department of Urban Studies and Planning
School of Architecture + Planning
Massachusetts Institute of Technology
Cambridge, MA, USA
dusp.mit.edu

Laboratory for Contemporary Urban Design
Department of Geography and Human Environment
Tel Aviv University
Tel Aviv, Israel
lcud.tau.ac.il

KIRYAT GAT 2025

PREPARED FOR: THE CITY OF KIRYAT GAT, ISRAEL

PREPARED BY: MIT DEPARTMENT OF URBAN STUDIES & PLANNING
TAU LABORATORY FOR CONTEMPORARY URBAN DESIGN

DATE: AUGUST 2012

ACKNOWLEDGEMENTS

It has been a great pleasure to undertake this planning process in such a captivating city with a diverse and enthusiastic community. The public officials, community members, and industry representatives have unparalleled pride in their city, and it was with great respect and admiration that the project team attempted to reflect that sentiment in the research and proposals. Kiryat Gat is a city with diversity and assets that represent an endless amount of potential as it is poised to transition into become a leader on the future stage.

The process of discovery was beneficial to the larger goal of investigating the consequences of mid-century development towns and the formulation of retrofitting approaches. Through the collaboration between MIT and TAU, the team was able understand the history and assess the existing conditions. Equipped with that knowledge, a vision for an improved urban condition provided guidance for the creation of plans for implementing development and policy that will allow it to evolve into a sustainable urban model. Within the context of the Kiryat Gat case study, the report outlines the alternative strategies for both immediate implementation and long-term growth of sustainable and cohesive neighborhoods in the redevelopment of any New Town.

Each proposal comprises principles that can improve countless areas, whether it is encouraging a walkable city with alternatives to single-occupant transport, waste and resource recovery in close-looped systems, or infill densification as a foil to sprawl, to excerpt only a few. As this is only Phase I, the continuing research endeavors to plan, design, and retrofit existing global New Towns to become progressive urban models. There will be a fundamental shift to a development type that is ecologically responsive, incorporates technology and industry, and enhances the livability and self-reliance of local residents and potential newcomers. We hope that our ideas and proposals serve to enhance the community we have grown so close to, and we express heartfelt gratitude to Kiryat Gat for this opportunity.

For their generous support, we would also like to thank the MIT International Science and Technology Initiatives (MISTI) and the Tel Aviv University President's office.

Finally, we would like to extend a sincere thank you to professors Eran Ben-Joseph and Tali Hatuka for their continued guidance and dedication. The project was a tremendous learning experience and public service opportunity, only made possible by professors who tirelessly enable their team to make a positive impact.

CONTENTS

OVERVIEW	1
ABOUT THE PROJECT	3
PROJECT CONTEXT	4
PROJECT TIMELINE	8
DESIGN PROCESS	10
ANALYSES	13
SITE CONDITION	15
TRENDS	18
NEW TOWNS	22
SPATIAL ANALYSES	24
PLANNING FRAMEWORK	49
INITIAL PROPOSALS	50
SITE PLANNING	61
URBAN CELL	62
PROPOSED ASSETS	70
SITE PLANS	73
CONTINUING NORTH: ACTIVE & PRODUCTIVE LANDSCAPES	74
THE HINGE: KIRYAT GAT'S URBAN CORE	86
INDUSTRIAL REMIX: RETHINKING THE INDUSTRIAL CAMPUS	98
CITYWIDE STRATEGIES	107
COMPREHENSIVE LAND USE	108
INDUSTRIAL CLUSTERING	110
RESTORATIVE WADI SYSTEM	116
ENVISIONING KIRYAT GAT	121
SEVEN STEPS PLAN	135
APPENDIX: NEW TOWNS	153



ABOUT THE PROJECT

PROJECT CONTEXT

PROJECT TIMELINE

DESIGN PROCESS

OVERVIEW





ABOUT THE PROJECT

In 2012, a team of graduate students at Tel Aviv University (TAU) and the Massachusetts Institute of Technology (MIT) collaborated to envision, plan, and design sustainable neighborhood prototypes for the city of Kiryat Gat, Israel.

This report describes the team's examination of Kiryat Gat and proposes a strategic plan for the city's future development. While the proposals are specific to the challenges and opportunities faced within Kiryat Gat, the process was intended to generate approaches that could be adopted by new towns globally; it is our hope that this document will be useful to guide redevelopment initiatives in other townships.

In January, eleven MIT students and their professor visited Kiryat Gat, along with five TAU students and their professor, for an intensive ten-day workshop. The project team met with municipal officials and community stakeholders, conducted site observations, and produced preliminary proposals. They gathered feedback through initial and midterm presentations, which were delivered by the entire MIT-TAU team to city officials and academic reviewers in Tel Aviv and Cambridge, respectively. The final presentation was simulcast in both locations.

Over the course of the six-month planning process, the team employed a variety of techniques to generate and refine their proposals, including stakeholder interviews, site visits, and in-depth analyses of demographic, geospatial, and environmental data. Everyone worked diligently to understand the assets, opportunities, and challenges in Kiryat Gat, and developed a plan that is responsive to its needs.

The project is the first phase of an international collaboration between TAU's Laboratory for Contemporary Urban Design and the City Design and Development Group at MIT's Department of Urban Studies & Planning. The results of the first phase of the project are included within this report. Continuing research strives to plan, design, and retrofit existing residential communities to become ecologically responsive, incorporate technology and industry, and enhance the livability and self-reliance of local residents and potential newcomers.

For more information, please visit our websites:

English: KIRYATGAT.MIT.EDU

Hebrew: KIRYATGATTAU.WORDPRESS.COM

PROJECT CONTEXT

THE RISE OF NEW TOWNS

One can observe the establishment of New Towns throughout urban history, but the practice experienced its apex in popularity in the middle of the 20th century. First published in 1898, Ebenezer Howard's *Garden Cities of Tomorrow* demonstrated a new city environment that better managed and decentralized the growing problems of congested and polluted metropolitan centers. These developed town environments were not only about the modern physical design and aesthetic, but also meant to address burgeoning social concerns, foster economic activity, enable better transportation, and provide access to nature. This was all embodied in a self-sufficient urban unit optimized to be just large enough to support a mix of uses and activities. In this smaller human scale, the combined benefits of urban and rural amenities were intended to enhance the residents' quality of life.

The comprehensive approach to planning and design of a settlement from the ground up was then modified for different people and places, which saw the increased activity of the New Town movement. These planned communities were meant to reflect an idealized philosophical view or motivation on the part of the planners, developers, or community, and the construction of the new towns allowed for these professionals to experiment with innovative, and at times utopic, design ideas. The method executed saw experiments in planning, ecological design, social organization, and aesthetics, and such holistically planned urban fabric patterns starkly contrasted the organic patterns of more traditional settlement. These new types of towns did not always exist as freestanding or self-contained, autonomous cities, but were also created as satellite towns possessing some activities but still relying upon the proximity of an urban center, comprehensive redevelopment areas that become new town centers within a large town, and growth centers in which a new town is added onto an existing small town.

The common thread is the ordered design and development of an idealized model for modern living.

One of the key downfalls of these mid-century new towns is the responsive nature in which they were implemented, but there was little consideration for the flexible or adaptive possibilities for the town to adjust to long-term change, whether growing, shrinking, or changing its central function. Each new town was viewed as a vital solution to the important problems facing urban centers at the time, but shifting values and the progression of time have only seen the emergence of new problems. While they were conceived by planners to contain an optimal size and function for self-sufficiency, changes in economy, industry, transportation, and ecological principles have seen the decline of many new towns.

NEW TOWNS OF ISRAEL

Urban communities in Israel are facing demographic and environmental changes typical of many advanced and developing nations. A rapidly aging population and changes in social habits have depopulated many of Israel's New Towns; this change has been accompanied with stigma and neglect, all representative of the relative inflexibility of the New Town form. Like many governments in Western Europe, the Israeli government has launched policies to solve the problems of distressed neighborhoods, the most prominent among which are 'demolition and redevelopment' (Pinui Binui) and densification (Ibui Binui). The idea behind these strategies is to create non-government mandated market conditions that foster initiatives for developers to physically expand their construction projects. Yet, there are many limitations to the current strategies and it is clear that new strategies need to be initiated, in particular for cases of neighborhoods with a majority of low-income families and low land values that do not attract for-profit developers.



MAYOR AVIRAM DAHARI INDICATES THE CITY'S FUTURE PLANS FOR EXPANSION.

KIRYAT GAT: PRESENT DAY

Kiryat Gat was selected as a laboratory to test new strategies, as it shares the same challenges facing Israeli new towns at large. Located fifty kilometers south of Tel Aviv and forty kilometers north of Be'er Sheva, Kiryat Gat the largest city in the agricultural Lachish Region with approximately 50,000 residents. Centrally located, it is connected by rail and highway to both Tel Aviv and Be'er Sheva. Route 35 runs through the city, connecting it to Ashkelon to the west and Route 60 to the east. Additionally, Kiryat Gat is adjacent to Route 6, Israel's major north-south highway.

The city is best known to outsiders as the home of

Intel's largest manufacturing plant (fab), which employs approximately 3,500 workers directly, and perhaps twice as many through parts manufacturing and service contracts. The fab is located in an industrial park that is home to other high-tech manufacturers as well as metalworking companies, food processors, and a variety of other industries. Most employees, however, live outside the city; Kiryat Gat has high unemployment rates and a high proportion of its citizens receive public assistance. Despite this, there are plans to add 7,000 households in a new neighborhood to the north of the existing city, in an effort to relieve pressure on a limited housing stock. Residents and city officials alike recognize the gravity of the challenges that face Kiryat Gat.

Kiryat Gat: A Brief History

ADAPTED FROM *NEW TOWN IN ISRAEL* (1966) BY ERIKA SPEIGEL

Kiryat Gat was established in 1955 as one of many Israeli new towns (also known as a development towns) that were essentially built from scratch. Unlike other new towns, however, Kiryat Gat was an important part of a comprehensive regional plan to establish settlements in a semi-arid sector of the country; the city was intended to be the center of the region. Prior to the city's founding, the area was sparsely populated.

Located just north of the Negev, the Lachish Region has always had a water shortage. Rain falls only in the winter months, and is relatively sparse; this limited development as the area was primarily used for pasture. This changed with the completion of the Yarkon-Negev water line in 1955, which brought water from the north. Planning for agricultural settlements was enabled by the new infrastructure, although their size and scope were necessarily limited by the water supply. The site for Kiryat Gat was selected for its proximity to existing cross-roads and flat topography, in the geographic center of the region. It was situated in the geographical center of the region. The city was also intended to be the region's hub for government administration, commerce, culture, specialized retail, and secondary education.

Of the 36,000 residents who were to settle in the Lachish Region, planners intended for 14,000 of them to live in Kiryat Gat. By 1964, this number had already been exceeded and the plan was updated to 38,000 residents. Early immigrants came from Eastern Europe, especially Poland and Romania, who were later followed by North African families and limited numbers of internal migrants. These days, the fastest growing population is Haredi, or conservative Orthodox, Jews.

Kiryat Gat was also an industrial city from the beginning, anchored by textile and sugar factories. A vocational school was established early on to support labor needs. The ensuing decades, however, would prove to be tumultuous. Motorization, including the expansion of Israel's road networks, would lead to the dispersion of enterprise throughout the countryside. The city's

largest employer, textile manufacturer Polgat, closed in the 1990s. After years of economic decline, the city landed the employer which is so intertwined with its identity today: Intel. The computer chip manufacturing company opened its first fab in 1999 after receiving a \$525 million grant from the national government. Now on its second fab, there are already plans to construct a third in order to keep up with advances in technology. Despite the rapid rebirth of the industrial park, high unemployment persists, as most of its workers commute from other communities.



THE SETTLEMENT OF GAT CIRCA 1946; THIS WAS THE PRECURSOR TO KIRYAT GAT.



PROJECT TIMELINE

WORKSHOP KIRYAT GAT



IN JANUARY, THE MIT CLASS VISITED ISRAEL FOR TEN DAYS. TOGETHER WITH THE TAU TEAM, THEY WERE INTRODUCED TO THE SITE, PUBLIC OFFICIALS, COMMUNITY MEMBERS, AND INDUSTRY REPRESENTATIVES.

INITIAL PRESENTATION TEL AVIV



STUDENTS SYNTHESIZED INITIAL PROPOSALS AND PRESENTED THEM TO AN AUDIENCE OF PUBLIC OFFICIALS AND ACADEMIC REVIEWERS AT TEL AVIV UNIVERSITY ON JANUARY 30.

RESEARCH CAMBRIDGE & TEL AVIV



BOTH TEAMS DELVED INTO RESEARCH ON NEW TOWNS, IN ADDITION TO GATHERING DATA AND MAPPING KIRYAT GAT. THESE EXERCISES WOULD INFORM PROPOSALS FOR THE MIDTERM PRESENTATION.

PROPOSAL REFINEMENT CAMBRIDGE & TEL AVIV



BUILDING UPON FEEDBACK FROM THE MIDTERM PRESENTATION, THE TEAM REORGANIZED PROPOSALS INTO THEIR FINAL FORMS.

FINAL PRESENTATION SIMULCAST CAMBRIDGE & TEL AVIV



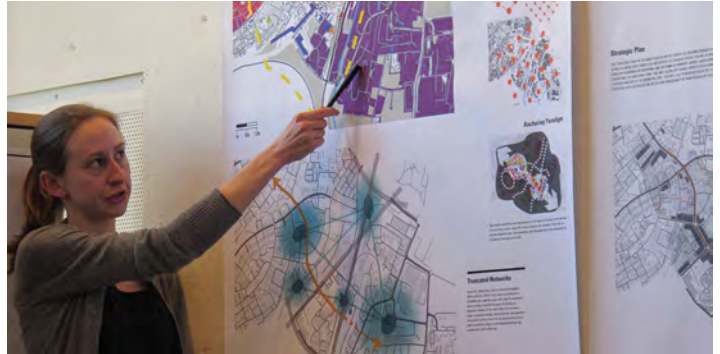
ON MAY 21, THE FINAL PRESENTATION WAS HELD SIMULTANEOUSLY AT MIT AND TAU, CONNECTED VIA TELECONFERENCE. CITY OFFICIALS AND ACADEMIC REVIEWERS CONTRIBUTED COMMENTS FROM BOTH LOCALES.

INTERIM MEETINGS
KIRYAT GAT



THE TAU TEAM CONTINUED TO MEET WITH PUBLIC OFFICIALS THROUGHOUT THE SPRING, GATHERING FEEDBACK AND INFORMATION TO INFORM THE RESEARCH AND INITIAL PROPOSALS.

MIDTERM PRESENTATIONS
CAMBRIDGE



THE TAU TEAM, ALONG WITH KIRYAT GAT'S CITY ENGINEER, VISITED MIT IN MARCH FOR THE MIDTERM PRESENTATION ON MARCH 29.

INDUSTRY PRESENTATION
KIRYAT GAT



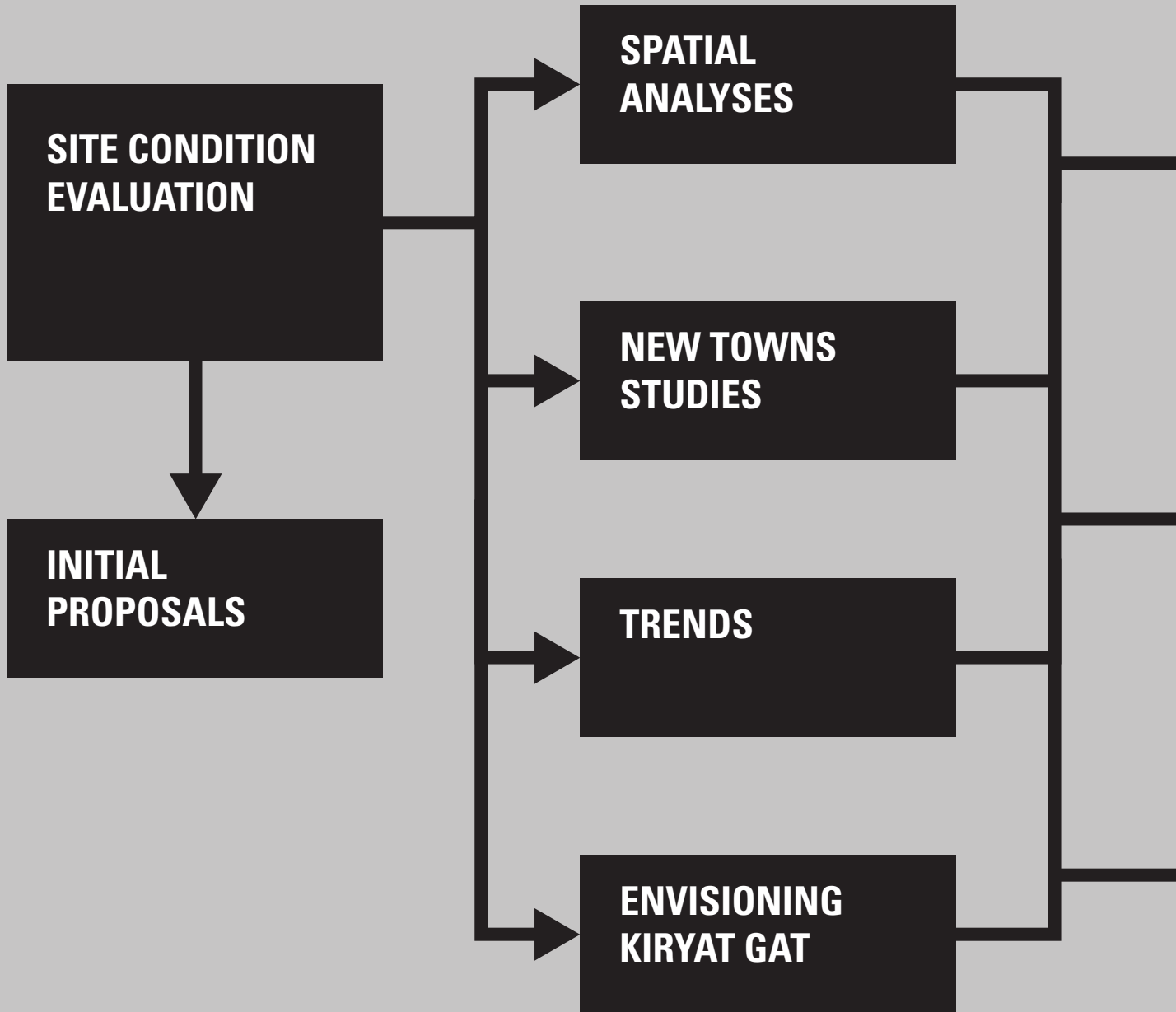
ON JULY 9, THE TAU TEAM, JOINED BY TWO MIT TEAM MEMBERS AND THEIR PROFESSOR, PRESENTED THE FINAL PROPOSALS TO CITY OFFICIALS AND REPRESENTATIVES FROM KIRYAT GAT'S INDUSTRIAL PARK. THE CITY IS MOVING FORWARD WITH SEVERAL OF THE IDEAS PRESENTED.

ONGOING RESEARCH
TEL AVIV



TWO GRADUATE RESEARCHERS FROM THE MIT TEAM JOINED LCUD FOR THE SUMMER. THE LAB IS CONTINUING THE NEW TOWN RESEARCH BEGUN WITH KIRYAT GAT AS THE CASE STUDY AND MOVING TO THE BROADER PROTOTYPICAL APPLICATIONS OF THESE STRATEGIES TO NEW TOWNS.

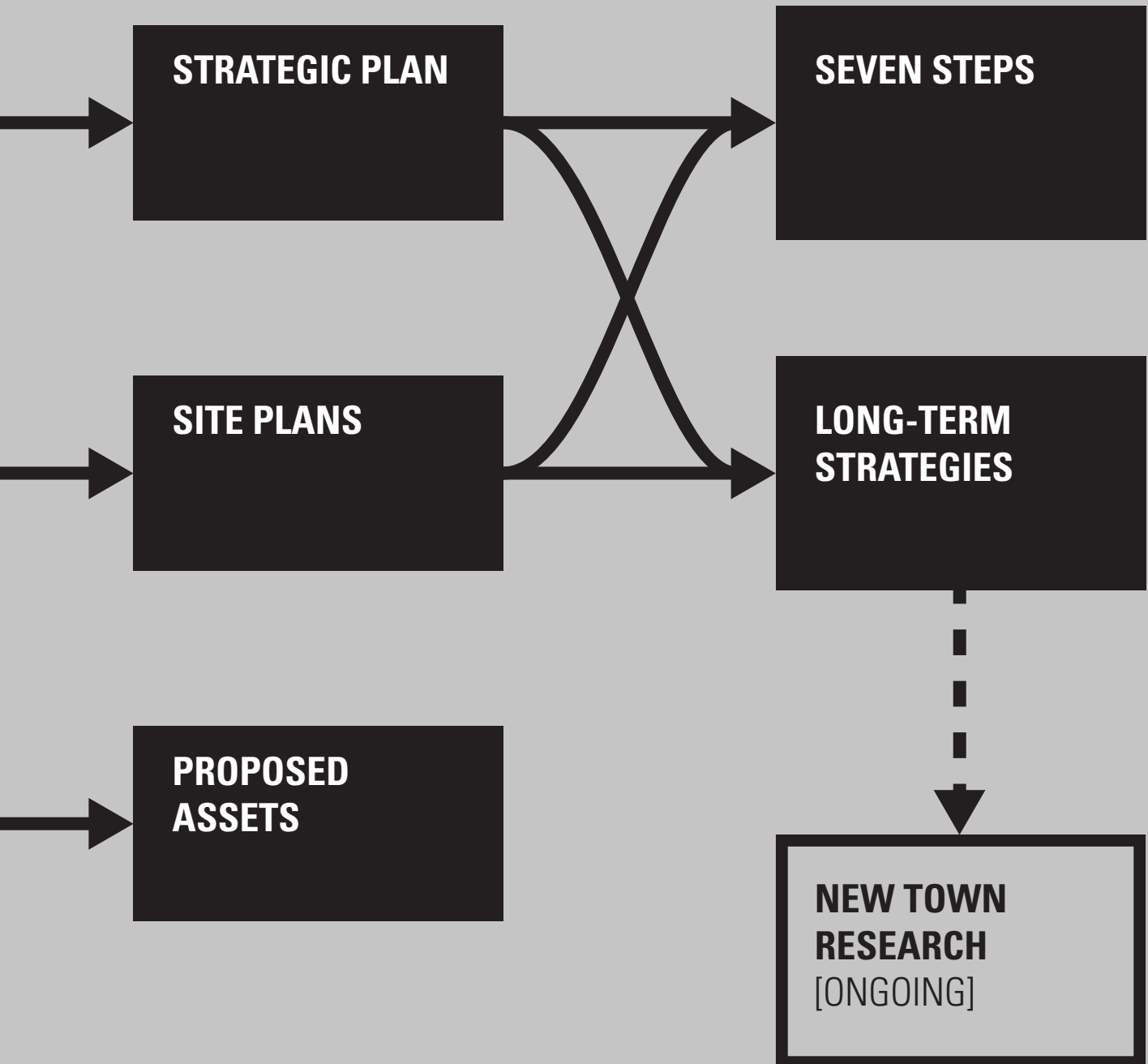
DESIGN PROCESS



WORKSHOP

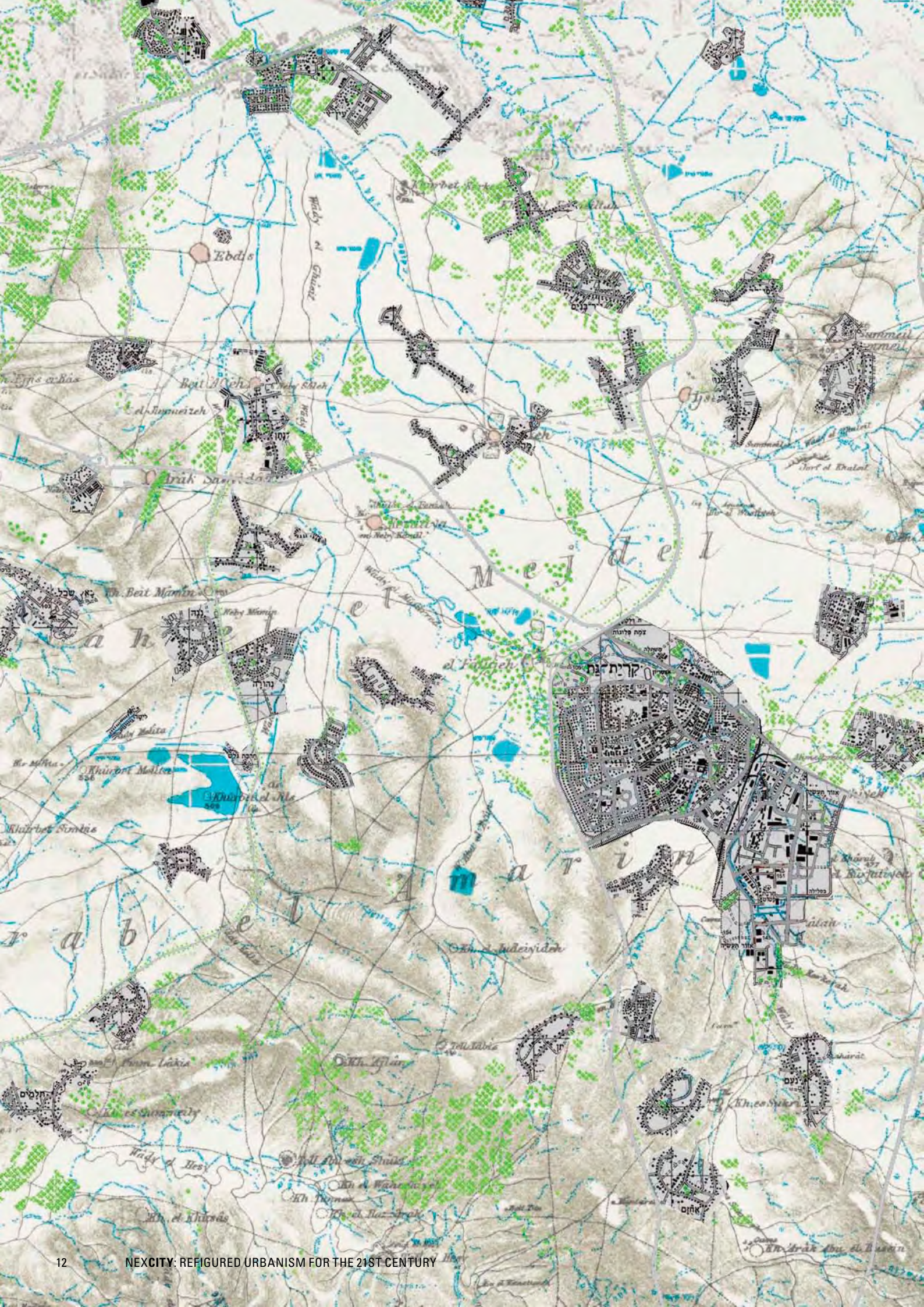
RESEARCH & VISIONING

THE NEXCITY PROJECT WAS - AND IS - AN ITERATIVE PROCESS THAT HAS EVOLVED WITH THE ONGOING COLLABORATION BETWEEN MIT, TAU, AND KIRYAT GAT. THIS DIAGRAM IS INTENDED TO HELP THE READER UNDERSTAND HOW IT ALL FITS TOGETHER.



PLANNING FRAMEWORK

IMPLEMENTATION



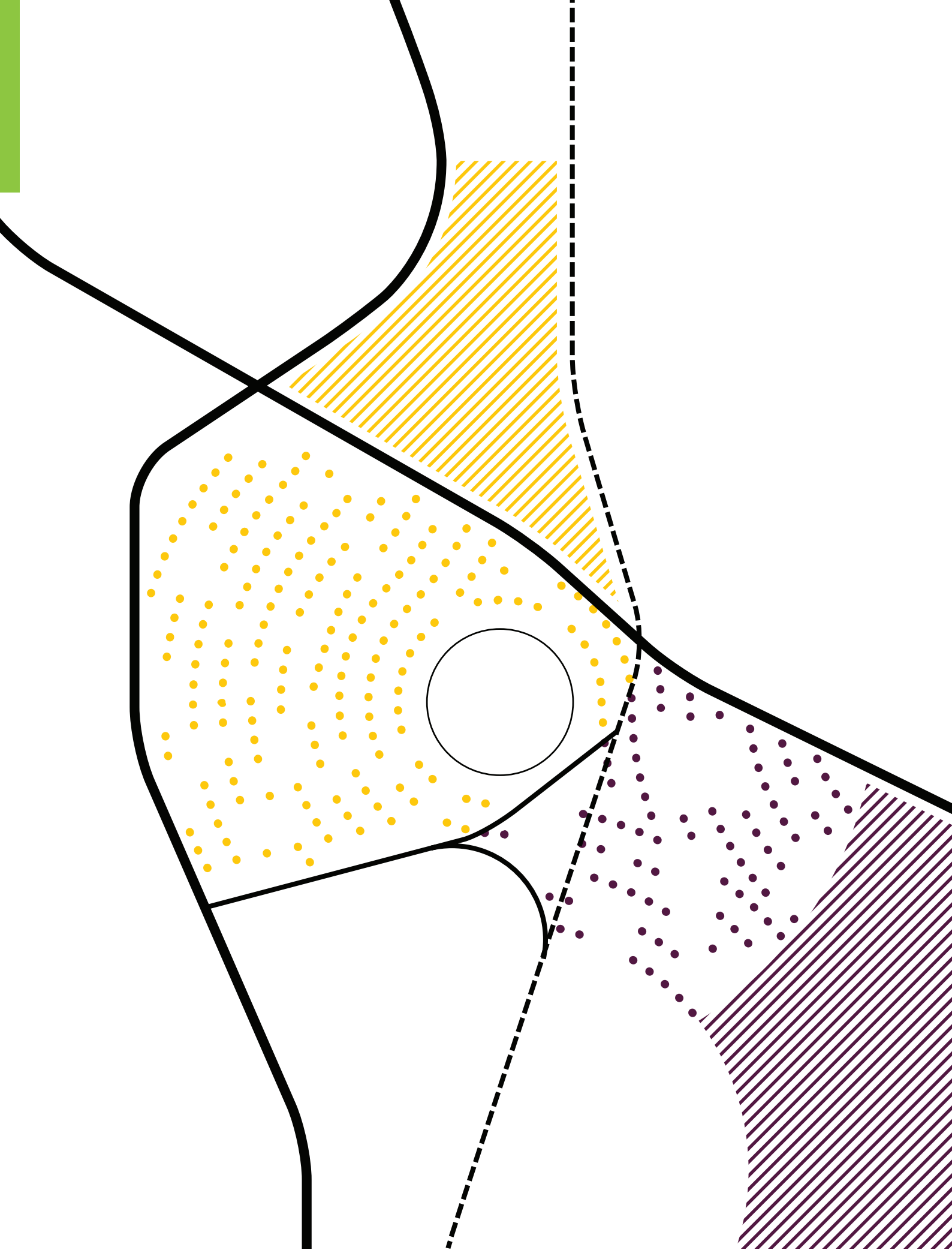
SITE CONDITION

TRENDS

NEW TOWNS

SPATIAL ANALYSES

ANALYSES



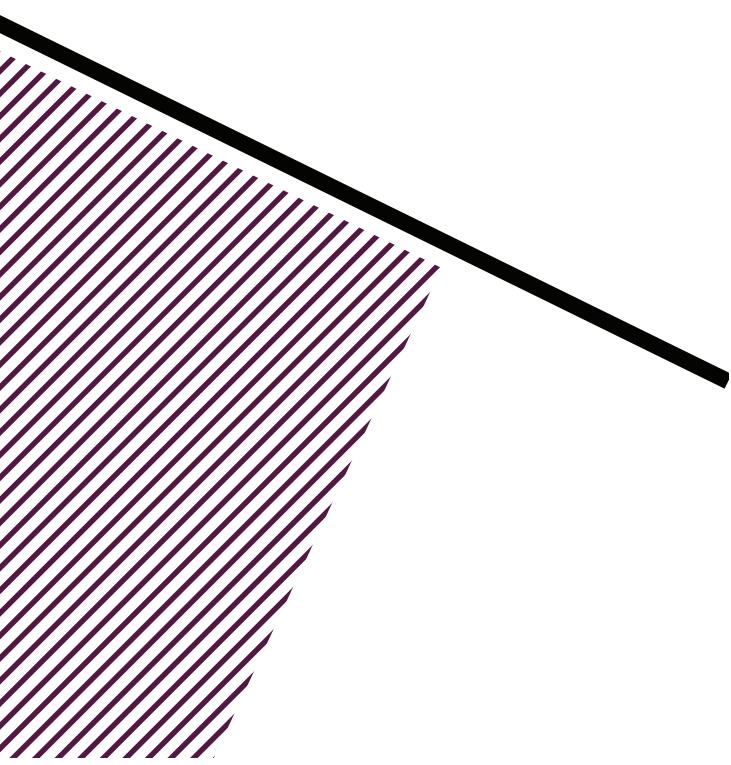
SITE CONDITION

FRAGMENTED URBAN FABRIC

Kiryat Gat is relatively dense, with preserved natural and agricultural surroundings and adjacent technology and industry ripe for applied innovation throughout the city. However, the edges of the city act more as buffers rather than connecting residents to natural assets. While compact, the urban fabric is fragmented by vacant lots that create underutilized voids in nearly every neighborhood. Within Kiryat Gat, there is a distinct separation of land uses. A predominantly residential core to the west composed of a variety of neighborhood enclaves for the city's diverse communities. The eastern industrial zone is home to several large manufacturers, including the Intel's microchip processing plant. Despite this juxtaposition, the industrial zone is treated as its own entity rather than an extension of the city. Kiryat Gat's residents benefit little economically and have a high rate of unemployment. Compounded with the fact that few amenities exist for residents between the ages of 25 to 40, the city struggles to retain young families and the most productive segment of its workforce.

DISJOINTED GROWTH

Currently, plans for expansion have been approved that will further polarize land use in Kiryat Gat. The proposed northern neighborhood is characteristically isolated, and will provide luxury mixed-type housing for new residents on what is currently a greenfield site. Expansion eastward will accommodate new large-scale industries, even though the current industrial zone contains opportunity sites for development. While recognizing that these proposals are an approaching reality, there is still the opportunity to strengthen the city's existing core and define alternative strategies for growth.



Current Condition Challenges



YOUTH HAVE FEW OPPORTUNITIES/AMENITIES THAT PROVIDE INCENTIVE FOR THEM TO STAY IN THE CITY.



ELDERLY RESIDENTS LACK ADEQUATE GATHERING SPACES AND ARE DISCONNECTED FROM DIGITAL SYSTEMS.

Current Condition Assets



THE CITY'S COMPACTNESS AND STRONG COMMUNAL RELATIONSHIPS ENABLE SMALL INTERVENTIONS TO HAVE FAR-REACHING IMPACTS.



THE UNIQUE NATURAL LANDSCAPES THAT SURROUND THE CITY HAVE SIGNIFICANT POTENTIAL FOR RECREATION.



THE CITY LACKS LEGIBILITY, LEAVING IT WITHOUT AN IDENTIFIABLE IMAGE FOR RESIDENTS AND VISITORS.



A LACK OF LIFESTYLE OPTIONS MAKES IT DIFFICULT TO SUPPORT A YOUNG, ENERGETIC WORKFORCE.



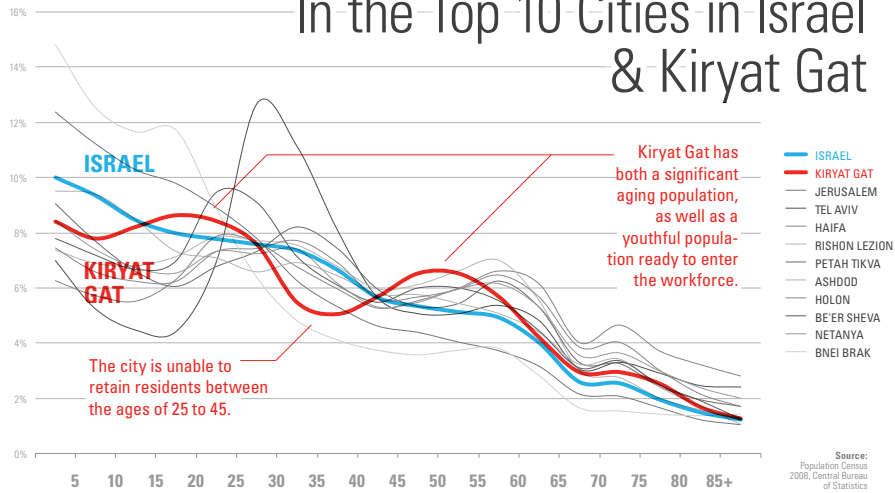
THE CITY IS WELL-POISED FOR EFFICIENT INTRA- AND INTER-CITY CONNECTIVITY.



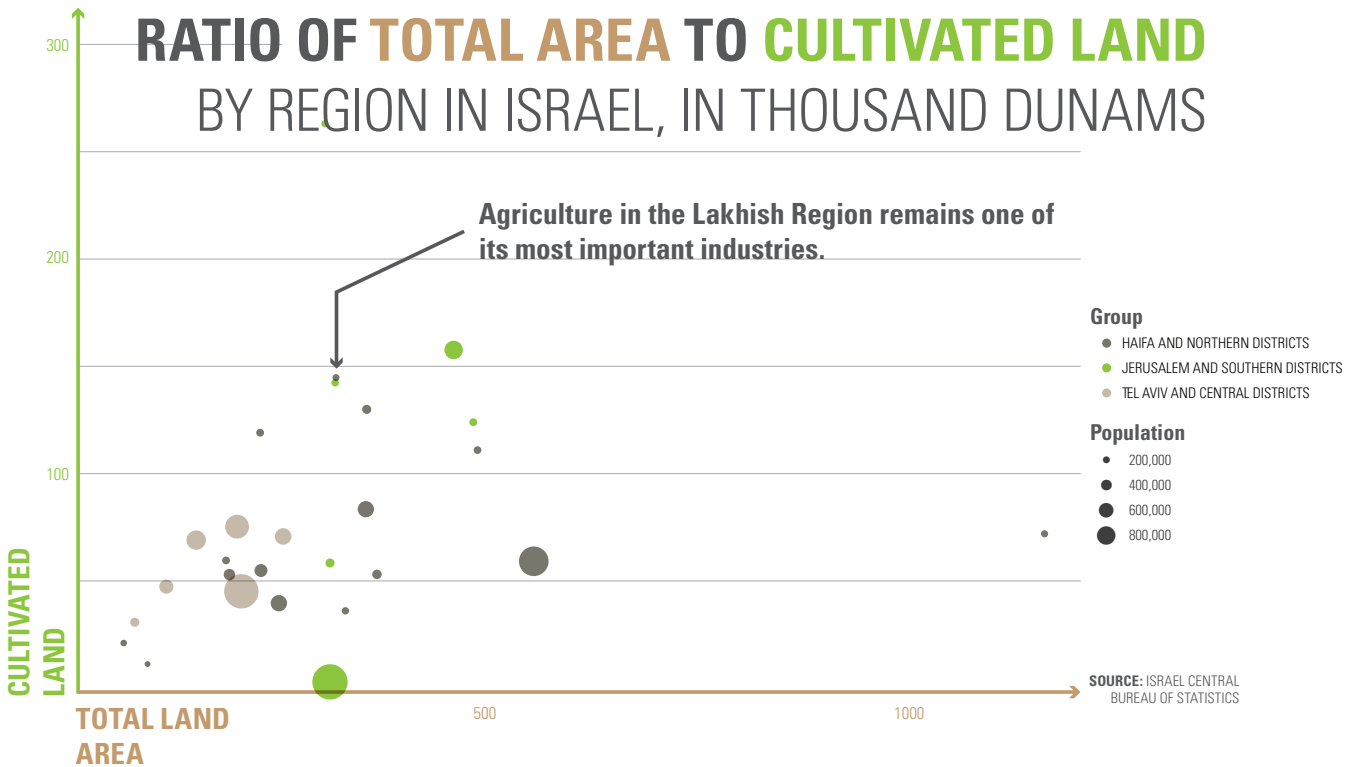
THERE IS A GENERAL INTEREST FOR COLLABORATION AMONG MUNICIPAL AGENCIES, PRIVATE FIRMS, AND COMMUNITY ORGANIZATIONS.

TRENDS

Population Distribution by Age In the Top 10 Cities in Israel & Kiryat Gat

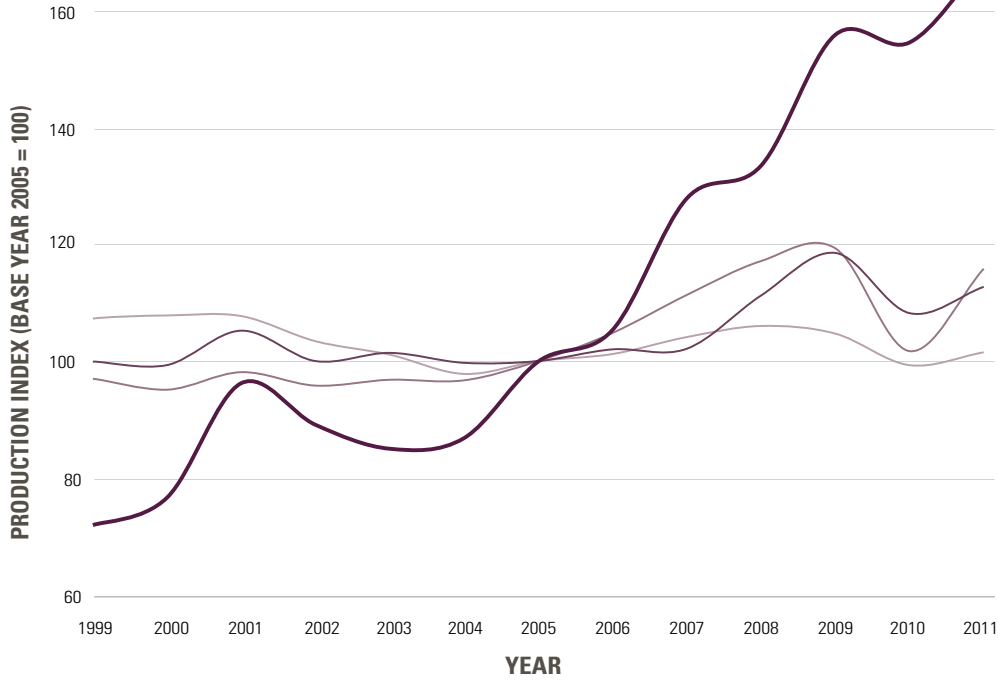


RATIO OF TOTAL AREA TO CULTIVATED LAND BY REGION IN ISRAEL, IN THOUSAND DUNAMS



PLANNING FOR 21ST CENTURY URBANISM REQUIRES A THOROUGH UNDERSTANDING OF THE FORCES THAT SHAPE DEVELOPMENT. THESE VISUALIZATIONS DRAW UPON INFORMATION FROM ISRAEL'S CENTRAL BUREAU OF STATISTICS, ALONG WITH ENVIRONMENTAL DATA PROVIDED BY MULTILATERAL AND NON-GOVERNMENTAL INSTITUTIONS.

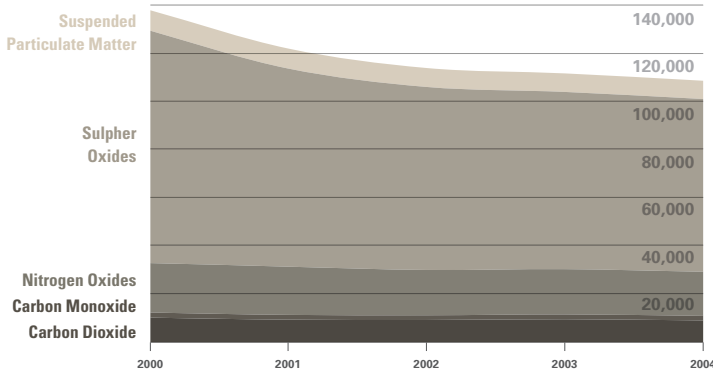
MANUFACTURING PRODUCTION



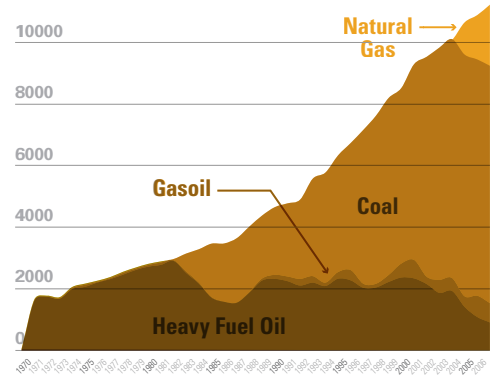
HIGH TECHNOLOGY is the fastest growing manufacturing sector in Israel, while other sectors are experiencing relatively static growth.

MEDIUM-LOW TECHNOLOGY
MEDIUM-HIGH TECHNOLOGY
LOW TECHNOLOGY

ANNUAL MANUFACTURING EMISSIONS IN METRIC TONS

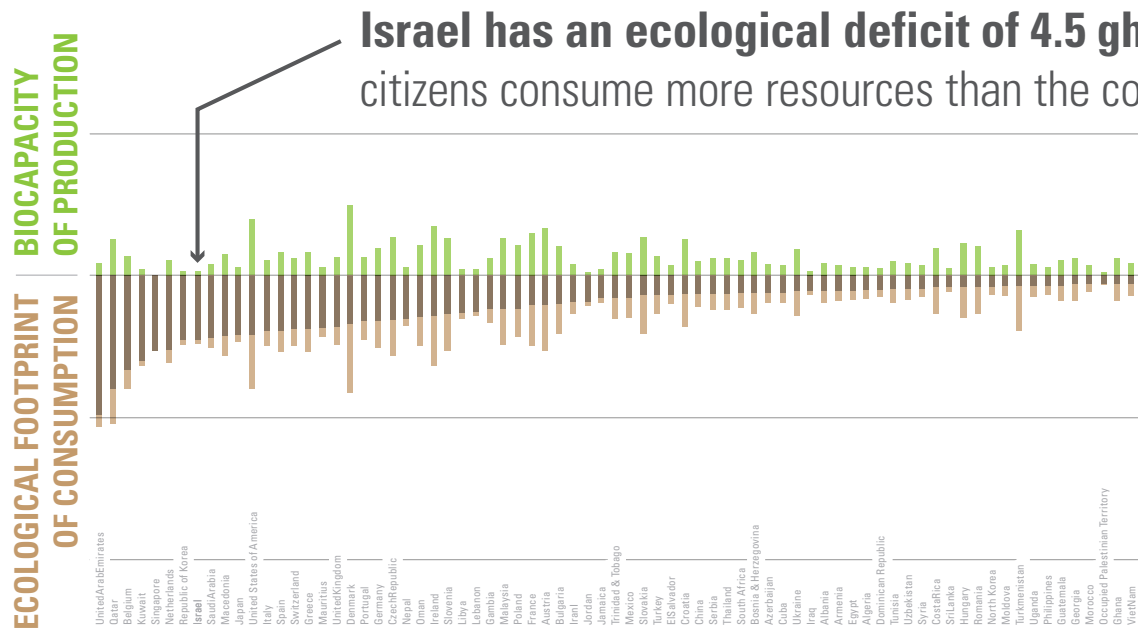


ANNUAL ELECTRICITY FUEL MIX IN METRIC TONS

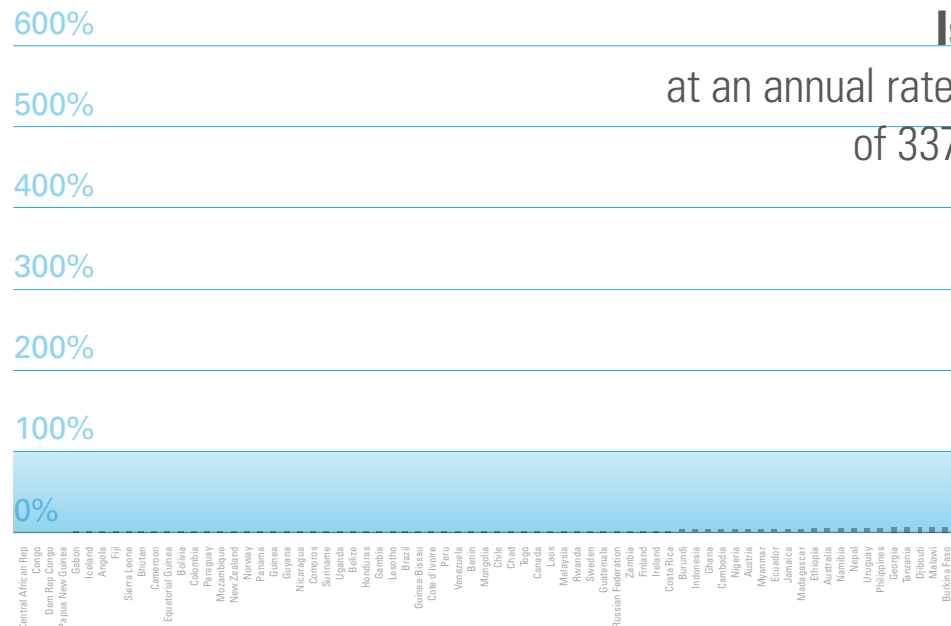


BALANCE OF BIOCAPACITY VS. ECOLOGICAL FOOTPRINT IN GLOBAL HECTARES PER CAPITA

FOR 152 HIGH, MIDDLE, & LOW-INCOME NATIONS
FIGURES FROM 2007



WATER WITHDRAWALS AS A PERCENT OF INTERNAL WATER RESOURCES



NEW TOWNS

The team compared a variety of New Towns around the globe in order to identify commonalities among New Towns and those conditions that are specific to Kiryat Gat. Although the towns selected differed a great deal in land area (6.7 to 3,282 square kilometers), population (19,000 to 1,000,000+), and geography, they also share a great number of challenges and opportunities. This suggests that Kiryat Gat can be considered a living laboratory, as urban planning strategies developed in Kiryat Gat could also be applicable in other New Towns.

Some of the key findings included:

- GROWTH IS NOT INHERENTLY POSITIVE; IT CAN BE PARTICULARLY PROBLEMATIC FOR A NEW TOWN THAT WAS NEVER DESIGNED TO ACCOMMODATE IT.
- INDUSTRIAL NEW TOWNS MUST HAVE A SUFFICIENTLY DIVERSE ECONOMIC BASE, OR THEY WILL DEVELOP INTO MONOFUNCTIONAL URBAN ZONES.
- NEW TOWNS MUST DEFINE THEMSELVES AS INDEPENDENT FROM THE SURROUNDING METROPOLIS, OR THEY WILL LOSE THEIR IDENTITY TO THE ENCROACHING SPRAWL.
- THE PRESERVATION OF COMPACT, WALKABLE TOWN CENTERS HAS HELPED MANY NEW TOWNS TO BE SUCCESSFUL OVER SEVERAL DECADES.

The complete profile of each New Town is included in Appendix I.

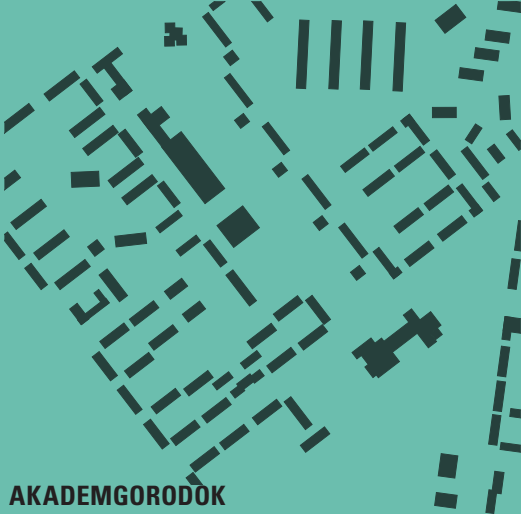
KIRYAT GAT



BUILDING FOOTPRINTS



STREET PATTERNS



AKADEMGORODOK



COLUMBIA



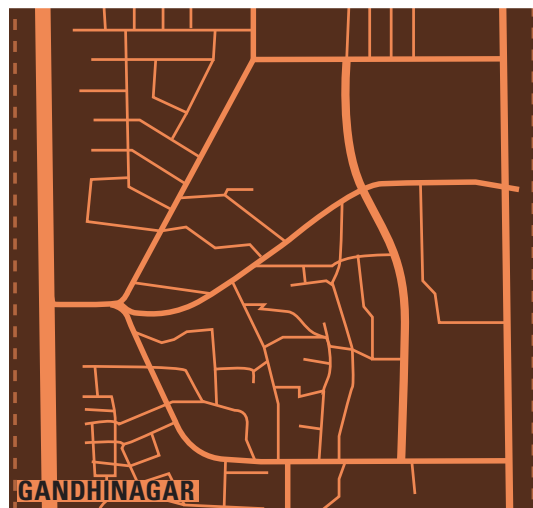
CIUDAD GUAYANA



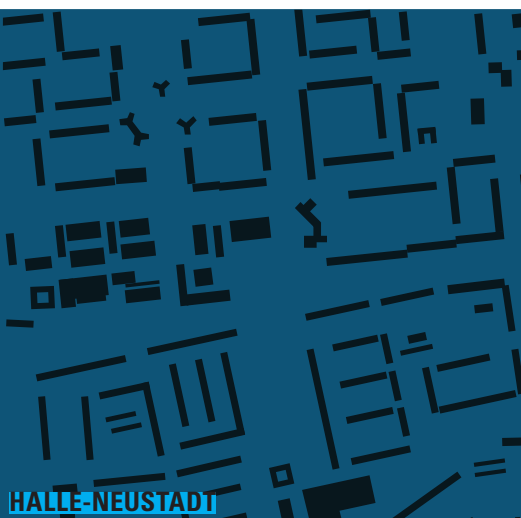
DIMONA



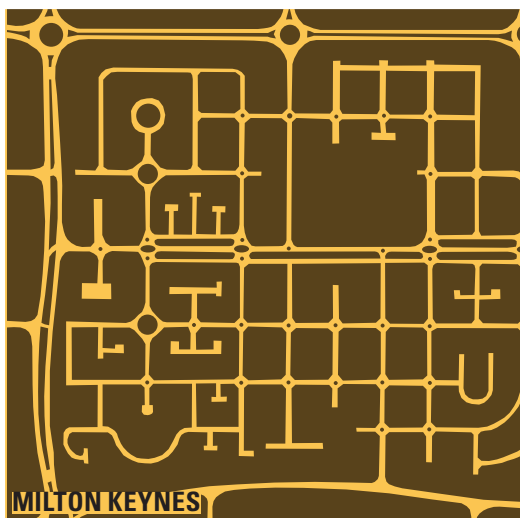
DON MILLS



GANDHINAGAR



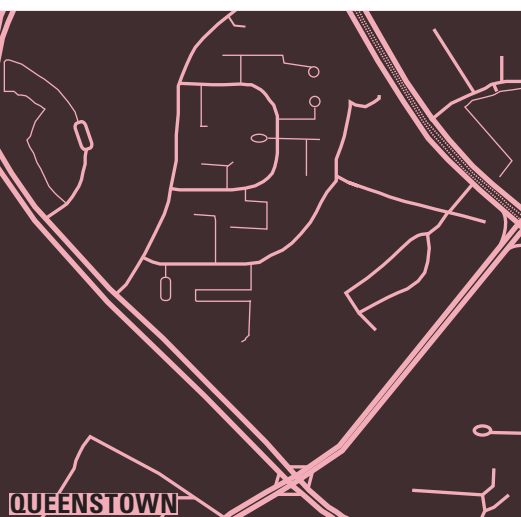
HALLE-NEUSTADT



MILTON KEYNES



OR YEHUDA



QUEENSTOWN



SABÁUDIA



TSUKUBA

SPATIAL ANALYSES

THE FOLLOWING MAPPINGS WERE DONE TO GAIN KNOWLEDGE ABOUT EXISTING CONDITIONS, ASSESS PROPOSED PLANS, FIND MISSING LINKAGES, AND DISCOVER POSSIBLE RELATIONSHIPS BETWEEN DESIGN AND PLANNING PARAMETERS.

Future Urban Development

Development in the city is occurring in several areas. As of 2012, there were three projects in construction just south of Route 35 in the city's northernmost neighborhood, which will include approximately 1,500 new housing units. Two additional projects are underway in the southeastern part of the city near the railway; one is a business district, the other a residential development. These five projects are miniscule in comparison to the anticipated growth to the north of Route 35; there is a master plan to build a new neighborhood with 8,500 housing units on 725 acres. That planned neighborhood will contain the vast majority of the city's new housing

units in the foreseeable future. Finally, the city is lobbying for the expansion of the industrial zone to the east.

If it continues down the same path, Kiryat Gat's future urban development will enhance the separation of land uses. Even more concerning is the lack of an overall master plan to guide development and infrastructure improvements; there is no connection between new nodes and existing ones. Kiryat Gat needs a vision which would shape its development into a singular, sustainable whole.



The future urban development enhances separation of one set of land use from another. There is no master plan guiding the future urban development, no infrastructure connection between the new and the existing nodes.

Income & Employment Distribution

These maps revealed some sharp delineations between neighborhoods, exemplified by average incomes and employment rates. There is a clear “hollowing out” of the city center, with the poor, vacant areas in the middle and the higher income areas on the outskirts. When examining employment data, including commuter statistics, a few relationships were observed.

The highest income neighborhoods are in the newer, western area of the city, where single-family homes outnumber other forms. These neighborhoods also have the highest rates of automobile usage, even though their residents tend to work within Kiryat Gat. The poorest neighborhood is sandwiched between the richest areas in the northwest corner of the city. This neighborhood has the lowest percentage of people who work in the city, although that is mostly explained by the large proportion of retirement-age residents.

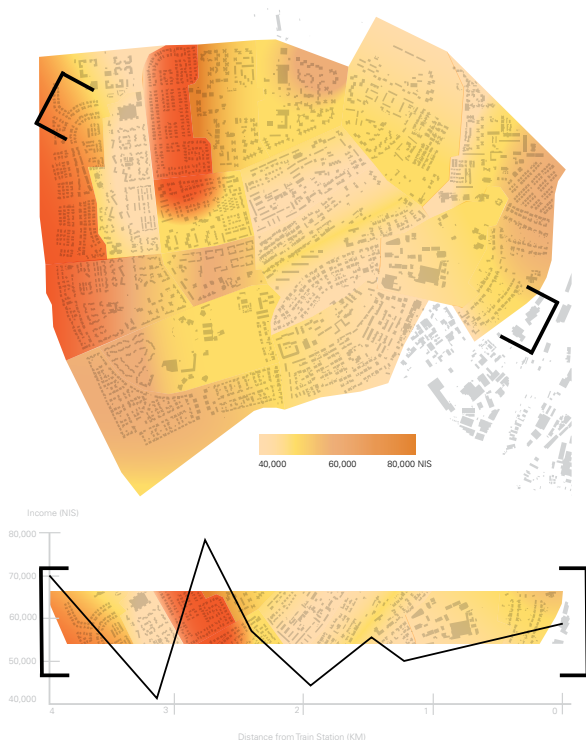
Interestingly, 38% of residents in the northwest corner walk to work, the highest proportion in the entire city. This includes the many teachers who live there, who represent 65% of Kiryat Gat’s educators.

However, the 38% figure is most heavily influenced by the corner’s orthodox neighborhood, where many people walk. Unsurprisingly, this area also has the lowest rates of automobile usage.

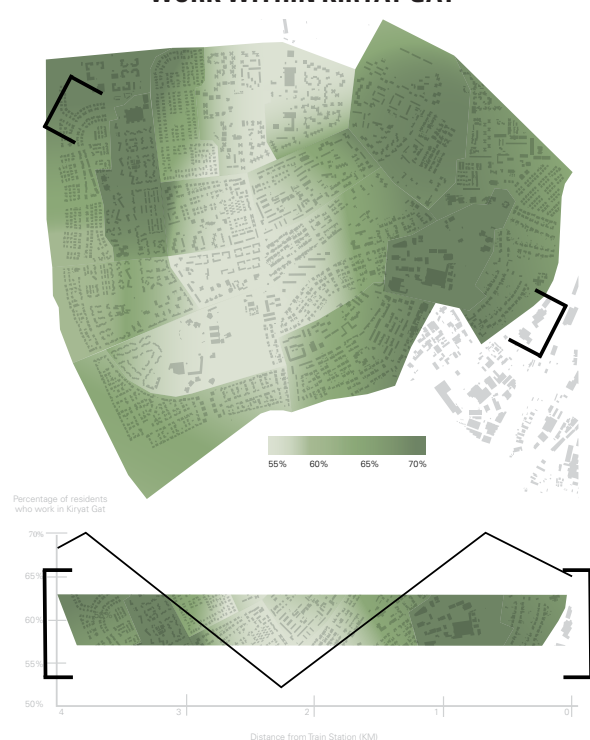
Many residents who live in the relatively poor center also work in Kiryat Gat. Interestingly, 32% of people who live in the center travel to work by transportation arranged by their employer, which is a greater proportion than any other area. This appears to be where there is the most demand for shuttles to the industrial park. If additional workforce housing is needed, there are plenty of opportunities to develop the vacant lots around this area.

Given these observations, the city should focus on adding programmatic elements to its center, in order to encourage infill development and locally-defined lifestyles. For instance, the new city hall could be sited here. A new civic area would take advantage of centrally-located vacant land, while catalyzing jobs within walking distance of every neighborhood.

2008 INCOME LEVELS



PERCENTAGE OF RESIDENTS WHO WORK WITHIN KIRYAT GAT



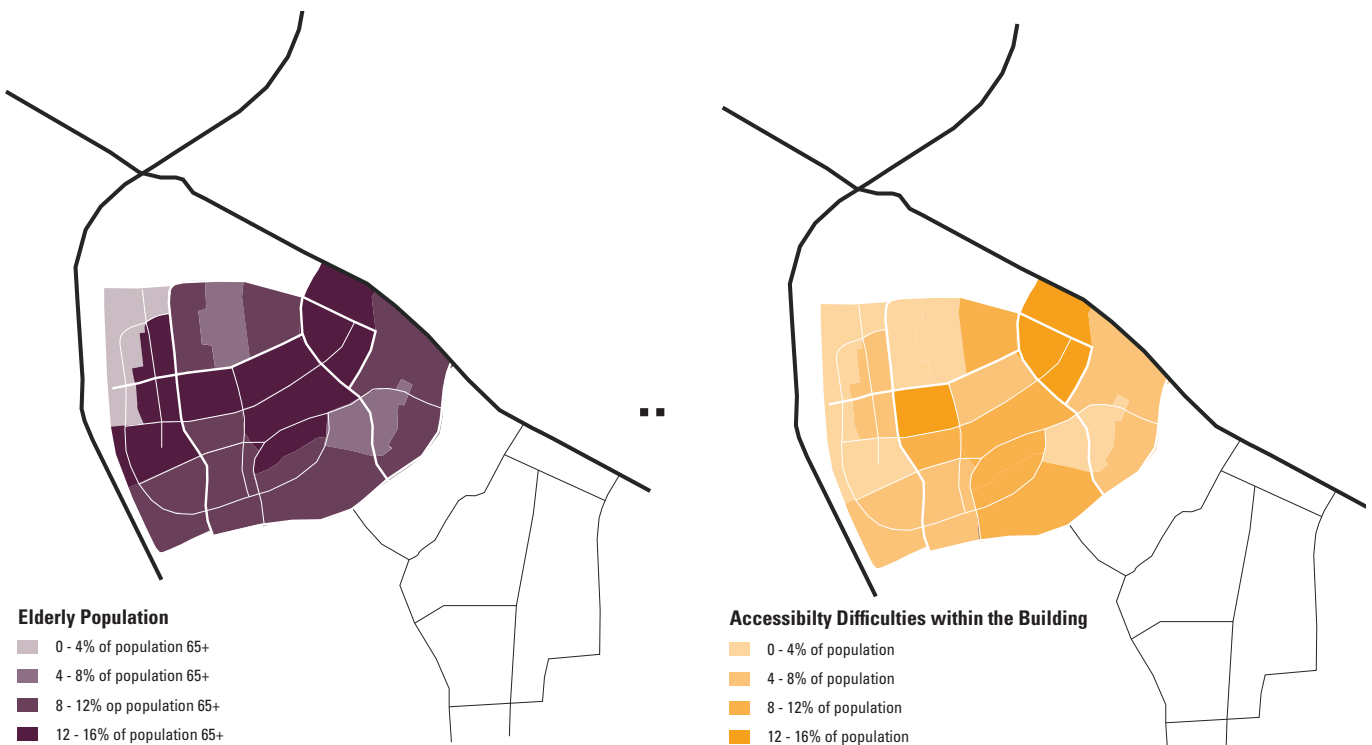
Population & Accessibility

Despite its relatively small size, Kiryat Gat is a demographically heterogeneous town, as different neighborhoods reveal different social fabrics and subsequent challenges. One such challenge is physical accessibility, influenced by residents' age, personal physical disabilities, car ownership and distribution of urban focal points within the city. In Kiryat Gat as a whole, approximately 20 percent of the population is over the age of 55, and 11 percent is over the age of 65. The areas with higher percentage of elderly population (over 65) are concentrated in the northern/central area of the city, spanning an east to west horizontal strip (see diagram). The areas with higher of percentage of youth population are not concentrated together but scattered around, mainly in the city's outer ring (see diagram). Only one area reveal congruence of both elderly and youth population high percentage.

This general distinction between the city center and the city's outer ring is further echoed when examining parameters such as personal disabilities and car ownership. In five statistical areas in Kiryat Gat, 10 percent or more of the population have difficulties walking or climbing stairs – out of which, Beni Israel neighborhood in the eastern part of the city has the highest percentage of disabled resident (16.1 percent). In general, 7.3 percent of the overall

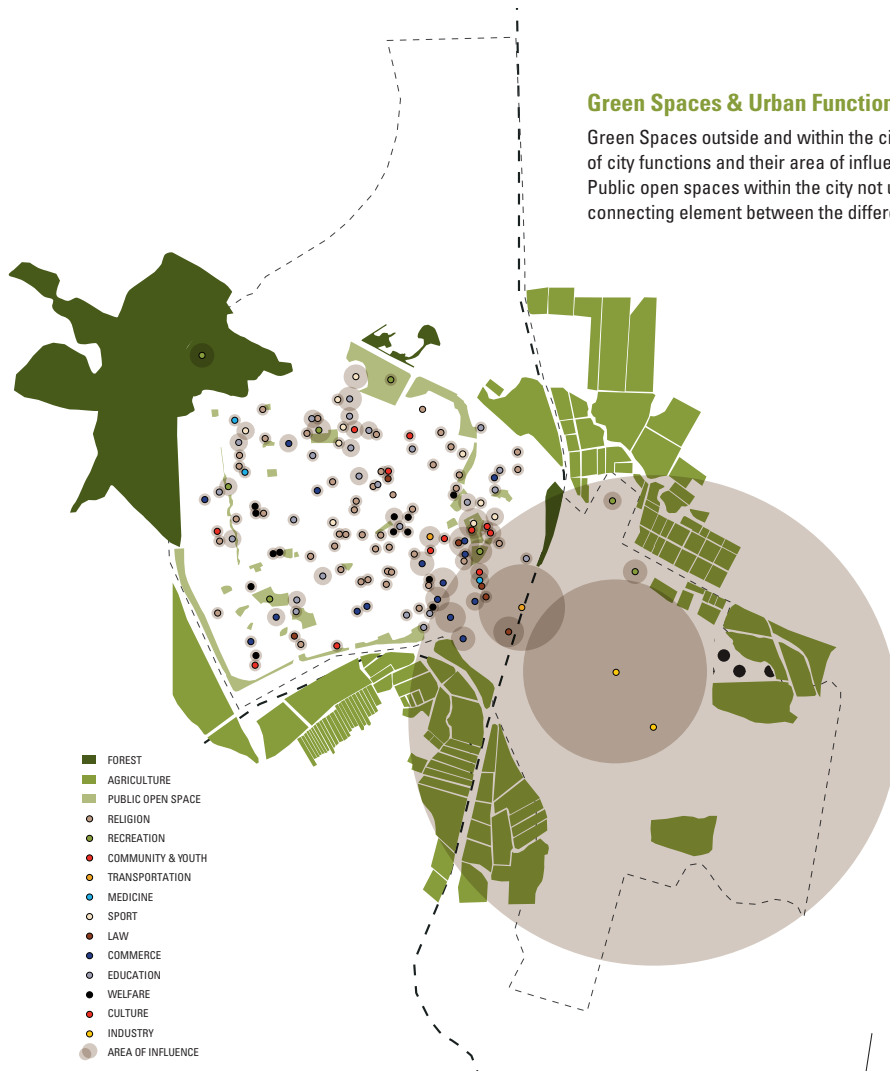
population in Kiryat Gat – and 36.2 percent of the elderly population (over 65) – has difficulties walking or climbing stairs. In terms of car ownership, the city show great diversity, ranging from areas in which car ownership reaches as high as 78.8 percent (Atarei Hamikra neighborhood) and as low as 23.3 percent (the adjacent neighborhood to the east). Compiling high percentage of personal disabilities and low percentage of car ownership reveal (once more) an east-to-west strip, located in the northern/central area of the city.

Furthermore, the limited accessibility is aggravated by the location of significant urban focal points, amenities, and functions in the city's outer ring --- such as leisure, recreation, and commerce located around the city hall, mall, and auditorium in the southern part of the city; the train station and industrial area even further to the south; open spaces and sports facilities located in the city's outskirts; and the future neighborhood located to the north. Measuring five-minute walking distances (see diagram) shows that many elderly residents, who are often disabled and/or don't have access to a private car, are deprived of many of the city's current as well as future amenities.

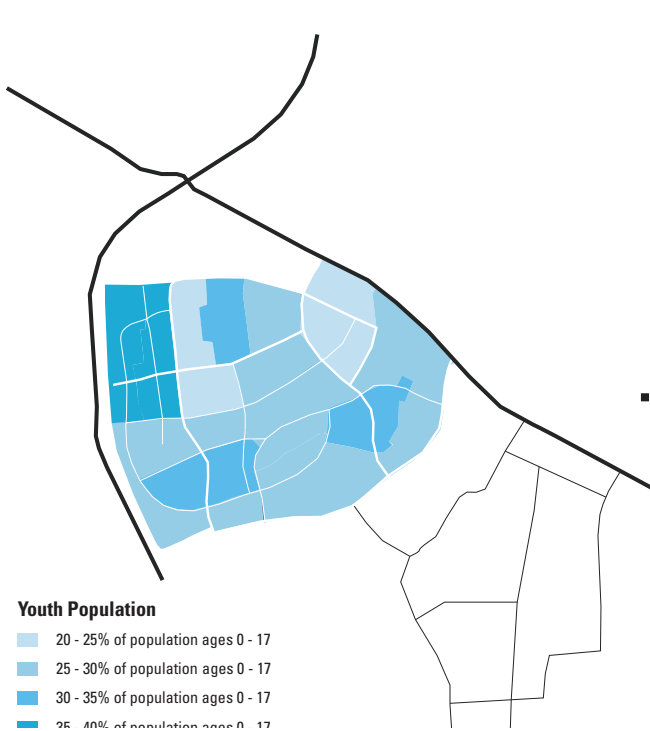


Green Spaces & Urban Functions

Green Spaces outside and within the city + distribution of city functions and their area of influence. Public open spaces within the city not used as a connecting element between the different functions.

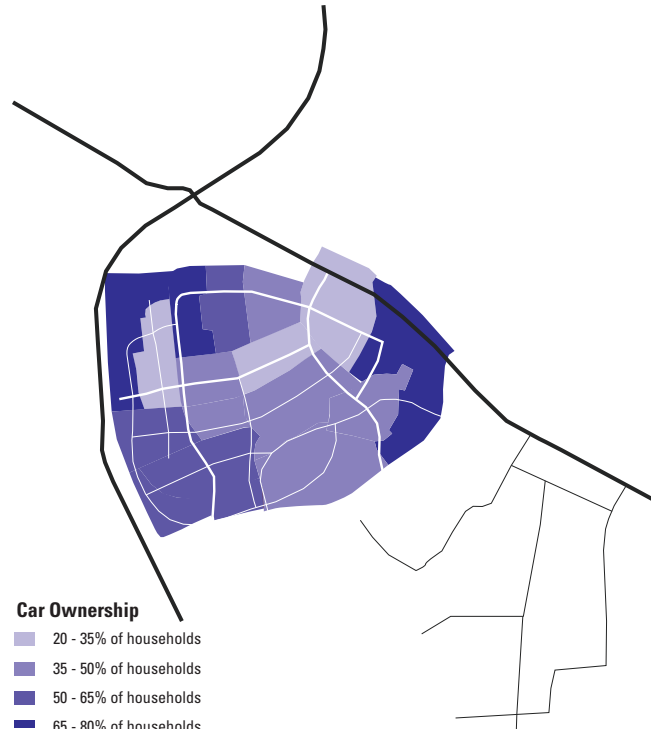


- FOREST
- AGRICULTURE
- PUBLIC OPEN SPACE
- RELIGION
- RECREATION
- COMMUNITY & YOUTH
- TRANSPORTATION
- MEDICINE
- SPORT
- LAW
- COMMERCE
- EDUCATION
- WELFARE
- CULTURE
- INDUSTRY
- AREA OF INFLUENCE



Youth Population

- 20 - 25% of population ages 0 - 17
- 25 - 30% of population ages 0 - 17
- 30 - 35% of population ages 0 - 17
- 35 - 40% of population ages 0 - 17



Car Ownership

- 20 - 35% of households
- 35 - 50% of households
- 50 - 65% of households
- 65 - 80% of households

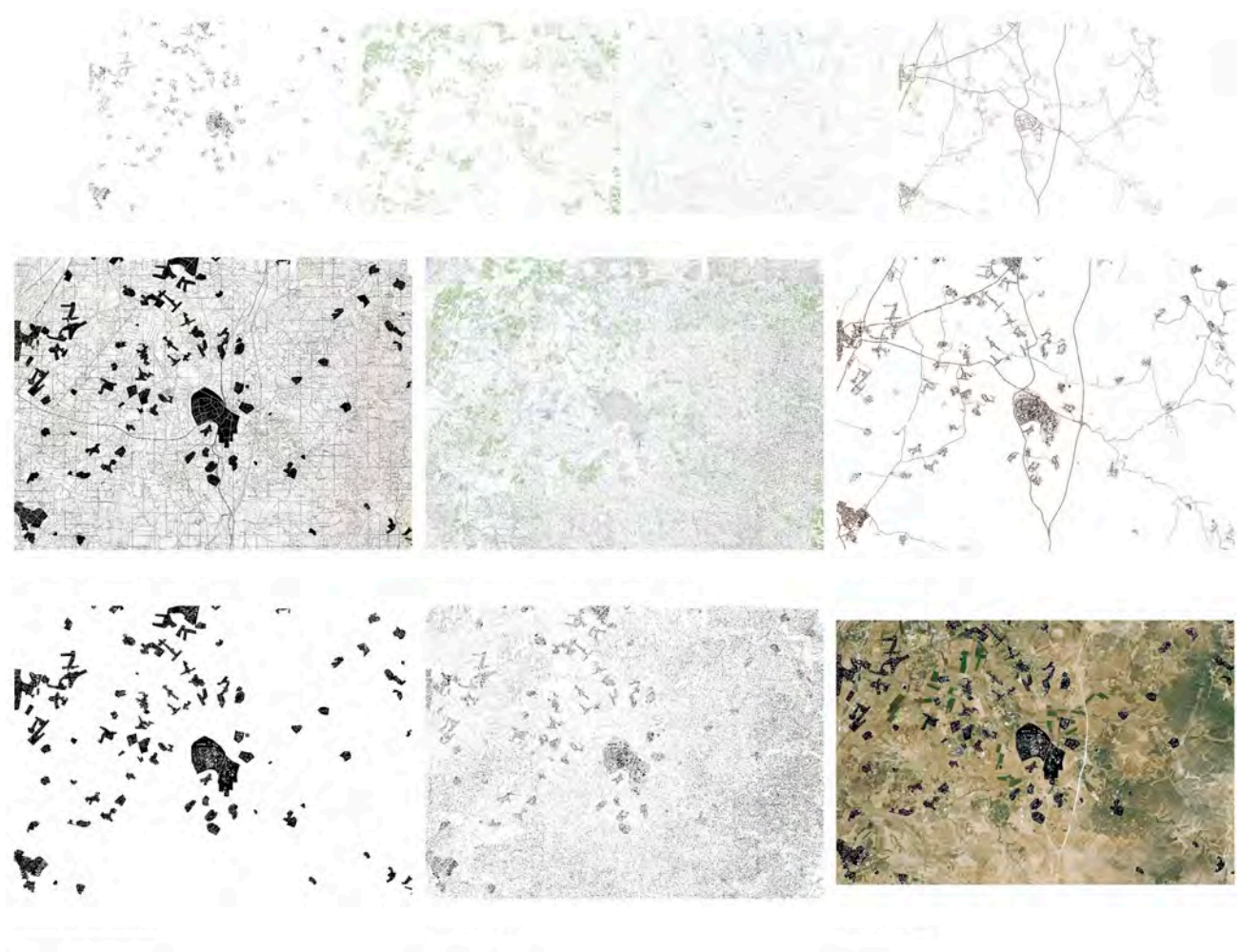
Regional Settlement Patterns & Ecological Gradients

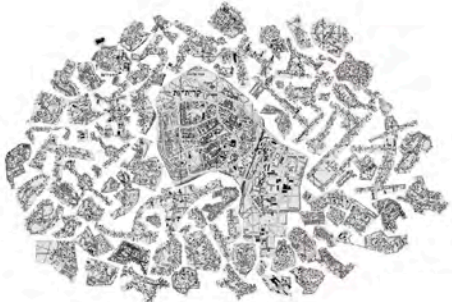
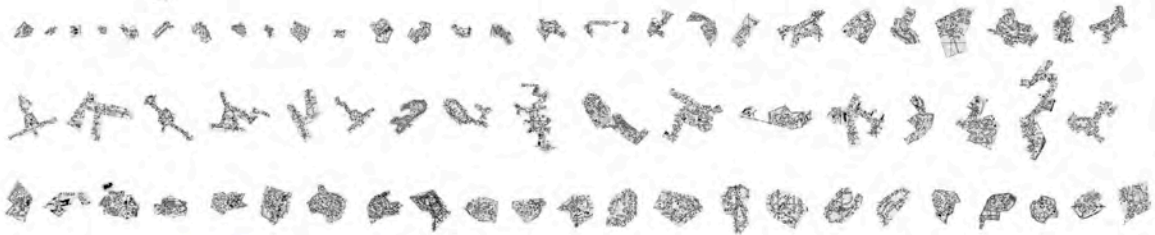
The region surrounding Kiryat Gat is full of many settlement types. The settlement area of the nearby kibbutzim, moshavim, and villages covers more space than the municipality of Kiryat Gat. In fact, if all the settlement areas are aggregated (including Kiryat Gat), they make up a metropolitan size slightly larger than Be'er Sheva.

The settlement patterns are very much determined by ecological gradients across the region, as well as proximity to other municipalities. A major band of small-scale settlements lies at the midway line between Kiryat Gat to the East and Ashkelon with Sderot to the West. This band lies in a relatively low topography and is in close proximity to green open space and the larger hydrological systems—probably making this land more amenable to agricultural uses.

There is also significant variation in the morphologies of the small settlements. The small settlements follow two general patterns: one which centers around an interior core and one which is linear, following small and medium scale road networks. The settlement formations provide potential patterns for the infill and expansion developments in Kiryat Gat. Perhaps the external settlements may be guides for the regeneration within the core of Kiryat Gat as well as the urban design of the expansion to the North.

Finally, Kiryat Gat could employ strategies to re-image itself as the hub for a larger, regional settlement zone. By bolstering the city's position as the cultural and economic heart of the region, a larger community of stakeholders would have a stake in the city's future development.





Industrial Sector Transect

Through transect analysis, one can see that the industrial zone is not as disorganized as it may seem at first glance; topographically-segmented sections have distinct industry types and scales, which enable different forms of industrial development. Additionally, the following phenomena were observed:

- WHILE THE TRANSECT LOOKS CLUTTERED IN PERSON AND IN AERIAL VIEW, THERE IS A SIGNIFICANT AMOUNT OF OPEN INTERSTITIAL SPACE WITHIN THE INDUSTRIAL ZONE.
- INTEL IS STARTING TO ENCROACH ON THE GREENFIELDS OUTSIDE OF THE CITY.
- MOST OF THE ROADS IN THE INDUSTRIAL ZONE ARE MINOR.

Topography and road systems go hand in hand to create separation. The light industrial area has meandering streets and is on a slight incline, while a large berm separates it from the heavy industrial area. This is in turn separated from the Intel/Micron campus by a wide, tree-lined thoroughfare. The mammoth campus is also bordered by a large retaining wall and fence, which create an intense topography of separation.

Heavy industry itself acts as a geographic buffer between the human-scaled light industrial area and the large high-tech campuses. The light industrial area enjoys developable land with walkable streets, making it an ideal candidate to be stitched into the city for better connectivity. While it appears sprawling, the high tech manufacturing area of the industrial zone has a massive concentration of buildings and workers, but most of the roads are internal to the campus; this area is an excellent candidate for industrial clustering interventions, including the provision of amenities and services.

Finally, there is an underutilized zone on both sides of the train tracks. In the light industrial section, the topography creates excellent sight lines over the silo and into the city. There is also a lot of open space on sizable lots. On the city side, the underutilized zone quickly gives way to a intense mixed-use area, with government buildings, residences, small stores, and a school. High value Transit-Oriented Development (TOD) is realistic, given the abundance of space and ability to tie in with existing development and infrastructure.



TRANSECT AREA

for all transect diagrams:
meters
100 200

aerial

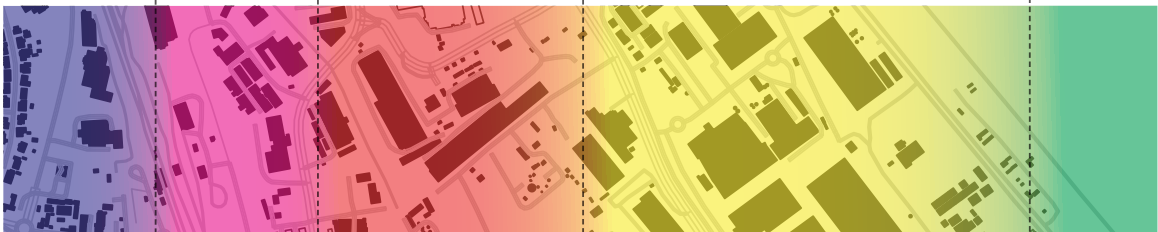


section



topography and features in section are graphically exaggerated

sector analysis



mixed residential/
commercial/municipal

light industrial
/wholesale

heavy industrial

high-tech manufacturing

greenfields

example structures: villas,
barber shop, plumbing store,
vehicle licensing dept.,
train station

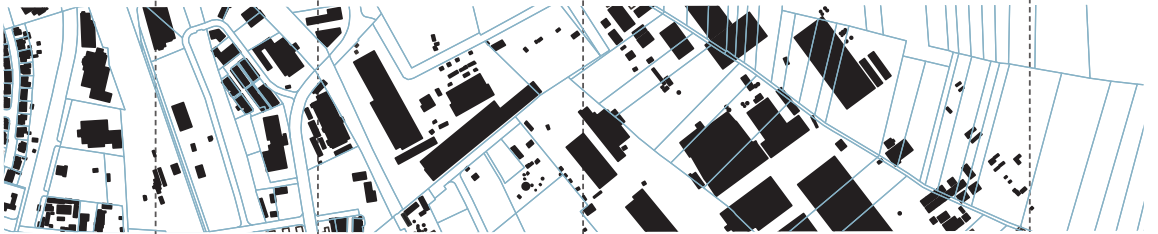
example structures: machine
shops, aluminum fabrication,
marketing firm, workshops,
textiles, carpentry

example structures: heavy metals,
digital manufacturing, electronics manufacturing,
auto bearings

example structures: intel campus, micron campus, hp campus, sabra salads

example structures:
minor intel edge
buildings, agricultural
land

figure ground
/lot size



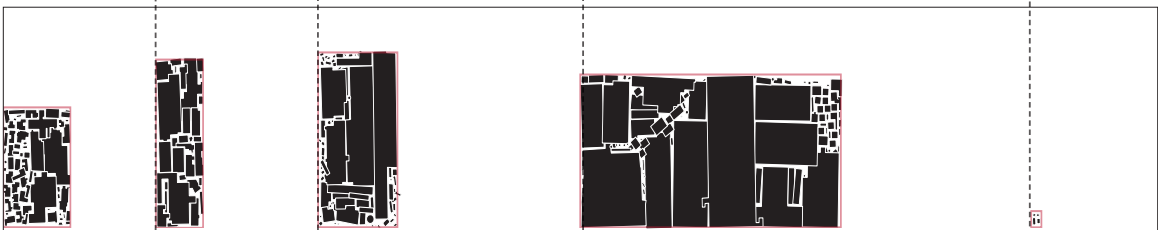
parcel line
building

older light and
situated on

heavy industrial
large individual parcels

intel campus situated on multitude
of smaller agglomerated parcels

building cover



20% buildings

16% buildings

19% buildings

33% buildings

0.4% buildings

street patterns



high connectivity with city-
low connectivity abutting and
across train tracks

low connectivity across train
tracks- small winding streets
suitable for pedestrians and
amenities

large berms separate from lower density industrial
to the west- large plants set back from street

walls, security and large thoroughfare lead to complete disconnection of intel/micron
campus from the rest of the industrial area- most roads internal to intel

public street
internal street
railroad

Housing Typologies

The study of the typologies was a process of confirmation and contradiction. The single family, detached housing model was exactly as it would have seemed: sparsely developed land with few occupants. The towers were a similar story: a large number of flats in a dense area with open space surrounding them. The striated pattern of the urban fabric reflected the city's history of development: a "whole cloth" approach, which produced adjacent but independent neighborhoods of uniform typologies. The adjacencies of these types were the most interesting phenomena. Single family homes were built next to the towers, which were built next to row houses, etc. In North America, typological zones tend to be transitional, increasing in intensity as one moves towards the city center. Such an approach was not evident in the Kiryat Gat pattern; rather the zones are defined by their street edge conditions.

The rowhouses were the most blended of all typologies, reflecting evolving and incremental treatments by their residents. Years of additions and modifications resulted in a variety of roof lines, materials, and footprints. Besides these internal varieties, there were few communities of "mixed" typologies, with the exception being the central neighborhood around the "twelve shops." This mixed typology seems to reflect the community living within, which contains a diversity of races and ages. This could begin to inform the future community development model of the city.



HOUSEHOLD DENSITIES

● DENOTES HOUSEHOLD/UNIT

HOUSING TYPOLOGIES

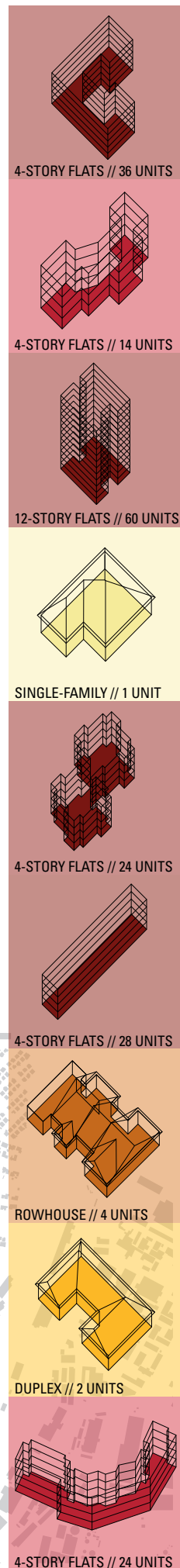
- SINGLE-FAMILY DETACHED
- TWO-FAMILY ATTACHED (DUPLIX)
- ROWHOUSE
- MULTIFAMILY FLATS (4-15 UNIT STRUCTURE)
- MULTIFAMILY FLATS (16-60 UNIT STRUCTURE)

HOUSING TRANSECT

- RESIDENTIAL SAMPLING
- ALL KIRYAT GAT BUILDINGS

HOUSING TYPOLOGIES // KIRYAT GAT

ALEXIS M WHEELER // 11.304J



4-STORY FLATS // 36 UNITS

4-STORY FLATS // 14 UNITS

12-STORY FLATS // 60 UNITS

SINGLE-FAMILY // 1 UNIT

4-STORY FLATS // 24 UNITS

4-STORY FLATS // 28 UNITS

ROWHOUSE // 4 UNITS

DUPLIX // 2 UNITS

4-STORY FLATS // 24 UNITS

Realms of the City

POTENTIAL CONNECTIONS ACROSS MEMORY, ECOLOGIES, INFRASTRUCTURE, & VOIDS

The map identifies key urban features from different realms that might be perceived of as barriers. The “memory” realm contains municipality-defined archaeological zones which could be a barrier due to restrictions on development. The “ecologies” realm contains rivers and streams, along with major topological shifts, which can act as a barrier to continuity. The “infrastructure” realm contains the municipal boundary, wide roads, and major buildings, which can all act as physical barriers. Finally, the “voids” realm contains large open spaces that can act as a barrier between areas through the creation of a buffer zone.

When distilled, patterns emerge on complementary barriers that might actually provide a site of a connective intervention. For example, an archaeological site and a void space might provide land that would be ideal for park space, or the confluence of a stream and a road would be ideal for the development of a new multi-use road typology. As it turns out, a key cluster of sites of possibility occurs around the center of the industrial area. There is also noticeable urban patterning based on topological features in what has otherwise been understood as a largely flat urban space.

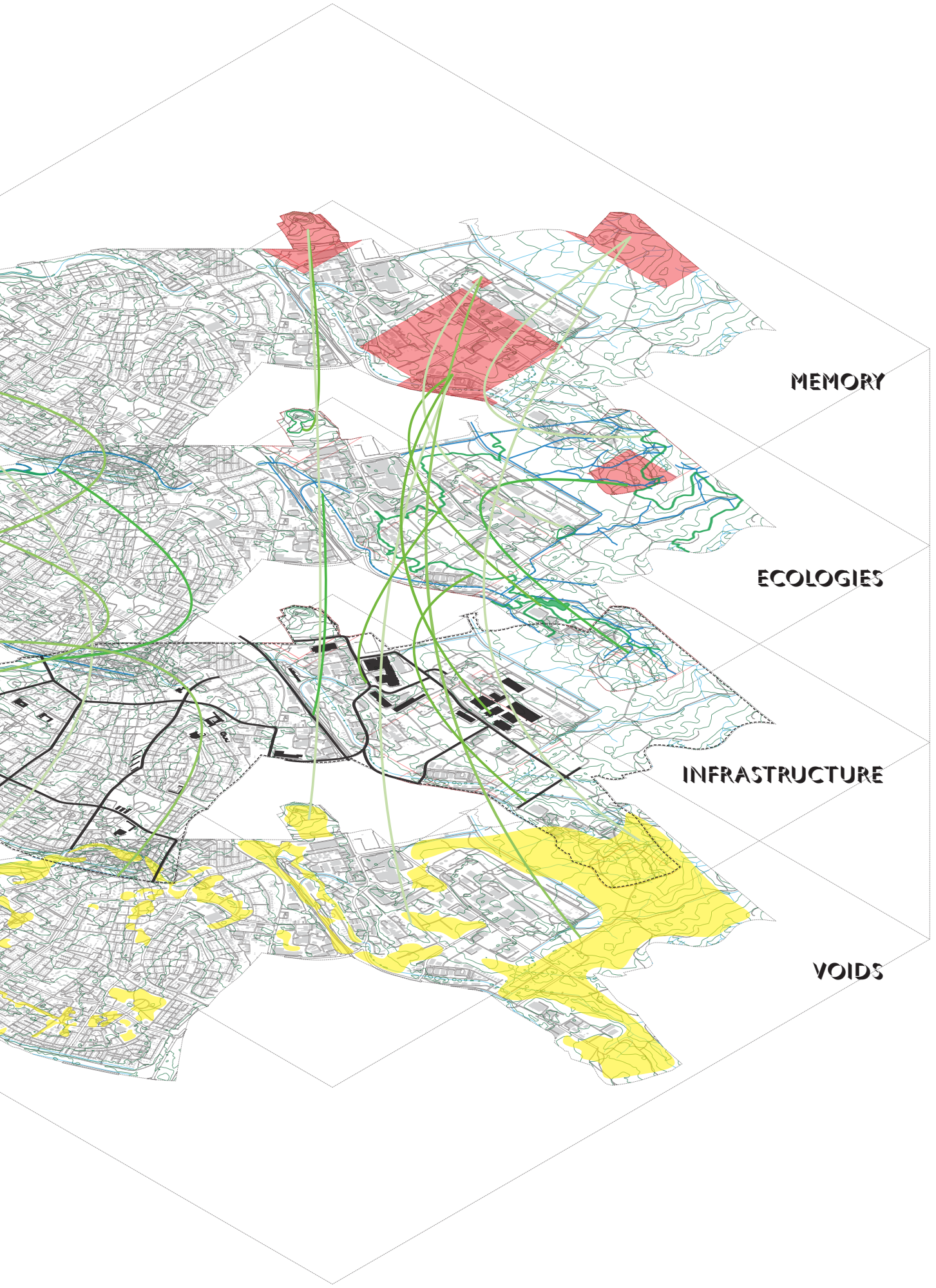
In the end, each potential connection is an apt site for opportunistic intervention. While this is only one analysis of the urban patterning, this mapping provides a set of sites for minor interventions through simple tactics, as well as areas that might be structurally ideal for major intervention.



LEGEND

- ARCHEOLOGICAL SITES
- RIVERS & STREAMS
- MAJOR TOPOLOGICAL SHIFTS
- INFRASTRUCTURAL BUILDINGS
- LARGE-WIDTH ROADS
- CITY BOUNDARY
- MAJOR OPEN SPACES
- POTENTIAL CONNECTIONS AS SITES OF INTERVENTION

LESS - MORE
POTENTIAL



MEMORY

ECOLOGIES

INFRASTRUCTURE

VOIDS

Watersheds & Stream Flows

This map displays streams as they were represented in a 1970s regional hiking map, overlaid with channels marked on a contemporary map of the city. Most of these streams are seasonal, and some have been buried or channelized to accommodate the growth of Kiryat Gat. The analysis reveals, however, a few opportunities for restoration and conservation to enhance the city's natural assets.

Water in Kiryat Gat flows from the southeast to the northwest. Two major subwatershed boundaries determine the flow of the city's primary stream. One boundary runs across the city's northern border, while another boundary runs north-south in the center of the city, separating the residential section from the industrial section. The subwatersheds in each section of the city—residential, industrial, and proposed northern expansion—are fairly self-contained, but ultimately they all flow into the same primary stream.

Large buffer zones appear in the southeast and northwest corners of Kiryat Gat, where the primary stream enters and leaves the city. Smaller buffers in the center of the city provide opportunities for daylighting. Additionally, narrow wooded buffers protect the city from winds moving across agricultural land.

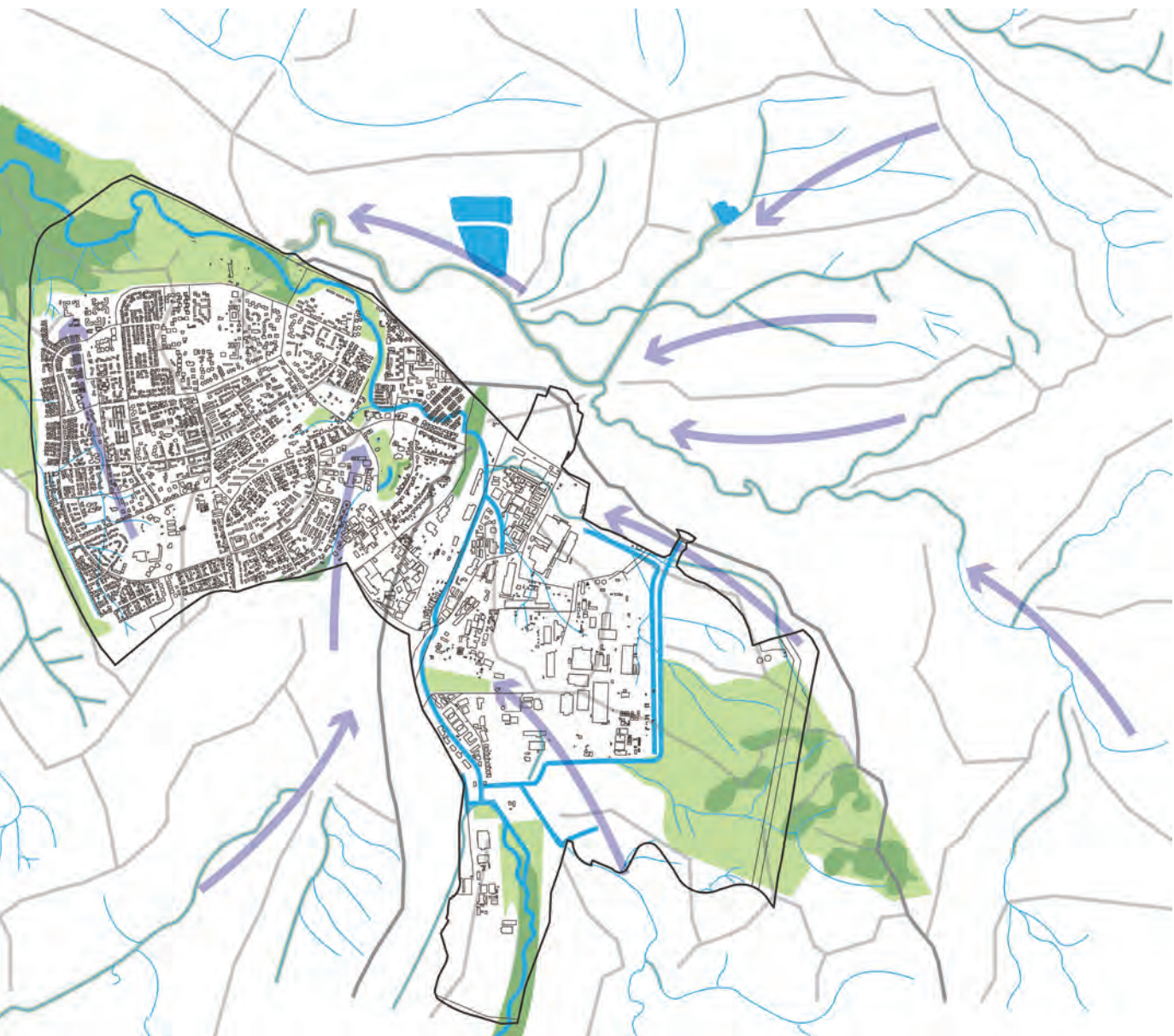
Together, the maps of water flows and buffer zones reveal key sites for protection and rehabilitation of the stream. To the north of the city, stream buffers should be maintained during construction of a new neighborhood. In the southeast corner of the city, a large buffer surrounding secondary streams should be considered as the industrial section expands and a proposed cemetery takes shape. In the northwest corner, a large buffer around the primary stream offers an opportunity for rehabilitation. Likewise, smaller buffers around the primary, secondary, and channelized streams suggest key points for daylighting and stream restoration that would also enhance the experience of nature in the city.












Kiryat Gat Watersheds and Stream Flows

Merran Swartwood / 11.304J / 02.25.12





- | | | |
|--|---|--|
|  Primary stream or channel |  Subwatershed boundary |  Wooded stream buffer |
|  Secondary stream |  Major subwatershed boundary |  Non-agricultural, non-wooded stream buffer |
|  Lake or reservoir |  Direction of water flow |  Kiryat Gat city boundary |

Water in Kiryat Gat flows from the southeast to the northwest. Two major subwatershed boundaries determine the flow of the city's primary stream. One runs across the city's northern boundary, while another runs north-south in the center of the city, separating the residential area to the east from the industrial area to the west.



Large buffer zones appear in the southeast and northwest corners of Kiryat Gat, where the primary stream enters and leaves the city. Smaller buffers in the center of the city provide opportunities for daylighting. To the north and southwest, narrow wooded buffers wind through agricultural land.

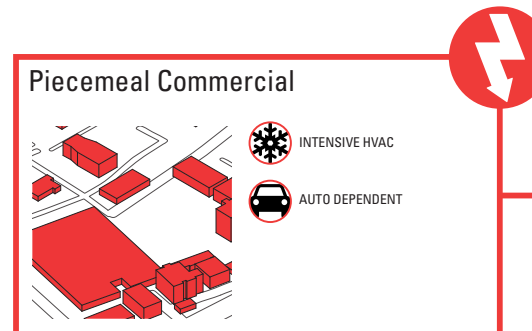
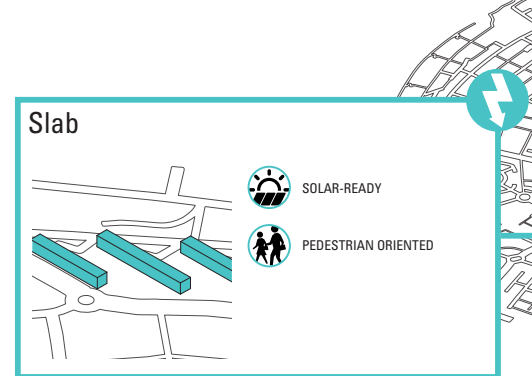
Urban Energy Performance

What is the relationship between urban form and energy consumption in Kiryat Gat? Looking beyond the performance of individual buildings, the particular arrangement of a neighborhood has a sizable impact on the way its inhabitants interact with the built environment. Building upon the Clean Energy Cities research project at MIT, a transect analysis was conducted of Kiryat Gat, in order to determine the relative efficiency of each neighborhood form.

The analysis revealed a city that has been developed in fits and starts. As the population grew, entire neighborhoods were built from the ground up. Each neighborhood took a different form, perhaps in response to whatever population pressures were most prevalent at the time they were built. This has resulted in a patchwork of building typologies and parcel arrangements. In addition to having a distinct physical profile, each neighborhood type has its own energy consumption profile as well.

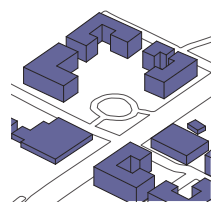
Generally, energy consumption as it relates to urban form can be broken down into three categories: embodied energy that is consumed during the construction process, operational energy that is consumed during the life of the buildings, and transport energy that is required in order to support the neighborhood activity. Additionally, the potential for renewable energy can be considered as a means of reducing the non-renewable resources that are required for operational and transport uses.

The transect analysis identified seven neighborhood typologies. Each may have internal variation, but they were grouped in such a way as to interpret their overall energy consumption profiles – and their potential for retrofit. The city would do well to invest in its best performers, including mixed superblocks and slabs, while avoiding past mistakes such as the tower in a park. Notably, there are great efficiency opportunities in the isolated industrial form, if an eco-industrial model can be adapted.





Medium Density Enclave



- HUMAN SCALE
- PEDESTRIAN ORIENTED

Tower in a Park



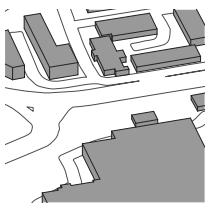
- ENERGY INTENSIVE
- AUTO DEPENDENT

Low Density Estate



- SYSTEM INEFFICIENT
- AUTO DEPENDENT

Isolated Industrial



- ECO-INDUSTRIAL ?
- SOLAR-READY

Open-Loop Urban Metabolism

In Kiryat Gat, little resource exchange exists between the two distinct components of the city (residential and industrial). Labor sources are pulled in to serve industry, even though a latent labor pool exists in the city itself. Additionally, the city is drained of its own social products because of its inability to retain a young, productive workforce. Even research in efficient energy leaves the urban envelope without ever being applied to benefit residents.

Urban metabolism presents an interesting framework for future development of the city by focusing on the input and output of resources. As resource availability continues to wane, closed-loop systems will become ever more relevant in considering the overall sustainability of a city. By first identifying the outward flows, opportunities to redirect the life-cycle of resources become apparent.

Considering how outputs from one sector of the city convert to inputs for another will further opportunities to create a symbiotic relationship between the residential core and the industrial zone. How these resource flows manifest physically becomes the design consideration. One opportunity in redefining the key junction near the train station is to represent the area as the energy stock of the city, referencing the silo as a key to retaining resources for Kiryat Gat.





Patterns of Public Open & Undeveloped Land

This exercise illustrated the shape, size and overall proportions of the various types of public open and undeveloped space, which included vacant land, parks, parking lots, and intra-block corridors. Field observations revealed a large proportion of vacant lots - this was confirmed by the mapping exercise, which showed that 22% of the central city is vacant.

The vacant lots are concentrated in the older neighborhoods of the city. The new, higher income neighborhoods in the western section of the city have a noticeably lower concentration of vacant land. They also have a more uniform allotment of parks and parking lots relative to the rest of the city. The even distribution of parking lots comes as little surprise as these neighborhoods are largely comprised of single family residences.

Interestingly, there is a possible correlation between intra-block corridors and increased levels of walking amongst residents. It is conceivable that the city could further build upon the existing intra-block corridors with linkages via vacant lots and parks to create a network of cross-neighborhood pathways. It also appears that there is an opportunity for stream restoration, as a swath of vacant space mimics the winding stream in the northeastern neighborhoods.

While there is plenty of vacant land within Central Kiryat Gat that could be targeted for infill development, the city will need to account for the diverse variety of shapes and sizes of lots should it decide to pursue such a strategy. Disregarding the northern parcel (which is currently planned for future development), the empty lots range from single family parcels to fully empty blocks.

Finally, Kiryat Gat has the opportunity to redefine its exterior buffer zones, as nearly the entire city is ringed with park land or vacant lots. The extension of the narrow park with a bike path in the southwestern corner of the city seems like a predictable and logical next step. Yet any potential design should be considered carefully, particularly along Route 35 to the northeast, as this section borders the future expansion section of Kiryat Gat. Given this location, Kiryat Gat should consider whether it wants to create a buffer, an edge, or a gateway between the central city and the expansion.





A City of Walking-Compatible Form

Mapping 5-minute walking radii around schools in Kiryat Gat reveals a neighborhood structure that appears to conform to the neighborhood unit model in which neighborhood size is determined by easy walking distances to schools. In this model, neighborhood commerce is distributed at the intersections of major roads between neighborhoods, thus making the neighborhood a self-sufficient unit.

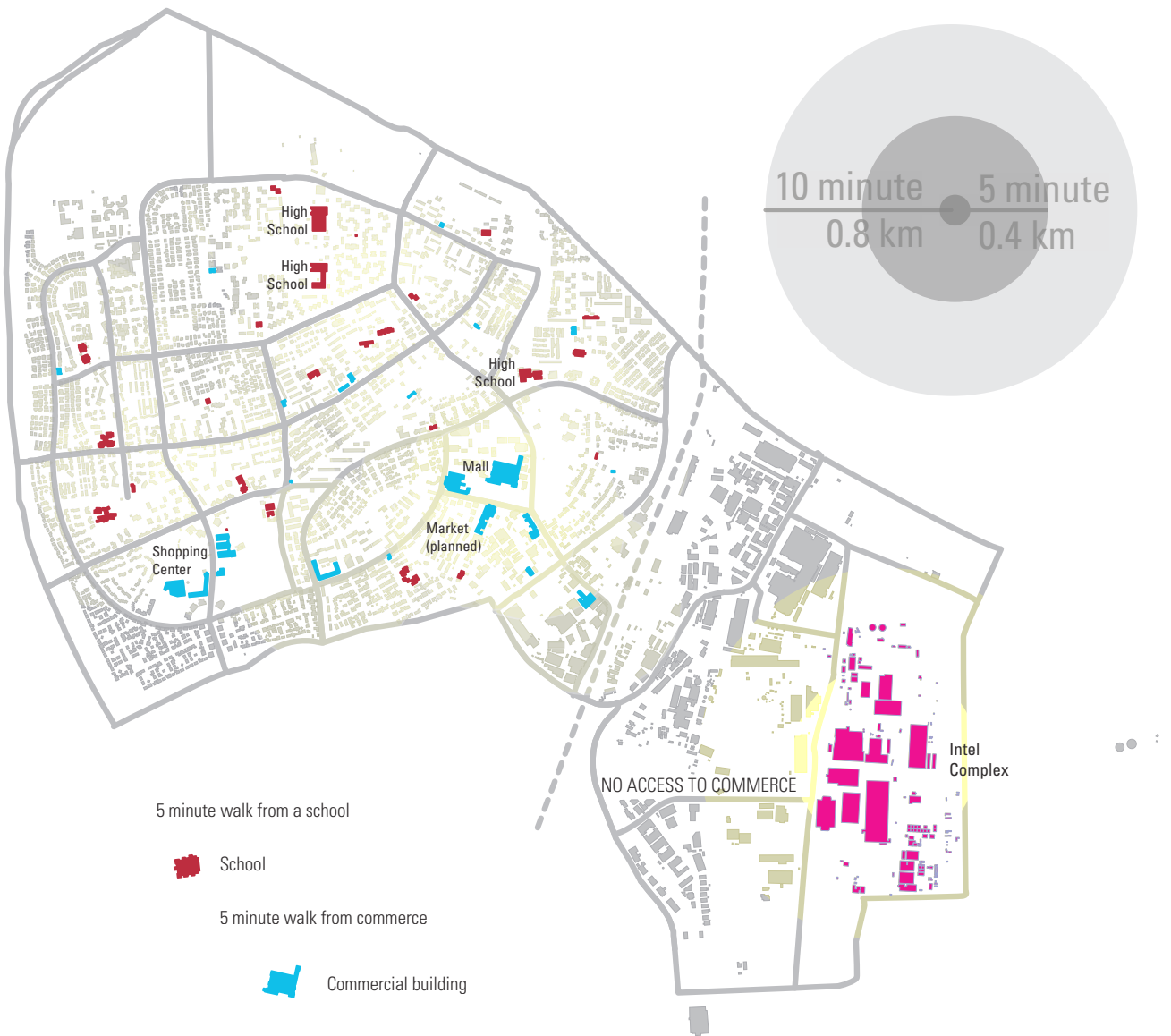
However, looking at the location of the major commercial centers in Kiryat Gat, it is clear that the neighborhood areas (bounded by major roads) are not self-sufficient. Additionally, while the schools are distributed according to walking access, Kiryat Gat has an open enrollment policy, meaning that the social reality is not necessarily reflected in the form of the city. Therefore, the city should focus less on walkable neighborhood units and more on the walkability of the entire city, including connections between neighborhoods.

While the city already enjoys a compact form,

the industrial zone is at a greater distance—more than a 10-minute walk from the city center. This implies that even if a physical connection is created across the train tracks, there will still be a need for transit/bicycle access from the industrial zone to the core. This could also be integrated into a regional connectivity network to the surrounding moshavim and kibbutzim; this network is currently unrealized. It is also important to note that restaurants and other services will need to be integrated into the industrial zone.

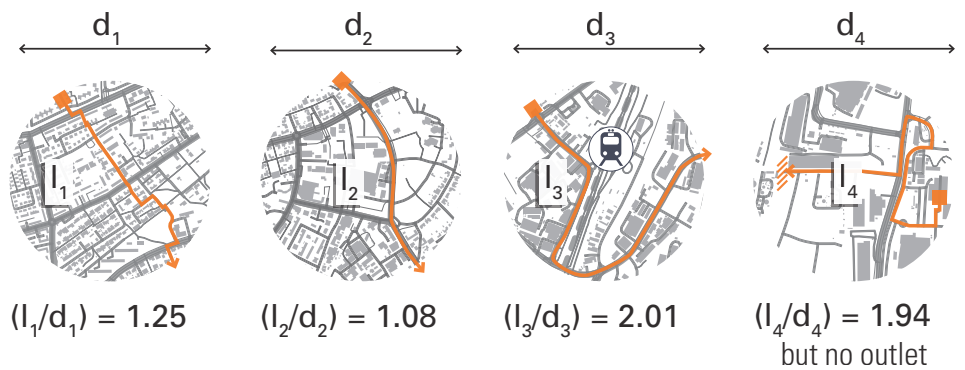
Finally, the connectivity analysis demonstrates a robust method of evaluating accessibility, utilizing network structure rather than just straight-line distance. As seen in the figure, there are significant differences in street topology between the residential, core, “hinge”, and industrial areas. The different areas will require different treatments in order to achieve walking-compatible form across the city.





the connectivity effect

the ratio of actual path length to a theoretical direct path



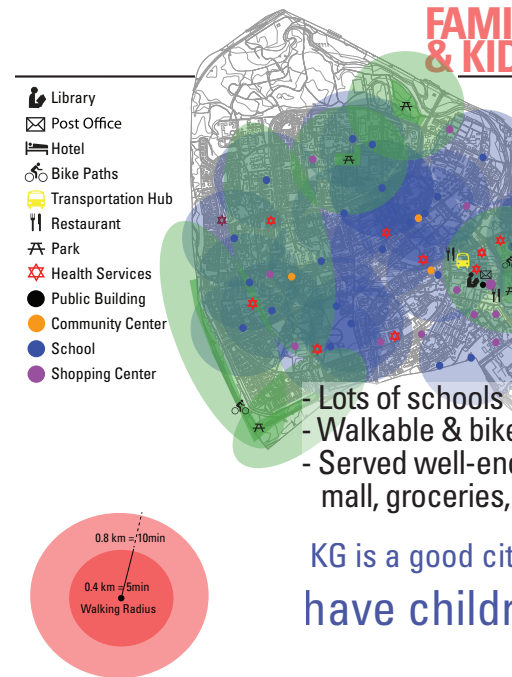
Life Stage Amenity Mapping

Life stage amenity mapping is an analytical method for understanding the users of a city and the amenities they require and/or desire. Mapping amenities in Kiryat Gat illuminated strikingly different patterns for children, young adults, and senior citizens.

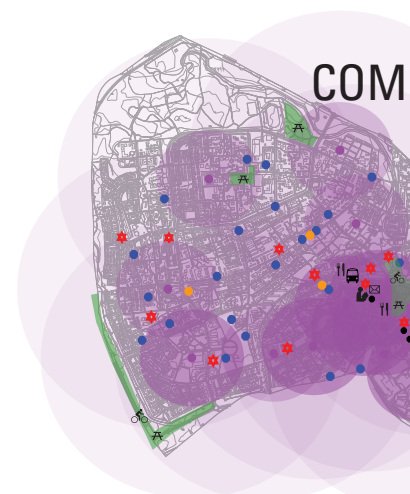
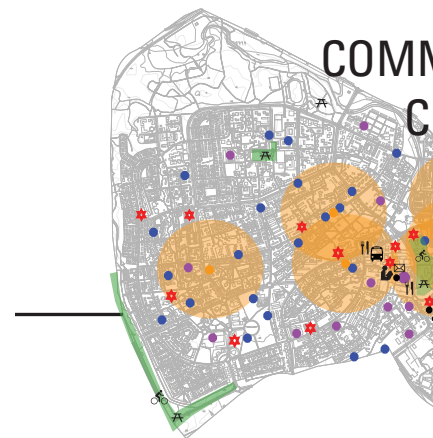
It immediately became apparent that Kiryat Gat is an excellent place for children. There is an abundance of playing fields and parks, especially considering the city's relatively modest size. There are also schools within walking distance of just about every residence, although this advantage is somewhat undercut by the city's open enrollment system. Students attending schools on the opposite side of the city may have to rely on motorized transportation. Nevertheless, they are presented with amenities in every neighborhood.

Kiryat Gat has struggled to attract or retain young adults; the city has attributed its struggle to a lack of private housing options. While this is important to consider, the city also lacks restaurants, cultural offerings, bars, and nightlife. In other words, there are few amenities that would keep young people interested in life outside the home.

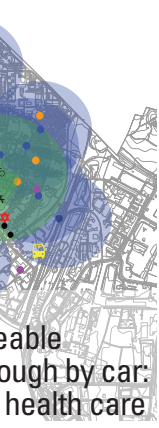
However, the city is well-suited for seniors. Its compactness works to its benefit. There is also a good supply of parks, health care clinics, synagogues, stores, and community centers. What might be lacking is a stronger bus system that would provide access to the whole city for seniors that don't drive their own vehicles.



KIRYAT GAT THROUGH

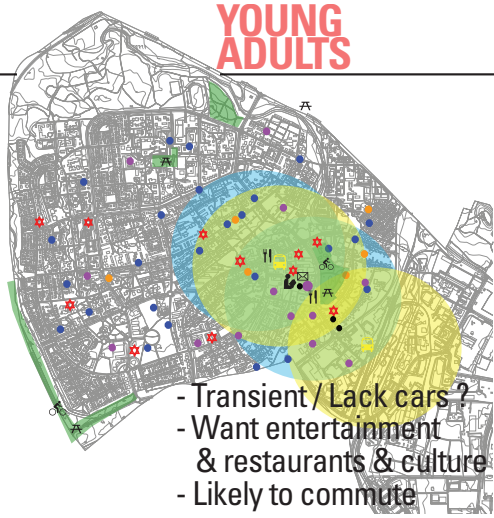


LIES
OS



ty to
ren

YOUNG ADULTS



- Transient / Lack cars?
- Want entertainment & restaurants & culture
- Likely to commute

KG is not attractive to young people

SENIORS



- Often don't drive
- Amenities need to be close
- Want culture, community centers & resources
- Health access lacking in north

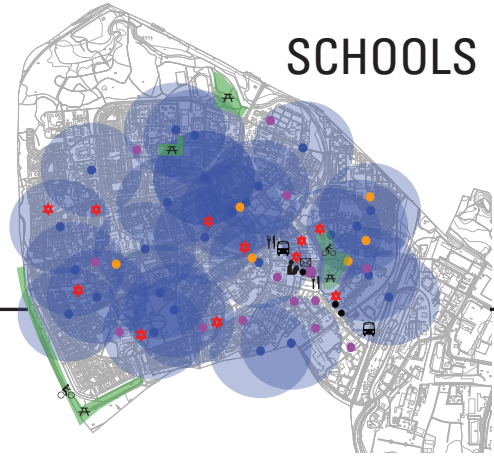
KG could better serve the elderly

THROUGH THE AGES

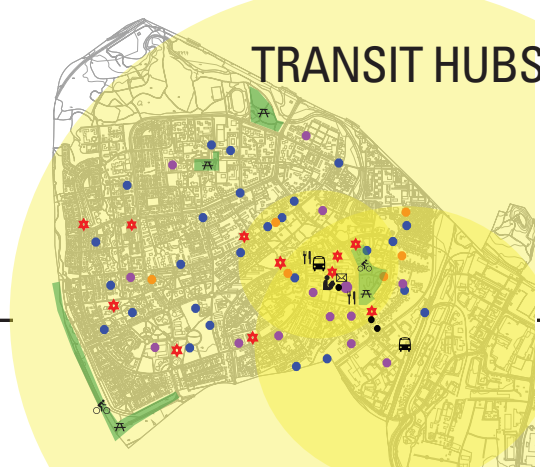
COMMUNITY CENTERS



SCHOOLS



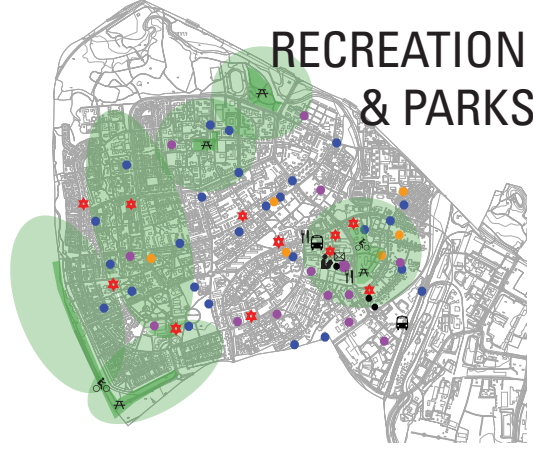
TRANSIT HUBS



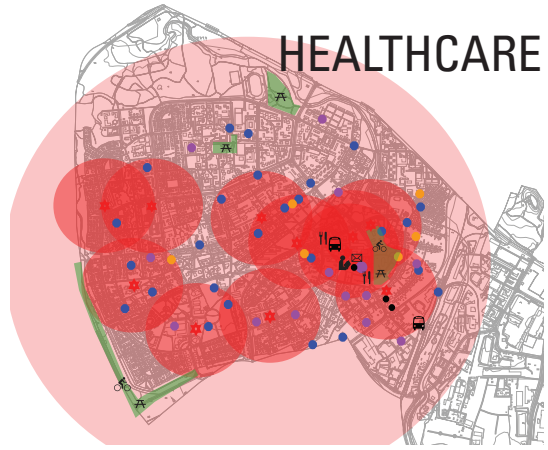
COMMERCE



RECREATION & PARKS



HEALTHCARE





INITIAL PROPOSALS

SITE PLANNING

URBAN CELL

PROPOSED ASSETS

PLANNING FRAMEWORK

INITIAL PROPOSALS

ALTERNATIVE STRATEGIES FOR GROWTH

The initial stage of the project is focused on social, economic, physical, and environmental analysis of Kiryat Gat. Initially divided into four teams, the members produced snapshot thematic proposals based on knowledge gained through meetings with municipal, industry, community leaders, and field observations. The overall themes were established to guide the city into the future by generating specific goals more directly responsive and closely tied to the currently fragmented Kiryat Gat neighborhoods, industrial areas and surrounding environs.

Kiryat Gat is relatively dense, with preserved natural and agricultural surroundings and adjacent technology and industry ripe for applied innovation throughout the city. However, the edges of the city act more as buffers rather than connecting residents to natural assets. While compact, the urban fabric is fragmented by vacant lots that create underutilized voids in nearly every neighborhood. Within Kiryat Gat, there is a distinct separation of land uses. A predominantly residential core to the west composed of a variety of neighborhood enclaves for the city's diverse communities. The eastern industrial zone is home to several large manufacturers, including the Intel's microchip processing plant. Despite this juxtaposition, the industrial zone is treated as its own entity rather than an extension of the city. Kiryat Gat's residents benefit little economically and have a high rate of unemployment. Compounded with the fact that few amenities exist for residents between the ages of 25 to 40, the city struggles to retain young families and the most productive segment of its workforce.

Currently, plans for expansion have been approved that will further polarize land use in Kiryat Gat. The proposed northern neighborhood is characteristically isolated, and will provide luxury mixed-type housing for new residents on what is currently a greenfield site. Expansion eastward will accommodate new large-scale industries, even though the current industrial zone contains opportunity sites for development. While recognizing that these proposals are an approaching reality, there is still the opportunity to strengthen the city's existing core and define alternative strategies for growth.

Given these conditions, Kiryat Gat is eager to redefine its image as a prototype of alternative urban growth for New Towns. The following initial proposals seek to leverage the

strengths of the existing urban fabric with the potentials of a smart city supported by technology. Several overlaid systems work together to create a unifying order for the overall strategy of the city. A series of fingers extend over networks of circulation and activity throughout the city. Following these paths are wave patterns denoted as frequencies which are defined as four different operational functions: Natural, Mediated, Mobility, and Compact.

- **COMPACT DENOTES AREAS OF MIXED USE ACTIVITY, INFILL DEVELOPMENT, AND ADAPTIVE REUSE OF SPACES.**
- **MEDIATED PATHS PORTRAY NEW ECONOMIES OF INFORMATION AND INNOVATION WITH A TEMPORALITY OF CONDITION.**
- **NATURAL REPRESENTS THE AREAS OF ECOLOGICAL SENSITIVITY AND RECREATIONAL CONSIDERATION.**
- **MOBILITY LOCATES NEW AREAS OF FOCUS FOR TRANSIT, WALKABILITY, INTERMODAL CHANGES, AND EASE OF ACCESS.**

Proposals within each theme will address multiple scales. Connections to the surrounding context of the city are considered at the regional scale. Urban scale proposals emphasize an integration of land uses and strengthening of the existing city core. Urban infill is the predominant strategy at the neighborhood scale, while densification and alternative typologies are explored at the building scale. Varying timelines and phases are also considered through the initial proposals, including tactical interventions that provide cost-effective strategies that have immediate and apparent impacts for Kiryat Gat.

The frequency patterning demonstrates an increase in amplitude and intensity in areas of heightened development and activity, and the focused locations of multiple lines highlight significant points of concentration within the city, as seen on sites such as the train station. Two larger bands cross as a nexus over the city to highlight the two major networks activating the city: the designation of Sderot Lachish as a main thoroughfare connecting the major zones of the city, and the landscape elements of the park and wadi injecting the urban condition with a natural pliability.

THE
COMPACT
CITY

THE
MEDIATED
CITY

THE
NATURAL
CITY

THE
MOBILITY
CITY



Compact City

GENERAL GOALS & FRAMEWORKS

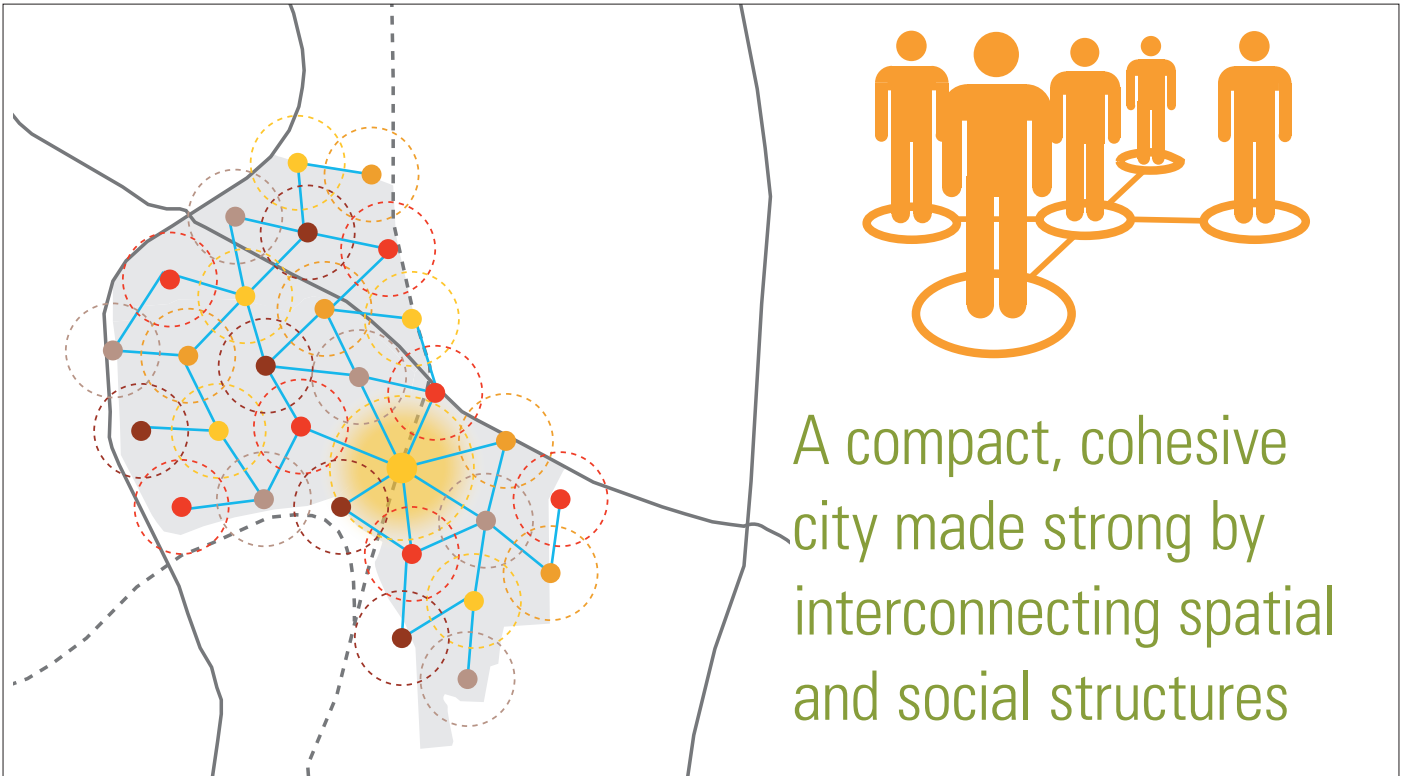
To promote a vibrant, compact, livable city with greater socio-economic diversity through a strategy of mixed use activity, infill development, and adaptive reuse of spaces. These goals can be accomplished by focusing on strengthening existing areas within the current city fabric with targeted development and forging stronger connections between the industrial zone, central city core, and future spaces of expansion. By first building upon the existing inventory of under-utilized space, the densification of the city will promote a walkable city conducive to community interactions.

SPECIFIC OBJECTIVES

- Develop on existing vacant lots to increase densification and preserve the greenfields surrounding the city for recreational and productive purposes.
- Retrofit existing residential buildings to be accessible and mixed use to attract and accommodate diverse range of residents.
- This measure focuses on the application of housing variety and mixed-use infill development within both the main city and the industrial zone.
- A city made strong through the development of interconnecting spatial and social structures. Our aim is to reconnect the city, recover unused space, and stitch together the urban fabric.

STRATEGIES & IMPLEMENTATIONS

- Mixed-use infill development within both the main city and the industrial zone and promote transit-oriented core development around the train station.
- Housing variety is important to the longevity of the city. By developing more mixed unit typologies and providing a range of unit sizes and prices, the public and private sectors can cater to a diverse market.
- Negative impacts of the northern expansion can be tempered by refocusing the new development on pocket neighborhoods or scaling back new construction by building in the vacant infill. Develop the core of the city and the northern expansion concurrently so as to not to erode the strengths of the compact city.
- The industrial zone can be reorganized into microcommunities of related and codependent businesses, sharing facilities, amenities, and incubator space.



OVERALL STRATEGY



IMMEDIATE TACTIC: LIGAT GATA CITY-WIDE SPORTS LEAGUE

Mediated City

GENERAL GOALS & FRAMEWORKS

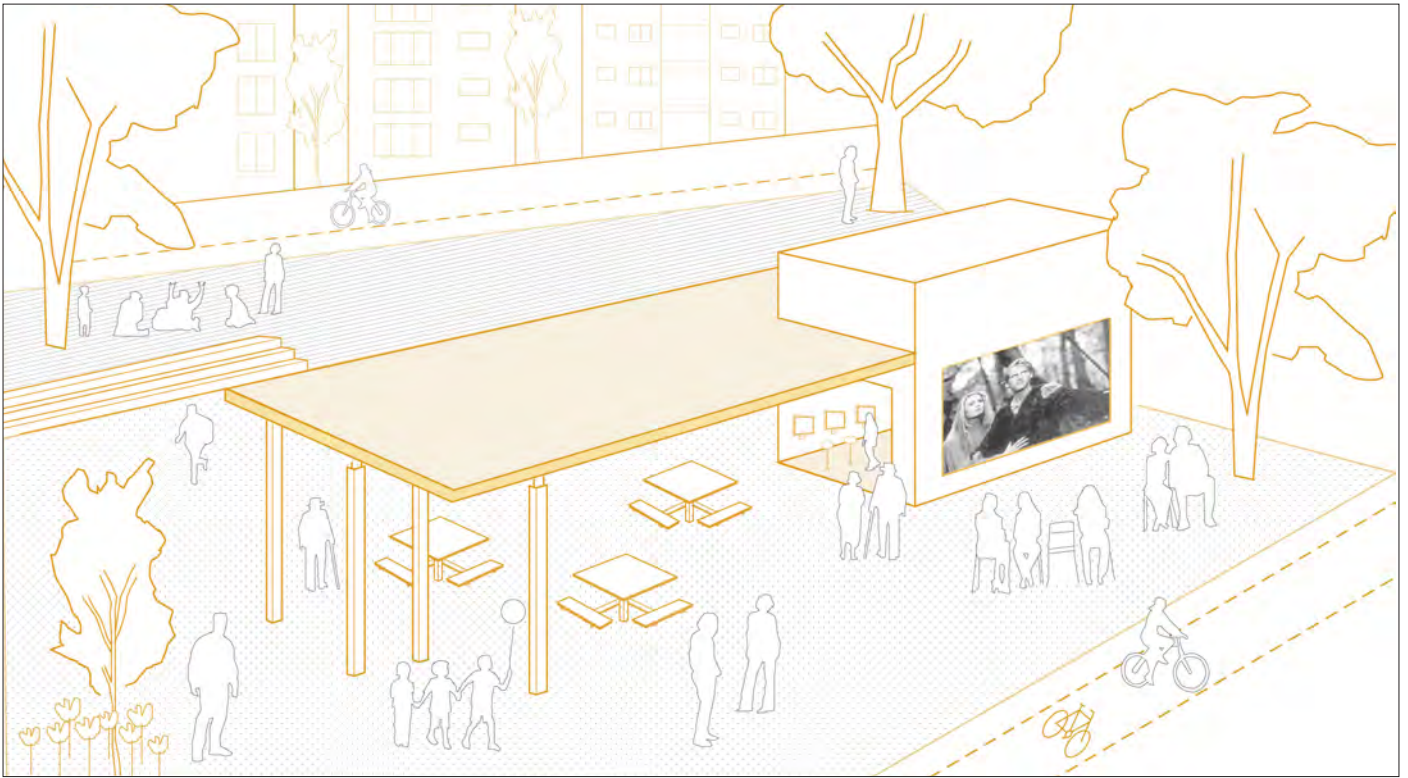
This seeks to reveal new and unforeseen paths that portray economies of information and innovation with the ability to respond and adjust over time. The Mediated City approach seeks to regenerate Kiryat Gat by harnessing the intellectual and technological assets it already contains and through targeted implementation of new and adaptable platforms. Through encouraging methods of collaboration between a multiplicity of strata, public and private or young and old, the city can be catalyzed to regenerate into the first “Smart City” in Israel.

SPECIFIC OBJECTIVES

- Technology and information training to bridge the technology gap between ages and socio-economic divisions. This serves to increase lifestyle options for all citizens.
- Improving civic communication between the government and residents, and between residents of different groups (such as youth and elderly, different ethnicities, etc.) through the integration of smart tools.
- Real-time testing and reporting of public and private implementations to track and respond. Based on a feedback loop of information from where Pop-ups occur, and where they are more or less successful, the city can learn where more permanent development is needed and might be successful.
- Supporting a new high-tech image for the city which can lead to new tourism, residents, and the re-location of commuters within the city. This has the potential to increase the economic capacity through the willingness of all people to stay in the city for utilization of diverse amenities.

STRATEGIES & IMPLEMENTATIONS

- Investing in education and technology programs initiated by residents. These could range from digital literacy centers for the elderly to cultural events in disused industrial spaces to public space tech incubators for local and commuter entrepreneurs.
- Municipal online platform with real-time signage and alerts to bring information about events and programming to the public.
- Initiate a program for temporary pop-ups in disused spaces throughout the city. These can be the result of synergistic partnerships with local businesses and residents, and promote a form of incremental development. The pop-ups can be digital platforms or low-tech service sites communicating through the mediated city infrastructure.



CONCEPTUAL IMAGE FOR A DIGITAL PAVILION



IMMEDIATE TACTIC: CITY-WIDE WIFI

Natural City

GENERAL GOALS & FRAMEWORKS

Areas of ecological sensitivity and recreational consideration have the ability to form a natural network, and this proposes that the city would use nature as an organizing tool. Natural interventions would stitch together disparate areas of the city and bridge exterior barriers in a grid-like fashion. This network would reconnect the city with its environs, making nature work for the city to enhance the ecology and experience of Kiryat Gat. The city would also incorporate the concept of productive landscapes; that is, landscapes that serve a multitude of purposeful functions. Urban nature is about more than just aesthetics. The right strategies can restore natural systems, enhance human experience, and enable closed loop systems. Technology can also supplement natural systems, especially with regards to establishing renewable resources.

SPECIFIC OBJECTIVES

- The landscape itself can support resource conservation through the use of drought resistant plantings and green infrastructure to capture and infiltrate stormwater.
- Daylighting the Lachish stream that cuts across Kiryat Gat would further assist in stormwater management and filtration. The wadi would provide a visual reminder of ecological processes throughout the city.
- Shading pedestrian walkways and streets with trees would mitigate the urban heat island effect while creating an enjoyable, visually defined system of pathways.
- Solar panels on building roofs and solar trees on the ground would simultaneously produce energy and provide protection from the sun.

STRATEGIES & IMPLEMENTATIONS

- To develop a natural network and productive landscapes, the city should identify existing and future focal points – intersections on the grid – and the pathways between them. From there, appropriate tactics for these spaces can be determined.
- Policy should complement these design efforts, requiring the use of climate-appropriate vegetation, shading for paths, the capture and infiltration of stormwater, and the activation of roof space.
- Public education and awareness is essential for the long-term success of the effective implementation of policy and systems. By incorporating real-time monitoring systems that create a more participatory relationship between citizens and resource expenditure, individuals will be empowered to be proactive in initiating meaningful changes in behavior.
- Kiryat Gat is well positioned to build Israel's first eco-industrial cooperative. A complementary set of factories would recycle products internally through a resource recovery center. By-products from factories and the surrounding moshavim – including scrap metal, waste fibers, and biofuel – would be redistributed among participants rather than flowing straight into a landfill.

UNIFYING TACTICS

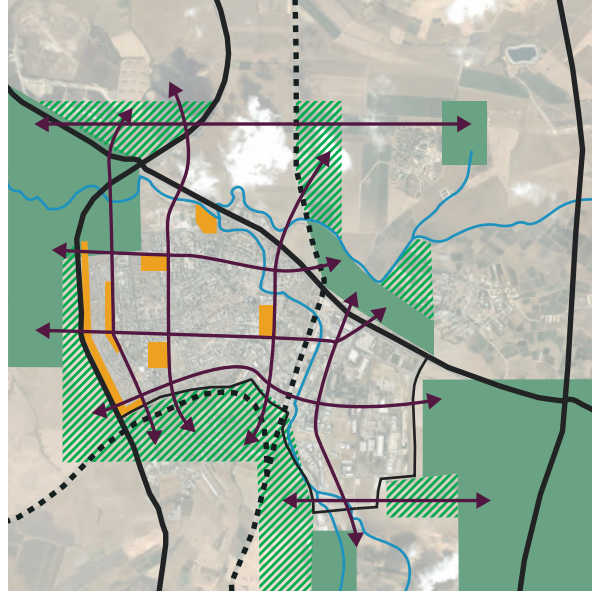


PRODUCTIVE LANDSCAPES



ECO-INDUSTRIAL COOPERATIVE

OVERALL STRATEGY: A NATURAL NETWORK



IMMEDIATE TACTIC: A TREE FOR EVERY FAMILY

Mobility City

GENERAL GOALS & FRAMEWORKS

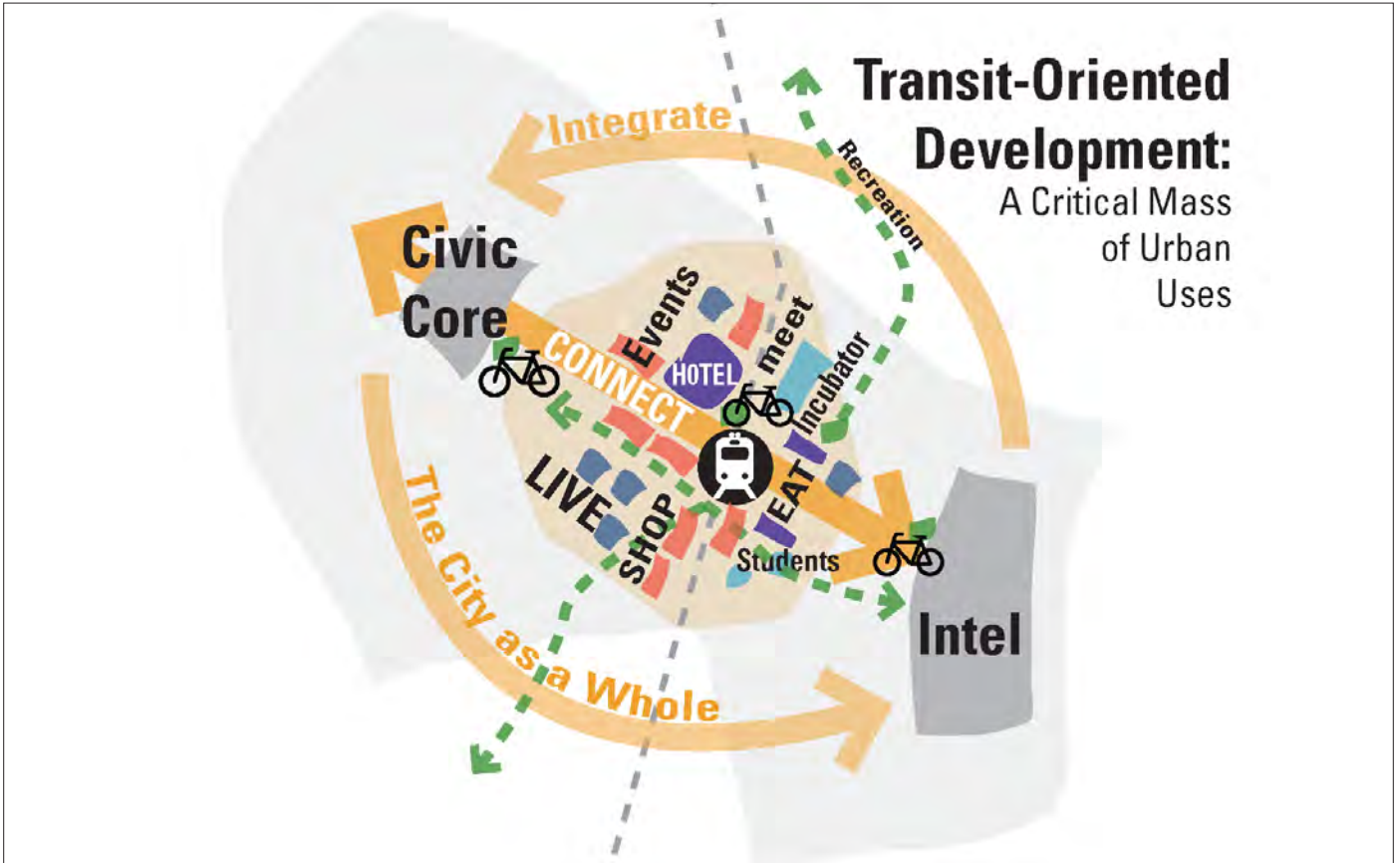
Through the lens of mobility, Kiryat Gat appears as a multifaceted city: a city of loyal and diverse residents, a focal point of the region, a growing industrial base, and city with untapped train accessibility to the country as a whole. Building on these strengths, we believe Kiryat Gat can grow to become a dynamic residential base as well as an employment and regional destination. The mobility framework locates new areas of focus for transit, walkability, intermodal changes, and ease of access encouraging Kiryat Gat to develop as both an origin and a destination – allowing it to serve as a commuter base, an industrial center, as well as a regional cultural and recreational hub.

SPECIFIC OBJECTIVES

- Develop the train-station area through Transit-Oriented Development methodologies. Create a vibrant, diverse, mixed use urban neighborhood that will bridge the gap between the city core and the industrial area, while attracting new residents to the city.
- Reorganize street grid and mobility networks to increase non-vehicular traffic movements and facilitate infill development and small neighborhood commercial nodes.
- Enable long-term growth without associated increase in vehicular travel by building on and strengthening the internal pedestrian, bicycle, and transit networks to see Kiryat Gat lead Israel in the reduction of car dependency.

STRATEGIES & IMPLEMENTATIONS

- Transit Oriented Development (TOD) uses the opportunity provided by the train service to harness this underutilized area as a center for mobility and catalyze higher density, mixed development by better reinforcing the mobility networks from this new center
- Provide a physical street connection across the tracks and connect future train station improvements with this new main arterial that will develop into a mixed-use urban corridor.
- Establish a sensible hierarchy of mobility networks with a conscious move toward becoming a less car-dependent city. This is through a usable, integrated transit network with the combination of fixed routes and Mobility-on-Demand, coordinated bus and train schedules, and an integrated fare system utilizing a smart card that can be used for transit, bike share, and the industrial shuttle network. Consider all components of transport as part of one strategic network.
- Increase cross-city mobility by establishing a bike share program starting with stations at the train station, bus station, and in the industrial area and complementing this with way finding and information markers along recreational and commuter routes.
- Reduce road widths, parking lots, and parking requirements throughout the city and use recovered space for infill housing and neighborhood commercial development.



IMMEDIATE TACTIC: CICLOVIA

Photo Credit: nati_fg@flickr



SITE PLANNING

THE INITIAL INVESTIGATIONS DETERMINED THE SEGMENTED NATURE OF THE CITY; THE FUTURE DEVELOPMENT PLAN THREATENED TO MERELY ENCOURAGE THE ESTABLISHED PATTERN. THE RESULTING FRAMEWORK WAS DEvised AS STRATEGY FOR ESTABLISHING COHESION AT THE URBAN SCALE WHILE PROMOTING ATTENTIVE AND CONTEXTUALLY APPROPRIATE URBAN SOLUTIONS TO EACH UNIQUE ZONE.

NORTHERN EXPANSION

The urban plan is currently defined by a completely disconnected urban fabric. The city identity is currently fragmented along socio-economic lines and the proposed plan will reinforce this disconnection while eroding the existing urban core. The new population growth in the northern neighborhoods offers an opportunity for economic development and an enhancement of amenity offerings for the city, if utilized and planned in a non-divisive approach.

URBAN CORE

Termed as the Hinge, it has tremendous unrealized potential. The municipal core is separated from the economic engine of the city in the industrial zone by a perfectly situated but underdeveloped piece of land, the “Wedge,” as well as an impermeable edge at the train tracks. Sderot Lachish winds down from the north into the Wedge but terminates at the train tracks. The Wedge is currently disinvested with light industrial and vacant space, but with visually interesting buildings and close proximity to a variety of important locations such as the train station, the courthouse, and the BIG, a major shopping center.

INDUSTRIAL ZONE

Kiryat Gat’s industrial park is one of the city’s most distinctive assets. In addition to hosting a bevy of traditional industries, including food processing (Sugat, Sabra) and metal production (Hod Assaf), it has recently attracted cutting-edge manufacturing facilities with the introduction of Intel, HP, Micron, Hitachi, Zenith Solar, and other high tech companies. However, it remains cut off from the city, in a very literal sense. A strict adherence to single-use zoning has created a district that is inhospitable to the pedestrian, compounded by enclosed campuses with amenities that are only open to their own employees.

URBAN CELL

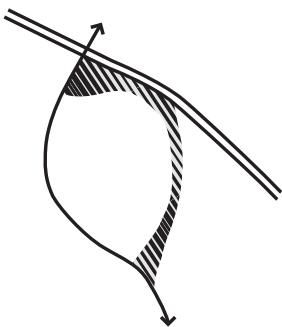
THE URBAN CELL IS A METHODOLOGICAL TOOL FOR ANALYZING, PLANNING, AND MANAGING URBAN FABRICS, EXISTING OR NEW THROUGH THE PREMISE THAT A CITY CAN BE READ AS A NETWORK OF CELLS, INTERCONNECTED THROUGH SOCIAL, PHYSICAL AND ECONOMIC TIES. ITS MAIN GOAL IS TO PROMOTE CONNECTIVITY, EASE OF ACCESSIBILITY, DIVERSITY OF DEMOGRAPHICS, AND CONTINUITY OF MANAGEMENT AND MAINTENANCE.

Existing Urban Fabric: Clusters of Neighborhoods

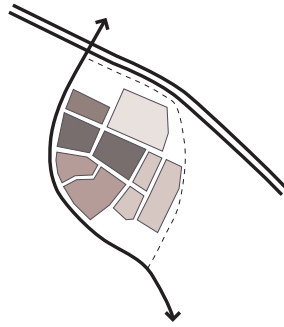
The departure point behind the urban cell was the understanding that one of Kiryat Gat's main challenges and opportunities lies in its existing urban fabric, which consists of an aging housing stock that fails to attract new residents. Without addressing and developing the existing fabric, Kiryat Gat is anticipated to become a dual city, on both sides of route 35. Much like many other cities in Israel and throughout the world, it was planned as a cluster of neighborhoods, and the main streets act as dividers between them. As a result, many neighborhoods in Israel illustrate rigid borders, poor connectivity (especially to adjacent neighborhoods), autonomous structure and under-utilized spaces (such as empty lots, public plazas and communal spaces and yards).



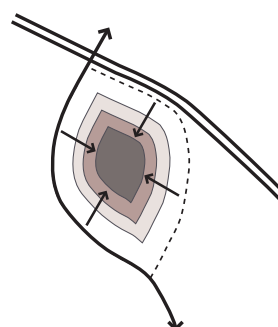
RIGID BORDERS



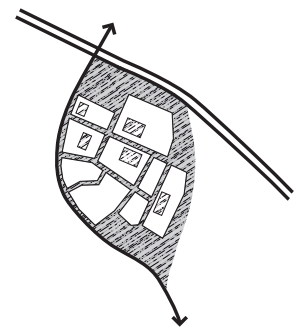
POOR CONNECTIVITY



AUTONOMOUS STRUCTURE



UNDERUTILIZED SPACES



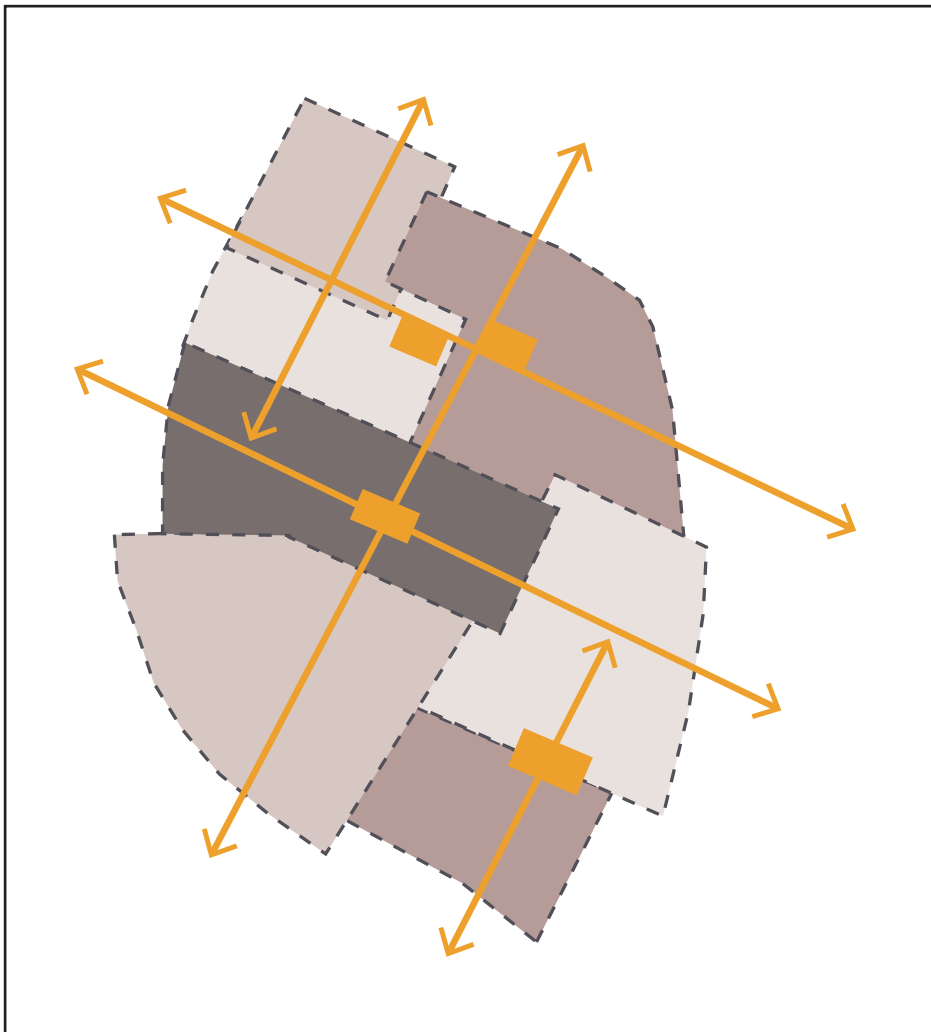


RETHINKING THE CITY
AS A NETWORK OF
URBAN CELLS

The cell, a socio-spatial unit

In order to address these challenges we suggest a methodology that seeks to challenge the neighborhood as the basic planning unit, and to re-think the city as a network composed of inter-connected cells. An urban cell is a socio-spatial unit that is characterized by flexible borders, good connectivity, wide range of open spaces, diversity of social groups, as well as management and maintenance models. The urban cell is not meant to replace the neighborhood scale as a reference unit for the residents but to act as a tool for analysis and intervention designated for planners and

policy makers. Through the evaluation of current and future qualitative capacity of the cell structure, a series of multiscale design and policy interventions can create a cohesive neighborhood fabric that lends itself better to the residents, internal operations, and the surrounding cellular context. The design and policy interventions are based on quantitative and qualitative principles, which touch parameters such as borders, connectivity, public spaces, urban language, human comfort, management, age groups etc.

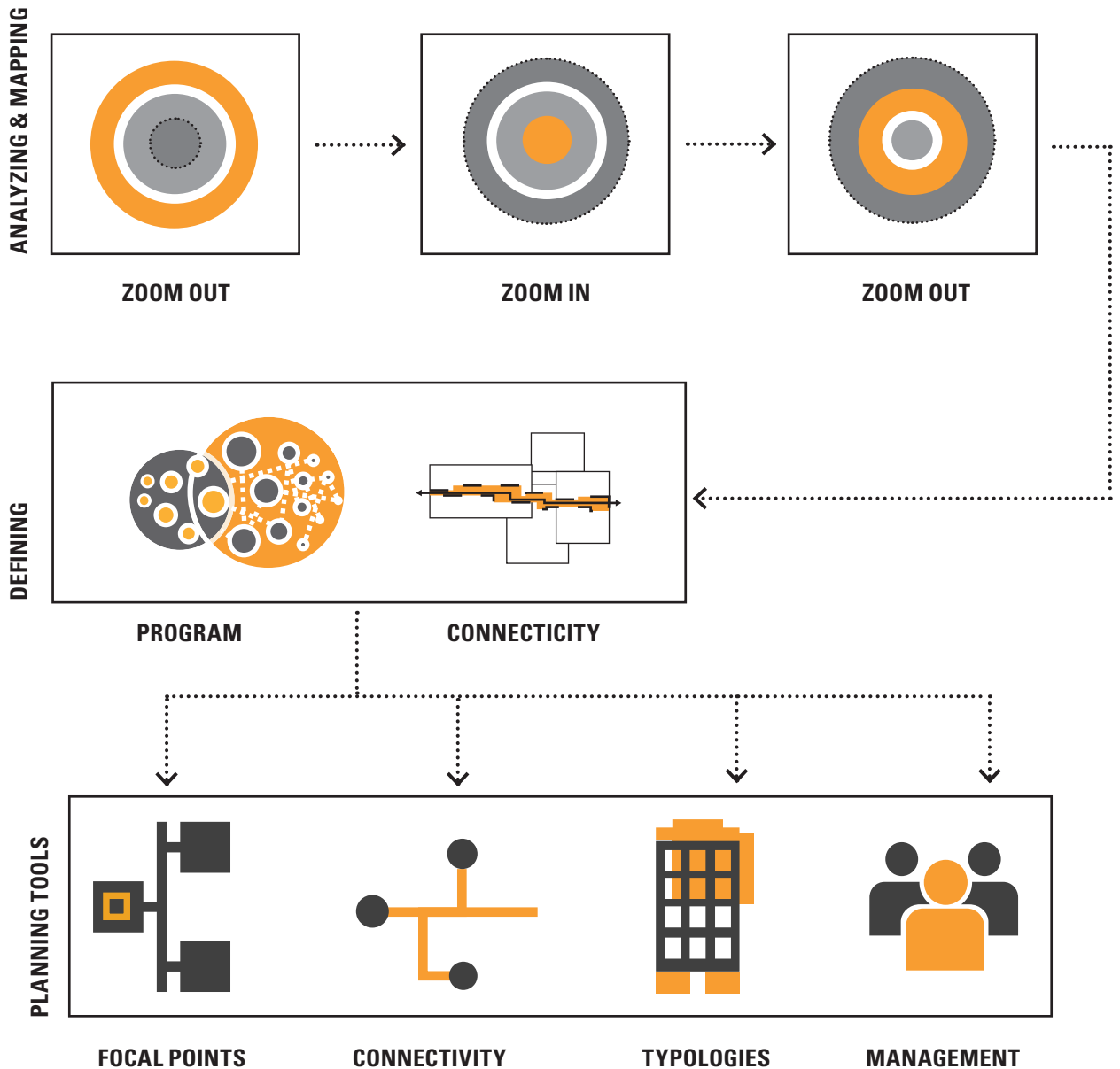


DIVISION OF A
NEIGHBORHOOD INTO
INTER-CONNECTED
URBAN CELLS

Planning methodology

The urban cell methodology introduces a nonlinear process for analysis and intervention, simultaneously examining the urban scale, cellular scale, and the adjacent environments. As a result, an urban cell is never analyzed and planned on its own as an autonomous entity, but always in relation to the greater composition, which influences its character and definitions. The urban cell's size and character are not pre-determined but may vary, as they are derived from an analysis of its place and role in the urban scale, and in relation to its surrounding environment.

The initial process involves the community, planning and design experts, city officials, and key stakeholders in order to ensure the best possible outcome for all actors. As the cells are analyzed, the result is an extracted Use Definition, a shared vision and concept, which will serve as guiding principles for the continuation of the process.

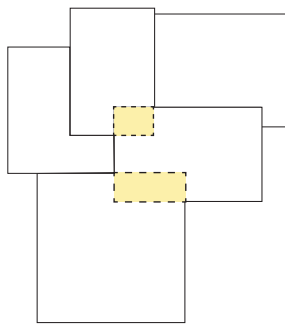


Based on this process, the planner defines –

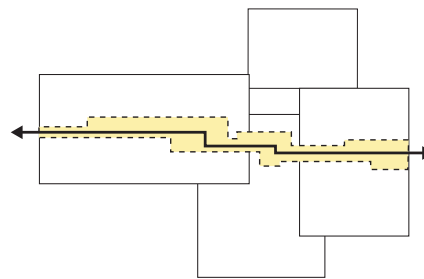
A

THE CELL'S INTERFACES WITH OTHER CELLS

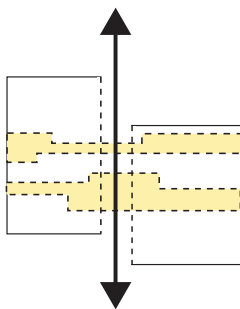
Although the urban cell concept wishes to promote connectivity and porous borders, it does not sustain that all cells can, nor should be connected to all other cells, but rather offers a set of flexible connectivity strategies. For example: overlapping areas between cells that carry different activities; an axis that connects through several cells; a central urban cell that acts as a connector between other cells.



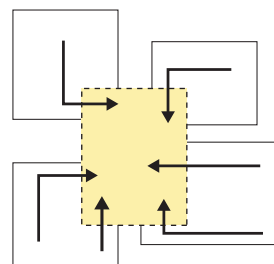
OVERLAPPING STRATEGY: FOCAL POINT IN OVERLAPPING AREAS



AXIAL STRATEGY: CONNECTIVITY THROUGH AN AXIS THAT HOLDS DIFFERENT PROGRAMS



CONNECTIVITY BETWEEN URBAN CELLS WITH A RIGID BOUNDARY BETWEEN THEM

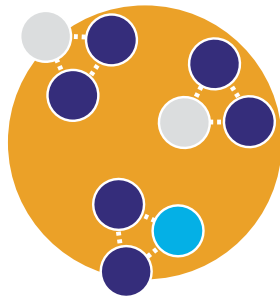


ASYMMETRICAL CONNECTIVITY TOWARDS AN URBAN CELL THAT ACTS AS A CONNECTOR

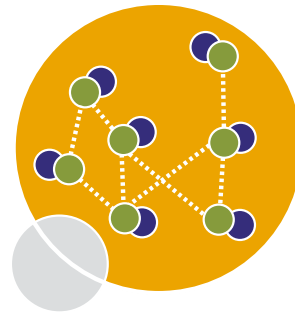
B

THE RELATIONSHIP BETWEEN USES WITHIN THE CELL

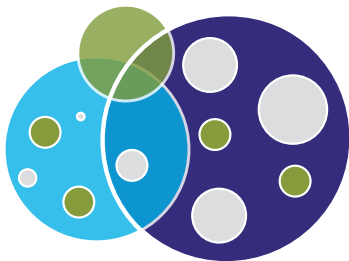
While the urban cell concept wishes to promote a wide range of opportunities and activities within the cell, it does not suggest that all cells should be mixed use. The socio-spatial relationships within the cell are defined by a complex program, which does not only specify the different uses (as it is done traditionally) but also defines the spatial relations between them.



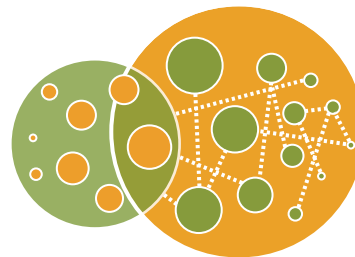
CLUSTERS OF EMPLOYMENT AND LOCAL BUSINESSES IN A RESIDENTIAL FABRIC



EMPLOYMENT OPPORTUNITIES AND PUBLIC SPACES SCATTERED IN A RESIDENTIAL FABRIC.



EMPLOYMENT AND COMMERCE, COMBINED WITH PUBLIC BUILDINGS AND OPEN SPACES



RESIDENTIAL FABRIC AND NATURAL OPEN SPACES GRADUALLY INTEGRATED INTO ONE ANOTHER.



Lexicon of possible interventions

The next steps look to a lexicon, a constantly updating tool kit of possible interventions and policy options that is made available to planners, architects, policy makers, community organizers, and even residents themselves. The lexicon is based on analyzing case studies thoroughly, identifying their planning principles, concepts and frameworks, and then extracting successful lessons to utilize as tools. The initial lexicon touches on four main subjects - typologies, open spaces, streetscapes, and management that comprise together the building blocks for planning an urban cell. As an on-going and evolving bank of ideas, the lexicon will expand into other themes, depending on the cell's context.

From the Lexicon, a multidisciplinary team can choose from combinations of these qualitative principles uniquely tailored to specific areas of the city that will encourage growth, inclusiveness, and the development of services and amenities, while at the same time reducing vacant and wasted space. During and following implementation the Urban Cell process will continue with ongoing analysis and testing. This will insure an evolutionary and responsive opportunity for the planners and the community.

SITE



URBAN DOCK LALAPORT TOYOSU,
EARTHSCAPE, JAPAN: TOKYO, 2006

EXAMPLE | PUBLIC SPACES



HAGEN ISLAND, MVRDV,
NETHERLANDS: YPENBURG, 2001
PHOTO: ROB 'T HART

EXAMPLE | RESIDENTIAL TYPOLOGIES



SW CORRIDOR PARK, MASTER PLAN: RIVER STUDIO, USA:
BOSTON, 1990

EXAMPLE | STREETSCAPE

DESCRIPTION

PROGRAM: PLAYING, GATHERING, RELAXATION.

COMPONENTS: HARDSCAPE, THREE-DIMENSIONAL SURFACE, VEGETATION, UNIQUE STREET FURNITURE.

AUDIENCE: CHILDREN, ADULT.

QUALITY: CREATING INTIMATE SPACES WITHIN A LARGE PLAZA. DIVERSE SPATIAL SITUATIONS AND OPPORTUNITIES FOR SITTING AND PLAYING. HIGH VISIBILITY THROUGHOUT THE SITE.

PROGRAM: AFFORDABLE HOUSING, 119 RESIDENTIAL UNITS.

COMPONENTS: PRE-CAST CONSTRUCTION METHOD, DISTINCTIVE MATERIALS AND DESIGN, PRIVATE OPEN SPACES ADJACENT TO PUBLIC SPACES.

AUDIENCE: UNDER-PRIVILEGED FAMILIES.

QUALITY: PEDESTRIAN-ORIENTED RESIDENTIAL ENVIRONMENT, THAT CHALLENGES TRADITIONAL SUBURBAN MODEL. PARKING LOCATED ON THE SITE'S PERIMETER. REPETITIVE AND EASY TO IMPLEMENT DESIGN.

PROGRAM: A LINEAR URBAN SPACE THAT COMBINES CIRCULATION WITH OTHER ACTIVITIES.

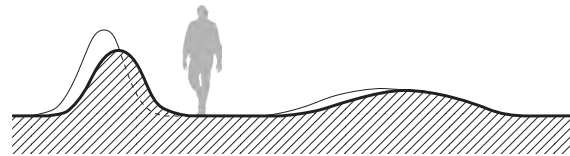
COMPONENTS: TRAFFIC CALMING, VEGETATION, NATURAL AND ARTIFICIAL SHADING, ACTIVITY AREAS (SUCH AS PLAYGROUNDS, DOG PARK, COMMUNITY GARDEN)

AUDIENCE: CHILDREN, ADULTS, SENIOR CITIZENS, PETS.

QUALITY: PLANNING A PATH AS A "PLACE". USING THE STREET SECTION FOR CREATING A VARIETY OF ACTIVITIES AND EVENTS, FOR ALL AGE GROUPS.

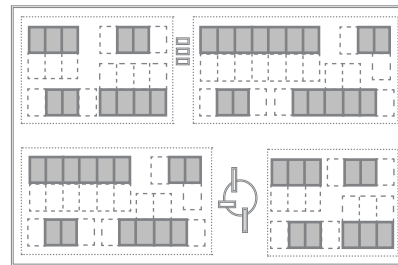
PLANNING PRINCIPLES

THE SURFACE AS A MEANS FOR CREATING A WIDE VARIETY OF (DYNAMIC AND STATIC) SPATIAL EXPERIENCES. USING THE SECTION AS A PLANNING TOOL, AND THE PAVEMENT AS A MEANS FOR CREATING RHYTHM AND CONTINUITY.



DIAGRAMATIC SECTION

CLUSTERS OF ROW RESIDENTIAL BUILDINGS, IN DIFFERENT LENGTHS. LOCATION OF THE BUILDING IN THE SITE PRODUCES A RANGE OF OPEN SPACES. LANDSCAPING THAT AVOIDS FENCES ENFORCES THE RELATIONSHIP BETWEEN PRIVATE AND PUBLIC SPACES.



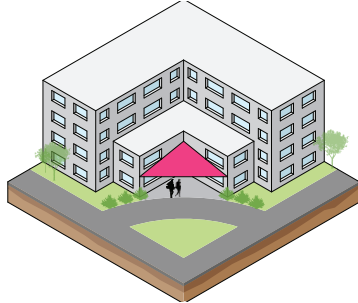
DIAGRAMATIC PLAN

AN URBAN PARK AS AN ASSEMBLAGE OF DIVERSE SPACES AND AS A CONNECTION BETWEEN ADJACENT RESIDENTIAL FABRICS.



DIAGRAMATIC SECTION

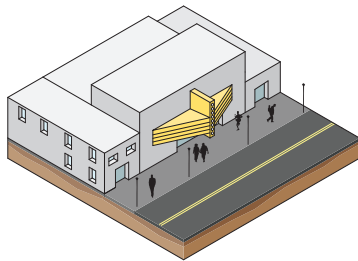
PROPOSED ASSETS



HOTEL

Contribution: Lodging for visitors to Kiryat Gat and Industrial Companies

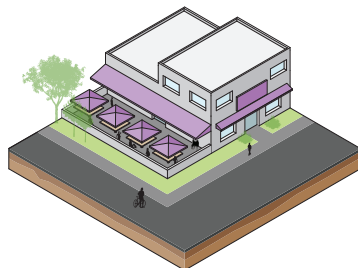
Demand: > 20,000 Residents



MOVIE THEATER

Contribution: Entertainment for all age groups

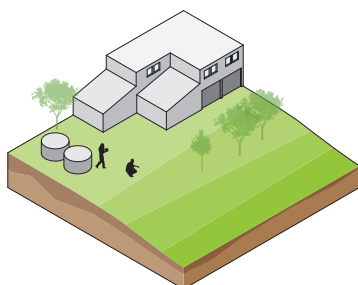
Demand: > 30,000 Residents



RESTAURANTS & BARS

Contribution: Entertainment and night-life for young adults and above

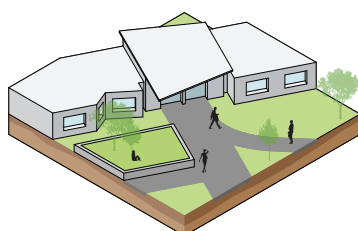
Demand: > 5,000 Residents



R&D PARK

Contribution: Create new jobs; attract new start-ups; diversify local economy

Demand: Current Economic Growth Trends

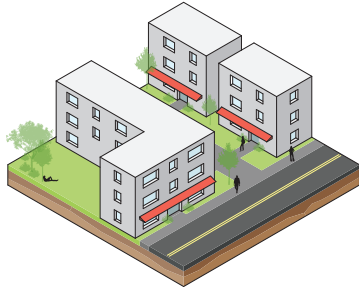


VOCATIONAL SCHOOL

Contribution: Provide job training; support local economic growth

Demand: > 50,000 Residents

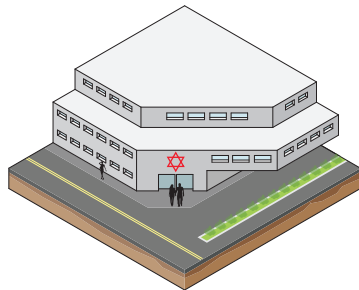
THE FOLLOWING ASSETS HAVE BEEN PROPOSED IN THE SITE PLANS IN THE FOLLOWING CHAPTER. EACH HAS THE POTENTIAL TO POSITIVELY IMPACT THE CITY AS PART OF THE STRATEGIC PLAN.



INTERN HOUSING

Contribution: Provide housing options for interns working in Industrial Zone

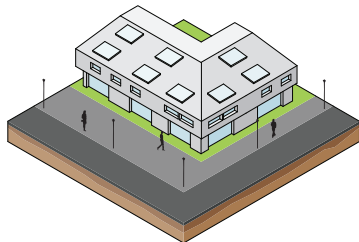
Demand: 600 Interns Annually



HOSPITAL

Contribution: Establish hospital to serve the greater Lachish region

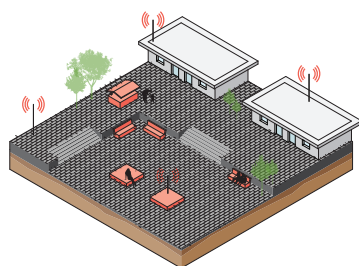
Demand: > 75,000 Residents



BUSINESS INCUBATOR

Contribution: Support new business development; attract new start-ups; establish entrepreneurial cluster

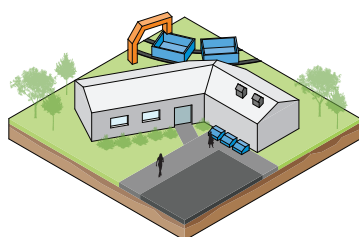
Demand: Current Economic Growth Trends



DIGITAL INFRASTRUCTURE

Contribution: Improve communication and access to information and entertainment

Demand: > 50,000 Residents



E-WASTE RECYCLING

Contribution: Generate new industry; ease compliance with new producer e-waste recovery legislation

Demand: Existing tech manufactures



CONTINUING NORTH: ACTIVE & PRODUCTIVE LANDSCAPES

THE HINGE: KIRYAT GAT'S URBAN CORE

INDUSTRIAL REMIX: RETHINKING THE INDUSTRIAL CAMPUS

SITE PLANS

CONTINUING NORTH

ACTIVE & PRODUCTIVE LANDSCAPES

The city of Kiryat Gat is planning to expand with a large development to the north of Route 35, a major east-west connector for Southern Israel. This plan will expand the city at a large scale, accommodating an increase of 25,000 residents.

The project critiques this plan, which is not without positives, but is flawed in several key respects. Most importantly, the current proposal may bifurcate an already disjointed city—missing an opportunity to take advantage of many of Kiryat Gat’s spatial, social and economic assets.

This plan is to focus on and take advantage of these assets and continue them into the North, tying what could be two very disparate areas into one cohesive city.

The proposal has two main goals beyond the original plan for the North: to emphasize connectivity and to prioritize the natural systems in the area. It looks closely at three elements that offer physical and programmatic directions that work with, but ideally will strengthen, the proposed development:

- Enhanced road connections that increase accessibility to the city and across the seam of Route 35, as well as mobility between the new northern neighborhoods and the existing city
- A landscape plan for the large open space between the two areas that emphasizes indigenous landscape forms and productive uses of hybrid forms of park space
- A proposal for a mixed-use R&D zone that takes advantage of the large park next door





Active Landscapes

Demo Plots

Multi-age Playscapes

Eco-tourism Resort

Solar Power Fields

Wadi Step-Downs

Continuous Wadi Landscape

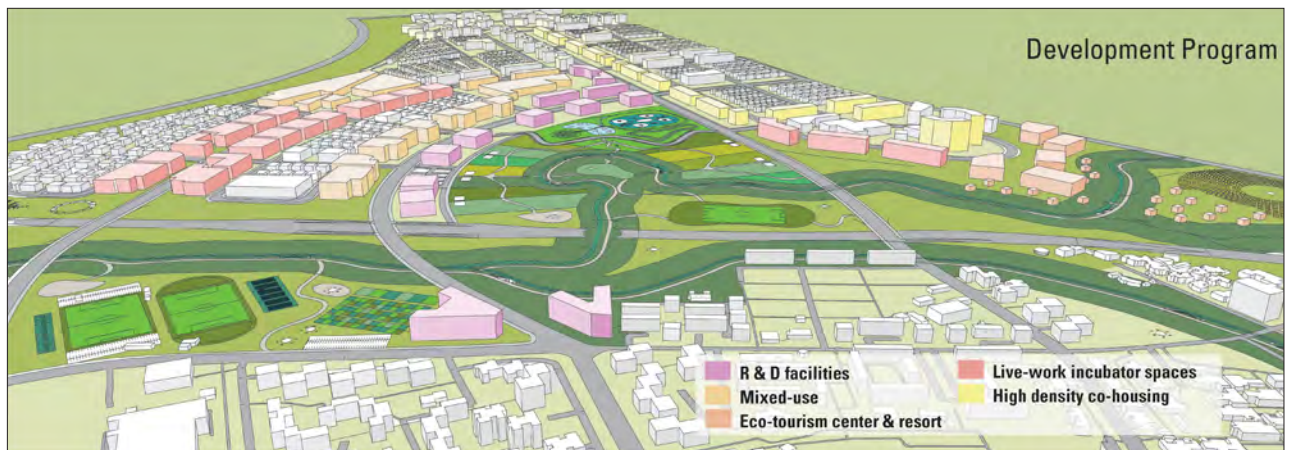
Continuous Lachish Activity Route

SITE PLAN

Connectivity Strategies

The design uses a spatial system of thematic fingers to create a coherent hierarchy that would unite the two areas. The fingers span from existing assets such as large open spaces, the civic core, areas with concentrations of education facilities and run along Lachish - the main thoroughfare, which will connect the Northern development with the future hinge and enhanced industrial zone.

The development of R&D facilities and office space along Lachish just north of the highway will provide a mix of uses in the area, preventing it from taking on a bedroom-suburb atmosphere. The proposed facilities would be built in two phases, each approximately 100,000 sq m. The first would be at the very southern part of Lachish in the north, the second at the northern part of the highway. These facilities could also take on a large chunk of the parkland behind them, managing them in a public-private partnership fashion.





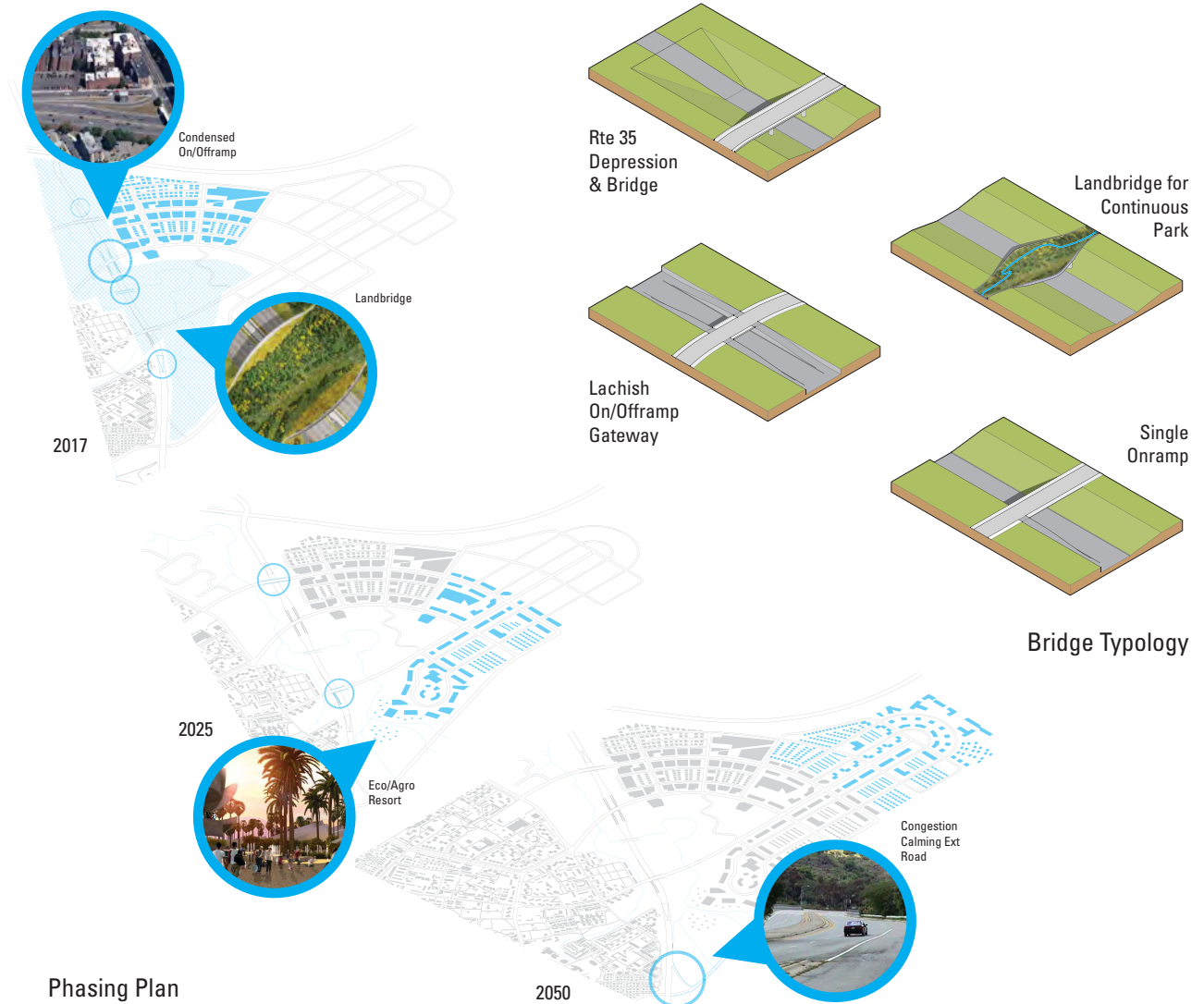
Connectivity Strategies

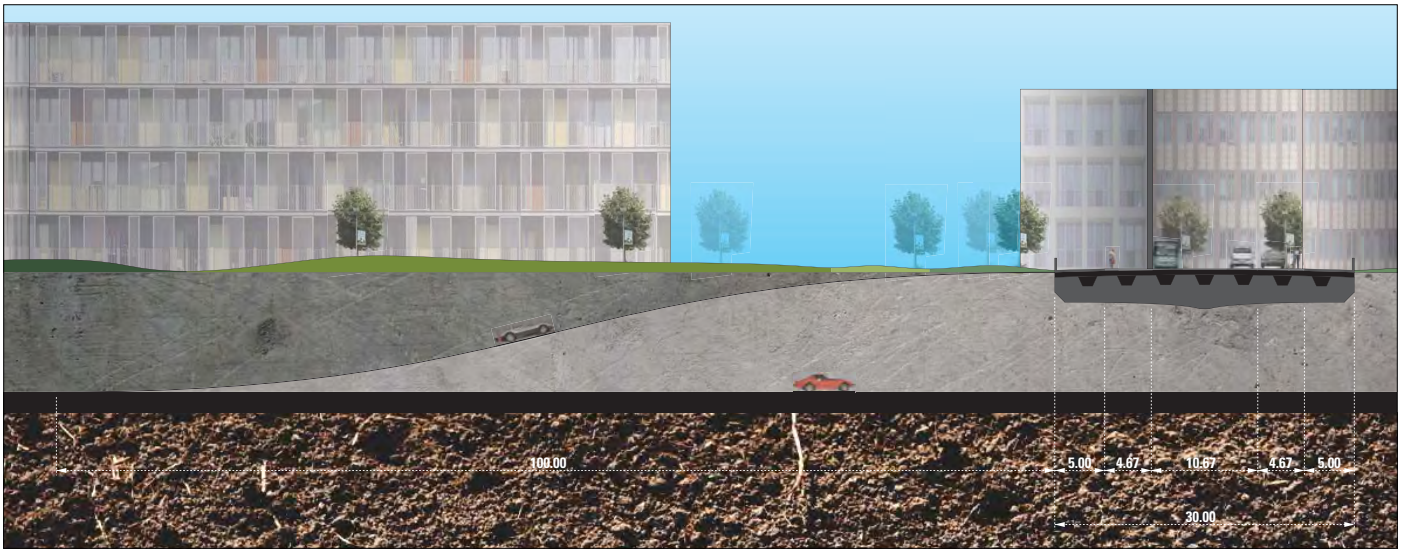
PHYSICAL & NATURAL CONNECTIONS

Concerning route 35, the plan proposes sinking the highway for most of its length through Kiryat Gat. This prioritizes the connection between the north and the center city, allowing for at-grade pedestrian and vehicular crossings in three locations. It has located on and off-ramps strategically onto Lachish, siphoning people into the heart of the Northern development area. There are options for additional on/off ramps at the Eastern edge of the city, to alleviate traffic if needed.

Our park plan also serves to connect the north to

the center city, through similar at-grade bridges and active and passive uses. Also, there is a developed strategy of several smaller parks based on the finger system—each programmatically unique and offering a distinct set of activities. The plan focuses on productive-landscape patterns, including: dual-programmed parking lots, agricultural demonstration plots, and walking/bike baths intertwined with natural landscape systems. Active recreation areas, including sports fields, are located at the entrance to the center city and easily accessible from the north. A “landbridge” offers a natural passage for people, ecology, and wildlife across 35 on an at grade bridge in the middle of the park.





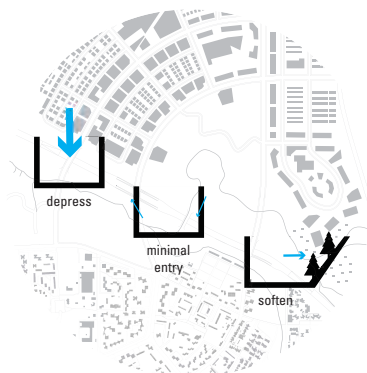
SECTION



WILDERNESS LAND BRIDGE



Image Gateways



Minimize Route 35



Increased Porosity

Natural Systems

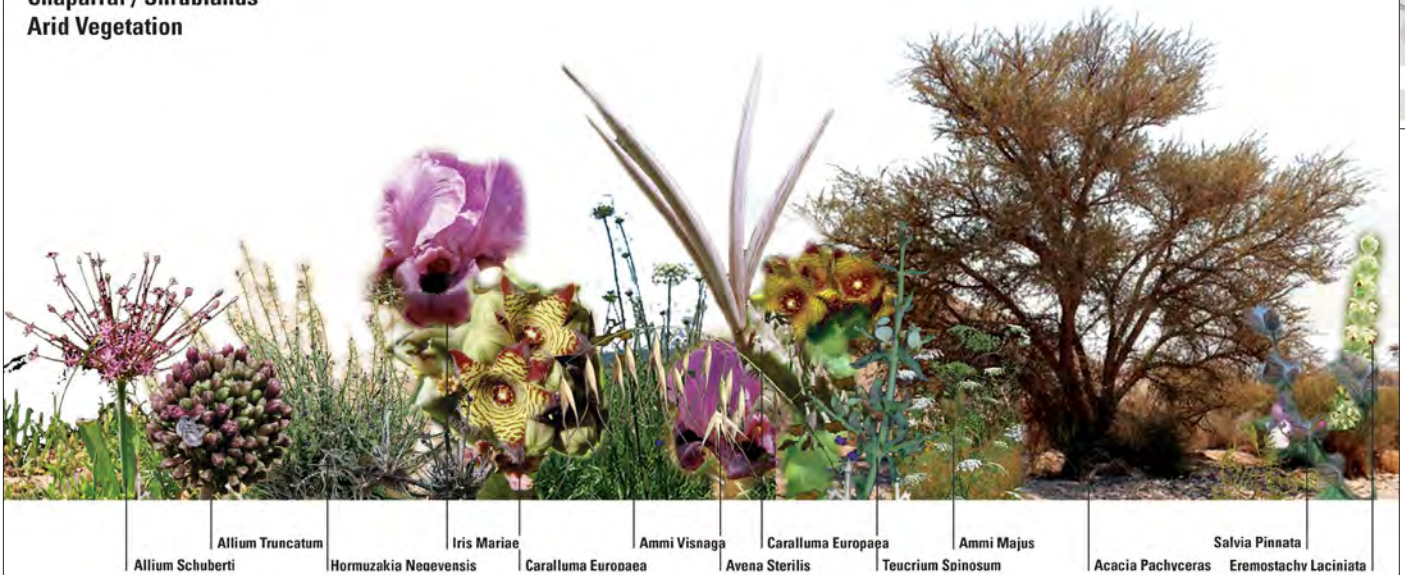
INDIGENOUS LANDSCAPES

The park plan takes advantage of Kiryat Gat's key regional ecological location. Kiryat Gat is sited at the intersection of two important ecological regions for Israel: the beginning of the Negev desert and the southeastern edge of the Lachish Wadi regional park. It is important to emphasize indigenous species in the new park plan. The current proposal for the park offers large fields of grass, which are unsustainable for the chaparral climate. There is a wide variety of beautiful indigenous species that grow in the area, all of which would be well-suited for the park landscape.

The city's path continuation to the North has the potential to not only provide growth opportunities for current and new residents of the city, but also to offer new models of active and productive open space, collaborative technology innovation and to situate the city as a major hub in Southern Israel.



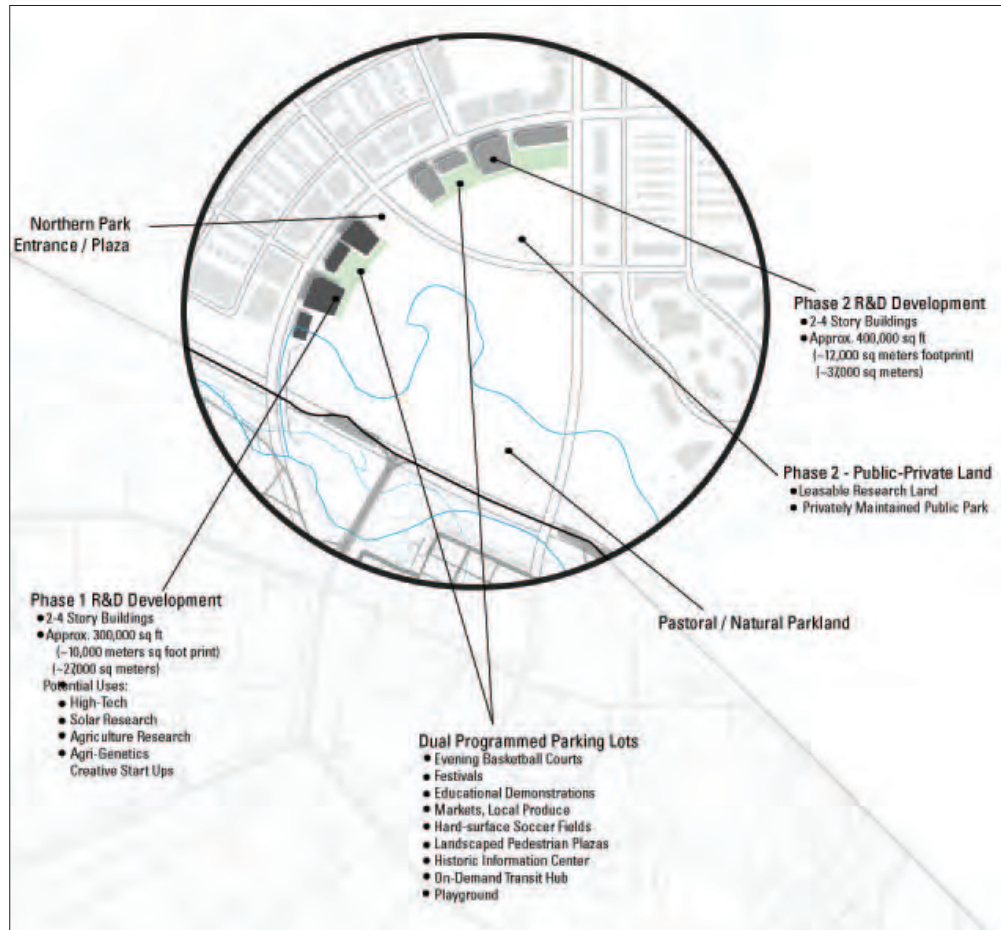
Chaparral / Shrublands Arid Vegetation





PARK SITE PLAN

Mixed Use R&D Zone



R&D AREA DETAILS





R&D AREA SITE PLAN

R&D AREA SECTION



Key Ideas & Terms

- *Sinking Route 35* to offer three at grade crossings from the core to the north, for vehicles and pedestrians.
- *Productive and active landscapes* for dual-programming, emphasis on natural systems, and active and passive recreation
- *Eco-tourism* by promotion of tourism centered around ecology, nature, and related industry
- *Preservation and prioritization* of the wadi
- *R&D Development* at a residentially-compatible scale, particularly clean, small-footprint, and interactive industries
- *A Wilderness Bridge* that would carry the wadi and trails across 35 and act as a landmark for those traveling across the highway
- *Solar Panel Plant* and research and distribution center. Highly visible from Route 35 and accessible for walking/biking from the park
- *Extensive walking and biking paths* along the Wadi, connecting the whole city
- *Agriculture and Research Demonstration Plots* are privately maintained but publicly accessible for walking and education, leasable by schools, Kibbutzim, or research centers.
- *Dual Programmed Parking Lots* for evening/weekend use, including markets, sports, festivals, education centers, etc.
- *Indigenous Species* for a chaparral climate





THE HINGE

KIRYAT GAT'S URBAN CORE

The plan for the Hinge is focused on creating a vibrant, mixed-use city center that draws from and connects the municipal core of the city and the current industrial zone. The plan is based on several implementation concepts. The first, circulation and public passage, is focused on creating public and transparent ground levels of municipal functions interconnected with existing public assets such as pedestrian pathways and plazas. Pedestrian networks utilize passive climatological solutions to encourage year-round pedestrian use. The second, urban infill and adaptation, is focused on utilizing strategic densification by developing vacant and underutilized lots within the existing city and adapting existing urban fabric to create dense residential and commercial neighborhoods. Finally, our economic development strategy is focused on developing mixed-use structures and promoting human-scale street activity. Denser development will result in stronger continuity between commercial and residential uses in different parts of the city.

SEGREGATED NATURE OF THE URBAN CORE: HARD EDGE CONDITIONS, INACCESSIBLE DESTINATIONS, AND FRAGMENTED NETWORKS



**MUNICIPAL
CORE**

**TRANSIT ORIENTED
DEVELOPMENT ZONE**

**TRAIN
STATION**

Wedge Redevelopment

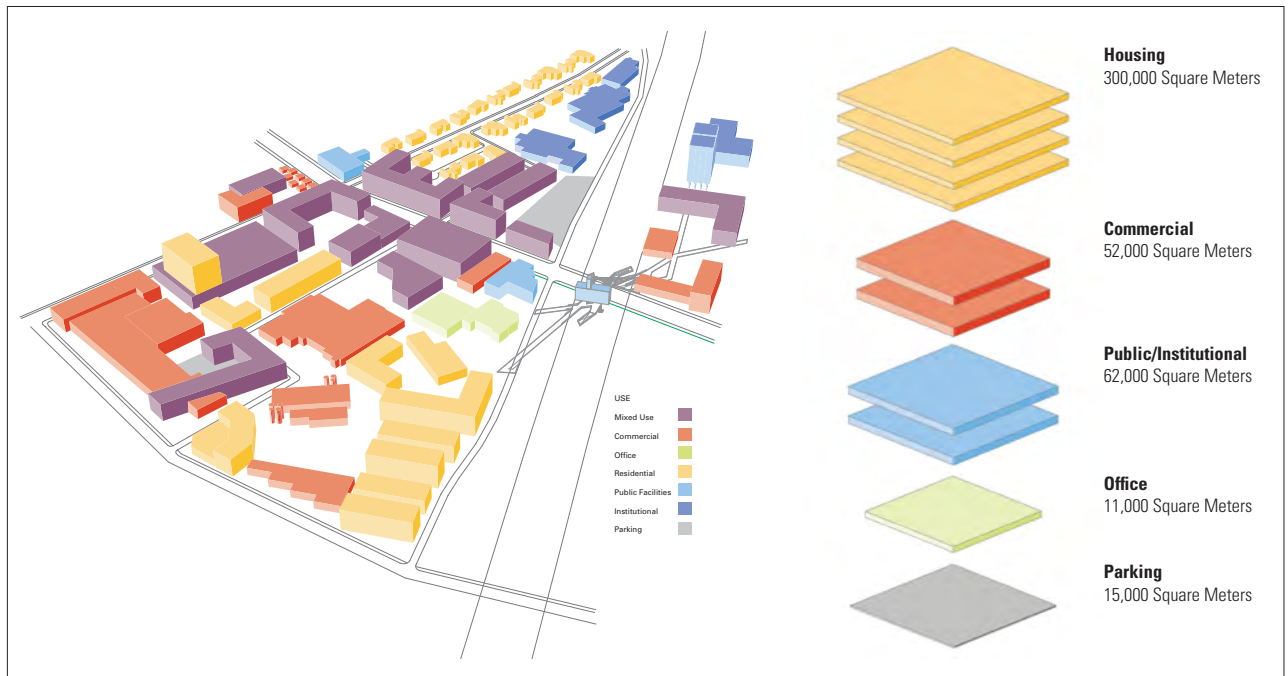
MIXED USE & INFILL STRATEGIES

The plan for the Hinge focuses primarily on a large-scale redevelopment of the Wedge into a mixed-use city center by embracing the principles of transit-oriented development. The project proposal involves moving the train tracks below grade so a new train station can be built at grade with a road connection into the industrial zone, bridging the two major parts of the city. The heart of Lachish will be in the Wedge, with mixed-use buildings containing storefronts, cafes, and municipal services on the ground level and residences above. Parked cars will shield pedestrians, bikers, and diners from traffic and tree cover will shield them from the sun.

To the west of Lachish, in the Wedge, major mixed-use development will focus on entertainment, nightlife, post-industrial artist live-work space, and amenities-focused housing, all within walking distance to the train, the industrial area, BIG, and the municipal core. Housing will be focused on two

important demographics. The first is young, upwardly mobile employees of the industrial zone who demand urban housing and amenities but currently have to go outside of Kiryat Gat to find them. The second is the city's large elderly population. While much of the mixed-use development in the Wedge is focused on providing options for young people, the same transit-oriented qualities that will attract them are also great for seniors: walking proximity to retail and services. A major new senior living center will open right across the street from the BIG shopping center. Finally, adaptations and extensions will be utilized to convert existing big box, iconic industrial buildings, and interesting voids into positive, urban, vibrant urban pedestrian space.

In the Wedge to the east of Lachish, plans for a technical/vocational campus to complement the growing agglomeration of high-tech manufacturing jobs in the city. The area would then taper off into low density residential to blend into the currently disconnected neighborhood to the north.



NEW & ADAPTIVE LAND USE PATTERNS

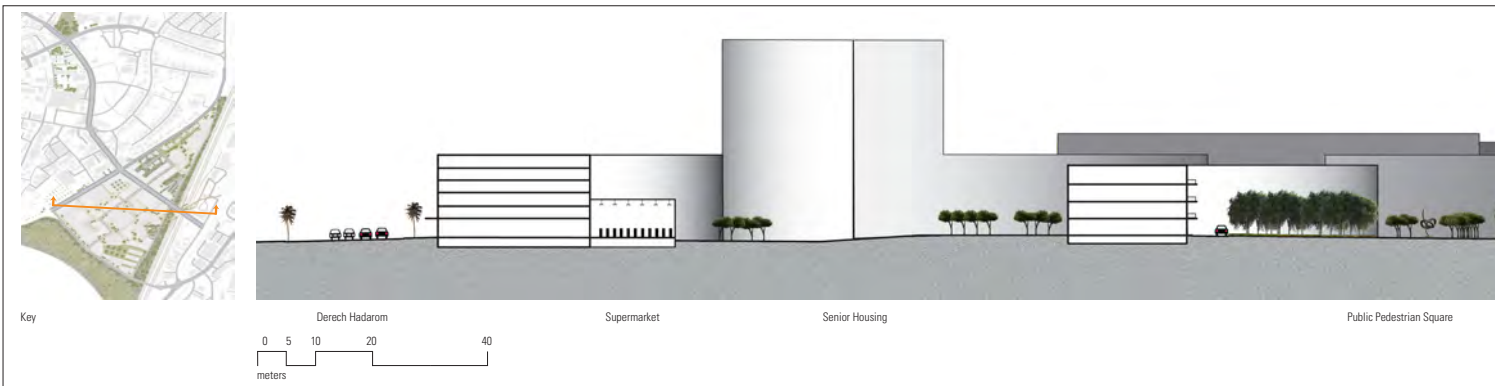


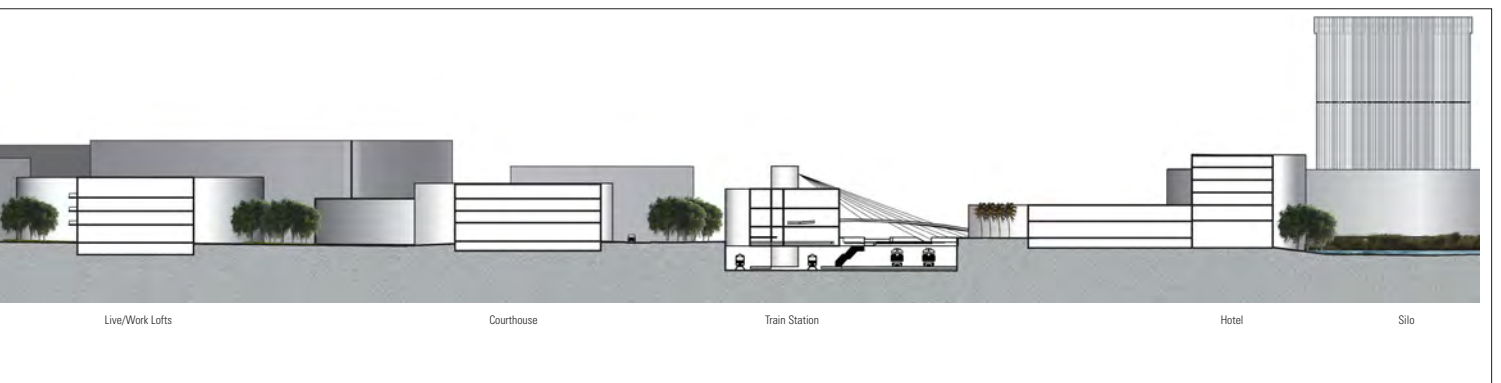
SITE PLAN DETAIL

MIXED USE REDEVELOPMENT ZONE



SECTION





Lachish Improvements

Major development and streetscape renovations along Sderot Lachish aim to turn this into an iconic street running the length of the city, from the northern development to Intel. The greatest level of intensity occurs along the urban core of the city, with mixed use development, infill of vacant street lots, and attention to the human scale of street activities. By being attentive to the street widths, with wide sidewalks and parking buffers, and ground level activities such as commercial and recreation, the improved Sderot Lachish has the potential to become a vibrant streetscape linking the functions of the city together into one cohesive environment.



LACHISH STREET IMPROVEMENTS FOR PEDESTRIAN ACTIVITIES



ADAPTED PARKS AND INFILLED VACANT SPACES CREATE OUTDOOR DESTINATIONS



Municipal Core

In the municipal core, the Hinge will see small pedestrian interventions that will encourage pedestrian wayfinding and comfortable walking into the park and down Lachish into the Wedge and the industrial zone. A major new combined city hall and bus station will refocus activity on Lachish and serve as a major anchor, connecting the Hinge to the Wedge and to the residential areas further north. A combined bus station/city hall is a major gesture of openness and transparency in government and is symbolic of the great strides that the city is making to orient Kiryat Gat towards success and revitalization in the coming decades.



SITE PLAN DETAIL



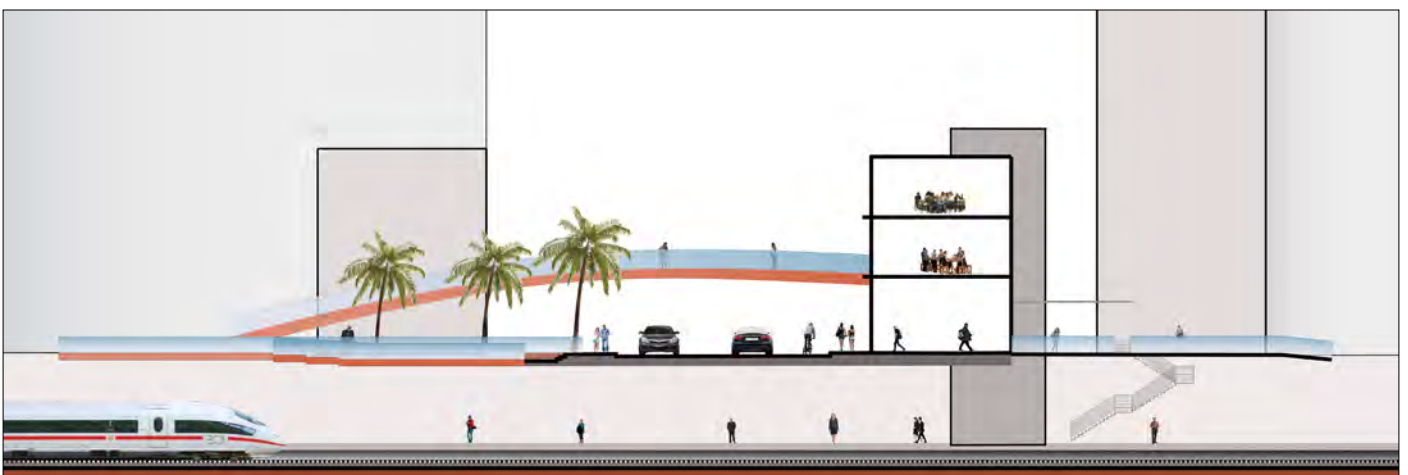
COMBINED CITY HALL / BUS STATION

Train Station Development

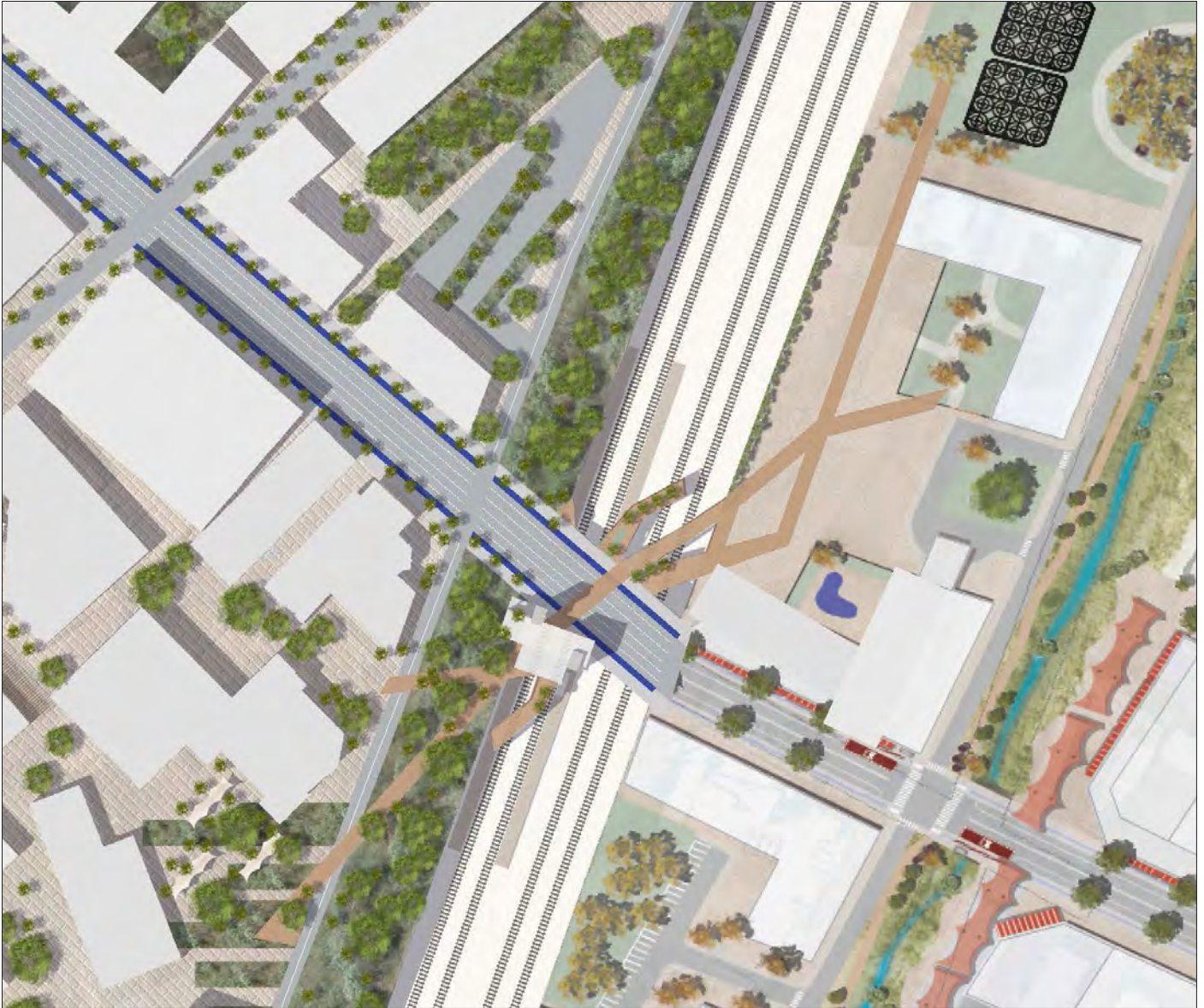
By depressing the train tracks, the new train station can be positioned directing on the junction and create a destination at this key modal shift. The train station serves as an important connector, functionally tying together the industrial zone and business hotel to the mixed use activities of the Wedge. The activities surrounding this space are catalyzed by the increased opportunities for access and mobility. Employees in the industrial zone have the opportunity to easily cross to the mixed use core, residents can cross to the new entertainment uses of the silo, and the train station space itself houses gathering spaces, pedestrian paths, and bars for the work commuter to relax.



VIEW FROM THE TRAIN STATION



TRAIN STATION SECTION



SITE PLAN DETAIL

Concepts & Principles for Broader Application

While many of the specifics of the proposed design of the wedge area of Kiryat Gat are due to the peculiar geometrics of the Wedge, there are a number of principles applied within the site that can be successfully abstracted and applied to similar urban settings.

BREAKDOWN HARD EDGES AND CREATE A PEDESTRIAN FRIENDLY ENVIRONMENT WITHIN TRANSIT ORIENTED DEVELOPMENT ZONES:

The ability of a city to capitalize on the asset of a train station depends very much on the built form and level of accessibility in the surrounding area. To successfully achieve transit-oriented or train-oriented development, a city must focus on breaking down hard edges between neighborhoods and providing both commerce and areas of residence

within easy walking distance of the train station. Fine-grained pedestrian networks are of particular importance for rethinking new towns and their inward-oriented neighborhood units.

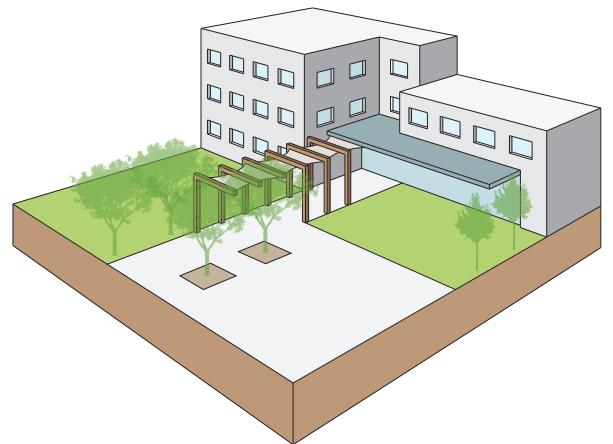
CREATE A CLIMATOLOGICALLY SENSITIVE PUBLIC REALM:

In hot climates like that of Israel, the success of the public realm in actually attracting activity depends on the comfort of not only passing through but also staying in these spaces. Passive solutions such as shade structure along with public and transparent ground levels of buildings offer respite from the heat.

MAINTAIN A VIBRANT URBAN REALM THROUGH A MIX OF PURELY PUBLIC AND SEMI-PRIVATE SPACES, BOTH INDOORS AND OUT:

CONCEPTUAL FRAMEWORKS

Public/Private Passage



- Creating public and transparent ground levels of municipal functions interconnected with existing public assets such as pedestrian pathways and plazas
- Applying simple passive solutions, making exterior space climatologically conducive to pedestrian use

The public sector cannot reasonably be expected to provide an adequate level of activity to support a truly vibrant public realm. The development of activity corridors such as that along Lachish depends therefore on strategic mixing of the public and private—each should support the other. Local businesses benefit from public investment in transit and streetscape initiatives. The public realm benefits from a continuity of economic activity implemented by the private sector and from semi-public spaces such as theatres, bars, and hotel amenities.

USE DENSITY AND MIXED USE DEVELOPMENT TO CAPITALIZE ON ECONOMIES OF SCALE AND MAINTAIN CONTINUITY BETWEEN ACTIVITIES:

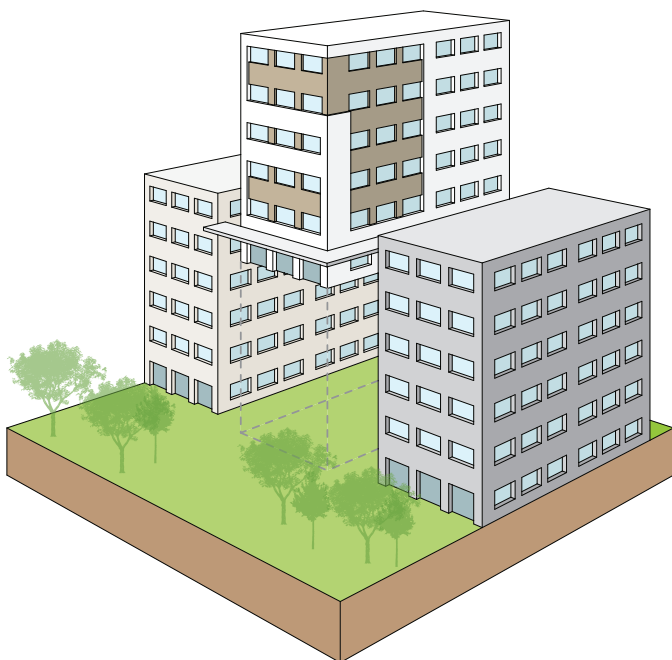
Businesses benefit from clustering. In situations of limited economic demand, a city can purposely focus

economic development and density into key areas of connectivity to profit from economies of scale and promote human-scale, continuous street-level activity.

IMPLEMENT STRATEGIC INFILL TO STRENGTHEN THE EXISTING URBAN FABRIC AND AVOID ENVIRONMENTALLY DAMAGING EXPANSION:

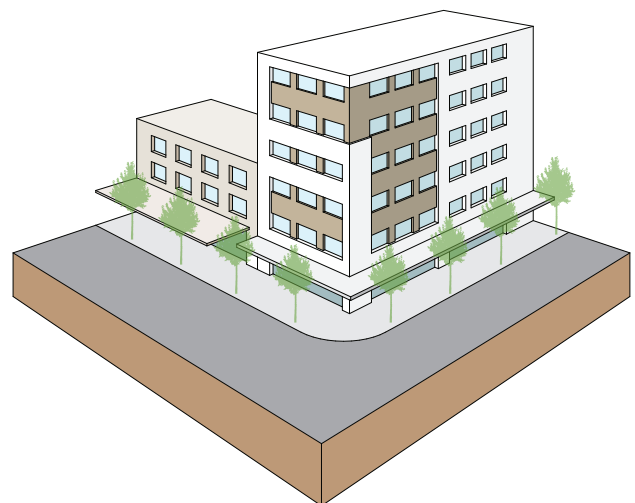
Strategic infill and adaptation of existing structures can serve to strengthen a city’s community by pairing new development with existing assets, thus creating a mutually reinforcing structure. Maintaining compactness can help to avoid social spatial stratification and support car-free living.

Urban Infill/Adaptation



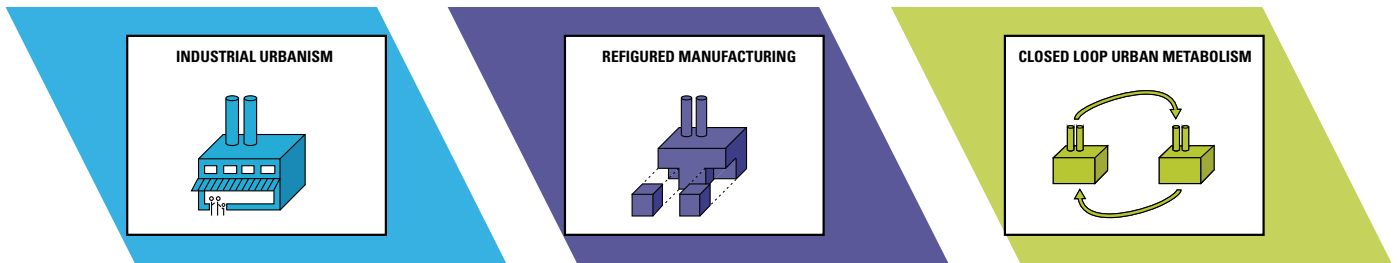
- a. Utilizing strategic densification by developing vacant lots within the existing city prior to urban expansion
- b. Adapting existing structures to provide universally accessible housing

Economic Development



- a. Developing mixed use structures to the right-of-way to promote human-scale street-level activity with sidewalk amenities and sun protection elements
- b. Creating denser development to promote stronger continuity between commercial uses

INDUSTRIAL REMIX



RETHINKING THE INDUSTRIAL CAMPUS

The industrial core is central to Kiryat Gat's future growth. It presents a unique development opportunity with its diverse collection of factories, workshops, warehouses, and office buildings. Thanks to national government incentives, international firms such as Intel and HP have recently built production facilities there, forming the beginnings of a new high tech cluster. However, the area still resembles the industrial parks of yesteryear, with isolated campuses and few publicly accessible amenities. Fortunately, cleaner manufacturing processes have opened the door for a new model of industrial development. The proposal envisions a future Kiryat Gat where housing, retail, and research facilities are introduced into industrial settings, in order to create innovation clusters with a high degree of knowledge spillover. Innovation can happen in a lab or a factory floor, but it multiplies when ideas flow between both settings. In the past, these facilities have been located in disparate locales due to land costs or siting limitations, but Kiryat Gat has a chance to challenge this convention. It can establish a new model for industrial new towns by becoming the first to co-locate housing, clean manufacturing, and R&D.

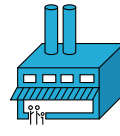
Israel as a nation has one of the largest deficits between the biocapacity of production and the ecological footprint of consumption. The studies also showed that while industry is trending towards high technology and is polluting less, energy consumption is still on the rise and water is being consumed faster

than it can be naturally replenished.

This proposal brings a new way of thinking to industrial areas, where the city can co-exist with manufacturing through an industrial remix. This can be achieved through a tripartite strategy of industrial urbanism, refigured manufacturing, and closed loop urban metabolism. It is a place-based strategy that draws upon Kiryat Gat's strengths in industry, environment, and people. The proposal is for an industrial area that functions more efficiently while creating a more livable domain.



SITE PLAN



Industrial Urbanism

The concept of “Industrial Urbanism” challenges conventional wisdom that industry must be segregated from residential and commercial uses. The introduction of residential and commercial uses into the industrial zone is not only feasible but also advantageous for the following reasons:

- MODERN INDUSTRY, ESPECIALLY HIGH TECH MANUFACTURING, IS BECOMING INCREASINGLY CLEAN
- INDUSTRY CREATES A UNIQUE AND ENGAGING SETTING THAT PEOPLE SEEK OUT
- GIVEN THE OPTION, MANY EMPLOYEES WOULD PREFER TO LIVE NEAR THEIR PLACES OF WORK, SO AS TO MINIMIZE OR ELIMINATE DAILY COMMUTES. AS SUCH, COMPANIES HAVE AN INCENTIVE TO PROVIDE/SUPPORT SUCH HOUSING OPTIONS SO AS TO ATTRACT TALENT

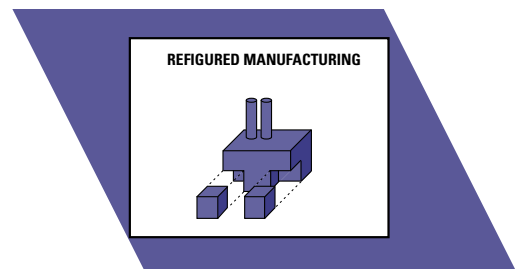
Continuing east along Lakhish Boulevard from the train station is the same TOD mixed-use residential development with ground-floor retail proposed for the Hinge, so as to establish connectivity between the two zones across the train tracks. This style of development is intentionally concentrated in close proximity to the train station to promote alternative forms of transportation and emphasize this area as a linear core.



LAKHISH BOULEVARD
RENDERING



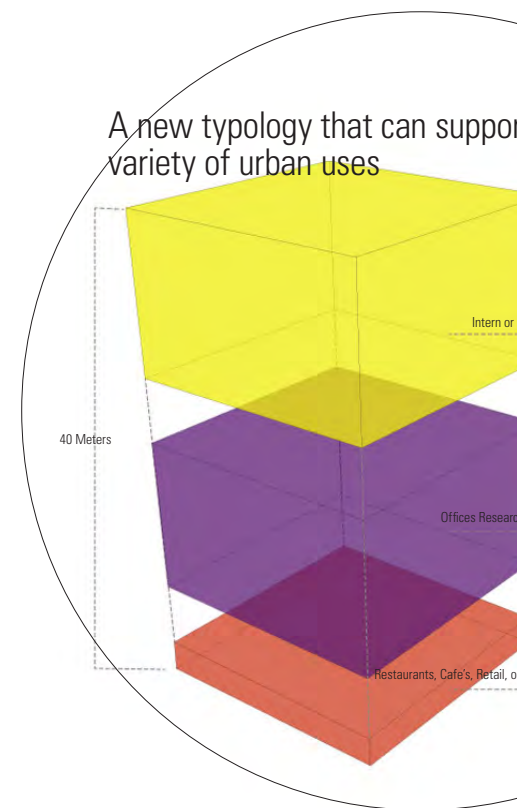
Refigured Manufacturing



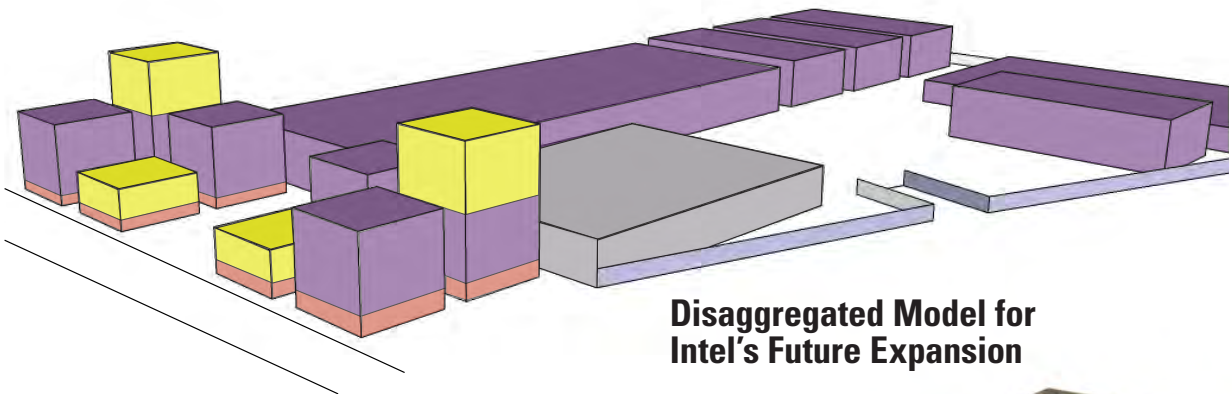
The goal in the industrial zone is to create a new typology for industry by refiguring manufacturing to be better integrated into a city environment. When visiting Kiryat Gat, the team was impressed with the agglomeration of high tech manufacturing industry in the city, but did not feel that the city was benefiting from their location as much as they could be. This is due to both the separation of the industrial zone from the rest of the city, but also about the isolation of the companies themselves in separate campuses. The plan disaggregates the non-manufacturing components of industry from the campus format and brings them into an urban setting. This allows employees to eat, drink and utilize services in the city alongside Kiryat Gat residents.

This benefits the city for a number of reasons. Businesses become more viable because they have two customer bases, workers during the day and residents at night. Because of this, the city will gain access to more services that are sorely needed. Also, amenities provided to technology employees such as health clubs would be available to all residents. Additionally, there is the potential to develop a vertically integrated high tech industry, where research and development facilities are also located in Kiryat Gat. Based upon examples in the US, companies like to cluster together to benefit from knowledge spillovers which generates new ideas for technologies that need testing and research facilities. These spillovers only happen if there is actually physical interaction between people, which this new typology creates. Furthermore, as the city grows, this renewed urban setting allows for future flexibility of the space, as it can accommodate industry, commercial, and residential uses. The disaggregated model is also a more efficient use of space, as a more dense setting takes up less land. This, along with a growth boundary, can keep the city in its current compact form.

A New Typology For Industrial Manufacture

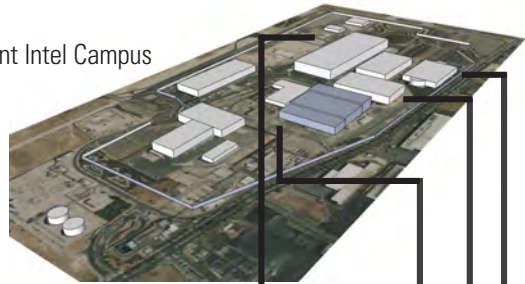


MERGING PRODUCTION AND CONSUMPTION:
THIS NEW TYPOLOGY SEPARATES NON-MANUFACTURING ACTIVITIES FROM THE CAMPUS, PUTTING THEM ON THE STREET AND CREATING A MORE SUCCESSFUL URBAN ENVIRONMENT. WITHIN WALKING DISTANCE ARE MANY BUSINESSES THAT SUPPORT DAYTIME WORKERS AS WELL AS RESIDENTS THAT LIVE IN THE AREA. THROUGH STREET LIFE AND A MORE DIVERSE OFFERING OF USES, THE INDUSTRIAL ZONE OF KIRYAT GAT CAN BECOME A VIBRANT URBAN EXTENSION OF THE CURRENT CITY.



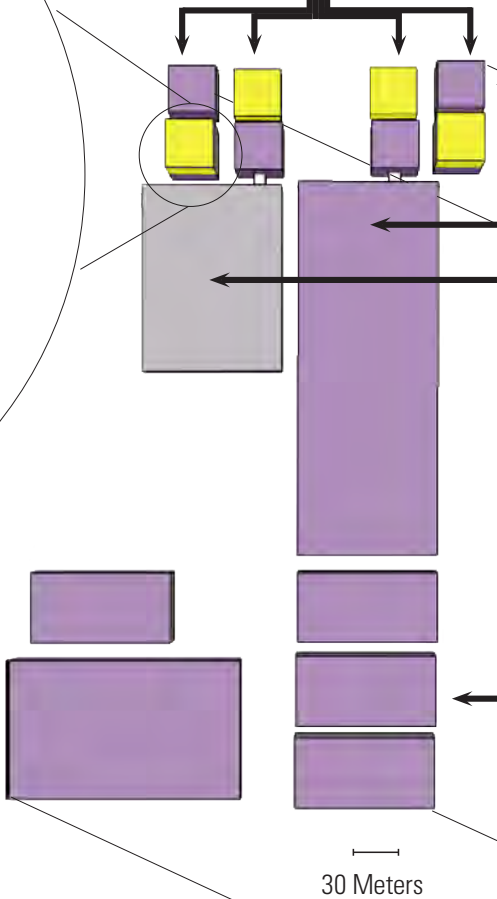
Disaggregated Model for Intel's Future Expansion

Current Intel Campus

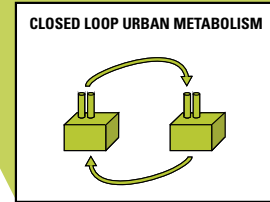


- Housing
- Restaurants
- Retail
- Amenities

- 400,000 m² Clean Room
- 500,000 m² Manufacturing Floor Space
- 300,000 m² Offices
- 125,000 m² Parking Structure



Closed Loop Urban Metabolism



Kiryat Gat is in the unique position of having a multitude of industries within and adjacent to its borders. In addition to high technology and solar companies, it also hosts a number of food production and metal processing firms. This is all on top of the city's status as the center of a productive agricultural region. Given all of these resources, the project team was interested in asking whether or not the city could achieve a closed-loop urban metabolism, whereby the excess outputs of one industry could be utilized as the inputs for another.

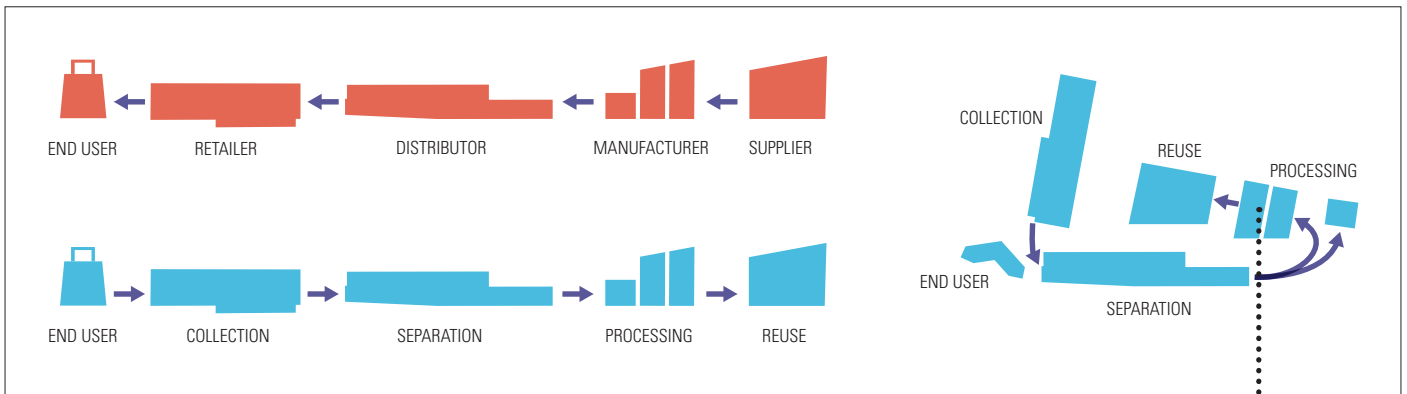
With this as a guiding principle, one particular industry honed in on that could be instrumental in helping Kiryat Gat to achieve a closed loop: e-waste recovery. As of February 2012, national law in Israel requires producers of electronic equipment to take back electronic waste at a rate of 65% of the total weight of the equipment that they sell. Modeled after similar "take back" laws in Japan and the European Union, this presents an enormous opportunity for Kiryat Gat. At present, 89% of Israel's e-waste goes directly to landfill, while the remaining 11% is sent to Asia and Africa. There are no e-waste recovery facilities in Israel, and as the host of Intel's flagship fab, Kiryat Gat is ideally situated to host one.

This would link the city with other parts of the supply chain. It would not only be part of the manufacturing process, but would be able to connect to the end user through an experiential process. The proposed e-waste facility would have a visitors center that would seek to educate the public about the recycling process and to encourage conservation. In effect, this is taking the traditional supply chain and turning it on its head:

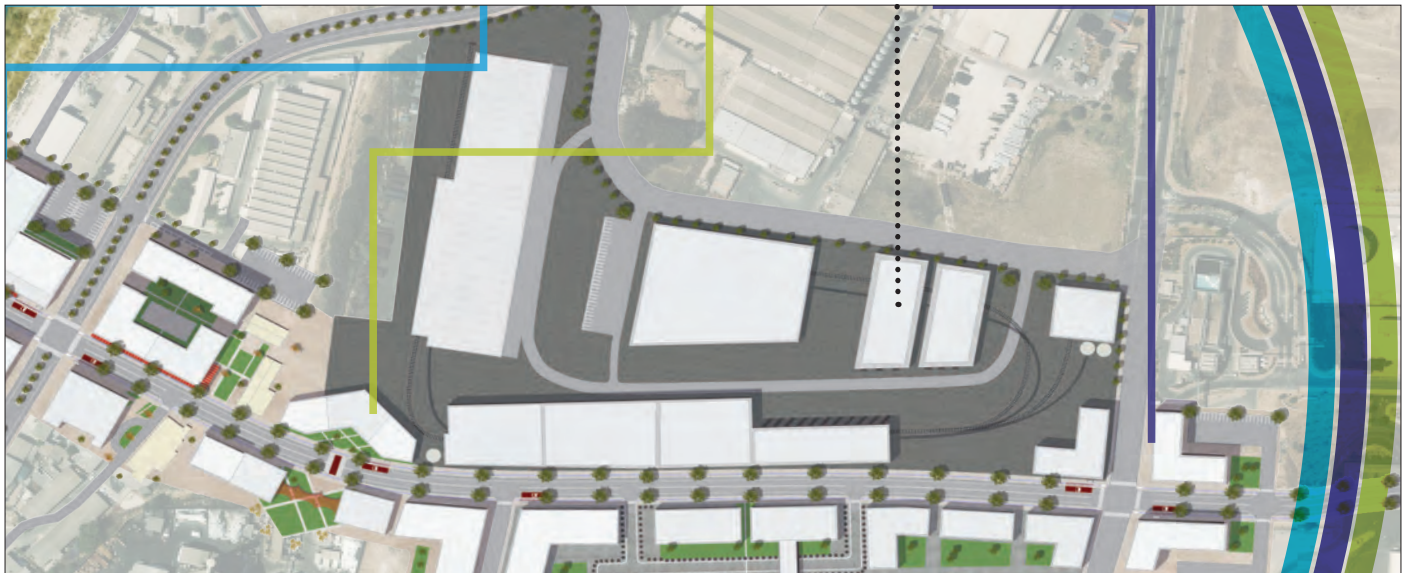
One of the best precedents found was the Panasonic Eco Technology Center (PETEC) facility in Japan, which similarly acts as an educational facility and operates under a national take-back law. PETEC is also a research and development facility, where manufacturers are able to develop new methods to make their products easier to recycle.

(<http://panasonic.net/eco/petec>)





REVERSE SUPPLY CHAIN



SITE PLAN DETAIL



RESOURCE RECYCLING CENTER BECOMES A HUB OF COMMUNAL EXCHANGE



COMPREHENSIVE LAND USE

INDUSTRIAL CLUSTERING

RESTORATIVE WADI SYSTEM

CITYWIDE STRATEGIES

COMPREHENSIVE LAND USE

Zoning and other land use controls should be an integral part of site and systems intervention in Kiryat Gat. Kiryat Gat suffers from a lack of a coordinated system for urban planning interventions. Improvements are implemented on a piecemeal basis - a swimming pool here, a bench there, and so forth - leaving large amounts of vacant space without a comprehensive framework for how to treat it. Zoning is done on a parcel-by-parcel basis, which prevents the city from implementing a cohesive scheme for how the city should be built out and improved over time. In the future, land use and zoning regulations should be done on an “area” basis so that the city has greater control over various neighborhoods and their unifying elements. Our project zeroed in on the “Hinge” area (and the “Wedge” within) to examine how zoning and regulatory mechanisms could be used by the city to promote a coordinated vision for future development and population growth.

SDEROT LACHISH

Our strategic plan focuses extensively on the activation of Sderot Lachish as the key connector of various parts of the city. Under our plan, the street would be well-suited for drivers and pedestrians, flanked by high quality housing and thriving businesses, especially in the Hinge area. A Transit-Oriented Development Zone would be implemented around Lachish on both sides of the train tracks. The zoning for Lachish would provide a continuous mixed-use streetscape for easy pedestrian access to amenities and transportation options (such as the bus station, train station, and bike share pods). Cafes, retail facilities, and city services (such as the department of motor vehicles) would be located at the ground level with 3-5 stories of residential development above.

A good way for Kiryat Gat to create a regulatory environment for this type development would be to utilize form-based code elements. With a form-based code, the city can diagrammatically regulate elements such as signage and frontage patterns. City officials could work to create a set of diagrams to illustrate what it wants Lachish frontage to look like and then require developers to conform. Peoria, Illinois has a good form-based code that can be used for reference. The city can also use form-based elements to specify lane dimensions and streetscape requirements on Lachish, ensuring that it retains its necessary character once developers are involved

in the process. Examples include Farmers Branch, Texas and the Peoria code.

THE WEDGE: TOD AND HIGH DENSITY RESIDENTIAL USE

The remainder of the wedge could fall into several different zones. Much of the Wedge should be zoned for mixed and high density residential uses, similar to Sderot Lachish but with a few different parameters. First, there should be a phasing mechanism; patchwork development would only serve to reinforce existing problems with interstitial space. Thus, it is important that Lachish be significantly activated in order to generate demand for retail and housing in the Wedge. Any regulatory mechanism for the Wedge must be designed to phase in only after Lachish is substantially developed. Alternatively, the land can be left in its current parcelized zoning until such time. While some of the Wedge is vacant and much of it is underutilized, there are active light industrial uses present on much of it, and those uses can continue to keep the area vital until such time as the area is ready for further Transit-Oriented Development.

There is certainly a precedent for the preservation of light industrial uses in areas transitioning to more mixed uses. In Cambridge, Massachusetts, for instance, there is a “Mixed Use Development District” in a transitioning area near Kendall Square and MIT. Here, light industry is allowed alongside a variety of office, business, retail, and high density residential uses in order to be responsive to market conditions. This district is specifically focused on mixed use, providing no restriction on combining different categories of uses within buildings, unless otherwise prohibited. In the case of Kiryat Gat, this is the type of mix we eventually want to see in the Hinge. The mixed uses should be phased in after Lachish is activated.

The Wedge area could eventually be divided into three different zones. The first, TOD2, would be focused on mixed-use development within close proximity to the train station. The second, Residential B, would be similar in its intent, but would provide for high-density residential-only buildings, recognizing that the commercial/retail potential in Kiryat Gat only goes so far. Both zones would provide much-needed housing for the young, educated, upwardly mobile demographic. These areas could also utilize form-



LIGHT INDUSTRIAL BUILDINGS COULD BE RETROFITTED TO PROVIDE LIVE/WORK SPACES

based code to preserve and enhance the Wedge’s existing industrial character to create attractive residential and nightlife options. An interesting precedent for guidance might be the Warehouse District section of Peoria. Although the frontage in the Wedge will be more irregular, the proposed buildings are of similar size and height to what is being regulated there. Because the wedge contains a wide variety of building types, specific dimensional and Floor Area Ratio (FAR) requirements are less important than general height and streetscape requirements that allow for diversity but create and preserve the industrial urban character of the area.

In general, FAR will not be a particularly effective measure for regulating land use in the short term. Lot sizes are irregular and likely to change as the Wedge is redeveloped. The build-out suggested by in our plan was informed by the perceived limits for demand in Kiryat Gat. The real estate market is likely not robust enough for FAR-based incentives to work immediately. If the new train station goes in and Lachish successfully develops as suggested during the first phase (five years), then perhaps at that time the city can utilize FAR regulations and bonuses to incentivize the type of development it prioritizes.

SPECIAL ARTS DISTRICT

Another zoning mechanism proposed for the Wedge is a special arts district. Recognizing the necessity of attracting young, educated workers to Kiryat Gat, a regulatory mechanism promoting artist activity could be a strong draw. In this district, a certain percentage of all buildings would be live/

work space and dimensional requirements would be relaxed to promote this. This is a perfect opportunity for reuse and renovation of light industrial buildings. A special arts zoning district in the Wedge would encourage arts-related uses (and reuses) like this, as well as new commercial activity. The zoning would encourage signage and sculpture, as well as creative street paving and furniture. Artists should be involved in the streetscape design process.

The creation of an arts district can also be coupled with proximity to transit to create dual development incentives; this can obviate typical parking requirements. For instance, in Somerville, Massachusetts, an arts overlay zoning district was coordinated in conjunction with a TOD district. The Somerville Arts Overlay District exists to preserve and enhance arts-related uses and also “to preserve and enhance the area as a center for a variety of retail, business services, housing, and office uses and to promote a strong pedestrian character and scale throughout the district.” The Somerville Arts Overlay District provides for artist live/work space arranged to promote “collaborative public engagement and art displace.” The ordinance gives development incentives to those pursuing those issues. It provides design guidelines that allow for minimal setback, context-sensitive design, and pedestrian-focused building orientation. In this case, there is underlying primary zoning that governs building requirements unless the use is arts-related. Kiryat Gat could either create an overlay district over a Residential B or TOD zone or create a primary zoning district relating to the arts. If the city creates a new zoning scheme from scratch, it may not need an overlay system; instead, it can simply differentiate the primary zoning.

INDUSTRIAL CLUSTERING

Kiryat Gat is already well-known for its industrial park, especially since it is home to Intel's largest Israeli fab. Additionally, the city prides itself upon its exceptional educational system, which has produced prize-winning students of robotics. The future of Kiryat Gat rests at the intersection of these two themes: education and technology. By intentionally fostering the formation of industry-centric clusters, the city will be able to attract development, create permanent jobs, and bestow benefits on both the public and private realms. Kiryat Gat should seize the best opportunities for agglomeration economies within its borders, thereby using industrial clustering as a tool for economic development.

CLUSTERING DEFINED

Clustering, which is related to economies of agglomeration, is a phenomenon in which similar firms co-locate to achieve mutual benefits. One such benefit is knowledge spillover; that is, sharing the most innovative ideas among professionals with like interests and specialties. This can lead to an increased number of collaborations among firms, generating additional business. Another benefit is a strong labor pool, as individuals choose to locate in clusters that may offer long-term employment opportunities. Firms also can benefit from access to specialized services, and may be able to achieve supply chain efficiencies due to their close proximity and similar needs.

Cities stand to benefit as well, through enhanced quality of life, a robust tax base, and a stronger civic identity. Clusters can help bolster education and income levels, and the spending power of new firms can support the development of retail and amenities that can also be shared by current citizens. Cities also can benefit from the positive attention that accompanies the industrial clusters, which can even lead to an increase in tourism revenues.

Corporations are attracted to places that have active investment and similar firms in operation. This signifies the presence of supportive resources including well-functioning transportation systems, business services, restaurants, and hotel or conference facilities. Potential employees also look

for amenities that will enable an enjoyable lifestyle. The best-functioning clusters are established around vibrant mixed-use districts with firms that range from start-ups to R&D (research and development) labs to manufacturing fabs.

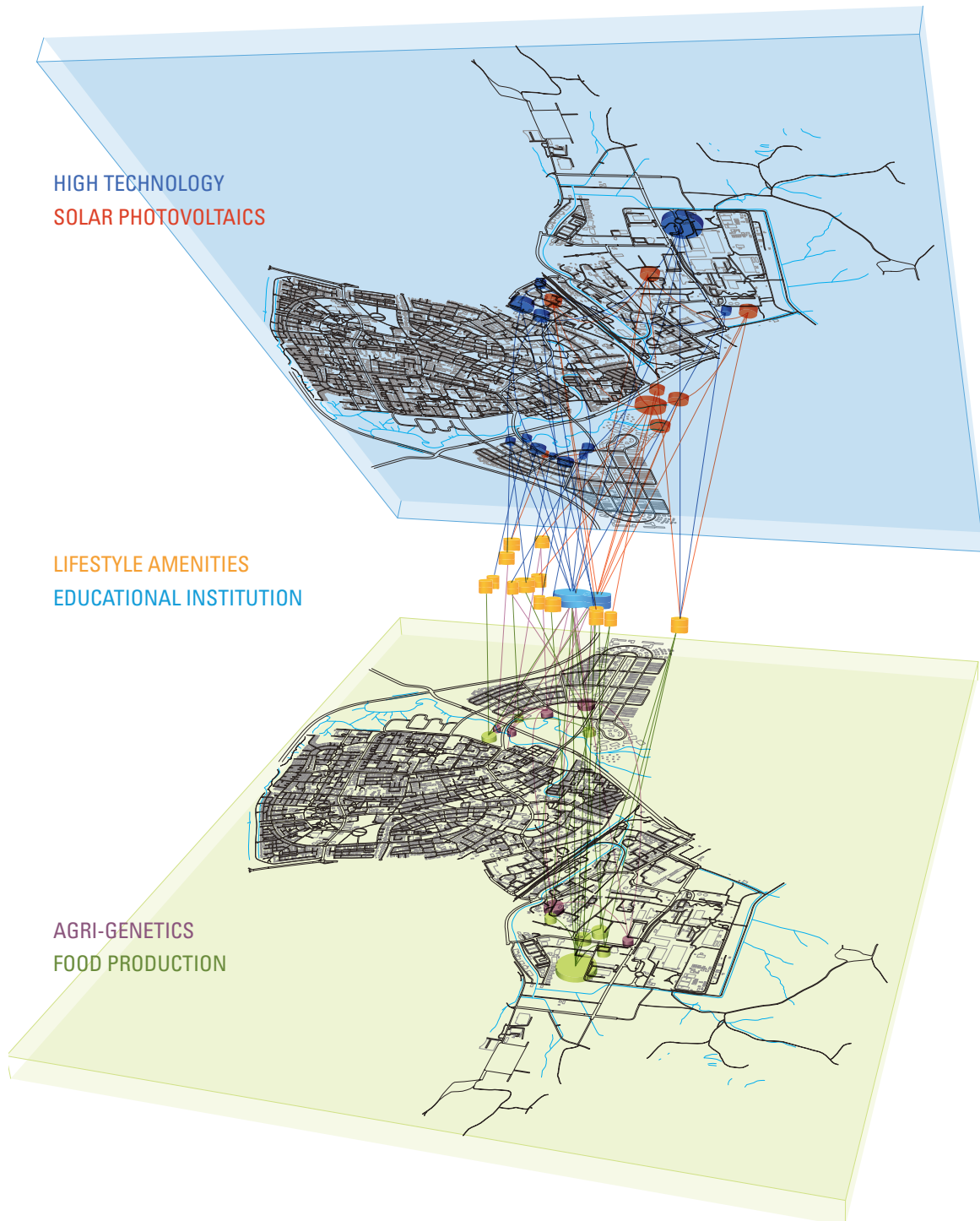
Industry clusters can be strengthened through the co-location of related firms, educational institutions, and shared amenities. The latter two are particularly important to foster collaboration and innovation across industries.

LOCAL AND NATIONAL ASSETS

Kiryat Gat has already attracted a diverse assortment of local and international firms. In addition to Intel, notable companies include Hazera Genetics, Hod Assaf, Hitachi, HP, Micron, Inaction Steel, Sabra, Sugat, Tokyo Electric, Xenia, and Zenith Solar. These could each serve as the anchors for clustering around agri-genetics, metalworking, computing/high technology, food production, and solar power. While we have identified these industries to target in the near term, it is important to note that the mix of industries is dynamic; focal points may change in the future according to the inevitable ebb and flow of production.

Dan Senor and Saul Singer, authors of *Start Up Nation*, credit Israel's success in high tech and startups to its immigrant culture. Immigration, they assert, preselects entrepreneurial people who are natural risk takers - the right people to support start up industries and new innovations. Kiryat Gat has a very high proportion of immigrants, which bodes well for potential startups. Government support for startups could come in many forms including targeted education, the solicitation of startup dollars and venture capital, or a city-wide business incubator and support group.

Additionally, Kiryat Gat falls within the colloquially termed "Silicon Wadi." Kiryat Gat's proximity to Haifa, Be'er Sheva, Herzliya, and Tel Aviv offers a fantastic opportunity to capitalize upon the region's strengths in the technology sector.



KIRYAT GAT CAN BUILD UPON
LOCAL ASSETS TO FOSTER
MULTILAYERED CONNECTIONS
ACROSS SECTORS.

CHALLENGES

Most industrial clusters are built around a major research university; consider Haifa's development around Haifa University and the Technion. Universities are especially important for research and development. While Kiryat Gat is within 90 minutes of several universities in Silicon Wadi, it may run into competition from other industrial parks. For example, Ben Gurion University is developing an R&D park in Be'er Sheva. A compelling alternative is the establishment of a polytechnical college. Such an institution could offer two-year degree programs in specialized areas, such as industrial engineering, and could share equipment, facilities, and research labs with companies in the area. The companies, in turn, would be able to draw upon a well-trained workforce for their manufacturing activities.

Another major challenge is a lack of amenities and cultural offerings. Without these, Kiryat Gat will struggle to attract the future workforce, especially young people and entrepreneurs. Prospective employees desire many more restaurants, museums, parks, theaters, etc. It may be necessary to encourage and support the development of these amenities first, before Kiryat Gat can become a competitive location for small businesses, start-ups, or R&D employees. The additional buying power provided by residents in the northern expansion can and should be leveraged to further these ends.

GUIDELINES TO PROMOTING CLUSTERING

Several actions can be taken by the government to promote clustering and attract industry. In addition to providing an environment amenable to business and desirable to employees, Kiryat Gat can utilize existing national initiatives and programs designed to support such growth. As a fringe town, Kiryat Gat qualifies for many such programs.

Kiryat Gat could also encourage the development of a small business development center, such as the MATI in Haifa. The city can also offer seed funding for startups, or provide in-kind benefits such as free office space. On a larger scale, the city could establish a supply chain think tank or logistics coordinator, in order to maximize efficiencies among like industries. For instance, some high technology manufacturers may not use conventional freight, and their less-than-truckload shipping could be coordinated through an Urban Consolidation Center (UCC). A UCC is a logistics facility that consolidates and coordinates deliveries through a single distribution point, which can save costs and reduce truck traffic. Examples include Broadmead and Bristol in England and La Petite Reine in France.

It is extremely important and advantageous to involve current industry through public-private partnerships. In addition to having access to



large amounts of financial capital, existing companies are important members of the community and will be much more invested in Kiryat Gat if and when they have contributed to making it a better place. For instance, the city could offer firms tax incentives in exchange for improvements to public and semi-public spaces; this would be especially true along the major corridor that we are proposing along the extended Sderot Lachish.

Establishing an educational center is also important, and there seems to be a great opportunity for a polytechnical school in Kiryat Gat. While founding a new institution could be a tremendous undertaking, the city could look to an existing institution that is looking to expand. Imagine, for instance, that Ben Gurion University had an extension campus in Kiryat Gat - this would be a natural extension for such an institution.

INDUSTRY-SPECIFIC PROGRAMS

SOLAR POWER: There is a great opportunity to establish a solar industry cluster. Already companies like Zenith Solar (zenithsolar.com) are choosing to locate in Kiryat Gat, and they are supported by venture capital firms like Xenia (xenia.co.il). The industry is well-established in Israel, but it has not developed a more tight knit cluster. Given Kiryat Gat's proximity to the Negev, it is perfectly situated for companies that wish to pursue research and development; when they are ready to manufacture at a domestic facility, the city could also support that pursuit.

HIGH-TECH / COMPUTING: Of course, building a cluster around high technology is a natural fit for Kiryat Gat, especially given the magnitude of investment leveraged by Intel, HP, and similar firms. There is an interesting opportunity to introduce an e-waste recycling plant, as no such firms currently exist in Israel. A 2011 law requires that producers assume responsibility for product end-of-life recycling, and this presents a perfect opportunity to recycle in Kiryat Gat. This is an opportunity to educate and showcase the process, much like Panasonic has done in Japan with their boundary-breaking PETEC facility.

AGRI-GENETICS: Hazera Genetics could serve as the backbone for a new cluster for agri-genetics. As nearby moshavim and kibbutzim experiment with new varieties of fruits and vegetables, they might be able to contract with Hazera to scale up their new hybrids, generating a new source of revenue for their communities.

METALWORKING: Kiryat Gat has an established collection of steel, aluminum, and other metalworking firms. These industries will continue to be important contributors to the local economy, and can also capitalize on a recycling plant such as the one described above.

FOOD PRODUCTION: Between Sabra, Sugat, and similar companies in the greater Lachish region, there is already a cluster of food producers. This presents an opportunity for branding, given the historical intent for Kiryat Gat to serve as the hub of an agricultural region.

ADDITIONAL OPPORTUNITIES

INDUSTRIAL TOURISM: Industrial tourism is becoming a global trend: people are increasingly interested in where their products come from and interactive production/education is being incorporated into many industries. Classic examples of this include food-related tourism, such as brewery tours and wine tastings at vineyards. This model has been expanded recently, however, to include facilities like the Volkswagen "Transparent Factory" in Dresden, Germany. This facility invites customers into the plant, where they can witness the final assembly stages of the car they will take home. It is a big experience, even including the ability to participate in one piece of the final assembly. Such interaction not only attracts tourist dollars to the city, but it also creates brand loyalty and a host of other benefits to the company itself.

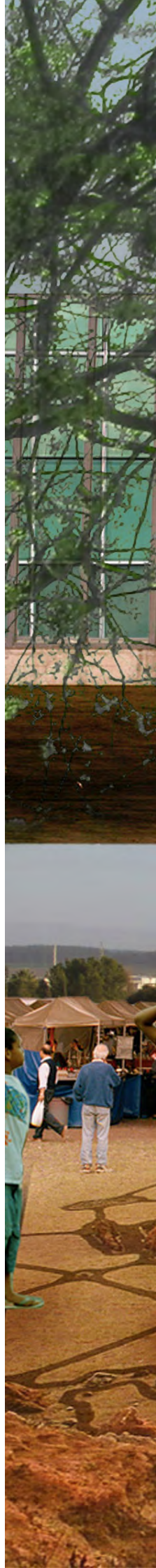
The project team was invited to view Intel's clean room, but it did not appear that it was a regular tourist attraction. We see this as one of many opportunities for industrial tourism. Perhaps a solar company could offer an education and distribution center. Hazera might want to host product launches and offer

IN ITS CURRENT FORM,
THE INDUSTRIAL PARK
IS INACCESSIBLE AND
ISOLATED.

Credit: Kiryat Gat Archives

educational tours of its specialty crop development. A new e-waste recycling center could show visitors the process of how post-consumer goods would enter a closed-loop supply chain. These kinds of industrial tourism would build upon traditional assets such as nature trails, bike paths, farmers markets, and food production tours. Along with restaurants, hotels, and other amenities, these assets could contribute to a new tourist economy.

CITY BRANDING: In terms of branding, the Industrial Park and new R&D development we are proposing could give Kiryat Gat a stronger and more well rounded version of the image it already has: a leader in technology and innovation. Industrial tourism is one important branding strategy. We have proposed the construction a highly visible field of concentrated solar thermal panels just north of Route 35. This field, well landscaped and designed to be optimally viewed by passers-by on the highway, would create an image of Kiryat Gat as a future-oriented and innovative city, possibly even as a hub of research and education in solar energy. Innovation, research, and technology merge well physically with our proposal for a transit-oriented-development area around the train station, which offers a denser more modern type of development situated at the hinge area between the industrial park, the older central city, and the new development to the north. Focusing on emerging industries, particularly those that might bring in many visitors, would give Kiryat Gat a fresh identity.



CULTURAL OFFERINGS, SUCH AS THIS IMAGINED WEEKEND MARKET, ARE IMPORTANT FOR VIBRANT INDUSTRIAL CLUSTERS.



RESTORATIVE WADI SYSTEM

The city's most prominent landscape features are two streams: the north-flowing, intermittent Shalva, at the border of the residential and industrial cores, and the east-flowing Lachish, which will define the future park between the original residential area and the northern expansion. Both streams are tributaries of the Lachish River and carry its two major sources of pollution: runoff from urban areas and agricultural lands. A restoration master plan for the Lachish river basin has the objectives of "conservation, rehabilitation and development of the Lachish River in several areas: water quality, surface runoff and soil conservation; nature, landscape and cultural heritage; and economy, recreation and tourism."

Kiryat Gat has the opportunity to restore its streams for ecological and cultural benefits. Cleaning and replanting the streambeds and their buffers would restore the most important functions of riparian areas:

- SUPPORT ANIMAL HABITAT AND ENHANCE FISH HABITAT;
- FILTRATE AND RETAIN SEDIMENTS AND NUTRIENTS FROM TERRESTRIAL UPLAND RUNOFF OR OUT-OF-BANK FLOODS;
- REDUCE CHEMICAL INPUTS FROM TERRESTRIAL UPLANDS BY IMMOBILIZATION, STORAGE AND TRANSFORMATION;
- STABILIZE STREAM BANKS AND BUILD-UP NEW STREAM BANKS;
- STORE WATER AND RECHARGE SUBSURFACE AQUIFERS, AND;



- **REDUCE FLOOD WATER RUNOFF**

The restoration would transform a currently overlooked resource into a notable continuous landscape feature—even if it is dry for part of the year—highlighting nature in the city while integrating the city with its agricultural and natural surroundings. The restoration of the Alexander River in northern Israel yielded such benefits. “Our goal was to rehabilitate the river and to create public consciousness around the need to protect the environment. In that we have succeeded beyond our expectations,” said Nachum Itzkovitz, mayor of the Emek Hefer Regional Council. Indeed, the restoration of the river has become an integral part of the community’s self-identity, and has been incorporated into the science curriculum of every schoolchild in the area.

Our wadi system plan calls for the treatment of the streams to vary according to the surrounding context. Different zones—urban/industrial, transitional, residential, wilderness crossing, northern park, and forest reserve—invite different combinations of interventions, including steps for stream access, seating, lighting, shade structures, and pedestrian bridges. Paths for pedestrians and cyclists accompany the streams throughout the city, allowing residents and visitors to experience these changing forms of urban nature. Native vegetation, trees, and shade structures create an ecologically and climatically sensitive landscape. The wadi system connects the industrial and residential cores of the city to the planned northern expansion neighborhood, and can extend past the city’s borders into the wooded conservation area and agricultural lands beyond, weaving nature into the city and integrating the city into the region.



WADI System Plan and Guidelines: Interventions and Ecology Zones

Northern Park Zone

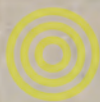


- **Interventions:** widen and restore riparian buffer; add path with lighting, shade, step-downs, and benches; build pedestrian bridges connecting to other park paths
- **Impact:** preserves and highlights wadi's path; enhances experience of a changing, active landscape

Forest Reserve Zone



- **Interventions:** widen and restore riparian buffer; add path
- **Impact:** improves access to existing amenity; encourages exploration of woods outside city limits



High ground



Wadi



Paths



Prioritized crossings



Step-downs



Bridges



Activity zones

Buffer areas



Pedestrian and bike path



Step-downs for seating & wadi access



Pedestrian bridges



Lighting



Vegetation



Shade structures



Strategic design intervention location



1 KILOMETER

Wilderness Crossing Zone



- Interventions: create iconic highway crossing for wadi, pedestrians, and cyclists
- Impact: increases wadi's visibility to drivers on Route 35; improves pedestrian connection between northern expansion and original city; provides corridor for wildlife

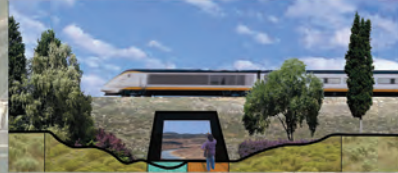
Residential Zone



- Interventions: restore riparian buffer; add path with lighting
- Impact: improves ecology and aesthetics in neglected land adjacent to residential neighborhoods; provides amenity that also increases access to park in northern expansion and redeveloped industrial area



Transitional Zone



- Interventions: widen and restore riparian buffer; add path and incorporate crossing in existing railroad underpass; provide adjacent seating area
- Impact: provides connection between residential and industrial areas; improves wadi's visibility at entrance to city

Urban Industrial Zone



- Interventions: restore riparian buffer; build step-down with shade structure; add path lined with lights and trees or shade structures
- Impact: creates promenade and outdoor gathering space to encourage recreation at intersection of Hinge and industrial area



INTEGRATED RESTORATION

GATEWAY TO A NEW CITY

RALLYING POINT

RAILWAY SEAM URBAN ENVIRONMENT

PEDAL DELIVERY

ADAPTABLE AGRICULTURE

MEETING IN THE MIDDLE

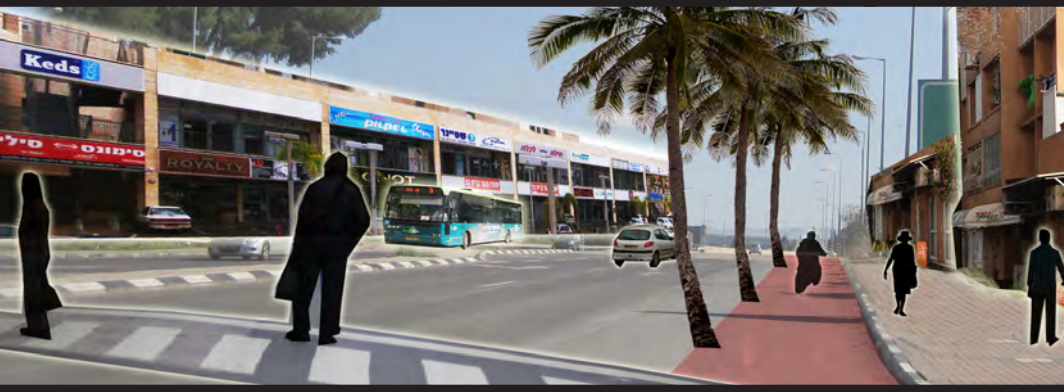
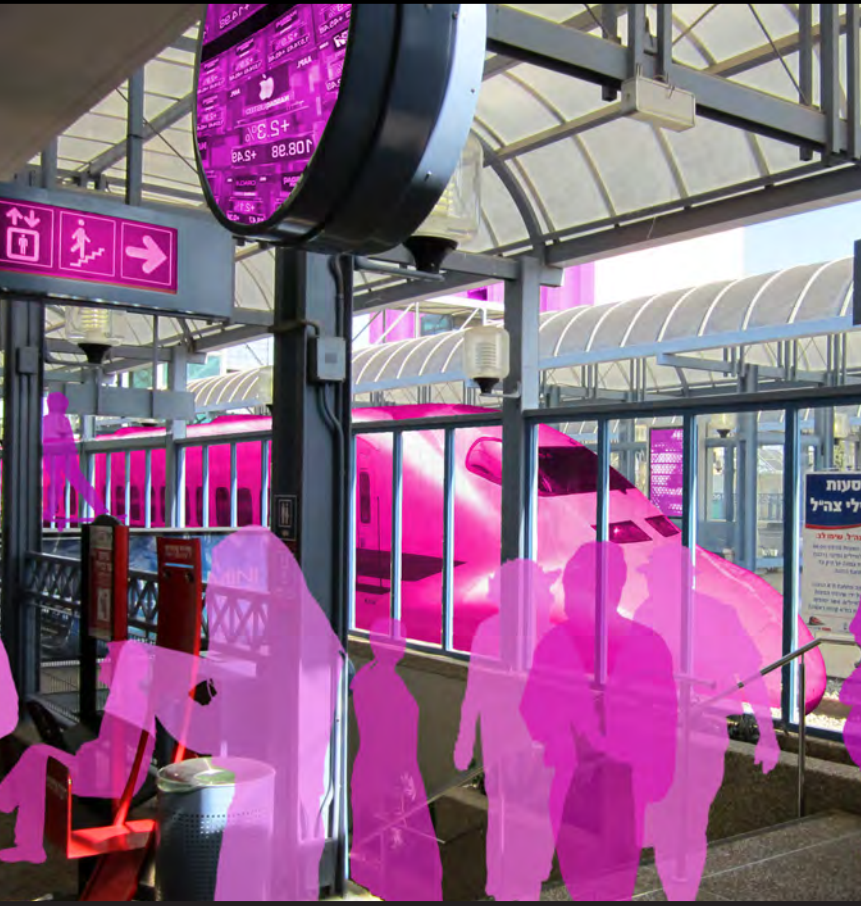
ECOTECH CITY ADVENTURE PARK

INNOVATION CONSTELLATION

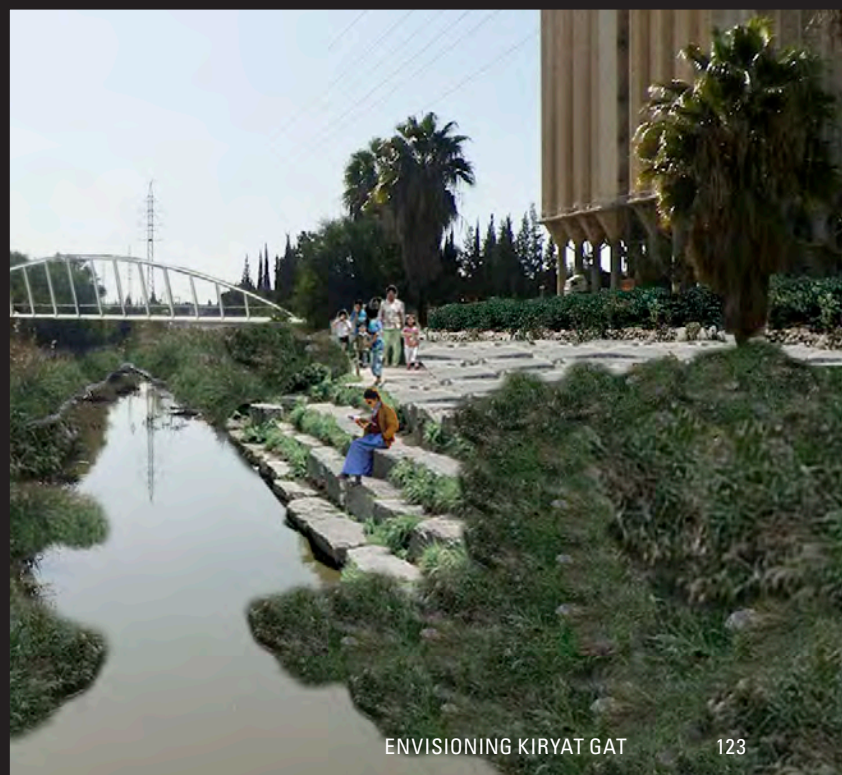
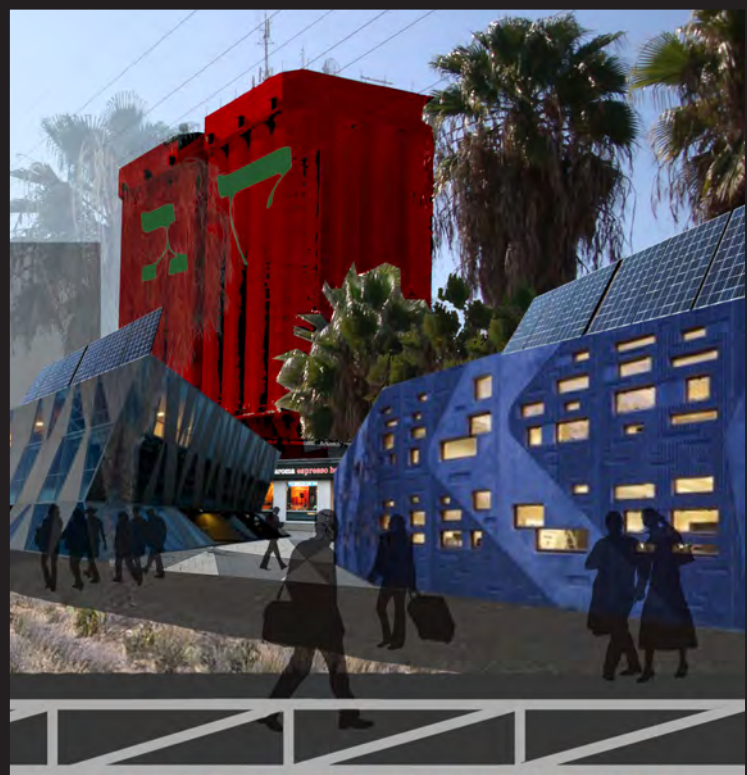
SMART & SOUND REGIONAL LANDSCAPES

ENVISIONING KIRYAT GAT

TOWARDS 2025



THE FUTURE FOR SUCCESSFUL RETROFITTING OF NEW TOWNS SUCH AS KIRYAT GAT LIES IN THE CREATIVE AND INNOVATIVE VISION FOR PLACE AND OPERATIONS. THESE CONCEPTUAL, CREATIVE SCENARIOS CAPTURE SOME OF THE POSSIBILITIES FOR THE CITY IN 2025.



Integrated Restoration



In 2025, Kiryat Gat has become a model of urban efficiency. Physical Resources such as land, water, energy, and industrial and municipal by-products are utilized to their utmost. The value of less tangible resources such as time, productivity, and finances are also maximized. The application of the concept of “productive landscapes” has resulted in a more compact, tightly-knit city. Previously neglected interstitial spaces, such as courtyards and parkways, are better maintained as functional spaces as a result of management programs that bestow residents with ownership. The key takeaway is that in this city, industry is no longer treated as an inherent blight or detraction that must be sectioned off from alternative urban uses. The city has become a

living laboratory for co-generation and regenerative design, and is a hotbed of innovation. This proposal can be implemented immediately, following the procurement of appropriate street trees. The next step would be to identify the corridors of the city that would most benefit from new plantings, building upon existing assets (such as connections to the linear park on the western side of the city).

Gateway to a New City



The industrial park has expanded rapidly, and there has also been progress in diversifying their presence in the city. While Intel and HP still have their R&D facilities in Hertzliya, a few of the smaller tech companies have built research facilities near the train station, close the movie theater, hotel, and restaurant row. While much of the money from the industrial park still goes to the Regional Council, the burgeoning service industry in the TOD area that supports these companies has brought money into the city. Kiryat Gat is able to retain its young population in the city due to the foresight of its leaders to require that all new housing being built be a mix of sizes and values, which has more evenly distributed wealth in the city. While those that

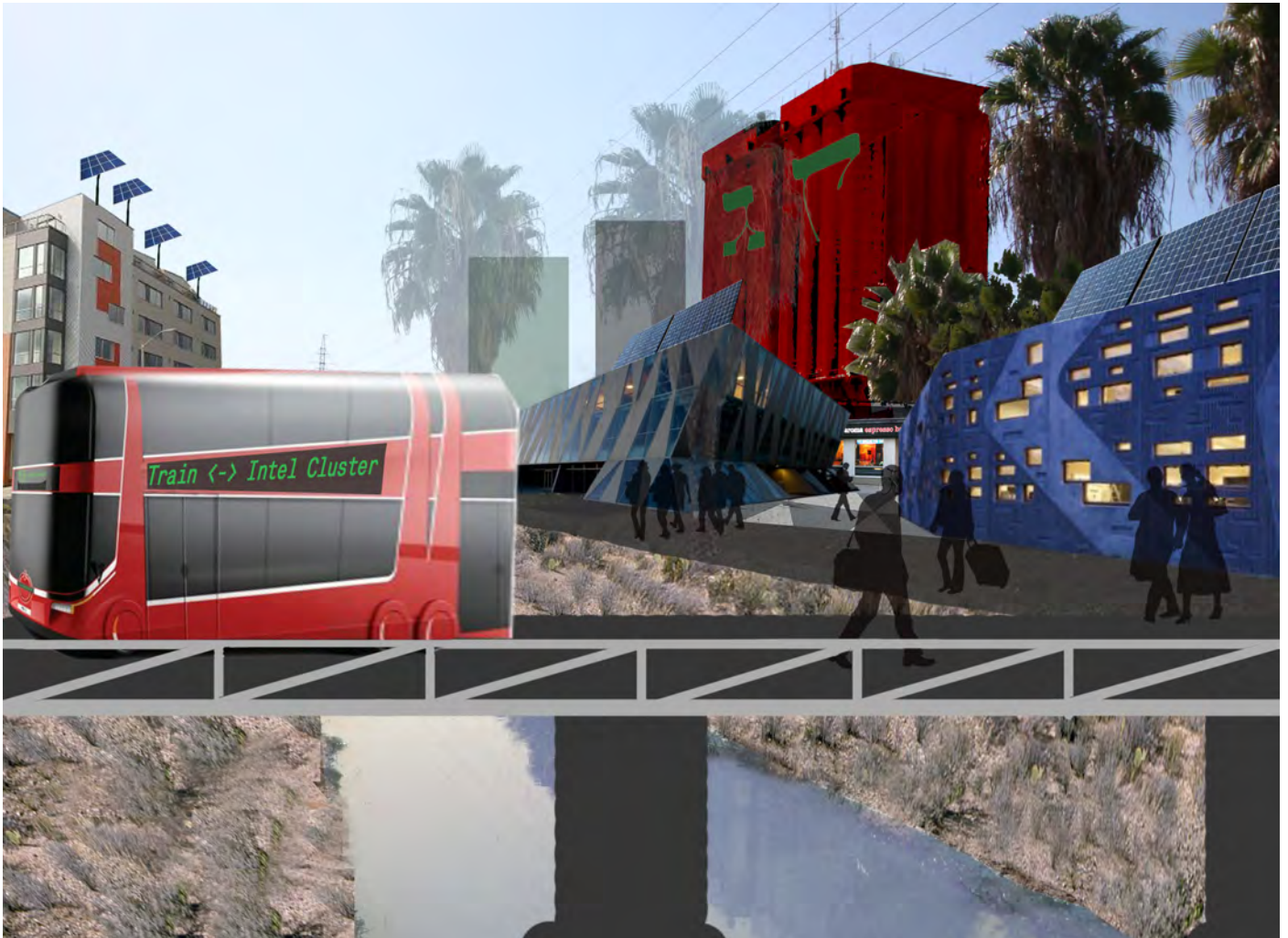
have lived all their lives in Kiryat Gat still struggle with the new, “modern,” Kiryat Gat, there has been progress on bringing these groups together at the community centers and keeping them involved in the direction of the city. following the procurement of appropriate street trees. The next step would be to identify the corridors of the city that would most benefit from new plantings, building upon existing assets (such as connections to the linear park on the western side of the city).

Rallying Point



As the sun begins to set on a warm summer evening, the City Hall Plaza is dynamically transformed. Even though it was quite active during the day, the plaza takes on an entirely different energy at night. Café tables spill out onto the plaza, conversation becomes more animated, and children dart in between trees and shade structures. A student band from Ben Gurion University-Kiryat Gat performs on the outdoor stage. It's a festive atmosphere that is enjoyed across generations. City Hall Plaza was one of the first areas to be redeveloped under Kiryat Gat's long-term infill plan, and it has enjoyed a complete physical transformation. The improvements started with temporary "pop-up" installations that were the inspiration for permanent installations – including the trees and the stage that define the plaza today. Rather than being an awkward, desolate space, City Hall Plaza has become a distinctive, popular place at the heart of Kiryat Gat.

Railway Seam Urban Environment



Life in Kiryat Gat could move rapidly away from personal cars and motorbikes. The city would be largely accessible by foot and bicycle. New development would center on the train station, bringing commuters from Tel Aviv, Be'er Sheva, and elsewhere. Low-emissions shuttle buses could transport commuters to and from Kiryat Gat to business and residential areas around the city. People living and working in Kiryat Gat could conceivably not need cars for daily life. This will increasingly become a selling point for the city due to its compact size and increasing prices at the gas pump. Restaurants and cultural institutions celebrating Moroccan, Ethiopian, and Russian heritage could flourish and result in a lively city

with interesting facades. Technology and nature will interact to a greater extent as Intel and other technology companies set up technology-related components in parks throughout the city in order to provide programming and public relations material. Parks can highlight the natural desert systems and move away from non-indigenous trees and grasses not supported by the desert ecosystem.

Pedal Delivery



A program for bicycle delivery of groceries will be run by local youth. Operated either as an after-school volunteer program or a first-job option, this program will give the elderly (and anyone who is interested) the option to have their groceries delivered, either by placing an online order through the city's information system or, if the shoppers prefer walking for exercise, to their door after they themselves have done the in-store shopping. Taxi service already fulfills this role currently but in the future of KG residents will also have non-vehicular options. The bicycle service brings the young and old into frequent contact, creating a social network that could be expanded to cover other programs—such as routine checkups

or medical delivery. In neighborhoods like Glikson there is already an informal network where residents check in on their elderly neighbors. Building on this unofficial network, a formal program will offer youth a gainful and socially gratifying way of being involved in the city.

Adaptable Agriculture



There is a new interdependent future of the industrial zone. Urban agriculture will extend inward, thus blurring the boundaries and edge conditions of the city. A network of tiered structures as well as the adaptive reuse of abandoned structures will have the opportunity to both produce and reuse: some floors will contain crops that utilize both the grey water and solid waste from the industrial buildings. Through living machines, brown water will be converted to non-potable water for agriculture and plantings. The crops will be used both in the industrial sites and local restaurants, as well as reinforcing the region's position as an integral part of the food production for the country. The façade and tops of the structures will be utilized for the harvesting of renewable resources, such as turbines for wind power, and photovoltaic arrays for solar. The power can be used on site in the industrial production and fed into the grid to power the city. Community gathering spaces and public space will also be a component with the farming structures, as they will provide a cool place to socialize, as well as providing programmable space for formal and informal events.

Meeting in the Middle



The future Kiryat Gat is a city with three commercial cores: the train station area spilling towards the industrial park, the municipal core and bus station area, and at the highway crossing into the northern development. The main concentration of cultural and institutional uses remain in the center (schools, library, market, city government) to prevent erosion, but the daily uses of residents and workers in the other zones are within a walkable distance. In the north, a limited cluster of amenities along highway 35 provide a hub that connects the development to the communities to the south while uniting the two, rather than making bridges and tunnels. The commercial also provides a chance to slow down traffic, catch the attention of drivers, and provide roadside identity to Kiryat Gat.

Ecotech City Adventure Park



Kiryat Gat has rebranded itself as the Ecotech City. In partnership with the tech sector, the city has developed a responsive, sustainable landscape, an electric-powered mobility-on-demand system, and a rigorous technology-centric education system. Israel's first eco-industrial complex incorporates inputs from the city as a whole, and subsidizes electricity use for residents. New infill housing, constructed in recognition of the ill effects of urban sprawl, adheres to strict energy requirements. The area formerly earmarked solely for residential expansion now boasts an adventure sports landscape for mountain biking, hiking, and rock climbing. The population has grown by 50%, attracted by the green lifestyle and excellent education system, which

also contributes to the retention of young adults employed by the technology industry. The increased density supports a thriving downtown entertainment district. Citizens connect with their government via websites and apps to voice suggestions and needs.

Innovation Constellation



Since the Israel High Speed Rail network, spanning from Haifa to Be'er Sheva, was completed in 2020, the urban form of tech innovation center Kiryat Gat took a further step toward decentralization. While planners rightly assumed that the city's rail node would catalyze dense development around the train station, they neglected to consider how the city's mobility-on-demand system allowed the influx of new residents and commuters to essentially live wherever they wanted. The newly blossoming constellation of pop-up micro-tech facilities scattered around the neighborhoods of Kiryat Gat was so successful that it drove most of this growth, and other businesses copied the quasi-cottage-industry model. While a few key players did, indeed,

increase density around the station - Intel's new R&D coordination market, the civic facilities, or the new live/play entertainment hub, for example - most opted for the new, standard live/work developments that lined the city's greenways.

Smart & Sound Regional Landscapes



A unified region has been defined and reimagined by the strengthened relationships with surrounding cities which has allowed for more diverse needs to be accommodated. Kiryat Gat is a city specializing in technology and innovation that contributes to a larger and more diverse polycentric region that takes advantage of the different types of settlement and is not just a set of interconnected cities. Kiryat Gat has leveraged its technological assets to be positioned as a major hub within the regional network, and the overall network has positioned the area higher on the national platform. To complement this outward maneuver, the city also looked inward and repositioned the indigenous landscapes as the predominant form of natural open space form. This highly valued feature has reinforced the city's identity and helped to prioritize a more sustainable approach to land management.



SEVEN STEPS PLAN

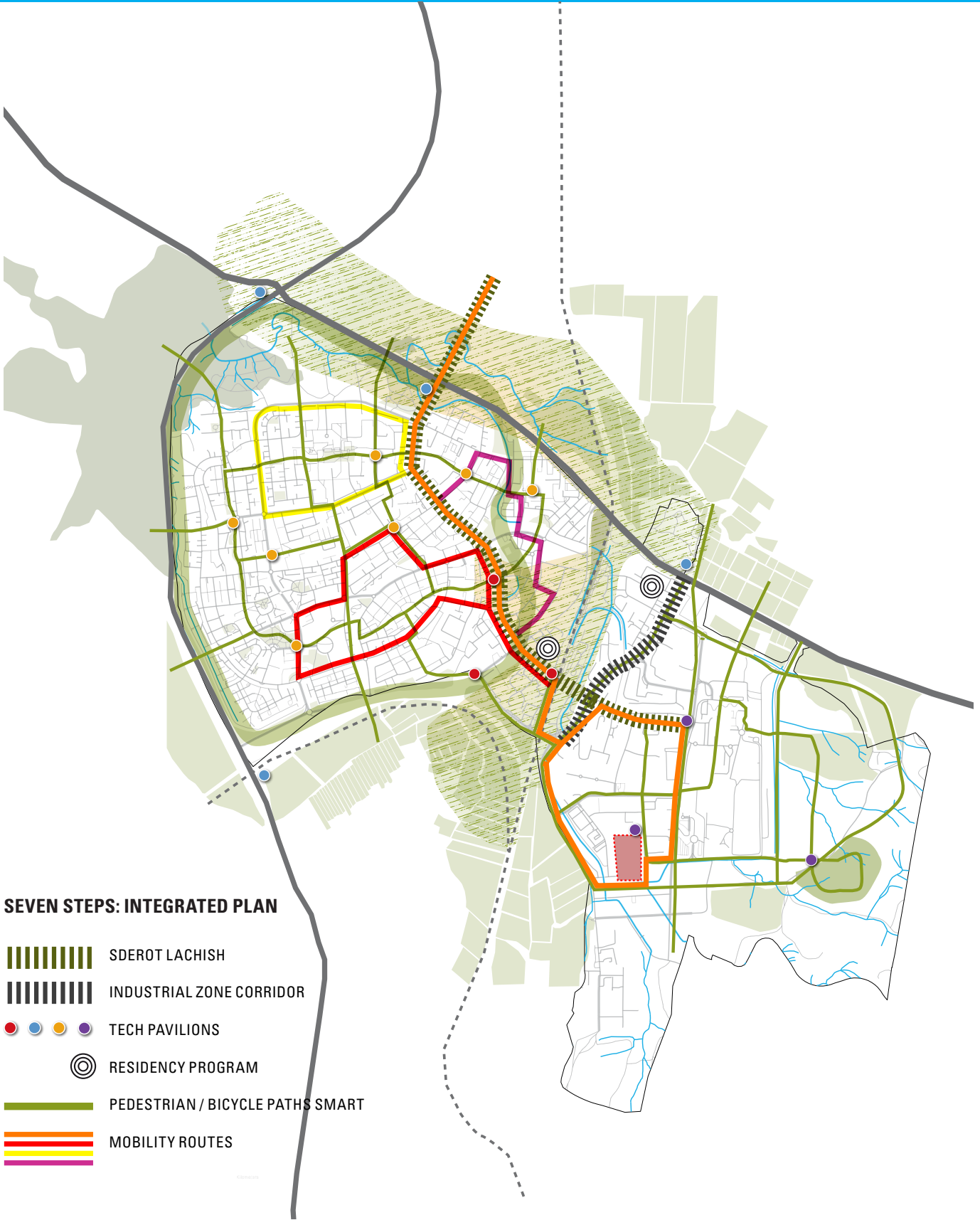
INTRODUCTION

As part of the strategic plan envisioned for Kiryat Gat, seven steps are suggested for immediate implementation: a smart mobility transportation system, a network of tech pavilions, an integrated urban design language for Sderot Lachish, a residency program for artists and start-up companies, improvements along a north-south corridor in the industrial area, a parking lots design competition, and a material flow analysis. Each one of the components is significant on its own; however the plan's strength lies in their integration, as the seven steps are inter-related and are all derived from the strategic plan.










The seven steps will assist in branding Kiryat Gat as a technology-oriented city and as Israel's first smart city. They have the power to generate long-term processes and to create an infrastructure of collaboration between the municipality, the private sector, and the community. Furthermore, all seven steps have strong visibility in the urban and national scales as contemporary models for urban planning.



A TECHNOLOGY-ORIENTED CITY



SEVEN STEPS: INTEGRATED PLAN

-  SDEROT LACHISH
-  INDUSTRIAL ZONE CORRIDOR
-     TECH PAVILIONS
-  RESIDENCY PROGRAM
-  PEDESTRIAN / BICYCLE PATHS SMART
-  MOBILITY ROUTES

Tech Pavilions

A network of tech pavilions is a strategic approach for promoting technological interfaces in public spaces. Its goals are: strengthening local identity and enhancing the connection between residents and their living environment; Providing accessibility to advanced technologies and incorporating them into public spaces; Encouraging social mobility by providing education for different age-groups; Developing public spaces using climate-sensitive urban language; Using compact interventions for stitching the urban fabric.

Four types of tech pavilions will be located in relation to the city's overall network (community pavilions, urban pavilions, info pavilions and industrial pavilions). The specific program and content of each pavilion will be determined according to its location in a specific community or area, but all of them will include computer stations, free Wi-Fi, screens, information,

sitting areas, natural or artificial shading, bike racks and repair stations etc.

The pavilions are not developed as independent nodes but as an integral part of their surroundings, reinforcing public spaces, acting as catalysts and creating a ripple effect in their environments. The pavilions and their adjacent public spaces are planned according to climate-sensitive design, regarding issues such as materials, local vegetation, water management and shading.



TECH PAVILION RENDERING



TECH PAVILIONS: LOCATIONS

● ● ● ● TECH PAVILIONS

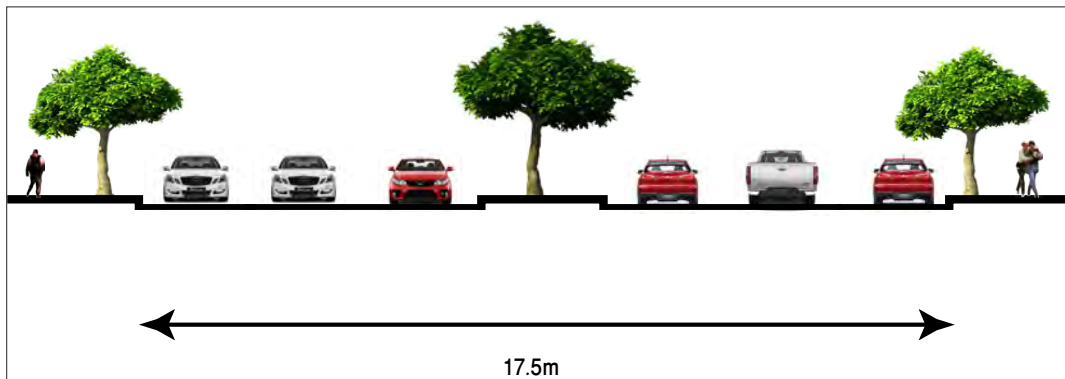
———— PEDESTRIAN / BICYCLE PATHS

Sderot Lachish

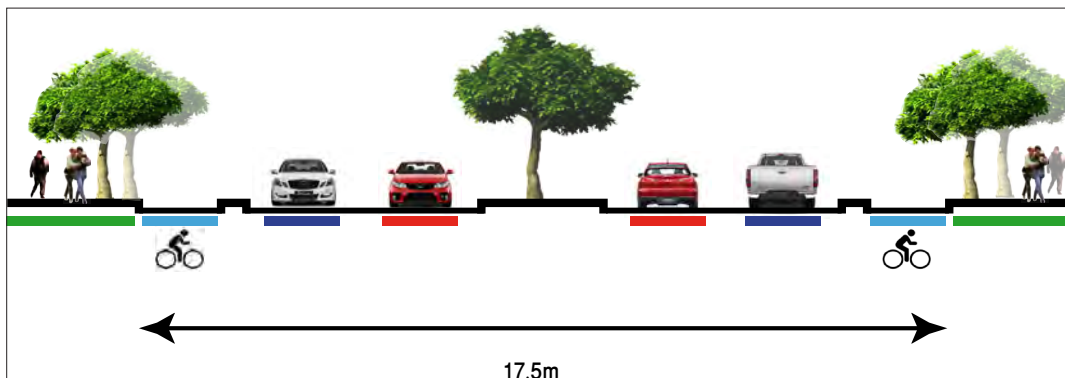
Developing an integrated urban language for Sderot Lachish, Kiryat Gat's main axis, is a crucial step in transforming this fragmented, exposed street into a vital and continuous linear connection between the different parts of the city, including the industrial area and northern development. Furthermore, Sderot Lachish can present a new image to those entering the city, either by car or train.

second theme, technology, will be incorporated into urban space as smart street furniture, solar panels, interactive maps, real-time information and signage. The proposed street section puts emphasize on pedestrian and bicycle traffic (and not only vehicular traffic), omitting traffic/parking lanes, widening the sidewalks and adding a bicycle path on each side.

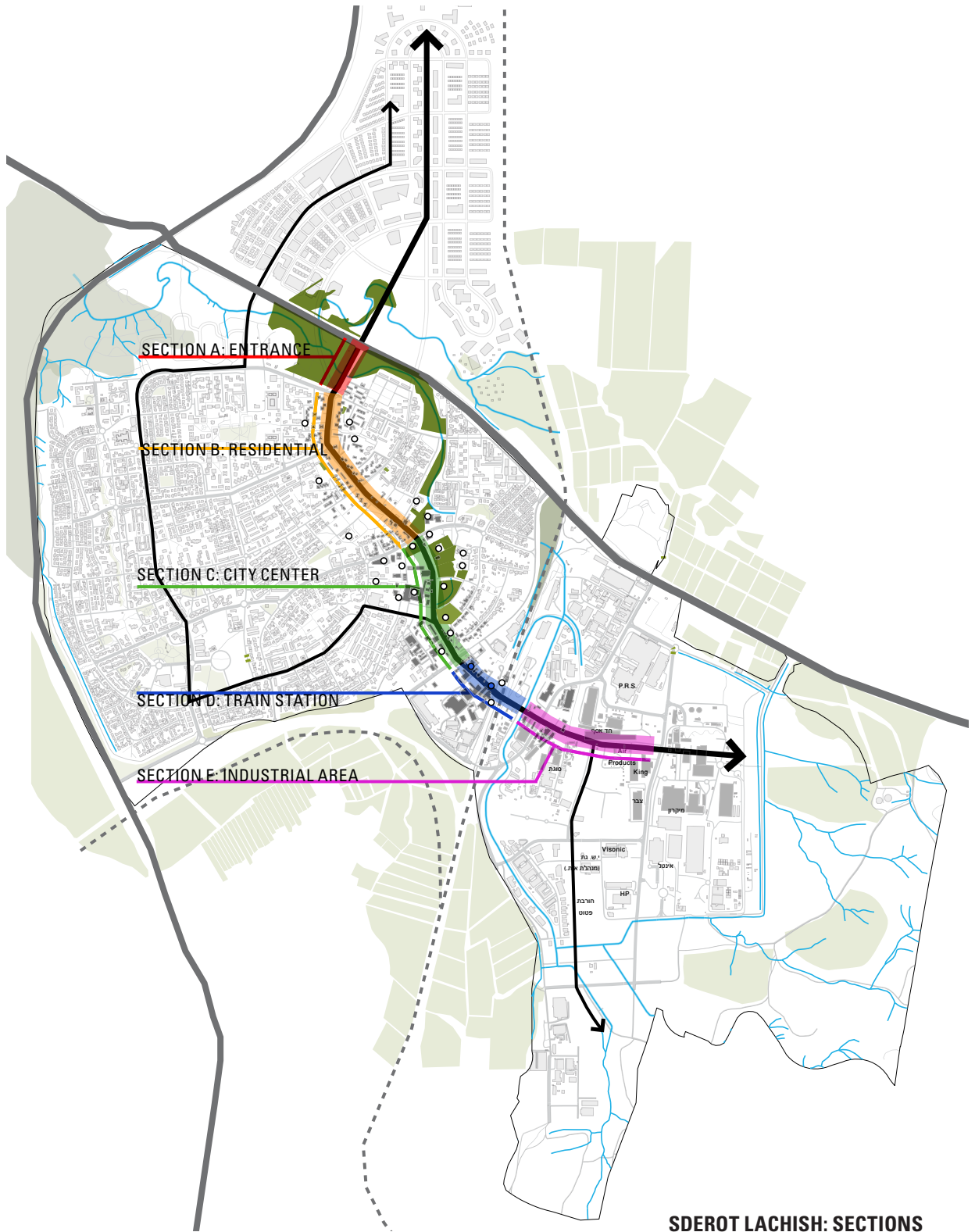
The urban language for Sderot Lachish is based on two main themes: climate and technology. As of today, major parts of the street are not shaded and therefore uncomfortable for walking. Planting mature trees along the street will not only enhance the human comfort but also create visual unity and a cohesive urban element. The



TYPICAL SECTION: EXISTING CONDITION



TYPICAL SECTION: PROPOSED PLAN



SDEROT LACHISH: SECTIONS

3

Smart Mobility

Being a medium size city, only three kilometers wide, mobility system for Kiryat Gat should be based on suitable tools, utilizing its compactness and not reproducing tools employed in major metropolitan areas. Adjusting the mobility system to the city's compact scale will not only increase its efficiency and answer local needs, but also prevent unnecessary waste of resources and carbon emissions.

In order to advance the idea of smart mobility for compact cities and to render the current system more efficient, we propose changing the existing transportation model into a system of high frequency shuttles. The shuttles will have relatively short routes, and will provide a good connection to the train station (in conjuncture with the train schedule) and industrial zones. This system is based on the premise, that small and fast shuttles are much more suitable for

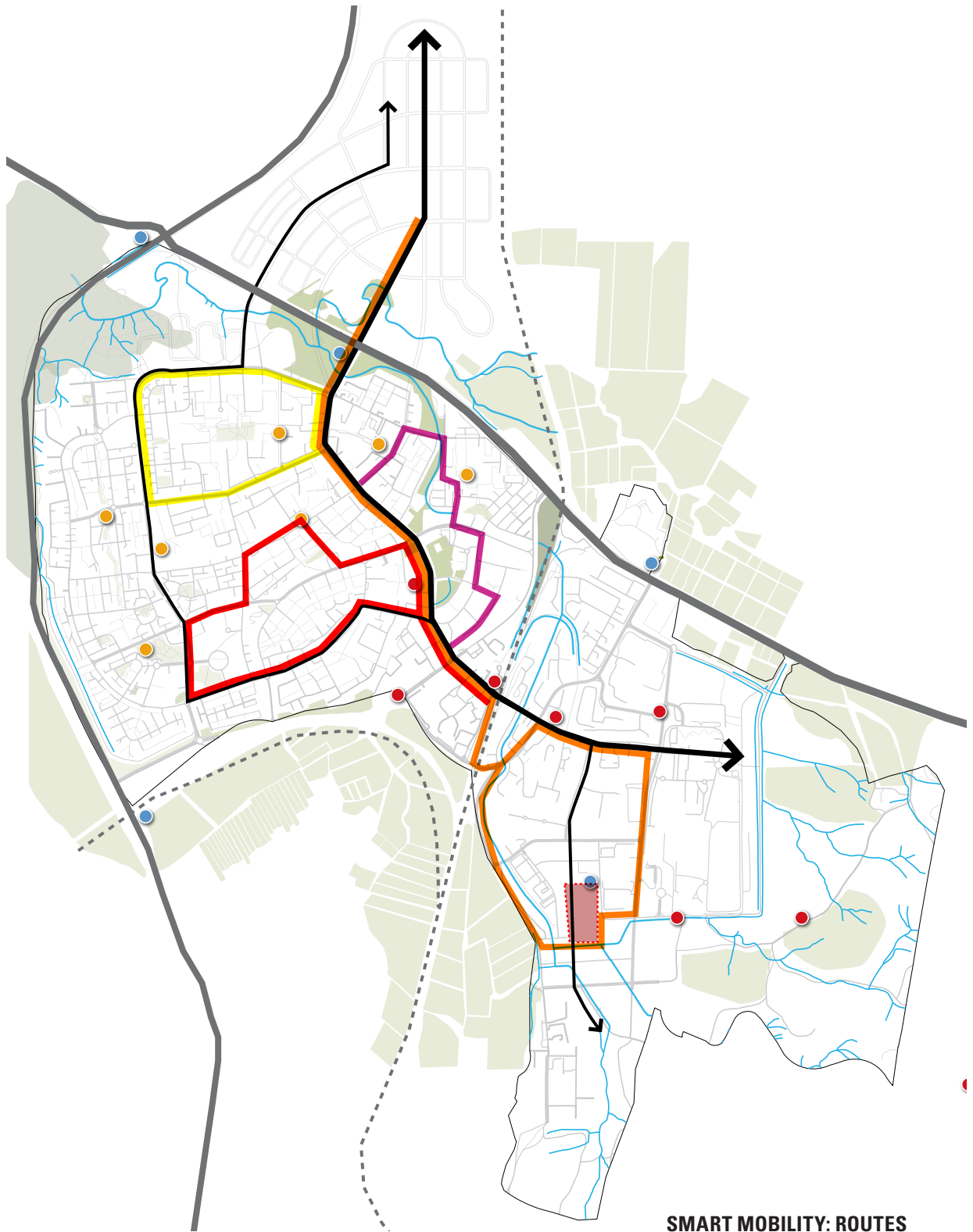
medium size city and more convenient to use, in comparison to larger and slower buses.

Furthermore, the system can incorporate a model of "mobility on demand", as part of which, users can order a shuttle through touch screens in the stations themselves or through a website or an app. Through these mediums, the passengers can also get real-time information regarding the shuttles' time of arrival and routes. It is the first time that a "mobility on demand" model is planned in Israel and it is considered innovative also in an international context. Applying such a model in Kiryat Gat will not only help branding the city as cutting edge but also serve as a model for adjusting the transportation system to compact scale.



EYE STOP

Credit: MIT SENSEable City Lab



SMART MOBILITY: ROUTES

-  ALL-CITY ROUTE
-  LOCAL ROUTES
-  LOCAL ROUTES

4

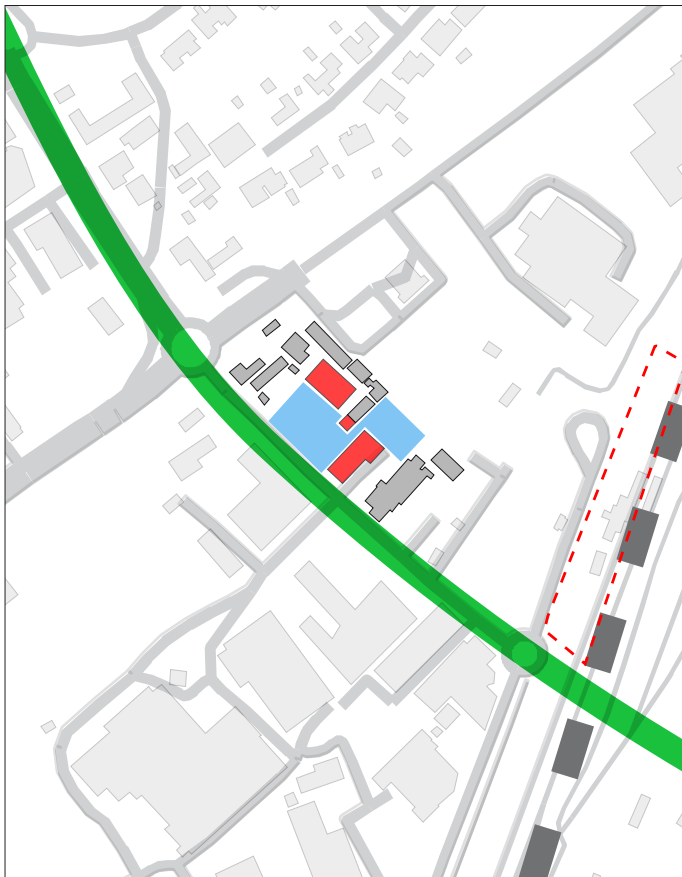
Residency Program

In order to establish collaboration between different actors and stakeholders, as well as to introduce the city to new and varied population groups, we propose developing a residency program in Kiryat Gat. The program includes two sub-trajectories: the first is designated for start-up companies which seek to develop a unique product or idea, in different areas of expertise. The second trajectory is designated for young artists who use different types of technologies in their work.

As part of the program, the participants will use hangers and work spaces in Kiryat Gat's industrial area, which will be retrofitted and renovated for this purpose. They will also receive partial rent support for housing in Kiryat Gat and will be able to use services

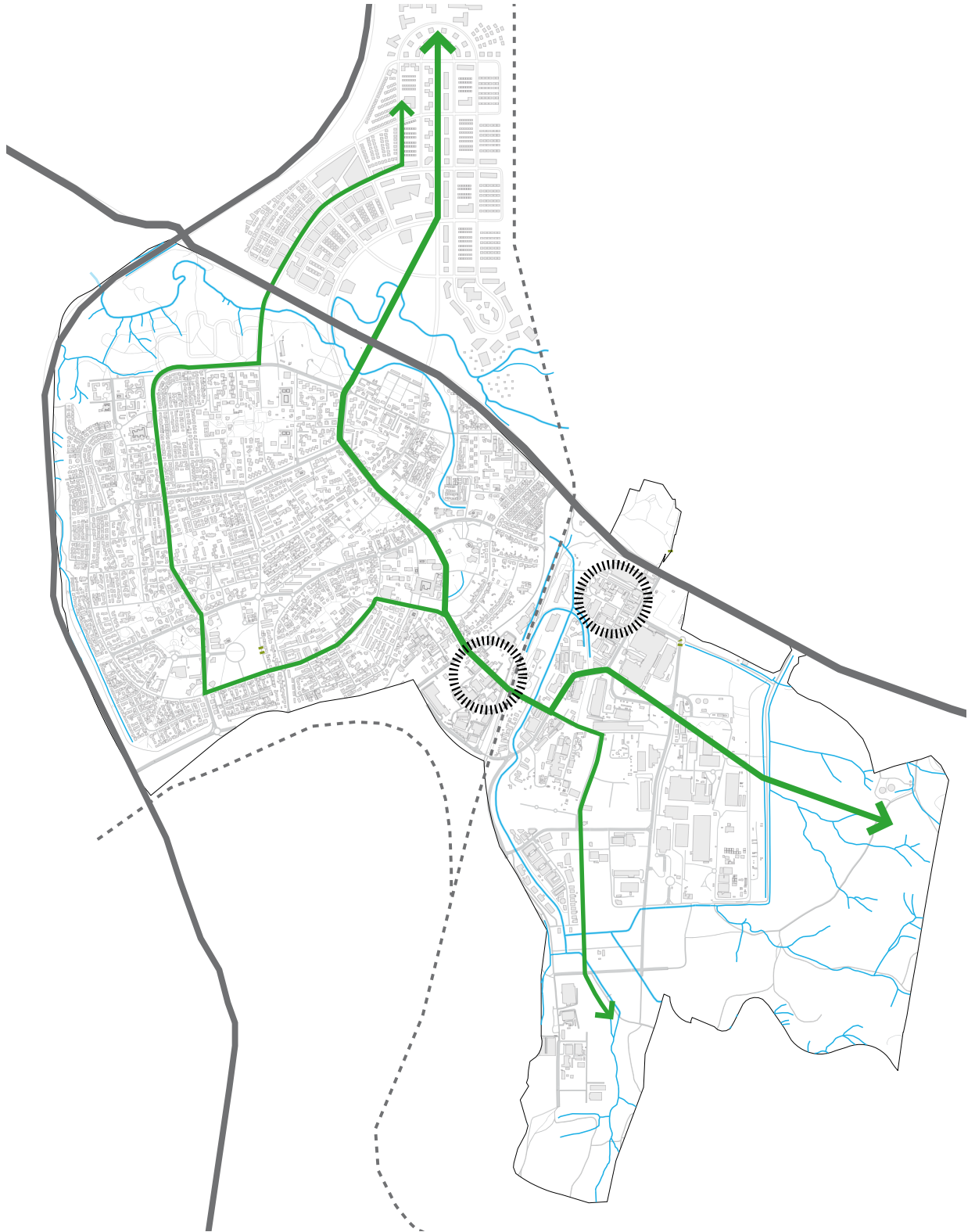
available from established companies placed in Kiryat Gat's industrial area (such as conference rooms for start-up companies or left-over materials for artists). In return, the participants will be obligated to participate in the city's education and community system, as teachers, mentors or instructors, as well as to open their studios/work spaces for tours and exhibitions.

The public spaces adjacent to the work spaces will be developed as to include open-air exhibitions and gathering areas, transforming the residency area into a major urban and regional attraction point and re-branding Kiryat Gat as a center for technological and artistic innovation.



RECOMMENDED SITE





RESIDENCY PROGRAM: LOCATIONS

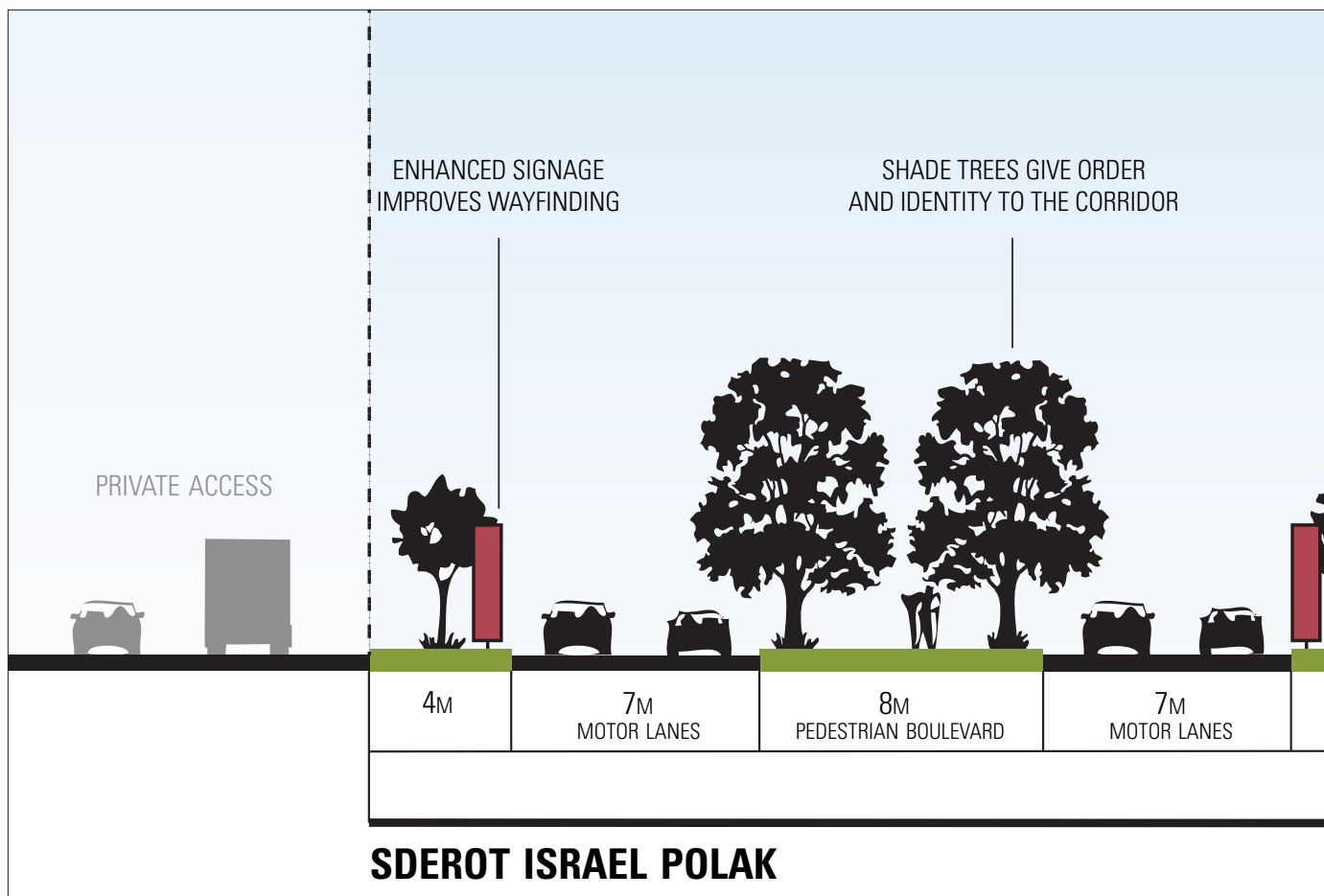
Industrial Zone Corridor

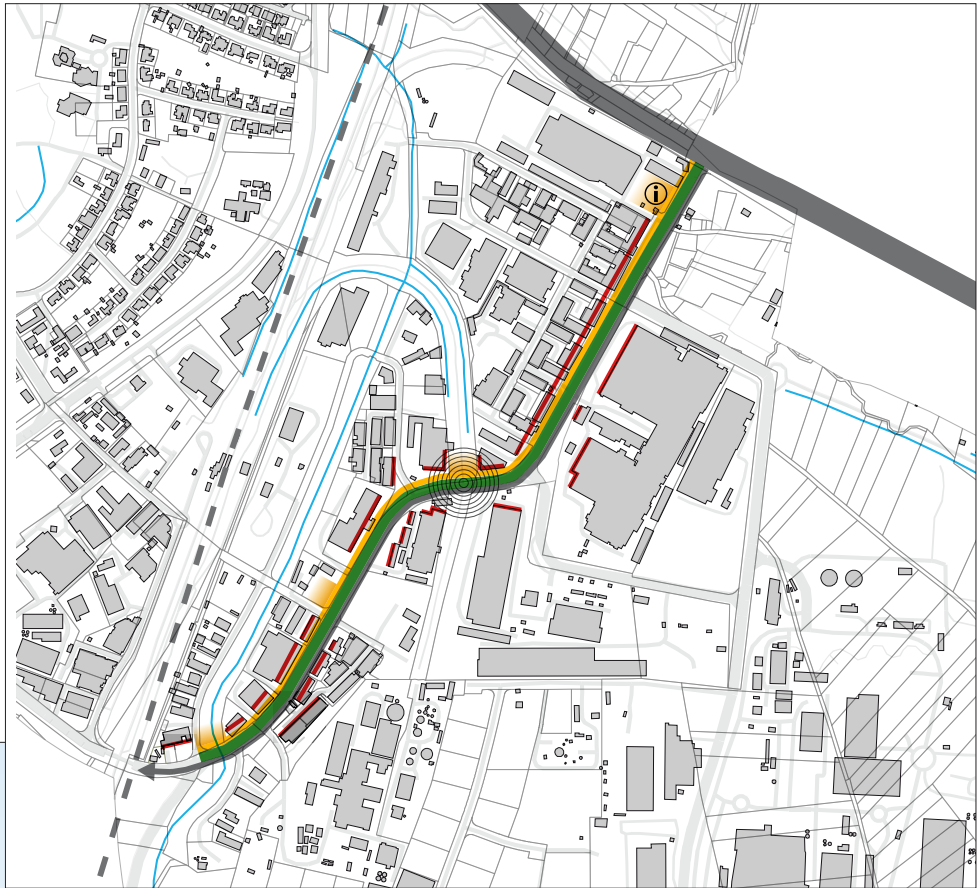
Sderot Israel Polak is the key gateway for the Kiryat Gat industrial zone. As such, it has a critical role in the movement of people and goods. At present, the entrance to the park does not function as a clear gateway and the roads have no clear order or hierarchy. The businesses in the park are also situated in an unorganized manner and there are no key nodes or destinations in the zone, other than the individual businesses. The industrial park needs focus and directional hierarchy in order to provide a good first impression of the area and the city of Kiryat Gat.

An information gateway will serve as a welcoming location where visitors to the industrial park can pause in a small plaza to learn about the area they are visiting. Informational boards will provide standard directional information, such as the location of the pavilion, amenities, services, and sites of interest. The boards would also provide

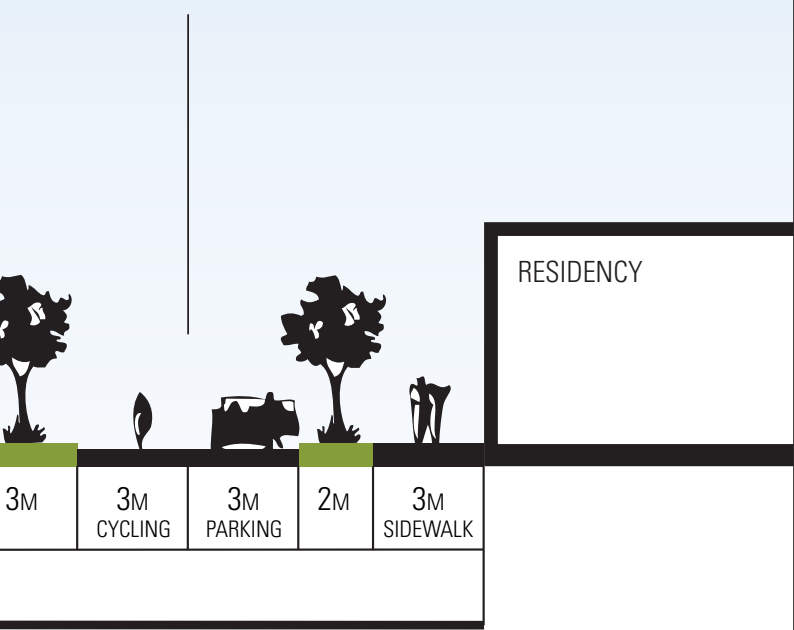
a holistic overview of the activities in the park, fulfilling the need for general orientation.

A suite of streetscape improvements along Sderot Israel Polak would provide a positive first impression of the area and a clear sense of place. New tree plantings, for instance, will create a strong visual presence to reinforce the importance of the street. In addition, a street allowance provides enough space where a new continuous cycling facility can be provided along the boulevard, which has a direct connection to the city. A street hierarchy could also be created in the industrial area to limit large truck movements along the corridor when possible. The improvements will enforce the road's primary role to serve the movement of goods and people to and from the industrial park





MULTI-MODAL ACCESS ROAD WITH ON-STREET PARKING



RIGHT OF WAY: 40M

INDUSTRIAL ZONE CORRIDOR

- ACTIVITY STRIP
- GREEN STRIP
- MOTORIZED TRAFFIC
- FACADE ATTENTION
- i INFORMATION
- ⊙ NODE ATTENTION

STREET SECTION

SDEROT ISRAEL POLAK FACING SOUTH

6 My Backyard: Parking Lots Design Competition

All firms in the industrial park can reconsider the physical quality of their parking lots for employees and visitors. This design competition will allow for all businesses to look in their own backyard and consider how they can make improvements to their sites. A collective result of improving the parking conditions will assist in better integrating individual industrial sites to the broader district. This initiative would be the first of its kind in Israel and has the potential to receive positive media attention for participating businesses and the city of Kiryat Gat.

Parking lots represent up to 40% of urban land, and this is typically on publicly accessible privately owned land. Parking has a major impact on the physical environment; this impact, however, can become a positive one for the Kiryat Gat industrial area. Redesigning parking lots can reduce the urban heat island effect – asphalt surfaces can be 20 degrees

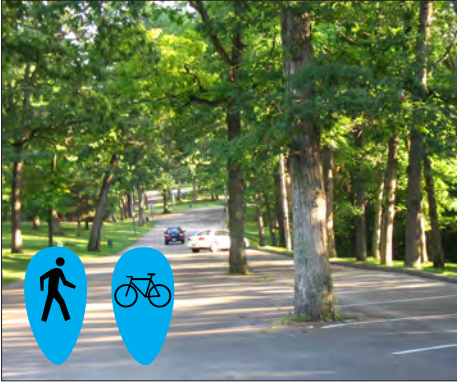
hotter on sunny days – by using shading and vegetation to make parking lots cooler and more comfortable. Ecologically sensitive design, such as pervious pavements, can capture storm water and reduce runoff. Well-designed parking lots can also provide for multiple uses, including food vendors, play areas, and event spaces.

The city will advertise the competition to local businesses and industries, explaining how the competition is a step towards sustainability and rebranding the industrial park as a positive place to do business. Sharing best practices, gathering ideas from participants, and using local resources will be key in implementing improvements in each company's parking lot. The city will also facilitate ongoing improvements by scheduling an annual series of programs to recognize and celebrate the efforts.



THE KIRYAT GAT INDUSTRIAL AREA HAS A WIDE VARIETY OF PARKING AVAILABILITY. THE SIZE AND SCALE OF THE PARKING VARIES, BUT THE TYPOLOGY OF THE PARKING SPACES IS USUALLY THE SAME: AN ASPHALT AREA WITH NO OTHER AMENITIES.

Possible programs and interventions



TREE PROVIDE AMPLE SHADE FOR PEDESTRIANS, BICYCLES AND CARS.

(SOURCE: SEAN_YODA_ROUSE@FLICKR)



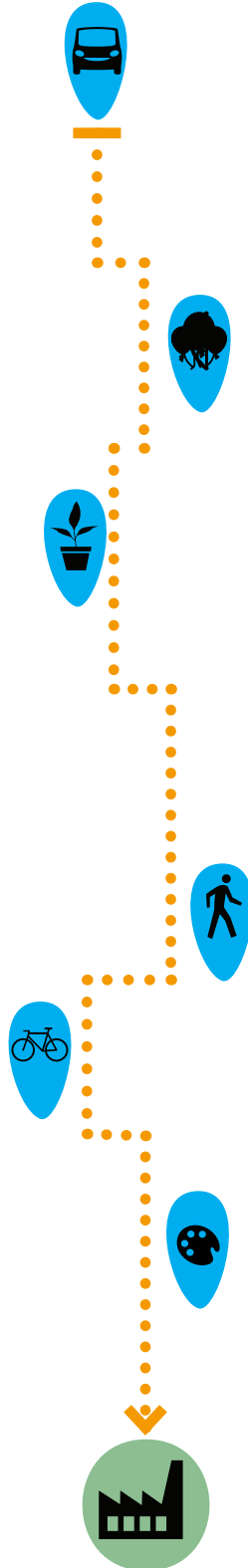
ECOLOGICALLY SENSITIVE DESIGN REATES A SOFTER ENVIRONMENT.

(SOURCE: WINTERSOUL1@FLICKR)



PERVIOUS PAVERS PREVENT WATER RUN-OFF AND MAKE AN INTERESTING ALTERNATIVE TO ASPHALT.

(SOURCE: PREPREET@FLICKR)



POP-UP MARKETS CAN ACTIVATE THE PARKING LOT ON WEEKENDS.

(SOURCE: SEAN_YODA_ROUSE@FLICKR)



ART AND LIGHT INSTALATIONS DURING THE NIGHT

(SOURCE: DAVEDEHETRE@FLICKR)



POP-UP MARKETS CAN ACTIVATE THE PARKING LOT ON WEEKENDS.

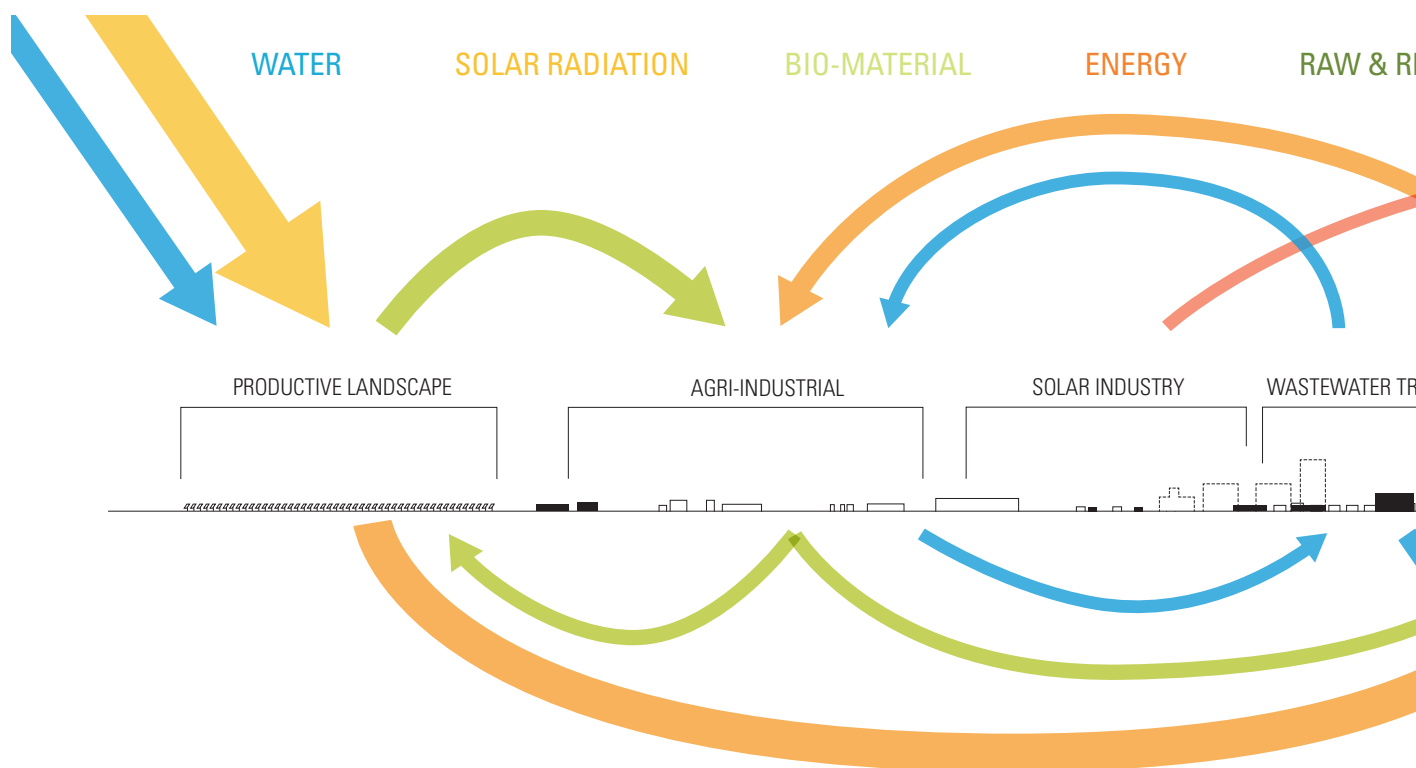
(SOURCE: DANIELLE_BLUE@FLICKR)

Material Flow Analysis

Kiryat Gat has an opportunity to implement the first eco-industrial park in Israel, whereby the outputs from one industry are used as the inputs for another. Cities that have embraced the eco-industrial model, including Kalundborg, Denmark, have seen economic, environmental, and social returns on investment. The first step towards achieving a balance in the flow of materials and energy is to understand those flows. A comprehensive inventory must be undertaken in order to account for the quantity, quality, and frequency of each firm's inputs and outputs.

This initiative is achievable, but it will require a great deal of trust and cooperation. It should be noted that municipal government can play a supporting role, in terms of providing incentives, but nearly all successful eco-industrial parks have been private initiatives, driven by economic feasibility and common environmental goals.

Cooperation is important because Kiryat Gat's industries are quite varied, and achieving a balance of material flows will require experts familiar with each one. It is incumbent upon facilitators to be inclusive, listen carefully to feedback, and make connections between compatible industries. The material flow analysis is an iterative process, and is the starting point for future collaborations.





APPENDIX: NEW TOWNS

KIRYAT GAT, ISRAEL

1954 MIDDLE EAST

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **60,000**
 TODAY'S POPULATION **47,621**
 TODAY'S AGE DISTRIBUTION **30.6**
 SOCIO-ECONOMIC STATUS **4 / 10**

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

SOUTH AREA WHEN BUILT
URBAN CENTER AREA TODAY
DESERT BORDER USE **RESIDENTIAL / INDUSTRIAL (HI-TECH)**
DESERT DESIGN MODEL
FLAT INDUSTRIAL ZONE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **MIXED**
 # OF DWELLINGS **14,821**
 # OF SCHOOLS **26**
 COMMERCE **URBAN CENTER & SHOPPING MALL**
 DEMOGRAPHICS **MIXED ETHNICS**



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY **909 UNITS / KM²**
 DWELLING COVERAGE **0.4 FAR**
 POPULATION DENSITY **2,921 PEOPLE / KM²**
 ROAD DENSITY **12.78 KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT **BUS, TAXI**
 REGIONAL TRAIN SERVICE **YES, ONE STATION**
 PEDESTRIAN NETWORK **YES**
 BIKE NETWORK **YES**

SCALE:
1000 x 1000 M

AKADEMGORODOK, RUSSIA

1957 EUROPE

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **50,000**
 TODAY'S POPULATION **100,000**
 TODAY'S AGE DISTRIBUTION
 SOCIO-ECONOMIC STATUS

GEOGRAPHIES

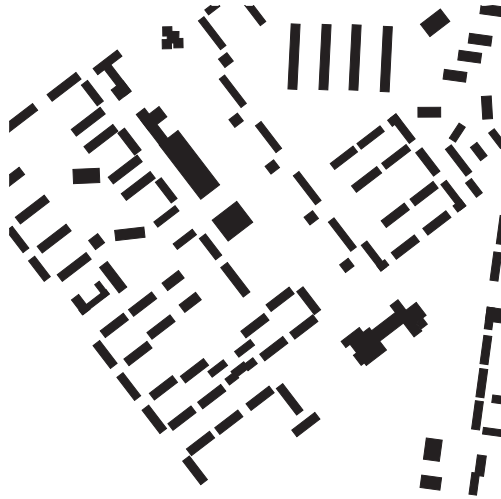
LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

SOUTH AREA WHEN BUILT
RESEARCH HUB AREA TODAY
FOREST USE **RESIDENTIAL / INSTITUTIONAL**
HUMID CONTINENTAL DESIGN MODEL
FLAT INDUSTRIAL ZONE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **MIXED**
 # OF DWELLINGS
 # OF SCHOOLS
 COMMERCE **YES**
 DEMOGRAPHICS **MIXED ETHNICS**



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY
 DWELLING COVERAGE
 POPULATION DENSITY **8333 PEOPLE / KM²**
 ROAD DENSITY **10 KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT **BUS, TAXI**
 REGIONAL TRAIN SERVICE **YES**
 PEDESTRIAN NETWORK **YES**
 BIKE NETWORK **YES**

SCALE:
1000 x 1000 M

COLUMBIA, MD, U.S.A

1967

N. AMERICA

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **100,000**
 TODAY'S POPULATION **96,900**
 TODAY'S AGE DISTRIBUTION **35.5**
 SOCIO-ECONOMIC STATUS
MEDIAN HOUSEHOLD INCOME - \$96,801

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

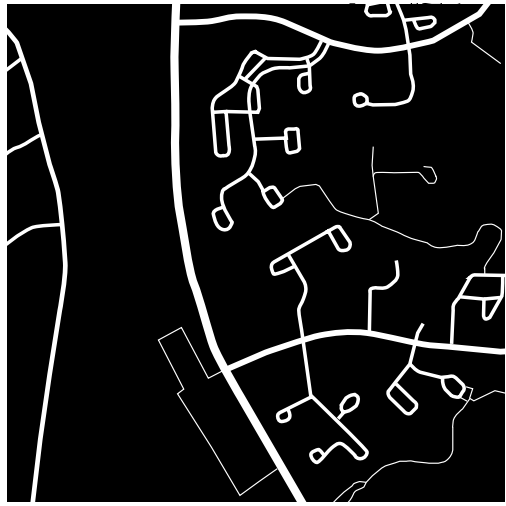
MID-ATLANTIC SELF-SUFFICIENT CITY
COASTAL / DC TEMPERATE HILLY
 AREA WHEN BUILT -
 AREA TODAY **71.48 km²**
 USE
 DESIGN MODEL
 INDUSTRIAL ZONE
RESIDENTIAL /INDUSTRY GARDEN CITY
SEPARATE INDUSTRIAL PARK

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **SINGLE FAMILY, VARIED**
 # OF DWELLINGS **34,000**
 # OF SCHOOLS **25+**
 COMMERCE
 DEMOGRAPHICS **VILLAGE CENTERS, BIG BOX**
50% WHITE, 23% BLACK, MIX



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY **494.3 UNITS / KM²**
 DWELLING COVERAGE **0.249 FAR / KM²**
 POPULATION DENSITY **1,200 PEOPLE / KM²**
 ROAD DENSITY **8.65* KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT
 REGIONAL TRAIN SERVICE
 PEDESTRIAN NETWORK
 BIKE NETWORK
AUTO - DEPENDENT AMTRAK NEARBY
YES
YES

SCALE:
1000 x 1000 M

CIUDAD GUAYANA, VENEZUELA

1961

S. AMERICA

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **250,000**
 TODAY'S POPULATION **1,050,283**
 TODAY'S AGE DISTRIBUTION **20.5**
 SOCIO-ECONOMIC STATUS
3 / 10

GEOGRAPHIES

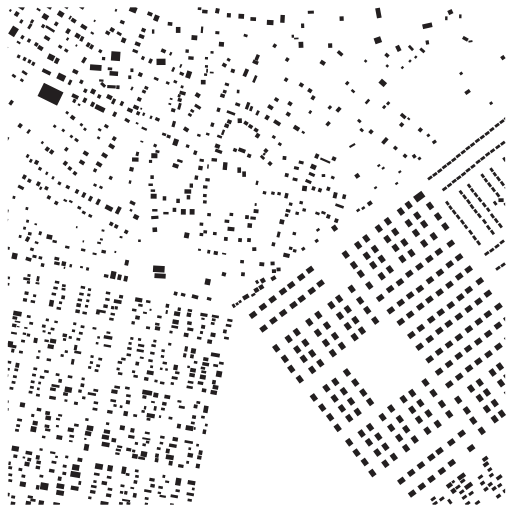
LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

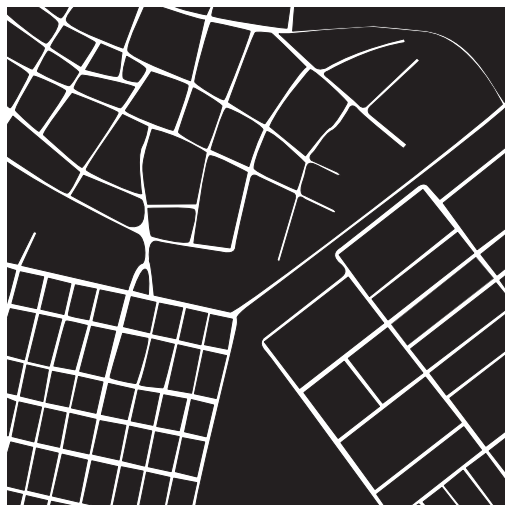
SOUTHEAST INDUSTRIAL CENTER
RIVER PORT TROPICAL
VARIED
 AREA WHEN BUILT
 AREA TODAY **3,282 km²**
 USE
 DESIGN MODEL
 INDUSTRIAL ZONE
RESIDENTIAL / INDUSTRIAL GARDEN CITY
SEPARATE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **MIXED**
 # OF DWELLINGS **228,322**
 # OF SCHOOLS **280**
 COMMERCE
 DEMOGRAPHICS **HYDROPOWER, STEEL**
MIXED ETHNICS



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY **1,600 UNITS / KM²**
 DWELLING COVERAGE **.47 FAR / KM²**
 POPULATION DENSITY **7,400 PEOPLE / KM²**
 ROAD DENSITY **105 KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT
 REGIONAL TRAIN SERVICE
 PEDESTRIAN NETWORK
 BIKE NETWORK
PERRERA, BUS, TAXI UNDER CONSTRUCTION
YES
YES

SCALE:
1000 x 1000 M

DIMONA, ISRAEL

1955 MIDDLE EAST

SOCIO-ECONOMIC FACTORS

TARGET POPULATION
TODAY'S POPULATION
TODAY'S AGE DISTRIBUTION
SOCIO-ECONOMIC STATUS

60,000
32,565
31.7
4 / 10

GEOGRAPHIES

LOCATION IN COUNTRY
REGIONAL FUNCTION
GEOGRAPHICAL REGION
CLIMATE
TOPOGRAPHY

PLANNING / DESIGN

SOUTH AREA WHEN BUILT
URBAN CENTER AREA TODAY
DESERT USE
DESERT DESIGN MODEL
FLAT INDUSTRIAL ZONE

N/A
29.877 km²
RESIDENTIAL / INDUSTRIAL
GARDEN CITY
SEPARATE

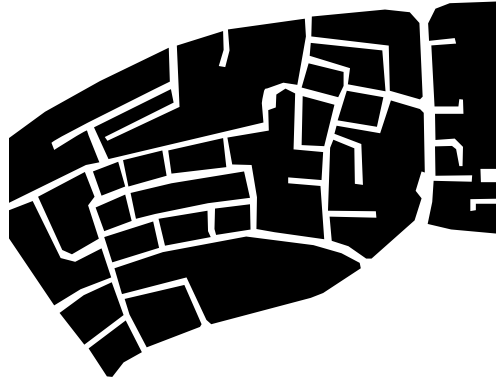
NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES
OF DWELLINGS
OF SCHOOLS
COMMERCE
DEMOGRAPHICS

MIXED
11,341
23
YES
MIXED ETHNICS



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY
DWELLING COVERAGE
POPULATION DENSITY
ROAD DENSITY

N/A
N/A
1,090 PEOPLE / km²
N/A

SERVICES & TRANSPORT

URBAN TRANSIT
REGIONAL TRAIN SERVICE
PEDESTRIAN NETWORK
BIKE NETWORK

BUS, TAXI
YES, ONE STATION
YES
YES

SCALE:
1000 x 1000 M

DON MILLS, CANADA

1953 N. AMERICA

SOCIO-ECONOMIC FACTORS

TARGET POPULATION
TODAY'S POPULATION
TODAY'S AGE DISTRIBUTION
SOCIO-ECONOMIC STATUS

45,000
25,435
44.7
8 / 10

GEOGRAPHIES

LOCATION IN COUNTRY
REGIONAL FUNCTION
GEOGRAPHICAL REGION
CLIMATE
TOPOGRAPHY

PLANNING / DESIGN

TORONTO SUBURB AREA WHEN BUILT
ANNEXED NEIGHBORHOOD AREA TODAY
LAKES REGION USE
HUMID CONTINENTAL DESIGN MODEL
RIVERS & RAVINES INDUSTRIAL ZONE

8.35 km²
8.35 km²
RESIDENTIAL / COMMERCIAL
GARDEN CITY / BAUHAUS
SEPARATE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES
OF DWELLINGS
OF SCHOOLS
COMMERCE
DEMOGRAPHICS

MIXED
10,970
21
YES
WHITE, CHINESE, OTHER



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY
DWELLING COVERAGE
POPULATION DENSITY
ROAD DENSITY

1314 UNITS / km²
.44 FAR / km²
3046 PEOPLE / km²
8 km / km²

SERVICES & TRANSPORT

URBAN TRANSIT
REGIONAL TRAIN SERVICE
PEDESTRIAN NETWORK
BIKE NETWORK

BUS, TAXI, HIGHWAY
YES, ONE STATION
YES
YES

SCALE:
1000 x 1000 M

GANDHINAGAR, GUJARAT, INDIA

1970

ASIA

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **150,000**
 TODAY'S POPULATION **195,985**
 TODAY'S AGE DISTRIBUTION **11% UNDER 6**
 SOCIO-ECONOMIC STATUS **80% LITERACY**

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

WEST CENTRAL DISTRICT CAPITAL RIVER BANK MONSOON FLAT
 AREA WHEN BUILT
 AREA TODAY
 USE
 DESIGN MODEL
 INDUSTRIAL ZONE

ADMINISTRATIVE / RESIDENTIAL NEIGHBORHOOD UNIT SEPARATE
 38 km²
 53 km²

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES
 # OF DWELLINGS
 # OF SCHOOLS
 COMMERCE
 DEMOGRAPHICS
MIXED (GOV. & PRIVATE)
XX
BY NEIGHBORHOOD
PRIMARY & NEIGHBORHOOD
95% HINDU



URBAN FORM

DWELLING DENSITY
 DWELLING COVERAGE
 POPULATION DENSITY
 ROAD DENSITY
XX UNITS / KM²
XX FAR / KM²
4,000-5,500 PEOPLE / KM²
14.6* KM / KM²

SERVICES & TRANSPORT

URBAN TRANSIT
 REGIONAL TRAIN SERVICE
 PEDESTRIAN NETWORK
 BIKE NETWORK
BUS
ONE STATION
SEPARATE IN RESIDENTIAL
SEPARATE IN RESIDENTIAL

SCALE: (GREY BOX)
 1000 x 1000 M

HALLE-NEUSTADT, GERMANY

1967

EUROPE

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **90,000**
 TODAY'S POPULATION **45,157**
 TODAY'S AGE DISTRIBUTION **SKewed ELDERLY**
 SOCIO-ECONOMIC STATUS **17,000 UNEMPLOYED (2008)**

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

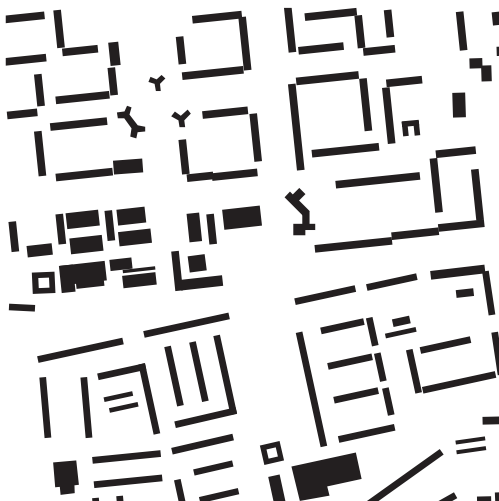
PLANNING / DESIGN

SAXONY-ANHALT (EAST) SUB-REGIONAL HUB NORTH GERMAN PLAIN TEMPERATE SEASONAL FLAT
 AREA WHEN BUILT
 AREA TODAY
 USE
 DESIGN MODEL
 INDUSTRIAL ZONE

RESIDENTIAL / SOME COMMERCIAL TOWERS IN THE PARK SEPARATE
 800 HA / 8 km²
 979.3 HA / 9.8 km²

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES
 # OF DWELLINGS
 # OF SCHOOLS
 COMMERCE
 DEMOGRAPHICS
TOWER BLOCKS
SOME
MIXED, ELDERLY-SKEWED



URBAN FORM

DWELLING DENSITY
 DWELLING COVERAGE
 POPULATION DENSITY
 ROAD DENSITY
 VACANCY
HIGH-DENSITY, HIGH-RISE
LOW COVERAGE
27,000 PEOPLE / KM² (IDEAL)
LOW
18% (HALLE)

SERVICES & TRANSPORT

URBAN TRANSIT
 REGIONAL TRAIN SERVICE
 PEDESTRIAN NETWORK
 BIKE NETWORK
 RECREATION AMENITIES
TRAM, BUS
YES, S-BAHN
YES
NOT WITHIN CITY
SKATE PARK

SCALE:
 1000 x 1000 M

MILTON KEYNES, ENGLAND

1967

EUROPE

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **250,000**
 TODAY'S POPULATION **185,000**
 TODAY'S AGE DISTRIBUTION **35**
 SOCIO-ECONOMIC STATUS **HIGH INCOME**

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

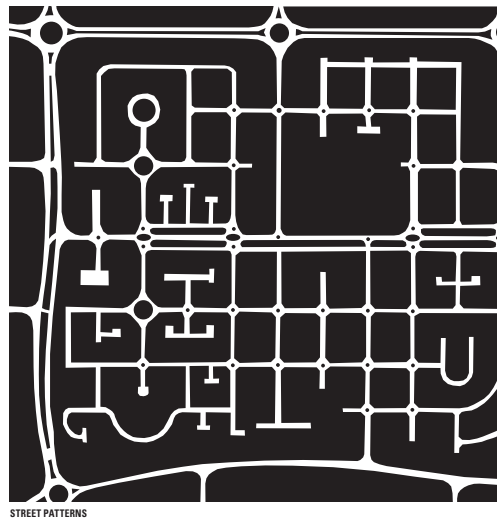
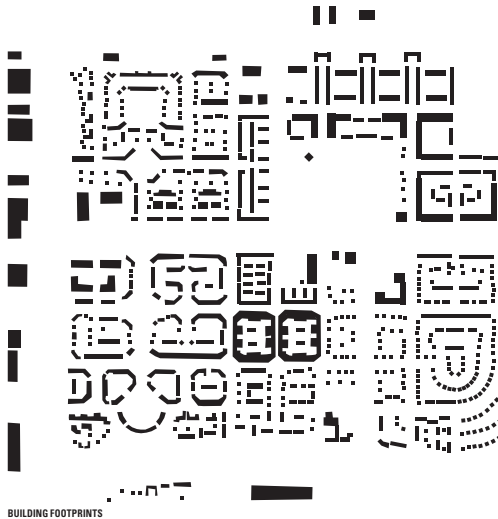
SOUTHEAST
URBAN CENTER
LOWLANDS
TEMPERATE
FLAT

AREA WHEN BUILT
 AREA TODAY
 USE
 DESIGN MODEL
 INDUSTRIAL ZONE

88 km²
89 km²
RES/COM/IND
GRID ROADS
SEPARATE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **SINGLE FAMILY**
 # OF DWELLINGS **101,872**
 # OF SCHOOLS **104**
 COMMERCE **YES**
 DEMOGRAPHICS **WHITE**



URBAN FORM

DWELLING DENSITY **1,144 UNITS / KM²**
 DWELLING COVERAGE **0.29 FAR / KM²**
 POPULATION DENSITY **2,079 PEOPLE / KM²**
 ROAD DENSITY **20 KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT
 REGIONAL TRAIN SERVICE **YES, FIVE STATIONS**
 PEDESTRIAN NETWORK **YES**
 BIKE NETWORK **YES**

BUS
YES
YES

SCALE:
1000 x 1000 M

OR-YEHUDA, ISRAEL

1949

MIDDLE EAST

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **60,000**
 TODAY'S POPULATION **34,664**
 TODAY'S AGE DISTRIBUTION **31.1**
 SOCIO-ECONOMIC STATUS **4 / 10**

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

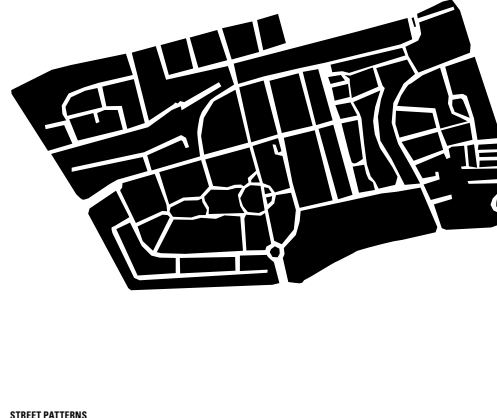
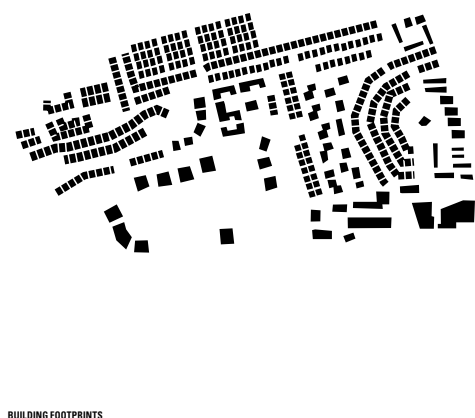
CENTER
TOWN
COASTAL
MEDITERRANEAN
FLAT

AREA WHEN BUILT
 AREA TODAY
 USE
 DESIGN MODEL
 INDUSTRIAL ZONE

N/A
5,141 km²
RESIDENTIAL / INDUSTRIAL
GARDEN CITY
SEPARATE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **MIXED**
 # OF DWELLINGS **9,715**
 # OF SCHOOLS **17**
 COMMERCE **YES**
 DEMOGRAPHICS **MIXED ETHNICS**



URBAN FORM

DWELLING DENSITY **N/A**
 DWELLING COVERAGE **N/A**
 POPULATION DENSITY **6,743 PEOPLE / KM²**
 ROAD DENSITY **N/A**

SERVICES & TRANSPORT

URBAN TRANSIT
 REGIONAL TRAIN SERVICE **BUS, TAXI**
 PEDESTRIAN NETWORK **NO**
 BIKE NETWORK **NO**

NO
NO
NO

SCALE:
1000 x 1000 M

QUEENSTOWN, SINGAPORE

1952

ASIA

SOCIO-ECONOMIC FACTORS

TARGET POPULATION
TODAY'S POPULATION
TODAY'S AGE DISTRIBUTION
SOCIO-ECONOMIC STATUS

157,000
98,502
MIXED, AGING
MIXED

LOCATION IN COUNTRY
REGIONAL FUNCTION
GEOGRAPHICAL REGION
CLIMATE
TOPOGRAPHY

GEOGRAPHIES

PLANNING / DESIGN

SOUTH
SATELLITE TOWN
ISLAND
TROPICAL RAINFOREST
MOSTLY FLAT

AREA WHEN BUILT
AREA TODAY
USE
DESIGN MODEL
INDUSTRIAL ZONE

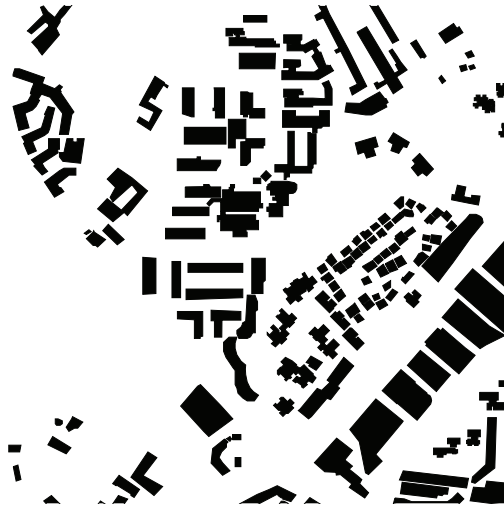
RESIDENTIAL / COMMERCIAL
GARDEN CITY
NEAR

~ 1 KM²
6.67 KM²

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES
OF DWELLINGS
OF SCHOOLS
COMMERCE
DEMOGRAPHICS

MIXED
28,406
15+
YES
MIXED ETHNIC



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY
DWELLING COVERAGE
POPULATION DENSITY
ROAD DENSITY

5,152 UNITS / KM²
3.72 FAR / KM²
14,768 PEOPLE / KM²
4.75 KM / KM²

SERVICES & TRANSPORT

URBAN TRANSIT
REGIONAL TRAIN SERVICE
PEDESTRIAN NETWORK
BIKE NETWORK

BUS, MRT, TAXI
YES, ONE STATION
YES
NO

SCALE:
1000 x 1000 M

SABAUDIA, ITALY

1934

EUROPE

SOCIO-ECONOMIC FACTORS

TARGET POPULATION
TODAY'S POPULATION
TODAY'S AGE DISTRIBUTION
SOCIO-ECONOMIC STATUS

40,000
19,664
49.5
MEDIUM

LOCATION IN COUNTRY
REGIONAL FUNCTION
GEOGRAPHICAL REGION
CLIMATE
TOPOGRAPHY

GEOGRAPHIES

PLANNING / DESIGN

SOUTH-CENTRAL
URBAN CENTER
COASTAL/MARCHLANDS
MEDITERRANEAN
FLAT

AREA WHEN BUILT
AREA TODAY
USE
DESIGN MODEL
INDUSTRIAL ZONE

RES / COMM / AGRI / TOURISM
GARDEN CITY
NONE

144 KM²
144 KM²

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES
OF DWELLINGS
OF SCHOOLS
COMMERCE
DEMOGRAPHICS

MIXED
10,158
7
YES
MIXED ETHNICS



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY
DWELLING COVERAGE
POPULATION DENSITY
ROAD DENSITY

70.5 UNITS / KM²
***.63 FAR / KM²**
136 PEOPLE / KM²
***12 KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT
REGIONAL TRAIN SERVICE
PEDESTRIAN NETWORK
BIKE NETWORK

BUS, TAXI
NO
YES
NO

SCALE:
1000 x 1000 M

TSUKUBA, JAPAN

1963

ASIA

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **100,000 RED¹ / 120,000 SD²**
 TODAY'S POPULATION **78,000 RED / 131,000 SD**
 TODAY'S AGE DISTRIBUTION **MIXED**
 SOCIO-ECONOMIC STATUS
*RED = RESEARCH AND EDUCATION DISTRICT
 *SD = SUBURBAN DISTRICT

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

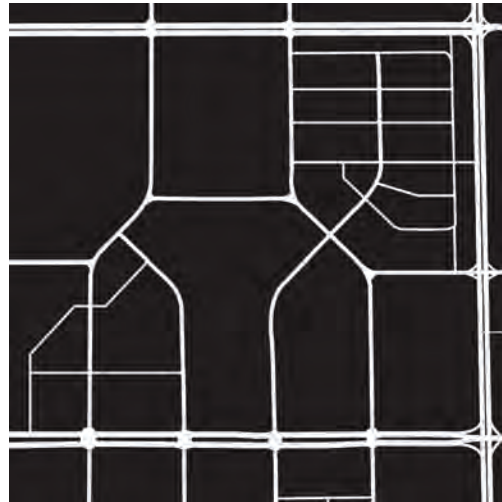
CENTRAL AREA WHEN BUILT
RESEARCH CENTER AREA TODAY
PLATEAU USE
TEMPERATE DESIGN MODEL
MOSTLY FLAT INDUSTRIAL ZONE
27 km² RED / 257 km² SD
INSTITUTIONAL / RESIDENTIAL
SCIENCE CITY
DISTRIBUTED IN SD

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **MIXED**
 # OF DWELLINGS **77,000 (RED+SD)**
 # OF SCHOOLS **62 + 3 UNIVERSITIES**
 COMMERCE **YES**
 DEMOGRAPHICS



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY **270 UNITS / KM² (RED+SD)**
 DWELLING COVERAGE **0.62 FAR / KM²**
 POPULATION DENSITY **2900 PEOPLE / KM² RED / 500 SD**
 ROAD DENSITY **9.55 KM / KM²**

SERVICES & TRANSPORT

URBAN TRANSIT **BUS**
 REGIONAL TRAIN SERVICE **YES, FOUR STATIONS**
 PEDESTRIAN NETWORK **YES**
 BIKE NETWORK **YES**

SCALE:
 1000 x 1000 M



YOKNEAM, ISRAEL

1950

MIDDLE EAST

SOCIO-ECONOMIC FACTORS

TARGET POPULATION **60,000**
 TODAY'S POPULATION **19,412**
 TODAY'S AGE DISTRIBUTION **30.6**
 SOCIO-ECONOMIC STATUS **6 / 10**

GEOGRAPHIES

LOCATION IN COUNTRY
 REGIONAL FUNCTION
 GEOGRAPHICAL REGION
 CLIMATE
 TOPOGRAPHY

PLANNING / DESIGN

NORTH AREA WHEN BUILT
URBAN CENTER AREA TODAY
COASTAL USE
DESERT DESIGN MODEL
FLAT INDUSTRIAL ZONE
N/A
7.39 km²
RES./IND.(HI-TECH)
GARDEN CITY
SEPARATE

NEIGHBORHOOD CHARACTERISTICS

HOUSING TYPES **MIXED**
 # OF DWELLINGS **5,739**
 # OF SCHOOLS **6**
 COMMERCE **YES**
 DEMOGRAPHICS **MIXED ETHNICS**



BUILDING FOOTPRINTS



STREET PATTERNS

URBAN FORM

DWELLING DENSITY **N/A**
 DWELLING COVERAGE **N/A**
 POPULATION DENSITY **2,627 PEOPLE / KM²**
 ROAD DENSITY **N/A**

SERVICES & TRANSPORT

URBAN TRANSIT **BUS, TAXI**
 REGIONAL TRAIN SERVICE **NO**
 PEDESTRIAN NETWORK **NO**
 BIKE NETWORK **NO**

SCALE:
 1000 x 1000 M

NEW TOWN METRICS

NEW TOWN

NAME	COUNTRY	DATE BUILT	POPULATION (TARGET)	POPULATION (TODAY)	AGE DISTRIBUTION (TODAY)	SOCIO-ECONOMIC
KIRYAT GAT	ISRAEL	1954	60,000	47,621	30.6	4 / 10
AKADEMGORODOK	RUSSIA	1957	50,000	100,000	-	-
COLUMBIA, MD	USA	1967	100,000	96,900	35.5	MEDIAN H PER CAPIT
CIUDAD GUAYANA	VENEZUELA	1961	250,000	1,050,283	20.5	3 FROM 10
DIMONA	ISRAEL	1955	-	-	31.7	4 / 10
DON MILLS, ON	CANADA	1953	45,000	25,435	44.7	8
GANDHINAGAR	INDIA	1970	150,000	195,985	11% UNDER 6	80% LITER
HALLE-NEUSTADT	GERMANY	1967	90,000	45,157	SKEWED ELDERLY	3 OUT OF
MILTON KEYNES	ENGLAND	1967	250,000	185,000 ²	35	HIGH INCO
OR YEHUDA	ISRAEL	1949	-	34,664	31.1	5 / 10
QUEENSTOWN	SINGAPORE	1952	157,000	98,502	SKEWED ELDERLY, BUT INCREAS- INGLY YOUNG	MIXED
SABAUDIA	ITALY	1934	40,000	19,664	49.5	MEDIUM
TSUKUBA	JAPAN	1963	220,000 ¹	216,175 ³	MIXED	
YOKNEAM	ISRAEL	1950	-	19,412	-	6 / 10

NOTES

1. 100,000 IN RESEARCH AND EDUCATION DISTRICT,
120,000 IN SURROUNDING SUBURBAN DISTRICT.
2. AS OF 2001

3. RESEARCH AND EDUCATION DISTRICT 78,000,
SURROUNDING SUBURBAN DISTRICT 131,000 (2008);
216,175 TOTAL (2011).

GEOGRAPHIES

ECONOMIC STATUS	GEOGRAPHIC REGION	LOCATION IN COUNTRY	TOPOGRAPHY	CLIMATE
	DESERT BORDER	SOUTH	FLAT	DESERT BORDER
	FOREST	SOUTH	FLAT	HUMID CONTINENTAL
HOUSEHOLD INCOME \$93,801, MEDIAN A: \$45,135	COASTAL	MID-ATLANTIC	MOSTLY FLAT	TEMPERATE
	RIVER PORT	SOUTHEAST	VARIED	TROPICAL
	DESERT	SOUTH	FLAT	-
	LAKES REGION	TORONTO SUBURB	RIVERS & RAVINES	HUMID CONTINENTAL
RACY	RIVER BANK	WEST CENTRAL	FLAT	MONSOON
10; 17,000 UNEMPLOYED (2008, HALLE)	NORTH GERMAN PLAIN	STATE OF SAXONY- ANHALT (EAST)	FLAT	TEMPERATE SEASONAL
OME (47% ABOVE NATIONAL AVERAGE)	LOWLANDS	SOUTHEAST ENGLAND ⁴	FLAT	TEMPERATE, SIMILAR TO THE REST OF ENGLAND
	COASTAL	CENTER	HILLY	MEDITERRANEAN
	TROPICAL ISLAND	SOUTHWEST OF SINGAPORE ISLAND	MOSTLY FLAT	TROPICAL RAINFOREST
	SOUTH-CENTRAL	COASTAL/ MARSHLANDS	FLAT	MEDITERRANEAN
	PLATEAU	CENTRAL, 56 KM NORTHEAST OF TOKYO	MOSTLY FLAT	TEMPERATE
	COASTAL	NORTH	FLAT	MEDITERRANEAN

4. EQUIDISTANT BETWEEN LONDON, BIRMINGHAM AND CAMBRIDGE

NEW TOWN METRICS

PLANNING / DESIGN

NAME	AREA WHEN BUILT (KM ²)	AREA TODAY (KM ²)	REGIONAL FUNCTION	USE	DESIGN MODEL
KIRYAT GAT	7.5	16.302	URBAN CENTER	RESIDENTIAL / INDUSTRIAL (HI-TECH & TRADITIONAL) / COMMERCE	GARDEN CITY
AKADEMGORODOK	-	12	SOVIET-ERA RESEARCH CENTRE OF SIBERIA ²	RESIDENTIAL / INSTITUTIONAL / INDUSTRIAL (SCIENCE/HIGH-TECH)	UNIVERSITY CAMPUS
COLUMBIA, MD	-	71.48	SMALL CITY	RESIDENTIAL / INDUSTRIAL / COMMERCE ⁵	GARDEN CITY ⁸
CIUDAD GUAYANA	3,282	3,282	INDUSTRIAL CENTER	RESIDENTIAL / INDUSTRIAL	GARDEN CITY
DIMONA	-	29.88	URBAN CENTER	RESIDENTIAL / INDUSTRIAL (TRADITIONAL) / COMMERCE	GARDEN CITY
DON MILLS, ON	8.35	8.35	ANNEXED NEIGHBORHOOD	RESIDENTIAL/COMMERICAL	GARDEN CITY/BAUHAUS
GANDHINAGAR	38	57	CAPITAL OF GUJARAT STATE ³	ADMINISTRATIVE CENTER; RESIDENTIAL / COMMERCIAL / INDUSTRY ⁶	NEIGHBORHOOD URBANISM
HALLE-NEUSTADT	8	9.8	SUB-REGIONAL HUB	RESIDENTIAL, SOME COMMERCIAL	SOCIALIST URBAN LIVING IDEAL
MILTON KEYNES	88 (DESIGNATED AREA)	89	REGIONAL CENTER ⁴	RESIDENTIAL / COMMERCIAL / INDUSTRIAL	"CITY IN A FOREST" (20 MILLION TREES)
OR YEHUDA	-	5.141	TOWN	RESIDENTIAL / INDUSTRIAL (TRADITIONAL) / COMMERCE	GARDEN CITY
QUEENSTOWN	1	6.67	SATELLITE TOWN FOR SINGAPORE CITY	RESIDENTIAL / COMMERCIAL ⁷	GARDEN CITY/ TOWERS IN THE PARK
SABAUDIA	144	144	TOURIST	RESIDENTIAL, COMMERCIAL, AGRICULTURAL, & TOURISM	GARDEN CITY
TSUKUBA	-	284 ¹	CENTER FOR SCIENTIFIC RESEARCH	RESIDENTIAL, INSTITUTIONAL, COMMERCIAL, INDUSTRIAL	SCIENCE CITY, GARDEN CITY
YOKNEAM	-	7.39	URBAN CENTER	RESIDENTIAL / INDUSTRIAL (HI-TECH & TRADITIONAL) / COMMERCE	GARDEN CITY

NOTES

1. 27 FOR RESEARCH AND EDUCATION DISTRICT; 257 FOR SURROUNDING SUBURBAN DISTRICT
2. RECENTLY MORPHED INTO A HIGH-TECH HUB.
3. SPLIT FROM MUMBAI STATE IN 1960.
4. ORIGINALLY MEANT TO RELIEVE HOUSING CONGESTION

5. INTENDED TO HAVE ENOUGH JOBS FOR RESIDENTS
6. INCLUDING THERMAL POWER STATION); HIGHER EDUCATION; HINDU TEMPLE (AKSHARDHAM
7. ABUTS SOME INDUSTRIAL PARKS AND A MAJOR PORT

NEIGHBORHOOD CHARACTERISTICS

	INDUSTRIAL ZONE	HOUSING TYPES	NUMBER OF DWELLINGS	NUMBER OF SCHOOLS	COMMERCE	DEMOGRAPHICS
	SEPARATE	MIXED	14,821	26	URBAN CENTER & SHOPPING MALL	-
PUS	SEPARATE	MIXED	-	-	CENTRAL SHOPPING CENTER	MIXED ETHNIC
		SINGLE FAMILY, SOME ATTACHED	34,000	25+	EACH VILLAGE HAS A SHOPPING CENTER	WHITE (51%), BLACK (23%), ASIAN (9%), HISPANIC (7%)
	SEPARATE	MIXED	228,322	280	STEEL & HYDRO-POWER-BASED INDUSTRY	MIXED ETHNIC
	SEPARATE	MIXED	11,341	23	URBAN CENTER & SHOPPING MALL	MIXED ETHNIC
	SEPARATE	MIXED	10,970	21	YES	WHITE, CHINESE, OTHER
UNITS	SEPARATE	MIXED (PUBLIC & PRIVATE)	-	BY NEIGHBORHOOD UNIT	NEIGHBORHOOD COMMERCIAL & PRIMARY	95% HINDU
N	SEPARATE	TOWER BLOCKS/ LARGE-SCALE SLAB	-	-	SOME, URBAN CENTERS BETWEEN TOWER BLOCKS	MIXED, PREDOMINANTLY WHITE, ELDERLY-SKEWED
T" (S)	SEPARATE	MAJORITY SINGLE FAMILY HOMES	101,872	104, INCLUDING UNIVERSITY	URBAN CENTER AND SHOPPING MALL	WHITE (88%)
	SEPARATE	MIXED	9,715	17	URBAN CENTER & SHOPPING MALL	MIXED ETHNIC
ARK	CLOSE BY	MIXED- MOSTLY LARGE TOWERS	28,406	15+, INCLUDING UNIVERSITY	MAJOR SHOPPING CENTERS, IKEA	MIXED ETHNIC- CHINESE, MALAY, INDIAN, OTHER
	NONE	MIXED: MULTIFAMILY & SINGLE FAMILY	10,158	7	YES	MIXED ETHNIC
RDEN	DISPERSED	MIXED	77,407 (BOTH DISTRICTS)	65, INCLUDING 3 UNIVERSITIES	SHOPPING CENTERS & N'BRHOOD COMMERCIAL	PRIMARILY JAPANESE CITIZENS ⁹
	SEPARATE	MIXED	5,739	6	URBAN CENTER & SHOPPING MALL	MIXED ETHNIC

8. DESIGNED TO NOT ONLY ELIMINATE INCONVENIENCES OF SUBDIVISION DESIGN, BUT ALSO ELIMINATE RACIAL, RELIGIOUS, AND CLASS SEGREGATION

9. 7300 FOREIGN NATIONALS (2005)

NEW TOWN METRICS

URBAN FORM

SERVICES &

NAME	DWELLING DENSITY (UNITS / KM ²)	DWELLING COVERAGE (FAR / KM ²)	POPULATION DENSITY (KM ²)	ROAD DENSITY (KM / KM ²)	URBAN TRANSIT
KIRYAT GAT	909	0.4	2,921	12.78	BUS, TAXI
AKADEMGORODOK	-	-	8,333	10	BUS, TAXI
COLUMBIA, MD	494.3	-	5,657		CAR, AMTRAK (9 MI)
CIUDAD GUAYANA	1,600	0.47	7,400	105	PERRERA, BUS, TAXI
DIMONA	-	-	1,090	-	BUS, TAXI
DON MILLS, ON	1,314	0.44	3,046	8	BUS, TAXIS, HIGHWAY
GANDHINAGAR	-	-	4,000-5,500	14.6 ²	BUS
HALLE-NEUSTADT	HIGH-DENSITY, HIGH RISE	LOW COVERAGE	27,000 (COMMUNIST IDEAL)	LOW	TRAM, BUS
MILTON KEYNES	1,144	0.29	2,079	20	BUS
OR YEHUDA	-	-	6,743	-	BUS, TAXI
QUEENSTOWN	5,152	3.72	14,768	4.75	BUS, MRT, TAXI
SABAUDIA	70.5	0.63*	136	12*	BUS, TAXI
TSUKUBA	273 (FOR BOTH DISTRICTS COMBINED)	0.62*	3,399 ¹	9.55*	BUS
YOKNEAM	-	-	2,627	-	BUS, TAXI

NOTES

1. 2,889 IN RESEARCH AND EDUCATION DISTRICT, 510 IN SURROUNDING SUBURBAN DISTRICT
2. NEIGHBORHOOD INCLUDES NON-VEHICULAR

TRANSPORT

FUN FACTS

REGIONAL TRAIN SERVICE	PEDESTRIAN NETWORK	BIKE NETWORK	
YES, ONE STATION	YES	YES	
YES	YES	YES	INTEL OPENED AN AKADEMGORODOK OFFICE IN 2004; A LOCAL IT FIRM IS PRODUCING A WEB PORTAL FOR OPRAH WINFREY
NEARBY	YES	YES	IN 2006, MONEY MAGAZINE RANKED COLUMBIA #4 OUT OF THE 100 "BEST PLACES TO LIVE" IN THE UNITED STATES.
UNDER CONSTRUCTION	YES	YES	PLANNED BY THE JOINT CENTER FOR URBAN STUDIES OF MIT AND HARVARD. NOT WITHOUT CONTROVERSY - SEE LISA PEATTIE'S "THE VIEW FROM THE BARRIO"
YES, ONE STATION	YES	NO	
YES, ONE STATION	YES	YES	DESIGNED BY A MID-20'S GSD STUDENT
YES, ONE STATION	SEPARATED IN RESIDENTIAL	SEPARATED IN RESIDENTIAL	SOUGHT TO MIX CLASSES OF PUBLIC HOUSING TO AVOID THE CRITICISM, GROUPED BY CATEGORY AROUND CENTRAL OPEN SPACE TO AVOID SOCIAL CONFLICT
YES, S-BAHN	YES	NOT WITHIN CITY	SKATE PARK; RECENT REGENERATION FOCUS; YOUTH-LED REUSE STRATEGIES
YES, FIVE STATIONS	YES	YES	FREE WIFI THROUGHOUT THE ENTIRE CITY
NO	NO	NO	
YES, ONE STATION	YES	NO	ALMOST ALL HOUSING IS PUBLIC
NO	YES	NO	MASSIVE LAND RECLAMATION PROJECT BY MUSSOLINI TO DEMONSTRATE THE "POWER" OF THE FASCISM; WELL-RESERVED EXAMPLES OF FASCIST ARCHITECTURE
YES, FOUR STATIONS	YES	YES	HELIPORT; SISTER CITY OF CAMBRIDGE, MA
NO	-	NO	

"See you in Kiryat Gat!"





