

TDS

Warehouse of the Future
Business park and logistics
ecosystems of the future

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Warehouse of the Future

Business park and logistics ecosystems of the future (part 3)

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Foreword

In the past 4 years, we have supervised a number of projects by students at companies in collaboration with Rotterdam University of Applied Sciences. Due to the open-mindedness of the students and therefore creative/innovative approach to bottlenecks, this has provided interesting insights into how to deal with logistics in the future. What we have particularly noticed, however, is the fact that we (logistics consultants, real estate companies and logistics parties), together with (local) governments, are not able to give a clear vision of how we see logistics in the Netherlands in the future.

That is why we have come up with the idea to give a (practical) impetus for that vision:

The Warehouse of the Future. The starting point of the Warehouse of the Future is that it makes a positive contribution to the requirements of sustainability, well-being and efficiency for the user, taking into account the increasing complexity as a result of scarcity, regulations and social transformation.

The white papers outline the range of possibilities that exist in the various sub-facets, with which the 'warehouse of the future' can be designed. The purpose of the whitepapers is to provide the various stakeholders with practical ideas and tools to work with and, where necessary, to provoke discussion/exchange of ideas. We realize that no overarching blueprint or 'Grand Design' is described here. Although the whitepapers are written from a Dutch perspective, we believe elements can be used internationally as well.

It is more important to us that we stop looking at each other or trapping each other because of outdated concepts or regulations. The Future is always different from what we think, in any case not what it is today: so, get moving and take steps for that future.

Happy reading.

Annemieke, Eric, Raymond, René and Radboud.

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Introduction

Space is at a premium. And yet, almost exclusively single-layer distribution centres are built. In doing so, the Netherlands is missing out on opportunities. By combining logistics functions, building multi-layered and smart automation, available space is better utilized. These warehouses of the future also offer countless other advantages. In three white papers, the most important facets of the Warehouse of the Future are examined. In previous sections, we outlined how square and cubic meters can be used more efficiently, and what requirements and limitations there are for the building. This last part takes a closer look at the consequences for (business) parks.

Consumer behaviour is constantly changing. And that has an impact on logistics chains and shopping malls, inside and outside the cities. In addition, the population of the Netherlands continues to grow. Combined with the government's desire to build fewer (large) distribution centres, the increasing distribution volume in the future must largely be absorbed within the existing distribution infrastructure.

Add to this the lack of available personnel, a development that is expected to continue in the coming years due to the increasing ageing of the population, it is clear a fresh look at distribution capacity is needed. In collaboration with, among others, the Top Sector Logistics and the Rotterdam University of Applied Sciences, René Geujen (Next Level Development), Radboud olde Scheper (Riverland Supply Chain Consultancy), Raymond Tukker (TICM) and Eric Hereijgers (St. Onge Company) provide this different view in a series of white papers

The starting point for the vision is that it should make a positive contribution looking at sustainability, well-being and efficiency, of course taking into account the increasing complexity as a result of scarcity, regulations and social transformation.

Leading in this are:

- scarcity (personnel, space, energy, etc).
- clustering of functions;
- flexibility;
- innovation;
- social relevance and acceptance;
- no sacred cows are spared and
- concrete steps (now and not in 10 to 20 years).

That is why we looked at better, sustainable use of space, better use of operational hours, the possibilities of energy transition, robotization and mechanization, and a sustainable use of materials.

The vision is laid down in three white papers - under the umbrella title 'Warehouse of the Future'. The triptych outlines the palette of possibilities to shape that warehouse for the future. Part 3 focuses on the business park of the future, in conjunction with logistics ecosystems and in relation to the environment. Among other things, the integration into the environment, the functionality, the life-cycle resilience, and the impact on the use of space are discussed.



Challenges

The Netherlands has more than 3,000 business parks, with a total area of more than 90,000 hectares (900 square kilometres). Of this, a total of approximately 6,000 hectares (6.6%) has been specifically filled with logistics buildings.



When integrating logistics and industrial buildings into future-proof business parks, the challenge lies mainly in bringing together the demand side (the buildings) and the supply side (future-proof business parks). A sustainable and resilient ecosystem will need to be developed, capable of adapting to changing technological, economic, and environmental factors. This requires an integrated approach to several themes.



Sustainability

Negative effects of the business park must be minimized, and resources must be used as efficiently as possible. This can be challenging, as significant investments in green technologies and infrastructure are required. Legal and financial obstacles will have to be overcome.



Technology

A future-proof business park must be equipped with the latest technologies and infrastructure. High-speed internet, data centers, smart energy systems, and other digital technologies, among others, must enable companies to operate efficiently and effectively. The implementation of these technologies can be complex and time-consuming due to technical, financial, and legal challenges.



Cooperation

Businesses, government agencies and other stakeholders need to work together to create a shared (long-term) vision and coordinate efforts in the development of a future-proof business park. This is a complex challenge, partly because stakeholders may have different priorities and interests. It may require considerable effort to build trust and to provide concrete direction and concretize plans.



Talent

A future-proof business park requires a pool of (differently) trained, flexible workers, who can adapt to changing requirements and technologies. However, there are already shortages of qualified workers with the desired skills and experience. It can be difficult to develop, attract, and retain talent.



Resilience

A future-proof business park must be resilient; to withstand and recover from disruptions such as natural disasters, pandemics, and economic recessions. Contingency planning, risk management, and the ability to adapt quickly to changing conditions are required.

Overall, this holistic approach requires a long-term horizon and a commitment to continuous investment and collaboration between all stakeholders. Of course, a future-proof business park must be responsibly integrated into the living environment.



Demand for logistics buildings

In macroeconomic terms, clear shifts are visible in the composition of industries and sectors. The logistics industry is no exception. Several trends are resulting in a greater and changing demand for logistics buildings:



E-commerce

The rise of online shopping has led to a sharp increase in the demand for logistics buildings. As more consumers shop online, businesses need more space to store goods and carry out the ordering process. These properties are often closer to consumer areas.



Faster delivery times

Consumers have increasingly higher wishes and expectations when it comes to delivery times. Orders have to be delivered faster and faster. To meet this changing demand, companies need more logistics buildings to be located closer to their customers. This enables faster and more reliable delivery times and strengthens the competitive position of those companies. The location closer to the consumer also offers the possibility to switch to CO₂ neutral transport for the 'last mile', for example by means of electric vehicles.



Inventory

The importance of efficient and strategic inventory management has risen sharply in recent years. With a growing demand for higher availability of goods, more accurate order processing, and larger assortments that are deliverable from stock, the demand for logistics space to store and manage those stocks is also growing.



Hessing Supervers in Venlo



Refresco Sittard in Sittard



Outsourcing

Many companies outsource their logistics activities to third-party service providers. These logistics providers need large premises to store and manage multiple customers' inventories under one roof. After all, a large building offers economies of scale and enables synergy effects. Moreover, it increases the long-term resilience of business operations.



Urbanization

More and more people are moving to urban areas. In order to efficiently deliver orders in these densely populated areas, 'last-mile' logistics buildings are needed. Urban logistics buildings reduce the distance that goods have to travel, reduce transport costs and result in a lower CO₂ burden for the urban area.



Nearshoring

Due to growing uncertainties and irregularities in supply chains, because of geopolitics, pandemics and other disruptions, buffer stocks are increasing – to prevent undesirable swinging effects in supply chains (bullwhip effect). These increasing buffer stocks also lead to a greater need for logistics buildings.





Logistic chains












The design of business chains and supply chains also plays a role. And it can vary considerably. Each sector has different logistics drivers, which can also differ from one company to another. Take the supermarkets; We know many supermarket chains, all of which deliver our daily groceries. However, the structure of Albert Heijn's logistics chain is completely different from that of Aldi, Jumbo or PicNic. This depends, among other things, on the size of the company (number of stores), the assortment (full-service supermarket vs. discounter), the location of the stores and the distribution model to the store branches and/or the consumer (split e-commerce deliveries or integral delivery from branches).

Numerous factors play a role in determining the location and set-up of a warehouse, such as the logistical focus in the supply and removal of goods, the desired speed of delivery, the composition of the assortment and the stock rotation of items.

In addition, the footprint of many companies is historically determined. For example, a wholesale company is often located in a location where the founder or owner comes from, while the storage of production companies is located in places where the raw materials come from. Many logistics companies consciously opt for logistics hotspots, where many different companies can work together and use different modes of transport.

Broadly speaking, several dominant establishment structures can be recognized. For example, there is a clear concentration of supermarket distribution centres in the A12 corridor around Bleiswijk and Waddinxveen. The central location in relation to a large consumer population in the Randstad conurbation and the high delivery frequency required to get a large quantity of goods to those consumers are logical explanations for this concentration.

The overview below provides more insight into several dominant structures and can be a guideline in setting up an area development and determining the target group of a location/region.

Target service level	2-3 days	Next day	Same day
Radius covered by 1 facility	Whole region	~500 km	~250 km
# of facilities needed	1-2	8-12	35-40
			
Dominant distribution structures per industry	European DC structure	Regional DC structure	Rapid fulfilment structure
 Medical Tech	90%	10%	
 Pharma		60%	40%
 Fashion & Lifestyle (Omnichannel)	80%	20%	
 Food & Beverage		20%	80%
 E-commerce (multi brand)		35%	65%
 High Tech	60%	40%	
 Chemicals	90%	10%	
 Spare parts	75%	25%	

Source: BCI Global



Natural clustering: Fresh park Venlo



Natural clustering

Each region has one or more clusters of sectors that play a dominant role. For example, South Limburg has a dominant representation of warehouses for the storage of medical technology for the European market with the Trilandis business park. The Rotterdam region has a warehousing cluster for bulk chemicals in the Botlek, but also has a huge fruit and vegetable cluster (in Barendrecht).

It is interesting to investigate where these clusters are complementary to each other and can reinforce each other. This can benefit cooperation in several areas. Possible follow-up questions include:

- Does clustering contribute to chain shortening and/or chain cooperation?
- Are companies countercyclical to each other and can they make use of each other's resources?
- Can business space be exchanged and/or shared?
- Are there additional functions in the area that promote chain integration?
- Can goods flows be shared or use the same logistics infrastructure (multimodal transport)?

However, a monoculture that is too dominant carries risks. If too many of the same companies are housed in the same cluster, there is a risk of saturation of the already tight labour market, additional pressure on the housing market and other undesirable economic consequences. Moreover, the region's long-term economic resilience is under pressure if the region is too dependent on a single industrial sector (monoculture).

In order to achieve a healthy balance in economic activity, it is therefore important to respond well to existing economic activities in combination with the desired vision of the future.



Location of logistics buildings

When we look at the location of logistics buildings, we distinguish three main groups: urban areas, suburban or peripheral areas, and non-urban areas. Urban warehouses are typically smallest and have the highest cost per cubic meter, but they provide easier access to consumers and transportation networks. Suburban warehouses are larger, less expensive, and often located near major highways. Warehouses in the outlying areas are usually the largest and cheapest but can be further away from major transportation networks.

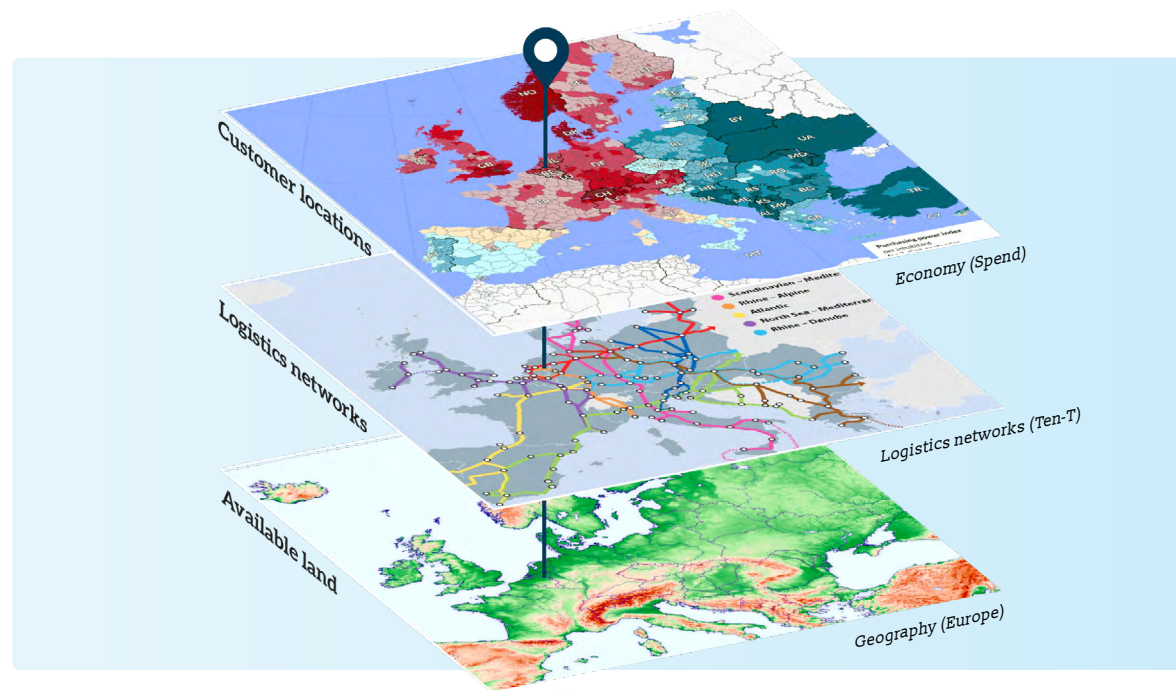
Of course, the decisive factors in the choice between these areas and warehouse types are the needs of the company, the markets that are served and the type of goods that are stored. City warehouses are ideal for those who need or want to serve the immediate needs of the local community, while XXL warehouses in a non-urban area are better suited for those serving larger regional or (inter)national markets.



Center of gravity

For a logistics user, operational costs are often decisive. The most decisive trade-off is often the location in relation to the center of gravity of the flows of goods versus the costs of a location. A location that is in the center of gravity of business operations is usually also the most sustainable location. As a result of the optimal location, the flow of goods - and therefore also the CO₂ emissions - is limited as much as possible.

When choosing between 2 equal locations, preference is always given to the location that is least distant from the crucial infrastructure. Ten kilometres closer to a port or motorway results in transport savings of 2,000 kilometres for 100 truck movements per day. A good positioning of logistics buildings in relation to logistics infrastructure and/or economic centres of gravity is therefore essential.





Perspective

The available space for the development of new business parks in the Netherlands is already scarce. In addition, housing, agriculture, nature development, energy transition and mobility also require space. The need for space is greater than the available space almost everywhere. The central government has therefore asked the provinces to work with municipalities to make choices about the use of space in the coming years.

In this spatial puzzle process, both national and regional governments are thinking about the spatial accommodation of large-scale business establishments. Partly based on the realisation that in many regions it will be difficult to find spacious, new, greenfield locations, there is a strong focus on better and more intensive use of existing business parks (brownfields). In doing so, it will be necessary to look carefully at how plots, including in terms of size, match the demands and needs of users. To accommodate companies with small, medium and large space requirements in a future-proof manner, and to realise as many flexible and modular buildings as possible, existing plots will have to be adapted - for example through replotting.



More efficient use brownfields:
Sluisweg Waalwijk (before and after)



It is very important for the regions to take decisions. What kind of economy do they want? And what level of ambition are they striving for? The economic profile of a region is formed by a multitude of companies operating in a multitude of sectors. Creating a healthy corporate biodiversity requires an integrated approach. On the one hand, both local and regional interaction between companies must be optimally and sustainably realised and anchored. On the other hand, corporate biodiversity will have to fit into the environment in terms of size and scale.

Important tools are:

- location determination: where what clusters;
- plan development: zoning plan/environmental plan;
- land allocation green fields;
- re-use of brownfields and
- Efficient use of space: better use of square and cubic metres (maximum building percentage and optimum building height).

Determining direction and rules leads to the perpetuation and strengthening of spatial layout and room for innovation and creativity and ensures that buildings and business parks also fit into the environment in a responsible manner. Getting this regulatory framework in place remains the concrete challenge.

By seeking dialogue with all stakeholders (government, companies, developers, local residents) in a good and timely manner (prior to planning), plans can be jointly designed, and proactive action can be taken. Governments can proactively adjust zoning plans and clearly indicate which developments are stimulated at which locations and then also align the regulatory framework with this.

Efficient use of space

It is clear that a limited number of new greenfield sites will become available in the coming years. It is therefore necessary to think carefully about the available space for business parks. A well-thought-out layout of the buildings in their surroundings leads to an efficient use of space and avoids unnecessary waste of already scarce space.

Better use of terrain dimensions

A logical grid for buildings results in a more efficient use of business parks. In order to arrive at such a logical grid, it is advisable to first determine a logical building structure - with optimal use of space - for intended users within the current zoning plan. Such a logical building structure has been discussed in detail in part 2 of this whitepaper series. Subsequently, it can be examined how the necessary other functions can be properly integrated into the area. In addition, an optimal use of space can be achieved on the plot by, where possible, stacking functions. This makes a building percentage of more than 65% achievable.

Interaction with and connection to the environment

However, a business park is never a stand-alone element, but is always part of a landscape. It is therefore very important that a business park fits into that landscape as naturally as possible. By determining the integration per side, an optimal result is achieved. If, for example, one side of a business park borders on a nature reserve and the other sides on another business landscape, it can be decided to make the transition with the nature reserve qualitatively higher than the more functional transitions on the other sides. In this way, an area can be developed specifically to the situation and yet cost-effectively.

For a sustainable integration into the environment, it is important that nuisance to the environment is prevented. For example, with the help of light and sound barriers, or through good lighting plans, in accordance with BREEAM sustainability requirements, whereby the lighting remains within the plot. The view from the adjacent surroundings also deserves attention. With green integration - to camouflage buildings - or by paying extra attention to architecture and special accents in the design, the view from the surroundings can be improved.

Plenty of space for general purposes

Space is needed for the general functioning of an area and a building. This is often ambivalent space, which can be used universally and can be adapted to the wishes of the user by means of specific design. This includes the creation of outdoor areas for storage, parking and transport on site, but also the creation of spaces for relaxation and leisure in the area. If there is only limited space available for this in an area, this space can also be accommodated in communal functions on a business park.



Verkeersruimte voor alle modaliteiten
fietspaden trade port noord Venlo

Traffic space for all modes of transport

With the most efficient use of space, sufficient space for all common modes of transport and desired traffic flows is crucial. For example, existing business parks often lack good footpaths and cycle paths. By properly integrating these connections, a better integration with the environment is created and interaction with the environment is stimulated. In addition, a good cycling or public transport infrastructure makes it possible to reduce CO₂ emissions from commuting in the area. From a safety point of view, it is important to avoid crossing modalities on the site as much as possible. This also improves the flow in that aspect.

Strategic reservation for the future

Because business operations are not a static process for many companies, and every company may have to deal with growth or shrinkage, the need for space is also subject to change. By reserving space in advance for growth or relocation, companies are prevented from having to relocate to other locations - with all the consequences for staff and ecosystem. This reserve also allows for manoeuvring and circulation within the site. In order to prevent financial problems in the development of the land, these sites can be (temporarily) linked to another use. For example, they can be used for large-scale parking, or as a ground-mounted solar park.





Challenges and points of attention

In the development of business parks, there are various challenges and points of attention, which must be translated into the zoning plan. It is important that there is consistency and clarity. Among other things, the zoning plan must indicate clear guidelines and standards for development. This can be challenging, as different parts of a city or region may have different needs and characteristics, which in turn require different regulations. For example, Rotterdam has a large logistics chemical cluster, but also a food/fresh cluster and an urban distribution demand. The trick is to provide the right guidelines at the right location, to accommodate the right companies in the right business parks.

And there are more points of attention and challenges. We distinguish:

Infrastructure

A well-designed infrastructure supports the needs of the park's businesses in a sustainable way. Make sure that the park is accessible to a wide range of users and through different modalities. Think of logistical accessibility through rail and barge, but also good accessibility for staff and people who use public transport or bicycles, for example.

In addition to good access for various modes of transport, a modern communication infrastructure, including fiber optics, but certainly also utilities, are essential. The increasing congestion on the energy grid requires innovative solutions to shape the energy transition and to properly organize the supply, generation, and distribution of energy on the site (smart grids). New technologies will have to be considered, such as transforming solar energy into hydrogen and jointly storing energy in industrial power banks.

Sustainability

Zoning plans must increasingly consider environmental factors, such as water quality, air pollution and natural habitats.

By integrating sustainable design features and technologies into the design of the business park, the site becomes more interesting for users. This can be a package of measures that contribute to sustainability themes such as energy transition, climate adaptation and biodiversity. A specific interpretation can be chosen for each location, but in general it concerns concrete solutions for rainwater collection and buffering, renewable energy sources, reuse of available materials, or a healthier living environment in and around the buildings. Aka; solutions that reduce the environmental impact of the park and promote the energy transition. The nitrogen problem can be particularly challenging, as environmental issues are complex and require specialised knowledge and expertise.

Buildings

In the business park of the future, the space available for construction will be used to the maximum. The starting point should be that the height contour of the zoning plan is at least 15 metres, as most logistics building configurations fit within this. In addition, the aim should be to achieve a building percentage of at least 65% on the building plot, provided that the plots have optimal shapes.

Flexibility

Design the business park with future flexibility in mind. For the buildings, this means a modular and scalable set-up, so they can move with and adapt to changing needs. There are many ways in which building flexibility can be increased in the realisation of new buildings.

Vertical warehouses

Vertical warehouses with multiple levels of storage allow for maximum space utilization in areas where land is scarce. Even in locations where the appearance is less disturbing, or where the buildings blend into the already present buildings, a vertical warehouse increases the storage capacity.



Building configurations



Multimodal hub combined with the energy transition: Harbour Wanssum

Automated warehouses

Automated technologies, such as robots, drones, and transportation systems, increase efficiency and storage density, and streamline processes. Automated warehouses are ideal for processes in locations that have a 24/7 supply and/or in locations where staff is scarce.

Smart Warehouses

Use Internet of Things (IoT) technology and sensors to track inventory, optimize space utilization, and improve warehouse safety.

Sustainable logistics buildings

Construct sustainable logistics buildings that use renewable energy sources, such as solar or wind power and rainwater harvesting systems/buffers. Keep in mind the desired flexibility that users need to set up sustainable business operations.

Adaptive reuse of existing business parks or structures - such as the conversion of old factories or auction sites into state-of-the-art logistics buildings - also contributes to a sustainable solution.

Last-mile delivery centers

Develop business parks for last-mile delivery centers in urban areas. These enable fast and efficient delivery to consumers but can also contribute to cooperation in the chain. This results in lower traffic pressure in the cities and enables the use of cleaner means of transport in the city.

Multimodal hubs

Create large, strategic logistics buildings on large-scale sites that integrate different modes of transport; to provide seamless logistics services.

Specific concentrations

Concentrate the construction of specific buildings, such as temperature-controlled warehouses and dangerous goods storage, in strategically chosen locations. In this way, collaboration and economy-of-scale can be achieved.

Collaborative logistics buildings

Develop logistics buildings that are shared by multiple companies to allow for shared resources and cost savings. A good example of a business park that has been developed with future flexibility in mind is the Heesch West business park, where the layout of the plots is set up based on a stamp sheet logic.



The zoning plan must also be flexible enough to adapt to changing circumstances, such as demographic shifts, economic changes or environmental factors. This can be difficult, as zoning plans are often long-term and difficult to change once they are enacted. This process can be simplified by keeping business parks modular and scalable, and by creating universal, multifunctional commercial buildings.



Smart technologies



Business park landscaping



'Bring your family' day



Safety

Zoning

Ensure future-proof zoning when drafting zoning plans. Proper zoning promotes the development of the desired business diversity in the ecosystem and encourages a wide range of industries and businesses within the park.

Connectivity

By providing shared spaces, functions and/or opportunities for collaboration, the sense of connectivity and collaboration between companies at the park is promoted.

Facilities

Facilities for employees increase the attractiveness of a business park. Therefore, make sure you have a range of practical facilities, such as restaurants, pick-up points and short stay, as well as recreational facilities, such as a park, walking routes and sports facilities.

Safety

Effective security measures (TAPA, HACCP) protect companies and their assets. But road safety on the business park also deserves attention.

Smart technologies

Integrate smart technologies, such as sensors, cameras, and data analytics, to improve the efficiency of operations and increase the overall user experience.

Staff

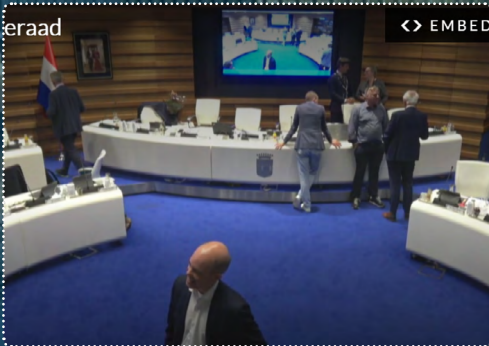
When it comes to the knowledge and skills available in the region, it is not only interesting to analyze the quantitative potential - and to improve the availability of personnel. Also look at the level of knowledge. Research by Rotterdam University of Applied Sciences shows that companies themselves can and should take a more active role in providing students with up-to-date knowledge.

Community Involvement

The zoning plan must balance the needs and interests of all stakeholders, including residents, businesses, and governments. A complex and time-consuming process, as different groups may have conflicting goals and priorities.



Education: students Hogeschool Rotterdam



Public consultation

The trick is to convert 'not-in-my-backyard' into 'fits-in-my-backyard' and to work out acceptable and feasible solutions. To ensure that the development of the business park is aligned with the needs and priorities of the local community - and that the park benefits not only the businesses operating there, but also the wider community - communication and collaboration is required. There are multiple ways, including:

Public consultation

Host public consultation meetings, workshops, and other gatherings to gather input and feedback from the community. This can help identify community concerns and priorities, as well as build trust and support for the project.

Outreach & Education

Outreach and education programs educate the community about the benefits of a sustainable industrial park and how it can benefit the local economy, the environment, and social well-being.

Joint planning

Work with community stakeholders to develop a shared vision for the industrial park that reflects the needs and interests of the community. This may involve setting up community advisory groups or committees that provide continuous input and feedback on the project.

Transparent communication

Ensure communication is transparent and consistent, with regular updates on project progress and opportunities for feedback and input. This can build trust and foster a sense of ownership and responsibility for the project.

Sustainable practices

Incorporate sustainable practices and design principles into the development and operation of the industrial park, such as renewable energy, green infrastructure, and waste reduction measures. This can promote community support for the project.



Energy transition, collaboration & integration

When developing business parks and attracting companies, the focus is often on the ideal picture. However, for the area to function optimally, it should not be forgotten that space must also be available for companies that provide basic functions. Based on CBS statistics, it has been calculated that an average household buys about 1 m³ of purchases per month. This volume concerns both online and offline purchases. To get all these goods to your home, a basic infrastructure of space and storage capacity is necessary. With innovation and collaboration on buildings, transport to the consumer can then be further innovated and made more sustainable.

Energy transition

Logistics companies can be supported to take practical measures to stimulate the energy transition and reduce the CO₂ footprint when realizing a business park. For example, by facilitating clean energy hubs on business parks, companies can more easily switch to alternative, cleaner fuels. If there is sufficient capacity available on the energy grids and the necessary utility connections, companies are also given an extra incentive to install solar panels or wind turbines. The generated, renewable energy can then be used to power their own warehouses, charging stations and material handling systems. In the event of overproduction, the energy can be buffered or shared with other companies in the park.

It is also wise to encourage the use of energy-efficient technologies. With LED lighting or an energy-efficient HVAC system, the efficiency of the logistics buildings increases, while energy consumption decreases. Targeted subsidies for, for example, alternative hydrogen heating sources or solar energy can be an additional incentive.



Housing employees:
Ruijgrok tower Aalsmeer



Clean energy hub Van Kessel



Supply chain cooperation under one roof:
Detailresult and HB RtS

In addition, it is also good to support employees in making sustainable choices. If employees know the impact and importance of the energy transition and how they can contribute themselves to it in their work, they will be more willing to contribute. Incentives for energy-efficient behaviour in business operations, the facilitation of public transport options and the use of bicycles for commuting help with this.

Cooperation

If cooperation between companies and with suppliers is facilitated, the CO₂ footprint can be reduced. For example, with complementary logistics companies in the vicinity of relevant modalities, routes can be combined and loading capacities can be further optimized. Collaboration with chain partners and suppliers also contributes to a lower CO₂ footprint. Other forms of cooperation are also conceivable. For example, by attracting countercyclical partners who have complementary labour market needs.

The collaboration can be both horizontal and vertical in the chain - for example in the field of transport, in packaging, the use of residual materials, or the deployment of personnel and equipment - but also more physically vertical and horizontal. In the latter case, companies in one chain work together in one building. An example of such an integrated collaboration is the company HB RTS, which cleans reusable crates for supermarkets. In Bleiswijk, HB RTS is housed in the same building as Dirk van de Broek. Through an internal gate, both companies exchange dirty and clean crates. Thanks to this internal connection, truck movements are no longer necessary for this sub-process and these transport flows can now be carried out electrically.

Various new forms of cooperation are also possible on a business park, such as housing for flex workers, which can be used by several companies. Or pick-up points, where staff from companies on the business park can pick up groceries or online orders during their daily journey to and from work - without having to make any additional detours. The clean energy hubs discussed earlier can also be a form of collaboration, when the renewable energy produced is shared with other companies.

For each local ecosystem, it will be necessary to look at where parties can be encouraged and supported to work together (more).

Fit into landscape

Fitting in a logistics building as well as possible is important for support in the environment. If the building blends in with its surroundings, acceptance increases. Fitting a building into its surroundings can be done in three ways: camouflage, architecture, and landscape integration.

The right colour scheme, use of materials and design can ensure that a building almost completely blends in with its surroundings. By combining camouflage with a good integration into the landscape, the eye is deceived, and the building mass becomes even less visible. Think of a row of trees in front of the building, or an earthen wall with a natural integration. If there is only limited space available on the business park, the same effect can be achieved with (green) screens. It is important that the right (indigenous) planting is applied, so that the natural habitat is also enhanced.



Architecture can also ensure that the building mass blends into the landscape. Logistics buildings are often predominantly square, in order to optimally support logistics processes, but different or reinforcing architecture results in a friendlier whole.



In all cases, it is important that the plans remain realistic, feasible and affordable in relation to business operations. All stakeholders will have to enter into a dialogue about this.



Future-proof business park

The development of a future-proof business park requires a long-term vision and a holistic approach, which considers a variety of factors, including sustainability, technology, collaboration, talent and resilience.

On the demand side for logistics and industrial buildings, it is mainly about flexibility and scalability; This makes it possible to quickly adapt to the market and market changes because of increasing e-commerce, faster delivery times, efficient inventory management, outsourcing, urbanization and nearshoring.

On the supply side, in the case of future-proof business parks, a spatial challenge arises to facilitate the required flexibility with efficient use of space, high-quality business parks, supporting regulations and the right zoning plans and participation.

The trick is to bring these two worlds together. By combining the knowledge and practical experience of all stakeholders at an early stage, sustainable and resilient ecosystems can be developed that can adapt to changing technological, economic, and environmental factors. This requires a long-term vision and commitment from all stakeholders to jointly invest, innovate and work together in a sustainable way.

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Warehouse of the Future

This is part 3 of our white paper series: Warehouse of the Future

- Optimal use of square and cubic metres (Part 1)
- Efficient use of land and space (Part 2)
- Business park and logistics ecosystems of the future (Part 3)

