1. INTRODUCTION

Eindhoven is experiencing a severe housing shortage. Over the next five years 15,000 new residential units will be built in what is now the city centre. We then face the challenge of building an additional 40,000 units through 2040, including 25,000 more in the centre. This implies at least as many additional residents sharing the existing space; people who all want to live, work and have fun here.

In addition, by 2025 the inner core of Eindhoven will be practically car-free, leaving ample space for cyclists, pedestrians and green infrastructure and thus creating a pleasant living environment and cleaner air. In a so-called car-free centre, only local vehicular traffic is allowed. This is in line with the city’s 2040 strategic target for mobility transformation, outlined in its ‘Eindhoven op weg’ (Eindhoven en route) policy document: less automobile use and more walking, cycling and public transportation.

It all boils down to denser development, less space for transport infrastructure and greater mobility demands: therein lies the challenge. This will require us to adopt new mobility practices in the city. Shared mobility offers a productive way forward in the mobility transformation because it reduces the overall number of miles driven and cuts down on car ownership, and thus the need for parking spaces. At the same time, we as a city want to maintain a grip on the use of our scarce public space and ensure public order and safety. This advisory memorandum offers a proposal for how we in Eindhoven would like to implement shared mobility and outlines the city’s preliminary positions.

Shared mobility is a means of achieving various of the overarching ambitions we have as a city:

- **Mobility transformation**: Increase the relative frequency of walking, cycling and public transport use and curtail car use to make the city healthier and more enjoyable to spend time in.

- **Car-free city centre**: Create a healthy, liveable, car-free city centre accessible only to local traffic by incorporating more space for cycling, pedestrians and green infrastructure.

- **Sustainable transport**: Actively stimulate electric mobility and multimodality by investing in seamless connections between transport modes – train, bus, bicycles and cars – to promote cycling and travelling by public transport, as well as investing in sustainable transport and cleaner cars.

- **Innovative management**: Use data to study what is happening on the ground, evaluate the impact of measures taken, forecast future trends and support implementation of concepts.

- **Physical development of the ‘Mobility as a Service (MaaS)’ concept**: Invest fully in MaaS and the wide-scale implementation of car shares.

- **Accelerated greening and ‘de-paving’**: Prioritize creation of a healthy, liveable outdoor space, a major task being the ‘de-paving’ of large swathes of public space (e.g. Operation Steenbreek).
2. STAKEHOLDERS

When it comes to shared mobility, there are three principal groups of actors: providers, users and the government. Each group has its own needs, interests and motivations:

- **The government** (with its policy objectives) comprises national, provincial, regional and municipal entities;
- **The providers** of shared services and the underlying platforms (with their commercial interests/business cases) include both existing providers and local start-ups; and
- **The users** (with their mobility needs and willingness to shared mobility services) include both people employing these modalities for personal use and all business users.

The advent of MAAS (Mobility as a Service) has introduced an additional stakeholder to the mix, namely the MaaS service provider. It serves as a link to providers of shared mobility and transportation services. The municipality of Eindhoven is a prime mover in one of the MaaS pilot projects launched in partnership with the Dutch Ministry of Infrastructure and Water Management. The pilot will initially be open to employees of the municipality of Eindhoven and ASML. Employees of other organizations will be able to sign up in the second phase, and after that MaaS will be made available to other target groups, such as residents and visitors. The MaaS pilot project thus serves as an impetus for establishing a MaaS ecosystem in Eindhoven and the surrounding area, whereby our goal is to have an ecosystem of providers and users fully in place by 2022.

Accordingly, the Eindhoven MaaS pilot project has the following connections to this Shared Mobility Agenda:

- The Shared Mobility Agenda establishes parameters for providers of shared mobility in Eindhoven that will also apply for the MaaS pilot project. This pertains to such matters as where supply can be located, in what volume and under which conditions (e.g. with regard to data to be furnished and interoperability). The city’s goal is for the supply of mobility options to be highly visible, appealing and readily available;
- The MaaS pilot project means that at least one MaaS service provider will be operating in the city in the near future. Shared mobility providers wanting to operate in the city are being asked to have their services integrated into MaaS (as much as possible) if they have not already done so.
3. Shared Mobility in Eindhoven

The Shared Mobility Agenda includes the following frames of reference summarizing the overall approach and basic assumptions for each particular theme.

3.1. City’s role

We have adopted an inviting, proactive stance as a city. We are dedicated to establishing shared mobility in the city within the next few years, whereby our task is to set the requisite parameters and regulate matters. That creates a level playing field for providers in which the ground rules are clearly spelled out. Our municipal role is thus to invite providers to come operate in our city. Beyond the formal relationship this entails, we believe it is important to engage in close ongoing communication to ensure that the design of a shared mobility network for Eindhoven aligns as closely as possible with the needs of the intended users and developments in the city.

3.2. Target groups and use

We view residents, visitors, commuters and workers as important target groups whom we want to furnish with a suitable range of choices. Having insight into users’ motives is critical to this. If we simply install a supply of shared mobility options, we have no way of knowing whether people will actually start using them. We also believe it is important that people be able to choose the mode of transport (or provider) that best suits their needs at the moment. In addition, we see great potential for offering alternatives to second cars, in particular. To effectively serve the envisioned target groups and introduce them to shared mobility as a way of life, we are employing the following precepts:

- Residents, commuters and visitors must have access to a wide assortment of mobility services;
- The supply of shared mobility options must be strategically well located in the public space, where market players and/or neighbourhood collectives can offer shared mobility services;
- People need to experience the ease and convenience of shared mobility, so it is the city’s duty to stimulate its use with an incentive-based approach that ensures a seamless first encounter;
- The use of shared mobility must not lead to unsafe traffic conditions.

3.3. Network and scale

In order for a working shared mobility system to succeed, scale will be essential. We are consequently directing our efforts toward creating a network of shared mobility. This will be primarily in effect within the city’s ring road, at hubs along the edges of the city (facilitating transfer points), at interchanges (train stations and bus stops) and in conjunction with businesses/large employers at work locations. We are also incorporating the network concept into our needs and requirements for mobility solutions for new developments. The success of the shared mobility system hinges upon having a densely interwoven network (i.e. sufficient supply and ample return options), the performance of the individual services within that network and the larger mobility system as a whole.

Providing a network of shared mobility options is essential, in our view, for offering users comfort, certainty and peace of mind in their transportation needs. That way they will never be left stranded. Since we envision having various providers, as well as various modalities/concepts, operating in the city, it is important to have a clear understanding of not only what we mean by a network, but also how the user will actually experience the supply in Eindhoven as a network of shared mobility. This obviously has a physical component (supply in the public space), but it also has a digital component (visibility and payment on a platform/app). As a city, we want to promote this network feeling as much as possible both spatially and in our terms of service.

This means adhering to the following principles:

- We are building a city-wide system of shared mobility consisting of car shares, bike shares and possibly light electric vehicles (e.g. e-scooters and other such vehicles);
- Our approach will be both top-down and bottom-up: we plan to work together with providers on a city-wide system using a gradual introduction model, while at
the same time examining the needs of the target groups and working with residents or businesses to explore ways of assisting them in addressing specific needs or launching individual initiatives;
- We have opted for an initial roll-out of bicycles within the city’s outer ring road; should there be sufficient use or demand, then an expansion of the supply will be considered in consultation with the providers of the shared mobility services. We are also exploring options for expanding the locations beyond the ring road and the immediate surroundings of Eindhoven and seeking partnerships with adjoining municipalities, regional entities, the BrabanStad five-city agglomeration and corporate actors;
- Ideally, the entire range of shared mobility services will be visible on all of the services’ platforms and preferably also available to consult/rent. This will basically require a willingness on the part of providers to share data on their available supply and to eventually join in the municipality of Eindhoven’s MaaS pilot project and connect to the MaaS platforms used;
- In mapping out the network, we as the city will ensure that the triad of costs (and benefits), necessity and convenience remains balanced to secure the conditions under which the supply remains attractive for users;
- With regard to the regional and urban planning in the city, we will encourage the promulgation of shared mobility versus car ownership. We will also ensure that the supply near new, large-scale developments links up to the city-wide network of shared mobility.

3.4. Supply
From the user’s perspective, ample supply, system accessibility and reliability are important preconditions. From the provider’s perspective, having sufficient scale/volume is a prerequisite for keeping the system going, in terms of both customer base and operational logistics (capacity, back office costs, repositioning of supply, etc.).

Our criteria in this regard are as follows:
- We want the supply of shared mobility options to be within easy reach of the target groups in all areas inside the ring road and at transfer points – not only physically, but also in terms of pricing and ease of use for the share services.
- We plan to start by laying a sound foundation:
  - Clearly outlining our ideal situation for supply and locations and communicating this to everyone involved;
  - Clearly indicating where we will be starting (locations), how much volume is involved (minimum numbers per modality) and how implementation and
growth will be phased in; and
- Offering shared mobility at transfer points and hubs.

- In the agreements we reach for each type of shared mobility, we will take the depreciation schedules used by the providers into account.
- With providers and disciplines that are under the city’s purview (e.g. parking policy, spatial planning), we will designate appropriate locations for the start scenario (the basis) and preserve the option of flexibly responding to changing demand (by, for example, relocating the supply or adding to it in the case of additional demand).

3.5. Locations (and design)
The introduction of shared mobility will undeniably impact the public space. We therefore feel it is our duty as a city to play a major role in designing the places where it will be offered. This is particularly important for preventing any nuisance, but also for positioning the supply so that it is recognizable and attractive. We believe that having a uniform look is important and want to work with providers to help decide that. This pertains to such matters as the design of the parking lots for car shares, as well as parking spots (e.g. for e-scooters) and bicycle racks for bike shares.

The basic principles in this are as follows:
- We want the locations where shared mobility options are offered to have a distinct identity. This means having not only a uniform look, but also recognizable, easy-to-locate (visible) sites;
- The city will decide on the design elements for shared mobility in Eindhoven. A design will be created for the various manifestations and discussed with the potential providers to determine whether their systems can accommodate it;
- In cases where the supply is located indoors, it needs to be clearly visible inside and out where the shared mobility devices are and how many are available;
- As part of these plans, we are exploring the possibility of flexibly installing the shared mobility devices in existing parking spots so that the supply of shared mobility/bike shares in a neighbourhood does not impact the existing bike parking racks.

3.6. New developments
In terms of new urban development, the policy objectives that have been set (reducing car use, promoting sustainable transportation alternatives and actively promoting the shared use of vehicles to improve liveability and air quality) represent important guiding principles. We foresee shared mobility playing an important role in this, in relation to space use, among other things. The important aspect here is that we as the city oversee the process and ensure coordination with the supply of shared mobility in the rest of the city, so that new developments connect up with the mobility (shared or otherwise) in the rest of the city.

The basic principles for new developments are as follows:
- It will no longer be standard practice for urban or other forms of development to include a parking spot for a residence. We encourage shared mobility in connecting to the city-wide network;
- Developments will be subject to the terms of the Parking Standards Memorandum;
- We aim to enact a mobility correction with new developments. If the mobility paradigm is designed differently, a developer does not have to build as many parking spots;
- Locations will be set aside in the public space to allow room for shared mobility modalities;
- Agreements will be made for every development project regarding connections to the supply of shared mobility as appropriate for the use and the users;
- Locations offering publicly accessible shared mobility options will be recognizable, easily visible, attractive and accessible to all;
- Shared mobility options must also be able to be used to transport large or small items, which means being sure to include short-term parking spaces near the entrance to buildings.

3.7. Neighbourhood initiatives
The municipality of Eindhoven is receiving a growing number of requests from private initiatives comprised of residents (often living in the same neighbourhood) who want to share a car. We are searching for suitable means of accommodating these requests from residents collectives.

The basic assumptions here are that:
- The city will establish an initial contact person who can advise residents about the applicable rules, processes and financing;
- A car is considered a car share if it is shared by at least 4 households located within a 500-metre radius of one another. Such car shares are eligible for 1 parking permit, which is valid for no more than 2 permit zones. Users can request a fixed parking place for a car that is shared by at least 10 households;

FRAME OF REFERENCE 4
Shared mobility in Eindhoven must be visible, recognizable, inviting and accessible to all.
4. ACTION PLAN

In 2019 we have been laying the groundwork for shared mobility in Eindhoven (stage 1) in order to prepare ourselves for arranging the supply in 2020 (stage 2).

**Stage 1: Laying the groundwork for shared mobility**

**Item 1: Legal framework**

It is important to draw up a legal framework and amend the general local regulations (APV) so that the city can legally take action in the event of dangerous or undesirable road safety and other situations. This includes first imposing a prohibition on installing bike shares in advance of instituting a permitting regime. These actions will allow us to incorporate the desired quality criteria and suitability specifications into the permitting process.

**Item 2: Point of contact/helpdesk for Eindhoven**

We will be setting up a helpdesk for shared mobility within the municipal organization. This is where providers, residents, businesses and developers can come with their questions, applications and proposals. It will also serve as a point of contact for advice on municipal procedures.

**Item 3: Quality requirements and criteria for adaptability**

The aims and principles that have been formulated will be formalized in a plan for quality requirements and adaptability criteria for shared mobility services.

*This plan will contain:*

- The preferred locations and volumes of shared mobility supply – within the ring road (city centre, neighbourhoods), at interchanges (Central Station, bus stations) and hubs and adjacent to facilities;
- A draft of the ‘Eindhoven Shared Mobility Design’, which will be integrated into the Public Space Handbook; and
- Guidelines for spatial adaptations for various forms of shared mobility (e.g. parking solutions per site), including due consideration of the need for flexibility.

**Item 4: Data dashboard**

We are developing a data dashboard to provide insight into user motives and target group use. We will thus be able to monitor the impact that offering ‘share’ solutions is having on the city, which in turn will allow us to quickly and effectively redirect supply as needed and address lagging demand. We will therefore be reaching agreements with the shared mobility providers regarding obtaining access to their data (i.e. which data and how much) for gaining information on how shared mobility is being used in the city. This will include data collected through the MaaS pilot projects in the Netherlands.

**Item 5: Communication**

We in Eindhoven will be actively communicating our ambitions for shared mobility, as well as our approach, to initiate a dialogue and drum up interest among providers of shared mobility solutions. This is being done through our website, trade magazines and conferences. We already share information about shared mobility with the...
so-called G4 cities (Amsterdam, Rotterdam, Utrecht and The Hague), and we are working on a set of uniform terms for data mining and sharing, city-wide parking permits and interoperability.

**Stage 2: Arranging the supply**

**Item 6: Arranging the supply**
We are formulating a plan for how to implement and coordinate the supply, which includes market consultati-ons: arranging solicitations to providers of shared mobility. This will occur in conjunction with the Eindhoven MaaS pilot project. As part of the plan, we will be creating a start scenario (locations and numbers of vehicles) and agreements about a gradual introduction model, preferably in conjunction with the selected market players.

**Item 7: Incentivizing use**
The target groups may not automatically start using the shared mobility options once these are installed on the streets. Consequently, the task of implementing and coordinating the supply includes an incentive-based approach to acquaint Eindhoven residents and frequent visitors/commuters with the array of shared mobility options available as a way of stimulating their use. We hope to partner in this with the various providers of the share services.

**Item 8: Shared mobility discussions**
The city's vision for the future and guiding principles will determine how shared mobility eventually develops in Eindhoven. Taking an adaptive approach, we will review our strategy annually to see if it needs to be adjusted. Monitoring and evaluation will help us track developments across the entire playing field, with data playing a pivotal role. The city will organize meetings with residents, employers and employees in the city.

**The purpose of such meetings will be to:**
- Get a picture of the needs of existing and potential users;
- Get a picture of what forms of shared mobility people want;
- Get a picture of suitable/desired locations and manner of provision for shared mobility and of how to integrate this into the public space; and
- Engage in a discussion about how shared mobility should be introduced in the municipality of Eindhoven.

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