Sunfield

Precedents and case studies

18th November 2025

Background to the Sunfield Development

Precedents are relevant to various features of the underlying design principles that shape Sunfield.

These principles are evident across multiple scales and organisational systems within the development, including:

Macro level connectivity, which brings multimodal transport access into the site, integrating Sunfield with the broader amenities of Papakura and Takanini — such as recreation reserves, town centres, and the wider rail network.

Master plan composition, including the overall arrangement of neighbourhoods, amenity hubs, and the connectivity networks between neighbourhoods (or precincts) and adjacent key centres.

Micro and mid-scale design, which focuses on the day-to-day functioning of neighbourhoods — such as access to dwellings, laneway design, waste collection and servicing, deliveries, parking, and convenient access to local open spaces and doorstep play areas.

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Vauban

Frieburg, Germany

Internationally renowned, Vauban is a car-reduced urban district in Frieburg, Germany, celebrated for its innovative mobility design and high quality of life.

Car-Lite Design

The district is largely "parking space-free" (stellplatzfrei). Residential streets are deliberately designed for pedestrians and play (Kinderstraßen).

Car Ownership and Vehicle to Dwelling Ratio

The vehicle to dwelling ratio of Vauban is exceptionally low, averaging around 172 cars per 1,000 residents (or approximately 0.17 cars per dwelling).

Approximately 70% of residents have chosen to live car-free. Those who own a car must purchase a space in consolidated parking garages located on the periphery of the district.

Active Transport Modes

Walking and cycling are prioritized with direct, safe connections. The streets are traffic-calmed and utilised for social interaction.

Public Transport

The area is serviced by a dedicated tram line that runs through the district, providing access to Freiburg's city centre.

Proximity to Employment

University Hospital Freiburg ~3-3.5km I Altstadt Town Centre ~2km

https://www.smartcitiesdive.com/ex/sustainablecitiescollective/life-without-cars-vauban-germany/9164/?utm_source=chatgpt.com

https://www.witpress.com/Secure/ejournals/papers/D&NE080401f.pdf

https://www.greencitytimes.com/europe-s-most-sustainable-city/

Culdesac Tempe

Arizona, USA

A progressive residential development (760 units) in the US, Culdesac Tempe is designed to be a fully car-free neighbourhood, challenging the heavily car-dependent nature of the surrounding metropolitan area.

Car-Lite Design

Culdesac Tempe is America's first car-free neighbourhood built from scratch. The space typically dedicated to parking lots and wide roads is replaced by courtyards, public squares, and walkable paseos.

Car Ownership and Vehicle to Dwelling Ratio

The private vehicle ratio is zero. Residents sign a lease agreeing not to keep a car on the property. The design enforces this through contractual agreements and lack of on-site parking.

Visitor parking is provided for at ~0.2 per dwelling.

Parking is only provided for retail visitors and ride-share/delivery services at the community edge.

Active Transport Modes

Walking and cycling are the primary modes. Residents receive free e-bike access and free public transit passes. Amenities are on-site (retail, restaurants, office space) to support internal walking.

Public Transport

Culdesac Tempe is adjacent to the Phoenix Light Rail line, providing a high-speed transit option to downtown Tempe and the wider metro area.

Proximity to Employment

Arizona State University Tempe Campus 3km I Tempe Town Centre 4km I Adjoins a commercial precinct

https://culdesac.com/tempe/

https://monocle.com/affairs/urbanism/tempe-arizona-walkable-neighbourhood/?utm_source=chatgpt.com

Oberbillwerder

Hamburg Germany

Hamburg's largest urban development project since HafenCity, Obserbillwerder is a master-planned "Connected City" designed from the ground up to be a model for sustainable, low-traffic, and socially integrated living.

Car-Lite Design

The goal is for the district to be "as free as possible from parked cars in public spaces." Residential streets will be largely free of traffic, creating more space for play and community life.

Car Ownership and Vehicle to Dwelling Ratio

The final target ratio is not fixed but the current design is based on significantly reduced parking provision. Approximately 5,000 parking spaces will be consolidated into 11 to 13 hubs for 6,000–7,000 homes, suggesting a ratio below 0.8 cars per dwelling.

Parking is concentrated in Mobility Hubs located no more than 250 meters from any home. These multi-story hubs offer parking on upper floors and integrated amenities (shops, services, co-working) on the ground floors.

Active Transport Modes

Pedestrians and cyclists are prioritized. A central "Green Loop" (Grüne Loop) provides a vast network of dedicated paths and public open spaces connecting the five different quarters.

Public Transport

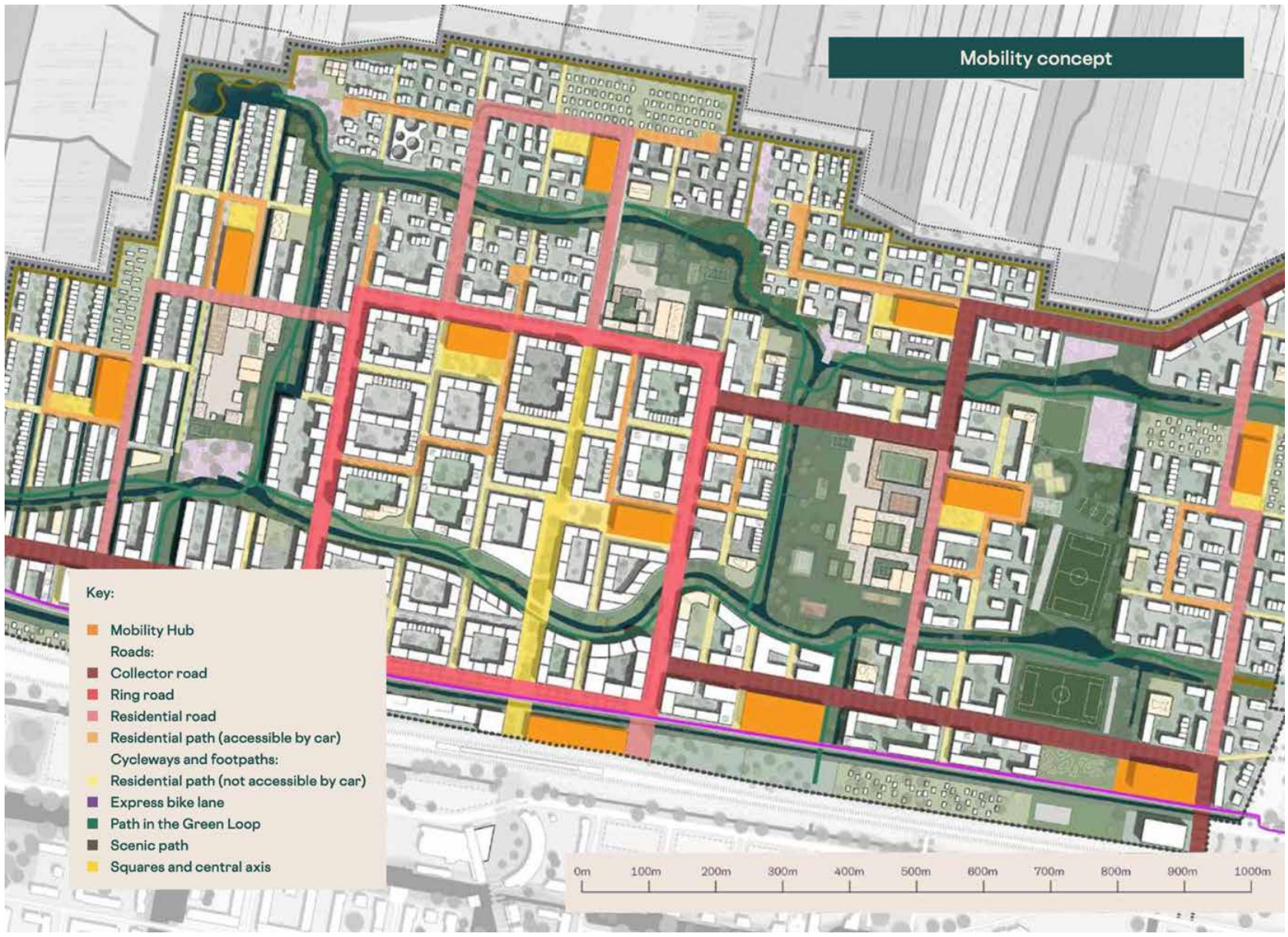
S-Bahn rail adjoins one edge of the site. Mobility Hubs are designed to encourage seamless transfers between cars, bikes, and public transport.

Proximity to Employment

Central Hamburg 3km I Town Centre Bergedorf 3km I Internal provision for commercial and education (4x schools)

https://adept.dk/project/oberbillwerder-the-connected-city

https://www.iba-hamburg.de/en/projects/oberbillwerder/overview


Mobility concept
Key:
Mobility Hub
Roads:
Collector road
Ring road
Residential road
Residential path (accessible by car)
Cycleways and footpaths:
Residential path (not accessible by car)
Express bike lane
Path in the Green Loop
Scenic path
Squares and central axis
0m
100m
200m
300m
400m
500m
600m
700m
800m
900m
1000m

Hagen Island

The Hague, Netherlands

An architectural response to the Dutch VINEX policy, Hagen Island aims to be a sustainable and compact suburban development that removes cars entirely from the internal layout to free up space for gardens, communal spaces and walking and cycling laneways.

Car-Lite Design

Designed with a clear goal of reducing car dependency. The inner residential streets are intentionally pedestrian-only and narrow, with a focus on open areas and gardens.

Car Ownership and Vehicle to Dwelling Ratio

Official ratios are not widely published, but the design principle involved putting cars around the edge of the site only, freeing up land for communal space and active transport circulation.

Active Transport Modes

Walking and cycling are prioritized through a porous and interconnected residential layout.

Public Transport

The site is situated near a bus stop and a tram stop, providing convenient public transport access for daily activities and connecting residents to the wider city of The Hague.

Proximity to Employment

Local Centre Ypenbug 0.75km I City Centre The Hague Center 5km

https://academic.daniels.utoronto.ca/urbanism/wp-content/uploads/sites/3/2020/11/Hagen-Island_compressed.pdf
https://www.mvrdv.com/projects/155/hagen-island

Frankfurt Northwest New Urban Quarter

Frankfurt, Germany

This new quarter of four residential precincts aims to create 7,000 to 10,000 dwellings (predominantly apartments) and up to 8,000 jobs, making it a high-density, self-sufficient, and highly connected environment where non-car mobility is the standard.

Car-Lite Design

Frankfurt Northwest New Urban Quarter aims for a progressive mobility culture. The plan eliminates through-traffic by only allowing access via looped entry roads, discouraging internal car movement.

Car Ownership and Vehicle to Dwelling Ratio

Frankfurt's city-wide Masterplan Mobilität goal has a target for car travel to account for only 30% of all trips (i.e. a 70% sustainable mode target). This inherently requires a minimal vehicle-to-dwelling ratio, far below traditional German standards.

Parking is unbundled from housing and will likely be consolidated into peripheral mobility hubs, similar to the Oberbillwerder model, to keep residential streets clear.

Active Transport Modes

5-Minute Distances are a core design principle. Working places, shops, transit stops, schools, and parks should all be reachable within a 5-minute walk from any home.

Public Transport

Connectivity is enabled by the planned extension of the U-Bahn line U7 and integration with the new Regionaltangente West rail link. Three of the four residential quarters are integrated with rail public transport lines.

Proximity to Employment

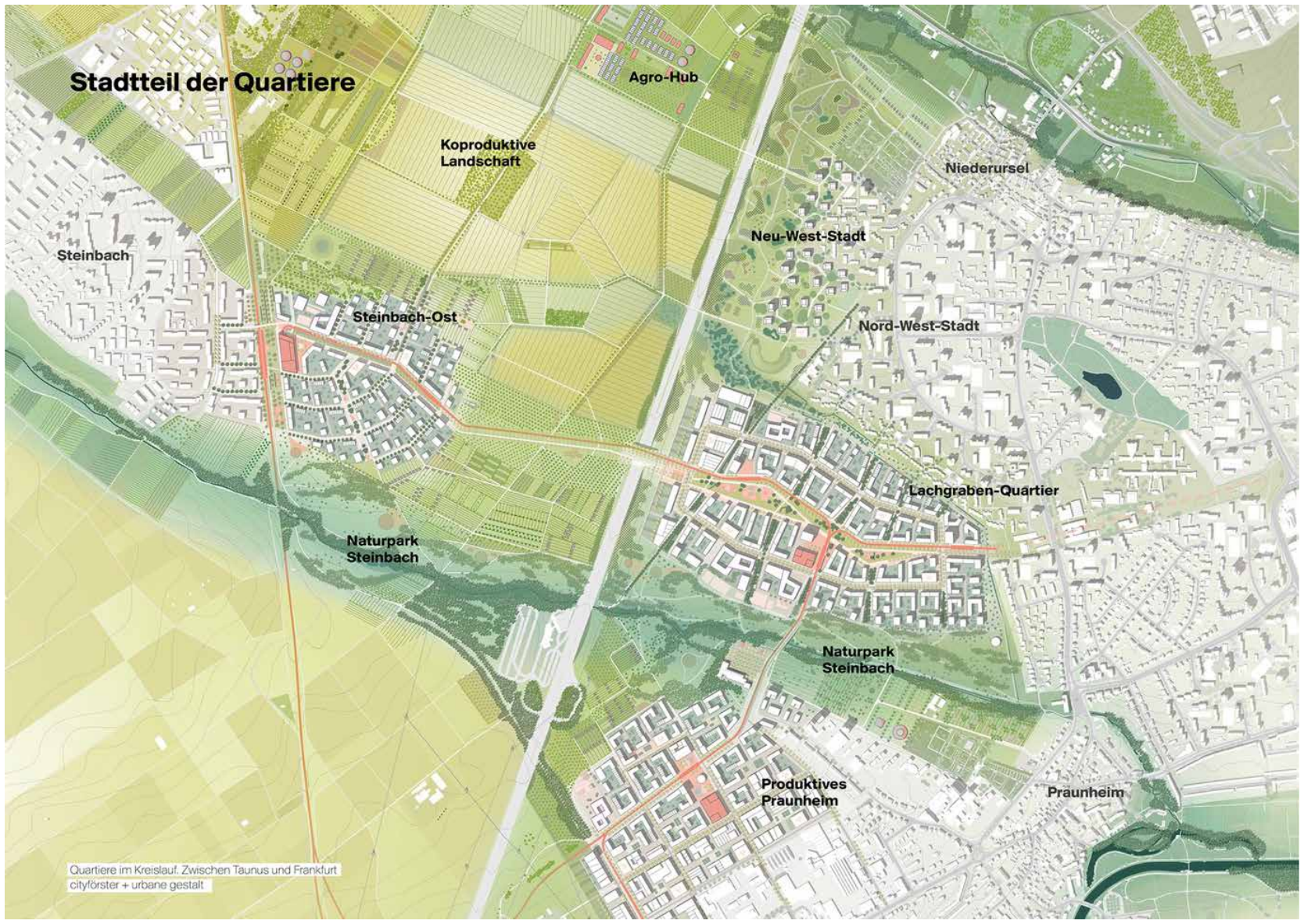
Frankfurt am Main City Centre ~8km I Adjacent local centres ~0.7–1.5km I Nearby commercial precinct ~0.5 - 4km (depending on which residential precinct)

https://lola.land/project/plusstadt-frankfurt-nordwest/

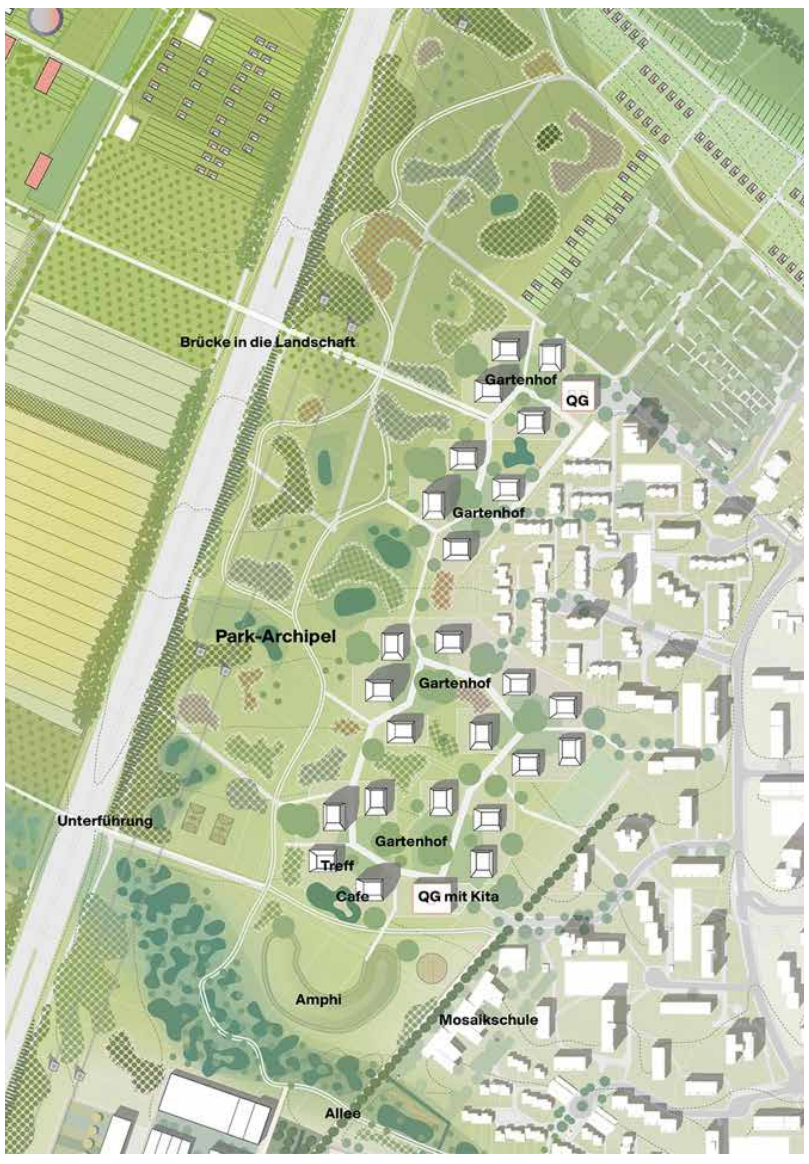
https://www.stadtplanungsamt-frankfurt.de/northwest_frankfurt_a_new_urban_quarter_23670.html?psid=d

https://www.fr.de/frankfurt/mehr-freiflaechen-fuer-stadtteil-der-quartier-geplant-93806615.html?utm_source=chatgpt.com

https://www.cityfoerster.net/projects/circular_quarters_frankfurt-403-2.html


Stadtteil der Quartiere
Agro-Hub
Koproduktive Landschaft
Niederursel
Neu-West-Stadt
Steinbach
Steinbach-Ost
Nord-West-Stadt
Lachgraben-Quartier
Naturpark Steinbach
Naturpark Steinbach
Produktives Praunheim
Praunheim
Quartiere im Kreislauf. Zwischen Taunus und Frankfurt
cityförster + urbane gestalt


Quartier
der Stadt"
Lach
ndschaftsbrücke
U7
Lachgraben-Park
Naturpark Steinbach
ischen Taunus und Frankfurt


Brücke in die Landschaft
Gartenhof
QG
Gartenhof
Park-Archipel
Gartenhof
Unterführung
Gartenhof
Treff
Cafe
QG mit Kita
Amphi
Mosaikschule
Allee

GWL-Terrein

Amsterdam, Netherlands

Built in the mid-1990s, GWL-Terrein is a pioneering example of internally car-free housing estate in the Netherlands. It demonstrates how eliminating cars from the site can free up large areas of public space for community use.

Car-Lite Design

The entire residential area is physically and legally kept car-free. The space saved by eliminating parking lots was converted into over 3.5 hectares of parkland, playgrounds, and community gardens.

Car Ownership and Vehicle to Dwelling Ratio

The private vehicle ratio for residents is 0.2 parks per dwelling. Parking spaces are off site on the periphery of the development street edge only. Those needing car access can use a pool of shared cars which are used by 26% of residents.

Active Transport Modes

Walking and cycling are the only internal means of transport. The density and mix of services (including a childcare facility and health food store) encourage internal self-sufficiency.

Public Transport Proximity

The district is integrated with Amsterdam's public transport system. Bus and tram lines are easily accessible for commuting and travel outside the immediate area.

Proximity to Employment

Central Amsterdam ~3km | Waterwijk Town Centre 0.3km

https://habitatmobilite.ch/wp-content/uploads/2024/11/GWL_Amsterdam_Factsheet.pdf?utm_source=chatgpt.com
https://sdg21.eu/en/db/gwl-terrein-amsterdam-westerpark#:~:text=Published%204%20January%202019,Completion:%201998
https://habitatmobilite.ch/wp-content/uploads/2024/11/GWL_Amsterdam_Factsheet.pdf
https://www.kcap.eu/projects/25/gwl-terrein-amsterdam

Sunfield

Auckland, New Zealand

Sunfield will be a 15-minute, car-less community, and implements international urban design principles to offer an alternative development and liveability model to New Zealand's traditional car-centric housing model.

Car-Lite Design

Inspired by European precedents, like those in Germany and the Netherlands, the design removes many residential roads, driveways, and garages, replacing them with extensive pedestrian friendly and common green spaces. The entire development is master-planned around the 15-minute neighbourhood principle, ensuring all daily needs (work, school, shops, etc) are within a short walk, bike ride, or bus trip, thereby minimising the need for long distance travel.

Car Ownership and Vehicle to Dwelling Ratio

In its final configuration, parking will generally be limited to a maximum of 1 space per 10 dwellings on-lot, plus an additional 1 space per 10 dwellings off-lot, in communal parking areas. Occupants will have the choice to purchase lots with on-site parking and/or shared unbundled parking.

There are allowances for limited on-street visitor parking, and service and loading zones within the streets and lane network .

Provisions will be made for ride-sharing vehicles. Loading zones will be provided in convenient locations allowing for and encouraging deliveries, drop-offs, and pick-ups.

Active Transport Modes

Walking and cycling are prioritized through a comprehensive network of paths that are more permeable than the vehicle network. The core idea is to make these modes the most convenient option for internal trips which supports reduced car dependence.

Public Transport

Connection to the wider network (Papakura Train Station) is maintained by a dedicated, continuous operation of an autonomous electric shuttle fleet (the 'Sunbus'), solving the "last-mile" problem seen in traditional suburban developments.

Proximity to Employment

Sunfield Town Centre is within the site I Takanini and Papakura Town Centres ~2km - 2.5km I Sunfield Employment Zone is adjoining the site.