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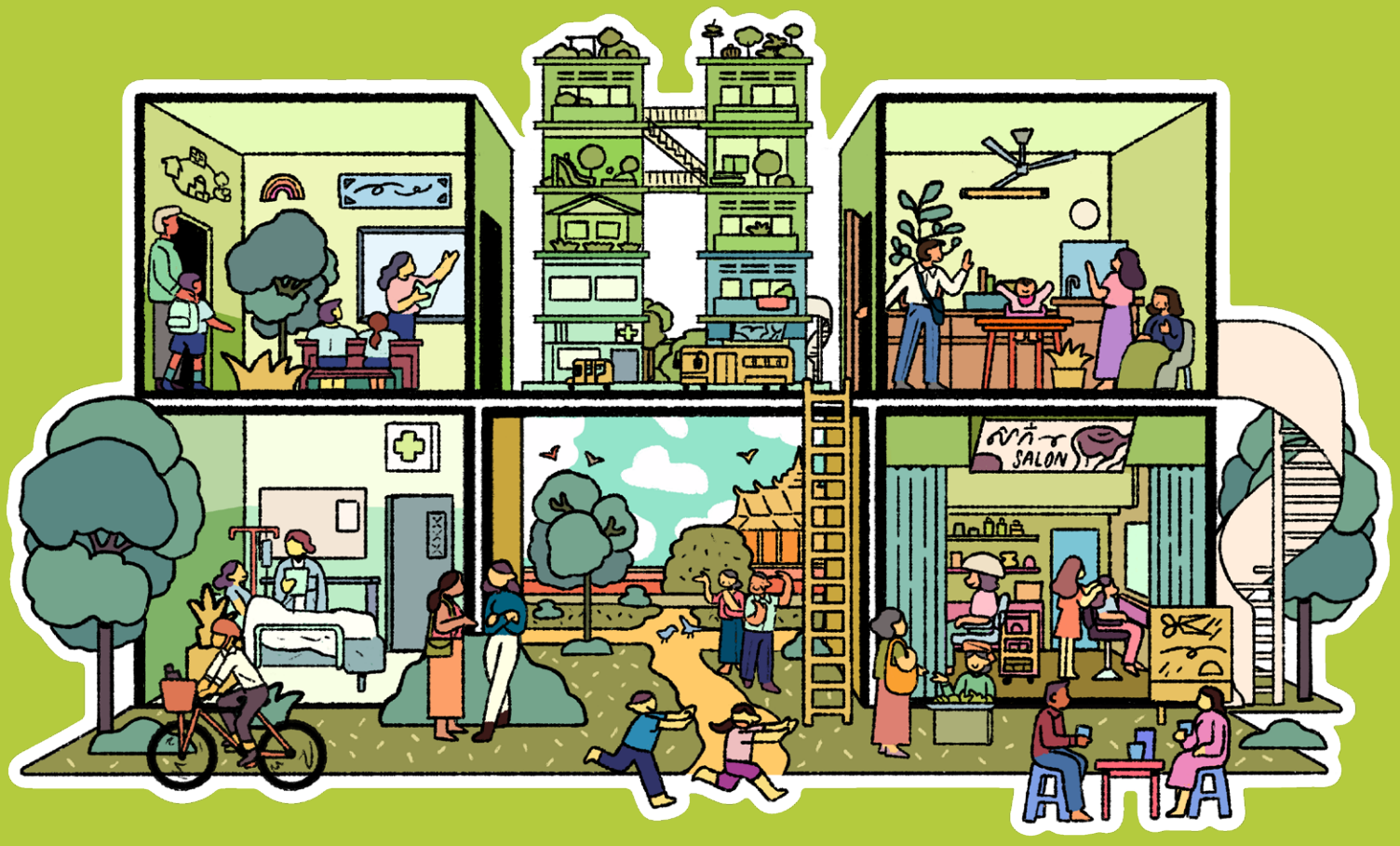

B4P TRANSFORMATION TOOLBOX

INTEGRATED URBAN DESIGN GUIDELINE

02.1

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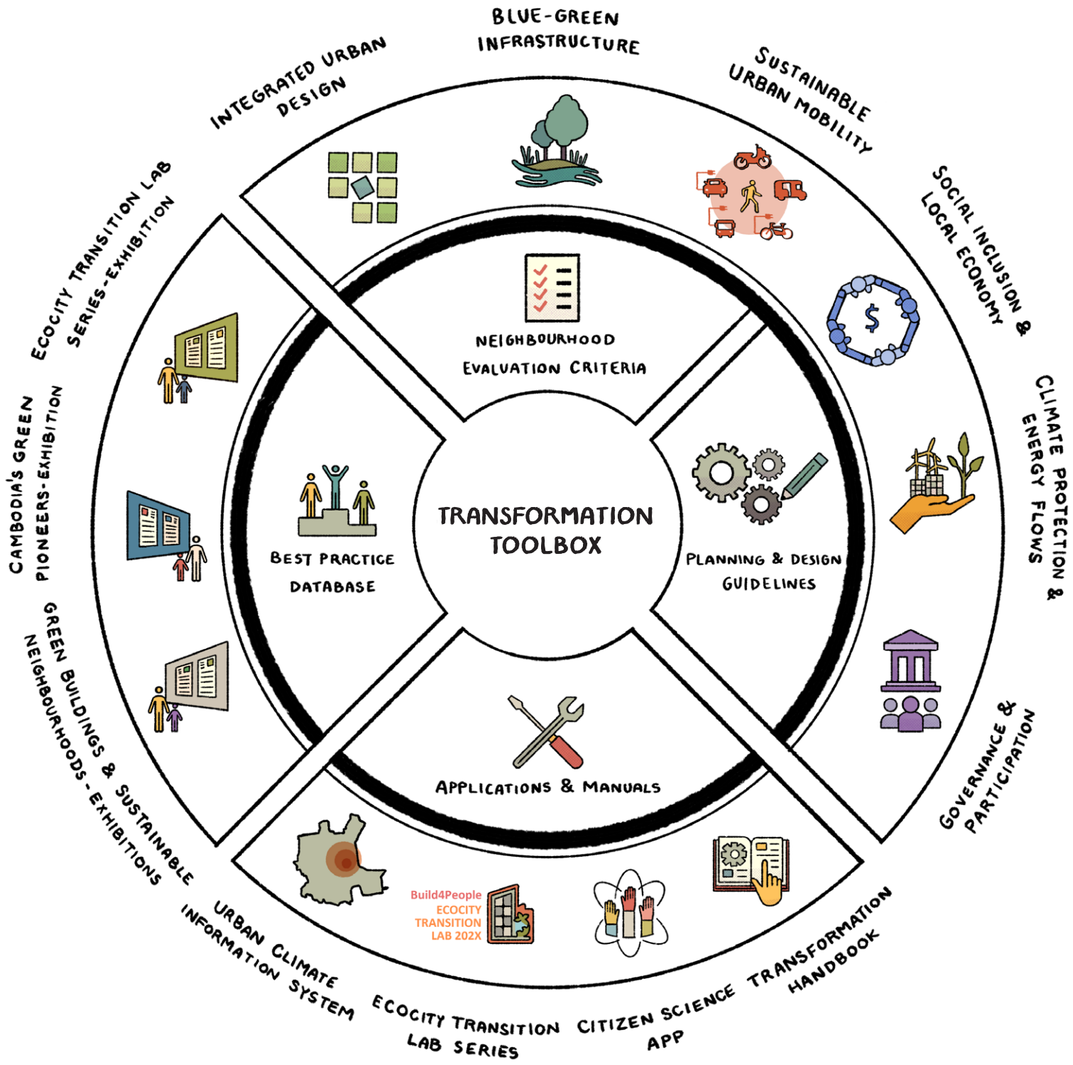

Figure 1. This guideline publication is part of the B4P Transformation Toolbox, a comprehensive learning platform developed by the Build4People project in cooperation with Phnom Penh City Hall to foster sustainable neighbourhood development in urban Cambodia.

02.1 IUD

INTEGRATED URBAN DESIGN

CONTENT

Version: 1.0
Figure 2. *Last update: 01.09.2025*

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Uddam Pen, Prosob Media, Phnom Penh.

02.1 IUD

INTEGRATED URBAN DESIGN

INTRODUCTION

Integrated neighborhood design focuses on creating urban spaces that are practical, welcoming, and aligned with Sustainable Development Goal 11 (SDG 11), established by the United Nations General Assembly in 2015 – making cities and communities inclusive, safe, resilient, and sustainable. It integrates various aspects of neighborhood life—such as housing, public spaces, and services—to ensure neighborhoods meet residents' needs while promoting social equity and environmental well-being. Understanding the unique character of a place, including its culture, history, and social makeup, plays a vital role in shaping sustainable urban areas.

A well-designed neighbourhood balances population density with quality of life. It creates vibrant, social spaces that are also comfortable and functional. Strong connections—both physical, like streets and public transportation, and social, like community networks—enhance mobility, improve access to essential services, and foster a sense of belonging.
Public spaces, particularly parks and green areas, are crucial for well-being and environmental resilience. They offer places for people to gather, relax, and connect with nature, while also contributing to biodiversity and helping cities adapt to climate-related challenges, such as floods. Schools, healthcare centers, and other community services are equally essential for meeting basic needs and strengthening social cohesion.

The collaboration between urban planners, public authorities, and local communities ensure that neighborhoods reflect shared values and priorities. This inclusive approach supports the UN sustainability agenda by enhancing social cohesion, boosting economic growth, and protecting the environment. In countries with rapidly growing populations like Cambodia, integrated design is key to improve living conditions, to build resilient communities, and ensure sustainable urban growth for future generations.

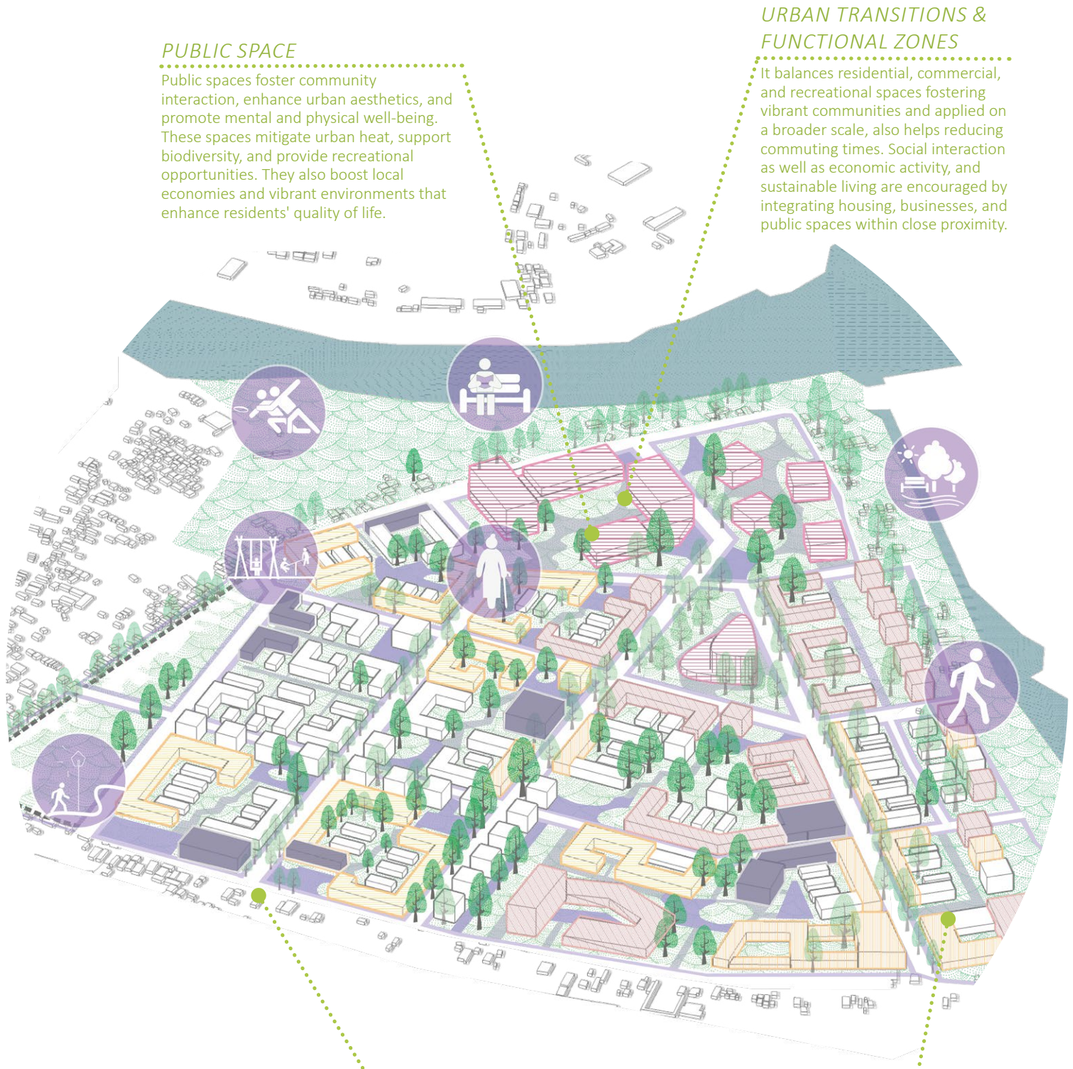


Figure 3. Example of a neighbourhood development referring to Phnom Penh's Chbar Ambov district, developed by Build4People during the Ecocity Transition Lab 2023.

ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS

Embracing integrated and sustainable neighborhood design principles offers plenty of economic, social, and environmental benefits for private developers, while also yielding advantages for local authorities and citizens. By prioritizing holistic and forward-thinking approaches to urban development, stakeholders have the opportunity to benefit in manifold ways.
Ultimately, by applying integrated and sustainable neighborhood design principles, private developers, local authorities, and citizens can collaborate to create communities that are economically prosperous, socially vibrant, and environmentally sustainable for generations to come. This holistic approach enhances resilience, aligning with Cambodia's national development goals and driving the country's long-term growth.

ECONOMIC BENEFITS FOR PRIVATE DEVELOPERS

From an economic standpoint, integrated and sustainable neighborhood design can, for private developers, imply the following principles for private developers:

- **Enhancement of property values and attract investment.**
- **Increasing of market demand:** Thoughtfully planned neighborhoods with efficient infrastructure, mixed-use developments, and access to green spaces tend to be more desirable, driving up demand and creating opportunities for developers to yield higher returns on investment.
- **Long term cost savings:** These developments can generate cost savings over the long term through reduced energy consumption, lower maintenance costs, and increased resilience to environmental risks.

ECONOMIC BENEFITS FOR PUBLIC AUTORITIES

Similarly, public authorities also see a positive economic impact:

- **Reduced infrastructure costs:** Sustainable, compact and mixed-use neighbourhoods typically require less water, energy, and transportation infrastructure, resulting in lower maintenance costs for local authorities.
- **Increased tax revenue:** Higher property values in sustainable neighbourhoods can lead to stable and potentially increased tax revenue for local governments.
- **Economic growth:** Promoting sustainable development can attract investment, stimulate economic activity, and create jobs within the municipality.
- **Tourism Revenues:** Improved neighbourhoods draw tourists, injecting revenue into the local economy through spending on accommodations, dining, and attractions.
- **Community Resilience:** Inclusive planning for diverse needs fosters a resilient community, mitigating economic downturns and enhancing overall stability.

ENVIRONMENTAL BENEFITS

Integrated and sustainable neighborhood design brings also a variety of environmental benefits:

- **Climate resilience:** Eco neighbourhoods mitigate the ecological footprint of urban development while enhancing resilience to climate change.
- **Mitigation of Urban Heat Island Effect:** By prioritizing green spaces, pedestrian-friendly infrastructure and green buildings, these neighbourhoods mitigate urban heat island.
- **Reduce pollution and traffic:** The promotion of sustainable transportation options such as walking, cycling, and public transit, reduce reliance on private vehicles and alleviating traffic congestion and air pollution.
- **Conservation of natural resources:** Blue-green infrastructure solutions, such as rain gardens and permeable pavements help managing stormwater runoff and protecting local ecosystems.
- **Climate Protection:** Energy-efficient buidlings with an energy supply based on renewable energy sources and reduce greenhouse gas emsissions

SOCIAL BENEFITS

From a social perspective, such neighborhoods benefit also the citizens directly:

- **Well-being procurement:** By fostering a sense of community and inclusivity, promoting social interaction and well-being among residents.
- **Vibrant hubs:** By incorporating public spaces, social infrastructure, and mixed-use developments. Integrated neighborhoods become vibrant hubs where people live, work and relax in close proximity. This fosters a sense of belonging and civic pride, strengthens social ties and promotes resilient society.
- **Increased social cohesion and inclusion:** Sustainable and integrated neighborhoods enhance social cohesion by creating accessible, diverse spaces that encourage interaction among residents of different backgrounds, promoting mutual understanding, shared experiences, and a stronger community bond.

Source: Own compilation based on various sources.

GUIDELINE 02.1

SCIENTIFIC BACKGROUND AND KEY IDEAS

Integrated urban design seeks to create neighborhoods that balance functionality, aesthetics, and sustainability. Phnom Penh's rapid urban expansion calls for an urgent yet thoughtful response. Achieving sustainable growth depends on finding the right balance between densification and ecological preservation.
Six key aspects have been identified to elevate the quality of new development areas in Phnom Penh. These aspects serve as a foundation for implementing complementary guidelines and strategies focussing on blue-green infrastructure, sustainable mobility, public participation, climate protection, social inclusion, and strengthening the local economy. This approach supports the official vision for 2050 of the government of the Royal Kingdom of Cambodia, the Pentagonal Strategy, which emphasizes developing land management and urbanization plans for municipalities, districts (khans), communes (sangkhats), while formulating guiding strategies for land use zoning and residential management (see Figure 2). These guidelines can play a crucial role in supporting these action and urbanization plans, promoting resilience and improving the quality of life for Phnom Penh's residents.

Figure 4. Alignment of the concepts included within the Integrated Urban Design Guidelines with the Anukret 42 Sub-decree on Urbanisation and the Pentagonal Strategy Phase I.

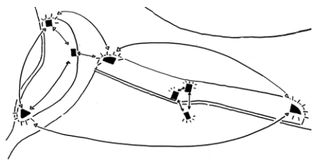
IUD GUIDELINE CONCEPT	KEY IDEAS	UN SUSTAINABLE DEVELOPMENT GOALS	ANUKRET 42 SUB-DECREE ON URBANISATION	PENTAGONAL STRATEGY PHASE I
NEIGHBOURHOOD & CONNECTIVITY	• Define main neighborhood axes. • Ensure a permeable urban structure. • Highlight and connect existing landmarks. • Develop a concept to enhance landscape and public spaces. • Propose a design that restores historical and landscape values while integrating new elements.	SDG 5.c: Adopt and strengthen sound policies for the promotion of gender equality and the empowerment of all women and girls at all levels. SDG 11.b: Adoption of integrated plans towards inclusion, resource efficiency, mitigation and adaptation to climate change.		Pentagonal 4, Side 4, Point 5 (p.74) (...) development of master plans for urban areas to ensure resilience and beauty (...) Pentagonal 4, Side 4, Point 2 (p.74) (...)developing plans for land management and urbanization for municipalities-districts-Khans, communes-Sangkhats (...) formulation guiding strategies for land use zoning and management of residences (...)
HARMONIOUS URBAN TRANSITIONS	• Identify existing urban typologies and plan functional zones for harmonious transitions. • Define suitable functional zones: special district, urban core, urban center, general urban, and housing.	SDG 11.a: Urban planning that responds to population dynamics and ensures balanced territorial development.	Art. 20: Buildable areas and control areas Art. 21: Buildable area classification Art. 25: 11 urban development types Art. 48: 5 conservation projects	
BUILDING DENSITY	• Define suitable urban densities for the new development based on functional zones.	SDG 11.a: Urban planning that responds to population dynamics and ensures balanced territorial development.	Art. 22: Building area ratio + 30% remaining area for infiltration. Art. 23: Maximum land use index Art. 26: Control area 30% land use Art. 30: Building height	
BALANCED MIX OF USES	• Allocate land uses within the neighborhood's functional zones based on their character. • Land uses: Residential, Education & Research, Business & Service, Retail, Gastronomy & Commerce, Culture & Social, Special, Recreation & Sport, Public Space, Green Corridors, Plazas & Parks.	SDG 11.a: Urban planning that responds to population dynamics and ensures balanced territorial development.		
VIBRANT PUBLIC SPACES	• 15-20% of urban land should be dedicated to public open spaces. • Central public spaces, such as playgounds, squares or plazas should be distributed within a 750m radius. • Integrate the 12 quality criteria for public spaces: safety, comfort, accessibility, human scale, multiuse, aesthetic (...).	SDG 11.7: Universal access to safe, inclusive and accessible, green and public spaces	Art. 33: Land use change: public open space + public green 10% GSA or 10m^2 per person Art. 45: Buildable area: public space and green surfaces 1ha per 1000 people or 15% total land area Art. 46: Public green classification	
DAILY NEEDS AND SOCIAL INFRASTRUCTURE	• Analyse the adequacy of social infrastructure around the planned neighborhood. • Integrate required social infrastructure based on the expected number of new inhabitants.	SDG 11.7: Equal access to basic services SDG 3.8: access to quality health-care services SDG 11.a: Urban planning that responds to population dynamics and ensures balanced territorial development.	Art. 35: Public Infrastructure, services and space Art. 42: Suficient public services Art. 43: Public services classification: education> kindergarden / primary (500m), lower secundary (3000m), higher secundary (5000m); recreation> childrens park 2000 m^2 (500m from schools), village park 1ha (...) Art. 11: Elements to consider for master planning	

I FROM CONCEPTUAL TO DETAILED PLANNING

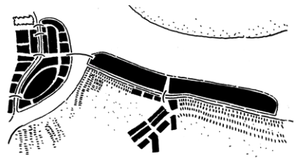
ANALYSIS
THE LOCAL CHARACTER TO DEFINE AN URBAN CONCEPT

EVALUATION CRITERIA

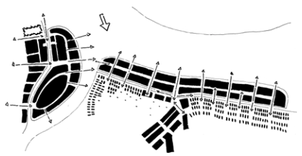
NEIGHBOURHOOD AND CITY CONNECTIVITY



a) Neighbourhood identity elements



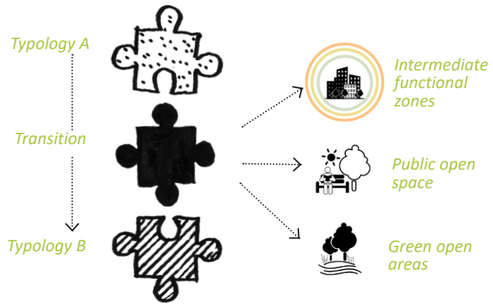
b) Local character analysis



c) Integration into the urban design

To support sustainable and context-sensitive urban development in Phnom Penh, the following principles should guide particularly the early planning stages:

- **Protect and Enhance the Natural Environment:** Preserve key ecological features such as trees, water bodies, floodplains, and green corridors. These elements support biodiversity, climate resilience, and community well-being, and should be integrated into the urban fabric, preferably linked to a green network.
- **Analyse Neighbourhood Identity:** Understand the area's defining characteristics—roads, spatial edges, building heights, landmarks, and urban nodes—which shape its image and influence people´s experience.
- **Strengthen Local Character:** Preserve distinctive architectural features, street patterns, and materials that reflect the neighbourhood's history and culture. Strive to incorporate local identity into new developments in order to support community acceptance and long-term sustainability.
- **Promote Urban Permeability and Connectivity:** Ensure easy, safe movement through the city by reinforcing connections between streets, paths and public transport hubs. Design inclusive public spaces that support walking, cycling, and transit use, encouraging vibrant street life and interaction.
- **Plan for Integration and Landmark Connectivity:** Align new developments with existing street patterns and visual axes. Use main roads and paths to connect significant places, ensuring coherence, legibility, and accessibility.
- **Reinforce Identity Through Public Landmarks:** Celebrate and integrate key landmarks—such as temples, markets, and historic buildings—into the public space network. These should be accessible and designed to foster social interaction, reinforcing place attachment and community cohesion. Further guidance is provided in Chapter III: Characteristics of Vibrant Public Spaces.



DESIGN
A COHESIVE URBAN STRUCTURE

URBAN TYPOLOGIES

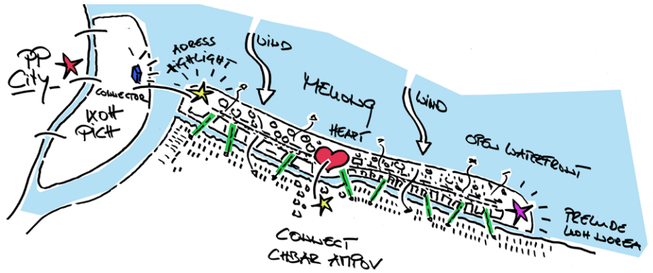
Urban typologies are classifications of urban forms, including building types and land uses that help to describe the different characters of a city or neighbourhood.

- **Define Urban Typologies:** Organize areas for distinct purposes such as:
  - » Special Districts: Specific functions (e.g. commercial or institutional zones).
  - » Urban core: High-density, mixed-use areas.
  - » Urban centre: Medium-density areas with a mix of residential, commercial, and public services.
  - » General urban: Predominantly residential use with local amenities.
  - » Housing areas: Low-density, primarily residential zones.

HARMONIOUS URBAN TRANSITIONS

Creating a harmonious urban transition means carefully connecting a new neighbourhood with its surroundings by strategically selecting urban typology combinations or by including transitional urban typologies. Similarly to puzzle pieces, some patterns fit together easily, while others need thoughtful transitions. To link different areas and to soften the edges, it is suggested to choose urban typologies that align with the functions of adjacent areas. Table 1 should serve as a guide for first urban transition drafts. An alternative is to use elements like parks, plazas, and mixed-use zones, as spaces that not only ease the shift between neighbourhoods but also add vibrancy.

Figure 5. Diagram that illustrates the logic behind the need of adequate urban transitions.



d) Comprenhensive urban concept summarising analysis of neighbourhood identity elements, main axes and public spaces.

Figure 6. Sketches a), b), c) illustrate the step by step process that contributes to define key axes and neighbourhood city connectivity structures. Sketch d) summarises the previous 3 steps into a exemplary urban concept. the example corresponds to the concept prepared for the Koh Norea island, Phnom Penh, by the B4P WP "Sustainable Neighbourhoods" during the Ecocity Transition Lab 2024.

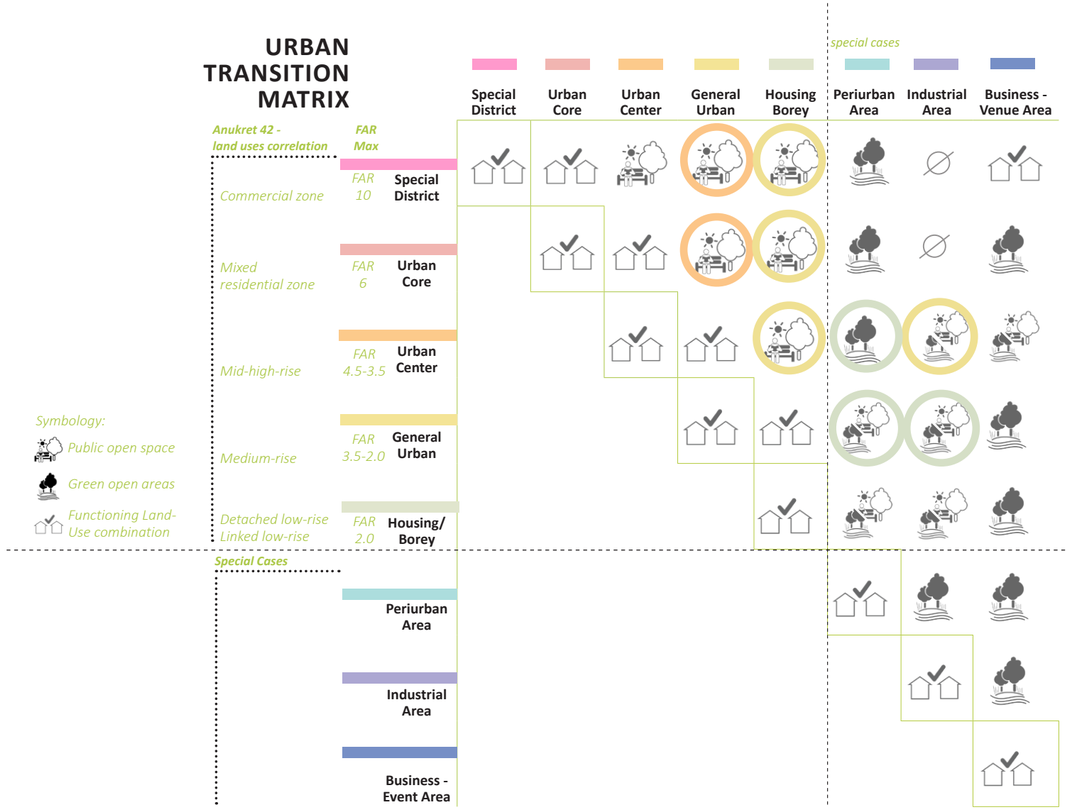


Table 1. Examples of urban fuctional zones combinations and suggested urban transitions.

Figure 7. Draft of urban functional zones for a new water front development in Phnom Penh, elaborated by members of the B4P WP "Sustainable Neighbourhoods" as part of the Ecocity Transition Lab 2024 proposal.

See also Figure 8: Exemplary neighbourhood block with functional zone classification: Urban Centre and General Urban

DEFINE
BALANCED URBAN DENSITIES AND LAND USE MIX

Aligned with the urban typology is the urban density and the land use mix. To achieve a rich and varied density that balances land use efficiency and ecological considerations, the following urban density principles should be followed:

- **Visualizing Built Forms:**
  - » Different built-form patterns with the same dwelling density can create vastly different urban environments.
  - » Explore alternatives beyond the common “low-rise + high compactness” model, which often limits green spaces and reduces quality of life.

BCR (Building Coverage Ratio) and FAR (Floor Area Ratio) help define the spatial qualities of a neighbourhood and are essential for understanding its urban structure. FAR indicates how intensively a plot of land can be built on by comparing the total floor area with the size of the land. It reflects how efficiently land is used for development. By the joint consideration of FAR and BCR, planners can design well-balanced and functional neighbourhoods that support profitability while reducing environmental impact.

>>> In Phnom Penh, the FAR/BCR ratio must balance urban character, economic needs, and environmental sustainability.

** FAR is defined by the German Sustainable Building Council (DGNB) as Floor Space Index (FSI; in German: GFZ)*

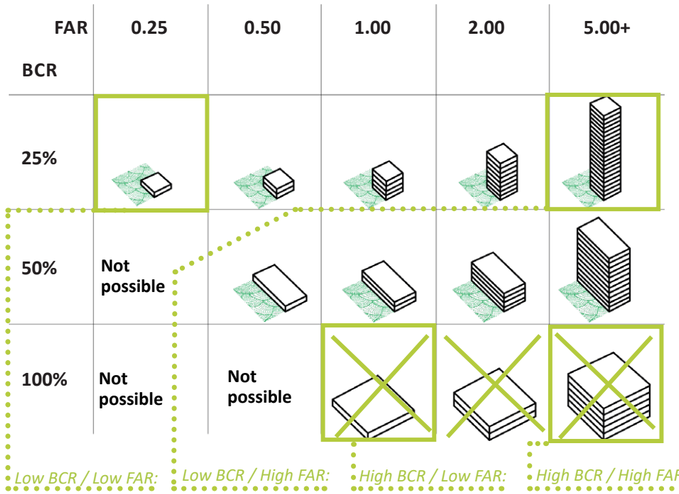
FAR = GFA [M²] / NBA [M²]
with
FAR: Floor Area Ratio
GFA: Gross Floor Area (see system basics)
NSA: Net Site Area (see system basics)

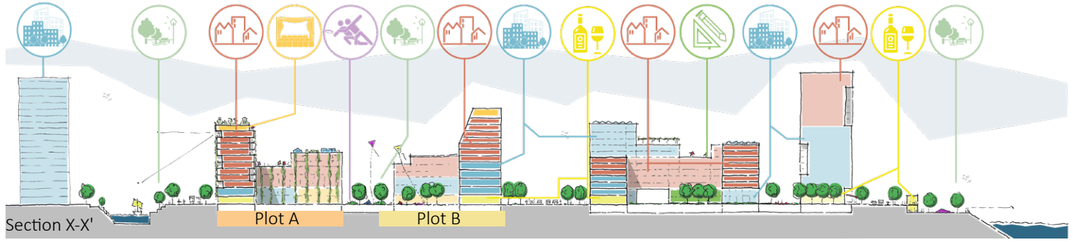
BCR = BFA [M²] / NBA [M²]
with
BCR: Building Coverage Ratio
BFA: Building Footprint Area (see system basics)
NSA: Net Site Area (see system basics)

EVALUATION CRITERIA

BUILDING DENSITY

Figure 8. Visualisation of different floor area ratio (FAR) and building coverage ratio (BCR) combinations.





URBAN TYPOLOGIES, CORRESPONDING DENSITIES AND LAND USE MIX		BCR	FAR	LEGEND	INITIAL LAND USE PROPORTION
SPECIAL DISTRICT	Iconic landmarks that shape identity, attract visitors.*Commercial Zone. **High population density.	50%	10.0		x 50% 30% 10% 10% 5% 5%
NEW URBAN CORE	Dense central area with business hubs, culture, and public amenities, offering mixed-use spaces and transit access.*Mixed Residential Zone. **Populated area.		6.0		
URBAN CENTRE	Residential, commercial, and recreational mix with retail, green spaces, and gathering spots.*Mid-high-rise.** Densely urbanised area.	40%	4.5-3.5		x 5% 15% 15% 25% 25% 15%
GENERAL URBAN	Mixed-use areas with diverse housing and public amenities.*Medium-rise. ** Densely urbanised area.		3.5-2.0		
HOUSING	Residential zones with various housing types, green spaces, and recreation.*Detached low-rise / Linked low-rise. ** Less urbanised area.	30%	2.0		x 5% 5% 10% 10% 65% 5%

Table 2. Recommendation for initial proportion of land uses according to defined neigbourhood urban functional zones. This proportion shall serve as initial draft and be refined as the designing and planning process advances. * Corresponding urban typology classification in the Annukret 42. **Corresponding urban typology classification according to the Phnom Penh 2035 Master Plan.

EVALUATION CRITERIA

BALANCED MIX OF USES

RELATION BETWEEN URBAN TYPOLOGIES AND DENSITY

Use the FAR/BCR combination suggested in Table 2 to guide the first draft of a neighbourhood plan. You should be aware that they are meant to be applied on the Net Site Area (NSA), not on a plot level.

- A great portion of the recommended BCR values here described are aligned with those defined in the Anukret 42 Sub-decree on Urbanization of the Capital City Art.22.
- It is suggested to define the proportion between road width and building heights based on microclimate analysis recommendations and the Anukret 42, Art 30.
- Ensure a qualified balance of green, public, semi-public, and private spaces for achieving economic, environmental, and social benefits. For the case of private green areas, consider a minimum 30% of the remaining area for unsealed green spaces, as defined in the Anukret 42 Sub-decree on Urbanization of the Capital City Art.22.

KOH NOREA EXEMPLARY NEIGHBOURHOOD BLOCK

Plot A - Urban Center

Net Site Area (NSA):	144x144 = 20,736m²	
Building Footprint Area (BFA):	7,756m²	
Gross Floor Area (GFA):	83,995m²	
Floor Area Ratio (FAR):	4.05	
Building Coverage Ratio (BCR):	0.37	
Proportion of areas within the neighbourhood block:		
Building Footprint Area (BFA)	7,756m²	37%
Footpaths & Squares	3,580m²	17%
Green yards & private paths	950m²	5%
Private Gardens	5,076m²	24%
Semi-private green space	3,370m²	16%
Net Site Area (NSA)	20,736m²	100%
Land use balance:		
Residential	25,199m²	30%
Business /Offices	15,119m²	18%
City vibrancy functions / Commercial Infrastructure	17,639m²	21%
Cultur / Social	12,599m²	15%
Education / Research	10,079m²	12%
Recreation / Sport	3;360m²	4%
Gross Floor Area	83,995m²	100%

Plot B General Urban

Net Site Area (NSA):	144x134 = 19.30m²	
Building Footprint Area (BFA):	6,609m²	
Gross Floor Area (GFA):	57,938m²	
Floor Area Ratio (FAR):	3.00	
Building Coverage Ratio (BCR):	0.34	
Proportion of areas within the neighbourhood block:		
Building Footprint Area (BFA)	6,609m²	34%
Footpaths & Squares	3,530m²	18%
Green yards & private paths	850m²	4%
Private Gardens	4,657m²	24%
Semi-private green space	3,650m²	19%
Net Site Area (NSA)	19,296m²	100%
Land use balance:		
Residential	27,810m²	30%
Business /Offices	2,897m²	5%
City vibrancy functions / Commercial Infrastructure	8,111m²	14%
Culture / Social	8,691m²	15%
Education / Research	9,270m²	16%
Recreation / Sport	1,159m²	2%
Gross Floor Area	57,938m²	100%

Figure 10. Exemplaryneighbourhood block proposal for the Koh Norea urban development area.

LAND USE BALANCE ACCORDING TO URBAN TYPOLOGIES

Allocate land uses based on the role of each functional zone to optimize neighbourhood functionality, for example:

- **Special Districts:** Focus on business, commercial, services, and public squares.
- **Housing Areas:** Prioritize residential use and public green spaces, with just some mixed-use elements to maintain a calm atmosphere.

The urban typologies proposed are in fact similar to those described in the Anukret 42 Sub-decree on Urbanization of the Capital City Art.23, as shown in Table 1. But it is important to stress a key difference:

- All functional zones should imply a certain degree of mixed use areas.
- Even if a development is planned as housing area, it is highly recommended to include at least 2 additional land uses, while each land use should represent at least 10% of the total GFA.

Mixed-Use in vertical developments should consider:

- **Ground Floor:** Commercial spaces.
- **Intermediate Floors:** Offices.
- **Top Floors:** Residential units.

LAND-USE CATALOGUE

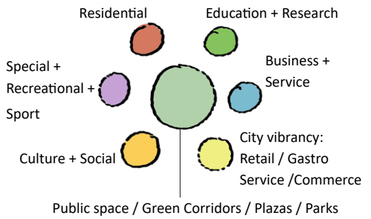


Figure 9. Land-use catalogue which includes social and commercial infrastructure land uses.

11 SOCIAL & COMMERCIAL INFRASTRUCTURE

EVALUATION CRITERIA

DAILY NEEDS & SOCIAL INFRASTRUCTURE

When designing a neighborhood, it is crucial to balance social infrastructure and commercial uses to meet community needs while ensuring vibrant, self-sufficient urban areas. The scale and type of infrastructure should align with the population size and urban functions. Social infrastructure supports basic community services, while commercial infrastructure enhances urban life with diverse activities. Both must be carefully integrated for a thriving neighborhood.

- Social Infrastructure: Education, culture, health services, markets & grocery, and sports & recreation.
- Commercial Infrastructure: Retail, restaurants, urban services (pharmacy, post office, bank), and co-working hubs.

TYPE OF SOCIAL INFRASTRUCTURE	SCALE OF SOCIAL INFRASTRUCTURE	NEIGHBOURHOOD 500-2,500 INHABITANTS	SUB-DISTRICT 2,500-5,000 INHABITANTS	DISTRICT / CITY 5,001-10,000 INHABITANTS
EDUCATION	*Service Unit*	Kindergarden or primary school		Secondary school or high school
	Service Ratio	750-1000 m (10-15 min walking, cycling, public transport)		1.5-2.0 km (20-25 min walking, cycling, public transport)
CULTURE	*Service Unit*	Cinema, district centre, community centre, youth room, senior citizens' meeting place		Public library, regional museum or municipal auditorium
	Service Ratio	750-1000 m (10-15 min walking)		1.5-2.0 km (20-25 min walking)
HEALTH	*Service Unit*	Community clinics, general practitioner, pharmacy		District health centre
	Service Ratio	1000 m (10-15 min walking)		15-30 km (20-30 min with motorised mobility)
MARKETS & GROCERY SUPPLY	*Service Unit*	Weekly street market, Small-scale commercial retail	Public market, local grocery store	Supermarket
	Service Ratio	750-1000 m (10-15 min walking)	750-1000 m (10-15 min walking)	1.5-3.0 km (30-45 min walking)
RECREATION & SPORT	*Service Unit*	Plaza + community garden & playground + sport field	Neighbourhood park + playground + sport fields	Urban park
	Service Ratio	250-750 m (10-15 min walking)	750-1000 m (10-15 min walking)	1.5-2.0 km (25-30 min walking)

Table 3. Level of social infrastructure recommended for Phnom Penh based on the projected amount of users that will live, work and visit a new development area. The pedestrian speed range considered was between 1.17- 1.42 m/s.
Source: Adapted by EMP based on the District Criteria Set (2020) from the German Sustainability Building Council considering the particular circumstances of Phnom Penh.

ANALYSIS
OF EXISTING INFRASTRUCTURE

- Assess current facilities to identify gaps and ensure new developments meet future demands. A comprehensive analysis includes location, service radius, and capacity.
- Key Categories:
  - » Education: Kindergartens, primary, and secondary schools
  - » Health services and clinics
  - » Cultural spaces (libraries, museums)
  - » Markets and grocery supply
  - » Parks, playgrounds, and sports facilities
- The recommended social infrastructure categories here described have the same purpose as the Anukret 42 Sub-decree on Urbanization of the Capital City Art.42: "ensure sufficent public service buildings".
- The social infrastructure categories here described complement those defined in the Anukret 42 Sub-decree on Urbanization of the Capital City Art.43.

BALANCING
INFRASTRUCTURE AND POPULATION

- Scale infrastructure based on population projections to meet current and future needs.
- Plan for shared services at the district level to avoid underloading individual neighborhoods. As initial guidance Table 13 can be used. Example:
  - » 1,500 residents may need a kindergarten within 750m.
  - » Multiple neighborhoods may require secondary schools and larger health centers.

ENSURING
FLEXIBILITY AND ADAPTABILITY

- Infrastructure plans must adapt to changing demographics and urban growth. Regular updates ensure the services remain adequate and proportional.
  - » Adjust plans to reflect population changes.
  - » Balance social and mixed-use spaces to maintain vibrancy and efficiency.

Figure 12. Social and commercial infrastructure mapping in Phnom Penh based on open street map data (2022).

Exemplary new development area in the Chbar Ampov district planned for about 1,500 inhabitants. Following Table 13, this area would requiere every 750-1000m: 1 kindergarden/primary school, 1 public square / neighbourhood centre, 1 community clinic, 1 public market , 1 neighbourhood park.

GUIDELINE 02.1

III FROM PUBLIC TO VIBRANT URBAN SPACES

EVALUATION CRITERIA

VIBRANT PUBLIC SPACES

Public space shall be conceived as a network that:

1. Connects new urban structures with surrounding areas, creating spaces for public life.
2. Serves multiple functions: recreation, social interaction, cultural activities, and transportation.

ANALYSIS
OF PUBLIC SPACE AVAILABILITY

The following proportions shall serve as initial considerations:

- Space allocation according to the German Sustainable Building Council (DGNB):
  - » 15–20% of gross site area (GSA) for public open spaces, including public green spaces.
  - » 25–35% for streets and roads.
- The recommended areas are aligned with the Anukret 42 Sub-decree on Urbanization of the Capital City Art.45.
- This allocation area range is aligned with the suggestions from UN Habitat (2018).
- Accessibility Standard:
  - » Public spaces should be within a 750m radius to guarantee walkable access.

Figure 13. An AI generated visualisation of a vibrant public space that summarise many of the twelve quality criteria enlisted in Table 4.
Note: Image generated using Midjourney from variations of the prompt an attractive public space in the middle of a residential area in Phnom Pehn. Further edition with Photoshop.

DESIGN
VIBRANT PUBLIC SPACES

Public spaces must meet key qualitative standards to foster vibrancy. Twelve quality criteria, outlined in Table 4, are grouped into three categories: Protection, comfort and enjoyment. This table serves as a tool for evaluating proposed public spaces, with each criterion rated as fulfilled, partially fulfilled, or not fulfilled.

>> SDG 11.7 states that: "By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities."

✓ Fulfilled ⌀ Partially Fulfilled X No Fulfilled

1. Traffic Safety Ensure the area and its surroundings are safe for pedestrians and cyclists of all ages by integrating street crossings, pedestrian islands and traffic lights, minimizing traffic risks.	**5. Personal Safety & Connectivity** Ensure clear sightlines, good lighting, and natural surveillance for safety. Integrate with public transport and maintain strong connections to surrounding areas	**9. Comfort** Design considers wind, sun, and shade for year-round comfort as well as protection from noise, pollution or harsh weather.	PROTECTION
2. Accessibility and Inclusivity Provide wide pathways, ramps, and clear signage to ensure physical accessibility and social inclusion.	**6. Standing and Lingering** Features like ledges, benches, and trees encourage staying and socializing.	**10. Sitting Options** Sufficient, comfortable, and non-commercial seating available.	COMFORT
3. Visual Interest Seating positioned for engaging views and interesting surroundings	**7. Talking and Listening** Suitable for conversations and social interaction.	**11. Play and Activity Options** Opportunities for play, exercise, and activities at various times.	
4. Human Scale Space and buildings designed to human proportions for comfort and connection.	**8. Multiuse** Create flexible spaces for various activities (e.g. weekly markets, events, recreational areas) with adaptable seating and open lawns.	**12. Aesthetic Qualities** Incorporate greenery, seating, public art and durable materials.	ENJOYMENT

Table 4. Twelve quality criteria for public spaces. Source: Adapted by EMP based recommendations from the Gehl Institute (2018).

IV WAY FORWARD

TO BE FURTHER DISCUSSED WITH LOCAL STAKEHOLDERS DURING B4P IMPLEMENTATION PHASE 2025-2027

In Phnom Penh, Cambodia, the path towards integrated neighbourhood design represents a collective endeavour requiring collaboration among private developers, public authorities, and citizens to forge a cohesive vision for the city's future. Understanding the unique local context is paramount, as it serves as the foundation upon which integrated design principles can be implemented effectively.

>>>> Private developers, as key drivers of urban development, must embrace the importance of integrating sustainable and inclusive design elements into their projects. By working closely with public authorities and engaging with local communities, developers can ensure that their developments align with the city's broader goals for sustainability and liveability. This might involve incorporating green spaces, pedestrian-friendly infrastructure, and mixed-use developments that cater to the diverse needs of residents.

Public authorities play a pivotal role in shaping the regulatory framework that governs urban development in Phnom Penh. By defining adaquate, ecologically and socialy qualified, building densities and encouraging a balanced mix of urban uses, authorities can guide development in a way that promotes efficient land use and fosters vibrant, walkable neighbourhoods. Additionally, authorities should regulate the proportion of public and green space within developments to ensure access to recreational areas and promote environmental sustainability. Furthermore, public authorities must prioritize the provision of sufficient social infrastructure, including schools, healthcare facilities, and community centres, to support the needs of growing neighbourhoods. By investing in social infrastructure, authorities can promote social cohesion and ensure that neighbourhoods are equipped to meet the needs of residents of all ages and backgrounds.

Citizen engagement is essential to the success of integrated neighbourhood design initiatives. By actively participating in the planning process, residents can voice their concerns, provide valuable insights, and advocate for their needs. Community input can help shape development proposals, ensuring that they reflect the values and aspirations of the local population.
In conclusion, the journey towards integrated neighbourhood design in Phnom Penh requires concerted efforts from all stakeholders.

By working together towards a shared vision, private developers, public authorities, and citizens can create neighbourhoods that are economically prosperous, socially inclusive, and environmentally sustainable. Through collaboration and a deep understanding of the local context, Phnom Penh can emerge as a model for integrated urban living in the region.
The Build4People project recommends considering these urban design guidelines as a starting point for integrated neighbourhood design in Phnom Penh. However, it also emphasizes the importance of continuously updating and applying these recommendations based on the experience gained after implementation. By learning from past projects and adapting to evolving needs and challenges, Phnom Penh can continue to progress towards a more sustainable and inclusive urban future. Through collaboration and a commitment to shared goals, stakeholders can create neighbourhoods and a city that are thriving, resilient, and equitable for all.

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GUIDELINE 02.1

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