

THE HABITAT DISTRICT AT PAYA LEBAR

Vision

Our concept master plan is structured around three key strategies to transform Paya Lebar Airbase into a highly liveable and sustainable new town. Firstly, the redevelopment of Paya Lebar Airbase will foster identity and pride among residents due to the historical significance of the Old Paya Lebar Airport. Secondly, our team believes in cultivating healthier communities by increasing interconnectedness within Paya Lebar through a network of parks and park connectors. Lastly, the new town should be able to provide job opportunities for the residents with amenities and entertainment facilities in close vicinity. The new town is intended to provide a place for generations of Singaporeans to live, work and play in a self-sufficient habitat. For the reasons mentioned above, our concept master plan is entitled “The Habitat District at Paya Lebar.”

Rational

Polycentric Spatial Structure

The Habitat District at Paya Lebar will employ a modern urban structure that emphasizes the degree of connectivity and accessibility within the new town. It aims to reduce urban sprawls and irrational planning that leads to congestions and a lack of cultural assimilation. As such, this proposal will touch on new public transportation systems and transportation corridors to facilitate a car-lite town. It will also cover the creation of a cosmopolitan grid that will enable mobility, thereby blurring class and racial segregation between communities (Chan, 2019).

City Beautiful Movement 1890s – 1900s

The Habitat District at Paya Lebar aims to incorporate concepts from the City Beautiful Movement from the 1890s and redevelop them into relevant ideals for this generation (Wilson, 1989). In order to foster a close-knit community and to create moral and civic virtues amongst the new residents, the redevelopment will be based upon two traits; Creating a Singaporean identity and preserving an aviation heritage.

Firstly, the re-purposed runway will act as a grand monument for all Singaporeans to be proud of as well as to feel a sense of attachment and accomplishment as a nation. Singapore faces a unique problem whereby most of our population are first- or second-generation Singaporeans, and it is vital to inculcate a sense of belonging through landmarks. Secondly, the re-purposed hangars and control towers will be a stunning evidence of the rich cultural heritage that The Habitat District enjoys. Such design philosophy not only preserves a rich aviation heritage through architecture but also the education of our younger generation.

Decentralisation

Since the 1991 Concept Plan, Singapore has placed much emphasis of decentralising the Central Business District (CBD) by creating new commercial corridors and commercial centres around the island, bringing recreation and jobs closer to our home (Urban Redevelopment Authority, 1991). As part of the redevelopment of the Paya Lebar Airbase (PLAB), our team aims to further build on these ideals in conjunction with our growing population. The PLAB sits on a prime location between the current CBD and regional centres in Tampines and Woodlands and therefore, will serve a vital role in developing the capacities of the current regional centres.

Currently, the PLAB sits around an area zoned for high-density housing and is well-positioned to develop into a regional centre with a readily available labour force in the vicinity. Furthermore, with height restrictions lifted in the area, low-lying industries currently in the area can be redeveloped into commercial buildings making use of the growth in use and exchange values. Most importantly, PLAB can act as an extension of the current CBD due to its close geographical locations, further alleviating congestions within the CBD.

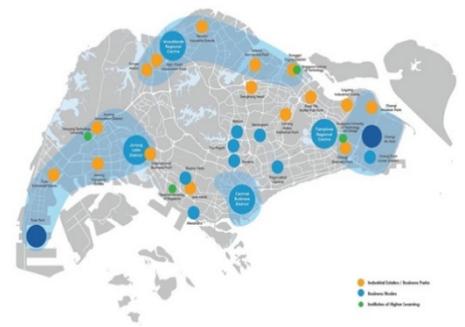


Figure 1 “Strengthening Economic Gateways” taken from Singapore’s Master Plan 2019

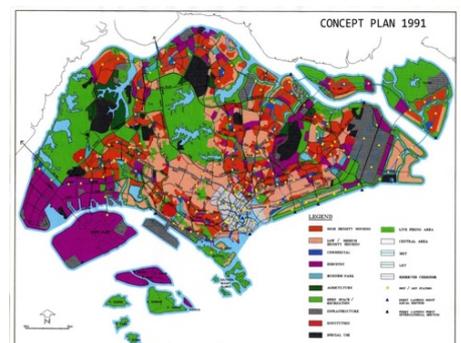
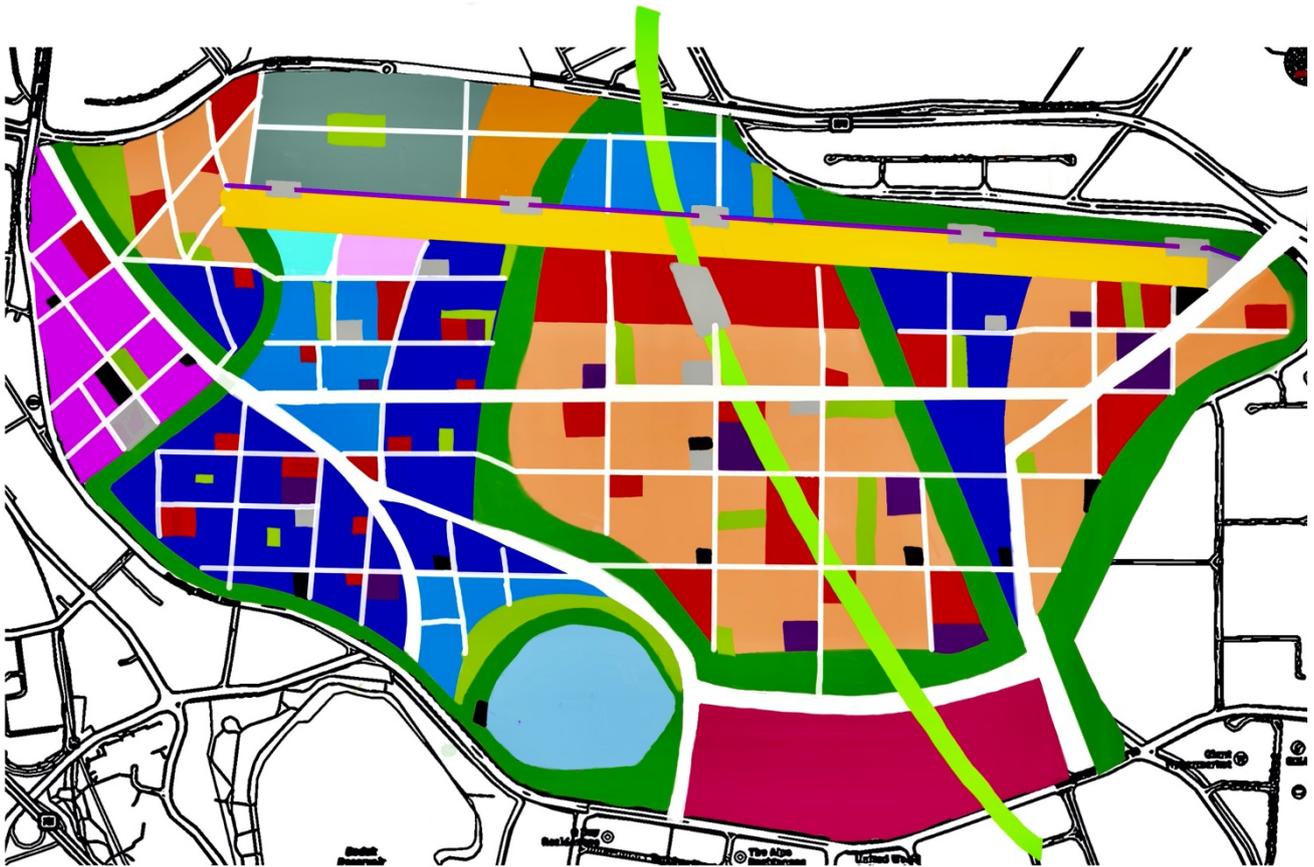


Figure 2 “Concept Plan 1991” taken from URA past concept plans archive.

The Habitat District at Paya Lebar



Legend (Main)					
Color	Zoning Type	Color	Zoning Type	Color	Zoning Type
	Open Spaces		Transport Facilities/Stations		Old Airport Hangers
	Parks/Park Connector		Light Rail Transport System		Education
	Water Body		Mixed-use Commercial/Institution		Roads
	Residential		Mixed-use Commercial/Residential		Runway
	Residential/Institution		Mixed-use Commercial/Hotel		Future Cross Island Line
	Existing Heavy Industry		Civic/Community Institution or Place of Worship		
	Light & Clean Industry		Commercial or Medical Institutions		

A. An All New Gateway

The concept of The Habitat District at Paya Lebar is in line with the Urban Redevelopment Authority's Masterplan 2019. Our design of The Habitat District is based on the catchphrase "Building a livable, breathable, and lovable New Town". Firstly, amenities and businesses will be within short distances from homes, providing a comfortable and convenient livable town. Secondly, an emphasis on corridors of greenery and open spaces to make routine life breathable. Thirdly, the heart of the district is based on compassion and love of community spirit and identity.

B. Sustainable Living for All

Breathability will attract businesses and Singaporeans to move into the new district. Our team believes in sustainable living for all residents in The Habitat District. Although net-zero living is not possible at our current stage, we will focus largely on reducing overall pollution in the district. Our team aims to reduce air pollution caused by vehicles and will adopt a strategic approach to promote a sustainable mode of transport and to reduce the reliance on car ownership. Moreover, public space is required in a new town to better serve its residents and works through the network of open spaces and park connectors. Additionally, all buildings in the business hub and residential precincts are to follow stricter guidelines for their designs.

I. Car-lite District

Our team believes in reducing the number of cars on roads in The Habitat District is key in achieving a sustainable living for all. The Habitat District features two major arterial roads branching off at both sides with support from primary and local access roads in the design. Through this, there will be a reduction in the movement of cars and noise pollution in the district. A transit priority corridor will encourage residents to take public transport, pedestrian, or cycling networks (Abdullah, 2019). There will be a reduction in car parks and an increase in hub parking for the district. There will also be car-free zones that also help to promote communal activities where such zones can be turned into outdoor dining areas during the night or available space for communal activities.

II. Open Spaces, Parks and Park Connectors

An essential requirement of the district is breathable space. It is essential to provide nearby access to recreational and ecological spaces for residents and workers for relaxation and rejuvenation. Open spaces are distributed across the district in residential and commercial precincts. Park Connectors stretches from all sides and all directions to encourage the use and increase the accessibility of parks. It also serves to provide privacy curtain for residential precincts against the bustling commercial and industrial side of the district.

III. Building Requirements

All high-rise buildings are to incorporate Predominant Sky Terrace Stories (Urban Redevelopment Authority, 2019) and open spaces in their plot of land. Additionally, it should be compulsory for all commercial and residential buildings to include solar panels to provide green energy. Buildings must have a minimal green mark gold award (Building Construction Authority, 2020). Buildings will be encouraged to have roof or vertical gardens to boost the living or workspace quality. High-rise and mid-rise buildings to have higher ceilings on the ground level to ensure sufficient cooling measures are in place rather than using full enclosed, air-conditioned lobbies.

C. Accessibility

The Habitat District is envisioned as a gateway for residents and workers of all ages to live, work, and play. Greater connectivity and accessibility for residents to commute from home to work. Our team believes in increasing mixed-use developments to maximize land use. It is crucial to incorporate New “RIDE” infrastructure for the community and reduce unnecessary wait times (Urban Redevelopment Authority, 2019).

I. Amenities for All

With the vision of live, work, and play, the location of amenities is vital in achieving it. The amenities will be wisely located to ensure that it is easily accessible to both residents and workers alike. At the same time, with an adequate distribution of amenities, the amenities will not be over-congested, both within the near future and in the long term. Moreover, the diversity of our amenities also factors for a multi-generational demographic that looks at the daily needs of the majority. Amenities will be well accommodating to various modes of transport from walking, buses or trains, or even cycling. There will be covered shelters for those walking, available bicycle lots for those cycling, and nearby bus stops or train stations.

II. Public Transportation Services

i. Cross Island Line (CRL)– New Station: Habitat District Station

The CRL has been proposed and in development by the Ministry of Transport that is slated for completion in 2030. The line will pass through the district between Tampines North Station (CR6) and Defu Station (CR7) (Land Transport Authority, 2019). Since the line is scheduled for completion in 2030 and has not been built, we propose an additional station – Habitat District Station between CR6 and CR7,

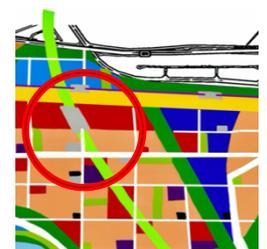


Figure 3 “The Habitat District Station along Cross Island Line”

seen in figure 3. The completion of the station will complement the redevelopment of Paya Lebar Airbase that is also tentative to be completed by 2030.

ii. **Proposed Light Rapid Transit System (LRTS)**

Our team proposes a LRTS in the form of a tram service to be implemented along the Runway seen in figure 4. The Runway and surrounding buildings will be designated as a car-free zone. Hence the LRTS will provide an option of green mode of transportation and will definitely increase connectivity for the buildings around.

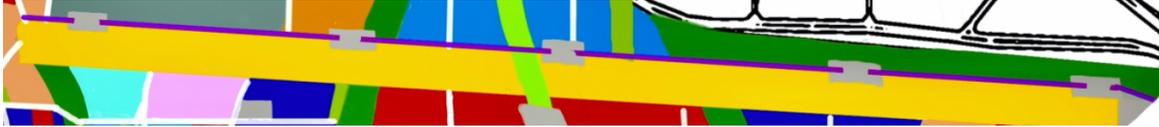


Figure 4 “LRTS – Tram Service” along The Runway

iii. **Smart Nation Initiative - Autonomous Vehicles**

The Habitat District will be deemed as a “smart town” that allows the commercial use of Autonomous Vehicles. Autonomous vehicles would be a great way to explore a car-lite alternative and reduce overall pollution in the district. Additionally, to encourage cleaner modes of transport, our team proposes that electric vehicle charging points be made available in all buildings to encourage the switch to electric cars for all residents.

Our team proposes the adoption of the Pneumatic Waste Conveyance System (PWCS) in the district (Housing Development Board, 2020). It is a system of waste collection that is fully automated that runs underground to prevent any air pollution and reduce waste spillage during refuse collection (Housing and Development Board, 2020). Therefore, it will lead to a hygienic and cleaner environment and improve the ambiance of the town.

D. **More Housing and Growing Business Hub**

III. **For Generations**

The population is on a steady incline with more international migration in addition to the slight increase in birthrate in Singapore. Moreover, from the figure – “Resident Population by Planning Area”, the surrounding towns, Pasir Ris (PR), Bedok (BD), Tampines (TM), Hougang (HG) and Sengkang (SE) are beginning to be overcrowded with residents seen in figure 5 (Singapore Department of Statistics, 2019). Since there is a high demand for housing and homeownership, it is appropriate to include additional residential districts in the district. The Habitat District provides additional private and public homes that are well connected to amenities, workplaces and community hubs with many public spaces and park connectors for residents to enjoy.

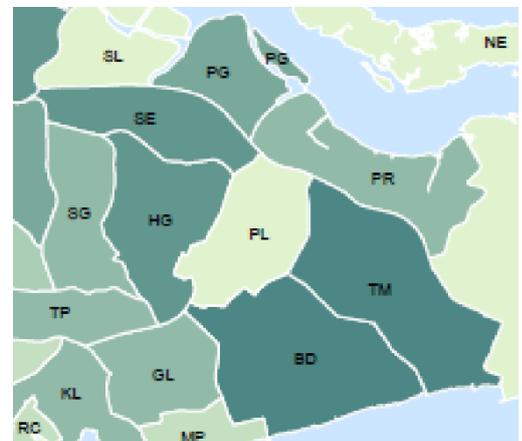


Figure 5 “Resident Population by Planning Area, June 2019” taken from Singapore Department of Statistics, Population Trends, 2019.

IV. **Commercial District**

Many job opportunities will be available, especially for residents where they are able to enjoy the convenience of work near the vicinity of home. In order to achieve it, we believe in increasing mixed-use developments to maximize land use. Other than having commercial only plots, we included a mixture of commercial and institutional, residential, or hotel plots as well. In addition, we are also looking at promoting startups and small-medium enterprises (SMEs) to occupy the space available in order to boost the attractiveness of the district.

E. Heritage and Conservation

Community and social integration play an important role in Singapore. Protecting a part of our nation’s history is crucial for greater appreciation from the future generation. In the district, we recommend transforming the runway and hangers into a national landmark. This will instill pride and love amongst Singaporeans, as it will highlight Singapore’s aviation history and progress.

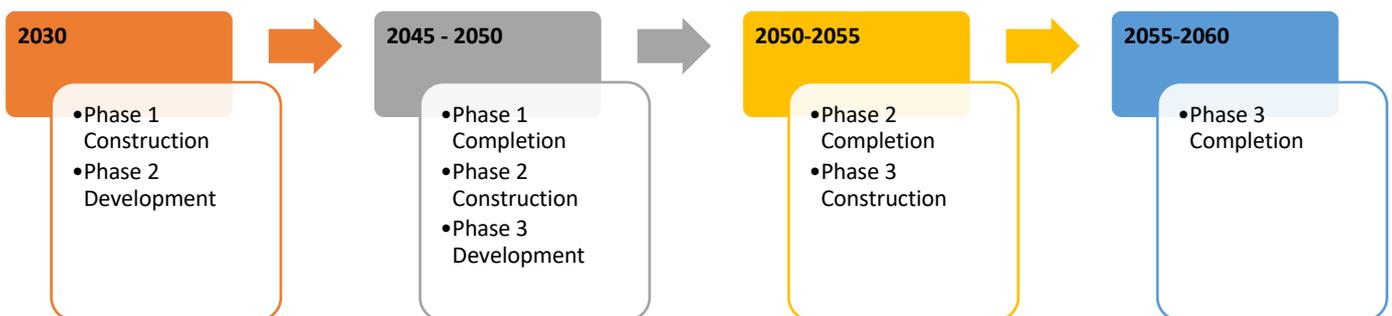
I. The Runway

The re-purposed runway will be the main landmark for The Habitat District, and the idea was taken from Baron Haussmann’s Grand Travaux (McAuliffe, 2020). The runway will be flanked by numerous civic and cultural institutions and amenities. The runway and the surrounding area will be designated a car-free zone and a LRTS – tram service will run along the runway for greater accessibility and mobility. The runway will feature covered walkways, promenades, greenery, open spaces, and an active mobility path where people can interact and socialize.

II. The Hangers

The Hangers will be re-purposed to be a museum dedicated to showcasing Singapore aviation history. It will serve as an education zone for Singaporeans to learn about our nation’s history. The re-purposed control tower can act as a national monument and double as a backdrop for a light show for entertainment purposes, thus piquing people’s interest. This will help to foster the identity and pride among people for The Habitat District. Moreover, interest groups will be allowed to volunteer to provide educational tours and allow residents to bond together.

Phasing and timeline



Phase	Precinct	Description
1	1 to 3	The first phase of The Habitat District will mainly consist of residential zones as our team believes it is necessary to supply enough housing to ease the current demand. Additionally, bringing residents in first will benefit commercial growth in the district. Although there are current nearby amenities available in Tampines such as Giant Supermarket, building sufficient amenities in phase 1 is essential as well. Amenities at a closer distance will bring greater convenience to the residents, and having workplaces nearer to residential districts will shorten commute time for workers.
2	4 to 7	As soon as the majority of the residents move into the district, our team believes that the focus should be on boosting the economy. Singapore is not shy in the concept of decentralisation and has positioned several business districts in its heartlands. Commercial zones are abundant in the district to drive up commerce, and having the business hub within a close distance to a residential district will shorten commute time and indirectly leading to better productivity for the economy. The highly anticipated runway will also be completed in phase 2, increasing the connectivity in the district.
3	8 to 10	Additional Residential zones are planned to bring about more residents into the area. Moreover, additional commercial and civic and cultural institutions will bring the area a more vibrant residential life. Additional facilities would also be implemented to cater to the rising demands.

Phase 1

Precinct 1 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	15 Residential	6 Flats, 4 Executive Condominiums, 5 Condominiums	Mid/High	The height of the buildings will gradually increase towards the top right of the plot of land. This will minimize any possible shadow effects on the low-rise buildings.	
	7 Civic/Cultural Institutions & 1 Place of Worship	1 Police Posts, 1 Post Office, 3 Community Clubs, 1 Library & 1 Place of Worship	Low/Mid	It ensures that the basic amenities of residents are being catered for within a walkable distance.	
	5 Open Spaces	3 Public Promenades, 1 Landscape Plazas, 1 Outdoor Pedestrian Malls	Low	Promote interaction and healthy lifestyle within community	
	3 Transport Facilities	3 Hub Parking	Mid	Provide public parking space for future visitors to The Runway and additional parking space for surrounding residents.	
	5 Education	1 Primary School, 2 Kindergarten, 2 Child-Care centres	Low/Mid	This will make it easy for students to commute to school. The lack of commercial areas will also mean less distractions for the students.	
	3 Utility	3 Electrical Substations	Low/Mid	Ensures that residents will have stable energy sources.	

Precinct 2 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	5 Commercial & 1 Medical Institution	2 Office Buildings, 1 Shopping Malls, 1 Bank, 1 Food Centre/Market & 1 Poly Clinic	Low/Mid	Provide a convenient source of leisure for residents in the near-by residential precinct.	
	1 Place of Worship	1 Place of Worship	Low	Serves religious needs of residents and workers	
	1 Open Spaces	1 Public Promenade	Low	Provides a “breathable” space for workers and residents	
	1 Transport Facilities	1 Hub Parking	Low/Mid	Parking space caters to the workers who commute by car.	
	1 Utility	1 Electrical Substation	Low/Mid	Substation ensures that offices have a stable energy source.	

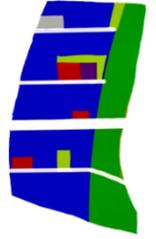
Precinct 3 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	3 Commercial	3 Office Buildings	Low/Mid	Commercial areas will provide job opportunities for residents	

	4 Mixed-Use Commercial & Residential	3 Office Building/Condominiums, 1 Shopping mall/Condominium	Mid/High	Quarry provides a scenic view for residents. Commercial areas will provide job opportunities for residents. Scenic place for workers and residents nearby to rest and interact. Park connectors encourages them to commute by bicycle. Ensures that workers have a stable supply of energy and water.	
	1 Open Spaces	1 Public Promenade	Low		
	1 Park	1 Park Connector/Community Park	Low		
	1 Waterbody	1 Reservoir	Low		
	2 Utility	1 Electrical Substation & 1 Water Pump	Low/Mid		

Phase 2

Precinct 4 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	4 Commercial & 1 Medical Institution	3 Office Buildings, 1 Bank, 1 Convention Centre/1 Medical Centre	Mid/High	Commercial areas will provide job opportunities for residents. The medical centre will ensure that health of workers is taken care of.	
	2 Civic/Cultural Institutions & 1 Place of Worship	1 Police Post, 1 Community Club & 1 Place of Worship	Mid	Ensures that the basic amenities of workers and residents are being catered for and provide a place for them to interact.	
	3 Open Spaces	1 Public Promenade, 2 Landscape Plazas	Low	Provides place for workers to rest and interact. Connects precinct to other precincts and encourages workers to commute by bicycles.	
	3 Park	1 Park Connector/Community Park	Low		
	1 Education	1 Child-Care centre	Mid/High	Commercial areas will provide job opportunities for residents.	
	1 Transport Facility	1 Hub Parking	Low/Mid	Carpark caters to the workers who commute by car.	

Precinct 5 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	12 Commercial & 1 Medical Institution	7 Office Buildings, 2 Banks, 1 Food Centre/Market, 1 Entertainment, 1 Commercial School & 1 Medical Suite	Mid/High	Commercial areas will provide job opportunities for residents. Banks, food centres and entertainment ensures that basic amenities of workers and residents are being catered for. While the medical suite ensures that the health of workers is taken care of.	
	4 Civic/Cultural Institutions & 1 Place of Worship	1 Fire Station, 1 Police Station, 1 Post Office, 1 Association & 1 Place of Worship	Low/Mid	Ensures that the basic amenities of workers and residents are catered for and the place of worship serves religious need of workers and residents in that precinct.	
	2 Open Spaces	2 Public Promenades	Low	Place for workers to rest and interact during their breaks.	
	2 Education	1 Kindergarten, 1 Child-Care centres	Mid	This will make it easy for students to commute to school	

	1 Transport Facility	Hub Parking	Mid	Ensures that the health of workers is taken care of. Carpark caters to workers who commute by car. Substation ensures that offices have a stable energy source.	
	1 Utility	1 Electrical Substation	Mid		

Precinct 7 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	The Runway	Open Space, Covered Walkways, Food Street	Mid	Boost community interaction. Allows residents and workers to easily access cheap food.	
	The Hangers	Educational Facilities, Museums	Low	Educate residents about the history of PLAB which can help create a sense of identity.	
	2 Open Space	2 Public Promenades	Mid	A place for residents to interact.	
	3 Parks	3 Park Connectors	Low	Encourage residents to commute by bicycle.	
	3 Civic & Cultural Institutions	1 Police Station, 1 Library, 1 Community Centre	Mid/High	Ensures that the basic amenities of residents are being catered for.	
	4 Mixed-use commercial and Residential	2 Shopping Malls/Condominium, 1 Hotel/Condominium and 1 Office/Condominium	Mid	Ensures that residents have access to basic amenities. Hotel provides international businessman with an accessible place to stay. Provide job opportunities for residents.	
	LRTS Stations/line	1 Line, 5 Stations	Mid	Increase connectivity within the area	
	1 Transport Facilities	1 LRTS Depot	Low/Mid	LRTS to increase connectivity within the area.	
	1 Residential/Institution	1 Community hall/Residential	High Rise	Provide easy access to community bonding and residential	

Phase 3

Precinct 8 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
	6 Residential	3 HDB Flats, 3 Condominiums	Mid/High	Residential buildings will be approximately the same height to minimize any shadow effect.	
	2 Commercial	1 Shopping Mall, 1 Food Centre/Market	Low/Mid	Commercial areas will provide job opportunities for residents	
	3 Civic/Cultural Institutions & 1 Place of Worship	1 Performing Arts Centre, 1 Police Post, 1 Community Centre & 1 Place of Worship	Low	Performing Arts Centre boosts the arts scene in that area. Community Centre will promote interaction amongst residents. Police Post maintains the security in that area. Place of worship caters to the religious needs of residents.	
	3 Open Spaces	1 Public Promenade, 2 Landscape Plazas	Mid	Boost interaction amongst residents. Park connectors encourages residents to commute by bicycle.	
	3 Park	3 Park Connector/Community Park	Low		

Precinct 9 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
Blue	5 Mixed-use commercial and Residential	2 Office/Executive Condominiums, 1 Food Centre/HDB Flats, 1 Shopping Mall/Condominiums	Mid/High	Commercial areas will provide job opportunities for residents.	
Red	3 Civic & Cultural Institutions	1 Fire Station, 1 Police Station, 1 Post Office, 1 Association	Mid	Ensures that residents have access to basic amenities.	
Cyan	1 Mixed-use commercial and institution	1 Entertainment Complex/Community Hall	High	Provides entertainment for residents and promotes interaction amongst them.	
Pink	1 Mixed-use commercial and hotel	1 Shopping Mall/Hotel	High	Ensures that residents have access to basic amenities. Hotel provides international businessman with an accessible place to stay.	
Light Green	1 Open Space	1 Outdoor Pedestrian Malls	Low	Boost interaction amongst residents. Park connectors encourages residents to commute by bicycle.	
Dark Green	2 Park	2 Park Connector	Low		
Purple	1 Education	1 Kindergarten	Mid	Easy for residents and workers to send their children to the kindergarten when they go to work.	
Grey	1 Transport Facility	Hub Parking	Mid	Parking space caters to residents and workers that commute by car.	

Precinct 10 – Development Breakdown in Zones (Blocks)

Colour	Zoning	Type of Development	Height (Rise)	Description	Plot
Orange	9 Residential	5 Landed Properties, 4 Condominiums	Low/Mid	The height of the buildings will gradually increase towards the top left of the plot of land. This will minimize any possible shadow effects on the low-rise buildings.	
Red	3 Civic/Cultural Institutions & 1 Place of Worship	1 Police Post, 1 Fire Station, 1 Post office & 1 Place of Worship	Mid	Ensures that residents have access to basic amenities. Serves religious needs of residents and workers nearby.	
Light Green	2 Open Spaces	1 Landscape Plaza, 1 Natural Open Space	Low	Place for residents to interact and encourage residents to commute by bicycles.	
Dark Green	1 Park	1 Park Connector	Low		
Black	2 Utility	2 Electrical Substations	Low	Ensures that residents will have a stable supply of power.	
Purple	3 Education	1 Child-Care Centre , 1 Kindergarten, 1 Special-assistance school	Low/Mid	Easy for residents and workers to send their children to the kindergarten when they go to work.	

References

- Chan, F. (2019). Claiming Ordinary Space in the Cosmopolitan Grid. *The New Companion to Urban Design*.
- Building Construction Authority. (2020, January 22). *BCA GREEN MARK ASSESSMENT CRITERIA, ONLINE APPLICATION AND VERIFICATION REQUIREMENTS*. Retrieved from Building Construction Authority: https://www.bca.gov.sg/GreenMark/green_mark_criteria.html
- Wilson, W. H. (1989). The City Beautiful Movement. *Baltimore: John Hopkins University Press.*, 126-146.
- Sim, F. (2019, March 27). *URA draft master plan: More housing planned for CBD, Marina Bay area*. Retrieved from Channel News Asia: <https://www.channelnewsasia.com/news/singapore/homes-housing-cbd-marina-bay-ura-draft-master-plan-11383914>
- Urban Redevelopment Authority. (1991). *Past Concept Plans*. Retrieved from URA: <https://www.ura.gov.sg/Corporate/Planning/Concept-Plan/Past-Concept-Plans>
- Adams, & John, S. (2005). The structure and growth of residential neighborhoods in American cities. *Progress in Human Geography*, Vol.29(3), pp.321-325.
- Housing and Development Board. (2020). *Waste Management: Pneumatic Waste Conveyance System (PWCS)*. Retrieved from HDB: <https://www.hdb.gov.sg/cs/infoweb/about-us/our-role/smart-and-sustainable-living/hdb-greenprint/waste-management>
- Urban Redevelopment Authority. (2019). *Flats and Condominiums*. Retrieved from <https://www.ura.gov.sg/Corporate/Guidelines/Development-Control/Residential/Flats-Condominiums/Building-Height>
- Urban Redevelopment Authority. (2019) *Better Connectivity For All*. Retrieved from <https://www.ura.gov.sg/Corporate/Planning/Master-Plan/Themes/Convenient-and-Sustainable-Mobility/Better-Connectivity-for-All>
- Land Transport Authority. (2019). *Land Transport Master Plan 2040*. Land Transport Authority. https://www.lta.gov.sg/content/ltagov/en/who_we_are/our_work/land_transport_master_plan_2040.html
- Singapore Department of Statistics. (2019). Population Trends 2019. Retrieved from <https://www.singstat.gov.sg/-/media/files/publications/population/population2019.pdf>
- McAuliffe, M. S. (2020). *Paris, City of Dreams: Napoleon Iii, Baron Haussmann, and the Creation of Paris*. Lanham: Rowman & Littlefield.
- Abdullah, Z. (2019). Bus-only roads a possibility in move to speed up bus travel: LTA. Retrieved from <https://www.straitstimes.com/singapore/transport/bus-only-roads-a-possibility-in-move-to-speed-up-bus-travel-lta>
- Past Concept Plans. (n.d.). Retrieved from <https://www.ura.gov.sg/Corporate/Planning/Concept-Plan/Past-Concept-Plans>