

# JUBM & Arcadis Construction Cost Handbook **MALAYSIA** **2021**

JUBM Sdn Bhd 197601001824 (27638-X)

Arcadis (Malaysia) Sdn Bhd 200001017836 (520443-H)

Arcadis Projek Sdn Bhd 199201002315 (233819-K)

KDN PP10466/05/2013(032500)



Cainiao Logistic Centre, Selangor

UMW High Value Manufacturing  
(HVM) Park, Selangor

Gravit8 Kota Bayuemas, Selangor

Gleneagles Medini  
Specialist Centre, Johor

The Prime Dataran Puchong,  
Selangor

M1 Sunway Citrine, Johor

The following handbook of information relating to the Malaysian construction industry has been compiled by:

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The information contained herein should be regarded as indicative and for general guidance only. Whilst every effort has been made to ensure accuracy, no responsibility can be accepted for errors and omissions, however caused.

Unless otherwise stated, costs reflected in this handbook are Malaysian costs at 4th Quarter 2020.



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Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. In Asia, we have over 3,500 people covering the Asia market across all sectors focused on improving quality of life.

As Arcadis (Malaysia) Sdn Bhd, we are one of the largest and longest established Quantity Surveying practices in the country. Together with our collaborative partner, JUBM Sdn Bhd, we offer a multi-disciplinary construction cost consultancy service and provides integrated solutions to our clientele throughout Malaysia working from five offices in Kuala Lumpur, Penang, Johor Bahru, Kota Kinabalu and Kuching.

We provide our specialist services to nearly all market segments in the construction industry from religious buildings to residential homes, hospitality to corporate headquarters, mixed use developments to master planning.

The diverse range of project experience provides us with a rich and extensive construction cost database which enables the company to handle the simplest to the most complex projects entrusted by clients who recognized our value and dynamism.

(Log on to [www.arcadis.com](http://www.arcadis.com) for more details.)

## Our Core Values

### People First

We care for each other and create a safe and respectful working environment where our people can grow, perform, and succeed.

### Integrity

We always work to the highest professional and ethical standards and establish trust by being open, honest and responsible.

### Client Success

We are passionate about our clients' success and bring insights, agility, and innovation to co-create value.

### Collaboration

We value the power of diversity and our global capabilities and deliver excellence by working as One Arcadis.

### Sustainability

We base our actions for clients and communities on environmental responsibility and social and economic advancement.

## A Selection of Our Projects

### Commercial

1. Mercu 3, KL Eco City, Kuala Lumpur 2017
2. Damansara City 2 Office Tower, Kuala Lumpur 2017
3. M1 Sunway Citrine, Johor 2017
4. Environmental Preservation and Innovation Centre (EPIC), Negeri Sembilan 2017
5. Etiqa Office Tower, Kuala Lumpur 2018
6. The Prime Dataran Puchong, Selangor 2018

### Retail

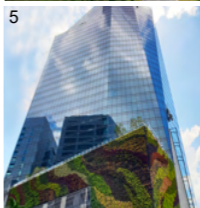
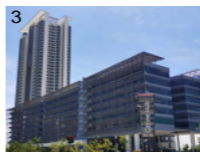
7. KLP Fashion Avenue, Kuala Lumpur 2012
8. Sunway Velocity, Kuala Lumpur 2016
9. Central Plaza I-City, Selangor 2019
10. Setia Walk, Selangor 2014

### Residential

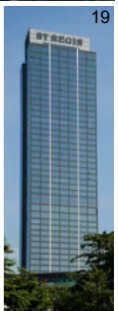
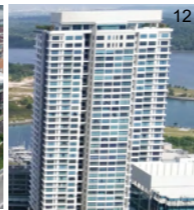
11. Pandora Service Apartment, Selangor 2016
12. Imperia Condominium, Puteri Harbour, Johor 2015
13. Gravit8 Kota Bayuemas, Selangor 2020
14. Irama Wangsa Condominiums, Kuala Lumpur 2018
15. Setia Sky Residences, Kuala Lumpur 2016
16. Le Nouvel Condominium, Kuala Lumpur 2016

### Hospitality, Sports & Leisure

17. Legoland Malaysia Theme Park, Johor 2012
18. Four Seasons, Kuala Lumpur 2018
19. St. Regis, Kuala Lumpur 2017
20. Sofitel Damansara City, Kuala Lumpur 2017
21. Setia Subterranean Penang International Convention & Exhibition Centre (SPICE), Penang 2017
22. Malaysia International Trade and Exhibition Centre (MITEC), Kuala Lumpur 2016
23. Pavilion Hotel, Kuala Lumpur 2018
24. Ritz Carlton Langkawi, Kedah 2017
25. Impression Theatre, Melaka 2018







(Cont'd)

(Cont'd)

## A Selection of Our Projects

### Healthcare

- 26. Women Children Hospital, Kuala Lumpur 2017
- 27. Gleneagles Medini Specialist Centre, Johor 2015
- 28. Pantai Hospital (Extension), Kuala Lumpur 2015
- 29. UCSI Hospital, Negeri Sembilan 2019



### Educational

- 30. Special Education School, Sabah 2019
- 31. Sunway Monash University, Selangor 2007
- 32. Tropicana International School, Selangor 2016
- 33. Asia Pacific Univeristy Campus, Kuala Lumpur 2016
- 34. Wesley Methodist International School, Penang 2018



### Transport & Infrastructure

- 35. Electrified Double Track-Padang Besar to Ipoh (Station Building) 2014
- 36. 6 Stations for Kelana Jaya LRT Line Extension, Kuala Lumpur 2014
- 37. KVMRT Sungai Buloh - Kajang Line 2017
- 38. KVMRT Sungai Buloh - Putrajaya Line 2022
- 39. UMW High Value Manufacturing (HVM) Park, Selangor 2022
- 40. Flyover Bridge Link to Bukit Jalil City 2020
- 41. Bus Rapid Transit (BRT) Sunway 2015



### Industrial

- 42. PML Production Facility, Selangor 2011
- 43. Cainiao Logistic Centre, Selangor 2020
- 44. Perodua - Second National Car Plant, Selangor 1994



### Religious Buildings

- 45. Masjid Jamek Abdullah Hukum, KL Eco City, Kuala Lumpur 2016
- 46. Lutheran Bible Training Institute, Selangor 2010
- 47. Church at Kuala Menggatal, Sabah 2019



### Public

- 48. Brunei Chancery, Putrajaya 2017
- 49. Federal Government Administrative Centre, Putrajaya 2010
- 50. IBS Housing, Putrajaya 2011





2021

S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
31					1	2	1	2	3	4	5	6	1	2	3	4	5	6		
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24	25	26	27	28	29	30	28							28	29	30	31			

S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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18	19	20	21	22	23	24	16	17	18	19	20	21	22	20	21	22	23	24	25	26
25	26	27	28	29	30		23	24	25	26	27	28	29	27	28	29	30			

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2022

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S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
31					1	2	1	2	3	4	5	6			1	2	3			
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10	11	12	13	14	15	16	14	15	16	17	18	19	20	11	12	13	14	15	16	17
17	18	19	20	21	22	23	21	22	23	24	25	26	27	18	19	20	21	22	23	24
24	25	26	27	28	29	30	28	29	30	31			25	26	27	28	29	30		

S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
30	31					1	1	2	3	4	5				1	2	3			
2	3	4	5	6	7	8	6	7	8	9	10	11	12	4	5	6	7	8	9	10
9	10	11	12	13	14	15	13	14	15	16	17	18	19	11	12	13	14	15	16	17
16	17	18	19	20	21	22	20	21	22	23	24	25	26	18	19	20	21	22	23	24
23	24	25	26	27	28	29	27	28	29	30			25	26	27	28	29	30	31	



# CONSTRUCTION COST DATA

# 1

## Construction Cost Specification

Kuala Lumpur Construction Cost Trend  
(2010 - 2020)

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Construction Costs for Kuala Lumpur

Construction Costs for Johor Bahru

Construction Costs for Penang

Construction Costs for Kota Kinabalu

Construction Costs for Kuching

Construction Costs for Selected  
Asian Cities

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Major Rates for Malaysia

Major Rates for Selected Asian Cities

ACMV Costs for Various Designs &  
Developments in Kuala Lumpur

M&E Costs for Selected Asian Cities

Unit Costs for Ancillary Facilities  
for Kuala Lumpur

Fit-Out Costs for Kuala Lumpur

## CONSTRUCTION COST SPECIFICATION

BUILDING TYPE		OUTLINE SPECIFICATION
DOMESTIC	Apartment, high rise, average standard	Apartment units with fit-out, but <b>excluding</b> decorative light fittings and loose furniture. <b>(Malaysia only)</b> 6-12 units per floor, excluding air-conditioning, kitchen cabinets and home appliances.
	Apartment, high rise, high end	Apartment units with good quality fit-out, including air-conditioning, kitchen cabinets and home appliances, but <b>excluding</b> decorative light fittings and loose furniture.
	Terraced houses, average standard	Houses with fit-out, including air-conditioning, kitchen cabinets and home appliances, but <b>excluding</b> decorative light fittings, loose furniture, garden and parking. <b>(Malaysia only)</b> <b>Excluding</b> air-conditioning, kitchen cabinets and home appliances.
	Detached houses, high end	Houses with good quality fit-out, including air-conditioning, kitchen cabinets and home appliances, but <b>excluding</b> decorative light fittings, loose furniture, garden and parking.
	Medium/high rise offices, average standard High rise offices, prestige quality	RC structure, curtain wall, including public area fit-out, tenant area with raised floor/carpet, painted wall and false ceiling. <b>(Malaysia only)</b> Average standard quality offices exclude tenant fit-out and raised floor. Prestige quality offices exclude tenant fit-out.
OFFICE/ COMMERCIAL	Out-of-town shopping centre, average standard Retail malls, high end	Including public area fit-out and M&E, but <b>excluding</b> shop fit-out.
	Budget hotels - 3-star, mid market Business hotels - 4/5 -star Luxury hotels - 5-star	1) Interior decoration 2) Furniture (fixed and movable) 3) Special light fittings (chandeliers, etc.) 4) Operating Supplies and Equipment (OS&E) <b>excluded</b> .
HOTELS	Industrial units, shell only (Conventional single storey framed units)	RC structure with steel roof and M&E to main distribution, but <b>excluding</b> air-conditioning, heating and lighting.
	Owner operated factories, low rise, light weight industry	RC structure, including small office with simple fit-out and M&E, but <b>excluding</b> air-conditioning and heating.
INDUSTRIAL		

<b>OTHERS</b>	
Underground/basement car parks (<3 levels)	RC structure
Multi storey car parks, above ground (<4 levels)	RC structure, natural ventilation, no facade enclosure.
Schools (primary and secondary)	Including fit-out and air-conditioning, but excluding educational equipment. <b>(Malaysia only)</b> Schools with standard government provisions.
Students' residences	Including fit-out, loose furniture and air-conditioning. <b>(Malaysia only)</b> Student hostels to university standard.
Sports clubs, multi purpose sports/leisure centres (dry sports)	Dry sports (no swimming pool) and are for 'leisure centre' type schemes including main sports hall, ancillary sports facilities, changing and showers, restaurant/cafe, bar, etc. Costs include a/c, Furniture, Fittings and Equipment (FF&E).
General hospitals - public sector	Excluding medical and operating equipment.

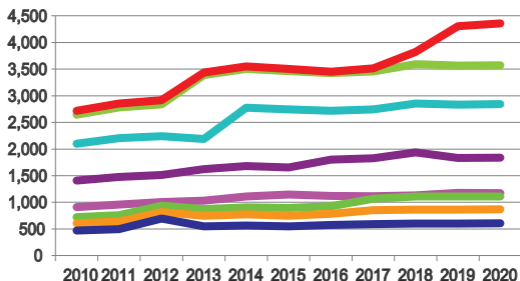
**Notes:**

1. The costs for the respective categories given above are averages based on fixed price competitive tenders. It must be understood that the actual cost of a building will depend upon the design and many other factors and may vary from the figures shown.
2. The costs per square metre are based on Construction Floor Areas (CFA) measured to the outside face of the external walls/ external perimeter including lift shafts, stairwells, balconies, plant rooms, water tanks and the like.
3. All buildings are assumed to have no basements (except otherwise stated) and are built on flat ground, with normal soil and site condition. The cost excludes site formation works, external works, land cost, professional fees, finance and legal expenses.
4. The standard for each category of building varies from region to region and do not necessary follow that of each other.
5. All costs are in US\$/m<sup>2</sup> CFA unless otherwise stated. Fluctuation in exchange rates may lead to changes in construction costs expressed in U.S. dollars.

## KUALA LUMPUR CONSTRUCTION COST TREND (2010 - 2020)

### Domestic

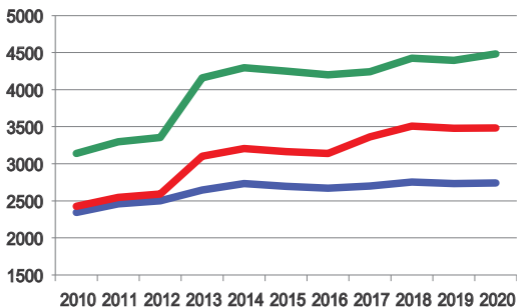
RM/m<sup>2</sup>



- Detached houses (mass housing)
- Detached houses (high end)
- Terraced houses
- Luxury apts, high rise
- Average standard apts high rise
- Low cost flats, high rise (<15 levels)
- Low cost flats, low rise (<6 levels)
- Low cost housing

### Office/Commercial

RM/m<sup>2</sup>



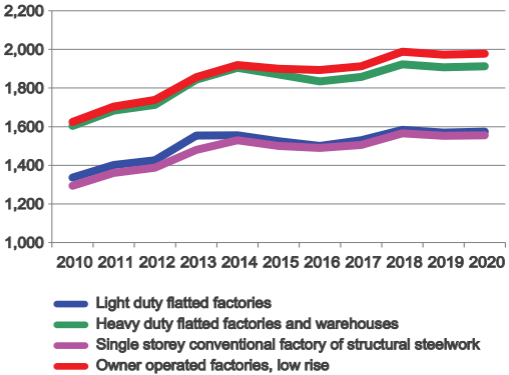
- Average standard offices, high rise
- Prestige offices, high rise
- Shopping Centres

All costs are at an average level unless otherwise stated



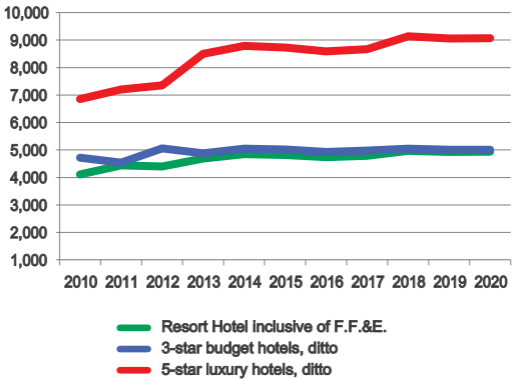
## Industrial

RM/m<sup>2</sup>



## Hotels

RM/m<sup>2</sup>



All costs are at an average level unless otherwise stated

# 1 CONSTRUCTION COST DATA

## CONSTRUCTION COSTS FOR KUALA LUMPUR

	RM/m <sup>2</sup>			
	BUILDING	SERVICES	TOTAL	
<b><u>DOMESTIC</u></b>				
Detached houses (mass housing)	1,590	800	1,065	2,390
Detached houses (high end)	2,230	810	1,065	3,040
Terraced houses	705	200	305	905
Average standard apartments, high rise	1,000	250	500	1,250
Luxury apartments, high rise	2,115	800	1,150	2,915
Low cost housing	440	110	135	550
Low cost flats, low rise (<6 levels)	615	180	220	795
Low cost flats, high rise (<15 levels)	720	250	325	970
<b><u>OFFICE / COMMERCIAL</u></b>				
Average standard offices, high rise	1,485	890	1,175	2,375
Prestige offices, high rise	2,205	1,500	1,750	3,705
Shopping centres	1,945	840	1,415	2,785
<b><u>HOTELS</u></b>				
Resort hotels, inclusive of F.F.&E.	3,170	1,280	1,700	4,450
3-star budget hotels, ditto	3,295	880	1,210	4,175
5-star luxury hotels, ditto	6,115	1,830	2,350	7,945

<b>INDUSTRIAL</b>									
Light duty flatted factories	870	-	1,025	590	-	665	1,460	-	1,690
Heavy duty flatted factories and warehouses	1,135	-	1,315	650	-	725	1,785	-	2,040
Single storey conventional factory of structural steelwork	960	-	1,275	350	-	525	1,310	-	1,800
Owner operated factories, low rise	1,275	-	1,535	500	-	645	1,775	-	2,180
<b>OTHERS</b>									
Basement car parks (<3 levels)	910	-	1,535	370	-	680	1,280	-	2,215
Elevated car parks (<4 levels)	715	-	1,105	185	-	335	900	-	1,440
Primary and Secondary schools	820	-	1,040	205	-	250	1,025	-	1,290
Student hostels	970	-	1,175	250	-	350	1,220	-	1,525
Sports clubs inclusive of F.F.&E.	1,880	-	2,320	560	-	730	2,440	-	3,050

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

## CONSTRUCTION COSTS FOR JOHOR BAHRU

	RM/m <sup>2</sup>			TOTAL
	BUILDING	SERVICES		
<b><u>DOMESTIC</u></b>				
Detached houses (mass housing)	1,600	750	950	2,350
Detached houses (high end)	2,250	800	1,000	3,050
Terraced houses	800	200	350	1,000
Average standard apartments, high rise	1,200	350	500	1,550
Luxury apartments, high rise	2,435	600	900	3,035
Low cost housing	450	105	145	555
Low cost flats, low rise (<6 levels)	600	155	215	755
Low cost flats, high rise (<15 levels)	685	230	260	915
<b><u>OFFICE / COMMERCIAL</u></b>				
Average standard offices, high rise	1,500	775	1,100	2,275
Prestige offices, high rise	2,150	1,350	1,650	3,500
Shopping centres	1,950	855	1,190	2,805
<b><u>HOTELS</u></b>				
Resort hotels, inclusive of F.F.&E.	3,250	1,250	1,600	4,500
3-star budget hotels, ditto	3,350	780	1,450	4,130
5-star luxury hotels, ditto	6,050	1,900	2,050	7,950

<b>INDUSTRIAL</b>									
Light duty flattened factories	900	-	915	520	-	675	1,420	-	1,590
Heavy duty flattened factories and warehouses	1,150	-	1,250	580	-	750	1,730	-	2,000
Single storey conventional factory of structural steelwork	980	-	1,175	350	-	500	1,330	-	1,675
Owner operated factories, low rise	1,300	-	1,430	500	-	600	1,800	-	2,030
<b>OTHERS</b>									
Basement car parks (<3 levels)	1,000	-	1,300	300	-	400	1,300	-	1,700
Elevated car parks (<4 levels)	650	-	850	210	-	290	860	-	1,140
Primary and Secondary schools	825	-	950	200	-	235	1,025	-	1,185
Student hostels	965	-	1,050	250	-	300	1,215	-	1,350
Sports clubs inclusive of F.F.&E.	1,850	-	2,105	550	-	670	2,400	-	2,775

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

## CONSTRUCTION COSTS FOR PENANG

	RM/m <sup>2</sup>			
	BUILDING	SERVICES	TOTAL	
<b><u>DOMESTIC</u></b>				
Detached houses (mass housing)	1,455	920	2,375	2,755
Detached houses (high end)	1,940	825	2,765	2,925
Terraced houses	715	150	865	1,320
Average standard apartments, high rise	1,070	320	1,390	1,755
Luxury apartments, high rise	1,635	755	2,390	3,160
Low cost housing	460	85	545	595
Low cost flats, low rise (<6 levels)	565	145	710	805
Low cost flats, high rise (<15 levels)	785	120	905	995
<b><u>OFFICE / COMMERCIAL</u></b>				
Average standard offices, high rise	1,435	865	2,300	2,805
Prestige offices, high rise	1,950	1,350	3,300	4,335
Shopping centres	1,575	850	2,425	3,110
<b><u>HOTELS</u></b>				
Resort hotels, inclusive of F.F.&E.	2,905	1,150	4,055	4,755
3-star budget hotels, ditto	2,945	970	3,915	5,585
5-star luxury hotels, ditto	5,715	1,920	7,635	9,170

<b><u>INDUSTRIAL</u></b>									
Light duty flattened factories	775	-	915	530	-	715	1,305	-	1,630
Heavy duty flattened factories and warehouses	925	-	1,125	595	-	760	1,520	-	1,885
Single storey conventional factory of structural steelwork	785	-	950	495	-	570	1,280	-	1,520
Owner operated factories, low rise	1,020	-	1,265	510	-	615	1,530	-	1,880
<b><u>OTHERS</u></b>									
Basement car parks (<3 levels)	845	-	1,385	325	-	565	1,170	-	1,950
Elevated car parks (<4 levels)	625	-	845	190	-	325	815	-	1,170
Primary and Secondary schools	670	-	895	200	-	255	870	-	1,150
Student hostels	870	-	985	215	-	280	1,085	-	1,265
Sports clubs inclusive of F.F.&E.	1,580	-	1,800	545	-	715	2,125	-	2,515

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

# 1 CONSTRUCTION COST DATA

## CONSTRUCTION COSTS FOR KOTA KINABALU

	RM/m <sup>2</sup>			TOTAL
	BUILDING	SERVICES		
<b><u>DOMESTIC</u></b>				
Detached houses (mass housing)	1,540	430	540	1,970
Detached houses (high end)	2,350	1,015	1,250	3,365
Terraced houses	790	285	340	1,075
Average standard apartments, high rise	1,050	355	430	1,405
Luxury apartments, high rise	2,460	945	1,070	3,405
Low cost housing	420	120	165	540
Low cost flats, low rise (<6 levels)	540	165	185	705
Low cost flats, high rise (<15 levels)	610	210	220	820
<b><u>OFFICE / COMMERCIAL</u></b>				
Average standard offices, high rise	1,580	880	1,015	2,460
Prestige offices, high rise	2,240	1,465	1,675	3,705
Shopping centres	1,610	880	1,015	2,490
<b><u>HOTELS</u></b>				
Resort hotels, inclusive of F.F.&E.	3,350	1,190	1,450	4,540
3-star budget hotels, ditto	4,080	1,450	1,605	5,530
5-star luxury hotels, ditto	6,320	2,330	2,490	8,650



<b>INDUSTRIAL</b>									
Light duty flattened factories	930	-	990	430	-	525	1,360	-	1,515
Heavy duty flattened factories and warehouses	1,190	-	1,260	500	-	570	1,690	-	1,830
Single storey conventional factory of structural steelwork	990	-	1,240	355	-	430	1,345	-	1,670
Owner operated factories, low rise	1,330	-	1,500	430	-	510	1,760	-	2,010
<b>OTHERS</b>									
Basement car parks (<3 levels)	1,000	-	1,190	250	-	285	1,250	-	1,475
Elevated car parks (<4 levels)	670	-	860	185	-	220	855	-	1,080
Primary and Secondary schools	720	-	850	235	-	370	955	-	1,220
Student hostels	960	-	1,030	260	-	285	1,220	-	1,315
Sports clubs inclusive of F.F.&E.	1,910	-	2,050	720	-	880	2,630	-	2,930

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries (10%) but exclusive of contingencies.



<b>INDUSTRIAL</b>									
Light duty flattened factories	1,090	-	1,305	395	-	405	1,485	-	1,710
Heavy duty flattened factories and warehouses	1,120	-	1,570	415	-	565	1,535	-	2,135
Single storey conventional factory of structural steelwork	970	-	1,070	325	-	475	1,295	-	1,545
Owner operated factories, low rise	1,130	-	1,535	440	-	605	1,570	-	2,140
<b>OTHERS</b>									
Basement car parks (<3 levels)	1,070	-	1,320	365	-	390	1,435	-	1,710
Elevated car parks (<4 levels)	835	-	945	220	-	245	1,055	-	1,190
Primary and Secondary schools	980	-	1,070	210	-	340	1,190	-	1,410
Student hostels	1,155	-	1,320	240	-	315	1,395	-	1,635
Sports clubs inclusive of F.F.&E.	1,815	-	1,990	720	-	875	2,535	-	2,865

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

## CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m <sup>2</sup>				
	KUALA LUMPUR	BANGKOK*	JAKARTA**	MANILA@	SINGAPORE@@
<b>DOMESTIC</b>					
Apartments, high rise, average standard	305 - 590	800 - 947	834 - 944	1,009 - 1,422	1,360 - 1,505
Apartments, high rise, high end	710 - 1,410	1,066 - 1,312	1,149 - 1,297	1,363 - 2,590	2,095 - 3,090
Terraced houses, average standard	220 - 350	500 - 614	443 - 576	983 - 1,203	1,765 - 1,950
Detached houses, high end	740 - 1,000	866 - 1,046	1,202 - 1,343	1,909 - 3,237	2,245 - 2,940
<b>OFFICE / COMMERCIAL</b>					
Medium/high rise offices, average standard	580 - 755	800 - 947	822 - 912	999 - 1,236	1,765 - 1,950#
High rise offices, prestige quality	900 - 1,280	999 - 1,279	1,295 - 1,434	1,446 - 1,823	1,985 - 2,130#
Out-of-town shopping centre, average standard	545 - 725	683 - 880	708 - 783	849 - 1,058	1,985 - 2,060
Retail malls, high end	680 - 1,015	916 - 963	780 - 845	1,160 - 1,626	2,095 - 2,280
<b>HOTELS</b>					
Budget hotels - 3 star, mid market	1,015 - 1,420	1,249 - 1,378	1,430 - 1,689	1,269 - 1,415	2,205 - 2,390
Business hotels - 4/5 star	1,340 - 2,210	1,599 - 1,827	1,950 - 2,106	1,430 - 2,389	2,830 - 3,160
Luxury hotels - 5 star	1,935 - 2,475	1,866 - 2,159	2,071 - 2,336	1,965 - 3,783	2,830 - 3,160

<b>INDUSTRIAL</b>									
Industrial units, shell only. (Conventional single storey framed units).	320 - 440	533 - 664	380 - 414	566 - 633	770 - 940				
Owner operated factories, low rise, light weight industry	430 - 530	N/A	413 - 456	761 - 951	N/A				
<b>OTHERS</b>									
Underground/basement car parks (<3 levels)	310 - 540	600 - 797	587 - 721	594 - 783	955 - 1,270				
Multi storey car parks, above ground (<4 levels)	220 - 350	200 - 325	380 - 414	504 - 725	660 - 940 <sup>^</sup>				
Schools (primary & secondary)	250 - 315	N/A	N/A	744 - 1,026	N/A				
Students' residences	295 - 370	N/A	N/A	787 - 1,010	1,620 - 1,730				
Sports clubs, multi purpose sports/leisure centres (dry sports)	595 - 740	N/A	1,200 - 1,798	1,259 - 1,831	2,020 - 2,130				
General hospitals - public sector	850 - 1,170	N/A	N/A	1,512 - 1,753	2,830 - 2,940				
Exchange Rate Used : US\$1 =	RM 4.11	BAHT 30,275	IDR 14,458	PHP 48.94	S\$ 1.36				

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries but exclusive of contingencies.

\* Rates exclude VAT and contingencies.

\*\* The data for Jakarta is provided by PT Lantera Sejahtera Indonesia.

@ Rates are exclusive of contingencies & include 12% VAT.

@@ Rates are nett of GST, exclusive of contingencies and cost impact arising from COVID-19 pandemic.

# Includes raised floor and ceiling to tenanted areas but excludes office carpets (normally under tenant's fit-out)

^ Open all sides with parapet.

(Cont'd)

# 1 CONSTRUCTION COST DATA

(Cont'd)

## CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m <sup>2</sup>			
	HO CHI MINH#	INDIA *	HONG KONG ^	MACAU\$
<b><u>DOMESTIC</u></b>				
Apartments, high rise, average standard	638 - 791	585 - 665	2,990 - 3,460	2,308 - 2,823
Apartments, high rise, high end	812 - 931	880 - 1,060	3,870 - 4,520	3,223 - 4,926
Terraced houses, average standard	430 - 505	405 - 425	4,080 - 4,720	3,934 - 4,694
Detached houses, high end	491 - 599	530 - 560	5,970 up	4,798 - 6,242
<b><u>OFFICE / COMMERCIAL</u></b>				
Medium/high rise offices, average standard	746 - 864	460 - 500	2,950 - 3,390	2,657 - 3,430
High rise offices, prestige quality	861 - 1,173	580 - 610	3,540 - 4,080	3,430 - 3,753
Out-of-town shopping centre, average standard	N/A	450 - 490	2,930 - 3,430	2,502 - 3,753
Retail malls, high end	697 - 913	630 - 675	3,790 - 4,520	3,934 - 4,746
<b><u>HOTELS</u></b>				
Budget hotels - 3 star, mid market	1,384 - 1,694	865 - 960	3,750 - 4,000	3,495 - 3,959
Business hotels - 4/5 star	N/A	1,350 - 1,600	3,880 - 4,530	4,746 - 5,673
Luxury hotels - 5 star	1,748 - 2,098	1,705 - 1,870	4,530 - 5,210	5,673 - 6,706

<b>INDUSTRIAL</b>							
Industrial units, shell only. (Conventional single storey framed units).	306 - 386	365 - 420	N/A	N/A	N/A		
Owner operated factories, low rise, light weight industry	347 - 457	385 - 450	2,270	- 2,850	N/A		
<b>OTHERS</b>							
Underground/basement car parks (<3 levels)	633 - 756	295 - 320	3,200	- 3,830	2,076	- 3,044	
Multi storey car parks, above ground (<4 levels)	407 - 447	245 - 265	1,910	- 2,270	1,148	- 1,509	
Schools (primary & secondary)	535 - 584	305 - 340	2,490	- 2,680	2,295	- 2,657	
Students' residences	535 - 687	335 - 370	2,850	- 3,210	1,818	- 2,115	
Sports clubs, multi purpose sports/leisure centres (dry sports)	791 - 846	620 - 650	3,740	- 4,270	N/A		
General hospitals - public sector	N/A	675 - 740	4,750	- 5,280	N/A		
Exchange Rate Used : US\$1 =	VND 23,500	INR 74.39	HK\$ 7.75		MOP 7.98		

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries but exclusive of contingencies.

# Rates are nett of VAT and contingencies.

\* Rates are based on projects in Bangalore and are nett of GST. Mumbai costs are generally 8% higher.

The data for India is provided by Arkind LS Private Limited, an Arcadis Alliance Partner.

^ Rates are exclusive of contingencies. Offices of average standard are built to the following provisions:

(i) Curtain wall/window wall facade.

(ii) Tenant are with screeded floor, painted wall and ceiling.

Schools (primary and secondary) are of public authority standard, no a/c and complete with basic external works.

\$ Rates are exclusive of contingencies and any management contract fee.

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## CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m <sup>2</sup>			
	BEIJING*	SHANGHAI*	SHENZHEN/ GUANGZHOU*	CHONGQING/ CHENGDU*
<b>DOMESTIC</b>				
Apartments, high rise, average standard	652 - 716	740 - 816	627 - 690	603 - 718
Apartments, high rise, high end	1,579 - 1,798	1,672 - 1,822	1,009 - 1,104	976 - 1,231
Terraced houses, average standard	933 - 1,011	1,023 - 1,114	940 - 1,090	833 - 985
Detached houses, high end	1,793 - 1,871	1,799 - 1,908	1,803 - 2,049	1,061 - 1,212
<b>OFFICE / COMMERCIAL</b>				
Medium/high rise offices, average standard	912 - 1,228	941 - 1,243	876 - 976	958 - 1,108
High rise offices, prestige quality	1,482 - 2,017	1,220 - 1,669	1,280 - 1,544	1,210 - 1,629
Out-of-town shopping centre, average standard	695 - 929	N/A	844 - 926	773 - 989
Retail malls, high end	1,257 - 1,730	1,294 - 1,669	1,226 - 1,714	1,152 - 1,613
<b>HOTELS</b>				
Budget hotels - 3 star, mid market	1,028 - 1,267	1,039 - 1,267	1,110 - 1,221	1,038 - 1,281
Business hotels - 4/5 star	1,719 - 2,269	1,674 - 2,267	1,794 - 2,561	1,867 - 2,331
Luxury hotels - 5 star	2,188 - 2,816	2,264 - 2,707	2,439 - 2,688	2,301 - 2,756



<b>INDUSTRIAL</b>						
Industrial units, shell only. (Conventional single storey framed units).	287 - 350	293 - 358	327 - 390	471 - 593		
Owner operated factories, low rise, light weight industry	555 - 636	453 - 566	N/A	N/A		
<b>OTHERS</b>						
Underground/basement car parks (<3 levels)	794 - 873	776 - 1,082	579 - 924	457 - 642		
Multi storey car parks, above ground (<4 levels)	478 - 483	398 - 555	413 - 456	363 - 449		
Schools (primary & secondary)	553 - 714	593 - 749	459 - 505	483 - 535		
Students' residences	391 - 553	434 - 592	290 - 320	337 - 490		
Sports clubs, multi purpose sports/leisure centres (dry sports)	947 - 955	1,001 - 1,229	800 - 880	765 - 842		
General hospitals - public sector	1,245 - 1,559	1,529 - 1,972	1,212 - 1,515	1,225 - 1,530		
Exchange Rate Used : US\$1 =	RMB 6.60	RMB 6.60	RMB 6.60	RMB 6.60		

The above costs are at 4th Quarter 2020 levels, inclusive of preliminaries but exclusive of contingencies.

\* Rates are exclusive of contingencies. Schools (primary and secondary) are of public authority standard, no a/c and complete with basic external works.

## MAJOR RATES FOR MALAYSIA

	RM				
	KUALA LUMPUR	PENANG	JOHOR BAHRU	KOTA KINABALU	KUCHING
1. Excavating basement ≤ 2m deep	m <sup>3</sup> 15.0 - 26.0	18.0 - 30.0	21.5 - 26.50	15.0	22.0
2. Excavating for footings ≤ 1.5m deep	m <sup>3</sup> 15.0 - 26.0	18.0 - 25.0	21.5 - 26.50	20.0	22.0
3. Remove excavated materials off site	m <sup>3</sup> 18.0 - 30.0	15.0 - 30.0	18.0 - 28.00	18.5	24.0
4. Hardcore bed blinded with fine materials	m <sup>3</sup> 72.0 - 100.0	80.0 - 100.0	70.0 - 100.0	100.0	105.0
5. Mass concrete grade 15	m <sup>3</sup> 225.0 - 295.0	240.0 - 280.0	200.0 - 265.0	350.0	360.0
6. Reinforced concrete grade 30	m <sup>3</sup> 250.0 - 300.0	260.0 - 300.0	210.0 - 270.0	400.0	400.0
7. Mild steel rod reinforcement	kg 3.25 - 3.70	3.20 - 3.80	2.80 - 3.50	4.00	3.95
8. High tensile rod reinforcement	kg 3.25 - 3.70	3.20 - 3.80	2.80 - 3.50	4.00	3.95
9. Sawn formwork to soffits of suspended slabs	m <sup>2</sup> 36.0 - 46.0	38.0 - 45.0	30.0 - 45.0	45.0	48.0
10. Sawn formwork to columns and walls	m <sup>2</sup> 36.0 - 46.0	38.0 - 45.0	30.0 - 45.0	45.0	48.0
11. 112.5mm thick brick walls	m <sup>2</sup> 43.0 - 50.0	42.0 - 50.0	38.0 - 46.0	51.0	53.0
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m <sup>2</sup> 70.0 - 90.0	75.0 - 95.0	75.0 - 95.0	96.0	100.0
13. Aluminium casement windows, single glazed	m <sup>2</sup> 380.0 - 600.0	280.0 - 420.0	330.0 - 380.0	300.0 - 350.0	360.0

14. Structural steelwork - beams, stanchions and the like	kg	6.50 - 9.50	6.50 - 9.00	5.50 - 8.50	7.00 - 7.50	9.00
15. Steelwork - angles, channels, flats and the like	kg	6.50 - 9.50	6.50 - 9.00	5.50 - 8.50	6.50 - 7.00	9.00
16. 25mm cement and sand (1:3) paving	m <sup>2</sup>	17.0 - 26.0	20.0 - 28.0	24.0 - 28.0	25.0	26.0
17. 20mm cement and sand (1:4) plaster to walls	m <sup>2</sup>	18.0 - 28.0	22.0 - 28.0	30.0 - 35.0	25.0	26.0
18. Ceramic tiles bedded to floor screed (measured separately)	m <sup>2</sup>	55.0 - 80.0	60.0 - 90.0	65.0 - 80.0	80.0	100.0
19. 12mm fibrous plasterboard ceiling lining	m <sup>2</sup>	36.0 - 46.0	35.0 - 45.0	35.0 - 45.0	48.0	62.0
20. Two coats of emulsion paint to plastered surfaces	m <sup>2</sup>	3.40 - 5.00	4.00 - 8.50	3.50 - 4.50	8.00	10.0
Average expected preliminaries	%	6 - 15	4 - 7	6 - 10	5 - 7	10 - 11

The above costs are at 4th Quarter 2020 levels, exclusive of contingencies and preliminaries.

## MAJOR RATES FOR SELECTED ASIAN CITIES

	KUALA LUMPUR RM	BANGKOK# BAHT	JAKARTA## IDR'000	MANILA PHP	SINGAPORE@ S\$
1. Excavating basement ≤ 2m deep	m <sup>3</sup> 15 - 26	120 - 140	65	270	20
2. Excavating for footings ≤ 1.5m deep	m <sup>3</sup> 15 - 26	120 - 140	100	538	20
3. Remove excavated materials off site	m <sup>3</sup> 18 - 30	120 - 150	50	350	15 - 20
4. Hardcore bed blinded with fine materials	m <sup>3</sup> 72 - 100	650 - 750	650	1,400 - 1,600	50
5. Mass concrete grade 15	m <sup>3</sup> 225 - 295	2,300 - 2,500	950	4,400	177 - 187*
6. Reinforced concrete grade 30	m <sup>3</sup> 250 - 300	2,800 - 3,200	1,135	4,899	117 - 122
7. Mild steel rod reinforcement	kg 3.25 - 3.70	25 - 28	11	51 - 55	1.25 - 1.35
8. High tensile rod reinforcement	kg 3.25 - 3.70	24 - 27	11	52 - 55	1.25 - 1.35
9. Sawn formwork to soffits of suspended slabs	m <sup>2</sup> 36 - 46	450 - 500	200	950 - 1,200	40
10. Sawn formwork to columns and walls	m <sup>2</sup> 36 - 46	450 - 500	195	1,200	40
11. 112.5mm thick brick walls	m <sup>2</sup> 43 - 50	650 - 750	250	N/A	35 - 40
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m <sup>2</sup> 70 - 90	1,200	300	1,500	43
13. Aluminium casement windows, single glazed	m <sup>2</sup> 380 - 600	7,000	1,650	12,500*	290
14. Structural steelwork - beams, stanchions and the like	kg 6.50 - 9.50	60 - 75	26	180	4.00 - 4.50
15. Steelwork - angles, channels, flats and the like	kg 6.50 - 9.50	60 - 75	26	160	4.00 - 4.50
16. 25mm cement and sand (1:3) paving	m <sup>2</sup> 17 - 26	200 - 240	90	650	21

17. 20mm cement and sand (1:4) plaster to walls	m <sup>2</sup>	18 - 28	220 - 260	100	500 - 700	22
18. Ceramic tiles bedded to floor screed (measured separately)	m <sup>2</sup>	55 - 80	1,200	200	1,800	74
19. 12mm fibrous plasterboard ceiling lining	m <sup>2</sup>	36 - 46	750 - 850	215	1,400 - 1,645	30
20. Two coats of emulsion paint to plastered surfaces	m <sup>2</sup>	3.40 - 5.00	140 - 180	35	500 - 800	3.50 - 4.00
Average expected preliminaries	%	6 - 15	12 - 18	8 - 10	12 - 18	12 - 15

The above costs are based on lump sum fixed price contract rate exclusive of preliminaries and contingencies unless otherwise stated.

# Rates are nett of VAT.

## The data for Jakarta is provided by PT Lantera Sejahtera Indonesia.

\* Aluminium with anodized finish; 6mm thick.

@ Rates are nett of GST and exclude cost impact arising from COVID-19 pandemic.

+ Rate for lean concrete blinding.

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## MAJOR RATES FOR SELECTED ASIAN CITIES

	HO CHI MINH <sup>A</sup> VND	INDIA* INR	HONG KONG HK\$	MACAU MOP
1. Excavating basement ≤ 2m deep	m <sup>3</sup> 72,400	230	210	150
2. Excavating for footings ≤ 1.5m deep	m <sup>3</sup> 72,400	215	190	180
3. Remove excavated materials off site	m <sup>3</sup> 84,700	N/A	290#	150
4. Hardcore bed blinded with fine materials	m <sup>3</sup> 280,900	4,570	940	1,300
5. Mass concrete grade 15	m <sup>3</sup> 1,606,400	6,180	1,050	1,500
6. Reinforced concrete grade 30	m <sup>3</sup> 1,912,291	7,735	1,150	1,400
7. Mild steel rod reinforcement	kg 17,864	67	9.50	7.50
8. High tensile rod reinforcement	kg 17,988	64	9.50	7.50
9. Sawn formwork to soffits of suspended slabs	m <sup>2</sup> 225,750	700	400	280
10. Sawn formwork to columns and walls	m <sup>2</sup> 257,250	753	400	280
11. 112.5mm thick brick walls	m <sup>2</sup> 312,780	1,140	390	450
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m <sup>2</sup> 401,110 - 597,600	1,765	1,000	N/A
13. Aluminium casement windows, single glazed	m <sup>2</sup> 6,315,000	6,230	3,800	4,000
14. Structural steelwork - beams, stanchions and the like	kg 48,650	130	35	30
15. Steelwork - angles, channels, flats and the like	kg 48,650	130	42	40
16. 25mm cement and sand (1:3) paving	m <sup>2</sup> 94,000	493	155	120

17. 20mm cement and sand (1:4) plaster to walls	m <sup>2</sup>	144,000	405	160	150
18. Ceramic tiles bedded to floor screed (measured separately)	m <sup>2</sup>	674,180	1,765	400	450
19. 12mm fibrous plasterboard ceiling lining	m <sup>2</sup>	245,700	1,400	570	650
20. Two coats of emulsion paint to plastered surfaces	m <sup>2</sup>	91,000	220	90	200
Average expected preliminaries	%	8 - 12	9 - 13	10 - 15	10

The above costs are based on lump sum fixed price contract rate exclusive of preliminaries and contingencies unless otherwise stated.

<sup>^</sup> Rates are nett of VAT.

\* Rates are supply & fix based on projects in Bangalore and are nett of GST. Mumbai costs are generally 8% higher.

The data for India is provided by Arkind LS Private Limited, an Arcadis Alliance Partner.

# Rate including dumping charges.

(Cont'd)

(Cont'd)

## MAJOR RATES FOR SELECTED ASIAN CITIES

	BEIJING RMB	SHANGHAI RMB	SHENZHEN/ GUANGZHOU RMB	CHONGQING/ CHENGDU RMB
1. Excavating basement ≤ 2m deep	33	30	40	35
2. Excavating for footings ≤ 1.5m deep	35	30	40	35
3. Remove excavated materials off site	120	190	110	65
4. Hardcore bed blinded with fine materials	190	190	190	180
5. Mass concrete grade 15	610	660	740	530
6. Reinforced concrete grade 30	650	700	800	560
7. Mild steel rod reinforcement	5.60	5.40	6.00	5.50
8. High tensile rod reinforcement	5.60	5.40	6.00	5.50
9. Sawn formwork to soffits of suspended slabs	90	95	90	65
10. Sawn formwork to columns and walls	85	90	85	60
11. 112.5mm thick brick walls	80	100*	100	80
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	N/A	N/A	N/A	N/A
13. Aluminium casement windows, single glazed	815*	700	700	670*
14. Structural steelwork - beams, stanchions and the like	11	10	12.50	10
15. Steelwork - angles, channels, flats and the like	9.50	8.50	11.50	9.00
16. 25mm cement and sand (1:3) paving	32	35	36	30



17. 20mm cement and sand (1:4) plaster to walls	m <sup>2</sup>	32	35	36	30
18. Ceramic tiles bedded to floor screed (measured separately)	m <sup>2</sup>	145	160	155	140
19. 12mm fibrous plasterboard ceiling lining	m <sup>2</sup>	162	160	165	150
20. Two coats of emulsion paint to plastered surfaces	m <sup>2</sup>	32	40	35	35
Average expected preliminaries	%	5 - 12	6 - 12	7 - 10	6 - 12

The above costs are based on lump sum fixed price contract rate exclusive of preliminaries and contingencies unless otherwise stated.

\* Rate for 120mm thick concrete block walls.

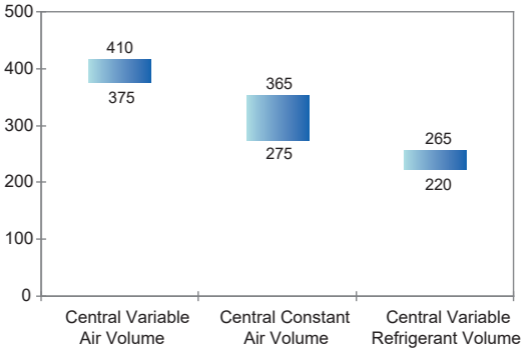
+ Rate for double glazed window.

# 1 CONSTRUCTION COST DATA

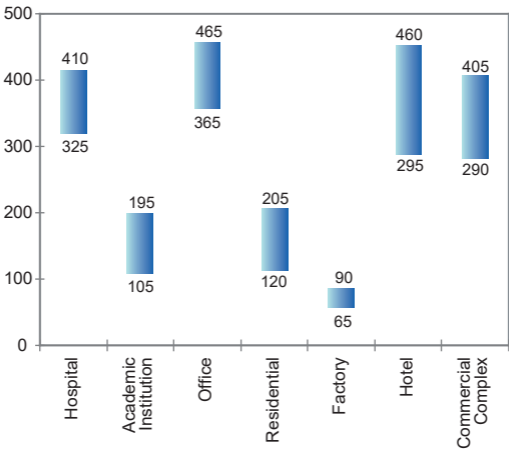
## ACMV COSTS FOR VARIOUS DESIGNS & DEVELOPMENTS IN KUALA LUMPUR

ACMV : Air Conditioning & Mechanical Ventilation System

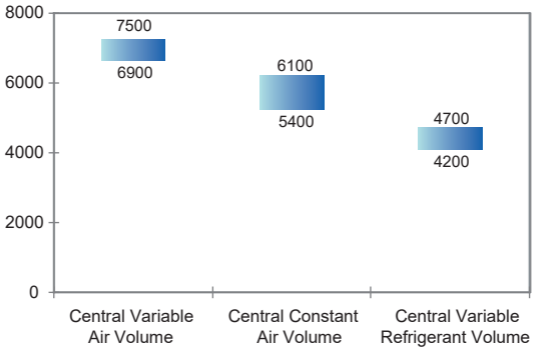
### RM/m<sup>2</sup> of Construction Floor Area



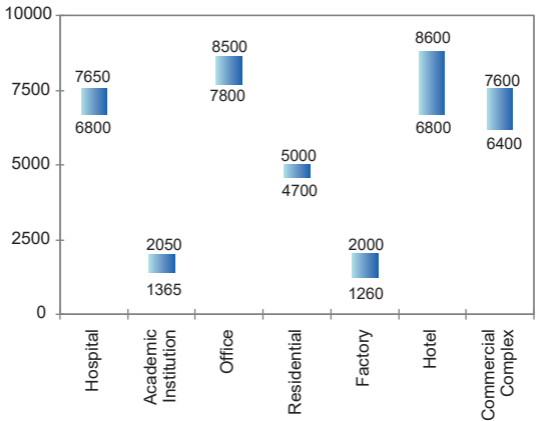
### RM/m<sup>2</sup> of Construction Floor Area



### RM/Tonne of Refrigeration



### RM/Tonne of Refrigeration



## M&amp;E COSTS FOR SELECTED ASIAN CITIES

	KUALA LUMPUR RM/m <sup>2</sup>	BANGKOK® BAHT/m <sup>2</sup>	JAKARTA# IDR'000/m <sup>2</sup>	MANILA\$ PHP/m <sup>2</sup>	SINGAPORE^ S\$/m <sup>2</sup>
<b><u>MECHANICAL SERVICES</u></b>					
Offices	330 - 495	4,400 - 4,800	1,013 - 1,166	4,000 - 7,150	153 - 249
Industrial*	90 - 190	1,550 - 1,600	459 - 733	800 - 1,600	34 - 117
Hotels	315 - 595	4,600 - 5,200	1,044 - 1,356	3,500 - 11,190	215 - 278
Shopping Centres	310 - 480	4,600 - 4,800	892 - 1,071	2,890 - 7,070	147 - 246
Apartments	125 - 210	4,300 - 4,500	997 - 1,266	1,390 - 4,450	90 - 170
<b><u>ELECTRICAL SERVICES</u></b>					
Offices	300 - 465	3,400 - 3,800	890 - 1,092	3,500 - 7,690	158 - 258
Industrial**	155 - 195	1,950 - 2,200	580 - 722	2,000 - 3,500	55 - 136
Hotels	310 - 550	3,800 - 4,500	843 - 1,161	4,900 - 10,200	277 - 367
Shopping Centres	305 - 465	2,800 - 3,200	712 - 897	3,060 - 6,600	160 - 304
Apartments	115 - 215	2,800 - 3,350	939 - 1,097	3,600 - 6,300	112 - 236
<b><u>HYDRAULIC SERVICES</u></b>					
Offices	45 - 70	780 - 900	216 - 311	1,230 - 2,200	26 - 55
Industrial	45 - 55	750 - 790	137 - 211	800 - 1,400	18 - 36
Hotels	185 - 275	1,400 - 1,650	986 - 1,161	2,250 - 6,820	122 - 172
Shopping Centres	35 - 40	790 - 950	195 - 301	1,220 - 1,650	46 - 80
Apartments	55 - 100	1,200 - 1,400	997 - 1,181	2,250 - 4,100	79 - 143

<b><u>FIRE SERVICES</u></b>									
Offices	65 - 85	780 - 850	296 - 411	980 - 1,720	33 - 56				
Industrial	55 - 70	730 - 750	148 - 211	1,000 - 2,500	23 - 51				
Hotels	65 - 100	780 - 890	327 - 406	1,100 - 2,120	28 - 55				
Shopping Centres	60 - 80	780 - 820	274 - 321	1,090 - 1,730	37 - 56				
Apartments	20 - 30	750 - 850	311 - 338	980 - 1,350	24 - 51				
<b><u>LIFTS / ESCALATORS</u></b>									
Offices	135 - 355	1,100 - 1,400	580 - 1,171	1,800 - 4,930	63 - 162				
Industrial	55 - 180	N/A	N/A	0 - 730	41 - 104				
Hotels	105 - 295	1,100 - 1,400	697 - 1,087	1,800 - 3,500	49 - 82				
Shopping Centres	100 - 120	300 - 450	321 - 865	1,600 - 3,010	56 - 90				
Apartments	70 - 110	600 - 800	707 - 881	850 - 3,440	41 - 113				

The above costs are at 4th Quarter 2020 levels, exclusive of contingencies unless otherwise stated.

\* Generally without air condition.

\*\* Excludes special power supply.

@ Based upon nett enclosed area and nett of VAT.

# The data for Jakarta is provided by PT Lantera Sejahtera Indonesia.

\$ Transformer included in Electrical Services.

^ Rates are nett of GST, excluding BAS and cost impact arising from COVID-19 pandemic.

(Cont'd)

## M&amp;E COSTS FOR SELECTED ASIAN CITIES

	HO CHI MINH VND('000)/m <sup>2</sup>	INDIA# INR/m <sup>2</sup>	HONG KONG HK\$/m <sup>2</sup>	MACAU MOP/m <sup>2</sup>
<b><u>MECHANICAL SERVICES</u></b>				
Offices	2,132 - 3,035	5,110 - 6,995	1,900 - 2,600	N/A
Industrial*	N/A	2,400 - 4,465	200 - 300	N/A
Hotels	N/A	5,920 - 7,000	2,000 - 2,500	2,590 - 2,990
Shopping Centres	N/A	5,215 - 7,130	2,100 - 2,600	2,350 - 2,940
Apartments	1,601 - 2,193	2,690 - 3,765	800 - 2,000up	900 - 1,200
<b><u>ELECTRICAL SERVICES</u></b>				
Offices	2,204 - 2,641	4,620 - 6,930	1,700 - 2,400	N/A
Industrial**	N/A	2,720 - 4,925	650 - 850	N/A
Hotels	N/A	5,125 - 7,625	1,900 - 2,500	2,590 - 3,090
Shopping Centres	N/A	4,405 - 6,430	1,700 - 2,400	2,590 - 2,940
Apartments	1,938 - 2,443	2,330 - 3,330	1,000 - 2,100up	1,000 - 1,290
<b><u>HYDRAULIC SERVICES</u></b>				
Offices	340 - 630	800 - 1,345	700 - 850	N/A
Industrial	N/A	550 - 1,050	500 - 650	N/A
Hotels	N/A	4,210 - 6,910	1,800 - 2,700	1,790 - 2,190
Shopping Centres	N/A	1,200 - 2,365	700 - 900	600 - 790
Apartments	660 - 770	1,900 - 2,865	1,300 - 2,000	1,490 - 1,990

<b><u>FIRE SERVICES</u></b>					
Offices	734 - 1,209	1,290 - 1,835	550 - 700		N/A
Industrial	N/A	590 - 885	400 - 500		N/A
Hotels	N/A	1,500 - 2,090	600 - 850		910 - 1,120
Shopping Centres	N/A	1,235 - 1,555	550 - 700		610 - 810
Apartments	515 - 646	690 - 895	100 - 600		250 - 300
<b><u>LIFTS / ESCALATORS</u></b>					
Offices	680 - 1,300	1,020 - 1,340	700 - 1,100		N/A
Industrial	N/A	680 - 880	550 - 750		N/A
Hotels	N/A	1,530 - 2,225	550 - 850		610 - 810
Shopping Centres	1,390 - 1,960	1,790 - 2,290	850 - 1,000		460 - 710
Apartments	770 - 1,120	920 - 1,200	450 - 850		460 - 610

The above costs are at 4th Quarter 2020 levels, exclusive of contingencies unless otherwise stated.

\* Generally without air condition.

\*\* Excludes special power supply.

# Rates are based on projects in Bangalore and are nett of GST. Mumbai costs are generally 8% higher.

The data for India is provided by Arkind LS Private Limited, an Arcadis Alliance Partner.

(Cont'd)

## M&amp;E COSTS FOR SELECTED ASIAN CITIES

	BEIJING RMB/m <sup>2</sup>	SHANGHAI RMB/m <sup>2</sup>	SHENZHEN/ GUANGZHOU RMB/m <sup>2</sup>	CHONGQING/ CHENGDU RMB/m <sup>2</sup>
<b><u>MECHANICAL SERVICES</u></b>				
Offices	786 - 1,212	822 - 1,045	775 - 1,150	758 - 1,030
Industrial*	172 - 283	182 - 307	155 - 285	146 - 242
Hotels	960 - 1,236	1,040 - 1,356	1,080 - 1,350	970 - 1,333
Shopping Centres	814 - 980	1,102 - 1,160	715 - 910	929 - 1,050
Apartments	144 - 464	330 - 436	152 - 410	157 - 313
<b><u>ELECTRICAL SERVICES</u></b>				
Offices	475 - 859	645 - 728	540 - 795	470 - 687
Industrial**	329 - 464	323 - 457	320 - 459	273 - 374
Hotels	726 - 972	703 - 898	715 - 980	606 - 864
Shopping Centres	495 - 697	561 - 703	500 - 690	530 - 687
Apartments	261 - 410	272 - 399	285 - 500	237 - 354
<b><u>HYDRAULIC SERVICES</u></b>				
Offices	98 - 144	115 - 171	103 - 184	89 - 126
Industrial	98 - 144	92 - 135	89 - 124	89 - 126
Hotels	381 - 495	389 - 535	390 - 500	343 - 470
Shopping Centres	144 - 206	145 - 195	114 - 168	106 - 157
Apartments	175 - 236	177 - 240	150 - 280	106 - 187



<b><u>FIRE SERVICES</u></b>						
Offices	186 - 273	241 - 338	230 - 350	250 - 303		
Industrial	155 - 232	167 - 278	143 - 272	136 - 242		
Hotels	226 - 387	306 - 412	285 - 425	263 - 364		
Shopping Centres	226 - 387	273 - 407	248 - 383	263 - 384		
Apartments	72 - 139	58 - 108	72 - 185	61 - 116		
<b><u>LIFTS / ESCALATORS</u></b>						
Offices	297 - 583	294 - 578	295 - 517	313 - 576		
Industrial	146 - 404	142 - 410	150 - 440	157 - 364		
Hotels	234 - 525	230 - 520	250 - 480	261 - 449		
Shopping Centres	330 - 525	342 - 520	325 - 470	303 - 460		
Apartments	177 - 292	173 - 306	130 - 450	146 - 253		

The above costs are at 4th Quarter 2020 levels, exclusive of contingencies unless otherwise stated.

\* Generally without air condition.

\*\* Excludes special power supply.

## UNIT COSTS FOR ANCILLARY FACILITIES FOR KUALA LUMPUR

DESCRIPTION	UNIT	RM
<p><b><u>PLAYGROUND EQUIPMENTS</u></b>            Outdoor playground equipments comprising various activities and safety mat including fitness park.            Age group: 4 to 12            Child Capacity: 15 - 20            * Price varies according to equipment and design.</p>	per set	55,800
<p><b><u>SAUNAS</u></b>            Sauna room complete with timber finishes (Finland Spruce), Finland Harvia sauna heater with built-in control panel and all accessories.            Size: 8'x8'x7'6"</p>	per room	15,700
<p><b><u>STEAM BATHS</u></b>            Steam bath complete with stainless steel steam generator, aluminium frame glass door, aluminium finishes, starry-lite. aroma pump, auto drain system, lighting and all accessories.            Size 8'x8'x7'6"</p>	per room	22,700
<p><b><u>SWIMMING POOLS</u></b>            Shape : Rectangle            Size: approx. 262.5m<sup>2</sup>            Depth: approx. 1.5m (average)            Capacity : 393,750 litres            Outdoor swimming pool with overflow system. Reinforced concrete in ground constructed by conventional system. 45mm x 45mm mosaic tile for pool interior and pebble washed for pool coping</p>	per pool	1,200,000
Extra for heating system	per pool	200,000

DESCRIPTION	UNIT	RM
<b><u>SQUASH COURTS</u></b> Single court with glass back wall including associated mechanical and electrical services but excluding any public facilities (enclosing structure not included)	per court	70,100
<b><u>TENNIS COURTS</u></b> Single court on grade with acrylic surfacing complete excluding chain link fence	per court	75,000

## FIT-OUT COSTS FOR KUALA LUMPUR

DESCRIPTION	RM/m <sup>2</sup>
<b><u>HOTELS</u></b>	
Public Area (Front of House):	
3 - star Hotel	2,360 - 3,360
4 - star Hotel	3,110 - 4,100
5 - star Hotel	4,000 - above
Guest Rooms:	
3 - star Hotel	1,180 - 1,770
4 - star Hotel	1,620 - 2,700
5 - star Hotel	2,600 - above
Notes:	
<ol style="list-style-type: none"> <li>1. Includes furniture, floor, wall and ceiling finishes, drapery, sanitary fittings and light fittings.</li> <li>2. Excludes partitioning, M&amp;E works, chandelier, building shell, operational items and equipment (e.g. bed, cutlery, crockery, linen, television, refrigerator etc.), opening expenses, stage equipment and computer systems.</li> </ol>	
<b><u>OFFICES</u></b>	
General Office	460 - 640
Executive Office	620 - 1,060
Prestige Office	1,050 - above
Notes:	
<ol style="list-style-type: none"> <li>1. Local furniture allowed for general offices.</li> <li>2. Includes furniture, partitioning, minor alteration to fire services, air-conditioning and suspended ceiling to suit layout.</li> <li>3. Excludes telephones, Local Area Network, office equipment (e.g. computers, photocopies, fax machines, UPS, etc).</li> </ol>	
<b><u>RESTAURANTS</u></b>	
General dining restaurant	2,370 - 3,750
Fine dining restaurant	5,500 - above
Notes:	
<ol style="list-style-type: none"> <li>1. Includes furniture, floor, wall and ceiling finishes, minor alteration to air-conditioning and fire services installation to suit layout, exhaust for kitchen but excludes exhaust flue, operational items (e.g. cutlery, crockery, linen, utensils, etc.).</li> </ol>	



# GENERAL CONSTRUCTION DATA **2**

JUBM - Arcadis Building Works  
Composite Tender Price Index (BWCTPI)

JKR Tender Price Index

Value of Construction Work Done by  
Type of Construction Activity

Performance of The Construction Sector

Estimating Rules of Thumb

Technical Specifications

Average Unit Prices

Unit Price Index

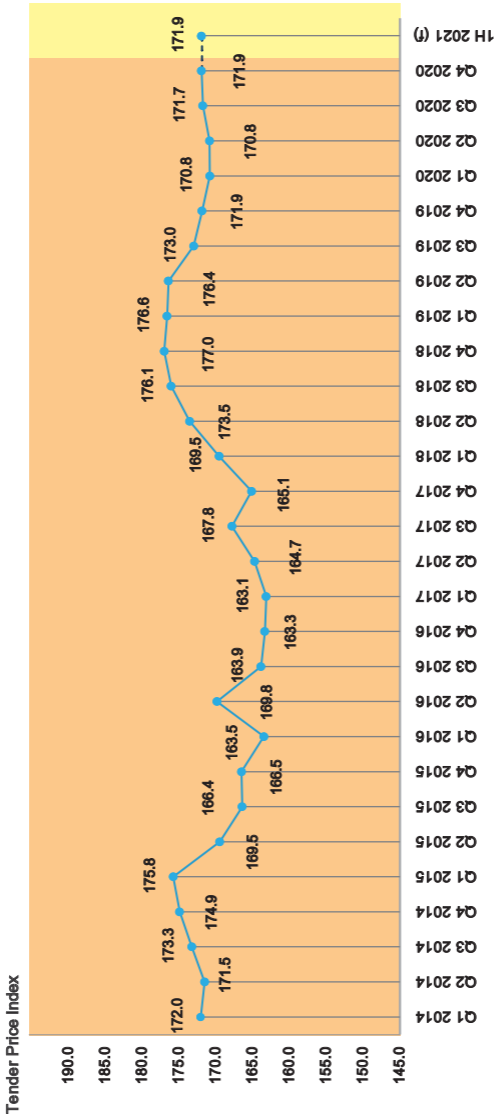
Construction Sector Indicators

Commodities Price Trend  
(Jan to Oct 2020)

Malaysia Construction Sector  
- Employment & Gross Domestic Product

Progress Payments

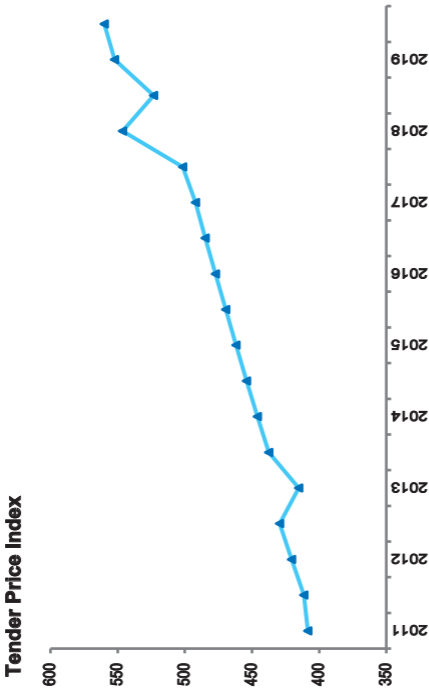
## JUBM - ARCADIS BUILDING WORKS COMPOSITE TENDER PRICE INDEX (BWCTPI)



Source: JUBM &amp; Arcadis

Base Year = 2000

## JKR TENDER PRICE INDEX



TENDER PRICE INDEX		
Year	1/2	2/2
2011	408.49	411.36
2012	420.49	429.32
2013	415.24	437.35
2014	446.03	453.99
2015	461.82	469.54
2016	477.15	484.69
2017	491.96	501.62
2018	546.30	523.22
2019	552.29	559.80

Base Year = 1980

Source: The Public Works Department, Malaysia

## VALUE OF CONSTRUCTION WORK DONE BY TYPE OF CONSTRUCTION ACTIVITY

Quarter / Year	Residential Buildings		Non-residential Buildings		Engineering		Special Trades		Total	
	RM million	(%)	RM million	(%)	RM million	(%)	RM million	(%)	RM million	(%)
Q1/2016	9,331	29.2	10,382	32.5	10,615	33.2	1,613	5.1	31,941	100.0
Q2/2016	9,283	30.5	9,615	31.6	10,075	33.1	1,453	4.8	30,427	100.0
Q3/2016	9,579	30.0	9,801	30.7	11,133	34.9	1,397	4.4	31,910	100.0
Q4/2016	9,615	29.5	9,964	30.6	11,495	35.3	1,486	4.6	32,560	100.0
Q1/2017	10,220	29.2	10,817	30.9	12,314	35.1	1,702	4.9	35,053	100.0
Q2/2017	9,639	28.5	10,546	31.2	12,018	35.5	1,622	4.8	33,825	100.0
Q3/2017	9,729	28.2	10,080	29.2	13,142	38.1	1,544	4.5	34,495	100.0
Q4/2017	9,728	27.7	10,109	28.8	13,613	38.8	1,627	4.6	35,078	100.0
Q1/2018	9,876	26.6	10,685	28.8	14,715	39.6	1,848	5.0	37,124	100.0
Q2/2018	8,906	25.0	10,036	28.2	14,855	41.7	1,827	5.1	35,625	100.0
Q3/2018	8,981	24.7	10,118	27.9	15,463	42.6	1,726	4.8	36,287	100.0
Q4/2018	8,829	24.2	10,362	28.4	15,560	42.6	1,760	4.8	36,511	100.0
Q1/2019	9,144	24.5	10,210	27.3	16,117	43.1	1,927	5.2	37,398	100.0
Q2/2019	8,807	24.5	9,103	25.3	16,075	44.8	1,934	5.4	35,919	100.0
Q3/2019	8,735	24.2	8,945	24.8	16,622	46.1	1,775	4.9	36,077	100.0
Q4/2019	9,066	24.5	9,300	25.1	16,785	45.4	1,827	4.9	36,978	100.0
Q1/2020	8,448	24.1	9,087	25.9	15,745	44.9	1,761	5.0	35,040	100.0
Q2/2020	5,398	27.3	5,809	29.4	7,194	36.4	1,379	7.0	19,780	100.0
Q3/2020	7,689	24.5	7,517	24.0	14,358	45.8	1,803	5.7	31,367	100.0

Source: Quarterly Construction Statistics, Department of Statistics Malaysia



## PERFORMANCE OF THE CONSTRUCTION SECTOR



	No. of Projects	Value of Work Done (RM'000)	Percentage Change (%) (QoQ) (YoY)
2018	Q1	37,123,931	5.8
	Q2	35,624,699	-4.0
	Q3	36,287,482	1.9
	Q4	36,511,049	0.6
2019	Q1	37,397,513	2.4
	Q2	35,919,139	-4.0
	Q3	36,076,604	0.4
	Q4	36,978,460	2.5
2020	Q1	35,040,152	-5.2
	Q2	19,780,063	-43.6
	Q3	31,367,003	58.6

Source: Quarterly Construction Statistics, Department of Statistics Malaysia

### ESTIMATING RULES OF THUMB

#### Composition of Concrete (per m<sup>3</sup>)

Mix	Cement	Sand	Aggregate
1:3:6	216kg	0.45m <sup>3</sup>	0.90m <sup>3</sup>
1:2:4	308kg	0.43m <sup>3</sup>	0.86m <sup>3</sup>
1:1:2	540kg	0.38m <sup>3</sup>	0.75m <sup>3</sup>

#### Weight of Concrete Items

Item	Weight
Concrete	2,400 kg/m <sup>3</sup>
Cement	1,441 kg/m <sup>3</sup>
Sand	1,600 kg/m <sup>3</sup>
Aggregate	1,350 kg/m <sup>3</sup>
Steel	7,843 kg/m <sup>3</sup>

#### Average Loads

	Volume
Lorry	10.0 m <sup>3</sup>
Concrete truck (24 ton)	5.5 m <sup>3</sup>
Barge	200 - 1,450 m <sup>3</sup>

#### Dimensions for Standard Parking Space, Loading/Unloading Bays and Lay-bys

	Length	Width	Minimum Headroom
Private Cars, Taxis and Light Vans	5 m	2.5 m	2.4 m
Coaches and Buses	12 m	3.0 m	3.8 m
Lorries	11 m	3.5 m	4.1 m
Container Vehicles	16 m	3.5 m	4.5 m

Minimum headroom means the clearance between the floor and the lower most projection from the ceiling including any lighting units, ventilation duct, conduits or similar.

## **Structure Design - Concrete Ratios**

The following is a range of concrete ratios for building superstructure design:

Concrete/floor area	0.3 m <sup>3</sup> /m <sup>2</sup>	to	0.6 m <sup>3</sup> /m <sup>2</sup>
Formwork/floor area	2.2 m <sup>2</sup> /m <sup>2</sup>	to	3.0 m <sup>2</sup> /m <sup>2</sup>
Reinforcement/concrete vol.	160 kg/m <sup>3</sup>	to	250 kg/m <sup>3</sup>

## **Average External Wall/Floor Ratio**

Residential Apartments	1.0 m <sup>2</sup> /m <sup>2</sup>
Office, Hotel	0.4 m <sup>2</sup> /m <sup>2</sup>
Industrial	0.4 m <sup>2</sup> /m <sup>2</sup>

## **Average Internal Wall/Floor Ratio**

Residential Apartments	1.0 m <sup>2</sup> /m <sup>2</sup>
Office	0.5 m <sup>2</sup> /m <sup>2</sup>
Hotel	1.5 m <sup>2</sup> /m <sup>2</sup>

## **Air - Conditioning**

Average	0.05 tonne/m <sup>2</sup> of floor area
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The above ratios are indicative and for reference purposes only. They do not account for buildings with special shapes, configurations or particular small foot prints.

## **Indicative Dimensions for Sports Grounds**

	Length	Width
Tennis Court	40 m	20 m
Squash Court	13 m	6 m
Basketball Court	38 m	23 m
Volleyball Court	30 m	20 m
Badminton Court	20 m	10 m
Rink	61 m	26 m
Soccer Playing Field	110 - 120 m	70 - 80 m
Futsal	25 - 42 m	15 - 25 m

The above dimensions are for a single court with appropriate clearance. No spectator seating or support area has been allowed.

## TECHNICAL SPECIFICATIONS

Table for Standard BRC Fabrics

BRC Ref. No.	BS 4483 or SS-32 Ref No.	Main Wire		Cross Wire		Cross-Sectional Area		Mass Per Unit Area Kg/m <sup>2</sup>
		Size mm	Spacing mm	Size mm	Spacing mm	Main mm <sup>2</sup> /m	Cross mm <sup>2</sup> /m	
<b>SQUARE MESHES</b>								
A 10	A 393	10.0	200	10.0	200	393	393	6.16
A 9	-	9.0	200	9.0	200	318	318	4.99
A 8	A 252	8.0	200	8.0	200	252	252	3.95
A 7	A 193	7.0	200	7.0	200	193	193	3.02
A 6/5	-	6.5	200	6.5	200	166	166	2.61
A 5	A 142	6.0	200	6.0	200	142	142	2.22
A 4	A 98	5.0	200	5.0	200	98	98	1.54
	-	4.0	200	4.0	200	63	63	0.99
<b>RECTANGULAR MESHES</b>								
B 12	B 1131	12.0	100	8.0	200	1,131	252	10.90
B 10	B 385	10.0	100	8.0	200	785	252	8.14
B 9	-	9.0	100	8.0	200	636	252	6.97
B 8	B 503	8.0	100	8.0	200	503	252	5.93
B 7	B 385	7.0	100	7.0	200	385	193	4.53
B 6	B 283	6.0	100	7.0	200	283	193	3.73
B 5	B 196	5.0	100	7.0	200	196	193	3.05
C 10	C 785	10.0	100	6.0	400	785	71	6.72
C 9	C 636	9.0	100	6.0	400	636	71	5.55
C 8	C 503	8.0	100	5.0	400	503	49	4.34
C 7	C 385	7.0	100	5.0	400	385	49	3.41
C 6	C 283	6.0	100	5.0	400	283	49	2.61
C 5	-	5.0	100	5.0	400	196	49	1.93

**STANDARD SIZES****Rolls**

(Ref. No's: A4, A5, A6, A6/5 only)

Length : 40.0 metres

Width : 2.0 metres

**Sheets**

(all Ref. No's)

Length : 6.0 metres

Width : 2.2 metres

## Weight Tables for Mild Steel Round Bar & High Tensile Deformed Bar

Std. Size (mm)		Cross Sectional Area (mm <sup>2</sup> )	Unit Weight (kg/m)	No. of Pcs. 12m Length Per Bundle	Weight Per Bundle (MT)
High Yield Deformed	Mild Steel Round				
D 6	Ø 6	28.3	0.222	376	1.002
D 8	Ø 8	50.3	0.395	210	0.995
D 9	Ø 9	63.6	0.499	168	1.006
D 10	Ø 10	78.5	0.616	138	1.020
D 12	Ø 12	113.1	0.888	96	1.023
D 16	Ø 16	201.1	1.579	54	1.023
D 20	Ø 20	314.2	2.466	34	1.006
D 22	Ø 22	380.1	2.984	28	1.003
D 25	Ø 25	490.9	3.854	22	1.017
D 28	Ø 28	615.8	4.834	18	1.044
D 32	Ø 32	804.2	6.313	14	1.061
D 35	Ø 35	962.1	7.553	12	1.088
D 38	Ø 38	1,134.1	8.903	10	1.068
D 40	-	1,256.6	9.864	9	1.065

\* High Yield Deformed Bar Standard Length : 12 metres straight.

\* Mild Steel Round Bar Standard Length : 12 metres straight or 12 metres once folded.

\* Special cut length can be produced from 6m to 15m on a certain min. quality per size per order upon request.

## AVERAGE UNIT PRICES

2020	Automotive Gas Oil RM/Litre			Sand RM/Metric Ton			Cement RM/50 kg Bag		
	Diesel Retail Price			River Sand			Ordinary Portland		
	A	B	C	A	B	C	A	B	C
Region									
Jan	2.18	2.18	2.18	51.96	42.00	50.00	17.50	17.49	19.18
Feb	2.13	2.13	2.13	51.89	42.00	46.00	17.62	17.49	19.18
Mar	1.90	1.90	1.90	53.19	42.00	46.00	17.65	17.57	19.18
Apr	1.49	1.49	1.49	53.19	42.00	46.00	17.66	17.57	19.18
May	1.45	1.45	1.45	53.19	42.00	46.00	17.75	17.57	19.33
Jun	1.72	1.72	1.72	53.19	42.00	46.00	17.78	17.57	19.33
Jul	1.85	1.85	1.85	53.86	42.00	46.00	17.83	17.57	19.33
Aug	1.81	1.81	1.81	53.86	42.00	46.00	17.83	17.57	19.33
Sep	1.73	1.73	1.73	53.86	42.00	46.00	17.80	17.57	19.33
Oct	1.72	1.72	1.72	53.86	42.00	46.00	17.74	17.57	19.33

Region: A = Central Peninsular Malaysia; B = Kota Kinabalu; C = Kuching

November & December rates are not available at time of printing.

Source: Special Release 1, For Civil Engineering Works, Department of Statistics, Malaysia.

		Aggregates RM/Metric Ton													
2020		Granite 10mm (3/8")			Granite 20mm (3/4")			Granite 40mm (1 1/2")			Crusher run				
Region	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Jan	32.59	29.00	31.45	32.65	65.89	31.50	32.96	31.00	29.60	25.58	29.33	26.50	25.58	29.33	26.50
Feb	31.77	29.00	26.20	32.56	65.89	31.50	32.01	31.00	25.40	25.15	29.33	26.50	25.15	29.33	26.50
Mar	31.13	29.00	26.20	32.16	65.89	31.50	30.60	31.00	25.40	24.72	29.33	26.50	24.72	29.33	26.50
Apr	31.13	29.00	26.20	32.16	65.89	31.50	30.60	31.00	25.40	24.72	29.33	26.50	24.72	29.33	26.50
May	31.04	29.00	26.20	32.16	65.89	31.50	30.60	31.00	25.40	24.72	29.33	26.50	24.72	29.33	26.50
Jun	31.13	29.00	26.20	32.10	65.89	31.50	30.58	31.00	25.40	24.72	29.33	26.50	24.72	29.33	26.50
Jul	30.79	29.00	26.20	32.10	65.89	31.50	29.60	31.00	25.40	24.42	29.33	26.50	24.42	29.33	26.50
Aug	30.79	29.00	26.20	32.11	65.89	31.50	29.57	31.00	25.40	24.42	29.33	26.50	24.42	29.33	26.50
Sep	30.79	29.00	26.20	32.11	65.89	31.50	29.57	31.00	25.40	24.42	29.33	26.50	24.42	29.33	26.50
Oct	31.09	29.00	26.20	32.38	65.89	31.50	29.57	31.00	25.40	24.67	29.33	26.50	24.67	29.33	26.50

Region: A = Central Peninsular Malaysia; B = Kota Kinabalu; C = Kuching  
November & December rates are not available at time of printing.

Source: Special Release 1, For Civil Engineering Works, Department of Statistics, Malaysia.

## UNIT PRICE INDEX

2020	Bricks & Wall	Glass	Ceiling Materials	Roofing Materials	Timber	Plywood	Sanitary Fittings	Floor & Wall Tiles	Plumbing Materials	Steel & Metal Sections	Paints
Jan	96.5	101.2	97.5	101.0	99.2	92.7	96.0	100.4	99.0	108.0	101.5
Feb	96.3	101.2	97.2	101.0	99.2	92.7	96.0	100.4	99.1	108.3	101.6
Mar	96.3	101.2	97.2	101.0	99.2	92.7	96.0	100.4	99.1	108.4	101.8
Apr	96.4	101.2	97.2	101.0	99.2	92.7	96.0	100.4	99.1	108.4	101.8
May	96.4	101.2	97.2	101.0	99.2	92.7	96.0	100.4	99.1	108.4	101.8
Jun	102.2	101.7	97.2	99.8	99.2	92.7	96.0	100.4	97.8	108.2	101.8
Jul	102.2	102.1	97.7	98.8	99.2	92.7	96.0	100.5	97.8	107.9	101.8
Aug	102.2	102.1	97.9	98.0	99.2	92.7	96.0	100.5	97.8	107.9	101.8
Sep	102.2	102.2	97.9	98.0	99.2	92.7	96.0	100.5	97.8	108.3	101.8
Oct	102.2	102.2	97.9	98.0	99.2	92.7	96.0	100.5	97.8	108.3	101.8

Note: July 2017 = 100

Unit Price Index above are applicable for Wilayah Persekutuan Kuala Lumpur, Melaka, Negeri Sembilan and Selangor region.  
November & December rates are not available at time of printing.

Source: Special Release 2, For Building and Structural Works, Department of Statistics, Malaysia.



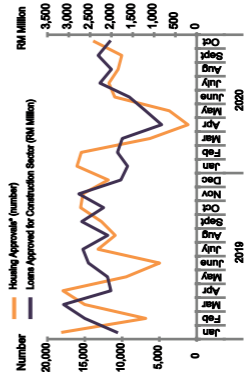
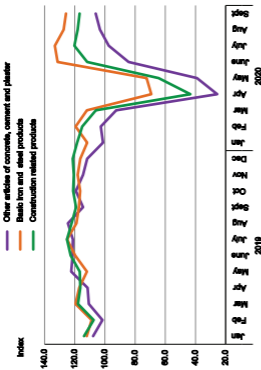
## CONSTRUCTION SECTOR INDICATORS

2020	Production <sup>#</sup> (Index)			Construction Related Products	Housing Approvals* (number)	Loans Approved for Construction Sector (RM million)
	Other Articles of Concrete, Cement & Plaster	Basic Iron and Steel Products	Construction Related Products			
Jan	101.2	111.7	118.4	118.4	16,047	1,623
Feb	102.7	119.5	115.0	115.0	15,468	1,857
Mar	92.5	112.0	106.1	106.1	6,262	1,747
Apr	25.6	69.3	43.4	43.4	1,176	824
May	39.0	72.4	64.4	64.4	3,667	1,199
Jun	84.3	131.4	111.7	111.7	10,991	1,581
Jul	97.5	133.1	120.3	120.3	11,766	2,270
Aug	103.2	127.4	118.0	118.0	10,531	2,000
Sep	106.1	125.8	116.8	116.8	10,038	2,310
Oct	N/A	N/A	N/A	N/A	13,692	2,042

Note: # Based on Industrial Production Index (2015 = 100).

\* Number of housing units by private developers approved for construction in Peninsular Malaysia by the Ministry of Housing and Local Government.

Source: Central Bank of Malaysia.



## COMMODITIES PRICE TREND (JAN TO OCT 2020)

### Nickel

USD/Tonne



### Copper (Grade A)

USD/Tonne



## Aluminium

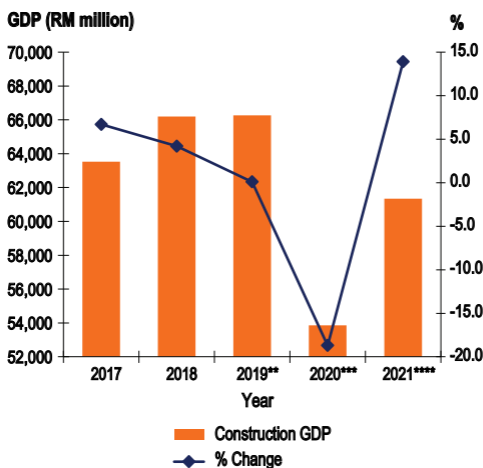
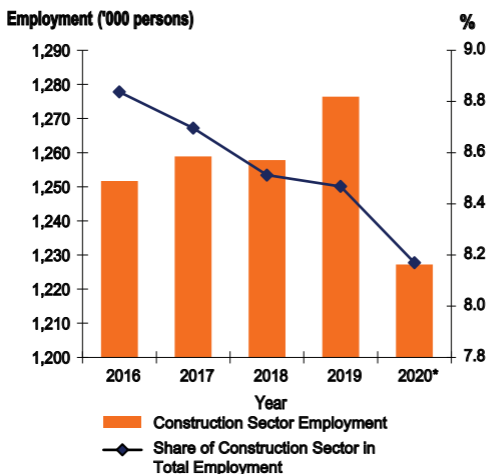
USD/Tonne



Year 2020	Aluminium	Copper (Grade A)	Nickel
	Monthly Average (USD / Tonne)		
Jan	1,770.89	6,037.95	13,495.79
Feb	1,685.08	5,685.30	12,735.50
Mar	1,610.70	5,178.05	11,867.77
Apr	1,457.15	5,048.25	11,753.20
May	1,459.79	5,233.82	12,135.32
Jun	1,564.02	5,742.39	12,703.27
Jul	1,639.35	6,353.76	13,341.35
Aug	1,733.90	6,496.70	14,486.85
Sep	1,745.34	6,712.41	14,866.27
Oct	1,802.82	6,702.77	15,219.36

Source: London Metal Exchange

### MALAYSIA CONSTRUCTION SECTOR - EMPLOYMENT & GROSS DOMESTIC PRODUCT



Note: \* For the first half of 2020

\*\* Preliminary

\*\*\* Estimate

\*\*\*\* Forecast

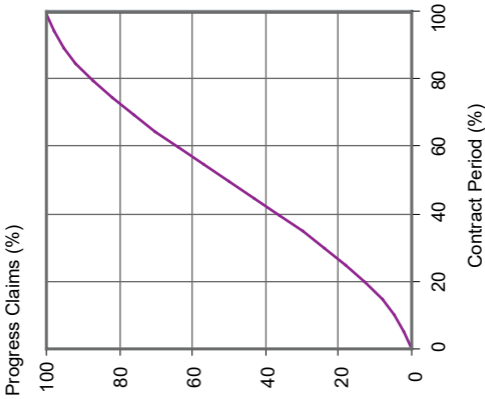
Source: Economic Outlook 2021, Ministry of Finance Malaysia

## PROGRESS PAYMENTS

The following graph and table are an indication of the rate of expenditure for construction projects.

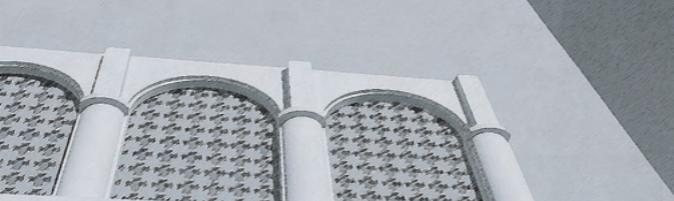
The rate of expenditure is an average rate and will vary from project to project when specific project circumstances are taken into account.

No account has been made for retention.



Contract Period	Cumulative Progress Claims	Contract Period	Cumulative Progress Claims	Contract Period	Cumulative Progress Claims
5%	2%	40%	36%	75%	82%
10%	5%	45%	43%	80%	87%
15%	8%	50%	50%	85%	92%
20%	13%	55%	57%	90%	95%
25%	18%	60%	64%	95%	98%
30%	24%	65%	70%	100%	100%
35%	30%	70%	76%		





# PROPERTY 3



Residential

Hotel

Office

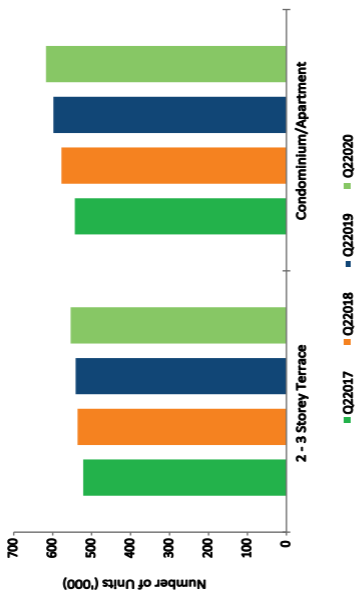
Shopping Complex

Shop

Industrial

## RESIDENTIAL

Existing Stock of Residential by Type in Kuala Lumpur and Selangor



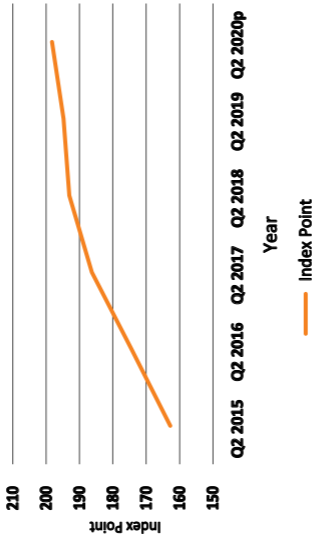
Source: Residential Property Stock Report 2Q 2017 - 2020, Valuation & Property Services Department

Residential Q2 2020	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	492,848	50,411
WP Putrajaya	15,109	5,499
WP Labuan	12,705	657
Selangor	1,580,481	104,350
Johor	848,929	51,816
Pulau Pinang	522,272	43,508
Perak	494,515	36,566
Negeri Sembilan	285,718	16,519
Melaka	198,726	20,834
Kedah	338,347	14,866
Pahang	284,439	19,308
Terengganu	102,760	18,329
Kelantan	83,839	11,921
Perlis	26,153	1,422
Sabah	221,473	26,995
Sarawak	266,781	18,494
<b>MALAYSIA</b>	<b>5,775,095</b>	<b>441,495</b>

Source: Residential Property Stock Report 2Q 2020, Valuation & Property Services Department



**Malaysia House Price Index**



Base Year = 2010

p = preliminary

Source: Malaysian House Price Index, Valuation & Property Services Department

**Rentals and Transacted Prices of Selected Existing High End Condominiums/Service Apartments (1H2020)**

Locality	Average Asking Rental (RM psf/month)	Average Transacted Price (RM psf)
KL City	2.30 - 5.00	870 - 1,190
Ampang Hilir / U-Thant	2.00 - 3.20	790 - 890
Bangsar	2.40 - 4.00	850 - 1,090
Damansara Heights	2.00 - 4.20	850 - 940
Mont' Kiara	2.00 - 3.50	630 - 800

**Notes:**

p = Analysis based on preliminary data and is calculated by weighted average approach based on recorded transactions of selected scheme

Source: Knight Frank Real Estate Highlights 1st Half 2020

## HOTEL

## Tourist Arrivals &amp; Receipts to Malaysia

Year	Arrivals (million)	Receipts (RM billion)
1Q 2020	4.23	12.5
2019	26.10	86.1
2018	25.83	84.1
2017	25.95	82.1
2016	26.76	82.1
2015	25.72	69.1
2014	27.44	72.0
2013	25.72	65.4
2012	25.03	60.6
2011	24.71	58.3
2010	24.58	56.5

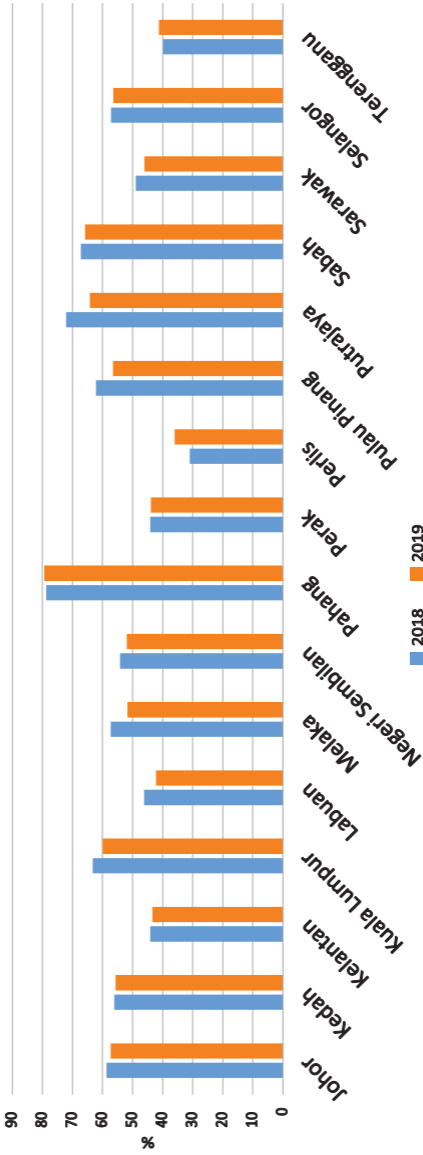
Source: Tourism Malaysia

## No of Hotel Rooms in Malaysia

Hotel Q2 2020	Existing Stock (Rooms)	Incoming Supply (Rooms)
WP Kuala Lumpur	40,771	8,288
WP Putrajaya	1,769	0
WP Labuan	1,660	264
Selangor	22,747	1,843
Johor	30,798	4,288
Pulau Pinang	21,553	4,951
Perak	16,055	865
Negeri Sembilan	9,399	1,596
Melaka	17,031	1,456
Kedah	13,154	756
Pahang	25,383	247
Terengganu	10,280	597
Kelantan	4,360	144
Perlis	1,245	120
Sabah	22,557	2,225
Sarawak	20,282	318
<b>MALAYSIA</b>	<b>259,044</b>	<b>27,958</b>

Source: Leisure Property Stock Table Q2 2020, Valuation &amp; Property Services Department

**Performance of Hotels - Average Occupancy Rates (%)**



Source: Tourism Malaysia

## OFFICE

## Purpose-Built Office Rental Index

State / Sub-Region	Q2 2019	Q2 2020 <sup>p</sup>	% Change (Y-o-Y)
Klang Valley	130.6	130.9	0.2
Kuala Lumpur	139.0	140.1	0.8
City Centre	139.3	140.9	1.1
Outside City Centre	138.0	137.7	-0.2
Selangor	125.2	125.2	0.0
Petaling Jaya / Subang Jaya	129.0	130.4	1.1
Shah Alam	121.5	120.0	-1.2
Seri Kembangan	125.0	125.2	0.2
Johor Bahru	130.0	130.6	0.4
George Town	128.5	127.0	-1.1

p = preliminary, 2010=100

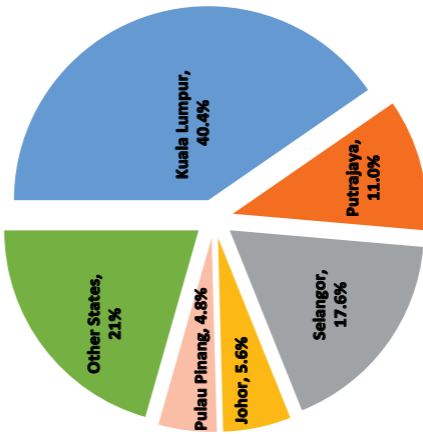
Source: Purpose-Built Office Rental Index (PBO-RI) Klang Valley, Johor Bahru & George Town Q1 - Q2 2020P, Valuation & Property Services Department

## Asking Rentals of Selected Grade A OfficeS (1H2020)

	Asking Gross Rental (RM psf/month)
<b>KL City</b>	
Integra Tower	11.00
Menara Binjai	8.80
The Exchange 106	10.00 - 12.00
G Tower	6.50 - 8.50
Menara Maxis	10.50 - 11.00
Menara Hap Seng 2	7.50
<b>KL Fringe</b>	
Menara Shell	8.50
Menara Etiqa	8.50
Nu Tower 2	7.50
The Gardens North & South Towers	7.50
Menara LGB	6.50 - 7.50
UOA Corporate Tower A	6.20
Mercu 2	7.50
<b>Selangor</b>	
1 First Avenue	6.00
The Pinnacle	6.50
Surian Tower	5.80
Nucleus Tower	5.80
Plaza 33	5.50
The Ascent @ Paradigm	5.50 - 6.00
Quill 18 (Block A & Block B)	5.50

Source: Knight Frank Real Estate Highlights 1st Half 2020

### Distribution of Existing Stock of Purpose Built Office in Malaysia as at Q2 2020

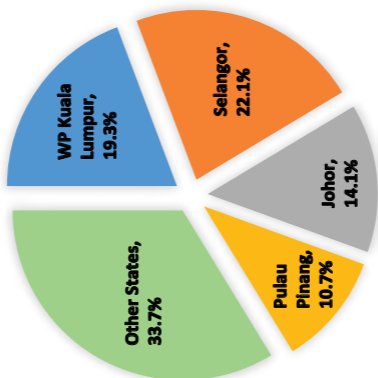


Purpose Built Office Q2 2020	Existing Stock Total Space (m <sup>2</sup> )	Incoming Supply Total Space (m <sup>2</sup> )
WP Kuala Lumpur	9,266,687	1,465,441
WP Putrajaya	2,525,253	75,186
WP Labuan	67,051	0
Selangor	4,030,791	208,391
Johor	1,294,794	244,290
Pulau Pinang	1,111,681	4,590
Perak	635,102	36,847
Negeri Sembilan	339,649	9,487
Melaka	411,050	0
Kedah	428,672	0
Pahang	420,570	36,375
Terengganu	362,977	63,767
Kelantan	391,525	0
Perlis	131,038	25,085
Sabah	799,613	19,252
Sarawak	737,798	58,516
<b>MALAYSIA</b>	<b>22,954,251</b>	<b>2,247,227</b>

Source: Commercial Property Stock Table Q2 2020, Valuation & Property Services Department

## SHOPPING COMPLEX

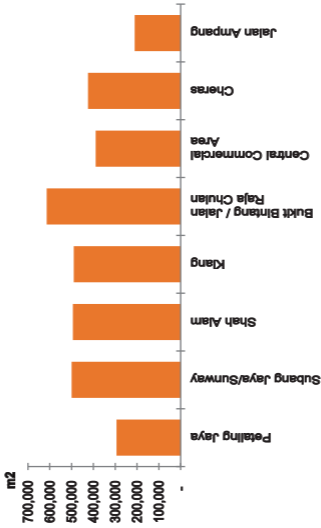
Distribution of Existing Stock of Shopping Complex in Malaysia as at Q2 2020



Shopping Complex Q2 2020	Existing Stock Total Space (m <sup>2</sup> )	Incoming Supply (m <sup>2</sup> )
WP Kuala Lumpur	3,131,431	639,508
WP Putrajaya	86,017	0
WP Labuan	28,614	0
Selangor	3,712,375	480,125
Johor	2,452,258	60,867
Pulau Pinang	1,823,589	0
Perak	958,199	124,775
Negeri Sembilan	597,350	0
Melaka	596,074	167,779
Kedah	589,057	0
Pahang	415,110	41,919
Terengganu	206,726	126,520
Kelantan	342,055	108,393
Perlis	55,872	13,493
Sabah	770,922	49,779
Sarawak	1,003,501	8,064
<b>MALAYSIA</b>	<b>16,769,150</b>	<b>1,821,222</b>

Source: Commercial Property Stock Table 2Q 2020, Valuation &amp; Property Services Department

**Shopping Complex's Existing Stock in Kuala Lumpur & Selangor (By Location) as at Q2 2020**



Source: Commercial Property Stock Table Q2 2020, Valuation & Property Services Department

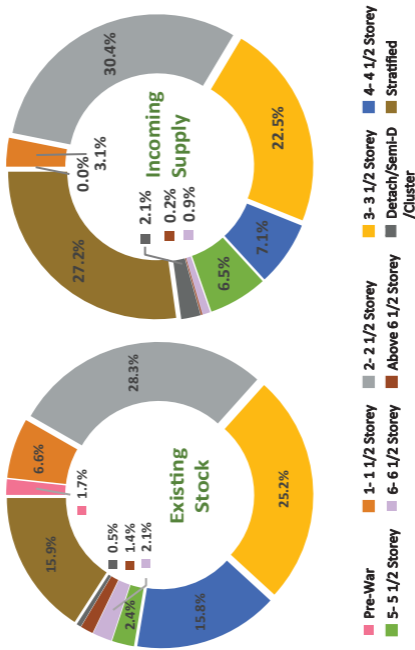
**Klang Valley: Incoming Retail Supply, 2H 2020**

Projects	Estimate Area (sf)
Retail Component of Pacific Star, Petaling Jaya	240,000
KIPMall Desa Coalfields, Sungai Buloh	140,000
Quayside @ Twentyfive 7, Shah Alam	328,000
Retail Component of Datum Jelatek, Ampang	319,000
Retail Component @ Exchange 106, TRX KL City	126,000
Retail Component of 8 Conlay, KL City	120,000
KL East Mall, KL Fringe	380,000

Source: Knight Frank Real Estate Highlights 1st Half 2020

## SHOP

**Distribution of Existing and Incoming Supply of Shop in Kuala Lumpur and Selangor as at Q2 2020**



Source: Commercial Property Stock Table Q2 2020, Valuation & Property Services Department

Shop Q2 2020	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	31,888	1,633
WP Putrajaya	538	0
WP Labuan	983	76
Selangor	108,093	6,892
Johor	89,275	10,134
Pulau Pinang	38,291	1,639
Perak	62,295	3,713
Negeri Sembilan	26,930	1,032
Melaka	22,628	1,760
Kedah	31,999	1,083
Pahang	25,447	1,610
Terengganu	8,273	1,242
Kelantan	13,914	1,242
Perlis	5,628	362
Sabah	32,041	2,109
Sarawak	35,809	1,852
<b>MALAYSIA</b>	<b>534,032</b>	<b>36,379</b>

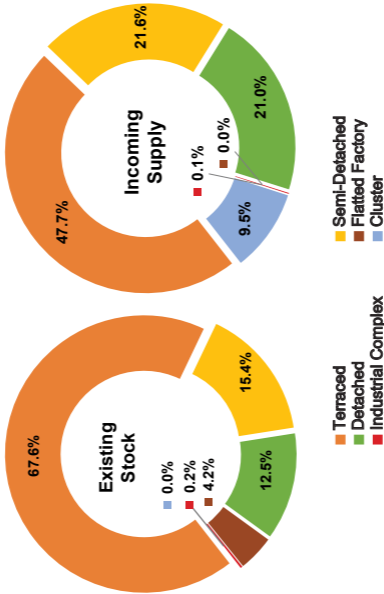
Source: Commercial Property Stock Table Q2 2020, Valuation & Property Services Department



## INDUSTRIAL

Industrial Q2 2020	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	5,138	0
WP Putrajaya	48	0
WP Labuan	635	8
Selangor	40,835	970
Johor	17,991	1,097
Pulau Pinang	9,260	368
Perak	8,464	152
Negeri Sembilan	5,524	61
Melaka	7,120	837
Kedah	3,858	33
Pahang	3,578	74
Terengganu	866	48
Kelantan	606	28
Perlis	296	28
Sabah	6,189	308
Sarawak	7,118	221
<b>MALAYSIA</b>	<b>117,526</b>	<b>4,233</b>

**Distribution of Existing and Incoming Supply of Industrial Units in Kuala Lumpur and Selangor as at Q2 2020**



Source: Industrial Property Stock Report 2nd Quarter 2020, Valuation & Property Services Department



Financial Definitions & Formulae

Mortgage Repayment Table

Malaysia Balance of Payments  
- Goods & Services

Consumer Price Index & Producer  
Price Index

Prime Rates & Base Lending Rates

Interest Rates : Banking Institutions

Currency Chart

Exchange Rates

## FINANCIAL DEFINITIONS

### Discount Rate

The rate of return a developer expects when investing in a project.  
i.e. opportunity cost

### Internal Rate of Return (IRR)

The IRR may be defined as the interest rate that equates the present value of expected future cash flows to the cost of the investment.

The IRR can be compared to the Discount Rate.

### Net Present Value (NPV)

The NPV is the present value of all future cash flows, discounted back to today's values at the Discount Rate.

The NPV indicates in today's dollars the profit or loss a developer makes above or below his required profit (based on a nominated Discount Rate).

### 72 Rule

The approximate number of years required to double your capital can be calculated by dividing the interest rate into 72.

e.g. If interest rate = 10% p.a.  
Then  $72 \div 10 = 7.2$  years  
It will take approximately 7.2 years to double your capital if it is invested at 10% p.a.

## FINANCIAL FORMULAE

Future value of \$1	$FV = PV (1+i)^n$
Future value of \$1 per period	$FV = PMT [((1+i)^n - 1) \div i]$
Sinking fund (the amount required to be put away periodically to realise some future sum)	$PMT = FV [i \div ((1+i)^n - 1)]$
Present value of \$1	$PV = FV [1 \div (1+i)^n]$
Present value of \$1 per period	$PV = PMT [((1+i)^n - 1) \div (i(1+i)^n)]$
Annuity with a PV of \$1 (Mortgage bond formula)	$PMT = PV[(i(1+i)^n) \div ((1+i)^n - 1)]$

PV = present value  
 FV = future value  
 PMT = payment amount  
 n = period (e.g. 10 years with monthly payments,  
 $n = 10 \times 12 = 120$ )  
 i = interest rate per period  
 (e.g. 12% p.a. compounded monthly;  
 $i = 12\% \div 12 \text{ month} = 1\% \text{ per period}$ )

## MORTGAGE REPAYMENT TABLE

Based on:

\* 1,000 units of currency

\* Interest compounded monthly

\* Equal monthly repayments

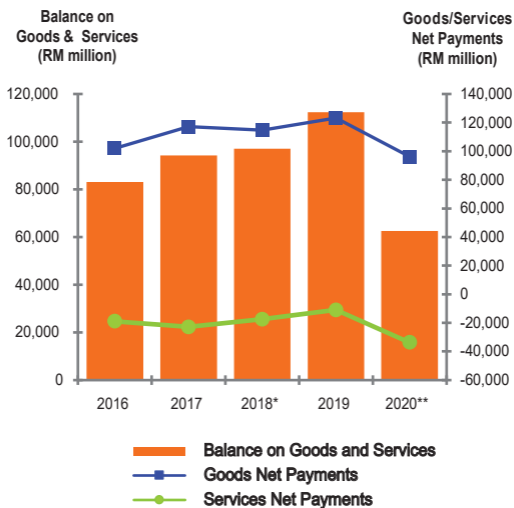
Interest p.a.	REPAYMENT (years)			
	5	10	15	20
5%	18.87	10.61	7.91	6.60
6%	19.33	11.10	8.44	7.16
7%	19.80	11.61	8.99	7.75
8%	20.28	12.13	9.56	8.36
9%	20.76	12.67	10.14	9.00
10%	21.25	13.22	10.75	9.65
11%	21.74	13.78	11.37	10.32
12%	22.24	14.35	12.00	11.01
13%	22.75	14.93	12.65	11.72
14%	23.27	15.53	13.32	12.44
15%	23.79	16.13	14.00	13.17
16%	24.32	16.75	14.69	13.91
17%	24.85	17.38	15.39	14.67
18%	25.39	18.02	16.10	15.43
19%	25.94	18.67	16.83	16.21
20%	26.49	19.33	17.56	16.99
21%	27.05	19.99	18.31	17.78
22%	27.62	20.67	19.06	18.57
23%	28.19	21.35	19.82	19.37
24%	28.77	22.05	20.58	20.17
25%	29.35	22.75	21.36	20.98

### Example

Borrow \$1,000,000 to be repaid monthly at 10% p.a.  
over 10 years.

$$\begin{aligned} \text{Repayments} &= 1,000,000 / 1,000 \times \$13.22 \\ &= \$13,220 \text{ per month} \end{aligned}$$

## MALAYSIA BALANCE OF PAYMENTS - GOODS & SERVICES



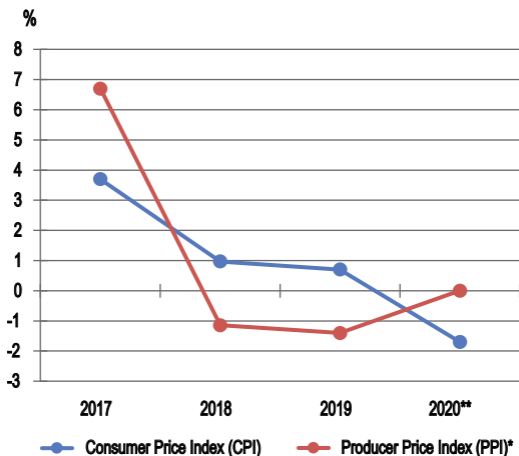
Year	Balance on Goods & Services (RM mil)	Goods Net Payments (RM mil)	Services Net Payments (RM mil)
2016	83,128	102,046	-18,917
2017	94,255	117,113	-22,858
2018*	97,106	114,621	-17,515
2019	112,412	123,334	-10,922
2020**	62,532	96,269	-33,737

Note: \* Revised

\*\* 1Q 2020 to 3Q 2020

Source: Central Bank of Malaysia

## CONSUMER PRICE INDEX & PRODUCER PRICE INDEX



Year	Annual Change (%)	
	CPI	PPI*
2017	3.7 %	6.7 %
2018	1.0 %	-1.1 %
2019	0.7 %	-1.4 %
2020**	-1.7 %	n.a.

Note: Year 2010=100

\* Local Production

\*\* November 2020

Source: Central Bank of Malaysia

## PRIME RATES & BASE LENDING RATES

as at 4th Quarter 2020

Country	Rate (%)
China*	4.75
Hong Kong	5.00
India <sup>§</sup>	8.75
Macau	5.25
Malaysia <sup>^</sup>	5.51
Philippines	6.03
Singapore	5.25
Thailand <sup>#</sup>	6.15
United Kingdom**	0.10
United States of America	3.25
Vietnam <sup>##</sup>	4.50
Jakarta <sup>**</sup>	4.50

\* 5-Year Benchmark Lending Rate

\$ The data is provided by Arkind LS Private Limited, an Arcadis Alliance Partner

^ Base Lending Rate (average based on 16 financial institutions)

# Minimum Loan Rate % per annum (average based on local bank)

\*\* Bank Rate (Bank of England base rate)

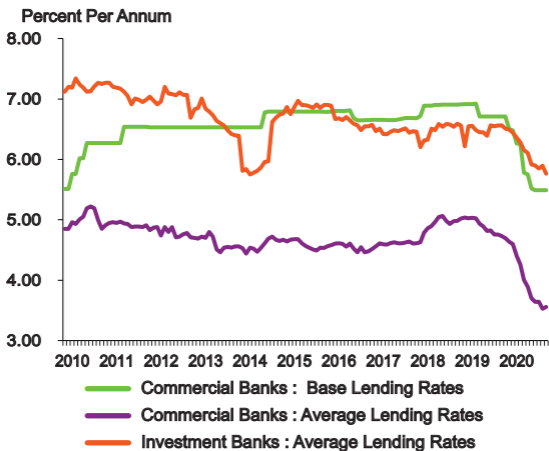
## Min and in VND per year

\$\$ The data is provided by PT Lantera Sejahtera Indonesia

Source:  
Arcadis Asia Offices



## INTEREST RATES: BANKING INSTITUTIONS

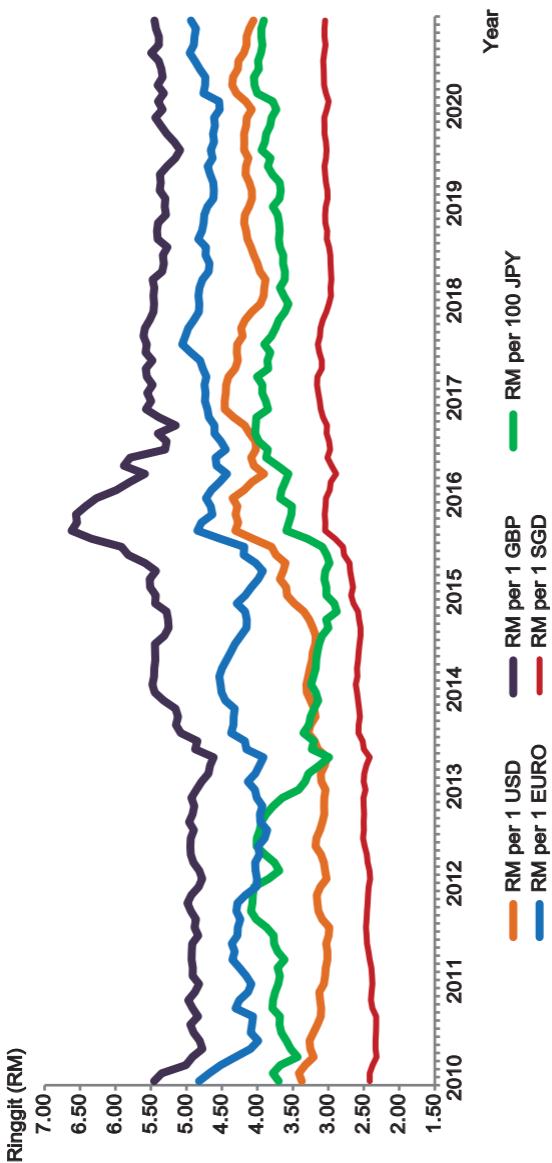


2020	Commercial Banks		Investment Banks
	Base Lending Rates (%)	Average Lending Rates (%)	Average Lending Rates (%)
Jan	6.50	4.64	6.49
Feb	6.48	4.60	6.44
Mar	6.26	4.40	6.36
Apr	6.26	4.26	6.28
May	5.78	4.01	6.16
Jun	5.75	3.89	6.10
Jul	5.52	3.70	5.92
Aug	5.49	3.64	5.90
Sep	5.49	3.64	5.85
Oct	5.49	3.53	5.90
Nov	5.49	3.56	5.76

Note: Only Jan till Nov rates are available at time of publication

Source: Central Bank of Malaysia

CURRENCY CHART



## EXCHANGE RATES

as at 31 December 2020

Country/Region	Currency	RM1	US \$1
Australia	dollar	0.3230	1.3049
Bahrain	dinar	0.0928	0.3750
Brunei	dollar	0.3278	1.3243
China	rmb	1.6148	6.5243
Egypt	pound	3.8871	15.7053
European Union	eur	0.2015	0.8141
Hong Kong	dollar	1.9187	7.7524
India	rupees	18.1054	73.1525
Indonesia	rupiah	3,476.47	14,046.30
Japan	yen	25.5500	103.2400
Kenya	shillings	26.8055	108.3040
Lebanon	pound	373.109	1,507.500
Malaysia	ringgit	1.0000	4.0357
New Zealand	dollar	0.3441	1.3905
Pakistan	rupee	39.5523	159.8060
Philippines	peso	11.8811	48.0041
Qatar	riyal	0.8924	3.6058
Singapore	dollar	0.3278	1.3243
South Africa	rand	3.6234	14.6399
South Korea	won	268.996	1,086.850
Sri Lanka	rupee	45.7568	184.8750
Thailand	baht	7.4091	29.9355
United Arab Emirates	dirham	0.9089	3.6724
United Kingdom	pound	0.1823	0.7364
United States of America	dollar	0.2475	1.0000
Vietnam	dong	5,707.40	23,060.10

Source: [www.oanda.com](http://www.oanda.com)





Utility Costs for Selected Asian Cities

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Conversion Guide

Public Holidays

Arcadis Asia Services

Directory of Offices

Telephone Directory (Malaysia)

## 5 OTHER INFORMATION

### UTILITY COSTS FOR SELECTED ASIAN CITIES as at 4th Quarter 2020

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m <sup>3</sup> )		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
<b>KUALA LUMPUR</b>	RM 4.11	0.053 - 0.139	0.092 - 0.124	0.139 - 0.487	0.504 - 0.555	0.423	N/A	0.394
FUEL: Rates for 14-20 Nov 2020. Unleaded petrol RON 95 WATER (Domestic): Rates for Residential with individual meter ELECTRICITY (Commercial / Industrial): Low voltage								
<b>BEIJING</b>	RMB 6.60	0.066 - 0.107	0.184 - 0.186 (peak) 0.114 - 0.116 (normal)	0.673 - 1.213	1.213 - 1.279	0.770	N/A	0.880
ELECTRICITY (Domestic / month) (below 1kV): 1 - 240kWh = US\$0.066; 241 - 400kWh = US\$0.073; 400kWh above = US\$0.107 ELECTRICITY (Commercial / Industrial) (1 - 10kV): Central Districts - Peak = US\$0.186, Normal = US\$0.116; Other Districts - Peak = US\$0.184, Normal = US\$0.114 WATER (Domestic / year): 1 - 180m <sup>3</sup> = US\$0.673; 181 - 260m <sup>3</sup> = US\$0.943; 261m <sup>3</sup> above = US\$1.213 WATER (Commercial / Industrial): Central Districts = US\$1.279; Other Districts = US\$1.213								
<b>GUANGZHOU</b>	RMB 6.60	0.084 - 0.143	0.086 - 0.157	0.283 - 0.566	0.490	0.790	N/A	0.850
UNLEADED FUEL: Unleaded gasoline 97#								
<b>HONG KONG</b>	HK\$ 7.75	0.110	0.130	0.830	0.590	1.890	N/A	2.280
ELECTRICITY (Domestic): 0 - 400 kWh = US\$0.11; 400 - 1,000kWh = US\$0.13; 1,000 - 1,800kWh = US\$0.15; 1,800 - 2,600kWh = US\$0.19; 2,600 - 3,400kWh = US\$0.22; 3,400 - 4,200kWh = US\$0.23; Above 4,200 kWh = US\$0.23 (Based on tariff scheme of CLP Holding Limited and is charged on bi-monthly consumption)								
WATER (Domestic): 0 - 12 m <sup>3</sup> = F.O.C.; 12 - 43m <sup>3</sup> = US\$0.54/m <sup>3</sup> ; 43 - 62m <sup>3</sup> = US\$0.83/m <sup>3</sup> ; Above 62m <sup>3</sup> = US\$1.17m <sup>3</sup> .								

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m <sup>3</sup> )		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
<b>MACAU</b>	MOP 7.98	0.170	0.170	0.560 - 0.910	0.760	1.450	N/A	1.280
<p><b>ELECTRICITY:</b> Electricity tariff are composition of demand charges, consumption charges, fuel clause adjustment and government tax. Charges for ordinary users (e.g. business, government buildings, schools, associations, hospitals and others) only. Special users (e.g. gaming industries, hotels, saunas, golf courses, construction, public infrastructures and other temporary consumption) are excluded.</p> <p><b>WATER (Domestic):</b> Consumption charge = US\$0.56/m<sup>3</sup> for 28m<sup>3</sup> or below; US\$0.64/m<sup>3</sup> for 29m<sup>3</sup> to 60m<sup>3</sup>; US\$0.75/m<sup>3</sup> for 61m<sup>3</sup> to 79m<sup>3</sup> and US\$0.90/m<sup>3</sup> for 80m<sup>3</sup> or above. Other charges (Depending on meter size 15mm - 200mm) : Meter Rental = US\$0.34 - 57.64/month.</p>								
<b>SHANGHAI</b>	RMB 6.60	0.093 (peak) 0.047 (normal)	5.155 (Basic Tariff) 0.089 (summer) 0.085 (non-summer)	0.523 - 0.883	0.760	0.780	N/A	0.890
<p><b>ELECTRICITY (Domestic):</b> 0 - 3,120 kWh = US\$0.093 (peak) / US\$0.047 (normal); 3,120 - 4,800kWh = US\$0.103 (peak) / US\$0.051 (normal); Above 4,800 kWh = US\$0.148 (peak) / US\$0.074 (normal). Charged on yearly consumption.</p> <p><b>ELECTRICITY (Commercial/Industrial):</b> In dual tariff system, Rate of 10kVA</p> <p><b>WATER (Domestic):</b> 0 - 220m<sup>3</sup> = US\$0.523/m<sup>3</sup>; 220 - 300m<sup>3</sup> = US\$0.732/m<sup>3</sup>; Above 300m<sup>3</sup> = US\$0.883/m<sup>3</sup>.</p> <p><b>UNLEADED FUEL:</b> Unleaded 95.</p>								
<b>CHONGQING</b>	RMB 6.60	0.077 - 0.124	0.084 - 0.099	0.504 - 0.850	0.660	0.76	N/A	0.859
<p><b>UNLEADED FUEL:</b> Unleaded 92# = US\$0.813/litre, 95# = US\$0.859/litre</p>								

(Cont'd)

(Cont'd)

## UTILITY COSTS FOR SELECTED ASIAN CITIES

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m <sup>3</sup> )		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
<b>BANGALORE</b>	INR 74.39	0.075 - 0.107	0.092 - 0.135	0.590 - 0.738	1.480	1.061	N/A	1.170
<b>NEW DELHI</b>	INR 74.39	0.021 - 0.118	0.107	0.370 - 1.110	1.475 - 2.590	1.024	N/A	1.130
The data for India is provided by Aikind LS Private Limited, an Arcadis Alliance Partner.								
<b>BANGKOK</b>	BAHT 30.275	0.078 - 0.146	0.103 - 0.105	0.281 - 0.477	0.314 - 0.522	0.687	N/A	0.738
UNLEADED FUEL: Gasohol 95 ELECTRICITY (Domestic): For normal tariff with consumption not exceeding 150kWh/month.								
<b>HO CHI MINH</b>	VND 23,500	0.120	0.110 / 0.060	0.270	0.860 / 0.490	0.490	N/A	0.640
All rates are VAT inclusive.								



COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m <sup>3</sup> )		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
<b>MANILA</b>	PHP 48.94	0.184	0.172	0.508 - 0.740	2.150	0.732	N/A	0.992
ELECTRICITY (Domestic): 231 kWh - 2677 kWh; ELECTRICITY (Commercial / Industrial): 185,404 kWh; WATER (Domestic): 36m <sup>3</sup> - 101m <sup>3</sup> ; WATER (Commercial / Industrial): 3,750m <sup>3</sup>								
<b>SINGAPORE</b>	S\$ 1.36	0.160	0.160	2.01* 2.71**	2.010	1.190	N/A	1.820
All rates are nett of GST. ELECTRICITY: Tariff is based on low tension power supply. WATER (Domestic): * Effective from 1 July 2018. Rate includes water conservation tax, water-borne fee, sanitary appliance fee and is an average for ≤ 40m <sup>3</sup> . ** Effective from 1 July 2018. Rate includes water conservation tax, water-borne fee, sanitary appliance fee and is an average for > 40m <sup>3</sup> . WATER (Commercial / Industrial): Effective from 1 July 2018. Rate includes water conservation tax, water borne fee & sanitary appliance fee. FUEL (Diesel & 98 Unleaded Petrol) - As at 17 November 2020.								
<b>JAKARTA</b>	IDR 14,155	0.102	0.102	0.074 - 0.527*	0.483 - 1.035**	0.664	N/A	0.636
ELECTRICITY / WATER: * Domestic group in Indonesia will cover residence, religion building, non-profit organization building and government hospital. ** Commercial group in Indonesia will cover luxury residence, apartment, offices, hotel, commercial building and factories The data is provided by PT Lantera Sejahtera Indonesia.								

## WEIGHT & MEASURES

### Metric Measures and Equivalents

<b>LENGTH</b>		
1 millimetre (mm)		= 0.0394 in
1 centimetre (cm)	= 10 mm	= 0.3937 in
1 metre (m)	= 100 cm	= 1.0936 yd
1 kilometre (km)	= 1,000 m	= 0.6214 mile
<b>AREA</b>		
1 sq cm (cm <sup>2</sup> )	= 100 mm <sup>2</sup>	= 0.1550 in <sup>2</sup>
1 sq metre (m <sup>2</sup> )	= 10,000 cm <sup>2</sup>	= 1.1960 yd <sup>2</sup>
1 hectare (ha)	= 10,000 m <sup>2</sup>	= 2.4710 acres
1 sq km (km <sup>2</sup> )	= 100 ha	= 0.3861 mile <sup>2</sup>
<b>VOLUME / CAPACITY</b>		
1 cu cm (cm <sup>3</sup> )		= 0.0610 in <sup>3</sup>
1 cu decimetre (dm <sup>3</sup> )	= 1,000 cm <sup>3</sup>	= 0.0353 ft <sup>3</sup>
1 cu metre (m <sup>3</sup> )	= 1,000 dm <sup>3</sup>	= 1.3080 yd <sup>3</sup>
1 litre (l)	= 1 dm <sup>3</sup>	= 1.76 pt
1 hectolitre (hl)	= 100 l	= 21.997 gal
<b>MASS (WEIGHT)</b>		
1 milligram (mg)		= 0.0154 grain
1 gram (g)	= 1,000 mg	= 0.0353 oz
1 kilogram (kg)	= 1,000 g	= 2.2046 lb
1 tonne (t)	= 1,000 kg	= 0.9842 ton
<b>USA MEASURES AND EQUIVALENTS</b>		
<b>USA Dry Measure Equivalents</b>		
1 pint	= 0.9689 UK pint	= 0.5506 l
<b>USA Liquid Measure Equivalents</b>		
1 fluid ounce	= 1.0408 UK fl oz	= 29.574 ml
1 pint (16 fl oz)	= 0.8327 UK pt	= 0.4723 l
1 gallon	= 0.8327 UK gal	= 3.7854 l

## Imperial Measures and Equivalents

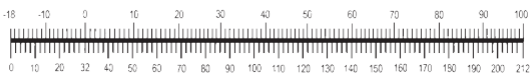
LENGTH		
1 inch (in)		= 2.54 cm
1 foot (ft)	= 12 in	= 0.3048 m
1 yard (yd)	= 3 ft	= 0.9144 m
1 mile	= 1,760 yd	= 1.6093 km
1 int. nautical mile	= 2,025.4 yd	= 1.853 km
AREA		
1 sq inch (in <sup>2</sup> )		= 6.4516 cm <sup>2</sup>
1 sq foot (ft <sup>2</sup> )	= 144 in <sup>2</sup>	= 0.0929 m <sup>2</sup>
1 sq yard (yd <sup>2</sup> )	= 9 ft <sup>2</sup>	= 0.8361 m <sup>2</sup>
1 acre	= 4,840 yd <sup>2</sup>	= 4,046.9 m <sup>2</sup>
1 sq mile (mile <sup>2</sup> )	= 640 acres	= 2.59 km <sup>2</sup>
VOLUME / CAPACITY		
1 cu inch (in <sup>3</sup> )		= 16.387 cm <sup>3</sup>
1 cu foot (ft <sup>3</sup> )	= 1,728 in <sup>3</sup>	= 0.0283 m <sup>3</sup>
1 fluid ounce (fl oz)		= 28.413 ml
1 pint (pt)	= 20 fl oz	= 0.5683 l
1 gallon (gal)	= 8 pt	= 4.5461 l
MASS (WEIGHT)		
1 ounce (oz)	= 437.5 grains	= 28.35 g
1 pound (lb)	= 16 oz	= 0.4536 kg
1 stone	= 14 lb	= 6.3503 kg
1 hundredweight (cwt)	= 112 lb	= 50.802 kg
1 ton	= 20 cwt	= 1.016 t

### Temperature Conversion

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

$$^{\circ}\text{F} = (9/5 ^{\circ}\text{C}) + 32$$

$^{\circ}\text{C}$



$^{\circ}\text{F}$

## CONVERSION GUIDE

### Conversion Formulae

To use the conversion formulae simply multiply the Imperial measurement by the factor beside the conversion you wish to make. For example 6 inches into millimetres. 6 inches multiplied by 25.4 equals 152.4 millimetres. Conversely if you wish to convert Metric measure into Imperial measure simply divide by the same factor.

<b>LENGTH</b>	
<i>To Convert</i>	<i>Multiply by</i>
mili-inches into micrometres	25.4
inches into millimetres	25.4
inches into centimetres	2.54
inches into metres	0.0254
feet into millimetres	304.8
feet into centimetres	30.48
feet into metres	0.3048
yards into metres	0.9144
fathoms into metres	1.8288
chains into metres	20.1168
furlongs into metres	201.168
miles, statute into kilometres	1.609344
miles, nautical into kilometres	1.852
<b>VOLUME &amp; CAPACITY</b>	
<i>To Convert</i>	<i>Multiply by</i>
cubic inches into cubic centimetres	16.387064
cubic inches into litres	0.016387
cubic feet into cubic metres	0.0283168
cubic feet into litres	28.316847
UK pints into litres	0.5682613
UK quarts into litres	1.1365225
cubic yards into cubic metres	0.7645549
UK gallons into litres	4.54609
UK gallons into cubic metres	0.0045461
UK fluid ounces into cubic centimetres	28.413063

## AREA

<i>To Convert</i>	<i>Multiply by</i>
square inches into square millimetres	645.16
square inches into square centimetres	6.4516
square feet into square centimetres	929.0304
square feet into square metres	0.092903
square yards into square metres	0.836127
square yards into (0.01 hectare)	0.0083613
acres into square metres	4046.8564
acres into hectares	0.4046856
square miles into square kilometres	2.589988

## MASS

<i>To Convert</i>	<i>Multiply by</i>
grains into miligrams	64.79891
grains into metric carats	0.323995
grains into grams	0.064799
pennyweights into grams	1.555174
ounces into grams	28.349523
ounces troy into grams	31.103477
ounces into kilograms	0.0283495
pounds into kilograms	0.4535924
stones into kilograms	6.35023932
hundredweights into kilograms	50.802345
tons into kilograms	1016.0469
tons into metric tonnes	1.01605
tahils into grams	37.799
kati into kilograms	0.60479

## POWER

<i>To Convert</i>	<i>Multiply by</i>
foot pounds-force per second into watts	1.35582
horsepower into watts	745.7
foot pounds-force per second into kilowatts	0.001356
horsepower into kilowatts	0.7457
horsepower into metric horsepower	1.01387

## PUBLIC HOLIDAYS

2021		
<b>MALAYSIA</b>		
New Year's Day*	01	Jan
Chinese New Year	12 - 13	Feb <sup>^</sup>
Labour Day	01	May
Hari Raya Aidilfitri**	13 - 14	May
Wesak Day	26	May
King/Agong's Birthday	07	Jun
Hari Raya Qurban**	20	Jul
Awal Muharam (Maal Hijrah)	10	Aug
National Day	31	Aug
Malaysia Day	16	Sep
Prophet Muhammad's Birthday	19	Oct
Deepavali**	04	Nov <sup>^^</sup>
Christmas Day	25	Dec

\* *Except Johor, Kelantan, Kedah, Perlis & Terengganu*

\*\* *Subject to change*

<sup>^</sup> *Except Kelantan & Terengganu*

<sup>^^</sup> *Except Sarawak*

### VIETNAM (Normal Scheduled Holidays)

New Year's Day	01	Jan
Lunar New Year	10 - 16	Feb*
Hung Vuong King Celebration	21	Apr
Liberation Day of Saigon	30	Apr
International Labour Day	01	May
National Day	02	Sep
Christmas Day	24 - 25	Dec

\* *Substitute (for 15 & 16 February)*

**2021**
**HONG KONG**

New Year's Day	01	Jan
Lunar New Year (Day 1)	12	Feb
Lunar New Year (Day 2)	13	Feb
Lunar New Year (Day 4)	15	Feb*
Good Friday	02	Apr
The day following Good Friday	03	Apr
The day following Ching Ming Festival	05	Apr*
The day following Easter Monday	06	Apr*
Labour Day	01	May
Birthday of the Buddha	19	May
Tuen Ng / Dragon Boat Festival	14	Jun
HKSAR Establishment Day	01	Jul
The day Following Chinese Mid-Autumn Festival	22	Sep
National Day	01	Oct
Chung Yeung Festival	14	Oct
Christmas Day	25	Dec
The 1st weekday after Christmas Day	27	Dec*

\* As the festivals in 2021 falls on Sunday, the day following it is designated as a general holiday in substitution

**CHINA**

New Year's Day	01 - 03	Jan
Chinese New Year's Eve	11	Feb
Chinese New Year	12 - 17	Feb
Ching Ming Festival	03 - 05	Apr
Labour Day	01 - 05	May
Tuen Ng / Dragon Boat Festival	12 - 14	Jun
Mid-Autumn Festival	19 - 21	Sep
National Day	01 - 07	Oct

(Cont'd)

## 5 OTHER INFORMATION

(Cont'd)

### PUBLIC HOLIDAYS

	2021	
<b>MACAU</b>		
New Year's Day	01	Jan
Lunar New Year's Eve (Afternoon)	11	Feb*
Lunar New Year's Day	12	Feb
The 2nd day of Lunar New Year	13	Feb
The 3rd day of Lunar New Year	14	Feb
The rest day for 2nd day of Lunar New Year	15	Feb@
The rest day for 3rd day of Lunar New Year	16	Feb@
Good Friday	02	Apr
The day before Easter	03	Apr
Ching Ming Festival	04	Apr
The rest day for the day before Easter	05	Apr@
The rest day for Ching Ming Festival	06	Apr@
Labour Day	01	May
The rest day for Labour Day	03	May@
Birthday of the Buddha	19	May
Tung Ng / Dragon Boat Festival	14	Jun
The day following Chinese Mid-Autumn Festival	22	Sep
National Day	01	Oct
The rest day for National Day	04	Oct
Chung Yeung Festival	14	Oct
All Soul's Day	02	Nov
Feast of Immaculate Conception	08	Dec
Macau SAR Establishment Day	20	Dec
Winter Solstice	21	Dec
Christmas Eve	24	Dec
Christmas Day	25	Dec
The rest day for Christmas Day	27	Dec@
New Year's Eve (Afternoon)	31	Dec*

\* *Special Holiday Granted by Chief Executive for staff in Public Administration*

@ *As the festivals in 2021 falls on Saturday / Sunday, the day following it is designated as a general holiday in substitution*



**2021**
**INDIA**

New Year's Day	01	Jan
Chandrama Ugadi	13	Apr
May Day	01	May
Ramzan	14	May
Ganesh Chaturthi	10	Sep
Gandhi Jayanti	02	Oct
Vijay Dashmi	15	Oct
Diwali	04	Nov
Christmas Day	25	Dec

*\* The data is provided by Arkind LS Private Limited,  
an Arcadis Alliance Partner*

**INDONESIA**

New Year's Day	01	Jan
Chinese New Year (Imlek)	12	Feb
Ascension of Prophet Muhammad	11	Mar
Hindu Day of Quiet (Nyepi)	14	Mar
International Labour Day	01	May
Good Friday	02	May
Ascension Day of Jesus Christ	13	May
Idul Fitri	15 - 16	May
Waisak Day	26	May
Pancasila Day	01	Jun
Idul Adha Day	20	Jul
Hijriyah New Year	10	Aug
National Independence Day	17	Aug
Prophet Muhammad's Birthday	18	Oct
Christmas Day	25	Dec

## 5 OTHER INFORMATION

(Cont'd)

### PUBLIC HOLIDAYS

	2021	
<b>PHILIPPINES</b>		
New Year's Day	01	Jan*
Chinese New Year	12	Feb <sup>#</sup>
EDSA People Power Revolution	25	Feb <sup>#</sup>
Maundy Thursday	01	Apr*
Good Friday	02	Apr*
Black Saturday	03	Apr <sup>#</sup>
Araw ng Kagitingan	09	Apr*
Labor Day	01	May*
End of Eid-ul-Fitre (Feast of Ramadhan)	12 - 13	May*
Independence Day	12	Jun*
Eid-ul-Adha	19 - 20	Jul*
Ninoy Aquino Day	21	Aug <sup>#</sup>
National Heroes Day	30	Aug*
All Saint's Day	01	Nov <sup>#</sup>
All Soul's Day	02	Nov <sup>#</sup>
Bonifacio Day	30	Nov*
Feast of the Immaculate Conception of Mary	08	Dec <sup>#</sup>
Christmas Eve	24	Dec <sup>#</sup>
Christmas Day	25	Dec*
Rizal Day	30	Dec*
Last Day of the Year	31	Dec <sup>#</sup>
* Regular Holidays		
* Special Non-Working Holidays		
<b>SINGAPORE</b>		
New Year's Day	01	Jan
Chinese New Year	12 - 13	Jan
Good Friday	02	Apr
Labour Day	01	May
Hari Raya Puasa	13	May
Vesak Day	26	May
National Day	09	Aug
Hari Raya Haji	20	Jul
Deepavali	04	Nov
Christmas Day	25	Dec

**2021**
**THAILAND**

New Year	01	Jan
Makha Bucha Day	26	Feb
Chakri Memorial Day	06	Apr
Songkran Festival	13 - 15	Apr
Labour Day	03	May*
Coronation Day	04	May
Wisakha Bucha Day	26	May
H.M. Queen Suthida Bajrasudhabimalalakshana's Birthday	03	Jun
H.M. King Maha Vajiralongkorn's Birthday	26	Jul**
H.M. Queen Sirikit The Queen Mother's Birthday / Mother's Day	12	Aug
H.M. King Bhumibol Adulyadej Memorial Day	13	Oct
Chulalongkorn Day	25	Oct***
H.M. King Bhumibol Adulyadej's Birthday / Father's Day	06	Dec****
Constitution Day	10	Dec
New Year's Eve	31	Dec

\* As Labour Day falls on Saturday, Monday is designated as a general holiday in substitution

\*\* As H.M. King Maha Vajiralongkorn's Birthday falls on Saturday, Monday is designated as a general holiday in substitution

\*\*\* As Chulalongkorn Day falls on Saturday, Monday is designated as a general holiday in substitution

\*\*\*\* As H.M. King Bhumibol Adulyadej's Birthday falls on Sunday, Monday is designated as a general holiday in substitution

### ARCADIS ASIA SERVICES

#### **BUSINESS ADVISORY**

From rapid urbanization and pressure on natural resources, to tighter regulation and market consolidation, we live in an increasingly complex world. We understand your business challenges and have first-hand experience of the assets you own and operate. We partner with you and bring unique insights to support you in getting better results, with more certainty from strategy, optimizing performance, enhancing resiliency or transformation of your asset - Arcadis has helped clients globally deliver success.

---

#### **COST MANAGEMENT**

Be it a high-rise office building, a state-of-the-art rail station or a large scale industrial development, the need to achieve value for money is central to every investment strategy. Our people understand the need to accurately advise on costs and procurement at planning stage, ensuring a development or program is both economically and environmentally viable for many years to come.

---

#### **DESIGN & ENGINEERING**

From tall buildings to the busy airports; from underground tunnels to iconic bridges, engineering feats help to improve the quality of life for us all. Our specialist engineers use their expertise and knowledge to deliver exceptional and sustainable outcomes for clients through working on some of the world's most impressive and well-known buildings and structures.

## **ENVIRONMENT**

We all deserve a clean, safe environment in which to live. Now more than ever, businesses and governments recognize the need to incorporate environmental concerns into their decision making. Arcadis is a global leader in inventive technical and financial approaches, helping some of the world's leading corporates and governments understand their impact on the natural world.

---

## **PROJECT & PROGRAMME MANAGEMENT**

Organizing the creation of the world's largest, most complex and iconic programs of work in the built and natural environment today is no easy task. Budgets, supply chains, health and safety, time-frames and the large number of parties involved can be daunting. We work alongside our clients to create the right strategy, manage and mitigate risk, and assure the outcomes to meet our clients' business objectives and create exceptional value. As construction programs grow more complex, often with multi-geography delivery and faster paced schedules, the risks are getting.

---

## **WATER**

From source to tap and then back to nature, the planet's most precious resource should be cherished. Thanks to over a century of experience in the water sector, Arcadis' specialist teams around the globe are uniquely positioned to provide safe and secure water technology that is built to withstand the demands of a rapidly changing world.

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Ministry of Housing & Local Government	03-8000 8000
Ministry of Works Malaysia	03-8000 8000
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Master Builders Association Malaysia	03-7984 8636
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<b>Professional Registration Boards</b>	
Board of Architects Malaysia	03-2698 2878
Board of Engineers Malaysia	03-2691 2090
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