

JUBM & Arcadis Construction Cost Handbook MALAYSIA 2019

JUBM Sdn Bhd (27638-X)
Arcadis (Malaysia) Sdn Bhd (520443-H)
Arcadis Projek Sdn Bhd (233819-K)

KDN PP10466/05/2013(032500)



Irama Wangsa
Condominiums,
Kuala Lumpur

Impression Theatre,
Melaka

Ritz Carlton Langkawi, Kedah

Pavilion Hotel, Kuala Lumpur

Asia Pacific University Campus, Selangor

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

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Unless otherwise stated, costs reflected in this handbook are Malaysian costs at 4th Quarter 2018.

 **ARCADIS** | Design & Consultancy
for natural and built assets

Arcadis (Malaysia) Sdn Bhd (520443-H)

Arcadis Projekts Sdn Bhd (233819-K)



JUBM Sdn Bhd (27638-X)

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TABLE OF CONTENTS

	Page No.
Table of Contents	2
About Us	4
Calendars	10

1. CONSTRUCTION COST DATA

Construction Cost Specification	12
Kuala Lumpur Construction Cost Trend (2008 - 2018)	14
Construction Costs for Kuala Lumpur	16
Construction Costs for Johor Bahru	18
Construction Costs for Penang	20
Construction Costs for Kota Kinabalu	22
Construction Costs for Kuching	24
Construction Costs for Selected Asian Cities	26
Major Rates for Malaysia	32
Major Rates for Selected Asian Cities	34
ACMV Costs for Various Designs & Developments in Kuala Lumpur	40
M&E Costs for Selected Asian Cities	42
Unit Costs for Ancillary Facilities for Kuala Lumpur	48
Fit-Out Costs for Kuala Lumpur	50

2. GENERAL CONSTRUCTION DATA

JUBM - Arcadis Building Works Composite Tender Price Index (BWCTPI)	52
JKR Tender Price Index	53
Value of Construction Work Done by Type of Construction Activity	54
Performance of The Construction Sector	55
Estimating Rules of Thumb	56
Technical Specifications	58
Average Unit Prices	60
Unit Price Index	62
Construction Sector Indicators	63
Commodities Price Trend (Jan to Oct 2018)	64
Malaysia Construction Sector - Employment & GDP	66
Progress Payments	67

3. PROPERTY

Residential	70
Hotel	72
Office	74
Shopping Complex	76
Shop	78
Industrial	79

4. FINANCIAL

Financial Definitions & Formulae	82
Mortgage Repayment Table	83
Malaysia Balance of Payment	
- Goods & Services	84
Consumer Price Index & Producer	
Price Index	85
Prime Rates & Base Lending Rates	86
Interest Rates : Banking Institutions	87
Currency Chart	88
Exchange Rates	89

5. OTHER INFORMATION

Utility Costs for Selected Asian Cities	92
Weight & Measures	96
Conversion Guide	98
Public Holidays	100
Arcadis Asia Leadership Team	106
Arcadis Asia Services	108
Directory of Offices	110
Telephone Directory (Malaysia)	119



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 4,000 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 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. Ilham Baru Tower, Kuala Lumpur 2014
2. Damansara City 2 Office Tower, Selangor 2017
3. PAM Centre, Kuala Lumpur 2016
4. Environmental Preservation and Innovation Centre (EPIC), Negeri Sembilan 2017
5. Sunway Putra Mall & Hotel, Kuala Lumpur 2015

Retail

6. Sunway Nexis, Selangor 2014
7. KLP Fashion Avenue, Kuala Lumpur 2012
8. Sunway Velocity, Selangor 2016
9. Louis Vuitton, Kuala Lumpur 2006
10. Setia Walk, Selangor 2014

Residential

11. Pandora Service Apartment, Selangor 2016
12. The Pearl Stonor, Kuala Lumpur 2010
13. Pantai Sentral Park, Kuala Lumpur 2018
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. Calvary Convention Centre, Bukit Jalil 2013
19. St. Regis, Kuala Lumpur 2017
20. Sofitel Damansara City, Selangor 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. Sunway Medical Centre, Selangor 1998
- 28. Pantai Hospital (Extension), Kuala Lumpur 2015
- 29. UCSI Hospital, Negeri Sembilan 2019

Private Educational

- 30. Universiti Teknologi Petronas, Perak 2003
- 31. Sunway Monash University, Selangor 2007
- 32. Tropicana International School, Selangor 2016
- 33. Asia Pacific University Campus, Selangor 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. Semangar Water Treatment Plant (Extension), Johor 2017
- 40. Integrated Water Supply, Kuala Lumpur 2008
- 41. Bus Rapid Transit (BRT) Sunway 2015

Industrial

- 42. PML Production Facility, Selangor 2011
- 43. Giant Distribution Centre (Sepang), Selangor 2009
- 44. Perodua - Second National Car Plant, Selangor 1994

Religious Buildings

- 45. Masjid Besar Sandakan, Sabah 1988
- 46. Lutheran Bible Training Institute, Selangor 2010

Public

- 47. Brunei Chancery, Putrajaya 2017
- 48. Citizenship and Immigration Canada (CIC) Annexe of Canadian High Commission, Kuala Lumpur 2004
- 49. Federal Government Administrative Centre, Putrajaya 2010
- 50. IBS Housing, Putrajaya 2011





2019

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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2020

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26	27	28	29	30	31		23	24	25	26	27	28	29	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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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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26	27	28	29	30	31		23	24	25	26	27	28	29	27	28	29	30			

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18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
25	26	27	28	29	30	31	29	30						27	28	29	30	31		



CONSTRUCTION COST DATA

1

Construction Cost Specification

Kuala Lumpur Construction Cost Trend
(2008 - 2018)

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

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 excluding decorative light fittings and loose furniture. (Malaysia only) 6-12 units per floor, 46m ² - 83m ² per unit 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 excluding decorative light fittings and loose furniture.
	Terraced houses, average standard	Houses with fit-out, including air-conditioning, kitchen cabinets and home appliances, but excluding decorative light fittings, loose furniture, garden and parking. (Malaysia only) Excluding 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 excluding decorative light fittings, loose furniture, garden and parking.
	Medium/high rise offices, average standard	RC structure, curtain wall, including public area fit-out, tenant area with raised floor/carpet, painted wall and false ceiling.
	High rise offices, prestige quality	(Malaysia only) Average standard and prestige quality offices exclude tenant fit-out.
OFFICE/ COMMERCIAL	Out-of-town shopping centre, average standard	Including public area fit-out and M&E, but excluding shop fit-out.
	Retail malls, high end	
	Budget hotels - 3-star, mid market	1) Interior decoration
	Business hotels - 4/5 -star	2) Furniture (fixed and movable)
HOTELS	Luxury hotels - 5-star	3) Special light fittings (chandeliers, etc.)
		4) Operating Supplies and Equipment (OS&E) excluded .
INDUSTRIAL	Industrial units, shell only (Conventional single storey framed units)	RC structure with steel roof and M&E to main distribution, but excluding 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 excluding air-conditioning and heating.

OTHERS	
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. (Malaysia only) Schools with standard government provisions.
Students' residences	Including fit-out, loose furniture and air-conditioning. (Malaysia only) 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.

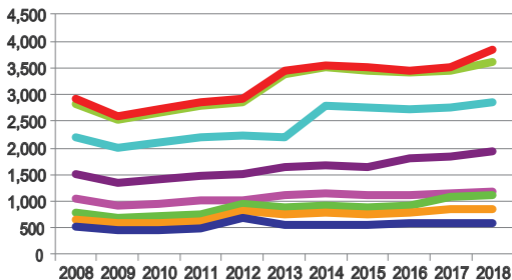
Notes:

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\$/m²-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 2008 - 2018

Domestic

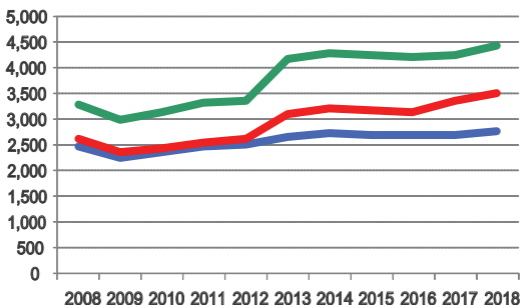
RM/m²



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

Office/Commercial

RM/m²

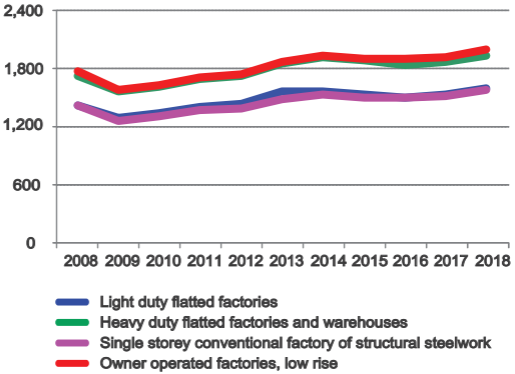


- Average standard offices, high rise
- Prestige offices, high rise
- Shopping Centres

All costs are at an average level unless otherwise stated

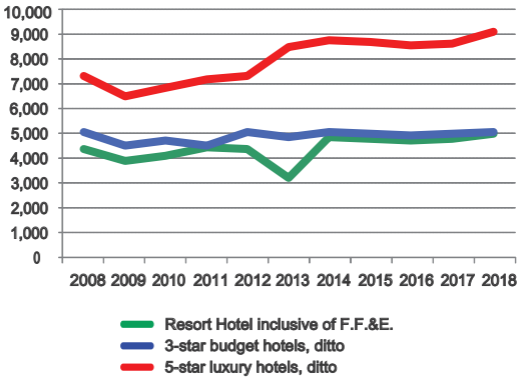
Industrial

RM/m²



Hotels

RM/m²



All costs are at an average level unless otherwise stated

1 CONSTRUCTION COST DATA

CONSTRUCTION COSTS FOR KUALA LUMPUR

	RM/m ²								
	BUILDING		SERVICES		TOTAL				
<u>DOMESTIC</u>									
Detached houses (mass housing)	1,620	-	2,230	795	-	1,065	2,415	-	3,295
Detached houses (high end)	2,285	-	3,040	800	-	1,065	3,085	-	4,105
Terraced houses	725	-	1,135	195	-	305	920	-	1,440
Average standard apartments, high rise	1,140	-	1,925	310	-	500	1,450	-	2,425
Luxury apartments, high rise	2,170	-	3,575	800	-	1,105	2,970	-	4,680
Low cost housing	440	-	525	110	-	130	550	-	655
Low cost flats, low rise (<6 levels)	615	-	720	180	-	215	795	-	935
Low cost flats, high rise (<15 levels)	720	-	925	250	-	325	970	-	1,250
<u>OFFICE / COMMERCIAL</u>									
Average standard offices, high rise	1,515	-	1,935	885	-	1,170	2,400	-	3,105
Prestige offices, high rise	2,205	-	3,505	1,405	-	1,735	3,610	-	5,240
Shopping centres	1,995	-	2,765	840	-	1,415	2,835	-	4,180
<u>HOTELS</u>									
Resort hotels, inclusive of F.F.&E.	3,250	-	3,725	1,270	-	1,700	4,520	-	5,425
3-star budget hotels, ditto	3,375	-	4,630	880	-	1,210	4,255	-	5,840
5-star luxury hotels, ditto	6,270	-	7,830	1,830	-	2,350	8,100	-	10,180

INDUSTRIAL									
Light duty flatted factories	895	-	1,025	580	-	665	1,475	-	1,690
Heavy duty flatted factories and warehouses	1,165	-	1,315	640	-	725	1,805	-	2,040
Single storey conventional factory of structural steelwork	985	-	1,275	345	-	525	1,330	-	1,800
Owner operated factories, low rise	1,305	-	1,535	490	-	645	1,795	-	2,180
OTHERS									
Basement car parks (<3 levels)	930	-	1,535	370	-	680	1,300	-	2,215
Elevated car parks (<4 levels)	735	-	1,105	185	-	335	920	-	1,440
Primary and Secondary schools	840	-	1,040	200	-	245	1,040	-	1,285
Student hostels	995	-	1,175	245	-	340	1,240	-	1,515
Sports clubs inclusive of F.F.&E.	1,930	-	2,320	550	-	725	2,480	-	3,045

The above costs are at 4th Quarter 2018 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR JOHOR BAHRU

	RM/m ²		
	BUILDING	SERVICES	TOTAL
<u>DOMESTIC</u>			
Detached houses (mass housing)	1,650	750	2,400
Detached houses (high end)	2,250	800	3,050
Terraced houses	800	200	1,000
Average standard apartments, high rise	1,200	300	1,500
Luxury apartments, high rise	2,435	600	3,035
Low cost housing	450	105	555
Low cost flats, low rise (<6 levels)	600	155	755
Low cost flats, high rise (<15 levels)	685	230	915
<u>OFFICE / COMMERCIAL</u>			
Average standard offices, high rise	1,500	775	2,275
Prestige offices, high rise	2,150	1,350	3,500
Shopping centres	1,950	855	2,805
<u>HOTELS</u>			
Resort hotels, inclusive of F.F.&E.	3,250	1,250	4,500
3-star budget hotels, ditto	3,350	780	4,130
5-star luxury hotels, ditto	6,050	1,900	7,950

INDUSTRIAL									
Light duty flatted factories	900	-	915	520	-	675	1,420	-	1,590
Heavy duty flatted 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
OTHERS									
Basement car parks (<3 levels)	1,110	-	1,450	350	-	600	1,460	-	2,050
Elevated car parks (<4 levels)	700	-	850	210	-	290	910	-	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 2018 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR PENANG

	RM/m ²			
	BUILDING	SERVICES	TOTAL	
<u>DOMESTIC</u>				
Detached houses (mass housing)	1,454	918	2,372	2,754
Detached houses (high end)	1,938	826	2,764	2,927
Terraced houses	714	153	867	1,320
Average standard apartments, high rise	1,069	320	1,389	1,754
Luxury apartments, high rise	1,632	755	2,387	3,162
Low cost housing	459	87	546	592
Low cost flats, low rise (<6 levels)	561	145	706	801
Low cost flats, high rise (<15 levels)	781	121	903	991
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,433	867	2,300	2,805
Prestige offices, high rise	1,950	1,350	3,300	4,335
Shopping centres	1,577	847	2,424	3,108
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	2,907	1,148	4,055	4,753
3-star budget hotels, ditto	2,947	969	3,916	5,585
5-star luxury hotels, ditto	5,712	1,923	7,635	9,171

INDUSTRIAL									
Light duty flattened factories	775	-	918	530	-	714	1,306	-	1,632
Heavy duty flattened factories and warehouses	923	-	1,122	597	-	760	1,520	-	1,882
Single storey conventional factory of structural steelwork	785	-	949	495	-	571	1,280	-	1,520
Owner operated factories, low rise	1,020	-	1,265	510	-	612	1,530	-	1,877
OTHERS									
Basement car parks (<3 levels)	842	-	1,387	326	-	561	1,168	-	1,948
Elevated car parks (<4 levels)	622	-	842	192	-	326	814	-	1,168
Primary and Secondary schools	673	-	898	199	-	255	872	-	1,153
Student hostels	867	-	984	214	-	281	1,081	-	1,265
Sports clubs inclusive of F.F.&E.	1,581	-	1,800	541	-	714	2,122	-	2,514

The above costs are at 4th Quarter 2018 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR KOTA KINABALU

	RM/m ²			
	BUILDING	SERVICES	TOTAL	TOTAL
<u>DOMESTIC</u>				
Detached houses (mass housing)	1,540	430	1,970	2,190
Detached houses (high end)	2,350	1,015	3,365	4,110
Terraced houses	790	285	1,075	1,390
Average standard apartments, high rise	1,050	355	1,405	2,010
Luxury apartments, high rise	2,460	945	3,405	4,060
Low cost housing	420	120	540	625
Low cost flats, low rise (<6 levels)	540	165	705	775
Low cost flats, high rise (<15 levels)	610	210	820	890
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,580	880	2,460	2,805
Prestige offices, high rise	2,240	1,465	3,705	4,980
Shopping centres	1,610	880	2,490	3,195
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	3,340	1,190	4,530	5,000
3-star budget hotels, ditto	4,070	1,450	5,520	6,140
5-star luxury hotels, ditto	6,310	2,325	8,635	9,935

INDUSTRIAL									
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
OTHERS									
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 2018 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR KUCHING

	RM/m ²			TOTAL
	BUILDING	SERVICES		
<u>DOMESTIC</u>				
Detached houses (mass housing)	1,175 -	1,310	480 -	630
Detached houses (high end)	1,785 -	2,950	830 -	985
Terraced houses	1,030 -	1,080	170 -	210
Average standard apartments, high rise	1,215 -	1,320	310 -	410
Luxury apartments, high rise	1,815 -	1,980	945 -	1,200
Low cost housing	575 -	635	115 -	145
Low cost flats, low rise (<6 levels)	795 -	830	160 -	190
Low cost flats, high rise (<15 levels)	845 -	920	165 -	240
			1,655 -	1,940
			2,615 -	3,935
			1,200 -	1,290
			1,525 -	1,730
			2,760 -	3,180
			690 -	780
			955 -	1,020
			1,010 -	1,160
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,570 -	1,840	930 -	1,095
Prestige offices, high rise	1,870 -	2,985	1,570 -	1,690
Shopping centres	1,765 -	1,845	810 -	1,005
			2,500 -	2,935
			3,440 -	4,675
			2,575 -	2,850
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	2,815 -	3,330	1,405 -	1,690
3-star budget hotels, ditto	3,010 -	3,330	1,590 -	1,740
5-star luxury hotels, ditto	4,805 -	6,990	2,435 -	2,590
			4,220 -	5,020
			4,600 -	5,070
			7,240 -	9,580

INDUSTRIAL									
Light duty flatted factories	1,040	-	1,255	360	-	390	1,400	-	1,645
Heavy duty flatted factories and warehouses	1,120	-	1,285	415	-	490	1,535	-	1,775
Single storey conventional factory of structural steelwork	925	-	1,020	310	-	450	1,235	-	1,470
Owner operated factories, low rise	1,130	-	1,280	440	-	525	1,570	-	1,805
OTHERS									
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 2018 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m ²				
	KUALA LUMPUR	BANGKOK*	JAKARTA#	MANILA@	SINGAPORE^
DOMESTIC					
Apartments, high rise, average standard	345 - 580	703 - 871	722 - 817	937 - 1,135	1,305 - 1,485
Apartments, high rise, high end	710 - 1,120	978 - 1,207	996 - 1,124	1,265 - 2,107	2,030 - 3,045
Terraced houses, average standard	220 - 345	458 - 565	383 - 498	762 - 917	1,705 - 1,920
Detached houses, high end	740 - 980	794 - 962	1,042 - 1,165	1,631 - 2,724	2,175 - 2,900
OFFICE / COMMERCIAL					
Medium/high rise offices, average standard	575 - 745	642 - 794	712 - 789	933 - 1,076	1,705 - 1,920 ⁺
High rise offices, prestige quality	865 - 1,255	871 - 1,176	1,050 - 1,174	1,264 - 1,390	1,920 - 2,100 ⁺
Out-of-town shopping centre, average standard	550 - 715	626 - 810	611 - 675	762 - 935	1,920 - 2,030
Retail malls, high end	680 - 1,000	840 - 886	675 - 730	1,093 - 1,508	2,030 - 2,245
HOTELS					
Budget hotels - 3 star, mid market	1,020 - 1,395	1,146 - 1,268	1,237 - 1,461	1,195 - 1,312	2,140 - 2,355
Business hotels - 4/5 star	1,720 - 2,175	1,466 - 1,680	1,691 - 1,827	1,347 - 1,607	2,755 - 3,115
Luxury hotels - 5 star	1,940 - 2,435	1,711 - 1,986	1,801 - 2,030	1,851 - 2,524	2,755 - 3,115

INDUSTRIAL									
Industrial units, shell only. (Conventional single storey framed units).	320 - 430	489 - 611	327 - 356	485 - 538	725 - 930				
Owner operated factories, low rise, light weight industry	430 - 520	N/A	355 - 392	685 - 789	N/A				
OTHERS									
Underground/basement car parks (<3 levels)	310 - 530	550 - 733	505 - 619	494 - 610	930 - 1,255				
Multi storey car parks, above ground (<4 levels)	220 - 345	183 - 299	327 - 356	475 - 661	640 - 930++				
Schools (primary & secondary)	250 - 305	N/A	N/A	701 - 952	N/A				
Students' residences	295 - 360	N/A	N/A	742 - 937	1,560 - 1,705				
Sports clubs, multi purpose sports/leisure centres (dry sports)	595 - 730	N/A	1,095 - 1,640	1,186 - 1,699	1,955 - 2,100				
General hospitals - public sector	855 - 1,155	N/A	N/A	1,287 - 1,523	2,755 - 2,900				
Exchange Rate Used : US\$1 =	RM 4.18	BAHT 32.73	IDR 15,180	PHP 52.88	S\$ 1.38				

The above costs are at 4th Quarter 2018 levels, inclusive of preliminaries but exclusive of contingencies.

* Rates exclude VAT and contingencies.

Rates are nett of VAT.

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

^ Rates are nett of GST and exclusive of contingencies.

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

++ Open all sides with parapet.

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CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m ²			
	HO CHI MINH#	INDIA *	HONG KONG ^	MACAU\$
<u>DOMESTIC</u>				
Apartments, high rise, average standard	645 - 800	576 - 660	3,060 - 3,570	2,279 - 2,788
Apartments, high rise, high end	820 - 940	869 - 1,047	4,020 - 4,690	3,183 - 4,864
Terraced houses, average standard	435 - 510	398 - 419	4,130 - 4,860	3,884 - 4,635
Detached houses, high end	495 - 605	525 - 550	6,140 up	4,737 - 6,163
<u>OFFICE / COMMERCIAL</u>				
Medium/high rise offices, average standard	755 - 875	435 - 471	2,990 - 3,500	2,623 - 3,387
High rise offices, prestige quality	870 - 1,185	544 - 576	3,630 - 4,260	3,387 - 3,705
Out-of-town shopping centre, average standard	N/A	424 - 461	2,970 - 3,540	2,470 - 3,705
Retail malls, high end	705 - 920	592 - 639	3,950 - 4,720	3,884 - 4,686
<u>HOTELS</u>				
Budget hotels - 3 star, mid market	1,400 - 1,710	817 - 905	3,840 - 4,160	3,451 - 3,909
Business hotels - 4/5 star	N/A	1,272 - 1,508	4,020 - 4,720	4,686 - 5,602
Luxury hotels - 5 star	1,765 - 2,120	1,607 - 1,759	4,720 - 5,460	5,602 - 6,621

INDUSTRIAL						
Industrial units, shell only. (Conventional single storey framed units).	310 - 390	340 - 398	N/A	N/A	N/A	N/A
Owner operated factories, low rise, light weight industry	350 - 460	361 - 424	2,330 - 2,950			
OTHERS						
Underground/basement car parks (<3 levels)	640 - 765	288 - 309	3,200 - 3,840	2,050 - 3,005		
Multi storey car parks, above ground (<4 levels)	410 - 450	230 - 252	1,920 - 2,280	1,133 - 1,490		
Schools (primary & secondary)	540 - 590	285 - 324	2,520 - 2,710	2,266 - 2,623		
Students' residences	540 - 695	309 - 340	2,930 - 3,310	1,795 - 2,088		
Sports clubs, multi purpose sports/leisure centres (dry sports)	800 - 855	602 - 628	3,820 - 4,450	N/A		
General hospitals - public sector	N/A	660 - 723	4,950 - 5,580	N/A		
Exchange Rate Used : US\$1 =	VND 22,600	INR 71.90	HK\$ 7.82			MOP 8.07

The above costs are at 4th Quarter 2018 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.

^ 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 ²			
	BEIJING*	SHANGHAI*	SHENZHEN/ GUANGZHOU*	CHONGQING/ CHENGDU*
DOMESTIC				
Apartments, high rise, average standard	613 - 673	668 - 740	534 - 590	552 - 661
Apartments, high rise, high end	1,484 - 1,690	1,554 - 1,697	874 - 958	907 - 1,149
Terraced houses, average standard	447 - 522	446 - 477	405 - 446	445 - 541
Detached houses, high end	673 - 749	666 - 740	553 - 609	591 - 682
OFFICE / COMMERCIAL				
Medium/high rise offices, average standard	857 - 1,154	868 - 1,156	777 - 860	882 - 1,025
High rise offices, prestige quality	1,154 - 1,895	1,158 - 1,445	1,132 - 1,361	1,122 - 1,520
Out-of-town shopping centre, average standard	653 - 873	N/A	749 - 822	706 - 912
Retail malls, high end	1,181 - 1,626	1,228 - 1,585	1,088 - 1,521	1,067 - 1,505
HOTELS				
Budget hotels - 3 star, mid market	966 - 1,191	952 - 1,169	985 - 1,084	958 - 1,189
Business hotels - 4/5 star	1,615 - 2,132	1,556 - 2,120	1,592 - 2,273	1,747 - 2,188
Luxury hotels - 5 star	2,057 - 2,646	2,117 - 2,538	2,165 - 2,386	2,159 - 2,592

INDUSTRIAL						
Industrial units, shell only. (Conventional single storey framed units).	270 - 329	280 - 342	497 - 547	426 - 542		
Owner operated factories, low rise, light weight industry	522 - 598	432 - 540	N/A	N/A		
OTHERS						
Underground/basement car parks (<3 levels)	746 - 820	742 - 1,033	513 - 820	413 - 589		
Multi storey car parks, above ground (<4 levels)	449 - 454	382 - 532	367 - 404	324 - 405		
Schools (primary & secondary)	520 - 671	528 - 676	407 - 448	438 - 487		
Students' residences	368 - 520	377 - 527	264 - 297	N/A		
Sports clubs, multi purpose sports/leisure centres (dry sports)	890 - 897	955 - 1,172	754 - 832	N/A		
General hospitals - public sector	1,170 - 1,465	1,418 - 1,839	N/A	N/A		
Exchange Rate Used : US\$1 =	RMB 6.94	RMB 6.94	RMB 6.94	RMB 6.94		

The above costs are at 4th Quarter 2018 levels, inclusive of preliminaries but exclusive of contingencies.

* Rates are exclusive of contingencies. Houses are built to shell and core standard only, where all tenant or occupant areas are unfurnished. 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 ³ 15.0 - 25.0	18.0 - 30.0	18.0 - 35.0	14.0	22.0
2. Excavating for footings ≤ 1.5m deep	m ³ 15.0 - 25.0	18.0 - 22.0	18.0 - 35.0	20.0	22.0
3. Remove excavated materials off site	m ³ 20.0 - 30.0	15.0 - 30.0	18.0 - 28.0	20.0	25.0
4. Hardcore bed blinded with fine materials	m ³ 72.0 - 95.0	80.0 - 100.0	75.0 - 120.0	100.0	105.0
5. Mass concrete grade 15	m ³ 240.0 - 315.0	240.0 - 280.0	215.0	345.0	360.0
6. Reinforced concrete grade 30	m ³ 260.0 - 320.0	260.0 - 300.0	265.0	395.0	400.0
7. Mild steel rod reinforcement	kg 3.40 - 3.80	3.20 - 3.80	3.50 - 3.70	4.00	3.90
8. High tensile rod reinforcement	kg 3.40 - 3.80	3.20 - 3.80	3.50 - 3.70	4.00	3.90
9. Sawn formwork to soffits of suspended slabs	m ² 38.0 - 45.0	38.0 - 45.0	40.0 - 50.0	45.0	48.0
10. Sawn formwork to columns and walls	m ² 38.0 - 45.0	38.0 - 45.0	40.0 - 50.0	45.0	48.0
11. 112.5mm thick brick walls	m ² 42.0 - 50.0	42.0 - 50.0	40.0 - 55.0	50.0	50.0
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m ² 65.0 - 70.0	75.0 - 95.0	80.0	96.0*	100.0
13. Aluminium casement windows, single glazed	m ² 380.0 - 600.0	220.0 - 420.0	300.0 - 380.0	250.0 - 350.0	360.0

14. Structural steelwork - beams, stanchions and the like	kg	7.50 - 9.50	6.50 - 8.00	5.50 - 7.00	7.00 - 7.50	9.00
15. Steelwork - angles, channels, flats and the like	kg	7.50 - 9.50	6.50 - 8.00	5.50 - 7.00	6.50 - 7.00	9.00
16. 25mm cement and sand (1:3) paving	m ²	17.0 - 25.0	20.0 - 28.0	18.0 - 25.0	25.0	25.0
17. 20mm cement and sand (1:4) plaster to walls	m ²	18.0 - 25.0	22.0 - 28.0	25.0 - 35.0	25.0	25.0
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	50.0 - 70.0	60.0 - 90.0	65.0 - 90.0	80.0	100.0
19. 12mm fibrous plasterboard ceiling lining	m ²	35.0 - 45.0	35.0 - 45.0	35.0 - 50.0	48.0	62.0
20. Two coats of emulsion paint to plastered surfaces	m ²	3.50 - 5.00	4.00 - 8.50	3.50 - 5.50	7.80	10.0
Average expected preliminaries	%	6 - 15	3 - 6	7 - 12	5 - 7	10

The above costs are at 4th Quarter 2018 levels, exclusive of contingencies and preliminaries.

* Rate for "Kliplok Colorbond" 0.54mm profiled steel sheeting.

MAJOR RATES FOR SELECTED ASIAN CITIES

	KUALA LUMPUR RM	BANGKOK* BAHT	JAKARTA* IDR'000	MANILA PHP	SINGAPORE® S\$
1. Excavating basement ≤ 2m deep	m ³ 15 - 25	120 - 140	40	270	20
2. Excavating for footings ≤ 1.5m deep	m ³ 15 - 25	140 - 180	75	500	20
3. Remove excavated materials off site	m ³ 20 - 30	120 - 150	35	350	15 - 20
4. Hardcore bed blinded with fine materials	m ³ 72 - 95	650 - 750	650	1,800	50
5. Mass concrete grade 15	m ³ 240 - 315	2,300 - 2,500	950	3,400	175 - 185+
6. Reinforced concrete grade 30	m ³ 260 - 320	2,600 - 2,800	1,135	4,800	115 - 120
7. Mild steel rod reinforcement	kg 3.40 - 3.80	26 - 29	12.5	54	1.25 - 1.35
8. High tensile rod reinforcement	kg 3.40 - 3.80	26 - 28	12.5	55	1.25 - 1.35
9. Sawn formwork to soffits of suspended slabs	m ² 38 - 45	420 - 480	200	1,000	40
10. Sawn formwork to columns and walls	m ² 38 - 45	420 - 480	195	950	40
11. 112.5mm thick brick walls	m ² 42 - 50	650 - 750	250	N/A	35 - 40
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m ² 65 - 70	1,200	300	1,400	43
13. Aluminium casement windows, single glazed	m ² 380 - 600	7,000	1,650	11,500*	290
14. Structural steelwork - beams, stanchions and the like	kg 7.50 - 9.50	60 - 75	27	160	4.00 - 4.50
15. Steelwork - angles, channels, flats and the like	kg 7.50 - 9.50	60 - 75	27	160	4.00 - 4.50
16. 25mm cement and sand (1:3) paving	m ² 17 - 25	200 - 240	90	650	21

17. 20mm cement and sand (1:4) plaster to walls	m ²	18 - 25	220 - 260	100	700	22
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	50 - 70	1,200	200	1,800	74
19. 12mm fibrous plasterboard ceiling lining	m ²	35 - 45	750 - 850	215 ^{\$}	1,400	30
20. Two coats of emulsion paint to plastered surfaces	m ²	3.50 - 5.00	120 - 160	30	500	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.

\$ 9mm gypsum board.

Aluminium with anodized finish; 6mm thick.

@ Rates are nett of GST.

+ Rate for lean concrete blinding.

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MAJOR RATES FOR SELECTED ASIAN CITIES

	HO CHI MINH ^A VND	INDIA* INR	HONG KONG HK\$	MACAU MOP
1. Excavating basement ≤ 2m deep	m ³ 92,400	199	200	150
2. Excavating for footings ≤ 1.5m deep	m ³ 92,400	225	180	180
3. Remove excavated materials off site	m ³ 84,700	N/A	300 [#]	150
4. Hardcore bed blinded with fine materials	m ³ 280,900	4,620	950	1,200
5. Mass concrete grade 15	m ³ 1,696,400	6,248	1,100	1,350
6. Reinforced concrete grade 30	m ³ 1,865,650	7,822	1,200	1,250
7. Mild steel rod reinforcement	kg 19,764	70	9.70	9.00
8. High tensile rod reinforcement	kg 19,908	72	9.70	9.00
9. Sawn formwork to soffits of suspended slabs	m ² 215,000	708	410	280
10. Sawn formwork to columns and walls	m ² 245,000	761	410	280
11. 112.5mm thick brick walls	m ² 312,780	1,155	400	450
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m ² 401,110 - 597,600	1,785	1,000	N/A
13. Aluminium casement windows, single glazed	m ² 6,315,000	6,300	3,800	4,000
14. Structural steelwork - beams, stanchions and the like	kg 52,650	126	36	35
15. Steelwork - angles, channels, flats and the like	kg 52,650	126	42	40
16. 25mm cement and sand (1:3) paving	m ² 94,000	498	160	120

17. 20mm cement and sand (1:4) plaster to walls	m ²	144,000	409	165	150
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	674,180	1,785	400	450
19. 12mm fibrous plasterboard ceiling lining	m ²	234,000	1,417	600	650
20. Two coats of emulsion paint to plastered surfaces	m ²	88,900	252	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.

^ 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.

Rate including dumping charges.

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MAJOR RATES FOR SELECTED ASIAN CITIES

	BEIJING RMB	SHANGHAI RMB	SHENZHEN/ GUANGZHOU RMB	CHONGQING/ CHENGDU RMB
1. Excavating basement ≤ 2m deep	30	30	30	30
2. Excavating for footings ≤ 1.5m deep	33	30	30	26
3. Remove excavated materials off site	60	135	105	95
4. Hardcore bed blinded with fine materials	180	190	190	170
5. Mass concrete grade 15	530	540	540	420
6. Reinforced concrete grade 30	550	570	580	550
7. Mild steel rod reinforcement	5.60	5.80	6.00	5.30
8. High tensile rod reinforcement	5.60	5.80	6.00	5.30
9. Sawn formwork to soffits of suspended slabs	90	90	90	65
10. Sawn formwork to columns and walls	85	90	85	60
11. 112.5mm thick brick walls	80	90*	80	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	650+
14. Structural steelwork - beams, stanchions and the like	11	11	12.50	11.00
15. Steelwork - angles, channels, flats and the like	9.50	9.50	11.50	11.10
16. 25mm cement and sand (1:3) paving	32	35	35	25

17. 20mm cement and sand (1:4) plaster to walls	m ²	32	35	30	35
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	145	160	155	130
19. 12mm fibrous plasterboard ceiling lining	m ²	162	150	190	150
20. Two coats of emulsion paint to plastered surfaces	m ²	32	40	35	35
Average expected preliminaries	%	7 - 10	5 - 10	5 - 12	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.

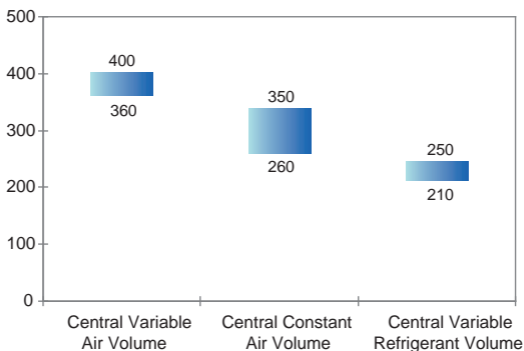
+ Rate for double glazed window.

1 CONSTRUCTION COST DATA

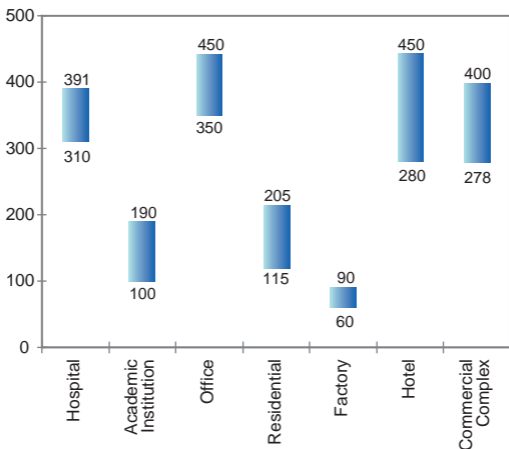
ACMV COSTS FOR VARIOUS DESIGNS & DEVELOPMENTS IN KUALA LUMPUR

ACMV : Air Conditioning & Mechanical Ventilation System

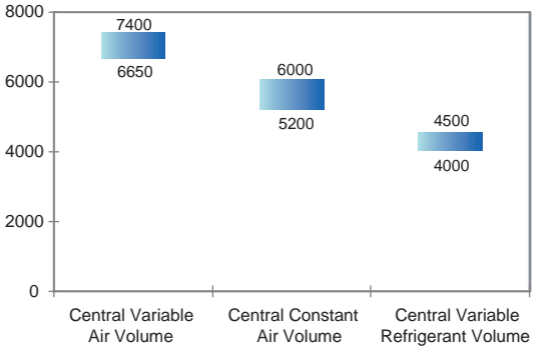
RM/m² of Construction Floor Area



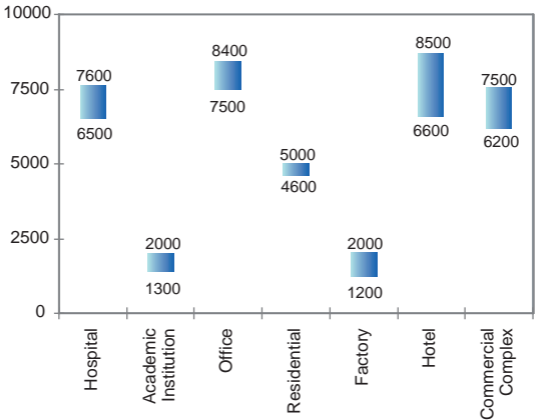
RM/m² of Construction Floor Area



RM/Tonne of Refrigeration



RM/Tonne of Refrigeration



M&E COSTS FOR SELECTED ASIAN CITIES

	KUALA LUMPUR RM/m ²	BANGKOK [®] BAHT/m ²	JAKARTA [#] IDR '000/m ²	MANILA ^{\$} PHP/m ²	SINGAPORE [^] S\$/m ²
<u>MECHANICAL SERVICES</u>					
Offices	320 - 490	4,400 - 4,800	1,028 - 1,183	4,000 - 5,930	153 - 249
Industrial*	85 - 190	1,550 - 1,600	466 - 744	800 - 1,500	34 - 117
Hotels	300 - 590	4,600 - 5,100	1,022 - 1,210	3,500 - 9,670	129 - 278
Shopping Centres	300 - 475	4,600 - 4,800	905 - 1,087	2,890 - 6,840	147 - 246
Apartments	120 - 210	4,300 - 4,500	915 - 1,001	1,360 - 4,430	90 - 170
<u>ELECTRICAL SERVICES</u>					
Offices	290 - 460	3,400 - 3,800	830 - 1,060	3,700 - 7,000	158 - 258
Industrial**	145 - 190	1,950 - 2,200	589 - 833	2,000 - 3,500	55 - 136
Hotels	295 - 550	3,800 - 4,500	835 - 937	4,700 - 12,000	181 - 356
Shopping Centres	295 - 460	2,800 - 3,200	723 - 910	3,600 - 6,000	160 - 304
Apartments	105 - 210	2,800 - 3,350	878 - 1,049	3,600 - 6,800	97 - 213
<u>HYDRAULIC SERVICES</u>					
Offices	35 - 65	780 - 900	209 - 294	1,230 - 2,200	26 - 55
Industrial	40 - 50	750 - 790	139 - 214	800 - 1,300	18 - 36
Hotels	175 - 270	1,400 - 1,650	835 - 1,054	2,250 - 6,820	91 - 172
Shopping Centres	30 - 35	790 - 950	198 - 305	1,220 - 1,600	46 - 80
Apartments	50 - 100	1,200 - 1,400	889 - 1,124	2,250 - 3,600	72 - 146

<u>FIRE SERVICES</u>									
Offices	60 - 80	780 - 850	284 - 375	950 - 1,560	33 - 56				
Industrial	45 - 65	730 - 750	150 - 214	800 - 2,000	23 - 51				
Hotels	65 - 90	780 - 890	284 - 332	1,100 - 2,030	28 - 57				
Shopping Centres	55 - 80	780 - 820	278 - 326	1,090 - 1,730	37 - 56				
Apartments	15 - 30	720 - 850	294 - 343	900 - 1,300	25 - 43				
<u>LIFTS / ESCALATORS</u>									
Offices	125 - 350	1,100 - 1,350	444 - 1,065	1,600 - 4,620	63 - 162				
Industrial	55 - 180	N/A	N/A	0 - 400	41 - 104				
Hotels	100 - 285	1,100 - 1,400	434 - 707	1,800 - 3,400	49 - 108				
Shopping Centres	95 - 120	250 - 450	326 - 878	1,600 - 2,680	56 - 90				
Apartments	65 - 110	500 - 580	434 - 798	850 - 3,440	41 - 100				

The above costs are at 4th Quarter 2018 levels, exclusive of contingencies unless otherwise stated.

* Generally without air condition.

** Excludes special power supply.

@ Based upon nett enclosed area and nett of VAT.

All rates are nett of VAT. Rates for Electrical Services are excluding genset. Rates for Hydraulic Services are excluding STP.

Rates for Mechanical Services refers to ACMV Rates only.

\$ Transformer included in Electrical Services.

^ Rates are nett of GST and excluding BAS.

(Cont'd)

M&E COSTS FOR SELECTED ASIAN CITIES

	HO CHI MINH VND('000)/m ²	INDIA# INR/m ²	HONG KONG HK\$/m ²	MACAU MOP/m ²
<u>MECHANICAL SERVICES</u>				
Offices	2,036 - 2,902	4,800 - 6,805	1,900 - 2,700	N/A
Industrial*	N/A	2,210 - 3,925	160 - 260	N/A
Hotels	N/A	5,880 - 6,420	2,100 - 2,650	2,640 - 3,050
Shopping Centres	N/A	4,585 - 6,005	2,200 - 2,750	2,400 - 3,000
Apartments	1,537 - 2,106	2,620 - 3,245	850 - 2,000up	900 - 1,200
<u>ELECTRICAL SERVICES</u>				
Offices	2,275 - 2,723	4,250 - 5,840	1,750 - 2,450	N/A
Industrial**	N/A	2,500 - 4,150	620 - 860	N/A
Hotels	N/A	4,710 - 6,425	1,900 - 2,600	2,640 - 3,150
Shopping Centres	N/A	4,050 - 5,420	1,800 - 2,450	2,640 - 3,000
Apartments	2,006 - 2,534	2,040 - 2,805	1,100 - 2,100up	1,020 - 1,320
<u>HYDRAULIC SERVICES</u>				
Offices	332 - 621	740 - 1,130	700 - 900	N/A
Industrial	N/A	510 - 890	500 - 700	N/A
Hotels	N/A	3,868 - 5,825	2,000 - 3,000	1,830 - 2,240
Shopping Centres	N/A	1,100 - 1,990	700 - 900	610 - 810
Apartments	647 - 752	1,745 - 2,410	1,400 - 2,200	1,520 - 2,030

<u>FIRE SERVICES</u>					
Offices	704 - 1,167	1,185 - 1,545	550 - 700		N/A
Industrial	N/A	540 - 745	400 - 500		N/A
Hotels	N/A	1,375 - 1,760	600 - 850		910 - 1,120
Shopping Centres	N/A	1,130 - 1,310	550 - 700		610 - 810
Apartments	483 - 606	630 - 750	100 - 600		250 - 300
<u>LIFTS / ESCALATORS</u>					
Offices	670 - 1,279	985 - 1,250	700 - 1,200		N/A
Industrial	N/A	640 - 825	550 - 750		N/A
Hotels	N/A	1,430 - 2,085	550 - 850		610 - 810
Shopping Centres	1,364 - 1,931	1,675 - 2,145	850 - 1,000		460 - 710
Apartments	761 - 1,101	890 - 1,150	450 - 850		460 - 610

The above costs are at 4th Quarter 2018 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.

(Cont'd)

M&E COSTS FOR SELECTED ASIAN CITIES

	BEIJING RMB/m ²	SHANGHAI RMB/m ²	SHENZHEN/ GUANGZHOU RMB/m ²	CHONGQING/ CHENGDU RMB/m ²
<u>MECHANICAL SERVICES</u>				
Offices	775 - 1,071	790 - 1,005	775 - 1,070	730 - 990
Industrial*	170 - 280	176 - 295	155 - 285	140 - 230
Hotels	950 - 1,224	1,010 - 1,316	1,080 - 1,350	930 - 1,280
Shopping Centres	806 - 970	1,070 - 1,125	715 - 910	890 - 1,010
Apartments	143 - 459	320 - 423	152 - 410	150 - 300
<u>ELECTRICAL SERVICES</u>				
Offices	470 - 717	620 - 700	540 - 795	450 - 660
Industrial**	326 - 459	311 - 440	320 - 459	260 - 360
Hotels	719 - 962	677 - 864	715 - 1,020	580 - 830
Shopping Centres	490 - 690	540 - 677	500 - 690	510 - 660
Apartments	258 - 406	262 - 383	285 - 500	230 - 340
<u>HYDRAULIC SERVICES</u>				
Offices	97 - 143	112 - 166	128 - 184	85 - 120
Industrial	97 - 143	89 - 131	89 - 124	85 - 120
Hotels	377 - 490	375 - 498	390 - 500	330 - 450
Shopping Centres	143 - 204	140 - 188	114 - 168	100 - 150
Apartments	173 - 234	171 - 231	150 - 280	100 - 180

<u>FIRE SERVICES</u>					
Offices	184 - 270	232 - 325	230 - 350	240 - 290	
Industrial	153 - 230	160 - 268	143 - 272	130 - 230	
Hotels	224 - 383	294 - 397	285 - 425	250 - 350	
Shopping Centres	224 - 383	263 - 391	248 - 383	250 - 370	
Apartments	71 - 138	56 - 105	72 - 152	60 - 110	
<u>LIFTS / ESCALATORS</u>					
Offices	294 - 577	288 - 567	295 - 517	300 - 550	
Industrial	145 - 400	139 - 402	150 - 440	150 - 350	
Hotels	232 - 520	226 - 510	250 - 480	250 - 430	
Shopping Centres	327 - 520	335 - 510	325 - 470	290 - 440	
Apartments	175 - 289	170 - 300	130 - 500	140 - 240	

The above costs are at 4th Quarter 2018 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><u>PLAYGROUND EQUIPMENTS</u> 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	55,700
<p><u>SAUNAS</u> 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	15,100
<p><u>STEAM BATHS</u> Steam bath complete with stainless steel steam generator, swing glass door, tempered glass wall, aluminium finishes, aroma pump, auto drain system, lighting and all accessories. Size 8'x8'x7'6"</p>	per room	26,200
<p><u>GOLF SIMULATOR</u> Complete high performance, commercial grade impact hitting screen. Durable, lush green, premium nylon putting turf (9.0 stimp meter). TruTrac revolutionary tracking system with illuminated hitting area. 21" touchscreen monitor, computer, and projector.</p>	per set	230,200

DESCRIPTION	UNIT	RM
<u>SQUASH COURTS</u>		
Single court with glass back wall including associated mechanical and electrical services but excluding any public facilities (enclosing structure not included)	per court	62,300
<u>TENNIS COURTS</u>		
Single court on grade with acrylic surfacing complete excluding chain link fence	per court	60,000
<u>SWIMMING POOLS</u>		
Size: 25m x 10.5m Depth: approx. 1.2m to 1.8m Outdoor swimming pool built on ground, fully tiled, completed with 5m wide deck and associated equipment	per pool	820,000
Extra for heating equipment (solar)	per pool	172,500
Extra for ozone system	per pool	241,500
Size: 25m x 10.5m Depth: approx. 1.8m to 3.0m Indoor swimming pool built with suspended structure (enclosing structure not included) fully tiled and completed with 5m wide deck, including mechanical ventilation and associated equipment	per pool	1,202,000
Extra for heating equipment (solar)	per pool	287,500
Extra for ozone system	per pool	345,000

FIT-OUT COSTS FOR KUALA LUMPUR

DESCRIPTION	RM/m ²
<u>HOTELS</u>	
Public Area (Front of House):	
3 - star Hotel	2,360 - 3,360
4 - star Hotel	3,110 - 4,100
5 - star Hotel	4,050 - above
Guest Rooms:	
3 - star Hotel	1,180 - 1,770
4 - star Hotel	1,620 - 2,700
5 - star Hotel	2,650 - above
Notes:	
1. Includes furniture, floor, wall and ceiling finishes, drapery, sanitary fittings and light fittings.	
2. Excludes partitioning, M&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.	
<u>OFFICES</u>	
General Office	460 - 640
Executive Office	620 - 1,060
Prestige Office	1,050 - above
Notes:	
1. Local furniture allowed for general offices.	
2. Includes furniture, partitioning, minor alteration to fire services, air-conditioning and suspended ceiling to suit layout.	
3. Excludes telephones, Local Area Network, office equipment (e.g. computers, photocopies, fax machines, UPS, etc).	
<u>RESTAURANTS</u>	
General dining restaurant	2,370 - 3,750
Fine dining restaurant	5,400 - above
Notes:	
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.).	



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

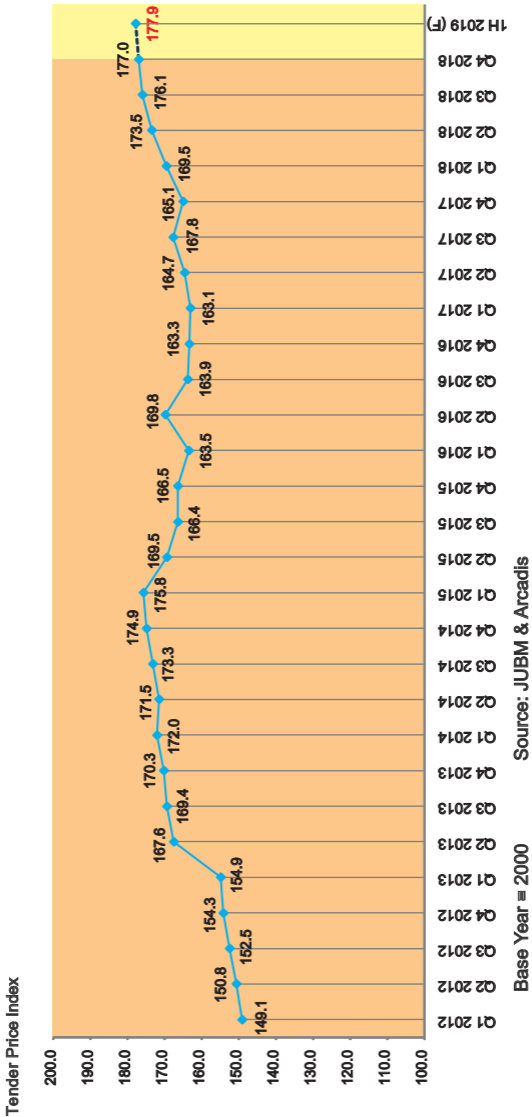
Construction Sector Indicators

Commodities Price Trend
(Jan to Oct 2018)

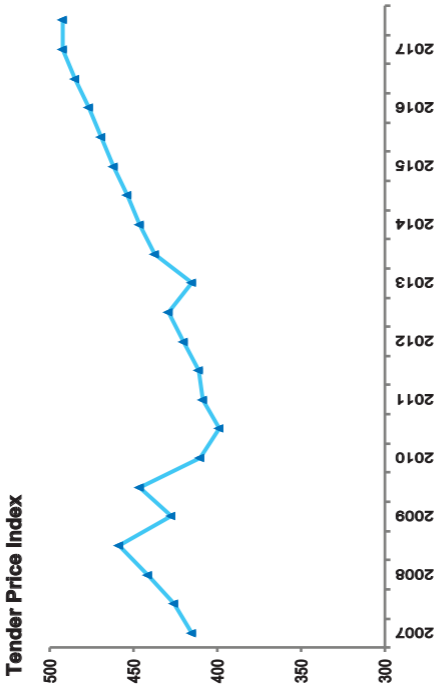
Malaysia Construction Sector
- Employment & GDP

Progress Payments

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



JKR TENDER PRICE INDEX



TENDER PRICE INDEX		
Year	1/2	2/2
2007	415.44	426.13
2008	441.68	458.76
2009	427.14	446.03
2010	410.18	398.59
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	491.96

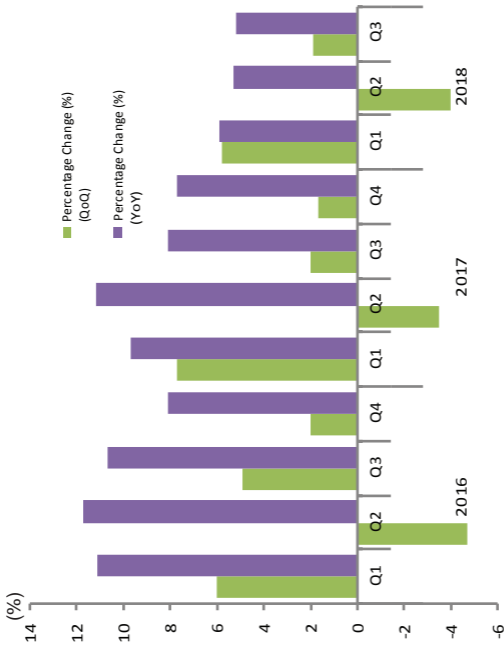
Base Year = 1980
 Source: Contract and Quantity Survey Branch, Public Works Department (JKR), Malaysia

VALUE OF CONSTRUCTION WORK DONE BY TYPE OF CONSTRUCTION ACTIVITY

Quarter / Year	Residential Buildings		Non-residential Buildings		Civil Engineering		Special Trade		Total	
	RM million	(%)	RM million	(%)	RM million	(%)	RM million	(%)	RM million	(%)
Q1/2014	7,202	28.8	8,052	32.2	8,399	33.6	1,320	5.3	24,973	100.0
Q2/2014	7,657	30.4	8,157	32.4	8,167	32.4	1,192	4.7	25,173	100.0
Q3/2014	7,598	30.0	8,724	34.5	7,838	31.0	1,141	4.5	25,301	100.0
Q4/2014	8,059	29.7	9,382	34.6	8,285	30.6	1,373	5.1	27,099	100.0
Q1/2015	8,606	29.9	10,006	34.8	8,753	30.5	1,376	4.8	28,741	100.0
Q2/2015	8,253	30.3	9,418	34.6	8,288	30.4	1,280	4.7	27,239	100.0
Q3/2015	8,227	28.5	9,937	34.5	9,330	32.4	1,340	4.6	28,834	100.0
Q4/2015	8,760	29.1	9,719	32.3	10,217	33.9	1,433	4.8	30,129	100.0
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

Source: Quarterly Construction Statistics, Department of Statistics Malaysia

PERFORMANCE OF THE CONSTRUCTION SECTOR



	No. of Project	Value of Work Done (RM'000)	Percentage Change (%) (QoQ) (YoY)
2016	Q1	31,941,170	6.0
	Q2	30,427,274	-4.7
	Q3	31,909,993	4.9
	Q4	32,559,568	2.0
2017	Q1	35,053,464	7.7
	Q2	33,825,084	-3.5
	Q3	34,495,002	2.0
	Q4	35,077,956	1.7
2018	Q1	37,123,931	5.8
	Q2	35,624,699	-4.0
	Q3	36,287,482	1.9

Source: Quarterly Construction Statistics, Department of Statistics Malaysia

ESTIMATING RULES OF THUMB

Composition of Concrete (per m³)

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

Weight of Concrete Items

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

Average Loads

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

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 ³ /m ²	to	0.6 m ³ /m ²
Formwork/floor area	2.2 m ² /m ²	to	3.0 m ² /m ²
Reinforcement/concrete vol.	160 kg/m ³	to	250 kg/m ³

Average External Wall/Floor Ratio

Residential Apartments	1.0 m ² /m ²
Office, Hotel	0.4 m ² /m ²
Industrial	0.4 m ² /m ²

Average Internal Wall/Floor Ratio

Residential Apartments	1.0 m ² /m ²
Office	0.5 m ² /m ²
Hotel	1.5 m ² /m ²

Air - Conditioning

Average	0.05 tonne/m ² of floor area
---------	---

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 Feld	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 ²
		Size mm	Spacing mm	Size mm	Spacing mm	Main mm ² /m	Cross mm ² /m	
SQUARE MESHES								
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
RECTANGULAR MESHES								
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 ²)	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

2018	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	2.31	2.31	2.31	48.01	78.83	40.25	18.05	18.41	19.72
Feb	2.24	2.24	2.24	47.64	78.83	44.00	18.06	18.64	19.72
Mar	2.17	2.17	2.17	47.64	78.83	44.00	17.87	18.64	19.72
Apr	2.18	2.18	2.18	48.35	78.00	44.00	17.88	18.64	19.72
May	2.18	2.18	2.18	46.13	78.00	46.00	17.88	18.64	19.72
Jun	2.18	2.18	2.18	44.94	78.00	41.50	17.26	18.37	19.49
Jul	2.18	2.18	2.18	48.06	56.06	43.00	17.26	18.37	19.46
Aug	2.18	2.18	2.18	49.34	56.06	43.00	17.65	18.37	19.46
Sep	2.18	2.18	2.18	49.47	56.06	44.00	17.68	18.26	19.18
Oct	2.18	2.18	2.18	49.49	56.06	42.50	17.48	18.26	19.18

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.

2018	Aggregates RM/Metric Ton											
	Granite 10mm (3/8")			Granite 20mm (3/4")			Granite 40mm (1 1/2")			Crusher run		
	A	B	C	A	B	C	A	B	C	A	B	C
Region												
Jan	32.78	34.85	29.97	34.83	65.19	33.63	33.02	38.58	26.97	26.87	34.79	24.00
Feb	33.20	34.85	29.97	34.98	65.19	33.63	33.03	35.93	26.97	26.97	34.19	24.00
Mar	33.20	34.85	29.97	34.73	65.19	33.63	33.03	35.93	26.97	26.71	34.19	24.00
Apr	33.20	34.85	29.97	34.73	65.19	33.63	33.03	35.93	26.97	26.71	34.19	24.00
May	33.20	34.85	29.97	34.58	65.19	33.63	33.03	35.93	25.40	26.71	34.19	24.00
Jun	32.02	28.70	29.94	33.71	63.39	30.00	31.64	33.90	24.80	25.89	32.47	22.64
Jul	32.47	28.70	29.94	33.81	63.39	30.75	32.78	33.90	24.80	26.00	32.47	24.00
Aug	32.47	28.70	29.43	33.66	63.39	31.17	32.78	33.90	25.40	26.00	32.47	24.00
Sep	32.47	29.60	29.43	33.63	63.39	31.17	32.78	33.05	25.40	26.00	32.10	24.00
Oct	32.47	29.60	29.63	33.63	63.39	31.17	32.78	33.05	25.40	26.00	31.73	24.00

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

2018	Bricks & Wall	Glass	Ceiling Materials	Roofing Materials	Timber	Plywood	Sanitary Fittings	Floor & Wall Tiles	Plumbing Materials	Steel & Metal Sections	Paints
Jan	99.7	100.0	100.0	103.6	94.9	92.4	100.1	100.5	100.5	108.3	100.7
Feb	99.7	100.0	99.6	103.6	94.9	92.4	100.6	100.9	100.7	108.5	100.9
Mar	99.8	100.0	99.6	103.6	94.9	92.4	100.6	100.9	100.7	109.0	100.9
Apr	99.8	100.0	99.6	103.6	94.9	92.4	100.6	100.4	100.7	109.2	101.0
May	99.8	100.0	99.6	103.6	94.9	92.4	100.6	100.4	100.9	109.3	100.4
Jun	96.7	100.0	96.3	100.8	94.9	92.4	95.9	97.4	98.7	106.4	96.6
Jul	96.7	100.0	96.3	101.2	91.2	90.0	95.9	97.4	98.7	106.5	96.8
Aug	96.7	100.0	96.3	101.2	91.7	90.0	95.9	97.4	98.7	106.7	96.7
Sep	96.7	100.0	97.0	101.2	91.7	90.0	95.9	98.3	98.9	106.9	97.3
Oct	97.1	100.0	97.0	101.2	91.7	90.0	95.9	99.4	98.9	107.1	98.9

Note: July 2017 = 100

Unit Price Index above are applicable for Wilayah Persekutuan Kuala Lumpur, Melaka, Negeri Sembilan and Selangor Region.

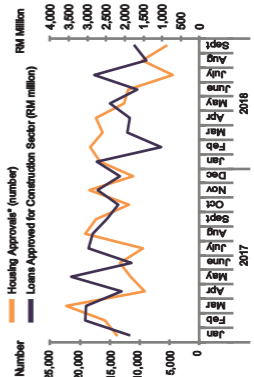
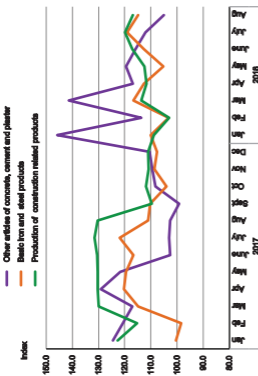
November & December rates are not available at time of printing.

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

CONSTRUCTION SECTOR INDICATORS

2018	Production* (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	145.9	110.0	108.8	16,588	2,740	
Feb	113.7	103.2	102.9	18,338	1,029	
Mar	141.4	116.7	113.7	16,182	1,942	
Apr	116.8	112.7	111.6	17,362	1,869	
May	119.4	105.1	112.5	12,658	2,396	
Jun	115.8	112.7	117.1	11,928	1,662	
Jul	112.1	119.0	119.8	4,449	2,809	
Aug	105.1	114.8	116.8	9,594	1,421	
Sep	N/A	N/A	N/A	5,552	1,722	

Note: # All rates are based on the new Industrial production Index (2010 = 100).
 * No. of housing units approved by Ministry of Housing and Local Government in Peninsular Malaysia for construction by private developer.
 Source: Monthly Statistical Bulletin, Central Bank of Malaysia.



COMMODITIES PRICE TREND (JAN TO OCT 2018)

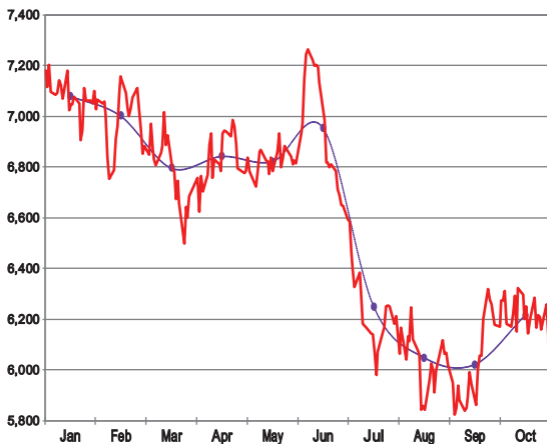
Nickel

USD/Tonne



Copper (Grade A)

USD/Tonne



Aluminium

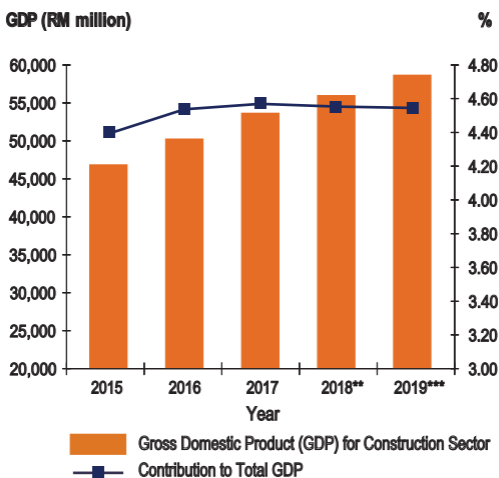
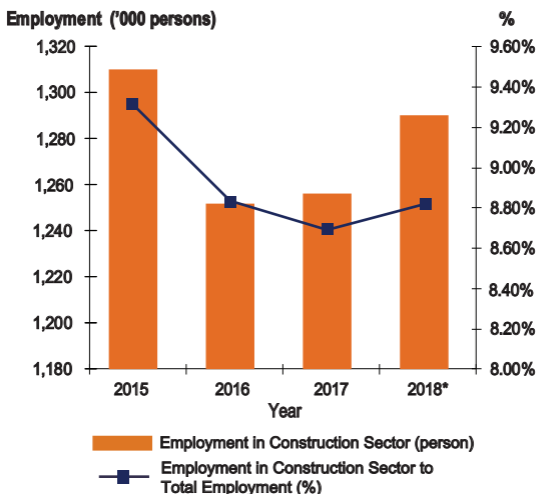
USD/Tonne



Year 2018	Aluminium	Copper (Grade A)	Nickel
	Monthly Average (USD / Tonne)		
Jan	2,213.68	7,079.45	12,871.82
Feb	2,184.25	7,000.85	13,568.75
Mar	2,075.81	6,794.74	13,395.95
Apr	2,257.68	6,841.92	13,946.58
May	2,289.55	6,820.83	14,346.90
Jun	2,239.62	6,953.55	15,103.10
Jul	2,099.40	6,248.69	13,764.05
Aug	2,045.39	6,046.33	13,439.57
Sep	2,022.00	6,019.18	12,520.50
Oct	2,033.54	6,214.57	13,319.13

Source: London Metal Exchange

MALAYSIA CONSTRUCTION SECTOR - EMPLOYMENT & GDP



Note: * For the first half 2018

** Estimate by Ministry of Finance Malaysia

*** Forecast by Ministry of Finance Malaysia

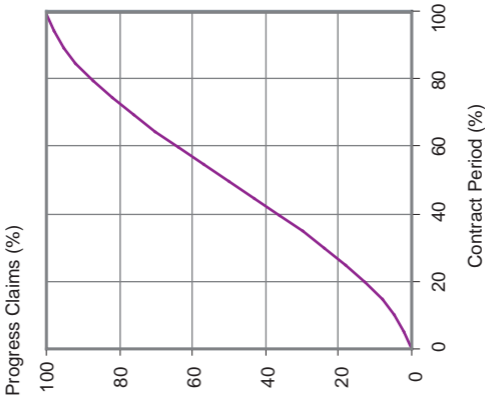
Source: Economic Report 2018/2019,
Ministry of Finance, Malaysia

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

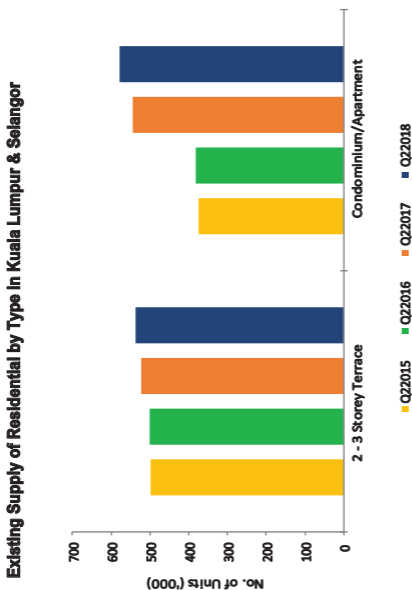
Office

Shopping Complex

Shop

Industrial

RESIDENTIAL



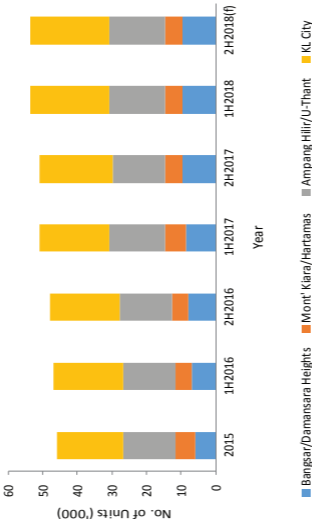
Source: Residential Property Stock Report, 2nd Quarter 2015 - 2018, by Valuation & Property Services Department.

Residential Q2 2018 ^p	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	476,628	30,660
WP Putrajaya	10,849	7,663
WP Labuan	11,921	1,191
Selangor	1,522,635	111,634
Johor	799,990	76,149
Pulau Pinang	502,886	47,387
Perak	471,638	35,665
Negeri Sembilan	266,469	21,544
Melaka	188,420	20,282
Kedah	325,669	16,758
Pahang	269,961	22,739
Terengganu	99,325	16,543
Kelantan	79,958	11,787
Perlis	25,744	1,303
Sabah	209,433	24,295
Sarawak	251,968	20,118
MALAYSIA	5,513,494	465,718

p = preliminary

Source: Residential Property Stock Report, 2nd Quarter 2018, by Valuation & Property Services Department.

Projection of Cumulative Supply for High End Condominiums / Residences 2015 - 2H2018(f)



Source: Knight Frank Real Estate Highlights 1st Half 2018

Average Asking Prices and Rentals of Existing High End Condominiums (1H 2018)

Locality	Asking Gross Rental (RM psf/month)	Average Asking Price (RM psf)
KL City*	2.20 - 5.20	660 - 1,700
Ampang Hilir / U-Thant**	2.00 - 3.50	550 - 1,200
Damansara Heights***	2.20 - 4.30	550 - 1,000
Kenny Hills	2.00 - 3.00	550 - 900
Bangsar	2.20 - 4.00	650 - 1,300
Mont Kiara****	1.80 - 3.50	500 - 850

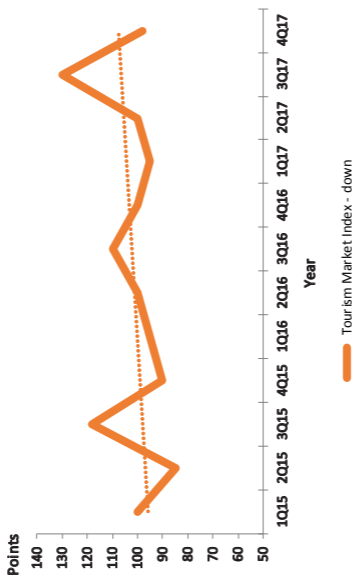
Notes:

- * Excludes Binjai on the Park and Pavilion Banyan Tree Signature but includes Pavilion Residences
- ** Excludes Seri Hening
- *** Excludes DC Residency but includes Twins @ Damansara Heights
- **** Excludes Verve Suites which comprise mainly fully furnished small units

Source: Knight Frank Real Estate Highlights 1st Half 2018

HOTEL

Tourism Market Index



Source: Malaysia Institute of Economic Research

Hotel Q2 2018 ^p	Existing Stock (Room)	Incoming Supply (Room)
WP Kuala Lumpur	39,818	5,915
WP Putrajaya	1,311	0
WP Labuan	1,675	384
Selangor	21,651	1,607
Johor	28,607	3,027
Pulau Pinang	19,278	3,306
Perak	16,365	780
Negeri Sembilan	9,357	1,502
Melaka	16,172	2,120
Kedah	16,568	994
Pahang	28,986	140
Terengganu	8,405	102
Kelantan	4,414	161
Perlis	1,118	232
Sabah	21,101	1,288
Sarawak	19,388	553
MALAYSIA	254,214	22,111

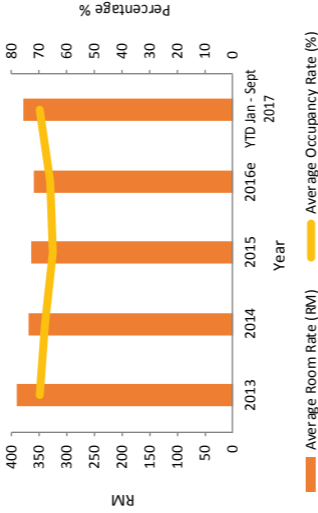
p = preliminary

Source: Leisure Property Stock Report, 1st and 2nd Quarter 2018, by Valuation & Property Services Department

Tourist Arrivals & Receipts to Malaysia

Year	Arrivals (million)	Receipts (RM billion)
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
2009	23.65	53.4
2008	22.05	49.6
2007	20.97	53.4

Performance of Hotels

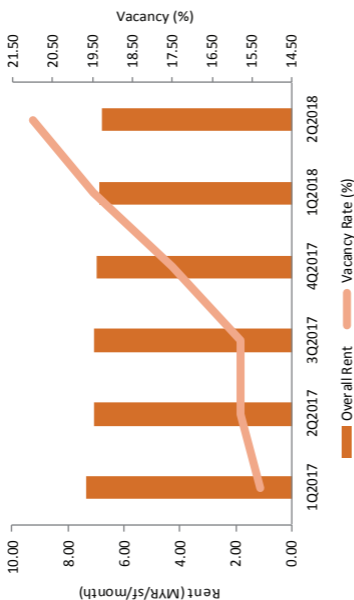


Source: 2018 Asia Pacific Real Estate Market Outlook (Malaysia), CBRE / WTW Research

Source: Tourism Malaysia

OFFICE

All Grade CBD Overall Rent & Vacancy Rate



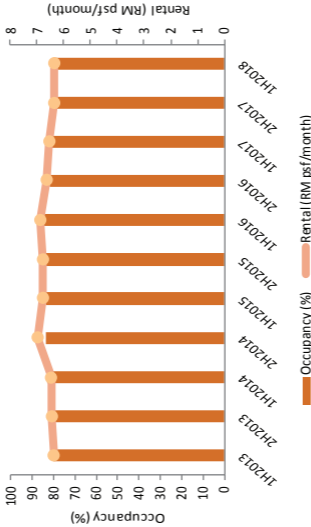
Source: Kuala Lumpur Office Marketbeats (June 2018), Cushman & Wakefield Research Publication

Selected Grade A Office Asking Rentals (1H2018)

Location	Asking Gross Rental (RM psf/month)
KL City	
Integra Tower	11.00
Menara Maxis	10.50
Vista Tower	9.00
G Tower	8.00
Menara Darussalam	8.50
Menara Binjai	8.80
Menara Hap Seng 2	7.00
KL Fringe	
Wisma Guocoland	7.00
Menara CIMB	8.00
Axiata Tower (formerly Quill 7)	7.50
1 Sentrum	7.80
The Gardens North & South Towers	7.50
Menara BRDB	6.50
Menara LGB	6.50
Beyond KL (Selangor)	
1 First Avenue	6.00
Quill 18 (Block B)	5.00
Surian Tower	5.50
The Ascent @ Paradigm	5.50
The Pinnacle	5.50
Wisma Mustapha Kamal	4.80

Source: Knight Frank Real Estate Highlights 1st Half 2018

Kuala Lumpur - Occupancy and Rental Trends 1H2013 - 1H2018



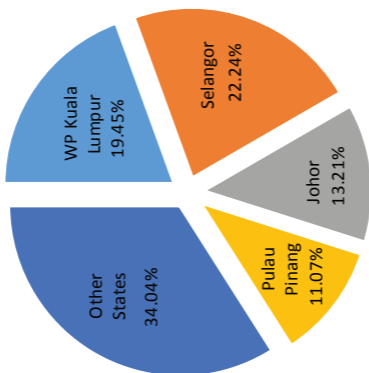
Source: Knight Frank Real Estate Highlights 1st Half 2018

Purpose Built Office Q2 2018 ^p	Existing Stock Total Space (m ²)	Incoming Supply Total Space (m ²)
WP Kuala Lumpur	8,890,157	1,149,235
WP Putrajaya	2,231,321	364,565
WP Labuan	66,706	19,222
Selangor	3,650,980	455,269
Johor	1,139,313	200,798
Pulau Pinang	1,123,156	20,390
Perak	620,131	17,456
Negeri Sembilan	306,326	14,341
Melaka	402,247	0
Kedah	389,114	27,623
Pahang	420,221	36,375
Terengganu	343,711	2,042
Kelantan	386,070	8,744
Perlis	131,038	16,176
Sabah	804,851	57,674
Sarawak	714,675	87,894
MALAYSIA	21,620,017	2,477,804

^p = preliminary

Source: Commercial Property Stock Report, 2nd Quarter 2018 by Valuation & Property Services Department

SHOPPING COMPLEX

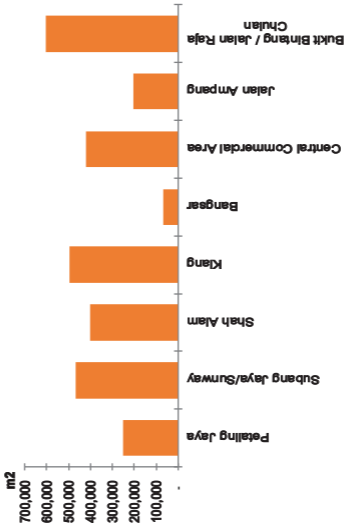
Distribution of Shopping Complex Existing Space in Malaysia as at Q2 2018^P

Shopping Complex Q2 2018 ^P	Existing Stock Total Space (m ²)	Incoming Supply Total Space (m ²)
WP Kuala Lumpur	3,053,897	208,144
WP Putrajaya	61,090	26,456
WP Labuan	28,434	0
Selangor	3,492,536	424,056
Johor	2,074,059	364,336
Pulau Pinang	1,738,912	83,942
Perak	956,434	100,438
Negeri Sembilan	543,665	47,737
Melaka	596,074	53,443
Kedah	580,678	9,077
Pahang	384,215	49,820
Terengganu	165,121	8,745
Kelantan	334,880	115,287
Perlis	55,872	6,806
Sabah	738,029	95,192
Sarawak	901,100	157,822
MALAYSIA	15,704,996	1,751,301

p = preliminary

Source: Commercial Property Stock Report 2nd Quarter 2018 by Valuation & Property Services Department

**Shopping Complex's Existing Stock
in Kuala Lumpur & Selangor (By Location)
as at Q2 2018^p**



p = preliminary

Source: Commercial Property Stock Report 2nd Quarter 2018 by Valuation & Property Services Department

Retail Space Supply in 2018

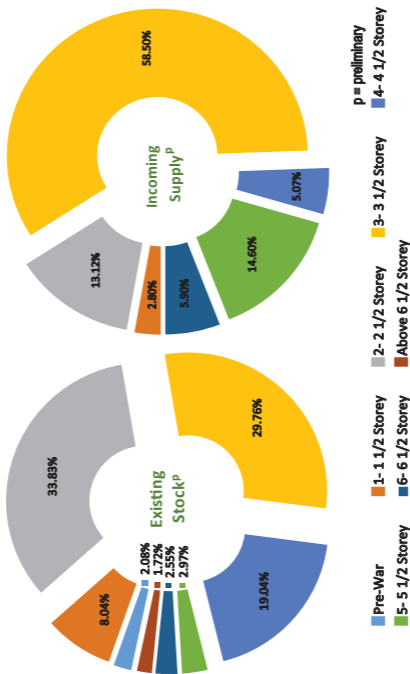
New Projects	Estimate Net Lettable Area (sf)*
Shoppes @ Four Seasons Place	200,000
Evo Shopping Mall	250,000
The Linc	120,000
GM Bukit Bintang	100,000
KL Eco City Retail Podium	250,000
EKO Cheras Mall	625,000
Kiara 163	300,000
Pinnacle	140,000
Empire City Damansara Mall	2,300,000
Tropicana Gardens	1,000,000
Skypark @ Cyberjaya	565,000
Pacific Star	240,000
Central i-City Shopping Centre (Central Plaza @ i-City)	940,000

Note: * New Completion and Expected Completion

Source: Knight Frank Real Estate Highlights 1st Half 2018

SHOP

Distribution of Existing and Incoming Supply of Shop In Kuala Lumpur and Selangor as at Q2 2018^p



Shop Q2 2018 ^p	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	31,221	1,926
WP Putrajaya	538	0
WP Labuan	955	46
Selangor	104,825	6,934
Johor	84,491	10,417
Pulau Pinang	36,917	2,091
Perak	60,334	4,417
Negeri Sembilan	25,472	2,305
Melaka	21,890	1,682
Kedah	30,788	1,574
Pahang	23,893	2,102
Terengganu	8,069	1,222
Kelantan	12,814	1,634
Perlis	5,186	426
Sabah	30,819	2,606
Sarawak	32,955	2,584
MALAYSIA	511,167	41,966

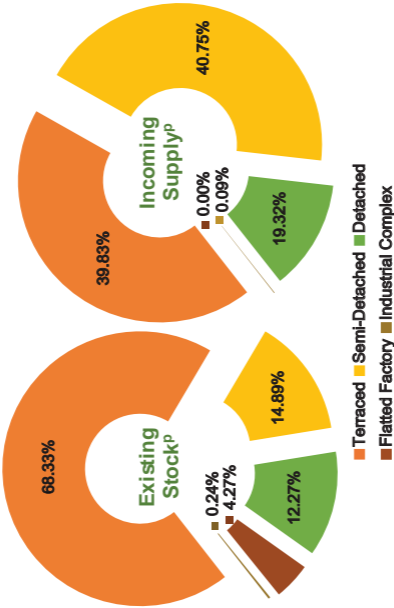
p = preliminary

Source: Commercial Property Stock Report, 2nd Quarter 2018, by Valuation & Property Services Department

INDUSTRIAL

Industrial Q2 2018 ^p	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	5,138	0
WP Putrajaya	48	0
WP Labuan	635	3
Selangor	40,134	1,087
Johor	16,574	1,794
Pulau Pinang	9,157	188
Perak	8,325	271
Negeri Sembilan	5,503	22
Melaka	6,870	1,051
Kedah	3,858	22
Pahang	3,538	89
Terengganu	866	47
Kelantan	604	18
Perlis	222	36
Sabah	6,067	392
Sarawak	6,854	390
MALAYSIA	114,393	5,410

Distribution of Existing and Incoming Supply of Industrial Units in Kuala Lumpur and Selangor as at Q2 2018^p



p = preliminary

p = preliminary

Source: Industrial Property Stock Report, 2nd Quarter 2018, by Valuation & Property Services Department

Financial Definitions & Formulae

Mortgage Repayment Table

Malaysia Balance of Payment
- 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

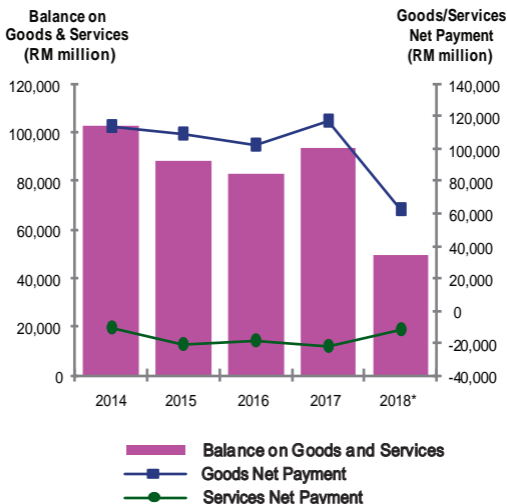
Interest p.a.	REPAYMENT (years)			
	5	10	15	20
5%	18.87	10.61	7.91	6.60
6%	19.33	11.10	8.44	7.16
7%	19.80	11.61	8.99	7.75
8%	20.28	12.13	9.56	8.36
9%	20.76	12.67	10.14	9.00
10%	21.25	13.22	10.75	9.65
11%	21.74	13.78	11.37	10.32
12%	22.24	14.35	12.00	11.01
13%	22.75	14.93	12.65	11.72
14%	23.27	15.53	13.32	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 PAYMENT - GOODS & SERVICES

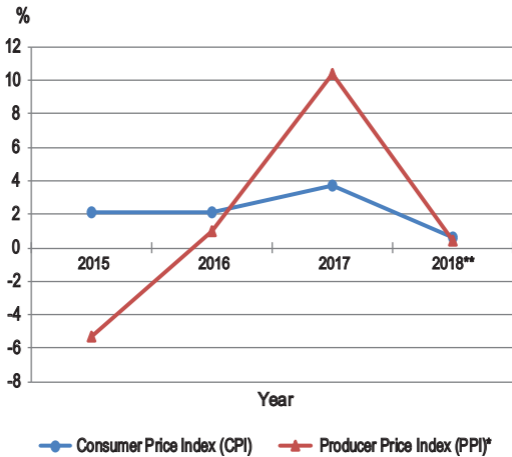


Year	Balance on Goods & Services (RM mil)	Goods Net Payment (RM mil)	Services Net Payment (RM mil)
2014	102,620	113,327	-10,706
2015	88,592	109,224	-20,632
2016	83,128	102,046	-18,917
2017	93,951	116,766	-22,815
2018*	49,709	61,736	-12,027

Note: * January to June 2018 only

Source: Department of Statistics Malaysia

CONSUMER PRICE INDEX & PRODUCER PRICE INDEX



Year	Annual Change (%)	
	CPI	PPI*
2015	2.1 %	-7.4 %
2016	2.1 %	-1.1 %
2017	3.7 %	6.7 %
2018**	0.6 %	-0.2 %

Note: Year 2010 is the Base Year

* Local Production

** CPI 2018: Oct 2018 compared to Oct 2017

PPI 2018: Sept 2018 compared to Sept 2017

Source: Bank Negara Malaysia, Department of Statistics Malaysia

PRIME RATES & BASE LENDING RATES

as at 4th Quarter 2018

Country	Rate (%)
China*	4.75
Hong Kong	5.13
India	9.45
Indonesia	6.75
Macau	5.38
Malaysia**	4.60
Philippines	4.35
Singapore	5.33
Thailand ⁺	7.00
United Kingdom	0.75
United States of America	5.25
Vietnam [#]	9.00

* 5-Year Benchmark Lending Rate

** Indicative Effective Lending Rate

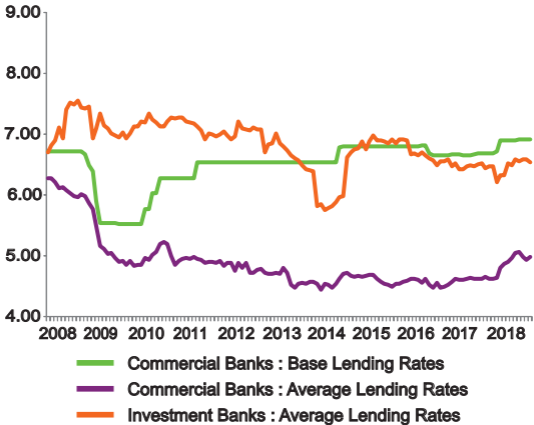
+ Minimum Loan Rate % pa (Average Based on Local Bank)

Minimum and in VND per year

Source:
Arcadis Asia Offices

INTEREST RATES: BANKING INSTITUTIONS

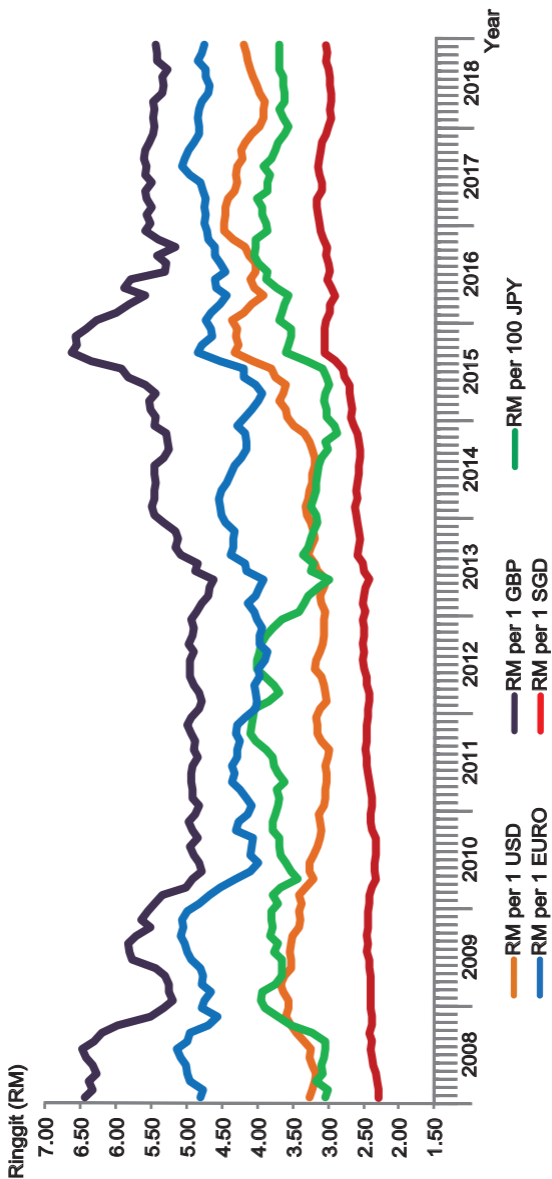
Percent Per Annum



2018	Commercial Banks		Investment Banks
	Base Lending Rates (%)	Average Lending Rates (%)	Average Lending Rates (%)
Jan	6.72	4.63	6.20
Feb	6.89	4.79	6.31
Mar	6.89	4.86	6.33
Apr	6.89	4.90	6.51
May	6.90	4.97	6.48
Jun	6.90	5.05	6.59
Jul	6.91	5.07	6.54
Aug	6.91	4.98	6.59
Sep	6.91	4.93	6.58
Oct	6.91	4.98	6.54

Note: Only Jan until Oct rates are available at time of publication.
Source: Monthly Statistical Bulletin, Central Bank of Malaysia

CURRENCY CHART



EXCHANGE RATES

as at 31 December 2018

Country	Currency	RM1	US \$1
Australia	dollar	0.3415	1.4192
Bahrain	dinar	0.0904	0.3754
Brunei	dollar	0.3286	1.3656
China	rmb	1.6547	6.8761
Egypt	pound	4.2975	17.8581
European Currency Unit	ecu	0.2102	0.8736
Hong Kong	dollar	1.8842	7.8297
India	rupees	16.7201	69.4804
Indonesia	rupiah	3,502.76	14,555.80
Japan	yen	26.530	110.240
Kenya	shillings	24.3706	101.272
Lebanon	pound	362.771	1,507.50
Malaysia	ringgit	1.0000	4.1510
New Zealand	dollar	0.3583	1.4888
Pakistan	rupee	33.3524	138.5960
Philippines	peso	12.6475	52.5567
Qatar	riyal	0.8759	3.6398
Singapore	dollar	0.3286	1.3656
South Africa	rand	3.4681	14.4117
South Korea	won	268.456	1,115.570
Sri Lanka	rupee	43.9910	182.8050
Thailand	baht	7.7965	32.3986
United Arab Emirates	dirham	0.8837	3.6724
United Kingdom	pound	0.1894	0.7871
United States of America	dollar	0.2406	1.0000
Vietnam	dong	5,579.82	23,187.00

Source: www.oanda.com/currency/converter/



OTHER INFORMATION

5



[Utility Costs for Selected Asian Cities](#)

[Weight & Measures](#)

[Conversion Guide](#)

[Public Holidays](#)

[Arcadis Asia Leadership Team](#)

[Arcadis Asia Services](#)

[Directory of Offices](#)

[Telephone Directory \(Malaysia\)](#)

5 OTHER INFORMATION

UTILITY COSTS FOR SELECTED ASIAN CITIES as at 4th Quarter 2018

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m ³)		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
KUALA LUMPUR	RM 4.18	0.052 - 0.137	0.091 - 0.122	0.136 - 0.478	0.495 - 0.545	0.522	N/A	0.526
UNLEADED FUEL: Unleaded petrol RON 95								
ELECTRICITY (Commercial / Industrial): Tariff A & Tariff D (Low voltage)								
BEIJING	RMB 6.94	0.071 - 0.113	0.219 - 0.221 (peak) 0.124 - 0.126 (normal)	0.721 - 1.296	1.296 - 1.368	1.100	N/A	1.220
ELECTRICITY (Domestic / month): 1 - 240kWh = US\$0.071; 241 - 400kWh = US\$0.078; 400kWh above = US\$0.113								
ELECTRICITY (Commercial / Industrial): Central Districts - Peak = US\$0.221, - Normal = US\$0.126; Other Districts - Peak = US\$0.219, - Normal = US\$0.124								
WATER (Domestic / year): 1 - 180m ³ = US\$0.721; 181 - 260m ³ = US\$1.008; 261m ³ above = US\$1.296								
WATER (Commercial / Industrial): Central Districts = US\$1.368; Other Districts = US\$1.296								
GUANGZHOU	RMB 6.94	0.085 - 0.128	0.089 - 0.124	0.285 - 0.571	0.500	0.970	N/A	1.120
UNLEADED FUEL: Unleaded gasoline 97								
HONG KONG	HK\$ 7.82	0.110	0.130	0.830	0.590	1.830	N/A	2.210
ELECTRICITY (Domestic): 0 - 400 kWh = US\$0.11; 400 - 1,000kWh = US\$0.12; 1,000 - 1,800kWh = US\$0.14; 1,800 - 2,600kWh = US\$0.18; 2,600 - 3,400kWh = US\$0.21; 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 ³ = F.O.C.; 12 - 43m ³ = US\$0.54/m ³ ; 43 - 62m ³ = US\$0.83/m ³ ; Above 62m ³ = US\$1.17/m ³ .								

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m ³)		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
MACAU	MOP 8.07	0.170	0.170	0.560- 0.900	0.750	1.700	N/A	1.450
ELECTRICITY: Electricity tariff are composition of demand charges, consumption charges, fuel clause adjustment and government tax. WATER (Domestic): Consumption charge = US\$0.56/m ³ for 28m ³ or below; US\$0.64/m ³ for 29m ³ to 60m ³ ; US\$0.75/m ³ for 61m ³ to 79m ³ and US\$0.90/m ³ for 80m ³ or above. WATER Commercial/Industrial): 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.								
SHANGHAI	RMB 6.94	0.089 (peak) 0.044 (normal)	0.157 (peak) 0.075 (normal)	0.497 - 0.840	0.680	1.160	N/A	1.220
ELECTRICITY (Domestic): 0 - 3,120 kWh = US\$0.089 (peak) / US\$0.044 (normal); 3,120- 4,800kWh = US\$0.098 (peak) / US\$0.049 (normal); Above 4,800 kWh = US\$0.141 (peak) / US\$0.070 (normal). Charged on yearly consumption. ELECTRICITY (Commercial): Charges on consumption less than 1,000kWh per month for summer period only. Refer to www.shdrc.gov.cn for detailed charges for different tiers and charges for non-summer period. WATER (Domestic): 0-220m ³ = US\$0.497/m ³ ; 220 - 300m ³ = US\$0.696/m ³ ; Above 300m ³ = US\$0.840/m ³ . UNLEADED FUEL: Unleaded 95.								
CHONGQING	RMB 6.94	0.080	0.110	0.610	0.850	1.220	N/A	1.280
UNLEADED FUEL: Unleaded 93# = US\$0.93/litre; 97# = US\$0.98/litre								

(Cont'd)

5 OTHER INFORMATION

(Cont'd)

UTILITY COSTS FOR SELECTED ASIAN CITIES

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m ³)		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
BANGALORE	INR 71.90	0.069 - 0.100	0.087 - 0.128	0.556 - 0.695	1.390	1.001	N/A	1.072
NEW DELHI	INR 71.90	0.069 - 0.111	0.070 - 0.111	0.350 - 1.050	1.390 - 2.440	0.992	N/A	1.141
BANGKOK	BAHT 32.73	0.072 - 0.136	0.096 - 0.098	0.259 - 0.441	0.290 - 0.483	0.895	N/A	0.881
UNLEADED FUEL: Gasohol 95 ELECTRICITY (Domestic): For normal tariff with consumption not exceeding 150kWh/month.								
HO CHI MINH	VND 22,600	0.110	0.100 0.060	0.240	0.750 / 0.430	0.820	N/A	0.920
All rates are VAT inclusive.								

COUNTRY	Exchange Rate US \$1 =	ELECTRICITY (US\$/kwh)		WATER (US\$/m ³)		FUEL (US\$/litre)		
		Domestic	Commercial/ Industrial	Domestic	Commercial/ Industrial	Diesel	Leaded	Unleaded
JAKARTA	IDR 15,180	0.097	0.097	0.069 - 0.491	0.450 - 0.965	0.481	N/A	0.543
WATER & ELECTRICITY - (Domestic): Domestic group in Indonesia will cover residence, religion building, non-profit organization building and government hospital. WATER & ELECTRICITY - (Commercial / Industrial): Commercial group in Indonesia will cover luxury residence, apartment, offices, hotel, commercial building, and factories.								
MANILA	PHP 52.88	0.210	0.190	0.290 - 0.740	1.370	0.972	N/A	1.146
ELECTRICITY - (Domestic): 190 kWh - 2,099 kWh; ELECTRICITY - (Commercial / Industrial): 185,404 kWh; WATER - (Domestic): 24m ³ - 101m ³ ; WATER - (Commercial / Industrial): 3,750m ³								
SINGAPORE	S\$ 1.38	0.170	0.170	1.990 2.670	1.990	1.340	N/A	1.940
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 the 1st 40m ³ . WATER (Commercial / Industrial) - Effective from 1 July 2018. Rate includes water conservation tax, water borne fee & sanitary appliance fee. FUEL (Diesel) - As at 2 November 2018. UNLEADED FUEL: 98 Unleaded petrol as at 2 November 2018.								

WEIGHT AND MEASURES

Metric Measures and Equivalents

LENGTH		
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
AREA		
1 sq cm (cm ²)	= 100 mm ²	= 0.1550 in ²
1 sq metre (m ²)	= 10,000 cm ²	= 1.1960 yd ²
1 hectare (ha)	= 10,000 m ²	= 2.4710 acres
1 sq km (km ²)	= 100 ha	= 0.3861 mile ²
VOLUME / CAPACITY		
1 cu cm (cm ³)		= 0.0610 in ³
1 cu decimetre (dm ³)	= 1,000 cm ³	= 0.0353 ft ³
1 cu metre (m ³)	= 1,000 dm ³	= 1.3080 yd ³
1 litre (l)	= 1 dm ³	= 1.76 pt
1 hectolitre (hl)	= 100 l	= 21.997 gal
MASS (WEIGHT)		
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
USA MEASURES AND EQUIVALENTS		
USA Dry Measure Equivalents		
1 pint	= 0.9689 UK pint	= 0.5506 l
USA Liquid Measure Equivalents		
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

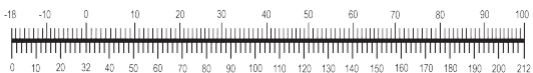
Imperial Measures and Equivalents

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 ²)		= 6.4516 cm ²
1 sq foot (ft ²)	= 144 in ²	= 0.0929 m ²
1 sq yard (yd ²)	= 9 ft ²	= 0.8361 m ²
1 acre	= 4,840 yd ²	= 4,046.9 m ²
1 sq mile (mile ²)	= 640 acres	= 2.59 km ²
VOLUME / CAPACITY		
1 cu inch (in ³)		= 16.387 cm ³
1 cu foot (ft ³)	= 1,728 in ³	= 0.0283 m ³
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.

LENGTH	
<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
VOLUME & CAPACITY	
<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

2019		
MALAYSIA		
New Year's Day**	01	Jan
Chinese New Year	05 - 06	Feb
Labour Day	01	May
Wesak Day#	19	May
Hari Raya Aidilfitri*	05 - 06	Jun
Hari Raya Qurban*	11	Aug
National Day	31	Aug
Awal Muharam (Maal Hijrah)#	01	Sep
King/Agong's Birthday	09	Sep
Malaysia Day	16	Sep
Deepavali*#	27	Oct
Prophet Muhammad's Birthday	09	Nov
Christmas Day	25	Dec
<p>* Subject to change ** Except Johor, Kelantan, Kedah, Perlis & Terengganu # The following day will be an additional Public Holiday</p>		
VIETNAM (Normal Scheduled Holidays)		
New Year's Day	01	Jan
Lunar New Year	04 - 08	Feb
Hung Vuong King Celebration	14 - 15*	Apr
Liberation Day of Saigon	30	Apr
International Labour Day	01	May
National Day	02	Sep
Christmas Day	24 - 25	Dec
<p>* Substitute for 14 Apr (Sunday)</p>		

2019
HONG KONG

New Year's Day	01	Jan
Lunar New Year (Day 1)	05	Feb
Lunar New Year (Day 2)	06	Feb
Lunar New Year (Day 3)	07	Feb
Ching Ming Festival	05	Apr
Good Friday	19	Apr
Holy Saturday	20	Apr
Easter Monday	22	Apr
Labour Day	01	May
The day following the Birthday of the Buddha	13	May
Tuen Ng Festival	07	Jun
HKSAR Establishment Day	01	Jul
The day Following Chinese Mid-Autumn Festival	14	Sep
National Day	01	Oct
Chung Yeung Festival	07	Oct
Christmas Day	25	Dec
The 1st weekday after Christmas Day	26	Dec

* As the Birthday of the Buddha in 2019 falls on a Sunday, the day following it is designated as a general holiday in substitution

CHINA

New Year's Day	01	Jan
Chinese New Year's Eve	04	Feb
Chinese New Year\$	05	Feb
Women's Day*@	08	Mar
Tomb-Sweeping Festival	05	Apr
Labour Day	01	May
Dragon Boat Festival	07	Jun
Mid-Autumn Festival	13	Sep
National Day#	01	Oct
Chung Yeung Festival@	07	Oct

\$ 05 - 10 February 2019 are holidays.

* All women can have half day holiday.

30 Sept - 7 October 2019 are public holidays. 05 October 2019 is a working day.

(Cont'd)

5 OTHER INFORMATION

(Cont'd)

PUBLIC HOLIDAYS

	2019	
MACAU		
New Year's Day	01	Jan
Lunar New Year's Eve (Afternoon)*	04	Feb
Lunar New Year's Day	05	Feb
The 2nd day of Lunar New Year	06	Feb
The 3rd day of Lunar New Year	07	Feb
Ching Ming Festival	05	Apr
Good Friday	19	Apr
Holy Saturday	20	Apr
Easter Monday*	22	Apr
Labour Day	01	May
Birthday of the Buddha Holiday*	13	May
Tung Ng Festival	07	Jun
The day following the Chinese Mid-Autumn Festival	14	Sep
National Day	01	Oct
The day following National Day	02	Oct
Chung Yeung Festival	07	Oct
All Soul's Day	02	Nov
All Soul's Day Holiday*	04	Nov
Feast of the Immaculate Conception	08	Dec
Feast of the Immaculate Conception Holiday*	09	Dec
Macau SAR Establishment Day	20	Dec
Winter Soslstice	22	Dec
Winter Soslstice Holiday*	23	Dec
Christmas Eve	24	Dec
Christmas Day	25	Dec
New Year's Eve (Afternoon)*	31	Dec

* *Special holiday granted by Chief Executive for staff in Public.*

2019
INDIA

New Year's Day	01	Jan
Maharashtra Day	01	May
Ramzan	05	Jun
Independence Day	15	Aug
Ganesh Chaturthi	02	Sep
Gandhi Jayanthi	02	Oct
Dasara	08	Oct
Diwali	28	Oct
Christmas Day	25	Dec

INDONESIA

New Year's Day	01	Jan
Chinese New Year (Imlek)	05	Feb
Hindu Day of Quiet (Nyepi)	07	Mar
Ascension of Prophet Mohammad	03	Apr
Good Friday	19	Apr
International Labour Day	01	May
Waisak Day	19	May
Ascension Day of Jesus Christ	30	May
Pancasila Day*	01	Jun
Idul Fitri	05 - 06	Jun
Idul Adha Day	11	Aug
National Independence Day	17	Aug
Hijriyah New Year	01	Sep
Prophet Muhammad's Birthday	09	Nov
Christmas Day	25	Dec

* Subject to changes

5 OTHER INFORMATION

(Cont'd)

PUBLIC HOLIDAYS

	2019	
PHILIPPINES		
Regular Holidays		
New Year's Day*	01	Jan
Chinese New Year#	05	Feb
EDSA People Power Revolution (Additional)#	25	Feb
Araw ng Kagitingan*	09	Apr
Maundy Thursday*	18	Apr
Good Friday*	19	Apr
Black Saturday (Additional)#	20	Apr
Labor Day*	01	May
End of Eid-ul-Fitre (Feast of Ramadhan)*	06	Jun
Independence Day*	12	Jun
Eid-ul-Adha*	12	Aug
Ninoy Aquino Day#	21	Aug
National Heroes Day*	26	Aug
All Saint's Day#	01	Nov
All Soul's Day (Additional)#	02	Nov
Bonifacio Day*	30	Nov
Feast of the Immaculate Conception of Mary#	08	Dec
Christmas Eve (Additional)#	24	Dec
Christmas Day*	25	Dec
Rizal Day*	30	Dec
Last Day of the Year (Additional)#	31	Dec
* Regular Holidays		
# Special Non-Working Day		
SINGAPORE		
New Year's Day	01	Jan
Chinese New Year	05 - 06	Feb
Good Friday	19	Apr
Labour Day	01	May
Vesak Day	19	May#
Hari Raya Puasa	05	Jun
National Day	09	Aug
Hari Raya Haji	11	Aug#
Deepavali*	27	Oct#
Christmas Day	25	Dec
* Subject to change		
# The following Monday will be a public holiday		

2019
THAILAND

New Year	01	Jan
Makha Bucha Day	19	Feb
Chakri Memorial day	08	Apr*
Songkran Festival	15 - 16	Apr**
Labour Day	01	May
Wisakha Bucha Day	20	May***
Asarnha Bucha Day	16	Jul
H.M. King Maha Vajiralongkorn's Birthday	29	Jul****
H.M. The Queen's Birthday	12	Aug
H. M. King Bhumibol Adulyadej Memorial Day	14	Oct*****
Chulalongkorn day	23	Oct
H.M. King Bhumibol Adulyadej's Birthday / Father's Day	05	Dec
Constitution Day	10	Dec
New Year's Eve	31	Dec

* As Chakri Memorial Day falls on Saturday (6 Apr) , Monday is designated as a general holiday in substitution

** As Songkran Festival falls on Saturday (13 Apr) and Sunday (14 Apr); Monday and Tuesday is designated as a general holidays in substitution

*** As Wisakha Bucha Day falls on Saturday (18 May) , Monday is designated as a general holiday in substitution

**** As H. M. King Maha Vajiralongkorn's Birthday falls on Sunday (28 July) , Monday is designated as a general holiday in substitution

***** As H. M. Bhumibol Adulyadej Memorial Day falls on Sunday (13 Oct) , Monday is designated as a general holiday in substitution

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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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