

JUBM & Arcadis Construction Cost Handbook MALAYSIA 2018

JUBM Sdn Bhd (27638-X)

Arcadis (Malaysia) Sdn Bhd (520443-H)

Arcadis Projek Sdn Bhd (233819-K)

Arcadis Consultancy Sdn Bhd (492788-H)

KDN PP10466/05/2013(032500)



Centre of Excellence (EPIC), Negeri Sembilan

Sunway Velocity, Selangor

Double Tree Hilton, Johor

SPICE, Penang

Desaru Adventure Water Park, Johor

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 2017.



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KDN : PP10466/05/2013 (032500)

For private circulation to staff and business associates only.

Printed: January 2018

by

Spiral Ecoprint Sdn Bhd (KDN: PQ1780/4606)
No.44, Jalan PBS 14/11,
Taman Perindustrian Bukit Serdang,
43300 Seri Kembangan, Selangor Darul Ehsan

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Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. In Asia, we have over 4,500 people covering the Asia market across all sectors focused on improving quality of life.

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

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

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

(Log on to www.arcadis.com 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. Menara Telekom, Kuala Lumpur 2002
 2. The Pinnacle Sunway, Selangor 2014
 3. Ilham Baru Tower, Kuala Lumpur 2014
 4. PAM Centre, Kuala Lumpur 2016
-

Retail

5. Sunway Putra Mall & Hotel, Kuala Lumpur 2015
 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. Iringan Hijau, Kuala Lumpur 2010
 12. The Pearl Stonor, Kuala Lumpur 2010
 13. 2 Hampshire Condominiums, Kuala Lumpur 2008
 14. Seri Hening Residence, Kuala Lumpur 2007
 15. Palazzio Sunway Condominiums, Kuala Lumpur 2011
 16. Setia Sky Residences, Kuala Lumpur 2016
 17. Le Nouvel Condominium, Kuala Lumpur 2016
-

Hospitality, Sports & Leisure

18. Desaru Adventure Water Park, Johor 2017
 19. Calvary Convention Centre, Bukit Jalil 2013
 20. St. Regis, Kuala Lumpur 2017
 21. Double Tree Hilton, Johor 2015
 22. SPICE, Penang 2017
 23. MITEC, Kuala Lumpur 2016
-





(Cont'd)

(Cont'd)

A Selection of Our Projects

Healthcare

- 24. Women Children Hospital, Kuala Lumpur 2017
- 25. Sunway Medical Centre, Selangor 1998
- 26. Pantai Hospital (Extension), Kuala Lumpur 2015

Private Educational

- 27. Universiti Teknologi Petronas, Perak 2003
- 28. Sunway Monash University, Selangor 2007
- 29. Tropicana International School, Selangor 2016
- 30. Asia Pacific University Campus, Selangor 2016

Transport & Infrastructure

- 31. Electrified Double Track-Padang Besar to Ipoh (Station Building) 2014
- 32. 6 Stations for Kelana Jaya LRT Line Extension, Kuala Lumpur 2014
- 33. KVMRT Sungai Buloh - Kajang Line 2017
- 34. Semangar Water Treatment Plant, Johor 2013
- 35. Integrated Water Supply, Kuala Lumpur 2008
- 36. Bus Rapid Transit (BRT) Sunway 2015

Industrial

- 37. PML Production Facility, Selangor 2011
- 38. Giant Distribution Centre (Sepang), Selangor 2009
- 39. Star Publications Office & Newspaper Printing Factory, Selangor 2000
- 40. Perodua - Second National Car Plant, Selangor 1994

Religious Buildings

- 41. Masjid Besar Sandakan, Sabah 1988
- 42. Lutheran Bible Training Institute, Selangor 2010

Public

- 43. Johor State Assembly Building, Johor 2007
- 44. Bangunan UMNO (Pekan), Pahang 2007
- 45. Citizenship and Immigration Canada (CIC) Annexe of Canadian High Commission, Kuala Lumpur 2004
- 46. Federal Government Administrative Centre, Putrajaya 2010
- 47. IBS Housing, Putrajaya 2011





2018

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

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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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28	29	30	31	25	26	27	28	29	30	31	29	30								

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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6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14
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20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28
27	28	29	30	31	24	25	26	27	28	29	30	29	30	31						



CONSTRUCTION COST DATA

1

Construction Cost Specification

Kuala Lumpur Construction Cost Trend
(2007 - 2017)

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, including air-conditioning, kitchen cabinets and home appliances, but excluding decorative light fittings and loose furniture. (Malaysia only) 6-12 units per floor, 46m ² - 83m ² per unit excluding air-conditioning.
	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. (Malaysia only) Average standard and prestige quality offices exclude tenant fit-out.
OFFICE/ COMMERCIAL	High rise offices, prestige quality	
	Out-of-town shopping centre, average standard	
	Retail malls, high end	Including public area fit-out and M&E, but excluding shop fit-out.
HOTELS	Budget hotels - 3-star, mid market	1) Interior decoration
	Business hotels - 4/5 -star	2) Furniture (fixed and movable)
	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.

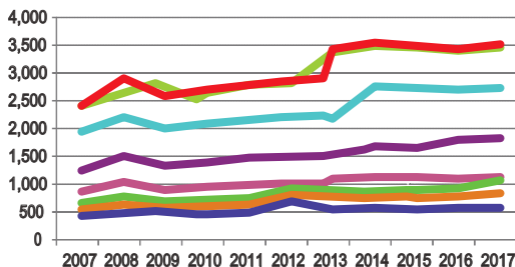
Notes:

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 2007 - 2017

Domestic

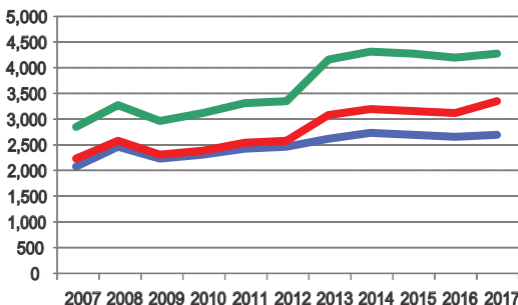
RM/m²



- 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

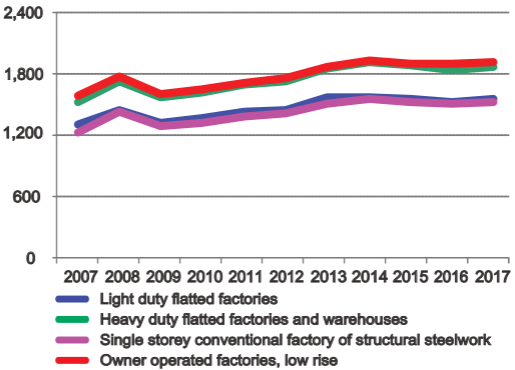


- Average standard offices, high rise
- Prestige offices, high rise
- Shopping Centres

All cost are at an average level unless otherwise stated

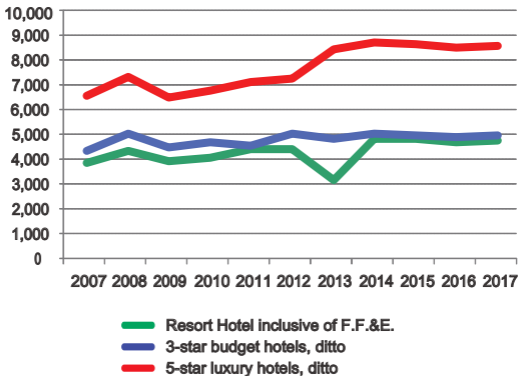
Industrial

RM/m²



Hotels

RM/m²



All cost 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	795	995	2,415
Detached houses (high end)	2,285	800	995	3,085
Terraced houses	725	195	285	920
Average standard apartments, high rise	1,230	290	560	1,520
Luxury apartments, high rise	2,375	800	910	3,175
Low cost housing	440	105	150	545
Low cost flats, low rise (<6 levels)	605	190	240	795
Low cost flats, high rise (<15 levels)	710	245	315	955
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,615	885	1,090	2,500
Prestige offices, high rise	2,190	1,405	1,620	3,595
Shopping centres	1,985	840	1,320	2,825
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	3,240	1,270	1,585	4,510
3-star budget hotels, ditto	3,375	780	1,460	4,155
5-star luxury hotels, ditto	6,100	1,910	2,030	8,010

INDUSTRIAL									
Light duty flatted factories	895	-	955	525	-	685	1,420	-	1,640
Heavy duty flatted factories and warehouses	1,165	-	1,225	585	-	740	1,750	-	1,965
Single storey conventional factory of structural steelwork	985	-	1,190	345	-	490	1,330	-	1,680
Owner operated factories, low rise	1,305	-	1,430	490	-	600	1,795	-	2,030
OTHERS									
Basement car parks (<3 levels)	1,120	-	1,440	370	-	635	1,490	-	2,075
Elevated car parks (<4 levels)	735	-	935	210	-	285	945	-	1,220
Primary and Secondary schools	840	-	970	200	-	230	1,040	-	1,200
Student hostels	975	-	1,050	255	-	305	1,230	-	1,355
Sports clubs inclusive of F.F.&E.	1,880	-	2,165	550	-	675	2,430	-	2,840

The above costs are at 4th Quarter 2017 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR JOHOR BAHRU

	RM/m ²			TOTAL
	BUILDING	SERVICES		
<u>DOMESTIC</u>				
Detached houses (mass housing)	1,650	750	950	2,400
Detached houses (high end)	2,250	800	1,000	3,050
Terraced houses	800	200	350	1,000
Average standard apartments, high rise	1,200	300	550	1,500
Luxury apartments, high rise	2,435	600	900	3,035
Low cost housing	450	105	145	555
Low cost flats, low rise (<6 levels)	600	155	215	755
Low cost flats, high rise (<15 levels)	685	230	260	915
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,500	775	1,100	2,275
Prestige offices, high rise	2,150	1,350	1,650	3,500
Shopping centres	1,950	855	1,190	2,805
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	3,250	1,250	1,600	4,500
3-star budget hotels, ditto	3,350	780	1,450	4,130
5-star luxury hotels, ditto	6,050	1,900	2,050	7,950

INDUSTRIAL									
Light duty flattened factories	900	-	915	520	-	675	1,420	-	1,590
Heavy duty flattened factories and warehouses	1,150	-	1,250	580	-	750	1,730	-	2,000
Single storey conventional factory of structural steelwork	980	-	1,175	350	-	500	1,330	-	1,675
Owner operated factories, low rise	1,300	-	1,430	500	-	600	1,800	-	2,030
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 2017 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
Detached houses (high end)	1,938	826	2,764
Terraced houses	714	153	867
Average standard apartments, high rise	938	281	1,219
Luxury apartments, high rise	1,632	755	2,387
Low cost housing	459	87	546
Low cost flats, low rise (<6 levels)	561	145	706
Low cost flats, high rise (<15 levels)	781	121	903
<u>OFFICE / COMMERCIAL</u>			
Average standard offices, high rise	1,433	867	2,300
Prestige offices, high rise	1,950	1,350	3,300
Shopping centres	1,403	760	2,162
<u>HOTELS</u>			
Resort hotels, inclusive of F.F.&E.	2,907	1,148	4,055
3-star budget hotels, ditto	2,754	969	3,723
5-star luxury hotels, ditto	5,712	1,923	7,635

INDUSTRIAL									
Light duty flatted factories	775	-	918	530	-	714	1,306	-	1,632
Heavy duty flatted 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)	541	-	842	192	-	326	732	-	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 2017 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR KOTA KINABALU

	RM/m ²			TOTAL
	BUILDING	SERVICES		
<u>DOMESTIC</u>				
Detached houses (mass housing)	1,540	430	540	1,970
Detached houses (high end)	2,340	1,010	1,245	3,350
Terraced houses	790	285	340	1,075
Average standard apartments, high rise	1,050	355	430	1,405
Luxury apartments, high rise	2,450	940	1,065	3,390
Low cost housing	420	120	165	540
Low cost flats, low rise (<6 levels)	540	165	185	705
Low cost flats, high rise (<15 levels)	610	210	220	820
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,570	875	1,010	2,445
Prestige offices, high rise	2,230	1,460	1,665	3,690
Shopping centres	1,600	875	1,010	2,475
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	3,330	1,185	1,445	4,515
3-star budget hotels, ditto	4,060	1,445	1,595	5,505
5-star luxury hotels, ditto	6,290	2,320	2,475	8,610

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.	1,900	-	2,040	720	-	875	2,620	-	2,915

The above costs are at 4th Quarter 2017 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	480	610	1,655
Detached houses (high end)	1,785	830	970	2,615
Terraced houses	1,030	170	205	1,200
Average standard apartments, high rise	1,215	310	410	1,525
Luxury apartments, high rise	1,815	945	1,180	2,760
Low cost housing	575	115	145	690
Low cost flats, low rise (<6 levels)	800	160	190	960
Low cost flats, high rise (<15 levels)	845	165	240	1,010
<u>OFFICE / COMMERCIAL</u>				
Average standard offices, high rise	1,570	930	1,080	2,500
Prestige offices, high rise	1,865	1,570	1,670	3,435
Shopping centres	1,765	810	990	2,575
<u>HOTELS</u>				
Resort hotels, inclusive of F.F.&E.	2,815	1,405	1,670	4,220
3-star budget hotels, ditto	3,010	1,590	1,735	4,600
5-star luxury hotels, ditto	4,805	2,435	2,500	7,240

INDUSTRIAL									
Light duty flatted factories	1,040	-	1,245	360	-	390	1,400	-	1,635
Heavy duty flatted factories and warehouses	1,120	-	1,275	415	-	490	1,535	-	1,765
Single storey conventional factory of structural steelwork	915	-	1,010	310	-	445	1,225	-	1,455
Owner operated factories, low rise	1,130	-	1,275	440	-	520	1,570	-	1,795
OTHERS									
Basement car parks (<3 levels)	1,070	-	1,305	365	-	385	1,435	-	1,690
Elevated car parks (<4 levels)	835	-	925	220	-	240	1,055	-	1,165
Primary and Secondary schools	980	-	1,055	210	-	335	1,190	-	1,390
Student hostels	1,155	-	1,295	240	-	310	1,395	-	1,605
Sports clubs inclusive of F.F.&E.	1,815	-	1,960	720	-	865	2,535	-	2,825

The above costs are at 4th Quarter 2017 levels, inclusive of preliminaries (10%) but exclusive of contingencies.

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m ²				
	KUALA LUMPUR [^]	BANGKOK [*]	BRUNEI	JAKARTA [#]	MANILA [@]
DOMESTIC					
Apartments, high rise, average standard	375 - 520	695 - 864	726 - 998	713 - 807	923 - 1,088
Apartments, high rise, high end	780 - 945	988 - 1,188	897 - 1,168	981 - 1,107	1,227 - 1,712
Terraced houses, average standard	225 - 330	463 - 556	470 - 740	378 - 492	760 - 906
Detached houses, high end	755 - 940	803 - 972	713 - 985	1,027 - 1,149	1,570 - 2,353
OFFICE / COMMERCIAL					
Medium/high rise offices, average standard	615 - 710	648 - 803	726 - 998	703 - 778	897 - 1,048
High rise offices, prestige quality	880 - 1,200	880 - 1,111	1,026 - 1,297	1,035 - 1,157	1,264 - 1,385
Out-of-town shopping centre, average standard	560 - 690	633 - 818	704 - 975	604 - 669	727 - 888
Retail malls, high end	690 - 955	849 - 880	929 - 1,199	667 - 721	1,059 - 1,504
HOTELS					
Budget hotels - 3 star, mid market	1,020 - 1,420	1,158 - 1,281	1,373 - 1,643	1,222 - 1,443	1,193 - 1,335
Business hotels - 4/5 star	1,760 - 2,065	1,482 - 1,698	1,936 - 2,206	1,666 - 1,800	1,322 - 1,650
Luxury hotels - 5 star	1,965 - 2,290	1,729 - 2,006	1,987 - 2,258	1,770 - 1,996	1,612 - 2,175

INDUSTRIAL									
Industrial units, shell only. (Conventional single storey framed units).	325 - 410	494 - 617	334 - 605	325 - 354	445 - 501				
Owner operated factories, low rise, light weight industry	440 - 500	N/A	456 - 727	352 - 389	598 - 677				
OTHERS									
Underground/basement car parks (<3 levels)	365 - 510	556 - 725	N/A	501 - 616	499 - 568				
Multi storey car parks, above ground (<4 levels)	230 - 300	185 - 296	372 - 643	325 - 354	457 - 678				
Schools (primary & secondary)	255 - 295	N/A	544 - 815	N/A	693 - 798				
Students' residences	300 - 330	N/A	638 - 908	N/A	750 - 895				
Sports clubs, multi purpose sports/leisure centres (dry sports)	595 - 695	N/A	1,465 - 1,735	1,075 - 1,611	1,200 - 1,585				
General hospitals - public sector	875 - 1,105	N/A	1,646 - 1,917	N/A	1,301 - 1,504				
Exchange Rate Used : US\$1 =	RM 4.08	BAHT 32.39	B\$ 1.36	IDR 13,055	PHP 50.50				

The above costs are at 4th Quarter 2017 levels, inclusive of preliminaries but exclusive of contingencies.

^ Rates are nett of GST and contingencies.

* Rates exclude VAT and contingencies.

Rates are nett of VAT.

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

(Cont'd)

CONSTRUCTION COSTS FOR SELECTED ASIAN CITIES

	US\$/m ²				
	SINGAPORE@	HO CHI MINH#	INDIA*	HONG KONG^	MACAU\$
<u>DOMESTIC</u>					
Apartments, high rise, average standard	1,325 - 1,510	630 - 780	550 - 630	3,080 - 3,620	2,229 - 2,740
Apartments, high rise, high end	2,060 - 3,090	800 - 920	830 - 1,000	4,150 - 4,830	3,126 - 4,770
Terraced houses, average standard	1,730 - 1,950	425 - 500	380 - 400	4,220 - 4,920	3,823 - 4,545
Detached houses, high end	2,210 - 2,945	485 - 590	500 - 525	5,460 - 6,220	4,645 - 6,040
<u>OFFICE / COMMERCIAL</u>					
Medium/high rise offices, average standard	1,730 - 1,950 ⁺	735 - 855	415 - 450	3,010 - 3,580	2,578 - 3,325
High rise offices, prestige quality	1,950 - 2,135 ⁺	850 - 1,160	520 - 550	3,720 - 4,490	3,325 - 3,636
Out-of-town shopping centre, average standard	1,950 - 2,060	N/A	405 - 440	3,080 - 3,590	2,428 - 3,636
Retail malls, high end	2,060 - 2,280	690 - 900	565 - 610	4,080 - 4,850	3,823 - 4,583
<u>HOTELS</u>					
Budget hotels - 3 star, mid market	2,170 - 2,390	1,370 - 1,670	780 - 865	3,910 - 4,230	3,387 - 3,836
Business hotels - 4/5 star	2,795 - 3,165	N/A	1,215 - 1,440	4,100 - 4,870	4,608 - 5,504
Luxury hotels - 5 star	2,795 - 3,165	1,725 - 2,070	1,535 - 1,680	4,810 - 5,580	5,504 - 6,513

INDUSTRIAL									
Industrial units, shell only. (Conventional single storey framed units).	735 - 945	305 - 380	325 - 380	N/A	N/A	N/A			N/A
Owner operated factories, low rise, light weight industry	N/A	370 - 490	345 - 405	2,360 - 3,000					N/A
OTHERS									
Underground/basement car parks (<3 levels)	945 - 1,275	625 - 750	275 - 295	2,320 - 2,880	2,005 - 2,964				
Multi storey car parks, above ground (<4 levels)	650 - 945 ⁺⁺	400 - 440	210 - 230	1,450 - 1,710	1,108 - 1,457				
Schools (primary & secondary)	N/A	525 - 575	260 - 295	2,530 - 2,740	2,217 - 2,578				
Students' residences	1,585 - 1,730	525 - 680	295 - 325	2,490 - 2,880	1,768 - 2,042				
Sports clubs, multi purpose sports/leisure centres (dry sports)	1,985 - 2,135	780 - 835	575 - 600	3,850 - 4,360	N/A				
General hospitals - public sector	2,795 - 2,945	N/A	630 - 690	5,000 - 5,640	N/A				
Exchange Rate Used : US\$1 =	S\$ 1.36	VND 22,600	INR 65.00	HK\$ 7.80	MOP 8.03				

The above costs are at 4th Quarter 2017 levels, inclusive of preliminaries but exclusive of contingencies.

@ 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.

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.

^ 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*
<u>DOMESTIC</u>				
Apartments, high rise, average standard	638 - 701	691 - 766	529 - 585	541 - 648
Apartments, high rise, high end	1,545 - 1,760	1,620 - 1,769	886 - 971	889 - 1,126
Terraced houses, average standard	465 - 543	465 - 497	402 - 442	445 - 541
Detached houses, high end	701 - 780	694 - 771	550 - 605	591 - 682
<u>OFFICE / COMMERCIAL</u>				
Medium/high rise offices, average standard	892 - 1,201	898 - 1,195	773 - 855	865 - 1,005
High rise offices, prestige quality	1,201 - 1,973	1,195 - 1,492	1,062 - 1,170	1,089 - 1,476
Out-of-town shopping centre, average standard	680 - 909	N/A	736 - 808	692 - 894
Retail malls, high end	1,230 - 1,693	1,270 - 1,640	1,082 - 1,189	1,089 - 1,536
<u>HOTELS</u>				
Budget hotels - 3 star, mid market	1,006 - 1,240	985 - 1,209	995 - 1,095	958 - 1,189
Business hotels - 4/5 star	1,681 - 2,220	1,619 - 2,205	1,605 - 1,768	1,839 - 2,303
Luxury hotels - 5 star	2,142 - 2,755	2,205 - 2,644	2,186 - 2,409	N/A

INDUSTRIAL						
Industrial units, shell only. (Conventional single storey framed units).	281 - 343	287 - 350	505 - 556	448 - 571		
Owner operated factories, low rise, light weight industry	543 - 623	446 - 557	N/A	N/A		
OTHERS						
Underground/basement car parks (<3 levels)	777 - 854	762 - 1,062	508 - 812	N/A		
Multi storey car parks, above ground (<4 levels)	467 - 473	392 - 546	364 - 400	309 - 386		
Schools (primary & secondary)	541 - 699	544 - 697	403 - 444	417 - 464		
Students' residences	383 - 541	388 - 543	262 - 294	N/A		
Sports clubs, multi purpose sports/leisure centres (dry sports)	927 - 934	988 - 1,213	747 - 824	N/A		
General hospitals - public sector	1,218 - 1,525	1,474 - 1,912	N/A	N/A		
Exchange Rate Used : US\$1 =	RMB 6.60	RMB 6.60	RMB 6.60	RMB 6.60		

The above costs are at 4th Quarter 2017 levels, inclusive of preliminaries but 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	16.5 - 35.0	14.0	22.0
2. Excavating for footings ≤ 1.5m deep	m ³ 15.0 - 25.0	18.0 - 22.0	16.5 - 35.0	20.0	22.0
3. Remove excavated materials off site	m ³ 20.0 - 30.0	15.0 - 30.0	20.5 - 30.5	20.0	25.0
4. Hardcore bed blinded with fine materials	m ³ 70.0 - 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	235.0	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 3.20 - 3.70	3.20 - 3.80	3.70	3.95	3.80
8. High tensile rod reinforcement	kg 3.20 - 3.70	3.20 - 3.80	3.70	3.95	3.80
9. Sawn formwork to soffits of suspended slabs	m ² 38.0 - 45.0	38.0 - 45.0	40.0	45.0	48.0
10. Sawn formwork to columns and walls	m ² 38.0 - 45.0	38.0 - 45.0	40.0	45.0	48.0
11. 112.5mm thick brick walls	m ² 45.0 - 50.0	42.0 - 50.0	40.0 - 55.0	50.0	50.0
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m ² 55.0 - 65.0	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	320.0 - 400.0	250.0 - 350.0	360.0

14. Structural steelwork - beams, stanchions and the like	kg	7.50 - 9.00	6.50 - 8.00	6.50 - 8.00	7.00 - 7.50	9.00
15. Steelwork - angles, channels, flats and the like	kg	7.50 - 9.00	6.50 - 8.00	6.50 - 8.00	6.50 - 7.00	9.00
16. 25mm cement and sand (1:3) paving	m ²	17.0 - 23.0	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 - 23.0	22.0 - 28.0	30.0 - 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	3.30 - 4.50	4.00 - 8.50	4.00 - 6.00	8.00	10.0
Average expected preliminaries	%	6 - 15	3 - 6	7 - 12	5 - 7	10

The above costs are at 4th Quarter 2017 levels, exclusive of contingencies and preliminaries.

* Rates is for "Kliplok Colorbond" 0.54mm profiled steel sheeting.

MAJOR RATES FOR SELECTED ASIAN CITIES

	KUALA LUMPUR® RM	BANGKOK* BAHT	BRUNEI B\$	JAKARTA* IDR '000	MANILA PHP
1. Excavating basement ≤ 2m deep	m ³ 15 - 25	120 - 140	3.40	40	270
2. Excavating for footings ≤ 1.5m deep	m ³ 15 - 25	140 - 180	2.90	75	300
3. Remove excavated materials off site	m ³ 20 - 30	110 - 150	2.90	30	160
4. Hardcore bed blinded with fine materials	m ³ 70 - 95	650 - 750	42	500	890
5. Mass concrete grade 15	m ³ 240 - 315	2,300 - 2,500	115	1,050	2,940
6. Reinforced concrete grade 30	m ³ 260 - 320	2,500 - 2,700	130	1,000	3,780
7. Mild steel rod reinforcement	kg 3.20 - 3.70	24 - 25	1.20	12	43
8. High tensile rod reinforcement	kg 3.20 - 3.70	23 - 24	1.20	12	44
9. Sawn formwork to soffits of suspended slabs	m ² 38 - 45	400 - 450	15	200	1,000
10. Sawn formwork to columns and walls	m ² 38 - 45	400 - 450	15	195	950
11. 112.5mm thick brick walls	m ² 45 - 50	650 - 750	16	250	N/A
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	m ² 55 - 65	1,200	58	300	1,100
13. Aluminium casement windows, single glazed	m ² 380 - 600	7,000	160 - 210	1,650	10,500*
14. Structural steelwork - beams, stanchions and the like	kg 7.50 - 9.00	50 - 60	3	26	125
15. Steelwork - angles, channels, flats and the like	kg 7.50 - 9.00	50 - 60	3	26	125
16. 25mm cement and sand (1:3) paving	m ² 17 - 23	200 - 240	8	90	400

17. 20mm cement and sand (1:4) plaster to walls	m ²	18 - 23	220 - 260	8	100	360
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	50 - 70	1,200	33	200	1,600
19. 12mm fibrous plasterboard ceiling lining	m ²	35 - 45	750 - 850	28	215 ^{\$}	1,090
20. Two coats of emulsion paint to plastered surfaces	m ²	3.30 - 4.50	110 - 140	5	30	390
Average expected preliminaries	%	6 - 15	12 - 18	5 - 8	8 - 10	12 - 18

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

@ Rates are nett of GST.

* Rates are nett of VAT.

\$ 9mm gypsum board.

Aluminium with anodized finish; 6mm thick.

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MAJOR RATES FOR SELECTED ASIAN CITIES

	SINGAPORE® S\$	HO CHI MINH^ VND	INDIA* INR	HONG KONG HK\$	MACAU MOP
1. Excavating basement ≤ 2m deep	20	92,400	190	220	130
2. Excavating for footings ≤ 1.5m deep	20	92,400	215	200	150
3. Remove excavated materials off site	15 - 20	84,700	N/A	300#	100
4. Hardcore bed blinded with fine materials	50	280,900	4,400	950	1,200
5. Mass concrete grade 15	175 - 185+	1,696,400	5,950	1,100	1,350
6. Reinforced concrete grade 30	115 - 120	1,955,800	7,450	1,300	1,250
7. Mild steel rod reinforcement	1.20 - 1.30	18,500	67	9.70	7.10
8. High tensile rod reinforcement	1.20 - 1.30	18,000	69	9.70	7.10
9. Sawn formwork to soffits of suspended slabs	40	201,800	675	410	250
10. Sawn formwork to columns and walls	40	220,000	725	410	250
11. 112.5mm thick brick walls	35 - 40	312,780	1,100	400	450
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	43	401,110 - 597,600	1,700	870	N/A
13. Aluminium casement windows, single glazed	290	6,315,000	6,000	3,200	4,000
14. Structural steelwork - beams, stanchions and the like	4.00 - 4.50	52,650	120	36	35
15. Steelwork - angles, channels, flats and the like	4.00 - 4.50	52,650	120	38	40
16. 25mm cement and sand (1:3) paving	21	94,000	475	150	120

17. 20mm cement and sand (1:4) plaster to walls	m ²	22	144,000	390	155	150
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	74	674,180	1,700	400	450
19. 12mm fibrous plasterboard ceiling lining	m ²	30	205,920	1,350	600	650
20. Two coats of emulsion paint to plastered surfaces	m ²	3.50 - 4.00	88,900	240	75	200
Average expected preliminaries	%	12 - 15	8 - 12	8 - 12	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 GST.

+ Rate for lean concrete blinding.

^ 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.

Rates including dumping charges.

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MAJOR RATES FOR SELECTED ASIAN CITIES

	BEIJING RMB	SHANGHAI RMB	CHONGQING/ CHENGDU RMB	SHENZHEN/ GUANGZHOU RMB
1. Excavating basement ≤ 2m deep	26	30	22	32
2. Excavating for footings ≤ 1.5m deep	31	30	26	26
3. Remove excavated materials off site	37	130	67	80 - 100
4. Hardcore bed blinded with fine materials	170	180	160	190
5. Mass concrete grade 15	410	450	320	470
6. Reinforced concrete grade 30	480	485	360	500
7. Mild steel rod reinforcement	4.90	5.20	5.20	5.50
8. High tensile rod reinforcement	4.90	5.20	5.20	5.50
9. Sawn formwork to soffits of suspended slabs	85	85	60	85
10. Sawn formwork to columns and walls	73	85	60	85
11. 112.5mm thick brick walls	72	85*	70	75
12. "Kliplok Colorbond" 0.64mm profiled steel sheeting	N/A	N/A	N/A	N/A
13. Aluminium casement windows, single glazed	815+	700	650+	650
14. Structural steelwork - beams, stanchions and the like	9.35	9.50	11.10	11.00
15. Steelwork - angles, channels, flats and the like	8.50	8.50	11.10	9.00
16. 25mm cement and sand (1:3) paving	27	30	25	32

17. 20mm cement and sand (1:4) plaster to walls	m ²	28	30	35	30
18. Ceramic tiles bedded to floor screed (measured separately)	m ²	140	155	130	155
19. 12mm fibrous plasterboard ceiling lining	m ²	162	150	150	190
20. Two coats of emulsion paint to plastered surfaces	m ²	32	40	35	35
Average expected preliminaries	%	7 - 10	5 - 10	5 - 10	5 - 10

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.

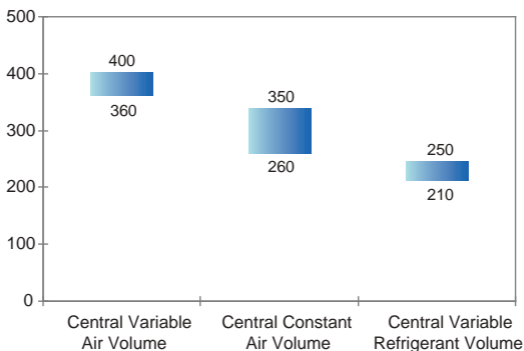
+ Rate for double glazed window.

1 CONSTRUCTION COST DATA

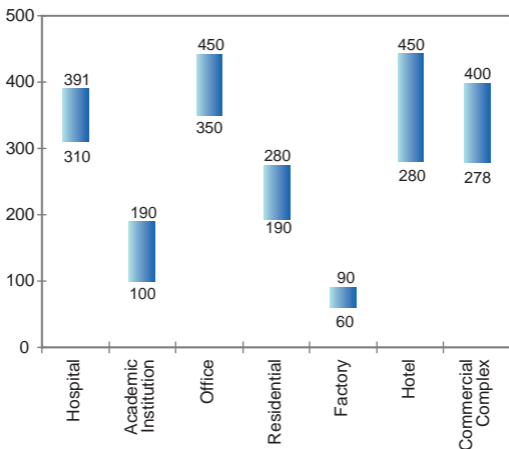
ACMV COSTS FOR VARIOUS DESIGNS & DEVELOPMENTS IN KUALA LUMPUR

ACMV : Air Conditioning & Mechanical Ventilation System

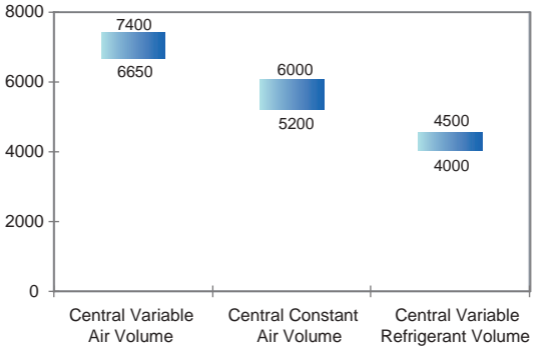
RM/m² of Construction Floor Area



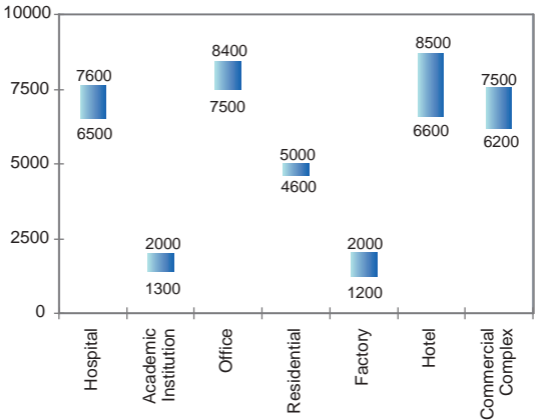
RM/m² of Construction Floor Area



RM/Tonne of Refrigeration



RM/Tonne of Refrigeration



M&E COSTS FOR SELECTED ASIAN CITIES

	KUALA LUMPUR [^] RM/m ²	BANGKOK [@] BAHT/m ²	BRUNEI B\$/m ²	JAKARTA [#] IDR '000/m ²	MANILA ^{\$} PHP/m ²
<u>MECHANICAL SERVICES</u>					
Offices	355 - 515	4,200 - 4,700	178 - 220	981 - 1,154	3,000 - 5,200
Industrial*	85 - 190	1,550 - 1,600	23 - 38	301 - 710	700 - 1,500
Hotels	300 - 580	4,600 - 5,100	283 - 326	976 - 1,313	3,500 - 7,200
Shopping Centres	315 - 505	4,200 - 4,700	201 - 239	863 - 1,037	2,500 - 5,000
Apartments	195 - 285	4,200 - 4,500	208 - 239	873 - 1,226	700 - 3,600
<u>ELECTRICAL SERVICES</u>					
Offices	310 - 510	3,400 - 3,800	226 - 283	792 - 1,057	3,300 - 7,000
Industrial**	145 - 190	1,950 - 2,200	188 - 226	449 - 700	2,000 - 3,500
Hotels	285 - 595	3,800 - 4,500	283 - 369	797 - 1,124	4,700 - 10,000
Shopping Centres	310 - 495	2,800 - 3,200	369 - 308	690 - 868	3,600 - 6,000
Apartments	105 - 220	2,800 - 3,350	244 - 308	838 - 1,062	3,600 - 6,300
<u>HYDRAULIC SERVICES</u>					
Offices	30 - 60	780 - 900	16 - 38	199 - 281	900 - 2,200
Industrial	40 - 50	750 - 790	11 - 19	112 - 204	700 - 1,300
Hotels	180 - 250	1,400 - 1,650	59 - 81	797 - 1,124	1,950 - 4,300
Shopping Centres	30 - 35	790 - 950	12 - 40	189 - 291	700 - 1,600
Apartments	20 - 50	1,200 - 1,400	37 - 58	848 - 1,144	1,800 - 3,000

<u>FIRE SERVICES</u>						
Offices	60 - 80	780 - 850	31 - 38	271 - 398	800 - 1,300	
Industrial	45 - 65	730 - 750	12 - 19	112 - 204	750 - 2,000	
Hotels	65 - 95	780 - 890	25 - 48	271 - 393	700 - 1,200	
Shopping Centres	65 - 85	780 - 820	31 - 64	266 - 312	700 - 1,300	
Apartments	20 - 30	720 - 850	25 - 50	281 - 327	800 - 1,300	
<u>LIFTS / ESCALATORS</u>						
Offices	95 - 395	1,100 - 1,350	9 - 31	424 - 1,134	1,600 - 3,600	
Industrial	55 - 190	N/A	4 - 19	N/A	0 - 400	
Hotels	85 - 365	1,100 - 1,400	12 - 44	414 - 1,052	1,800 - 3,400	
Shopping Centres	85 - 110	250 - 450	12 - 35	312 - 838	800 - 2,300	
Apartments	65 - 105	500 - 580	11 - 25	414 - 853	850 - 2,200	

The above costs are at 4th Quarter 2017 levels, exclusive of contingencies unless otherwise stated.

* Generally without air condition.

** Excludes special power supply.

^ Rates are nett of GST.

@ 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.

(Cont'd)

M&E COSTS FOR SELECTED ASIAN CITIES

	SINGAPORE [^] S\$/m ²	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	153 - 249	1,885 - 2,687	4,585 - 6,500	2,000 - 2,800	N/A
Industrial*	34 - 117	N/A	2,110 - 3,750	200 - 300	N/A
Hotels	129 - 278	N/A	5,615 - 6,130	2,200 - 2,750	2,600 - 3,000
Shopping Centres	147 - 246	N/A	4,380 - 5,735	2,300 - 2,850	2,200 - 2,800
Apartments	90 - 170	1,423 - 1,950	2,500 - 3,100	850 - 1,750	900 - 1,100
<u>ELECTRICAL SERVICES</u>					
Offices	158 - 258	2,136 - 2,547	4,050 - 5,575	1,750 - 2,500	N/A
Industrial**	55 - 136	N/A	2,390 - 3,965	650 - 900	N/A
Hotels	181 - 356	N/A	4,500 - 6,135	1,900 - 2,600	2,600 - 3,100
Shopping Centres	160 - 304	N/A	3,870 - 5,175	1,900 - 2,500	2,600 - 2,800
Apartments	97 - 228	1,884 - 2,379	1,950 - 2,680	1,100 - 1,750	1,000 - 1,300
<u>HYDRAULIC SERVICES</u>					
Offices	26 - 55	306 - 572	710 - 1,080	700 - 900	N/A
Industrial	18 - 36	N/A	485 - 850	500 - 700	N/A
Hotels	91 - 172	N/A	3,695 - 5,565	2,000 - 3,000	1,800 - 2,200
Shopping Centres	46 - 80	N/A	1,050 - 1,900	700 - 900	600 - 800
Apartments	72 - 141	596 - 693	1,665 - 2,300	1,500 - 2,400	1,500 - 2,000

<u>FIRE SERVICES</u>						
Offices	33 - 56	664 - 1,101	1,130 - 1,475	550 - 700	N/A	
Industrial	23 - 51	N/A	540 - 710	400 - 500	N/A	
Hotels	28 - 57	N/A	1,315 - 1,680	600 - 850	900 - 1,100	
Shopping Centres	37 - 56	N/A	1,080 - 1,250	550 - 700	600 - 800	
Apartments	25 - 50	456 - 572	600 - 715	200 - 450	250 - 300	
<u>LIFTS / ESCALATORS</u>						
Offices	63 - 162	635 - 1,212	940 - 1,195	700 - 1,200	N/A	
Industrial	41 - 104	N/A	610 - 785	550 - 750	N/A	
Hotels	49 - 108	N/A	1,365 - 1,990	550 - 850	600 - 800	
Shopping Centres	56 - 90	1,293 - 1,830	1,600 - 2,050	850 - 1,000	450 - 700	
Apartments	41 - 113	721 - 1,044	850 - 1,100	450 - 850	450 - 600	

The above costs are at 4th Quarter 2017 levels, exclusive of contingencies unless otherwise stated.

* Generally without air condition.

** Excludes special power supply.

^ Rates are nett of GST and excluding BAS.

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	760 - 1,050	776 - 985	760 - 1,050	690 - 990
Industrial*	170 - 280	176 - 295	150 - 280	140 - 230
Hotels	950 - 1,200	990 - 1,290	1,080 - 1,350	730 - 1,180
Shopping Centres	790 - 950	1,050 - 1,103	700 - 960	590 - 990
Apartments	140 - 450	315 - 415	150 - 400	110 - 300
<u>ELECTRICAL SERVICES</u>				
Offices	460 - 703	605 - 664	530 - 780	430 - 660
Industrial**	320 - 450	311 - 440	310 - 450	260 - 360
Hotels	705 - 943	664 - 847	700 - 1000	520 - 770
Shopping Centres	481 - 676	530 - 664	490 - 680	410 - 660
Apartments	253 - 398	257 - 375	280 - 500	230 - 340
<u>HYDRAULIC SERVICES</u>				
Offices	95 - 140	110 - 163	125 - 180	60 - 120
Industrial	95 - 140	89 - 131	86 - 120	60 - 120
Hotels	370 - 480	368 - 488	390 - 500	280 - 350
Shopping Centres	140 - 200	137 - 184	110 - 165	60 - 120
Apartments	170 - 230	168 - 226	145 - 280	100 - 180

<u>FIRE SERVICES</u>						
Offices	180 - 265	225 - 315	225 - 350	200 - 260		
Industrial	150 - 225	153 - 255	140 - 270	130 - 230		
Hotels	220 - 375	285 - 385	280 - 420	200 - 320		
Shopping Centres	220 - 375	255 - 380	245 - 375	250 - 350		
Apartments	70 - 135	53 - 102	70 - 150	60 - 110		
<u>LIFTS / ESCALATORS</u>						
Offices	294 - 577	280 - 550	295 - 500	340 - 590		
Industrial	145 - 400	135 - 390	150 - 440	150 - 350		
Hotels	232 - 520	220 - 495	250 - 470	290 - 490		
Shopping Centres	327 - 520	325 - 495	325 - 470	290 - 440		
Apartments	175 - 289	165 - 325	125 - 300	140 - 240		

The above costs are at 4th Quarter 2017 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 EQUIPMENT</u> Outdoor playground equipment comprising various activities and safety mat Age group: 4 to 12 Child Capacity: 15 - 20 * Price varies according to equipment and design.</p>	per set	46,600
<p><u>SAUNAS</u> Sauna room complete with timber finishes (Finland Spruce), stainless steel heater with built-in control panel and all accessories Size: 8' x 8' x 7'6"</p>	per room	15,200
<p><u>STEAM BATHS</u> Steam bath complete with steam generator, aluminium framed glass door, ceramic wall tiles, water proofing system, lighting and all accessories Size: 8' x 8' x 7'6"</p>	per room	18,000
<p><u>GOLF COURSES</u> (Based on "Average Cost Model" of an 18 hole golf course in Asia). Including fairway construction and rough hydro seeding.</p>	per hole	2,550,000
<p><u>GOLF SIMULATOR</u> Complete golf simulation system complete with projector, high impact projection screen, artificial grass putting turf, putting green</p>	per set	275,000

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	59,300
<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 - 3,330
4 - star Hotel	3,110 - 4,050
5 - star Hotel	3,990 - above
Guest Rooms:	
3 - star Hotel	1,180 - 1,740
4 - star Hotel	1,620 - 2,670
5 - star Hotel	2,540 - 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 - 630
Executive Office	620 - 1,050
Prestige Office	1,030 - 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 - 3,700
Fine dining restaurant	5,380 - 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 Construction Sector

Estimating Rules of Thumb

Technical Specifications

Average Unit Prices

Unit Price Index

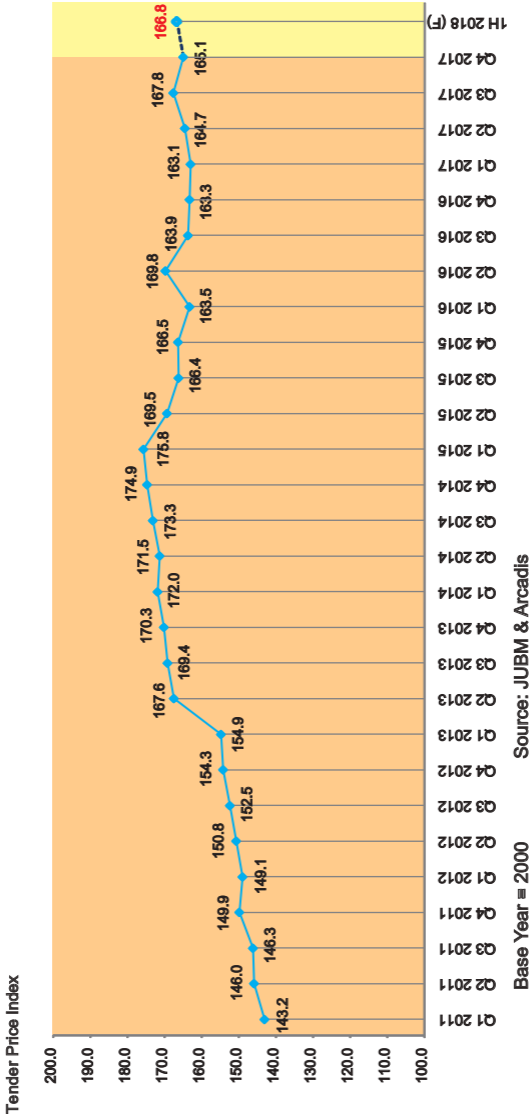
Construction Sector Indicators

Commodities Price Trend
(Jan to Nov 2017)

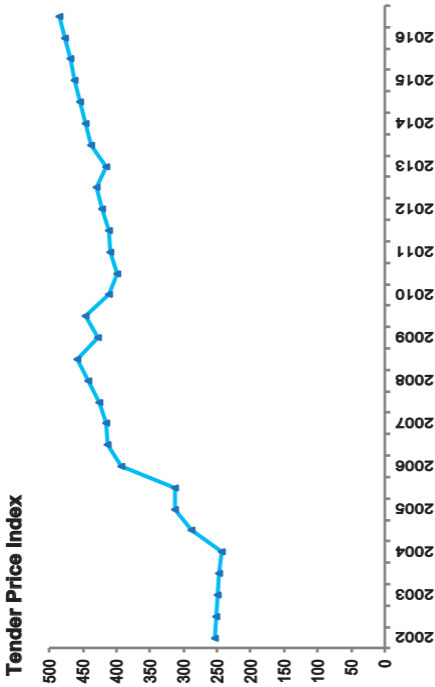
Malaysia Construction Sector
- Employment & GDP

Progress Payments

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



JKR TENDER PRICE INDEX



TENDER PRICE INDEX		
Year	1/2	2/2
2006	393.64	412.62
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

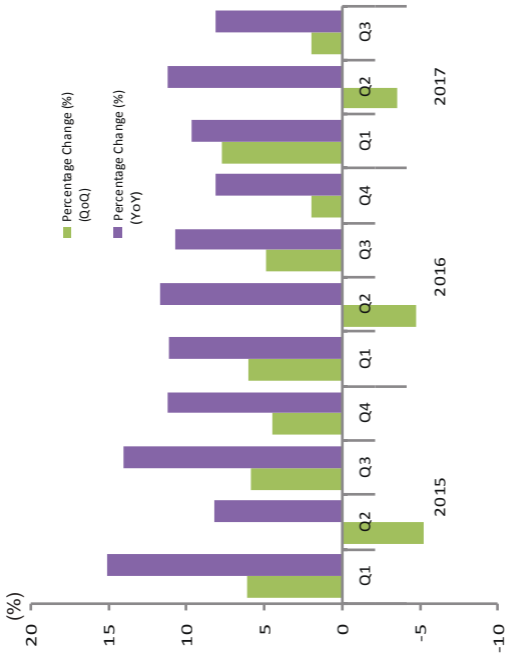
Base Year = 1980
Source: Contract and Quantity Survey Branch, Public Works Department (JKR), Malaysia

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	(%)
Q1/2013	5,413	26.3	6,714	32.6	7,603	36.9	884	4.3	20,613	100.0
Q2/2013	6,484	28.5	7,123	31.4	8,025	35.3	1,086	4.8	22,717	100.0
Q3/2013	6,253	27.4	7,869	34.4	7,667	33.6	1,062	4.6	22,852	100.0
Q4/2013	6,813	27.6	7,598	30.8	9,006	36.5	1,275	5.1	24,692	100.0
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

Source: Quarterly Construction Statistics, Department of Statistics Malaysia

PERFORMANCE OF THE CONSTRUCTION SECTOR



	No. of Project	Value of Construction Done (RM'000)	Percentage Change (%) (QoQ) (YoY)
2015	Q1	28,740,794	6.1 15.1
	Q2	27,239,139	-5.2 8.2
	Q3	28,834,152	5.9 14.0
	Q4	30,128,938	4.5 11.2
2016	Q1	31,941,170	6.0 11.1
	Q2	30,427,274	-4.7 11.7
	Q3	31,909,993	4.9 10.7
	Q4	32,559,568	2.0 8.1
2017	Q1	35,053,464	7.7 9.7
	Q2	33,825,084	-3.5 11.2
	Q3	34,495,002	2.0 8.1

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
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The above ratios are indicative and for reference purposes only. They do not account for buildings with special shapes, configurations or particular small foot prints.

Indicative Dimensions for Sports Grounds

	Length	Width
Tennis Court	40 m	20 m
Squash Court	13 m	6 m
Basketball Court	38 m	23 m
Volleyball Court	30 m	20 m
Badminton Court	20 m	10 m
Rink	61 m	26 m
Soccer Playing 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

2017	Fuel Oil RM/Litre			Bitumen RM/Metric Ton			Automotive Gas Oil RM/Litre			Sand RM/Metric Ton			Cement RM/50 kg Bag											
	Medium	80/100 Penetration						Diesel Retail Price						River Sand						Ordinary Portland				
Region	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C			
Jan	2.17	2.31	N/A	1750.00	N/A	2,180.0	2.05	2.05	2.05	48.28	36.66	39.00	19.06	18.89	20.06									
Feb	N/A	N/A	N/A	1720.00	N/A	1,900.0	2.15	2.15	2.15	48.28	36.66	39.00	19.30	18.89	20.06									
Mar	N/A	N/A	N/A	1720.00	N/A	1,845.0	2.20	2.20	2.20	48.28	36.66	39.00	19.30	18.89	20.06									
Apr	N/A	N/A	N/A	1720.00	N/A	1,875.0	2.14	2.14	2.14	47.10	47.04	39.00	19.30	18.89	20.06									
May	N/A	N/A	N/A	N/A	N/A	N/A	2.02	2.02	2.02	47.10	47.04	39.00	19.04	17.97	20.06									
Jun	N/A	N/A	N/A	N/A	N/A	N/A	1.92	1.92	1.92	47.10	47.04	39.00	19.04	17.97	20.06									
Jul	N/A	N/A	N/A	N/A	N/A	N/A	1.93	1.93	1.93	47.10	65.21	39.00	18.66	17.97	20.06									
Aug	N/A	N/A	N/A	N/A	N/A	N/A	2.01	2.01	2.01	47.58	65.21	39.00	18.49	17.97	19.72									
Sep	N/A	N/A	N/A	N/A	N/A	N/A	2.09	2.09	2.09	48.01	65.21	39.00	18.33	17.97	19.72									
Oct	N/A	N/A	N/A	N/A	N/A	N/A	2.13	2.13	2.13	48.01	65.21	39.00	18.33	17.97	19.73									
Nov	N/A	N/A	N/A	N/A	N/A	N/A	2.21	2.21	2.21	48.01	65.21	39.00	18.18	17.97	19.73									

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

December rates are not available at time of printing.

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

2017	Aggregates RM/Metric Ton											
	Granite 10mm (3/8")			Granite 20mm (3/4")			Granite 40mm (1 1/2")			Crusher run		
Region	A	B	C	A	B	C	A	B	C	A	B	C
Jan	31.84	41.65	29.97	33.89	62.83	32.20	31.33	48.70	31.15	24.86	39.13	24.79
Feb	33.18	41.65	29.97	35.41	62.83	32.20	33.02	48.70	31.15	25.77	39.13	24.79
Mar	33.18	41.65	29.97	35.38	62.83	32.20	33.02	46.00	31.15	26.67	38.26	25.60
Apr	33.18	40.44	29.97	35.64	65.19	33.63	32.02	43.30	29.60	26.73	37.83	24.00
May	32.79	35.48	29.97	35.64	65.19	33.63	32.02	43.30	29.60	26.73	36.61	24.00
Jun	32.79	35.48	29.97	35.58	65.19	33.63	32.02	43.30	27.50	26.59	36.61	24.00
Jul	32.87	35.48	29.97	35.79	65.19	33.63	32.02	43.30	27.50	27.11	35.38	24.00
Aug	32.87	35.48	29.97	35.48	65.19	33.63	32.02	43.30	27.50	27.11	35.38	24.00
Sep	32.97	35.48	29.97	35.66	65.19	33.63	33.23	43.30	27.50	27.24	35.38	24.00
Oct	32.97	35.48	29.97	35.66	65.19	33.63	33.23	40.94	27.50	26.97	35.38	24.00
Nov	32.87	35.48	29.97	35.48	65.19	33.63	33.23	38.58	27.50	26.97	35.38	24.00

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

December rates are not available at time of printing.

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

UNIT PRICE INDEX

2017	Bricks & Wall	Glass	Ceiling Materials	Roofing Materials	Timber	Plywood	Sanitary Fittings	Floor & Wall Tiles	Plumbing Materials	Steel & Metal Sections	Paints
Jan	103.9	115.9	108.6	107.4	122.2	85.6	114.7	114.7	104.6	95.1	111.4
Feb	103.9	115.9	108.6	107.4	122.2	85.6	114.7	114.7	104.6	96.2	111.4
Mar	103.9	115.9	108.6	107.4	122.2	85.6	114.7	114.7	104.6	97.2	111.8
Apr	104.1	115.9	108.6	107.4	122.2	85.6	114.7	114.7	104.7	97.5	118.8
May	104.1	115.9	108.6	107.5	122.8	85.6	114.7	114.7	104.7	97.5	111.8
Jun	102.7	115.9	108.6	107.0	122.6	85.6	114.7	114.7	104.7	97.0	111.8
Jul	101.9	115.9	108.6	107.3	122.6	85.6	114.7	114.7	104.6	96.9	112.0
Aug	101.8	115.9	108.4	109.7	120.1	83.0	114.7	115.2	104.7	100.2	112.0
Sep	101.8	115.9	108.6	109.9	115.7	83.0	114.7	115.2	104.6	101.0	112.1
Oct	101.8	115.9	108.6	111.2	113.3	80.3	114.7	115.2	104.6	103.4	112.6
Nov	101.9	115.9	108.6	111.2	113.4	80.3	114.9	115.2	105.2	104.6	112.9

Note: July 2012 = 100

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

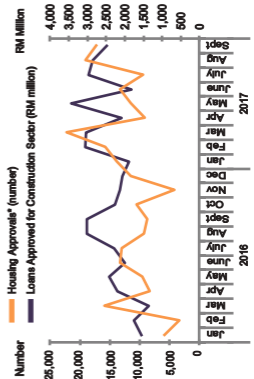
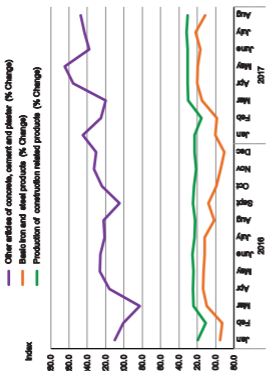
December rates are not available at time of printing.

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

CONSTRUCTION SECTOR INDICATORS

2017	Production* (Index)			Construction Related Products	Housing Approvals* (number)	Loans Approval for Construction Sector (RM million)
	Other Articles of Concrete, Cement & Plaster	Basic Iron and Steel Products				
Jan	245.1	100.3		122.7	13,881	1,878
Feb	225.0	98.4		115.3	15,758	3,060
Mar	219.7	114.9		129.9	22,309	3,030
Apr	255.1	120.2		130.3	9,169	2,087
May	264.6	119.5		130.3	11,484	3,436
Jun	237.9	116.6		130.5	13,310	1,822
Jul	243.2	121.9		131.6	9,407	2,971
Aug	247.3	111.1		130.4	19,089	2,855
Sep	-	-		-	17,357	2,494

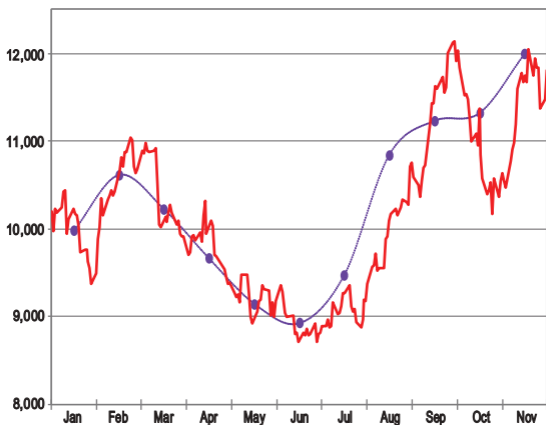
Note: # All rates are based on the new Industrial production Index (2010 = 100).
 * No. of housing units by private developers approved for construction by the Ministry of Housing and Local Government in Peninsular Malaysia.
 Source: Monthly Statistical Bulletin, Central Bank of Malaysia.



COMMODITIES PRICE TREND (JAN TO NOV 2017)

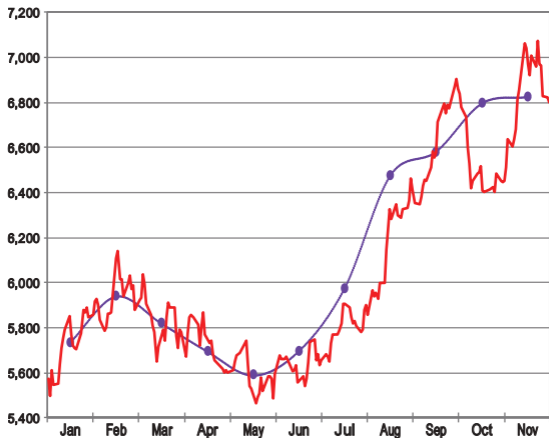
Nickel

USD/Tonne



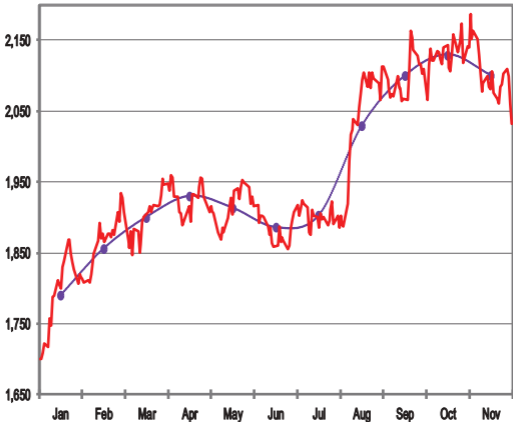
Copper (Grade A)

USD/Tonne



Aluminium

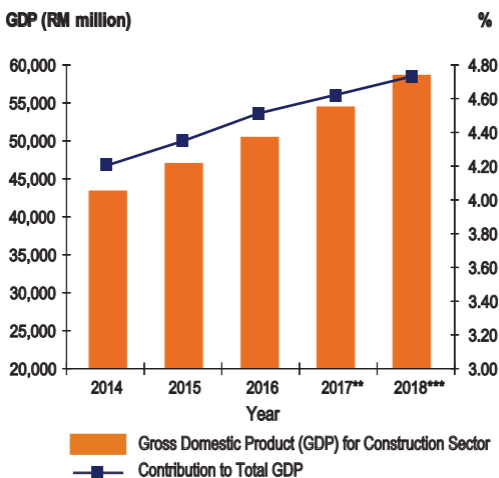
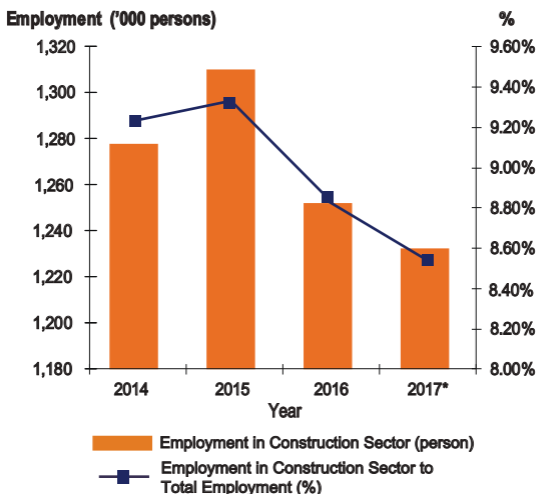
USD/Tonne



Year 2017	Aluminium	Copper (Grade A)	Nickel
	Monthly Average (USD / Tonne)		
Jan	1,789.95	5,736.55	9,977.14
Feb	1,856.08	5,940.65	10,611.75
Mar	1,900.65	5,820.65	10,220.87
Apr	1,930.28	5,697.06	9,661.11
May	1,913.21	5,590.71	9,147.62
Jun	1,885.89	5,698.68	8,924.55
Jul	1,902.83	5,977.62	9,475.71
Aug	2,029.16	6,477.18	10,844.09
Sep	2,099.81	6,582.17	11,227.14
Oct	2,129.64	6,796.30	11,314.32
Nov	2,100.11	6,824.61	11,987.05

Source: London Metal Exchange

MALAYSIA CONSTRUCTION SECTOR - EMPLOYMENT & GDP



Note: * For the first half 2017

** Estimate by Ministry of Finance Malaysia

*** Forecast by Ministry of Finance Malaysia

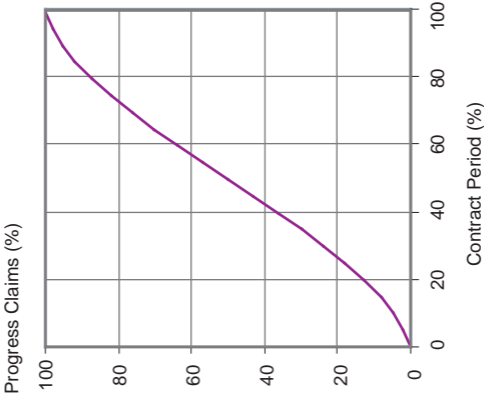
Source: Economic Report 2017/2018,
Ministry of Finance, Malaysia

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

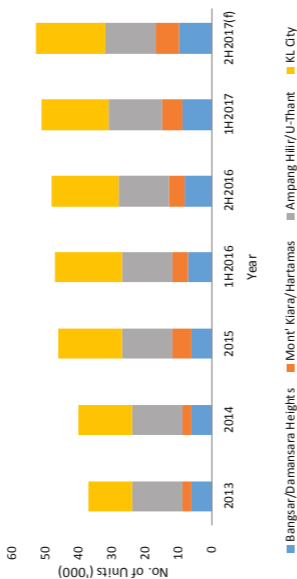
Shopping Complex

Shop

Industrial

RESIDENTIAL

Projection of Cumulative Supply for High End Condominiums / Residences 2013 - 2H2017(f)



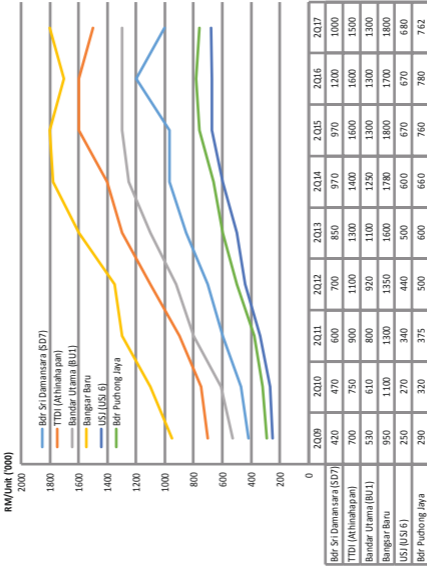
Source: Knight Frank

Residential Q2 2017 ^P	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	458,237	40,051
WP Putrajaya	10,409	6,264
WP Labuan	11,816	1,290
Selangor	1,480,291	115,377
Johor	775,174	87,193
Pulau Pinang	490,774	46,740
Perak	462,428	35,726
Negeri Sembilan	257,870	21,593
Melaka	176,545	15,702
Kedah	316,210	18,151
Pahang	262,054	21,980
Terengganu	96,707	17,402
Kelantan	77,111	9,879
Perlis	25,004	1,622
Sabah	205,602	24,840
Sarawak	242,438	21,623
MALAYSIA	5,348,670	485,433

p = preliminary

Source: Residential Property Stock Report, 2nd Quarter 2017, by Valuation & Property Services Department.

Capital Value for selected 2-storey terraced houses (land area 1,200 - 1,870 sqft) in Klang Valley



Source: The Edge

Average Asking Prices and Rentals of Existing High End Condominiums (1H 2017)

Locality	Asking Gross Rental (RM psf/month)	Average Asking Price (RM psf/month)
KL City*	2.20 - 5.20	710 - 1,750
Ampang Hilir / U-Thant**	2.00 - 3.50	570 - 1,200
Damansara Heights***	2.20 - 4.30	550 - 1,020
Kenny Hills	2.00 - 3.50	550 - 900
Bangsar	2.20 - 4.50	700 - 1,300
Mont Kiara****	1.80 - 3.40	500 - 850

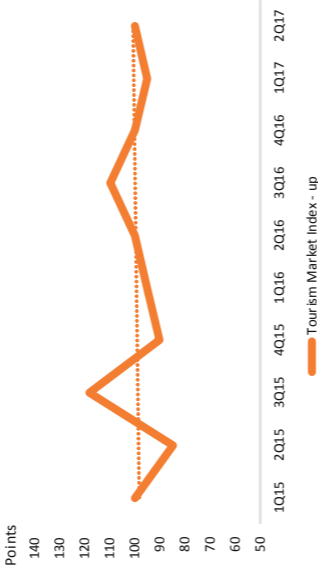
Notes:

- * Excludes Binjai on the Park but includes Pavilion Residences
- ** Excludes Seri Hening
- *** Includes Twins @ Damansara Heights
- **** Excludes Verve Suites which comprise mainly fully furnished small units

Source: Knight Frank

HOTEL

Tourism Market Index



Hotel Q2 2017 ^p	Existing Stock (Room)	Incoming Supply (Room)
WP Kuala Lumpur	38,695	5,328
WP Putrajaya	1,068	243
WP Labuan	1,614	479
Selangor	20,221	1,860
Johor	26,798	1,888
Pulau Pinang	18,659	3,036
Perak	15,936	938
Negeri Sembilan	8,726	1,661
Melaka	13,997	4,360
Kedah	16,196	1,081
Pahang	28,857	140
Terengganu	7,860	66
Kelantan	4,480	161
Perlis	1,111	280
Sabah	20,570	1,688
Sarawak	18,448	911
MALAYSIA	243,236	24,120

p = preliminary

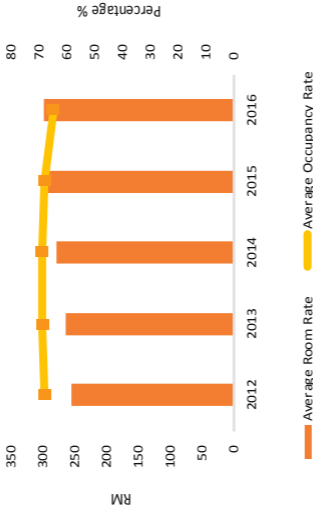
Source: Leisure Property Stock Report, 2nd Quarter 2017, by Valuation & Property Services Department

Source: Malaysia Institute of Economic Research

Tourist Arrivals & Receipts to Malaysia

Year	Arrivals (million)	Receipts (RM billion)
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
2006	17.55	36.3

Performance of Hotels

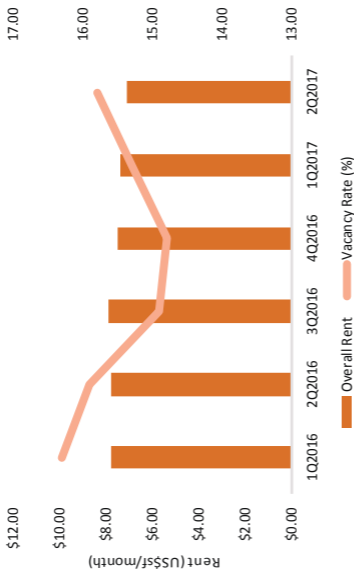


Source: Tourism Malaysia

Source: Property Market 2017, CBRE / WTW Research

OFFICE

All Grade CBD Overall Rent & Vacancy Rate (1Q2016 - 2Q2017)



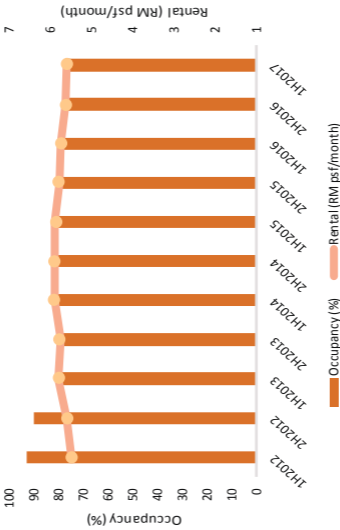
Source: IVPS Research

Selected Grade A Office Asking Rentals (1H2017)

Location	Asking Gross Rental (RM psf/month)
KL City	
Integra Tower	11.00
Menara Maxis	10.50
Vista Tower	7.50 - 8.50
G Tower	8.00
Menara Darussalam	8.50
Menara Binjai	8.80
Menara Prestige	7.50 - 8.50
KL Fringe	
Menara CIMB	8.00
Menara Allianz Sentral & Nu Tower 2	7.00
The Gardens North & South Towers	7.80
Menara BRDB	6.50
Axiata Tower (formerly Quill 7)	7.50
1 Sentrum	7.80
Beyond KL (Selangor)	
1 First Avenue	6.00
Plaza 33	4.50
Surian Tower	5.50
The Ascent @ Paradigm	5.50
Puchong Financial Corporate Centre	4.50
The Pinnacle	5.50
Wisma Mustapha Kamal	4.50

Source: Knight Frank

Kuala Lumpur - Occupancy and Rental Trends 1H2012 - 1H2017



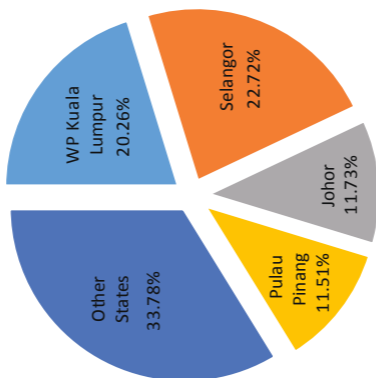
Source: Knight Frank Research

Purpose Built Office Q2 2017 ^p	Existing Stock Total Space (m ²)	Incoming Supply Total Space (m ²)
WP Kuala Lumpur	8,738,261	599,762
WP Putrajaya	2,114,207	481,679
WP Labuan	66,716	19,222
Selangor	3,437,013	447,611
Johor	1,137,996	134,277
Pulau Pinang	1,113,401	20,390
Perak	620,110	1,839
Negeri Sembilan	306,657	9,487
Melaka	402,247	-
Kedah	362,086	31,019
Pahang	401,386	19,175
Terengganu	343,711	2,042
Kelantan	386,070	8,452
Perlis	131,038	11,933
Sabah	725,813	47,624
Sarawak	707,484	41,570
MALAYSIA	20,994,196	1,876,082

^p = preliminary

Source: Commercial Property Stock Report, 2nd Quarter 2017 by Valuation & Property Services Department

SHOPPING COMPLEX

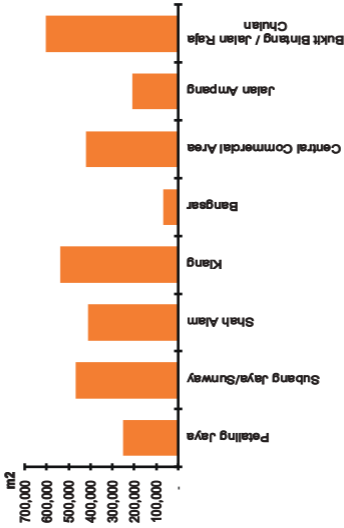
Distribution of Shopping Complex in Malaysia as at Q2 2017^P

Shopping Complex Q2 2017 ^P	Existing Stock Total Space (m ²)	Incoming Supply Total Space (m ²)
WP Kuala Lumpur	3,058,200	227,653
WP Putrajaya	61,090	26,456
WP Labuan	28,434	0
Selangor	3,430,024	394,662
Johor	1,770,653	518,337
Pulau Pinang	1,738,282	43,963
Perak	975,135	29,146
Negeri Sembilan	463,103	70,238
Melaka	563,389	48,923
Kedah	580,678	4,895
Pahang	292,203	85,334
Terengganu	165,174	8,745
Kelantan	334,880	115,287
Perlis	55,872	6,806
Sabah	695,658	95,192
Sarawak	884,066	176,593
MALAYSIA	15,096,841	1,852,230

p = preliminary

Source: Commercial Property Stock Report 2nd Quarter 2017 by Valuation & Property Services Department

Shopping Complex's Existing Stock in Kuala Lumpur & Selangor (By Location) as at Q2 2017



Shopping Centres Scheduled for Completion / Opening in 2H2017

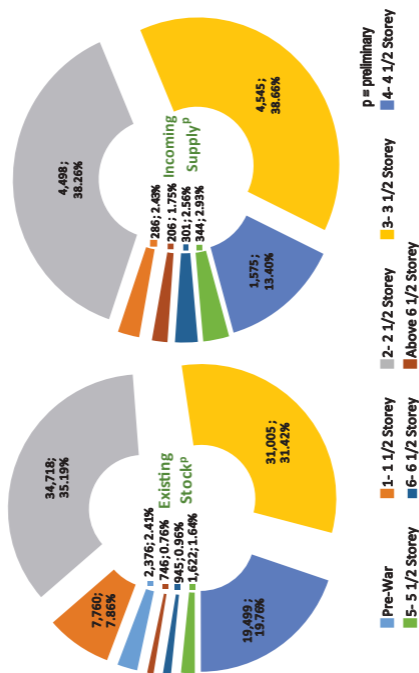
New Projects	Estimate Net. Lettable Area (sf)
Melawati Mall	620,000
KL Eco City Retail Podium	200,000
Amerin Mall (Cheras Selatan)	155,600
Evo Shopping Mall	251,000
Empire City Mall	2,300,000

Source: Commercial Property Stock Report 2nd Quarter 2017 by Valuation & Property Services Department

Source: Knight Frank

SHOP

Distribution of Existing and Incoming Supply of Shop In Kuala Lumpur and Selangor as at Q2 2017



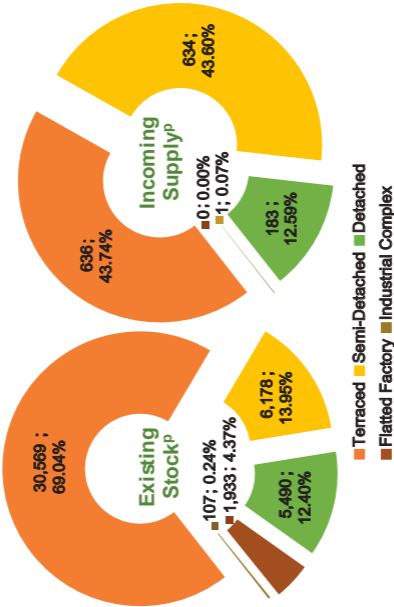
Shop Q2 2017 ^p	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	25,753	1,817
WP Putrajaya	420	119
WP Labuan	889	102
Selangor	87,893	15,420
Johor	75,364	19,507
Pulau Pinang	32,631	5,135
Perak	54,734	6,219
Negeri Sembilan	20,101	5,068
Melaka	18,964	5,091
Kedah	27,152	4,759
Pahang	22,832	2,940
Terengganu	6,815	1,365
Kelantan	9,962	2,864
Perlis	4,166	803
Sabah	18,499	5,005
Sarawak	30,732	3,740
MALAYSIA	436,907	79,954

p = preliminary

Source: Commercial Property Stock Report, 2nd Quarter 2017, by Valuation & Property Services Department

INDUSTRIAL

Distribution of Existing and Incoming Supply of Industrial Units in Kuala Lumpur and Selangor as at Q2 2017



p = preliminary

p = preliminary

Source: Industrial Property Stock Report, 2nd Quarter 2017, by Valuation & Property Services Department

Industrial Q2 2017 ^p	Existing Stock (unit)	Incoming Supply (unit)
WP Kuala Lumpur	5,138	0
WP Putrajaya	48	0
WP Labuan	563	75
Selangor	39,139	1,454
Johor	16,117	1,821
Pulau Pinang	9,057	246
Perak	8,103	474
Negeri Sembilan	5,433	61
Melaka	6,495	938
Kedah	3,825	47
Pahang	3,495	113
Terengganu	865	48
Kelantan	604	17
Perlis	222	31
Sabah	6,051	262
Sarawak	6,637	477
MALAYSIA	111,792	6,064

Financial Definitions & Formulae

Mortgage Repayment Table

Malaysia Balance of Trade

Consumer 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

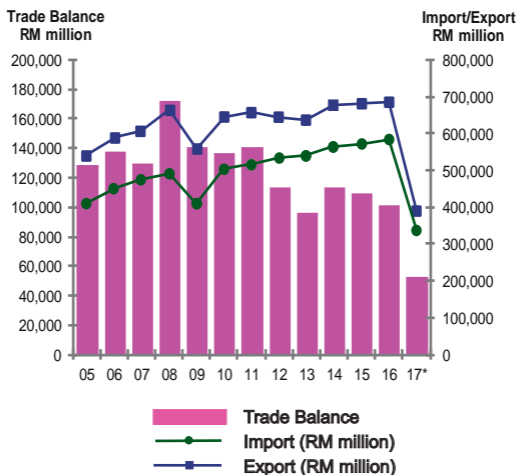
Interest p.a.	REPAYMENT (years)			
	5	10	15	20
5%	18.87	10.61	7.91	6.60
6%	19.33	11.10	8.44	7.16
7%	19.80	11.61	8.99	7.75
8%	20.28	12.13	9.56	8.36
9%	20.76	12.67	10.14	9.00
10%	21.25	13.22	10.75	9.65
11%	21.74	13.78	11.37	10.32
12%	22.24	14.35	12.00	11.01
13%	22.75	14.93	12.65	11.72
14%	23.27	15.53	13.32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



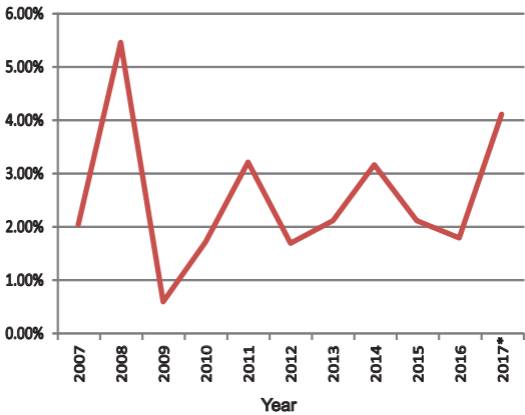
Year	Exports (RM mil)	Imports (RM mil)	Trade Balance (RM mil)
2007	605,175	475,687	129,488
2008	663,875	492,076	171,799
2009	552,920	412,565	140,355
2010	641,135	504,384	136,751
2011	658,421	517,893	140,529
2012	644,864	531,835	113,030
2013	637,683	541,131	96,552
2014	678,865	565,538	113,327
2015	681,275	572,051	109,224
2016	686,075	584,693	101,382
2017	390,895	338,569	52,325

Note: * January to June 2017 only

Source: Economic Report 2017/2018,
Ministry of Finance, Malaysia

CONSUMER PRICE INDEX

% Change in CPI



Year	CPI	% Change
2007	92.7	2.03 %
2008	97.7	5.44 %
2009	98.3	0.58 %
2010	100.0	1.71 %
2011	103.2	3.19 %
2012	104.9	1.66 %
2013	107.1	2.11 %
2014	110.5	3.14 %
2015	112.8	2.10 %
2016	115.0	1.78%
2017*	119.5	4.09%

Note: Year 2010 is the Base Year

* Average from January to November 2017 only

Source: Department of Statistics, Malaysia

PRIME RATES & BASE LENDING RATES

as at 4th Quarter 2017

Country	Rate (%)
Brunei	5.50
China [*]	4.75
Hong Kong	5.00
India	9.55
Indonesia	5.00
Macau	5.25
Malaysia ^{**}	4.35
Philippines	4.14
Singapore	5.28
Thailand ⁺	7.00
United Kingdom	0.50
United States of America	4.50
Vietnam [#]	9.00

* 5-Year Benchmark Lending Rate

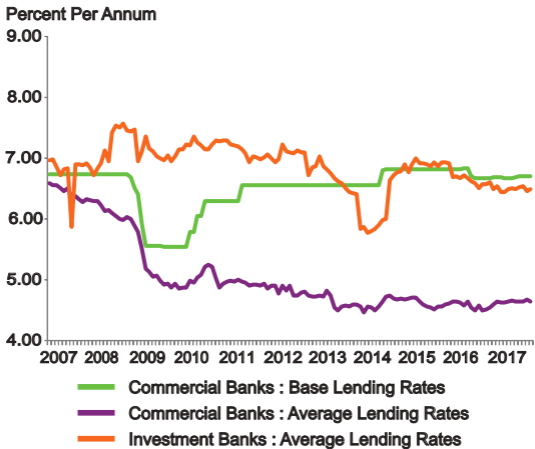
** Indicative Effective Lending Rate

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

Minimum and in VND per year

Source:
Arcadis Asia Offices

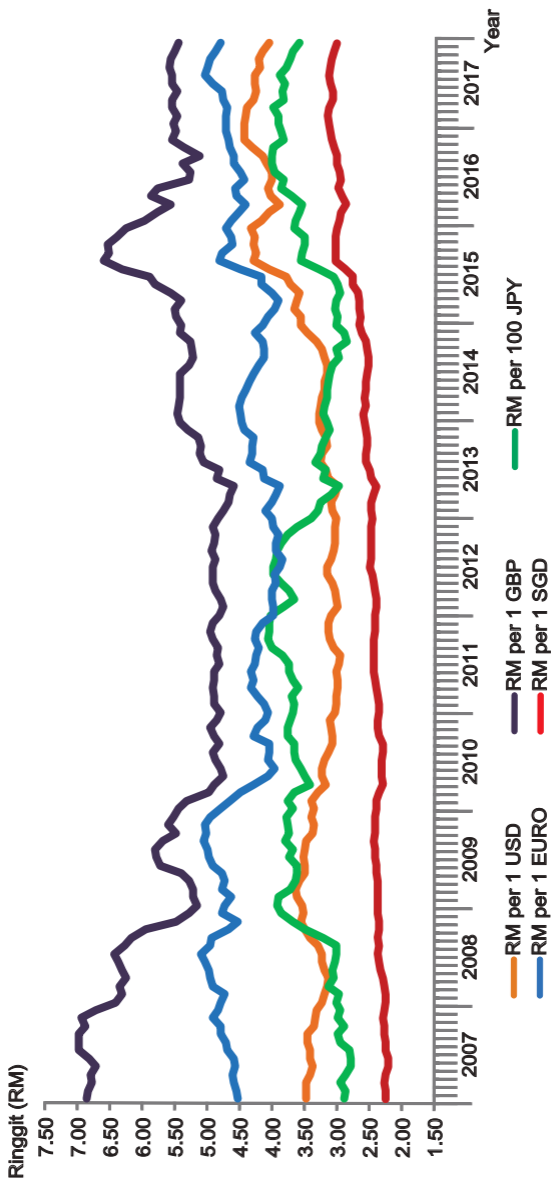
INTEREST RATES: BANKING INSTITUTIONS



2017	Commercial Banks		Investment Banks
	Base Lending Rates (%)	Average Lending Rates (%)	Average Lending Rates (%)
Jan	6.66	4.56	6.47
Feb	6.66	4.61	6.51
Mar	6.66	4.60	6.42
Apr	6.65	4.59	6.42
May	6.65	4.61	6.46
Jun	6.65	4.63	6.48
Jul	6.66	4.61	6.47
Aug	6.67	4.61	6.49
Sep	6.68	4.62	6.51
Oct	6.68	4.64	6.44
Nov	6.68	4.61	6.47

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

CURRENCY CHART



EXCHANGE RATES

as at 1 January 2018

Country	Currency	RM1	US \$1
Australia	dollar	0.3152	1.2806
Bahrain	dinar	0.0919	0.3735
Brunei	dollar	0.3274	1.3304
China	rmb	1.6020	6.5097
Egypt	pound	4.3665	17.7432
European Currency Unit	ecu	0.2050	0.8329
Hong Kong	dollar	1.9227	7.8130
India	rupees	15.6473	63.5830
Indonesia	rupiah	3,328.47	13,525.3
Japan	yen	27.7230	112.653
Kenya	shillings	25.1571	102.23
Lebanon	pound	367.432	1,493.1
Malaysia	ringgit	1.0000	4.0590
New Zealand	dollar	0.3466	1.4085
Pakistan	rupee	27.2813	109.47
Philippines	peso	12.2887	49.935
Qatar	riyal	0.8797	3.5748
Singapore	dollar	0.3288	1.3363
South Africa	rand	3.0365	12.339
South Korea	won	262.238	1,065.61
Sri Lanka	rupee	37.3756	151.876
Thailand	baht	7.9754	32.408
United Arab Emirates	dirham	0.9037	3.6724
United Kingdom	pound	0.1821	0.7401
United States of America	dollar	0.2461	1.0000
Vietnam	dong	5,542.12	22,520.5

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



OTHER INFORMATION

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UTILITY COSTS FOR SELECTED ASIAN CITIES as at 4th Quarter 2017

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 4.08	0.053 - 0.140	0.093 - 0.108	0.252 - 0.490	0.507 - 0.559	0.539	N/A	0.551
UNLEADED FUEL: Unleaded petrol RON 95								
BEIJING	RMB 6.60	0.070 - 0.119	0.230 (peak) 0.133 (normal)	0.758 - 1.364	1.364 - 1.439	0.920	N/A	1.040
ELECTRICITY (Domestic / month): 1 - 240kWh = US\$0.073; 241 - 400kWh = US\$0.082; 400kWh above = US\$0.119 WATER (Domestic / year): 1 - 180m ³ = US\$0.758; 181 - 260m ³ = US\$1.061; 261m ³ above = US\$1.364 WATER (Commercial / Industrial): Central Districts = US\$1.439; Other Districts = US\$1.364 UNLEADED FUEL: Unleaded gasoline 97								
GUANGZHOU	RMB 6.60	0.100	0.140	0.440	0.740	0.940	N/A	1.060
UNLEADED FUEL: Unleaded gasoline 97								
HONG KONG	HK\$ 7.80	0.110	0.130	0.830	0.590	1.570	N/A	1.990
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\$0.53/m ³ ; 43 - 62m ³ = US\$0.83/m ³ ; Above 62m ³ = US\$1.16/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 8.03	0.170	0.170	0.560 - 0.910	0.750	1.540	N/A	1.280
ELECTRICITY: Electricity tariff is a 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\$0.65/m ³ for 29m ³ to 60m ³ ; US\$0.75/m ³ for 61m ³ to 79m ³ and US\$0.91/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 6.60	0.093 (peak) 0.047 (normal)	0.160 (peak) 0.079 (normal)	0.530 - 0.88	0.720	0.930	N/A	1.053
ELECTRICITY (Domestic): 0 - 3,120 kWh = US\$0.093 (peak) / US\$0.047 (normal); 3,120 - 4,800kWh = US\$0.1 (peak) / US\$0.051 (normal); Above 4,800 kWh = US\$0.148 (peak) / US\$0.074 (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\$0.53/m ³ ; 220 - 300m ³ = US\$0.73/m ³ ; Above 300m ³ = US\$0.88/m ³ . UNLEADED FUEL: Unleaded 95.								
CHONGQING	RMB 6.60	0.080	0.130	0.530	0.690	0.860	N/A	0.980
UNLEADED FUEL: Unleaded 93# = US\$0.93/litre; 97# = US\$0.98/litre								
BANGALORE	INR 65.00	0.050 - 0.114	0.130 - 0.132	0.400 - 0.692	1.358	0.908	N/A	1.077

(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
NEW DELHI	INR 65.00	0.063 - 0.132	0.141 - 0.164	0.288 - 1.037	1.318 - 5.886	0.896	N/A	1.074
BANGKOK UNLEADED FUEL: Gasohol 95 ELECTRICITY (Domestic) For normal tariff with consumption not exceeding 150kWh/month.	BAHT 32.39	0.072 - 0.136	0.097 - 0.099	0.262 - 0.446	0.293 - 0.488	0.814	N/A	0.859
BRUNEI ELECTRICITY (Domestic): Tariff effective from 1st Jan 2012. 1-10kWh 10c, 11-60kWh 8c, 61-100kWh 12c, above 100kWh 15c.	B\$ 1.39	0.009 - 0.130	0.065 - 0.182	0.099 - 0.398	0.552 - 0.596	0.343	0.461	0.479
HO CHI MINH	VND 22,700	0.110	0.090 - 0.140 0.060 - 0.110	0.270 - 0.570	0.790 / 0.480	0.640	N/A	0.800 - 0.830

All rates are VAT inclusive.

ELECTRICITY (Domestic): Domestic electricity rates are applied to the 301th KW above wards.

FUEL (Diesel): D.O - 0.05%

UNLEADED FUEL: 92 Unleaded Petrol & 95 Unleaded Petrol as at October 2012.

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 13,570	0.108	0.108	0.077 - 0.549	0.503 - 1.080	0.538	N/A	0.608
Domestic group in Indonesia will cover residence, religion building, non-profit organization building and government hospital. Commercial group in Indonesia will cover luxury residence, apartment, offices, hotel, commercial building, and factories.								
MANILA	PHP 50.50	0.210 - 0.220	0.150	0.480 - 0.800	1.120	0.600	N/A	0.900
Actual Billing: Include misc. charges such as Environmental Charge, Currency Exchange Rate Adjustment (CERA), VAT, etc. ELECTRICITY - (Domestic): 190 kWh - 860 kWh; (Commercial / Industrial): 150,000 kWh; WATER - (Domestic): 29m ³ - 41m ³ ; WATER - (Commercial / Industrial): 4,030m ³								
SINGAPORE	S\$ 1.36	0.150	0.150	1.176 2.010	1.176 2.010	1.10	N/A	1.75
All rates are nett of GST. ELECTRICITY: Tariff is based on low tension power supply. WATER (Domestic) - Effective from 1 July 2017 to 30 June 2018 & from 1 July 2018: Rate includes conservation tax, water-borne fee, sanitary appliance fee & is an average for the 1st 40m ³ . WATER (Commercial / Industrial) - Effective from 1 July 2017 to 30 June 2018 & from 1 July 2018: Rate includes water conservation tax, water borne fee & sanitary appliance fee. FUEL (Diesel) - As at 2 November 2017. UNLEADED FUEL: 98 Unleaded petrol as at 2 November 2017.								

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

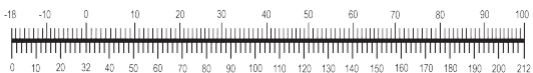
Imperial Measures and Equivalents

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

	2018	
MALAYSIA		
New Year's Day**	01	Jan
Chinese New Year	16 - 17	Feb
Labour Day	01	May
Wesak Day	29	May
Hari Raya Aidilfitri*	15 - 16	Jun
Hari Raya Qurban*	22	Aug
National Day	31	Aug
King/Agong's Birthday#	09	Sep
Awal Muharam (Maal Hijrah)	11	Sep
Malaysia Day#	16	Sep
Deepavali*	06	Nov
Prophet Muhammad's Birthday	20	Nov
Christmas Day	25	Dec
* <i>Subject to change</i>		
** <i>Except Johor, Kelantan, Kedah, Perlis & Terengganu</i>		
# <i>The following day will be an additional Public Holiday</i>		
BRUNEI		
New Year's Day	01	Jan
Chinese New Year	16	Feb
National Day	23	Feb
Israk Miraj	13	Apr
First Day of Ramadhan	16	May
Royal Brunei Armed Forces Day	31	May
Nuzul Quran	01	Jun
Hari Raya Aidilfitri*	15	Jun
Hari Raya Aidilfitri*	16	Jun
Hari Raya Aidilfitri*	18	Jun
HM The Sultan's Birthday	15	Jul
Hari Raya Aidil Adha*	22	Aug
Christmas Day	25	Dec
* <i>Subject to change</i>		

2018
HONG KONG

The first day of January	01	Jan
Lunar New Year's Day	16	Feb
The 2nd day of Lunar New Year	17	Feb
The 4th day of Lunar New Year	19	Feb*
Good Friday	30	Mar
The day following Good Friday	31	Mar
Easter Monday	02	Apr
Ching Ming Festival	05	Apr
Labour Day	01	May
Buddha's Birthday	22	May
Tuen Ng Festival	18	Jun
The day following HKSAR Establishment Day	02	Jul*
The day Following Chinese Mid-Autumn Festival	25	Sep
National Day	01	Oct
Chung Yeung Festival	17	Oct
Christmas Day	25	Dec
The 1st weekday after Christmas Day	26	Dec

** As the the third day of Lunar New Year in 2018 falls on Sunday, the fourth day of Lunar New Year is designated as a general holiday in substitution. In addition, since the Hong Kong Special Administrative Region Establishment Day in 2018 falls on 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	15	Feb
Chinese New Year	16 - 19	Feb\$
Tomb-Sweeping Day	05	Apr ⁺
Labour Day	01	May [@]
Dragon-Boat Festival	18	Jun
Mid Autumn Festival	24	Sep
National Day	01 - 03	Oct [#]

\$ 16 - 21 February are holidays. 11 February 2018 and 24 February 2018 are working days.

+ 5 and 6 April 2018 are holidays. 8 April 2018 is working day.

@ 30 Apr - 1 May 2018 are holidays. 28 April 2018 is working day.

1 - 7 October 2018 are holidays. 29 - 30 September 2018 are working days.

(Cont'd)

5 OTHER INFORMATION

(Cont'd)

PUBLIC HOLIDAYS

	2018	
MACAU		
New Year's Day*#	01	Jan
Lunar New Year's Eve (Afternoon)@	15	Feb
Lunar New Year's Day*#	16	Feb
The 2nd day of Lunar New Year*	17	Feb
The 3rd day of Lunar New Year*	18	Feb
The 4th day of Lunar New Year@#	19	Feb
The 5th day of Lunar New Year@	20	Feb
Good Friday*#	30	Mar
The day before Easter*	31	Mar
The first working day after the Day before Easter@#	02	Apr
Ching Ming Festival*#	05	Apr
Labour Day*#	01	May
The Buddha's Birthday*#	22	May
Tung Ng Festival (Dragon Boat Festival)*#	18	Jun
Mid-Autumn Festival*#	25	Sep
National Day*#	01	Oct
The day following National Day*	02	Oct
Chung Yeung Festival*#	17	Oct
All Soul's Day*#	02	Nov
Feast of the Immaculate Conception*	08	Dec
The first working day after Feast of the Immaculate Conception@	10	Dec
Macau SAR Establishment Day*#	20	Dec
Winter Solstice*	22	Dec
Christmas Eve*#	24	Dec
Christmas Day*#	25	Dec
The first working day after Christmas Day@#	26	Dec
New Year's Day (Afternoon)@	31	Dec

Bank's Holiday

* *Obligatory Holiday*

@ *Special Holiday granted by Chief Executive for staff in Public Administration.*

2018
INDIA

New Year's Day	01	Jan
Republic Day	26	Jan
Good Friday	30	Mar
Independence Day	15	Aug
Ganesh Chaturthi	13	Sep
Dusshera	19	Oct
Karnataka Formation Day	01	Nov
Diwali	06	Nov
Christmas Day	25	Dec

INDONESIA

New Year's Day	01	Jan
Chinese New Year (Imlek)	16	Feb
Hindu Day of Quiet (Nyepi)	17	Mar
Good Friday	30	Mar
Ascension of Prophet Mohammad	13	Apr
Waisak Day	29	May
International Labour Day	01	May
Ascension Day of Jesus Christ	10	May
Pancasila Day*	01	Jun
Idul Fitri	15 - 16	Jun
National Independence Day	17	Aug
Idul Adha Day	22	Aug
Hijriyah New Year	11	Sep
Prophet Muhammad's Birthday	20	Nov
Christmas Day	25	Dec

* Subject to changes

5 OTHER INFORMATION

(Cont'd)

PUBLIC HOLIDAYS

	2018	
PHILIPPINES		
Regular Holidays		
New Year's Day*	01	Jan
Chinese New Year#	16	Feb
EDSA People Power Revolution Anniversary#	25	Feb
Maundy Thursday*	29	Mar
Good Friday*	30	Mar
Black Saturday#	31	Mar
Araw ng Kagitingan*	09	Apr
Labour Day*	01	May
Independence Day*	12	Jun
Ninoy Aquino Day#	21	Aug
National Heroes Day*	27	Aug
All Saints Day#	01	Nov
Additional special non-working day#	02	Nov
Bonifacio Day*	30	Nov
Additional special non-working day#	24	Dec
Christmas Day*	25	Dec
Rizal Day*	30	Dec
Last day of the year#	31	Dec
* <i>Regular Holidays</i>		
# <i>Special Non-Working Day</i>		
SINGAPORE		
New Year's Day	01	Jan
Chinese New Year	16 - 17	Feb
Good Friday	30	Mar
Labour Day	01	May
Vesak Day	29	May
Hari Raya Puasa	15	Jun
National Day	09	Aug
Hari Raya Haji	22	Aug
Deepavali	06	Nov
Christmas Day	25	Dec

2018
THAILAND

New Year	01 - 02	Jan*
Makha Bucha Day	01	Jan
Chakri Memorial day	06	Mac
Songkran Festival	13 - 16	Apr**
Labour Day	01	May
Wisakha Bucha Day	29	May
Asarnha Bucha Day	27	Jul
H.M. The King's Birthday	30	Jul***
H.M. The Queen's Birthday	13	Aug****
The Passing of H.M. the Late King Bhumibol Adulyadej (Rama IX)	15	Oct*****
Chulalongkorn day	23	Oct
H.M. the Late King Bhumibol Adulyadej's Birthday, National Day and National Father's Day	05	Dec
Constitution Day	10	Dec
New Year's Eve	31	Dec

* Substitute for 31 Dec 2017 (Sun)

** Substitute for 14 Apr 2018 (Sat) and 15 Apr 2018 (Sun)

*** Substitute for 28 Jul 2018 (Sat)

**** Substitute for 12 Aug 2018 (Sun)

***** Substitute for 13 Oct 2018 (Sat)

VIETNAM (Normal Scheduled Holidays)

New Year's Day	01	Jan
Lunar New Year	15 - 21	Feb*
Hung Vuong King Celebration	25	Apr
Liberation Day of Saigon	30	Apr
International Labour Day	01	May
National Day	02 - 03	Sep**
Christmas Day	24 - 25	Dec

* Substitute for 17 & 18 Feb (Saturday & Sunday)

** Substitute for 2 September (Sunday)

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ARCADIS ASIA SECTORS

AUTOMOTIVE

At the present time we are witnessing a massive shift in the automotive sector. Electric vehicles are rapidly establishing themselves as a credible alternative as their range and performance meets (and exceeds) customer expectation. We are seeing more and more brands developing their own models across the region. In addition, the race for autonomous vehicles is leading to the development of new technologies at a pace that is unprecedented in the sector. We are helping our clients to restructure their manufacturing bases to meet shifting global demand, to remodel production lines for the new models demanded by customers, and to invest in the new supply chain technology.

Automotive retail continues to be fiercely competitive, with digital technology entering this space creating a more immersive buying experience. The race to roll out new retail formats around the globe requires lean and efficient delivery models and global standardization, supply chains and logistics.

AVIATION

The recent successful launches of new airframe technologies has caused airports to rethink how they can service larger passenger planes, and, with the prospect of new routes being enabled by longer range and new airframe formats, we expect to see further expansion and development of airports around the globe.

Domestic air travel and cargo hubs are also among popular areas of investment in aviation sector. Investment in domestic air travel is essential, as passengers demand an experience comparable with the best international airports. New cargo hubs are planned to meet 'same day' delivery expectations from on line retailers and logistics firms. We expect to see continued investment and demand for high quality design and engineering solutions in the aviation sector for many years to come.

CHEMICALS & PHARMACEUTICALS

The chemical and pharmaceutical industry faces a diverse range of challenges across globe. Growing and ageing populations have created rising demands for medication and more effective cures for diseases. Asia is no exception, despite Asia having a relatively younger population compared the other regions. It is also important to take note that approximately two thirds of total global demand growth for chemicals is expected to be generated in Asia.

In order to stay ahead of the competition, we work with our clients across Asia to improve their supply chain and secure their pipelines. The chemicals and pharmaceuticals industry will continue to be 'on the move' to Asia with rapid development in the future to fulfill demand coming from Asia and beyond.

COMMERCIAL DEVELOPERS

Commercial developers are a significant proportion of our market in Asia, especially in those countries where the economy is driven by investment in property. In the last 10 years China, for example, has been fuelled by demand for properties as a result of rapid urbanization, and this is also now the case in countries such as Vietnam and the Philippines.

All building types, including commercial offices, residential, leisure, hospitality and retail, are confronted with ever increasing challenges in terms of efficiency of land use, planning compliance, product positioning, cost, quality, impact on communities, sustainability and also market competitiveness. The commercial developer sector will continue to play a key role in all economies across Asia.

5 OTHER INFORMATION

(Cont'd)

ARCADIS ASIA SECTORS

FINANCIAL INSTITUTIONS

Driving better investment and asset performance and improving sustainable returns in current challenging markets is the key focus of our sector specialists.

Through utilizing unique market insight, such as our global asset performance benchmarks, our deep technical knowledge, and an unrivalled global track record in working with financial institutions, we are able to define solutions to meet client needs and to enhance their business outcomes.

OIL AND GAS

Rising production costs and unpredictable prices put oil & gas clients under more pressure than ever. Growing complexities of shifting environmental legislation combined with an increased need for asset decommissioning, oil & gas has become a complex and rapidly evolving sector.

We partner with global oil & gas clients to maximize returns on our clients' investments, through better management of project risks and costs, and improvement of opex performance. We work across the asset lifecycle from concept through to decommissioning. We bring together upstream & downstream expertise and understanding from a broad base of capabilities including cost & risk management, environmental management, project management and maintenance strategy.

RAIL

Rapid large scale urbanization, tight budgets and environmental sensitivity require innovative approaches to deliver advanced infrastructure. With our expertise in rail, and our transformational thinking, clients rely on us to improve performance and connect communities cross countries and regions.

In Asia, we have been involved in providing engineering design, cost management, contract administration, risk management, business advisory and mobility oriented design for numerous metro and high speed rail projects in Hong Kong, Mainland China, Taiwan, Singapore and Malaysia.

ARCADIS ASIA SERVICES

PORTS AND WATERWAYS

Ports are at the heart of globalization, facilitating the spread of trade and prosperity. The rapid growth of Asia has seen a substantial investment in port and logistics infrastructure, but also increasing competition between ports, and a focus on raising productivity and service quality. At the same time, it is increasingly necessary to respond to public concerns about environmental and safety issues.

Delivering sustainable growth is a great challenge and requires know-how and expertise across a broad range of disciplines. We offer governments, port institutions, private terminal operators, investors and shipping lines all the disciplines necessary for an integrated approach and the delivery of successful outcomes, whether in the technical, operational, nautical, environmental, risk, financial or economic arena.

RETAIL & CONGLOMERATES

As the world of retails faces the fiercest competition yet due to the change of traditional retail landscape and the rapid development of online retail industry, we work with our retail clients to gain a competitive advantage in their market expansion or re-branding. It is essential for us to tailor our services to fit client strengths and needs, to minimize spend and achieve the best solution for each individual company.

With unrivaled experience across all facets of retail development, from luxury and sports fashion to cosmetics, supermarkets and restaurant chains, we help our clients successfully navigate through complex challenges in retail development.

5 OTHER INFORMATION

(Cont'd)

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. In Arcadis you have a partner that understands your business challenges and has first-hand experience of the assets you own and operate. We bring unique insights which support you in getting better results with more certainty.

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.

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, timeframes and the large number of parties involved can be daunting.

At Arcadis, 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.

WATER

From source to tap and then back to nature, the planet's most precious resource should be cherished.

Thanks to our centuries 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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Subang Jaya Municipal Council (MPSJ)	03-8024 7700
Kajang Municipal Council (MPK)	03-8737 7899
Selayang Municipal Council (MPS)	03-6126 5800
Ampang Jaya Municipal Council (MPAJ)	03-4296 8000
City Council of Penang Island (MBPP)	04- 259 2020
SIRIM Berhad	03-5544 6000
The Malaysia Highway Authority	03-8738 3000
Contractor's Association	
Master Builders Association Malaysia	03-7984 8636
Contractor's Registration Board	
Construction Industry Development Board (CIDB)	03-4047 7000
Professional Registration Boards	
Board of Architects Malaysia	03-2698 2878
Board of Engineers Malaysia	03-2691 2090
Board of Quantity Surveyors Malaysia	03-2610 8140
Professional Bodies	
Assoc. of Consulting Engineers Malaysia (ACEM)	03-2095 0031
Malaysia Institute of Architects (PAM)	03-2202 2866
Malaysia Institute of Planners (MIP)	03-7877 0636
The Institution of Engineers Malaysia (IEM)	03-7968 4001
Royal Institution of Surveyors Malaysia (RISM)	03-7955 1773
Other Important Numbers	
Ambulance & Police	999
Civil Defence (Rescue)	999
Fire Fighter	999
General Hospital KL	03-2615 6391
SYABAS Sdn Bhd	1800 88 5252
Tenaga Nasional (KL)	03-2296 5566



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