



PRELIMINARY INDICATION OF COST
for

HEATHROW HUB INTERCHANGE
MASTER PLAN CONCEPT

for

RUNWAY INNOVATIONS / HEATHROW HUB LIMITED

Revision: -
Issue Date: 16/06/2014



	Page No.
A Executive Summary	3
B Cost Estimate:	
1.0 Heathrow Hub	4
2.0 Associated Road Works	7
3.0 Automated People Mover (APM)	8
4.0 Heathrow Hub Baggage Transfer	10
5.0 Phasing Allowance	11
C Notes & Exclusions	13
D Basis of Estimate	15

HEATHROW HUB INTERCHANGE PRELIMINARY INDICATION OF COST EXECUTIVE SUMMARY

Issue Date: 16.06.14

No	Description	Estimate £	Notes
1	HEATHROW HUB	850,000,000	
2	ASSOCIATED ROAD WORKS	180,000,000	
3	AUTOMATED PEOPLE MOVER (APM)	500,000,000	
4	EXTRA-OVER FOR HEATHROW HUB BAGGAGE TRANSFER	403,000,000	
	SUB-TOTAL CONSTRUCTION	1,933,000,000	
5	PHASING ALLOWANCE (Say at 2%)	40,000,000	
	SUB-TOTAL Incl. PHASING	1,970,000,000	
6	OTHER DEVELOPMENT COSTS (Including Land Acquisition)	Excluded	Included in 'Heathrow Expansion' estimate dated 28.05.14
	SUB-TOTAL Incl. OTHER DEVELOPMENT	1,970,000,000	
7	FEES (Professional, Planning & Building Control) (15%)	295,500,000	
	SUB-TOTAL Incl. FEES	2,265,500,000	
8	CONTINGENCY : <i>Heathrow Hub</i>	242,000,000	
	<i>Associated Road Works</i>	47,000,000	
	<i>Automated People Mover</i>	122,000,000	
	<i>Heathrow Hub Baggage Transfer</i>	141,000,000	
		552,000,000	
	SUB-TOTAL CONTINGENCY	2,820,000,000	
9	INFLATION (Base Date 2Q 2014)	EXCLUDED	
10	OPTIMISM BIAS	EXCLUDED	
	ESTIMATED PROJECT COST TOTAL (Excl. VAT)	2,820,000,000	(@2nd Q 2014)

HEATHROW HUB INTERCHANGE PRELIMINARY INDICATION OF COST HEATHROW HUB

Issue Date: 16.06.14

No	Description	Quantity	Unit	Rate £	Cost £	Cost £	Risk Factor				Notes
							VH	H	M	L	
1.00	<u>HEATHROW HUB</u>						50%	35%	25%	15%	
1.01	Land										
1.01.1	Purchase				-						Included in Heathrow Expansion Cost Estimate.
1.01.2	Compensation/ Relocation				-						
1.02	Ecology/ Environmental/ Archaeological					60,000,000					
1.02.1	Ecology - Allowance for mitigation and monitoring of ecological impact	1	item	35,000,000	35,000,000						Provisional allowances
1.02.2	Air quality - Allowance for monitoring and mitigation										
1.02.3	Noise - Allowance for noise monitoring and control measures										
1.02.4	Allowance for costs associated with Archaeological										
1.02.5	Flood Water mitigation	1	item	25,000,000	25,000,000						
1.03	Advanced Enabling Works Clearing and Site Preparation					25,000,000					
1.03.1	Site clearance	1	item	25,000,000	25,000,000			35%			Provisional allowance
1.03.2	Clearing and site preparation										
1.03.3	Protection to retained water treatment assets										
1.03.4	Demolition of existing structures										
1.03.5	Protection to M25										
1.03.6	Remediation works										
1.03.7	Ground stabilising works										
1.03.8	Protection to NR assets (GWML)										
1.03.9	Allowance for Earthworks - Cut/Fill/Grading										
1.04	Utilities					60,000,000					
1.04.1	Allowance for diversion of existing services	1	item	10,000,000	10,000,000			35%			Provisional allowance
1.04.2	Allowance for new off site services										
1.04.3	Allowance for new on site services										
1.04.4	Allowance for new substation.										
1.04.5	Undergrounding of power lines	1	item	25,000,000	25,000,000			35%			
1.04.6	Energy Centre	1	item	25,000,000	25,000,000			35%			
1.05	Relocation of the Water Treatment Plant					135,000,000					
1.05.1	Allowance for demolition, relocation etc. of the existing Water treatment works	1	item	135,000,000	135,000,000		50%				Aruo cost uplifted to include for exclusions.

HEATHROW HUB INTERCHANGE PRELIMINARY INDICATION OF COST HEATHROW HUB

Issue Date: 16.06.14

No	Description	Quantity	Unit	Rate £	Cost £	Cost £	Risk Factor				Notes
							VH	H	M	L	
							50%	35%	25%	15%	
1.06	Works at Iver Station					5,991,000					
1.06.1	Stage works UP Relief : Existing Ivor platform including new cross-over to west	1	Item	1,000,000	1,000,000				25%		
1.06.2	Extend existing Ivor platform	1,560	m2	1,500	2,340,000				25%		
1.06.3	NR possession management & TOC compensation	12%			401,000				25%		
1.06.4	Allowance for NR signalling diagram/control centre	1	Item	250,000	250,000				25%		
1.06.5	Allowance for extending access, canopy etc.	1	Item	2,000,000	2,000,000				25%		
1.07	HUB Station					337,970,000					
1.07.1	Permanent Way Related Works:-										
a)	Stage Works (east and west of new station location)	1	Item	2,000,000	2,000,000				25%		
	UP Relief (1)										
	UP Relief (2)/Reversal										
	DOWN Relief										
	UP Main										
	DOWN Main										
b)	Permanent Way (including systems, OHLE etc)	8,600	m	4,000	34,400,000				25%		
c)	Platforms & canopies										
	Brook Culvert	65	m	10,000	650,000			35%			
	Platforms 4 Islands (260m x 10m)	10,400	m2	1,500	15,600,000				25%		
	Canopies 4 lengths (150m x 10)	6,000	m2	1,000	6,000,000				25%		
d)	NR possessions management & TOC compensation 12%	1	item	6,320,000	6,320,000				25%		
e)	Allowance for signalling diagram/ control centre	1	item	1,500,000	1,500,000				25%		
1.07.2	Station Building - Including Rail terminal and concourses.										
a)	Structure (300m x 70m)	21,000	m2	10,000	210,000,000				25%		
b)	Link concourses to :										
	APM (50m x 20m)	1	Item	2,500,000	2,500,000			35%			
	Hotel (50m x 20m)	1	Item	2,500,000	Excluded						
c)	Station approach deck (100m x 100m)	10,000	m2	1,000	10,000,000				35%		
d)	Link connection to Hotel (800m x 3m)	1	Item	2,000,000	2,000,000				35%		
e)	Allowance for access routes from proposed parking areas	1	Item	5,000,000	5,000,000		50%				
f)	Allow for "signature" station : say 20% of Station estimate	1	Item	42,000,000	42,000,000				35%		
											Assumptions based on meetings with PBA and May Associates.

HEATHROW HUB INTERCHANGE PRELIMINARY INDICATION OF COST ASSOCIATED ROAD WORKS

Issue Date: 16.06.14

No	Description	Quantity	Unit	Rate £	Cost £	Cost £	Risk Factor				Notes
							VH	H	M	L	
2.00	<u>ASSOCIATED ROAD WORKS</u>						50%	35%	25%	15%	
2.01	Land										
2.01.1	Purchase				-						Included in Heathrow Expansion Cost Estimate.
2.01.2	Compensation/ Relocation				-						
2.02	Ecology/ Environmental/ Archaeological					25,000,000					
2.02.1	Ecology - Allowance for mitigation and monitoring of ecological impact	1	item	25,000,000	25,000,000						Provisional Allowance
2.02.2	Air quality - Allowance for monitoring										
2.02.3	Noise - Allowance for noise monitoring and control measures										
2.02.4	Allowance for costs associated with Archaeological										
2.03	Advanced Enabling Works Clearing and Site Preparation					10,000,000					
2.03.1	Site clearance	1	item	10,000,000	10,000,000		50%				Provisional Allowance
2.03.2	Demolition/Enabling Works										
2.03.3	Allowance for remediation works										
2.03.4	Allowance for ground stabilisation works										
2.04	Utilities					5,000,000					
2.04.1	Allowance for diversion of existing services	1	item	5,000,000	5,000,000		50%				Provisional Allowance
2.04.2	Allowance for new off site services										
2.04.3	Allowance for new on site services										
2.04.4	Allowance for new substation.										
2.05	Motorway/ Road Works at Heathrow Hub					136,920,000					
2.05.1	Road Works	1	item	11,435,000	11,435,000				25%		
2.05.2	Motorway Works	1	item	71,740,000	71,740,000				25%		
2.05.3	Junction Works	1	item	1,745,000	1,745,000			35%			
2.05.4	Viaducts	4	nr	7,500,000	30,000,000			35%			
2.05.5	Bridges	1	item	22,000,000	22,000,000			35%			
SUB-TOTAL ASSOCIATED ROAD ROADS						£176,920,000					
									£47,104,500		Total Risk Allowance

HEATHROW HUB INTERCHANGE PRELIMINARY INDICATION OF COST AUTOMATED PEOPLE MOVER (APM)

Issue Date: 16.06.14

No	Description	Quantity	Unit	Rate £	Cost £	Cost £	Risk Factor				Notes
							VH	H	M	L	
3.00	<u>AUTOMATED PEOPLE MOVER (APM)</u>						50%	35%	25%	15%	
3.01	Land										
3.01.1	Purchase				-						Included in Heathrow Expansion Cost Estimate.
3.01.2	Compensation/ Relocation				-						
3.02	Ecology/ Environmental/ Archaeological					30,000,000					
3.02.1	Ecology - Allowance for mitigation and monitoring of ecological impact	1	item	30,000,000	30,000,000						Provisional allowance
3.02.2	Air quality - Allowance for monitoring and mitigation										
3.02.3	Noise - Allowance for noise monitoring and control measures										
3.02.4	Allowance for costs associated with Archaeological										
3.03	Advanced Enabling Works Clearing and Site Preparation					5,000,000					
3.03.1	Site clearance	1	item	5,000,000	5,000,000		35%				Provisional allowance
3.03.2	Demolition/Enabling Works										
3.03.3	Allowance for remediation works										
3.03.4	Allowance for ground stabilisation works										
3.03.5	Allowance for Earthworks - Cut/Fill/Grading										
3.04	Utilities					2,500,000					
3.04.1	Allowance for diversion of existing services	1	item	2,500,000	2,500,000		35%				Provisional allowance
3.04.2	Allowance for new off site services										
3.04.3	Allowance for new on site services										
3.04.4	Allowance for new substation.										
3.05	APM (including Depot)					447,750,000					
	APM to T5 & CTA										
3.05.1	Transfer station @ Hub (100m x 50 m)	5,000	m2	2,000	10,000,000		35%				Incl all vertical transportation and incl route under runway,
3.05.2	Route (15m high level)	2,350	m	35,000	82,250,000			25%			
3.05.3	Route (Grounded)	2,100	m	30,000	63,000,000			25%			
3.05.4	Route, Tunnel to T6 (30m high level)	1,650	m	50,000	82,500,000			25%			Incl all vertical transportation and m&e : two tiers
3.05.5	Transfer station @ roof Level new Hotel (100m x 100m)	5,000	m2	4,000	20,000,000		35%				
3.05.6	Allowance for transfer structure to T5 and T6	1	item	5,000,000	5,000,000			25%			

No	Description	Quantity	Unit	Rate £	Cost £	Cost £	Risk Factor				Notes
							VH	H	M	L	
3.05.7	Route : T6 to T2 (30m high level)	2,900	m	50,000	145,000,000		50%	35%	25%	15%	
3.05.8	Transfer station @ T2 (100m x 50m)	5,000	m2	4,000	20,000,000				25%		Incl all vertical transportation and m&e : two tiers
3.05.9	E. Over for structure mods to cope with alignment changes	1	Item	5,000,000	5,000,000			35%			
3.05.10	Allowance for T2 : roof mods to accommodate APM station	1	Item	5,000,000	5,000,000			35%			
3.05.11	Rolling Stock (APM Cars)	1	item	10,000,000	10,000,000			35%			
3.06	APM Private Access Road					11,550,000					
3.06.1	Road	3850	m	3,000	11,550,000				25%		Hub to the A4 intersection only.
Sub-Total - AUTOMATED PEOPLE MOVER						496,800,000			£122,450,000	Total Risk Allowance	

9

HEATHROW HUB INTERCHANGE

PRELIMINARY INDICATION OF COST

EXTRA OVER FOR HEATHROW HUB REMOTE BAGGAGE TRANSFER SYSTEM

Issue Date: 16.06.14

No	Description	Quantity	Unit	Rate £	Cost £	Cost £	Risk Factor				Notes
							VH	H	M	L	
4.00	<u>EXTRA-OVER FOR HEATHROW HUB REMOTE BAGGAGE TRANSFER SYSTEM TO T5/T6</u>						50%	35%	25%	15%	
4.01	Land										
4.01.1	Purchase				-						Included in Heathrow Expansion Cost Estimate.
4.01.2	Compensation/ Relocation				-						
4.02	Ecology/ Environmental/ Archaeological/ Historical/ Listed Buildings					1,000,000					
4.02.1	Ecology - Allowance for mitigation and monitoring of ecological impact										
4.02.2	Air quality - Allowance for monitoring and mitigation										
4.02.3	Noise - Allowance for noise monitoring and control measures										
4.02.4	Allowance for costs associated with Archaeological	1	item	1,000,000	1,000,000						
4.03	Advanced Enabling Works Clearing and Site Preparation					1,000,000					
4.03.1	Site clearance										
4.03.2	Demolition/Enabling Works										
4.03.3	Allowance for remediation works										
4.03.4	Allowance for ground stabilisation works	1	item	1,000,000	1,000,000			35%			
4.04	Utilities					1,000,000					
4.04.1	Allowance for diversion of existing services										
4.04.2	Allowance for new off site services										
4.04.3	Allowance for new on site services										
4.04.4	Allowance for new substation.	1	item	1,000,000	1,000,000			35%			
5.05	Extra-Over Allowance to the APM structure to accommodate the Baggage Transfer System					400,000,000					
5.05.1	Allowance for additional structure required to APM	1	item	65,000,000	65,000,000			35%			Based on T3-T5 Terminal Transfer of bags 1 way only Assume screening at Terminal
5.05.2	Transfer Baggage System	6,100	m	50,000	305,000,000			35%			
5.05.3	Baggage reception facility at Hub	1	item	15,000,000	15,000,000			35%			
5.05.4	Allowance for System interface T6	1	item	15,000,000	15,000,000			35%			
SUB-TOTAL EXTRA-OVER FOR HEATHROW HUB REMOTE BAGGAGE TRANSFER SYSTEM							£140,700,000				Total Risk Allowance
							£403,000,000				



HEATHROW HUB INTERCHANGE PRELIMINARY INDICATION OF COST PHASING ALLOWANCE

Issue Date: 16.06.14

[illegible]

NOTES (Assumptions)

The Cost Estimate is based on the following notes:

- 1 Estimate is based on the level of detail/information provided. Therefore, estimate includes for risks typically transferred to the contractor, but not those risks typically retained by the employer.
- 2 To avoid excessive repetition and multiple statements that appear obvious, certain fundamental assumptions that apply across the project are stated once in the list below. This list also allows a more comprehensive cross-reference with the risk register.
It is generally assumed that :
 - a The project will be fully funded i.e. there are no financial constraints/contribution expectations/ etc.
 - b The works as scoped will be packaged, procured and completed within time and to budget.
 - c The works will deliver the required performance and function.
 - d The operational railway will deliver the required performance and function.
 - e There will be sufficient skilled resources and market capacity to meet Project demand at reasonably competitive prices.
 - f All parties will be reasonable, remain solvent and exercise reasonable skill and care.
 - g All parties will comply with the applicable laws, regulations, standards, contract conditions and conventions and that these constraints will not materially change.
 - h change.
 - i The UK economy and other relevant economies and foreign exchange rates will remain stable.
 - j The project will not suffer from force majeure, protracted legal disputes, ground or property collapse, exceptionally adverse climatic conditions, or significant industrial relations problems.
 - k industrial relations problems.
 - l External influences do not result in significant changes in scope.
- 3 Estimates are compiled from information provided on drawings and meetings.
- 4 All works associated with the Airport, M25 and road works to the south of M4, Southern Rail Access works, Other Development have not been included in this estimate.
- 5 2% provisional allowance for the phasing costs.
- 6 A risk allowance ranging from 15% - 50% has been applied to each item of cost within the detailed estimate based on a high level assessment of probable risk (the risk percentages can be seen within the detailed estimate). We note that this approach is in contrast to the HAL, who we understand have applied a 15% risk allowance to all items.
- 7 Only primary option for the HUB, Roads, APM and Baggage transfer system have been priced.
- 8 Provisional allowances included for all utilities associated works
- 9 Provisional allowances included for all Ecological, Environmental, Flood Control measures.
- 10 Budget allowance of £100m included for the relocation of the Iwer Water Treatment Works, as advised by Client.
- 11 Provisional allowance included for works associated with Archaeological and Historical/Listed buildings measures
- 12 Earth work quantities for the airfield provided by URS.
- 13 All works follow the profile of the land and therefore do not require major excavation/fill
- 14 Areas of hard and soft landscaping assumed at the Hub site.
- 15 No hotel included in estimate.
- 16 It is assumed that no works are to be carried out to the 'Thorney Country Park'.
- 17 Assumed no works required to the passive rail corridor.
- 18 An allowance of 12% is included to cover NR Possession Management and TOC compensation.

NOTES (Assumptions) Continued.

- 19 The connections to and from the utilities do not require any special measures
- 20 Existing Power Capacity - Existing power suppliers will have the necessary capacity to accommodate the demands of the Project.
- 21 Commercial/Over-Site Development - There is no provision for Commercial/Over-Site Development. Any changes to the operational infrastructure to enhance Commercial/Over-Site Development value will be treated as a Scope change to the Project.
- 22 APM Maintenance depot will be located in the Hub station vicinity.
- 23 APM stop airside will be above the current roof line, assumed two tier stations.
- 24 The structure to route the APM under the proposed runway extension is deemed to include ingress and egress ramps at both ends.
- 25 Performance of Existing NR Assets - No works or cost allowances have been included for upgrading the existing rail network to improve its asset condition or maintain its reliability beyond that which to be modified for the benefit of the Project.
- 26 Access to Works Sites - Access to works sites, including temporary possession of assets and facilities of other parties, will be available to allow the project to proceed in accordance with the programme.
- 27 Standard construction equipment - The project will be constructed using 'standard' construction plant and equipment.
- 28 Unexploded Ordnance (UXB) - There are no express provisions in the scope of the works for dealing with unexploded ordnance that may be encountered during the construction works.
- 29 Construction traffic will not be adversely restricted
- 30 Works by Nominated Undertaker - No additional costs will be incurred if works are not undertaken by the Nominated Undertaker and its contractors
- 31 Excavated Materials - Wherever possible and economically advantageous excavated materials will be re-used on the Project.
- 32 Excavated Materials - Where relevant the estimate contains an allowance (10%) for dealing with contaminated material by local remediation and re-use on the Project.
- 33 Continuous construction and commissioning sequence - The scheme will be constructed and commissioned in one continuous construction sequence i.e. no de-mobilisation and re-mobilisation. The railway will be tested and commissioned in phases.
- 34 Support from Contractors of Third Parties - Where third parties' contractors are required to carry out works to support the Project (e.g. modifications to existing assets and attendance for handover/hand back activities), they will be able to carry out these works as required by the Project programme.

EXCLUSIONS

The Master Planning is based on the following exclusions:

- 1 All Southern Rail Access works
- 2 Capital cost of Coach replacement service for APM.
- 3 Airport Works
- 4 Road Works South of the M4
- 5 Client costs at Heathrow
- 6 The client's corporate, project management and design costs (indirect costs)
- 7 All other structures in Hub except for station building, hotel and car park.
- 8 ORAT
- 9 Systems Integration (existing facilities to new)
- 10 Security screening at new stations - no allowance has been made for significant changes to the current security practices used for long distance inter-urban services in the UK.
- 11 The powers sufficient to construct, operate and maintain the whole of the works as identified including all associated services.
- 12 Development Fees and Financing Costs
- 13 Cost of any goods and services provided by the employer
- 14 Costs or allowances associated with risks that will not be transferred to the contractor
- 15 Specific drainage arrangements e.g. grey water harvesting systems, attenuation tanks etc.
- 16 Costs associated with the purchase or lease of rolling stock (Except for APM)
- 17 Sustainable improvements/enhancements
- 18 Future statutory changes including Construction Regulations
- 19 Future inflation in rates and prices; costs are based at 2Q14
- 20 Costs of operation or asset management following hand over
- 21 Specific drainage arrangements e.g. grey water harvesting systems, attenuation tanks etc.
- 22 Specific and special measures for reservoir and waterways protections
- 23 Income or expenditure associated with the acquisition or disposal of land and property.
- 24 Income or expenditure associated with potential property development
- 25 Disposal off-site of unusable contaminated material.
- 26 No Cost Recovery for Materials or Plant - There are no allowances in the estimate for residual value of plant and equipment (e.g. value of any salvaged materials).
- 27 Betterment - No allowances have been made in the estimate for recovery of monies from third parties in respect of betterment.
- 28 Cost Sharing - No allowances have been made in the Phase 1 point estimate for recovery of monies from Utilities in respect of 'cost sharing'.
- 29 Archaeological Discoveries - No sums are included in the estimate for expenses associated with the discovery of archaeological remains.
- 30 Non-Operational Assets - The cost of retail fit-outs and other non-operational assets (e.g. ATMs, photo booths, vending machines and telephone kiosks) are excluded from the Phase One point estimate. They are assumed to be borne by others.
- 31 Section 106 costs
- 32 Section 278 costs
- 33 Value Added Tax
- 34 Levies such as Land Fill Tax, HA contributions
- 35 Costs of operation or asset management following hand over
- 36 Fees, third party cost and expenses, statutory and other charges
- 37 Local Authority Adoption costs and commuted sums - roads and public realm to be maintained by developer / community trust

BASIS

The Cost Estimate is based on the following information:

Drawing:

URS- General Arrangement - P 47067372/TL/GA/06

PBA -Heathrow Hub Station Indicative Layout - 30021/002/SK11/B

PBA -Heathrow Hub Station Indicative Layout - 30021/002/SK12/B

PBA -Heathrow Hub Station Schematic Track Layout