



SECTION 4

CONTRACT DATA PART 1

MAIN OPTION C
CONTRACT DATA
PART 1

CONTRACT DATA

Part One – Data provided by the *Employer*

Statements given in all contracts

1. General
 - The *conditions of contract* are the core clauses and the clauses for main Option C and secondary Options clauses **X1, X2, X4, X5, X7, X15, X16, X18, X20, X21, X23, X25** and Y(UK)2 and Z clauses of the NEC3 Engineering and Construction Contract June 2005 (incorporating amendments June 2006 and September 2011) as amended or inserted in each case in accordance with secondary Option Z.
 - The *works* are the Bank Station capacity upgrade project, the requirements of which are summarised in section WI 100 of the Works Information and set out in further detail in the Works Information as a whole.
 - The *Employer* is

Name: London Underground Limited

Address: 55 Broadway, London SW1H 0BD
 - The *Project Manager* is

Name: Simon Addyman

Address: 84, Eccleston Square, London SW1V 1PX
 - The *Supervisor* is

Name: Simon Addyman

Address: 84, Eccleston Square, London SW1V 1PX
 - The Works Information is in Section 7.
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- The Site Information is in Section 9.
 - The *boundaries of the site* are defined in the Site Information section SI 100 Site Location.
 - The *language of this contract* is English.
 - The *law of the contract* is the law of England and Wales.
 - The *period for reply* is 3 weeks.
3. Time
- The *starting date* is: 1 August 2013.
 - The *access dates* are as follows:
 - [REDACTED] surveys 18th November 2013
 - [REDACTED] survey access 17th February 2014
 - [REDACTED] Worksite 20th April 2016
 - [REDACTED] Worksite 20th April 2016
 - The *Contractor* submits revised programmes at intervals no longer than 4 weeks.
4. Testing and Defects
- The *defects date* is 52 weeks after Completion of the whole of the *works*.
 - The *defect correction period* is 4 weeks.
5. Payment
- The *currency of this contract* is pounds sterling.
 - The *assessment interval* is 4 weeks.
 - The *interest rate* is 2 % per annum above the base rate of the Bank of England.
6. Compensation events
- The place where weather is to be recorded is Central London.
 - The *weather measurements* to be recorded for each calendar month are
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- the cumulative rainfall (mm)
- the number of days with rainfall more than 5 mm
- the number of days with minimum air temperature less than 0 degrees Celsius
- the number of days with snow lying at 09:00 hours GMT.
- The *weather measurements* are supplied by The Met Office, Fitzroy Street, Exeter EX1 3PB.
- The *weather data* are the records of past *weather measurements* for each calendar month which were recorded at Central London and which are available from the Met Office.
- The Geotechnical Baseline Conditions LUSTN-0008798-RPT-002364 version 0.2 issued 23 October 2012 is in the Site Information section SI 200.10.

8. Risks and insurance

Insurances taken out by the *Employer*

- **Construction All Risks Insurance** - details and minimum limit of indemnity as set out in the Insurance Table in clause 84.2 of the consolidated conditions of contract.
- **Public liability insurance** - details and minimum limit of indemnity as set out in the Insurance Table in clause 84.2 of the consolidated conditions of contract.
- **Non-negligence insurance** - details and minimum limit of indemnity as set out in the Insurance Table in clause 84.2 of the consolidated conditions of contract.

Insurances taken out by the *Contractor*

- ***Employer's liability insurance*** - details as set out in the Insurance Table in clause 84.2 of the consolidated conditions of contract with a

minimum limit of indemnity in the amount of [REDACTED] per occurrence.

- **Contractor's equipment loss insurance** - details and minimum limit of indemnity as set out in the Insurance Table in clause 84.2 of the consolidated conditions of contract.
- **Professional indemnity insurance** - details as set out in the Insurance Table in clause 84.2 of the consolidated conditions of contract with a minimum limit of indemnity in the amount of [REDACTED] per occurrence.

Optional statements

If the *Employer* has decided the *completion date* for the whole of the *works*

- The *completion date* for the whole of the *works* is 27 July 2021.

If the *Employer* has identified work which is to meet a stated *condition* by a *key date*

- The *key dates* and *conditions* to be met are

<i>condition</i> to be met	<i>key date</i>
1. Completion of concept design to LUL Standard S1538.	30 th May 2014
2. Completion of compliance design to LUL Standard S1538.	23 rd February 2016
3. Contractor provides the support required under this contract in relation to the submission of the TWAO application by LUL.	22 nd July 2014

If Y(UK)2 is used and the final date for payment is not 14 days

after the date when payment is due

- The period for payment is 28 days after the date when payment becomes due in accordance with clause 51.1A of the conditions of contract.

If there are additional *Employer's* risks

- These are the additional *Employer's* risks:
 1. A Transport and Works Act Order being made.
 2. Risks identified as *Employer's* risks in the Risk Register in Appendix 5 of Contract Data Part 2 .

Cover/deductibles for insurances provided by the *Employer*

1 **Construction All Risks Insurance** (as stated in the Insurance Table)

Cover/indemnity is: the full reinstatement value of the *works*

The deductibles are:

- [REDACTED] per occurrence for loss or damage to the *works* caused by defects in design plan specification materials or workmanship (DE5 1995). Such deductible shall only apply in respect of reinstatement or making good of that part which is itself defective;
- [REDACTED] per occurrence in respect of loss or damage to the works caused by defect in design plan specification materials or workmanship (DE3 1995);
- [REDACTED] per occurrence in respect of loss or damage caused by storm, tempest, water damage, subsidence or collapse;
- [REDACTED] every other occurrence.

2 **Public liability insurance** (as stated in the Insurance Table)

Cover/indemnity is not less than [REDACTED] million per occurrence.

The deductibles are: [REDACTED] per occurrence.

3 **Non-negligence Insurance** (as stated in the Insurance Table)

Cover/indemnity is [REDACTED] million per occurrence.

The deductibles are [REDACTED] per occurrence.

If there are *additional termination events*:

- These are the *additional termination events*.

1. If a Stage 2 Works Non-Commencement Notice is issued by the Employer.

- The *Contractor's share percentages* and the *share ranges* are:

<i>share range</i>	<i>Contractor's share percentage</i>
less than 97.50%	[REDACTED]
97.50% to 102.50 %	[REDACTED]
more than 102.50%	[REDACTED]

- The *share termination threshold* is [REDACTED]
- The Contractor prepares forecasts of Defined Cost for the *works* at intervals no longer than 4 weeks.

If Option X1 is used

- The proportions used to calculate the Price Adjustment Factor are:

0.50 linked to the index for Labour Series 1161.

0.30 linked to the index for General Civil Engineering Cost Series 1191.

0.20 linked to the index for M&E Costs Series 1151.

Total 1.00

- The *base date* for indices is August 2013.
 - The indices are those prepared by BCIS.
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If Option X5 is used

- The *completion date* for each *section* of the *works* is:

section	description	<i>completion date</i>
1	Completion of: the New Southbound Running Tunnel and platform, the Central Line link with moving walkway and triple escalator, DLR triple escalator, Cross Passage CP1, 2 and 4, the Northern Line Concourse, New Adit and Column removal in the existing Northbound platform.	13 th August 2020.

If Option X7 is used

- Delay damages for Completion of the whole of the *works* are [REDACTED] per day or part thereof. No delay damages shall be payable in respect of a period of 6 months from the *completion date*.

If Option X16 is used

- The *retention free amount* is [REDACTED] million.
- The *retention percentage* is [REDACTED] %.

If Option X18 is used

- Without prejudice to the *Contractor's* liability for Defects, the *Contractor* shall have no liability to the *Employer* for indirect, economic or consequential loss arising out of any breach of the *Contractor's* obligations under this contract save insofar as the same arise out of any excluded matters listed in Option X 18.4.
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- For any one event, the *Contractor's* liability to the *Employer* for loss of or damage to the *Employer's* property is unlimited.
- The *Contractor's* liability for Defects due to his design which are not listed on the Defects Certificate is unlimited.
- The *Contractor's* total liability to the *Employer* for all matters arising under or in connection with this contract, other than Defects and excluded matters listed in Option X18.4 is limited to [REDACTED] of the Prices.
- The *Contractor's* total liability to the *Employer* under Option X7 is [REDACTED]

Option Z

- The *additional conditions of contract* are the amendments to core, main and secondary option clauses and additional conditions of contract incorporated in the consolidated conditions of contract and included in section 4 of the contract documents.
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SECTION 8

CONTRACT DATA PART 2

MAIN OPTION C
CONTRACT DATA
PART 2

CONTRACT DATA

Part Two – Data provided by the *Contractor* for the Works

The *Contractor* is

Name: Dragados SA

Regina House,
Address: 2nd Floor,
1-5 Queen Street London EC4N 1SW

The *fee amount* in relation to Stage 1 Works is as follows and becomes due on completion of each activity as set out below:

The fixed price for Stage 1 Works profit including all head office overhead, management fees, etc. for completing concept design to LUL Standard S1538 is [REDACTED]

The fixed price for Stage 1 Works profit including all head office overhead, management fees, etc. for completing compliance design to LUL Standard S1538 is [REDACTED]

The fixed price for Stage 1 Works profit including all head office overhead, management fees, etc. for submission of the TWAO application by LUL is [REDACTED]

The *fee amount* in relation to Stage 2 Works is [REDACTED]

With individual amounts for each activity set out in the Activity Schedule and becoming due on completion of each activity as set out in the Activity Schedule.

The *fee percentage* in relation to compensation events is [REDACTED]

The *working areas*¹ are the Site including [REDACTED] locations identified within Site Information section SI100 Site Location, 84 Eccleston Square SW1V 1PX [REDACTED]

[REDACTED] site compound areas, temporary lay down area, temporary stockpile areas, off-site disposal areas, batching plant areas, temporary workshops, areas for steel fabrication.

- The Contractor's Representative is

Name: [REDACTED]

Regina House
Address: 2nd Floor 1-5 Queen Street
London EC4N 1SW

Telephone Number [REDACTED]

- The key people are

1. Name [REDACTED]

Job Project Director

Handover period 6 months

Responsibilities Project Leader

Qualifications [REDACTED]

Experience [REDACTED]

2. Name [REDACTED]

Job Project Manager

Handover period 6 months

Responsibilities Project Delivery and Controls

Qualifications [REDACTED]

Experience [REDACTED]

3. Name [REDACTED]

Job Design Manager

Handover period 6 Months

Responsibilities Design & TWAO Submission Support Management

Qualifications [REDACTED]

Experience [REDACTED]

4.

Name [REDACTED]

Job Project Manager

Handover period 6 Months

Responsibilities Project Delivery and Controls

Qualifications [REDACTED]

Experience [REDACTED]

5.

Name TBC

Job Principal Tunnel Engineer

Handover period 6 Months

Responsibilities Lead designer for tunnelling

Qualifications [REDACTED] ent

Experience [REDACTED]

6.

Name TBC

Job Principal Civils Engineer

Handover period 6 Months

Responsibilities Lead designer for structural and civil engineering

Qualifications Relevant experience and degree/masters degree/Chartered status ICE, or equivalent

Experience 15 years +

The following matters will be included in the Risk Register:

As detailed in the Risk Register in Appendix 5 of Contract Data Part 2

**Optional
Statements**

If the Contractor is to provide Works information for his design

The Works Information for the *Contractor's* design is in the Works Information WI 2400.

If a programme is to be identified in the Contract Data

- The programme identified in the Contract Data is in Appendix 6 of Contract Data Part 2.

If the *Contractor* is to decide the *completion date* for the whole of the works

- The *completion date* for the whole of the *works* is 27th July 2021.

The *activity schedule* is: in Appendix 6.1 of Contract Data Part 2.

The Quantified Activity Breakdown (QAB) is included in Appendix 6.2 of Contract Data Part 2 which is referred to in the Works Information, in particular WI 100.

The Business Case Assistant (BCA) and BCA Assumptions Template is included in Appendix 6.3 of Contract Data Part 2 which is referred to in the Works Information, in particular WI 100.

The Passenger Modelling is included in Appendix 6.4 of Contract Data Part 2 which is referred to in the Works Information, in particular WI100.

The Risk Register is included in Appendix 6.5 of Contract Data Part 2 which is referred to in the Works Information, in particular WI100.

The tendered total of the Prices is [REDACTED]

If Option X13 is used and states that the need for a performance bond is dependant on a Dun & Bradstreet credit rating

The *parent company*² of the *Contractor* is

ACS, Actividade de Construcción y Servicios, S.A.

Data for Schedule of Cost Components

- The listed items of Equipment purchased to work on this contract, with an on cost charge, are

Equipment	time-related charge	per time period
Tunnel Excavator –	█	per Week
Tunnel Excavator Type	█	Per Week
SCL Robot Putzmeister	█	per Week
SCL Robot Meyco Oruga	█	per Week
SCL Concrete Pump	█	Per Week
Dumper Heavy Duty	█	per Week
Mixer COC Huron -5	█	per Week
Scissor Lift SL33	█	Per Week
Flatbed truck CP30	█	per Week

- The rates for special Equipment are

Equipment	size or capacity	purchase rate
Tower Crane	CTL400	█
32t Gantry Crane	GH CRANE	█
24t Gantry	GH Crane	█
55t Crawler	55t (per week)	█

- The percentage for Working Areas overheads is █

- The hourly rates for Defined Cost of manufacture and fabrication outside the Working Areas are

category of employee hourly rate

Skilled [REDACTED]

Semi-Skilled [REDACTED]

Unskilled [REDACTED]

- The percentage for manufacture and fabrication overheads is [REDACTED]

Data for both schedules of cost components

- The hourly rates for Defined Cost of design outside the Working Areas are

category of employee hourly rate

Director [REDACTED]

Technical Director [REDACTED]

Principal Engineer [REDACTED]

Senior Engineer [REDACTED]

Engineer [REDACTED]

Senior Assistant Engineer [REDACTED]

Graduate Engineer [REDACTED]

Senior Technician [REDACTED]

- The percentage for design overhead is [REDACTED]

The categories of design employees whose travelling expenses to and from the Working Areas are included as a cost of design of the *works* and Equipment done outside the Working Areas are

The percentage for direct site staff including but not limited to project management, construction management, commercial management, planner, health and safety representative etc. and site overheads applicable to compensation events is

■

No other allowances for direct site staff and site overheads for compensation events may be applied.

Data for the Shorter Schedule of Costs Components

- The percentage for people overheads is ■ %
- The published list of Equipment is the last edition of the list published by **CECA**
- The percentage for adjustment for Equipment in the published list is ■ % (state plus or minus)
- The rates for other Equipment are

Equipment	size or capacity	rate
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1.	As required	
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2.		
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Appendix 6.1 Activity Schedule



Bank Station Capacity Upgrade ACTIVITY SCHEDULE SUMMARY

E Code	Elemental			Combined Elemental Total
108.100	General Management & Supervision			
108.105	Design			
108.115	Risk & Contingency			
108.120	Preliminaries			
108.200	Possession Management			
108.210	Protection Management			
108.220	Fleet			
108.230	Construction			
108.24	Associated works - Signalling works			
108.25	Associated works - Power works			
108.26	Associated works - Conductor Rail works			
108.270	Associated works - Drainage works			
201.100	General Management & Supervision			
201.105	Design			
201.110	Possession Management			
201.115	Contractor Preliminaries			
201.120	Risk & Contingency			
201.200	Enabling & Temporary Works (incl. Utilities)			
201.210	Tunnels & Shafts			
201.220	Station Box			
201.230	Ticket Hall			
201.240	Concourse			
201.250	Circulation Areas / Passages			
201.255	Operations Rooms			
201.256	Staff Facilities/Rooms			
201.257	Other Rooms/Areas			
201.260	Platform			

Bank Station Capacity Upgrade ACTIVITY SCHEDULE SUMMARY

E Code	Elemental			Combined Elemental Total
201.270	Station Signage			
201.300	Lifts & Escalators			
201.400	Fare Collection			
201.500	Fire, Mechanical & Services			
201.510	Electrical (AC Only)			
201.520	Communications			
201.600	Drainage (External)			
201.610	External Works			
502.100	ATC Resignalling			
TOTALS				



Bank Station Capacity Upgrade ACTIVITY SCHEDULE

SCE Code	Standard Cost Element	Activity Schedule Prices SCE Level
108.100.100	Project & Commercial	
108.100.105	Safety	
108.105.100	Track Layout & Geometry Design	
108.105.105	As installed drawings	
108.105.110	Final scoping track walk pre-possession	
108.105.115	CCTV survey and report	
108.105.120	Pre-possession survey	
108.105.125	As built drawings and handover documents	
108.115.100	Project risk	
108.115.105	Programme risk	
108.115.110	Estimating uncertainty / Contingency	
108.120.100	Staff (Construction)	
108.120.105	Materials Handling Plant	
108.120.110	Craneage	
108.120.115	Passenger/Goods Hoists	
108.120.120	General Plant	
108.120.125	Small Plant & PPE	
108.120.130	Scaffolding	
108.120.135	Temporary works/Access/Haul Roads	
108.120.140	Temporary Services	
108.120.145	Environmental Control	
108.120.150	Waste Management & Disposal	
108.120.155	Logistics	
108.120.160	Setting Out Control	
108.120.165	Site Hoardings / Barriers	
108.120.170	Security & Access Control	
108.120.175	Site Storage	
108.120.180	Temporary Accommodation	
108.120.185	Facilities Management	
108.120.190	Communications	
108.120.195	Temporary Signs	
108.120.200	IT Equipment & running costs	
108.200.100	Pre-possession meeting	
108.200.105	Possession briefings	
108.200.110	Possession site supervision	
108.200.115	Post possession reviews	
108.210.100	Staff	
108.210.105	Equipment	
108.220.100	Rail delivery	
108.220.105	Ballast delivery	
108.220.110	Removal of waste material	
108.220.115	Road railers	
108.220.120	Rail & Sleeper delivery train	
108.220.125	Tampers	
108.230.115	Extra cost for check / slave rail	
108.230.120	Forged transition rails	
108.230.125	Install outstanding track components I.e. greasers	
108.230.130	Installation of asset tags and microchips	
108.230.137	Reinforced concrete invert	

Activity Schedule Prices □ SCE Level



Bank Station Capacity Upgrade ACTIVITY SCHEDULE

SCE Code	Standard Cost Element	Activity Schedule Prices SCE Level
108.230.140	Sleepers (resilience or Plain)	
108.230.145	New flat bottom running rail	
108.230.146	Ditto curved	
108.230.150	Rail drop	
108.230.155	Rail stressing	
108.230.160	Re tamp including tidying up ballast (Where new connections occur)	
108.230.165	Remove existing sleepers	
108.230.170	Remove running rail	
108.230.175	Snagging track walk	
108.230.180	Stressing rails	
108.230.195	Track walk and marking up site	
108.230.215	Additional work in working adjacent to / through platforms	
108.230.220	Demobilise possession (Blockade) site	
108.230.225	Mobilise Possession (Blockade) site	
108.230.230	Other follow up works	
108.230.235	Other possession (Blockade) works	
108.230.240	Other preparation work i.e. letter-drops and craneage of plant	
108.230.245	Pre-possession (Blockade) advanced works	
108.230.275	Permanent expansion switches	
108.230.285	Work in connection with joining existing running rails	
108.240.100	Disconnect remove redundant cabling	
108.240.105	New cabling and jumper cables allowed in Section 500	
108.240.110	Working around cables crossing trackbed allowed in Section 500	
108.250.100	Disconnect remove redundant cabling	
108.250.105	New cabling and jumper cables allowed in Section 500	
108.250.110	Working around cables crossing trackbed allowed in Section 500	
108.260.100	Create conductor rail gaps	
108.260.105	Conductor rail	
108.260.107	Ditto Curved	
108.260.115	Remove conductor rail	
108.260.120	Work in connection with joining existing conductor rails	
108.270.100	Track drainage installation	
108.270.105	New catchpits	
108.270.115	Benching catchpits	
108.270.120	Installation of asset tags and microchips	
108.270.125	Sumps/Pumps	
108.270.128	Connection to existing track tunnel drainage system	
201.100.100	Project & Commercial	
201.100.105	Safety	
201.100.110	Engineering	
201.100.115	Safety	
201.105.000	Design Management	
201.105.100	TWA/Planning Consents	
201.105.105	Surveys and reports	
201.105.110	Structural design	
201.105.115	Architectural Design	
201.105.120	Mechanical & Electrical Design	
201.105.125	Environmental Design	
201.105.130	Fire & Safety Design	
201.105.131	Hard Landscaping	
201.105.135	Railway systems design	
201.105.136	Utilities Management	
201.105.137	Geotechnical Services	
201.105.138	Tunnelling Design	
201.105.139	Pedestrian Modelling & Transport Planning	
201.105.140	As built/installed drawings	

Activity Schedule Prices □ SCE Level



Bank Station Capacity Upgrade ACTIVITY SCHEDULE

SCE Code	Standard Cost Element	Activity Schedule Prices SCE Level
201.105.145	Handover documents	
201.110.100	Pre-possession meeting	
201.110.105	Possession briefings	
201.110.110	Possession site supervision	
201.110.115	Post possession reviews	
201.115.100	Staff	
201.115.105	Materials Handling Plant	
201.115.110	Craneage	
201.115.115	Passenger/Goods Hoists	
201.115.120	General Plant	
201.115.125	Small Plant & PPE	
201.115.130	Scaffolding	
201.115.135	Temporary Works/ Access/Haul Roads	
201.115.140	Temporary Services	
201.115.145	Environmental Control	
201.115.150	Waste Management	
201.115.155	Logistics	
201.115.160	Setting Out Control	
201.115.165	Site Hoardings / Barriers	
201.115.170	Security & Access Control	
201.115.175	Site Storage	
201.115.180	Temporary Accommodation	
201.115.185	Facilities Management	
201.115.195	Communications	
201.115.200	Temporary Signs	
201.115.205	IT Equipment & running costs	
201.115.210	Other (Including Insurance)	
201.120.100	Project risk	
201.120.110	Estimating uncertainty	
201.200.100	Mobilise Site	
201.200.105	Demolition	
201.200.110	Clear Site	
201.200.115	Services Diversions	
201.200.120	Dewatering	
201.200.125	Grouting	
201.200.130	Other (including utilities)	
201.210.100	Running Tunnel	
201.210.105	Tunnel Crossover	
201.210.110	Tunnel Shaft	
201.210.115	Tunnel Adit	
201.210.120	Station Platform Tunnel	
201.210.125	Station Area	
201.210.130	Station Shaft	
201.210.135	Subway	
201.210.140	Single Escalator Shaft	
201.210.145	Double Escalator Shaft	
201.210.150	Triple Escalator Shaft	
201.210.155	Quadruple Escalator Shaft	
201.210.160	Refuge	
201.210.165	Lift Shaft	
201.220.100	Substructures	
201.220.105	Frame	
201.220.110	Upper Floors	
201.220.115	Roof	
201.220.120	Stairs	
201.220.125	External Walls	
201.220.130	Windows and External doors	
201.220.135	Surface finishes	
201.220.140	Fixture and Fittings	
201.220.145	External Works	
201.220.150	Mechanical & Electrical works	
201.220.155	Communications systems	
201.230.130	Windows & External Doors	
201.230.135	Internal Walls and Partitions	
201.230.140	Internal Doors	
201.230.145	Wall Finishes	

Activity Schedule Prices □ SCE Level



Bank Station Capacity Upgrade ACTIVITY SCHEDULE

SCE Code	Standard Cost Element	Activity Schedule Prices SCE Level
201.230.150	Floor Finishes	
201.230.155	Ceiling Finishes	
201.230.160	Fittings and Furnishings	
201.230.165	Mechanical & Electrical works	
201.240.130	Windows & External Doors	
201.240.135	Internal Walls and Partitions	
201.240.140	Internal Doors	
201.240.145	Wall Finishes	
201.240.150	Floor Finishes	
201.240.155	Ceiling Finishes	
201.240.160	Fittings and Furnishings	
201.240.165	Mechanical & Electrical works	
201.250.125	External Walls	
201.250.130	Windows & External Doors	
201.250.135	Internal Walls and Partitions	
201.250.140	Internal Doors	
201.250.145	Wall Finishes	
201.250.150	Floor Finishes	
201.250.155	Ceiling Finishes	
201.250.160	Fittings and Furnishings	
201.255.130	Windows & External Doors	
201.255.135	Internal Walls and Partitions	
201.255.140	Internal Doors	
201.255.145	Wall Finishes	
201.255.150	Floor Finishes	
201.255.155	Ceiling Finishes	
201.255.160	Fittings and Furnishings	
201.255.165	Mechanical & Electrical works	
201.256.130	Windows & External Doors	
201.256.135	Internal Walls and Partitions	
201.256.140	Internal Doors	
201.256.145	Wall Finishes	
201.256.150	Floor Finishes	
201.256.155	Ceiling Finishes	
201.256.160	Fittings and Furnishings	
201.256.165	Mechanical & Electrical works	
201.257.130	Windows & External Doors	
201.257.135	Internal Walls and Partitions	
201.257.140	Internal Doors	
201.257.145	Wall Finishes	
201.257.150	Floor Finishes	
201.257.155	Ceiling Finishes	
201.257.160	Fittings and Furnishings	
201.257.165	Mechanical & Electrical works	
201.260.100	Substructure	
201.260.105	Frame	
201.260.110	Decking	
201.260.120	Edging Detail	
201.260.135	Internal Walls and Partitions	
201.260.140	Internal Doors	
201.260.145	Wall Finishes	
201.260.150	Floor Finishes	
201.260.155	Ceiling Finishes	
201.260.160	Fittings and Furnishings	
201.270.100	Station Signage Non-Illuminated	
201.270.105	Whiteboard	
201.270.110	Poster Frame	
201.270.115	Advertising Panel / Notice Board	
201.270.100	Station Signage Non-Illuminated	
201.270.105	Whiteboard	
201.270.110	Poster Frame	
201.270.115	Advertising Panel / Notice Board	
201.300.100	Escalator System	
201.300.105	Passenger Conveyor	
201.300.110	Passenger Lifting Platform	

Activity Schedule Prices □ SCE Level



Bank Station Capacity Upgrade ACTIVITY SCHEDULE

SCE Code	Standard Cost Element	Activity Schedule Prices SCE Level
201.300.115	Hydraulic Lift	
201.300.120	Traction Lift	
201.300.125	Plant & Equipment	
201.400.105	Passenger Operated Machines	
201.400.110	Staff Operated Machines	
201.400.115	Ticketing Gates	
201.400.120	Non-Ticketing Gates	
201.400.125	Station Computer	
201.400.130	Other Equipment	
201.400.135	Ticket Office Equipment	
201.500.100	Split Airconditioning	
201.500.105	VRF/VRV	
201.500.110	Chilled Water	
201.500.115	Tunnel Ventilation	
201.500.120	Water Services	
201.500.125	Gas Services	
201.500.130	Oil Services	
201.500.135	Fire Detection	
201.500.140	Passive Fire System	
201.500.145	Suppression Fire System	
201.500.150	Fire Extinguishing Equipment	
201.500.155	Sanitary Appliances	
201.500.160	Disposal Installations	
201.500.165	Testing & Commissioning	
201.500.170	BWIC	
201.510.100	LU Supplied-Main Distrbtn	
201.510.105	LU Supplied-Local Distrbtn	
201.510.110	REC Supplied-Main Distrbtn	
201.510.115	Emergency Supply	
201.510.120	Tunnel Lighting	
201.510.125	REC Supplied-Local Distrbtn	
201.510.130	Public Sys Lighting Services	
201.510.135	LVAC Power Services	
201.510.140	Non Public Sys Lighting	
201.510.145	Control	
201.510.150	Appliances	
201.510.155	External Services - Tenant Supplies	
201.510.160	Illuminated Station Signage	
201.520.100	CCTV Systems	
201.520.105	PA Systems	
201.520.110	Security Systems	
201.520.115	Op Information Systems	
201.520.120	Telecommunications	
201.520.125	Station Management System	
201.520.130	Service Control System	
201.520.135	Platform Telephones/Help Points	
201.520.140	Other Systems	
201.600.100	Chambers	
201.600.105	Pipe	
201.600.110	Vent Pipe	
201.600.115	Separator	
201.600.120	Channels	
201.600.125	Ditch	
201.600.130	Siphon	
201.600.135	Valves	
201.600.140	Outfalls	
201.600.145	Water Retention Tank	
201.600.150	Treatment Plant	
201.600.155	Pumps	
201.610.100	Access Road	
201.610.105	Car Park	
201.610.110	Covered Walkway	
201.610.115	Footpath	
201.610.120	Forecourt & Paving	
201.610.125	Wall(free standing)	
201.610.130	Steps / Ramps	
201.610.135	Fencing	

Activity Schedule Prices □ SCE Level

Appendix 6.2 Quantified Activity Breakdown (QAB)



**DRAGADOS
BANK STATION CAPACITY UPGRADE**

London Underground

Cost & Estimating System

Cost Feedback Structure (CFS)

**CONTRACT DATA PART TWO
APPENDIX 6.1**

Guidance notes for completing the Activity Schedule and Quantified Activity Breakdown (QAB)

- 1 LU has developed the Quantified Activity Breakdown (QAB) template to describe and validate pricing in a consistent format at a required level of detail.
- 2 The Contractor shall use and populate tabs of this workbook for his tender pricing in the ITT response.

The Contractor shall price the QAB fully in accordance with the requirements of WI 500.
- 3 The rates used to populate the QAB tabs for Bank Station Capacity Upgrade project shall be fully inclusive and shall be used in the assessment of Compensation Events. For clarity, the only uplift to be applied to these Prices will be the *fee percentage* in relation to Compensation Events as stated in Contract Data Part 2.
- 4 The "Activity Schedule" tab in this workbook shows the Level 1 Activity breakdowns
- 5 Reference should also be made to the Labour Rates Matrix tab and the narrative included.
- 6 The Activity Schedule requires the Contractor to price for each Level 1 activity. These are mandatory to be priced and must not be amended.
- 7 In addition, the Activity Schedules require the Contractor to propose further Standard Cost Element activities (Level 2). LU has proposed some Level 2 activities, however, the Contractor shall propose additional relevant Level 2 activities by inserting a row and reference in the spreadsheet. The Contractor must complete the cost build up data for each activity in each of the numbered worksheets for the design proposal included in the ITT response. Where an activity is not included in your design proposal enter the value zero. Where the QAB does not have a row for an activity on your design proposal add a new row, referencing in sequence and identifying it as a new row by shading green.
- 8 The sum total of the Level 2 activities within a Level 1 Activity shall build-up to and match the Level 1 Activity totals on the Activity Schedule.
- 9 The Activity Schedules are summarised in the "Summary" tab.
- 10 The Contractor is required to **fully price** the Quantified Activity Breakdown for all the labour, materials, and plant components of cost for **each** Level 2 activity. The totals from the Quantified Activity Breakdown for each Level 2 activity shall be the same as the Level 2 activity Prices on the Activity Schedule. Data input to the QAB will be in accordance with Works Information WI500.
- 11 LUL will use the QAB for tender evaluation purposes.
- 12
- 13 In completing the QAB the Contractor shall:

- a Complete the Standard Cost Element with Level 2 activities as necessary. Any new Level 2 activities shall be added to the Activity Schedule
 - b Labour Code in column L, and Labour Rate in column H utilising only the labour type classifications and rates from the Labour Rates Matrix.
 - c No Labour Types or Labour Rates shall be used that do not directly derive from the Labour Rates Matrix.
 - d Enter Labour Shifts in column G
 - e The Labour Total in column I shall be the product of the Labour Shifts in column G and Labour Rate in column H
 - g Materials costs shall be entered by Description in column J, Amount in column K, Unit of Measure in column L, and Rate in column M
 - h The Material Total for a Level 1 Activity entered in the unshaded row shall be the summation of the Level 2 Material Totals
 - i Plant costs shall be entered by Description in column O, Amount in column P Unit measure in column Q, and Rate in column R
- 14 Each of the Total Costs values for Labour, Materials, and Plant in the QAB (Level 1 and 2) must be the same value as the Prices included in the Activity Schedule
- 15 The value of the total of the costs in the QAB must be the same as the value in the completed Activity Schedule. The QAB and the Activity Schedule must align directly with the activities in the Contractor's tendered Programme
- 16 Where there is a difference between the QAB and the Activity Schedule, the higher value may be used for evaluation purposes.
- 17 The QAB shall be completed in Excel as the template provided, and the Contractor shall check the arithmetical logic in products and summations used throughout, as well as consistency with the Activity Schedule.
- 18 The Contractor shall price the following Activities on a "net cost reimbursable" basis. All other Activities are to be completed in line with the NEC Contract Option C :
- (a) Design costs and the management of the design process up to and including the attainment of Concept Design acceptance in accordance with Standard S1538
 - (b) Design costs and the management of the design process up to and including the attainment of Compliance Submission acceptance in accordance with Standard S1538.
 - (c) Design costs and the management of the design process up to and including the submission by the Employer of the Transport And Works Act Order Application.
 - (d) Actual costs payable by the Contractor to the Utility Companies undertaking service diversions and /or strengthening existing utilities to enable the implementation of the works (incl Design).

19 For the avoidance of doubt "net cost reimbursable" costs shall be consistent with the Schedule of Cost Components.

20 Design and Management of the works shall be based upon the net cost of employment of individuals.

21 Site overheads shall be separately priced lump sums within the Activity Schedules/QAB

22 All Contractors costs relating to the management, planning, and coordination (reference WI 915(3)) of the Utility Companies service diversions, alterations and /or strengthening works in relation to the Works do not form part of net cost reimbursable amounts described in 18(d) above. Equally, temporary service connections to support site offices, site compounds, or any working areas do not form part of the net cost reimbursable amounts.

23 Where revisions to activities in the QAB and Activity Schedule are agreed, the basis of payment of the fee associated with those activities will be set to reflect two principles:

- i. Incentivisation of timely delivery by linking fee release to completion of activities; and
- ii. Preservation of Contractor cash flow.

For example, fee release for generic management activity costs may be paid each Period whereas fee release for specific physical activity costs may be paid on completion of that activity.

High Level Analysis Structure (ARC) Cost Feedback Structure

Level 1	TfL Mode	Rail & Underground
Level 2	Directorate	Capital Programmes
Level 3	Programme	Station Capacity
Levels 4 - 6	Portfolio, etc	n/a
Level 7	Projects (Location/Title)	Bank station capacity upgrade
Level 7a	Sub-Projects (Geographical Sub-Division)	To be determined by Contractor

Group Code	Implementation		
100	Permanent Way		
	108.100	General Management & Supervision	
	110.105	Design	
	110.110	Engineering & Assurance	
	110.115	Risk & Contingency	
	110.120	Site Facilities	
	110.200	Possession Management	
	110.210	Protection Management	
	110.220	Fleet	
	110.230	Construction	
	110.240	Associated works - Signalling works	
	110.250	Associated works - Power works	
	110.260	Associated works - Conductor Rail works	
	110.270	Associated works - Drainage works	
200	Stations, Platforms & Other Buildings		
	201.100	LU Management & Costs	-
	201.105	Design	-
	201.110	Possession Management	-
	201.115	Preliminaries	-
	201.120	Risk	-
	201.200	Enabling Works	-
	201.210	Tunnels & Shafts	-
	201.220	Station Box/Station Structure	-
	201.230	Ticket Hall	-
	201.240	Concourse	-
	201.250	Circulation Areas / Passages	-
	201.255	Operations Rooms	-
	201.256	Staff Facilities/Rooms	-
	201.257	Other Rooms/Areas	-
	201.260	Platform	-
	201.270	Station Signage	-
	201.300	Lifts & Escalators	-
	201.400	Fare Collection	-
	201.500	Fire Mechanical & Services	-
	201.510	Electrical (AC Only)	-
	201.520	Communications & Other Systems	-
	201.600	Drainage (External)	-
	201.610	External Works	-
300	Power (& Cooling)		
400	Bridges, Tunnels & Other Structures		
500	Control Systems		
600	Communications		
700	Rolling Stock		
800	Other Development Costs		
		OSD	
		Land/Property Acquisition	
		Transport & Works Act	
900	Risk		
1000	Inflation		

Labour Rates Matrix Template for Rates for People and for Labour Rates to be used in the Quantified Activity Breakdown (QAB)**Notes:-**

The labour rates included under this matrix shall be those used in the assessment of Compensation Events. The rates will be "all-in" and inclusive of all uplifts and overheads. These rates shall be those applied to in the assessment of Compensation Events. *For clarity, no people overheads or fee percentage will be applied to these labour rates.*

Further, only rates from this Labour Rates Matrix shall be used to populate the Quantified Activity Breakdown (QAB). The QAB will shall be used as the basis for assessing Compensation Events, where the Project Manager decides that this is appropriate and relevant to the issue causing the Compensation Event. In populating the labour rates in the QAB, the Contractor shall denote the appropriate labour code - for example a Groundworker standard traffic hours 8 hours shift in the day on a Monday would be denoted as "CIV01G" on the QAB and the rate would correspond with that on the matrix below.

In submitting these rates, the Contractor acknowledges and agrees that these labour rates shall apply for the assessment of Compensation Events.

The Contractor shall populate rates against the various trades and grades for EACH of the Engineering Hours / Traffic Hours / Bank Holidays categories. If the Contractor considers it appropriate to add additional work trades / grades, then he should do so at the bottom of the matrix, and insert the appropriate description

Rates shall be populated on a "per shift" basis for the base shift, and the overtime hourly rate shall be the rate to be paid for any hours over the base shift.

For Engineering Hours, and in particular for the assessment of Frustrated Access Compensation Events, the amount to be assessed will be the applicable shift rate, pro-rata to the time lost, divided by the Available Engineering Hours.

Standard Weekend shifts shall be as categorised on the rates matrix, unless specifically mentioned otherwise by the supplier in his return, i.e. Friday / Saturday Engineering Hours, Saturday / Sunday Traffic hours.

Weekend closure shift rates will be calculated and paid on the basis of the flat 8 hours plus Overtime rate for however many hours worked – e.g. 12 hour closure shift will comprise flat 8 hours shift, plus 4 hours at the appropriate overtime rate.

The submitted rates and the QAB which is to be founded upon these rates will be used and factored into the commercial evaluation of tenders.

Bank Station Capacity Upgrade

Dragados

Shift Pattern Code	Engineering Hours						Traffic Hours				
	A	B	C	D	E	F	G	H	I	L	
DAYS OF WORKING	Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays	
MINIMUM HOURS OF WORKING	Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour	
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
TUN01	Helper										
TUN02	Leading Miner										
TUN03	Dumper driver										
TUN04	Underground labour										
TUN05	Carpenter										
TUN06	Electrician										
TUN07	Nozzle man										
TUN08	Mechanical fitter										
TUN09	Welder										
TUN10	Loader operator										
TUN11	Underground labour										
CIV01	Groundworker										
CIV02	Drainlayer										
CIV03	Driller										
CIV04	Groutman										
CIV05	Concrete Worker / Finisher										
CIV06	Reinforcement Steel Fixer										
CIV07	Shuttering Joiner / Carpenter										
CIV08	Bricklayer / Mason										
CIV09	Roofer										
CIV10	Steel Erector										
CIV11	Carpenter										
CIV12	Joiner										
CIV13	Screeder										
CIV14	Plasterer										
CIV15	Plasterboard Fixer										
CIV16	Tiler										
CIV17	Glazier										
CIV18	Painter										
CIV19	Plant Operative										
CIV20	Scaffolder										
CIV21	Coded Welder										
CIV22	Concrete Gang Chargehand										
CIV23	Dumper Driver (10T)										
CIV24	Concrete Labourer										
CIV27	Foreman										
CIV28	Approved Asbestos Operative										
COM01	Communications Supervisor										
COM02	Senior Comms Engineer										
COM03	Communications Engineer										
COM04	Communications Installer										
ELE01	Approved Electrician Level 2										
ELE02	Electrician's Mate										
ELE03	Lead Electrical SPiC										
ELE04	Electrical SPiC										
ELE05	Safe Isolation Level 3 Electrician										
ELE06	Cable Puller										
ELE07	Electrical Engineer										
ELE08	Electrical Supervisor										
ELE09	NICEIC Tester										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
ELE10	Technical Officer (TO)										
FIR01	Fire Systems Installer										
LAB01	Ganger										
LAB02	Chainman										
LAB03	General Labourer										
LAB04	Semi-Skilled Labourer										
LAB05	Senior Semi-Skilled Labourer										
LAB06	Trade Foreman										
LAB07	Operative certified for lift & escalator materials handling										
LAB08	Topman for confined space working										
LAB09	Cleaner										
LAB10	Groundworker Foreman										
LAB11	Labourer (Track Accustomed)										
LAB12	Floor Layer										
MEC01	Mechanical Mate										
MEC02	Mechanical Fitter										
MEC03	Pipefitter										
MGT01	Design Engineer - Civils										
MGT02	Design Engineer - Comms										
MGT03	Design Engineer - Fire Systems										
MGT04	Design Engineer - M&E										
MGT05	Assurance Engineer										
MGT06	Project Manager										
MGT07	Site Manager										
MGT08	Commercial Manager										
MGT09	Contract Administrator										
PLU01	Approved Plumber										
PLU02	Plumber's Mate										
A code will be allocated	Plumbing Supervisor										
SPC01	SPiC (M&E)										
A code will be allocated	Protection Master										
A code will be allocated	Protection Master (SPC)										
A code will be allocated	SPC										
A code will be allocated	Train Master										
A code will be allocated	Possession Master										
A code will be allocated	Fire Watchman										
A code will be allocated	Lookout LU										
A code will be allocated											
A code will be allocated											
A code will be allocated											
A code will be allocated											
A code will be allocated											
A code will be allocated	Approved Asbestos Supervisor										
A code will be allocated	Signage Installer										
A code will be allocated	Collapsible Gate Installer										
A code will be allocated	Steel Door Installer										
A code will be allocated	Ceiling Fixer										
A code will be allocated	Comms Labourer										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
<i>A code will be allocated</i>	Comms CAD Technician										
<i>A code will be allocated</i>	Comms Project Manager										
<i>A code will be allocated</i>	GLAP Installer										
<i>A code will be allocated</i>	Electrical Site Manager										
<i>A code will be allocated</i>	Electrical Surveyor										
<i>A code will be allocated</i>	Quantity Surveyor										
<i>A code will be allocated</i>	Planner										
<i>A code will be allocated</i>	Secretary / Document Controller										
<i>A code will be allocated</i>	Director										
<i>A code will be allocated</i>	Traffic Marshal										
<i>A code will be allocated</i>	Security Guard Days										
<i>A code will be allocated</i>	Waste Operative										
<i>A code will be allocated</i>	Hoist Driver										
<i>A code will be allocated</i>	Forklift Driver										
<i>A code will be allocated</i>	Slinger										
<i>A code will be allocated</i>	Further trades as specified by Contractor										
<i>A code will be allocated</i>	Pipe Welder										
MGT10	Associate Engineer Track										
MGT11	Principal Engineer Track										
MGT12	Senior Assistant Engineer Track										
MGT13	Engineer Track										
MGT14	Technician Track										
MGT15	Director/Associate M&E Manager										
MGT16	Principal Engineer (Elec)										
MGT17	Principal Engineer (Mech)										
MGT18	Principal Engineer Communications										
MGT19	Principal Engineer Fire										
MGT20	Senior Engineer Electrical										
MGT21	Senior Engineer Mechanical										
MGT22	Engineer Mechanical										
MGT23	Engineer Electrical										
MGT24	Engineer Communications										
MGT25	Engineer Fire										
MGT26	Assistant Engineer Electrical										
MGT27	Assistant Engineer Mechanical										
MGT28	Assistant Communications Engineer										
MGT29	Senior Engineer M&E										
MGT30	Lift Engineer										
MGT31	M&E CAD Technician										
MGT32	Principal Building Physicist										
MGT33	Building Physicist										
MGT34	Public Health Engineer										
MGT35	M&E Coordinator										
MGT36	Technical Director Structures										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
MGT37	Principal Engineer Structures										
MGT38	Senior Engineer Structures										
MGT39	Design Engineer Structures										
MGT40	Engineer Structures										
MGT41	Assistant Engineer Structures										
MGT42	Graduate Engineer Structures										
MGT43	CAD Technician Structures										
MGT44	Senior Technician Structures										
MGT45	Technician Structures										
MGT46	Principal Engineer Utilities										
MGT47	Senior Engineer Utilities										
MGT48	Engineer Utilities										
MGT49	Senior Assistant Engineer Utilities										
MGT50	CAD Technician Utilities										
MGT51	Director/Associate Planning & Consents										
MGT52	Planning and Consents Consultant										
MGT53	Planning and Consents Junr Consultant										
MGT54	Planning and Consents Principal Consultant										
MGT55	Planning and Consents Senior Consultant										
MGT56	Planning and Consents Consultant Planner										
MGT57	Planning and Consents Principal Planner										
MGT58	Planning and Consents Environmental Consultant										
MGT59	Planning and Consents Consultation Specialist										
MGT60	GeoServices Director										
MGT61	GeoServices Principal Desk Study/GI										
MGT62	GeoServices Principal WBS and Shafts										
MGT63	GeoServices Principals Settlement										
MGT64	GeoServices Senior Eng Desk Study/GI										
MGT65	GeoServices Senior Eng WBS and Shafts										
MGT66	GeoServices Senior Eng Settlement										
MGT67	GeoServices Engineer Desk Study/GI										
MGT68	GeoServices Engineer WBS and Shafts										
MGT69	GeoServices Engineer Settlement										
MGT70	GeoServices Assistant Engineer Desk Study/GI										
MGT71	GeoServices Assistant Engineer WBS and Shafts										
MGT72	GeoServices Assistant Engineer Settlement										
MGT73	GeoServices CAD Technician										
MGT74	Design Director										
MGT75	Design Manager										
MGT76	Design Package 1 Manager										
MGT77	Design Package 2 Manager										
MGT78	Design Package 3 Manager										
MGT79	Design Coordinator										
MGT80	Design Project Controls										
MGT81	Design Commercial Manager										
MGT82	Design Commercial Assistant										
MGT83	Design Commercial Assistant										
MGT84	Design Team Planner										
MGT85	Document Controller										
MGT86	Design Administrator										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
MGT87	CAD Manager										
MGT88	BIM Manager										
MGT89	Quality Manager										
MGT90	Risk Manager										
MGT91	CDM Specialist										
MGT92	Assurance Manager										
MGT93	Assurance Engineer										
MGT94	Assurance Technical Support										
MGT95	Assurance Technical Support										
MGT96	Requirements Manager										
MGT97	V&V Manager										
MGT98	Engineering Safety Manager										
MGT99	RAM Manager										
MGT100	System Interface Manager										
MGT101	Human Factors Consultant										
MGT102	EMC Manager										
MGT103	Fire Safety Manager										
MGT104	Technical Director Tunnelling										
MGT105	Associate Engineer Tunnelling										
MGT106	Principal Engineer Tunnelling										
MGT107	Senior Engineer Tunnelling										
MGT108	Engineer Tunnelling										
MGT109	Assistant Engineer Tunnelling										
MGT110	Senior Technician Tunnelling										
MGT111	Technician Tunnelling										
MGT112	Senior Engineer PED Flow										
MGT113	Associate Engineer Landscaping										
MGT114	Senior Engineer Landscaping										
MGT115	CAD Technician Landscaping										
MGT116	Tunneling Associate Construction Support										
MGT117	Pinciple Lanscaping										
MGT10	Associate Engineer Track										
MGT11	Principal Engineer Track										
MGT12	Senior Assistant Engineer Track										
MGT13	Engineer Track										
MGT14	Technician Track										
MGT15	Director/Associate M&E Manager										
MGT16	Principal Engineer (Elec)										
MGT17	Principal Engineer (Mech)										
MGT18	Principal Engineer Communications										
MGT19	Principal Engineer Fire										
MGT20	Senior Engineer Electrical										
MGT21	Senior Engineer Mechanical										
MGT22	Engineer Mechanical										
MGT23	Engineer Electrical										
MGT24	Engineer Communications										
MGT25	Engineer Fire										
MGT26	Assistant Engineer Electrical										
MGT27	Assistant Engineer Mechanical										
MGT28	Assistant Communications Engineer										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
MGT29	Senior Engineer M&E										
MGT30	Lift Engineer										
MGT31	M&E CAD Technician										
MGT32	Principal Building Physicist										
MGT33	Building Physicist										
MGT34	Public Health Engineer										
MGT35	M&E Coordinator										
MGT36	Technical Director Structures										
MGT37	Principal Engineer Structures										
MGT38	Senior Engineer Structures										
MGT39	Design Engineer Structures										
MGT40	Engineer Structures										
MGT41	Assistant Engineer Structures										
MGT42	Graduate Engineer Structures										
MGT43	CAD Technician Structures										
MGT44	Senior Technician Structures										
MGT45	Technician Structures										
MGT46	Principal Engineer Utilities										
MGT47	Senior Engineer Utilities										
MGT48	Engineer Utilities										
MGT49	Senior Assistant Engineer Utilities										
MGT50	CAD Technician Utilities										
MGT51	Director/Associate Planning & Consents										
MGT52	Planning and Consents Consultant										
MGT53	Planning and Consents Junr Consultant										
MGT54	Planning and Consents Principal Consultant										
MGT55	Planning and Consents Senior Consultant										
MGT56	Planning and Consents Consultant Planner										
MGT57	Planning and Consents Principal Planner										
MGT58	Planning and Consents Environmental Consultant										
MGT59	Planning and Consents Consultation Specialist										
MGT60	GeoServices Director										
MGT61	GeoServices Principal Desk Study/GI										
MGT62	GeoServices Principal WBS and Shafts										
MGT63	GeoServices Principal Settlement										
MGT64	GeoServices Senior Eng Desk Study/GI										
MGT65	GeoServices Senior Eng WBS and Shafts										
MGT66	GeoServices Senior Eng Settlement										
MGT67	GeoServices Engineer Desk Study/GI										
MGT68	GeoServices Engineer WBS and Shafts										
MGT69	GeoServices Engineer Settlement										
MGT70	GeoServices Assistant Engineer Desk Study/GI										
MGT71	GeoServices Assistant Engineer WBS and Shafts										
MGT72	GeoServices Assistant Engineer Settlement										
MGT73	GeoServices CAD Technician										
MGT74	Design Director										
MGT75	Design Manager										
MGT76	Design Package 1 Manager										
MGT77	Design Package 2 Manager										
MGT78	Design Package 3 Manager										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
MGT79	Design Coordinator										
MGT80	Design Project Controls										
MGT81	Design Commercial Manager										
MGT82	Design Commercial Assistant										
MGT83	Design Commercial Assistant										
MGT84	Design Team Planner										
MGT85	Document Controller										
MGT86	Design Administrator										
MGT87	CAD Manager										
MGT88	BIM Manager										
MGT89	Quality Manager										
MGT90	Risk Manager										
MGT91	CDM Specialist										
MGT92	Assurance Manager										
MGT93	Assurance Engineer										
MGT94	Assurance Technical Support										
MGT95	Assurance Technical Support										
MGT96	Requirements Manager										
MGT97	V&V Manager										
MGT98	Engineering Safety Manager										
MGT99	RAM Manager										
MGT100	System Interface Manager										
MGT101	Human Factors Consultant										
MGT102	EMC Manager										
MGT103	Fire Safety Manager										
MGT104	Technical Director Tunnelling										
MGT105	Associate Engineer Tunnelling										
MGT106	Principal Engineer Tunnelling										
MGT107	Senior Engineer Tunnelling										
MGT108	Engineer Tunnelling										
MGT109	Assistant Engineer Tunnelling										
MGT110	Senior Technician Tunnelling										
MGT111	Technician Tunnelling										
MGT112	Senior Engineer PED Flow										
MGT113	Associate Engineer Landscaping										
MGT114	Senior Engineer Landscaping										
MGT115	CAD Technician Landscaping										
MGT116	Tunneling Associate Construction Support										
MGT117	Pinciple Lanscaping										
MGT118	Architecture - Director										
MGT119	Architecture - Director										
MGT120	Architecture - Associate Director										
MGT121	Architecture - Senior Architect										
MGT122	Architecture - Senior Architect										
MGT123	Architecture - Architect										
MGT124	Architecture - Architect										
MGT125	Architecture - Specification Architect										
MGT126	Architecture - Assistant Architect (P2)										
MGT127	Architecture - Assistant Architect (P2)										
MGT128	Architecture - Assistant Architect (P1)										

Bank Station Capacity Upgrade

Dragados

		Engineering Hours						Traffic Hours			
Shift Pattern Code		A	B	C	D	E	F	G	H	I	L
DAYS OF WORKING		Sun-Thur	Sun-Thur	Sun-Thur	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Weekend (Fri-Sat)	Mon-Fri	Mon-Fri	Weekend (Sat-Sun)	Bank Holidays
MINIMUM HOURS OF WORKING		Eng Hours	8 Hours	1 Hour	Eng Hours	8 Hours	1 Hour	8 Hours	1 Hour	8 Hours	1 Hour
REF Code	Trade	Shift Rate	Shift Rate	Overtime	Shift Rate	Shift Rate	Overtime	Shift Rate	Overtime	Shift Rate	Overtime
MGT129	Architecture - Visualiser										
MGT130	Architecture - OSD Senior Architect										
MGT131	Architecture - OSD Architect										
MGT132	Architecture - OSD Architect										
MGT133	Architecture - OSD Assistant Architect (P2)										
MGT134	Architecture - OSD Assistant Architect (P2)										
MGT135	Architecture - OSD Assistant Architect (P1)										
MGT136	SCL - Project Director										
MGT137	SCL - Tunnelling Expert										
MGT138	SCL - Project Manager										
MGT139	SCL - Design Manager										
MGT140	SCL - Senior Engineer										
MGT141	SCL - Engineer										
MGT142	SCL - Financial Control Manager										
MGT143	SCL - CAD Manager										
MGT144	SCL - 3D CAD Technician										
MGT145	SCL - 2D CAD Technician										
MGT146	SCL - Junior Engineer										

Section 11 Supporting Information LUSTN-0008798-XXX

This is an example based on the Base Case. Contractor will amend as necessary for his proposal and cross reference to the individual QAB sections.

Level	Room Ref.	Geo.Location	Drawing ref LUSTN_0008798-		CBS Ref. Code	Structure	Fit-out	Escalator & Lifts	General Note
1F	X1001	Station Box	004116	HVAC System A	BoH	201.220	201.257		
1F	X1002	Station Box	004116	HVAC System B	BoH	201.220	201.257		
1F	X1003	Station Box	004116	HVAC system C	BoH	201.220	201.257		
1F	X1004	Station Box	004116	HVAC System D	BoH	201.220	201.257		
1F	X1005	Station Box	004116	HVAC System E	BoH	201.220	201.257		
1F	X1006	Station Box	004116	LU Plant Area 1	BoH	201.220	201.257		
1F	X1007	Station Box	004116	LU Plant Area 2	BoH	201.220	201.257		
1F	X1008	Station Box	004116	LU Stair1 to Street Level	BoH	201.220	201.257		
1F	X1009	Station Box	004116	Lobby1	BoH	201.220	201.257		
1F	X1010	Station Box	004116	Lobby2	BoH	201.220	201.257		
1F	X1011	Station Box	004116	LU Stair2 to Street Level	BoH	201.220	201.257		
1F	X1012	Station Box	004116	OSD	BoH	201.220	201.257		
1F	X1013	Station Box	004116	OSD Stair1 to Street level	BoH	201.220	201.257		
1F	X1014	Station Box	004116	LU Lift 1	FoH	201.210.165	N/a	201.300	
1F	X1015	Station Box	004116	LU Lift 2	FoH	201.210.165	N/a	201.300	
1F	X1016	Station Box	004116	LU Lift 3	FoH	201.210.165	N/a	201.300	
1F	X1017	Station Box	004116	LU Lift 4	FoH	201.210.165	N/a	201.300	
GF	XG001	Station Box	004113	Ticket Hall	FoH	201.220	201.230		
GF	XG002	Station Box	004113	POM1	FoH	201.220	201.257		
GF	XG003	Station Box	004113	POM2	FoH	201.220	201.257		
GF	XG004	Station Box	004113	Riser 1	BoH	201.220	201.257		
GF	XG005	Station Box	004113	Riser 2	BoH	201.220	201.257		
GF	XG006	Station Box	004113	Riser 3	BoH	201.220	201.257		
GF	XG007	Station Box	004113	Riser 4	BoH	201.220	201.257		
GF	XG008	Station Box	004113	OSD Lower Lobby Entrance	BoH	201.220	201.257		
GF	XG009	Station Box	004113	LU Stair1 to UB	BoH	201.220	201.257		
GF	XG010	Station Box	004113	LU Stair2 to 1st	BoH	201.220	201.257		
GF	XG011	Station Box	004113	OSD Stairs	BoH	201.220	201.257		
GF	XG012	Station Box	004113	WC	BoH	201.220	201.257		
GF	XG013	Station Box	004113	Cleaning Services Store	BoH	201.220	201.257		
GF	XG014	Station Box	004113	Cleaners Store & Water Poi	BoH	201.220	201.257		
GF	XG015	Station Box	004113	Bin Store	BoH	201.220	201.257		
GF	XG016	Station Box	004113	LU Stair3 to Basement	BoH	201.220	201.257		
GF	XG017	Station Box	004113	LU Stair4 to 1st	BoH	201.220	201.257		
GF	XG018	Station Box	004113	Secure Lobby 1	BoH	201.220	201.257		
GF	XG019	Station Box	004113	Secure Lobby 2	BoH	201.220	201.257		
GF	XG020	Station Box	004113	Paper Store	BoH	201.220	201.257		
GF	XG021	Station Box	004113	LU Lift 1	FoH	201.210.165	N/a	201.300	
GF	XG022	Station Box	004113	LU Lift 2	FoH	201.210.165	N/a	201.300	
GF	XG023	Station Box	004113	LU Lift 3	FoH	201.210.165	N/a	201.300	
GF	XG024	Station Box	004113	LU Lift 4	FoH	201.210.165	N/a	201.300	
GF	XG025	Station Box	004113	OSD Service Area	BoH	201.220	201.257		
UB	XU001	Station Box	004114	OSD	BoH	201.220	201.257		
UB	XU002	Station Box	004114	LU Lift 1	FoH	201.210.165	N/a	201.300	
UB	XU003	Station Box	004114	LU Lift 2	FoH	201.210.165	N/a	201.300	
UB	XU004	Station Box	004114	LU Lift 3	FoH	201.210.165	N/a	201.300	
UB	XU005	Station Box	004114	LU Lift 4	FoH	201.210.165	N/a	201.300	
UB	XU006	Station Box	004114	Void 1	BoH	201.220	201.257		
UB	XU007	Station Box	004114	Void 2	BoH	201.220	201.257		
UB	XU008	Station Box	004114	MEP Plant	BoH	201.220	201.257		
UB	XU009	Station Box	004114	Stair1 to Street	BoH	201.220	201.257		
UB	XU010	Station Box	004114	Stair2 to Street	BoH	201.220	201.257		
UB	XU011	Station Box	004114	Stair3 to LB	BoH	201.220	201.257		
UB	XU012	Station Box	004114	Riser	BoH	201.220	201.257		
LB	XL001	Station Box	004115	Pressurisation Plant Room	BoH	201.220	201.257		
LB	XL002	Station Box	004115	CER	BoH	201.220	201.255		
LB	XL003	Station Box	004115	Stair1 to UB	BoH	201.220	201.257		
LB	XL004	Station Box	004115	LU Supply Plant Room	BoH	201.220	201.257		
LB	XL005	Station Box	004115	Male WC	BoH	201.220	201.256		
LB	XL006	Station Box	004115	Female WC	BoH	201.220	201.256		
LB	XL007	Station Box	004115	Mess/Kitchen	BoH	201.220	201.256		
LB	XL008	Station Box	004115	DNO Room	BoH	201.220	201.257		
LB	XL009	Station Box	004115	Protected Lobby	BoH	201.220	201.257		
LB	XL010	Station Box	004115	Stair2 to UB	BoH	201.220	201.257		
LB	XL011	Station Box	004115	Radio Room	BoH	201.220	201.257		
LB	XL012	Station Box	004115	Stair3 to Northern Line	BoH	201.220	201.257		
LB	XL013	Station Box	004115	LU Lift 1	FoH	201.210.165	N/a	201.300	
LB	XL014	Station Box	004115	LU Lift 2	FoH	201.210.165	N/a	201.300	
LB	XL015	Station Box	004115	LU Lift 3	FoH	201.210.165	N/a	201.300	
LB	XL016	Station Box	004115	LU Lift 4	FoH	201.210.165	N/a	201.300	
LB	XL017	Station Box	004115	OLBI 3	BoH	201.220	201.257		
LB	XL018	Station Box	004115	SCR	BoH	201.220	201.257		
LB	XL019	Station Box	004115	Foul pump Room	BoH	201.220	201.257		
LB	XL020	Station Box	004115	OSD	BoH	201.220	201.257		
LB	XL021	Station Box	004115	Riser	BoH	201.220	201.257		

LB	XL022	Station Box	004115	Shaft Riser	BoH	201.220	201.257	
LB	XL023	Station Box	004115	UPS Room	BoH	201.220	201.257	
LB	XL024	Station Box	004115	UTS Room	BoH	201.220	201.257	
IL	X1001	Station Shaft	004119	LU Lift 1	FoH	201.210.165	N/a	201.300
IL	X1002	Station Shaft	004119	LU Lift 2	FoH	201.210.165	N/a	201.300
IL	X1003	Station Shaft	004119	LU Lift 3	FoH	201.210.165	N/a	201.300
IL	X1004	Station Shaft	004119	LU Lift 4	FoH	201.210.165	N/a	201.300
IL	X1005	Station Shaft	004119	FF Stair1 to NL	BoH	201.220	201.257	
IL	X1006	Station Shaft	004119	Lobby	BoH	201.220	201.257	
IL	X1007	Station Shaft	004119	Riser 1	BoH	201.220	201.257	
IL	X1008	Station Shaft	004119	Riser 2	BoH	201.220	201.257	
IL	X1009	Station Shaft	004119	Riser 3	BoH	201.220	201.257	
3	3/P01	Central Line	004148	UMC (Escalator 20 & 21)	BoH	201.210.145	201.257	Escalator to Northern line
3	3/P02	Central Line	004148	Crosspassage	FoH	201.210.105	201.240	Central Line Cross Passages
3	3/P03	Central Line	004148	Crosspassage	FoH	201.210.105	201.240	Central Line Cross Passages
3	3/P04	Central Line	004148	Crosspassage	FoH	201.210.105	201.240	Central Line Cross Passages
3	3/P05	Central Line	004148	New Stairs to Cruciform	FoH	201.210.105	201.250	Stairs to Cruciform
4	4/P01	Triplication Area	004147	UMC (Escalator 18 & 19)	BoH	201.210.145	201.257	Escalator to Northern line
4	4/P02	Triplication Area	004147	Concourse	FoH	201.210.110	201.240	Triplication Junction
4	4/P03	Triplication Area	004147	Passage	FoH	201.210.110	201.250	LLIP2
4	4/P04	Triplication Area	004147	Crosspassage	FoH	201.210.105	201.240	Triplication Connecting Passages
4	4/P05	Triplication Area	004147	Crosspassage	FoH	201.210.105	201.240	Triplication Connecting Passages
4	4/P06	Triplication Area	004147	Crosspassage	FoH	201.210.105	201.240	Triplication Connecting Passages
4	4/P07	Triplication Area	004147	Stairs	FoH	201.210.110	201.250	Triplication Connecting Passages
4	4/P08	Triplication Area	004147	Crosspassage	FoH	201.210.115	201.240	LLIP2 to LLIP Link Tunnel
4	4/P09	Triplication Area	004147	LMC (Escalator 20 & 21)	BoH	201.210.145	201.257	Escalator to Central Line
4	ESC3	Triplication Area	004147	Escalator 20 & 21	FoH	201.210.145	201.250	Central Line to Triplication Escalator
5	5/661	Northern Line	004141	Crosspassage	FoH	201.210.105	201.240	5/611 to be reopened
5	5/761	Northern Line	004141	Crosspassage	FoH	201.210.105	201.240	5/761 to be reopened
5	5/P01	Northern Line	004141	Southbound Platform	FoH	201.210.115	201.260	New Southbound Platform
5	Room	Northern Line	004141	Switchroom1	BoH	201.220	201.257	
5	Room	Northern Line	004141	CER Node Room1	BoH	201.220	201.257	
5	Room	Northern Line	004141	Switchroom2	BoH	201.220	201.257	
5	Room	Northern Line	004141	CER Node Room2	BoH	201.220	201.257	
5	5/P02	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	Northern Line Cross Passages
5	5/P03	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	Ditto
5	5/P04	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	Northern Line Cross Passages
5	5/P05	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	
5	5/P06	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	Northern Line Cross Passages
5	5/P07	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	
5	5/P08	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	
5	5/P09	Northern Line	004141	Crosspassage	FoH	201.210.115	201.240	
5	5/P10	Northern Line	004141	Lift Lobby	FoH	201.210.115	201.250	
5	Room	Northern Line	004141	Spare Room	BoH	201.220	201.257	
5	5/P11	Northern Line	004141	Concourse	FoH	201.210.110	201.240	Concourse Tunnels
5	Room	Northern Line	004141	Store	BoH	201.220	201.257	
5	Room	Northern Line	004141	Cleaning Services Store	BoH	201.220	201.257	
5	Room	Northern Line	004141	Cleaners Store	BoH	201.220	201.257	
5	Room	Northern Line	004141	Lobby	BoH	201.220	201.257	
5	5/P12	Northern Line	004141	Passage	FoH	201.210.110	201.250	
5	5/P13	Northern Line	004141	Concourse	FoH	201.210.120	201.240	Northern Line Concourse
5	5/P14	Northern Line	004141	Passage	FoH	201.210.110	201.250	Northern Line to Central Line Link Tunnel
5	5/P15	Northern Line	004141	Passage	FoH	201.210.115	201.250	Northern Line to PRM Link Passage
5	5/P16	Northern Line	004141	PRM Lift to DLR	FoH	201.210.115	201.250	201.300
5	5/P16	Northern Line	004141	Staircase	FoH	201.210.115	201.250	Northern Line to DLR PRM Staircase
5	5/P17	Northern Line	004141	Lift Lobby	FoH	201.210.115	201.250	Northern Line to DLR PRM Staircase
5	Room	Northern Line	004141	Shaft Stairs	BoH	201.220	201.257	
5	5/P18	Northern Line	004141	Concourse	FoH	201.210.110	201.240	
5	Room	Northern Line	004141	Lobby	BoH	201.220	201.257	
5	Room	Northern Line	004141	CER Node Room	BoH	201.220	201.257	
5	Room	Northern Line	004141	OLBI	BoH	201.220	201.257	
5	5/P19	Northern Line	004141	UMC (Escalator 16 & 17)	BoH	201.210.110 or 145	201.250	Northern Line to DLR Escalator Shaft
5	5/P20	Northern Line	004141	Concourse	FoH	201.210.110	201.240	
5	5/P21	Northern Line	004141	UMC (Escalator 18 & 19)	FoH	201.210.145	201.257	Escalator to Triplication
5	ESC2	Northern Line	004141	Escalator 18 & 19	FoH	201.210.145	201.250	201.300
5	5/P22	Northern Line	004141	Stairs	FoH	201.210.110	201.250	Northern Line to Triplication Escalator
5	5/P23	Northern Line	004141	Stairs to DLR	FoH	201.210.110	201.250	Stairs to Central Line
6	6/P01	Docklands Light Railway	004142	Crosspassage	FoH	201.210.105	201.240	Stairs to DLR
6	6/P02	Docklands Light Railway	004142	6/751 to UPS Room	BoH	201.220	201.257	DLR Crosspassage (6/661&6/664)
6	6/P03	Docklands Light Railway	004142	Crosspassage	FoH	201.210.105	201.240	DLR UPS
6	6/P04	Docklands Light Railway	004142	Crosspassage	FoH	201.210.105	201.240	DLR Crosspassage (6/991)
6	6/P06	Docklands Light Railway	004142	Stair1 to NL	FoH	201.210.105	201.250	DLR Crosspassage
6	6/P07	Docklands Light Railwa	004142	New LMC	BoH	201.210.145	201.257	Stairs to Northern Line
6	ESC1	Docklands Light Railwa	004142	Escalator 16 & 17	FoH	201.210.145	201.250	UMC
6	6/P08	Docklands Light Railway	004142	Connection Passage	FoH	201.210.105	201.250	DLR to Northern Line
6	6/P09	Docklands Light Railway	004142	Lift Lobby	FoH	201.210.165	201.250	DLR PRM Link Passage
6	6/P09	Docklands Light Railway	004142	PRM Lift	FoH	201.210.165	201.250	201.300
6	6/P09	Docklands Light Railway	004142	Escape Stair to NL	FoH	201.210.165	201.250	Northern Line to DLR PRM Shaft
6	6/204	Docklands Light Railway	004142	Backfilled Crosspassage	BoH	201.220	201.257	Northern Line to DLR Staircase
6	6/P10	Docklands Light Railway	004142	New Store Room	BoH	201.220	201.257	Under Escalator



						Programme	Labour Total (£)	Materials Total (£)	Plant Total (£)
		108.105	Design	m					
					108.105.100	Track Layout & Geometry Design			
		108.120	Preliminaries	m					
					108.120.150	Waste Management & Disposal			
		108.210	Protection Management	m					
					108.210.100	Staff			
					108.210.105	Equipment			
		108.230	Construction	m					
					108.230.115	Extra cost for check / slave rail			

108.105 Design		Programme WBS Ref	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)
108.105.100	Track Layout & Geometry Design						
108.105.100	Concept Design						
108.105.100		Associate					
108.105.100		Principal Engineer					
108.105.100		Senior Assistant Engineer					
108.105.100		Enginner					
108.105.100							
108.105.100	Detail Design						
108.105.100		Associate					
108.105.100		Principal Engineer					
108.105.100		Senior Assistant Engineer					
108.105.100		Enginner					
108.105.100		Technitian					

108.120	Preliminaries	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Labour Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
		WBS Ref															
108.120.150	Waste Management & Disposal						£ -					£ -					£ -
108.120.150	Non Hazardous 'Inert' Material																

108.230		Construction	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
			WBS Ref															
		Northern Line																
		Running Tunnel																
108.230.115		Slab Track																
108.230.115		Installation of Slab Track																
108.230.115		Logistics Gang For Material Handling																
108.230.115		Slave Rail Installation Gang																
108.230.115		Materials (Non Track)																
108.230.115		Prelims																



										Programme	Labour Total (£)	Materials Total (£)	Plant Total (£)
RWI Code	Repeatable Work Item	UoM	E Code	Element	UoM	SE Code	Sub-Element	UoM	Coverage Assumptions	WBS Ref			
201	Station New/Enhancement	m2											
			201.100	LU Management & Costs	m2								
						201.100.100	Project & Commercial						
						201.100.105	Assurance						
						201.100.110	Engineering						
						201.100.115	Safety						
						201.100.120	Protection Management						
			201.105	Design	m2								
						201.105.000	Design management						
						201.105.100	TWA / Planning consents						
						201.105.105	Surveys and reports						
						201.105.110	Structural design						
						201.105.115	Architectural Design						
						201.105.120	Mechanical & Electrical Design						
						201.105.125	Environmental design						
						201.105.130	Fire & Safety Design						
						201.105.131	Hard Landscaping						
						201.105.135	Railway systems design						
						201.105.136	Utilities Management						
						201.105.137	Geotechnical Services						
						201.105.138	Tunnelling Design						
						201.105.139	Pedestrian Modelling & Transport Planning						
			201.115	Preliminaries	m2								
						201.115.100	Staff (Construction Phase)						
						201.115.105	Materials Handling Plant						
						201.115.110	Craneage						
						201.115.115	Passenger/Goods Hoists						
						201.115.120	General Plant						
						201.115.135	Temporary works/Access/Haul Roads						
						201.115.145	Environmental Control						
						201.115.150	Waste Management & Disposal						
						201.115.160	Setting Out Control						
						201.115.165	Site Hoardings / Barriers						
						201.115.170	Security & Access Control						
						201.115.175	Site Storage						
						201.115.180	Temporary Accommodation						
						201.115.185	Facilities Management						
						201.115.195	Communications						
						201.115.205	IT Equipment & running costs						
						201.115.210	HSE/Protective Clothing Equipment						
			201.120	Risk	m2								
						201.120.100	Project risk						
			201.200	Enabling Works	m2								
						201.200.105	Demolition						
						201.200.115	Services Diversions						
						201.200.125	Grouting						
						201.200.130	Other						
			201.210	Tunnels & Shafts	m2								
						201.210.100	Running Tunnel						
						201.210.105	Tunnel Crossover						
						201.210.110	Tunnel Shaft						
						201.210.115	Tunnel Adits & Auxiliary structures						
						201.210.120	Station Platform Tunnel						
						201.210.150	Triple Escalator Barrels						
						201.210.160	New Switch room & Mess room						
						201.210.165	Lift Shaft						
			201.220	Station Box/Station Structure	m2								
						201.220.100	Substructures						
						201.220.105	Frame						
						201.220.110	Upper Floors						
						201.220.115	Roof						
						201.220.120	Stairs						
						201.220.125	External Walls						
						201.220.150	Mechanical & Electrical works						
			201.230	Ticket Hall	m2								
						201.230.130	Windows & External Doors						
						201.230.135	Internal Walls and Partitions						
						201.230.140	Internal Doors						
						201.230.145	Wall Finishes						
						201.230.150	Floor Finishes						
						201.230.155	Ceiling Finishes						
						201.230.160	Fittings and Furnishings						
						201.230.165	Mechanical & Electrical works						
			201.250	Circulation Areas / Passages	m								
						201.250.135	Internal Walls and Partitions						
						201.250.140	Internal Doors						
						201.250.145	Wall Finishes						
						201.250.150	Floor Finishes						
						201.250.155	Ceiling Finishes						
			201.26	Operations Rooms	m								
						201.255.130	Windows & External Doors						




										Programme	Labour Total (£)	Materials Total (£)	Plant Total (£)
RWI Code	Repeatable Work Item	UoM	E Code	Element	UoM	SE Code	Sub-Element	UoM	Coverage Assumptions	WBS Ref			
						201.255.135	Internal Walls and Partitions						
						201.255.140	Internal Doors						
						201.255.145	Wall Finishes						
						201.255.150	Floor Finishes						
						201.255.155	Ceiling Finishes						
						201.255.165	Mechanical & Electrical works						
			201.26	Staff Facilities/Rooms	m								
						201.256.135	Internal Walls and Partitions						
						201.256.140	Internal Doors						
						201.256.145	Wall Finishes						
						201.256.150	Floor Finishes						
						201.256.155	Ceiling Finishes						
						201.256.160	Fittings and Furnishings						
			201.26	Other Rooms/Areas	m								
						201.257.135	Internal Walls and Partitions						
						201.257.140	Internal Doors						
						201.257.145	Wall Finishes						
						201.257.150	Floor Finishes						
						201.257.155	Ceiling Finishes						
			201.260	Platform	m2								
						201.260.150	Floor Finishes						
			201.270	Station Signage	m2 coverage								
						201.270.100	Station Signage Non-Illuminated						
			201.300	Lifts & Escalators	nr								
						201.300.100	Escalator System						
						201.300.105	Passenger Conveyor						
						201.300.120	Traction Lift						
			201.510	Electrical (AC Only)	m2 coverage								

Project & Commercial		Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)
STAGE 1 resources	Direction					
	Project Director					
	Project Manager					
	Health & Safety					
	Health and Safety Manager					
	Health and Safety Tunnels Works Inspectors					
	Health and Safety Station Works Inspectors					
	Health and Safety Training Officer					
	Occupational Health (Nurse)					
	BBS Trainer					
	Commercial & Financial					
	Commercial Manager					
	Changes Control Manager					
	Accountant Manager					
	Accountant					
	Subcontracts Manager					
	Senior Quantity Surveyor					
	Quantity Surveyor					
	Procurement Manager					
	Responsible procurement Manager					
	Buyer					
	HR (Office)Manager					
	Project Controls Manager					
	Planning Manager					
	Planner					
	Risk Manager					
	Reporting & KPI Engineer					
	Document Control Manager					
	Document Control assistant					
	Quality & Assurance					
	Assurance Engineer					
	B M Manager					
	B M Technician					
	Cost Control Interface Manager					
	Assistant Cost Engineer					
	Environmental Management					
	Environmental Manager					
	Sustainability Engineer					
	Fire Coordinator					
	Waste Engineer					
	Air Quality Specialist					
	Heritage Specialist					
	Land Contamination Specialist					
	N&V Specialist					
	Stakeholder & Interface Manager Manager					
	Communications Manager					
	Undertakings & Assurance Manager					
	Construction					
	Head of Construction					
	Tunnel Manager					
Tunnel Site Agent						
SubAgent Facilities (assembly/dissassembly)						
Sub Agent SCL Tunnels Shifts						
Sub Agent Arthur Street Shaft Shifts						
Site Engineers Shifts						
Sub Agent Tunnel Facilities & Plant						
Tunnel Survey Manager						
Tunnel Surveyor						
Station Works Manager						
Sub Agent KWS Ticket Hall						
Sub Agent LU Works						
Site Engineers						
Utilities Coordinator						
Sub Agent Utilities						
Station Surveyor						
Enabling Works Manager						
Possession Manager						
Possession Assistant						
Logistic & Traffic Management						
Logistics & Traffic Manager (in Subcontractor quotation)						
Engineering						
Engineering Manager						
Temporary Works Engineer						
Temporary Works Designer						
SCL Senior Engineer (in Subcontractor quotation)						
SCL Engineer (in Subcontractor quotation)						
SCL Inspector (In Subcontractor quotation)						
Settlement Manager (in Subcontractor quotation)						
Settlement Monitoring Engineer (in Subcontractor quotation)						
I & M Manager (in Subcontractor quotation)						
Geotechnical Engineer (in Subcontractor quotation)						
Materials Engineer (in Subcontractor quotation)						
Design						
Contractor's Design Manager						

Project & Commercial		Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)
STAGE 2 resources						
Direction						
Project Director						
Project Manager						
Health & Safety						
Health and Safety Manager						
Health and Safety Tunnels Works Inspectors						
Health and Safety Station Works Inspectors						
Health and Safety Training Officer						
Occupational Health (Nurse)						
BBS Trainer						
Commercial & Financial						
Commercial Manager						
Changes Control Manager						
Accountant Manager						
Accountant						
Subcontracts Manager						
Senior Quantity Surveyor						
Quantity Surveyor						
Procurement Manager						
Responsible procurement Manager						
Buyer						
HR (Office)Manager						
Project Controls Manager						
Planning Manager						
Planner						
Risk Manager						
Reporting & KPI Engineer						
Document Control Manager						
Document Control assistant						
Quality & Assurance						
Assurance Engineer						
B M Manager						
B M Technician						
Cost Control Interface Manager						
Assistant Cost Engineer						
Environmental Management						
Environmental Manager						
Sustainability Engineer						
Fire Coordinator						
Waste Engineer						
Air Quality Specialist						
Heritage Specialist						
Land Contamination Specialist						
N&V Specialist						
Stakeholder & Interface Manager Manager						
Communications Manager						
Undertakings & Assurance Manager						
Construction						
Head of Construction						
Tunnel Manager						
Tunnel Site Agent						
SubAgent Facilities (assembly/dissassembly)						
Sub Agent SCL Tunnels Shifts						
Sub Agent Arthur Street Shaft Shifts						
Site Engineers Shifts						
Sub Agent Tunnel Facilities & Plant						
Tunnel Survey Manager						
Tunnel Surveyor						
Station Works Manager						
Sub Agent KWS Ticket Hall						
Sub Agent LU Works						
Site Engineers						
Utilities Coordinator						
Sub Agent Utilities						
Station Surveyor						
Enabling Works Manager						
Possession Manager						
Possession Assistant						
Logistic & Traffic Management						
Logistics & Traffic Manager (in Subcontractor quotation)						
Engineering						
Engineering Manager						
Temporary Works Engineer						
Temporary Works Designer						
SCL Senior Engineer (in Subcontractor quotation)						
SCL Engineer (in Subcontractor quotation)						
SCL Inspector (In Subcontractor quotation)						
Settlement Manager (in Subcontractor quotation)						
Settlement Monitoring Engineer (in Subcontractor quotation)						
I & M Manager (in Subcontractor quotation)						
Geotechnical Engineer (in Subcontractor quotation)						
Materials Engineer (in Subcontractor quotation)						
Design						
Contractor's Design Manager						

201.110	Possession Management	Programme WBS Ref	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.110.100	Pre-possession meeting																
201.110.100	Site Supervisor																
201.110.100	Engineer In Charge																
201.110.100	Protection Master																
201.110.100	Site Person In Charge																
201.110.105	Possession briefings																
201.110.105	Site Supervisor																
201.110.105	Engineer In Charge																
201.110.105	Protection Master																
201.110.105	Site Person In Charge																
201.110.110	Possession site supervision																
201.110.110	Site Supervisor																
201.110.110	Engineer In Charge																
201.110.110	Protection Master																
201.110.110	Site Person In Charge																
201.110.110	LUL Possession Costs																
201.110.110	DLR Possession Costs																
201.110.115	Post possession reviews																
201.110.115	Site Supervisor																
201.110.115	Engineer In Charge																
201.110.115	Protection Master																
201.110.115	Site Person In Charge																

201.115 Preliminaries		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
201.115.103	Ganger (Waste Manager)	WBS Ref																	
201.115.104	Operative (Relief TM / Security / Hoist driver)																		
201.115.100	Waste Operative 1 Fit out of Station																		
201.115.100	Waste Operative 2 Fit out of Station																		
201.115.100	Fit Out Waste Skips																		
201.115.100	Waste Disposal (2no. 12 Yard Skips per week)																		
201.115.100	Waste Disposal (2no. 12 Yard Skips per week)																		
201.115.100	Security Guard Site Welfare Block - Days																		
201.115.100	Security Guard Site Welfare Block - Nights																		
201.115.100	Traffic Marshal 1 Site Entrance Arthur St																		
201.115.100	Traffic Marshal 2 King William Street Exit																		
201.115.100	Traffic Marshal 3 Internal Unloading area																		
201.115.100	Traffic Marshal e/o when 24/7																		
201.115.100	Traffic Marshal e/o when 24/7																		
201.115.100	Security Guard Site Welfare Block - Days																		
201.115.100	Security Guard Site Welfare Block - Nights																		
201.115.100	Traffic Marshal 4 Site Entrance (7 Days / week)																		
201.115.100	Traffic Marshal 5 Site Exit (7 Days / week)																		
201.115.100	Traffic Marshal Nights (7 Nights / week)																		
201.115.100	Canteen																		
201.115.100	XXX to be allocated																		
201.115.105	Materials Handling Plant																		
108.120.105	Telescopic Loadall																		
201.115.110	Craneage																		
201.115.110	Tower crane																		
201.115.110	Mobile Cranes																		
201.115.110	Bridge crane 32 ton, span 8 meters																		
201.115.110	Gantry crane 24 ton 6m span																		
201.115.110	Cranes installation																		
201.115.115	Passenger/Goods Hoists																		
201.115.115	Passenger Hoists																		
201.115.120	General Plant																		
201.115.120	At Arthur Street Site																		
201.115.120	At Whole Block Site																		
201.115.120	Other (please insert & specify)																		
201.115.120	Winch 15ton																		
201.115.135	Temporary works/Access/Haul Roads																		
201.115.135	At Arthur Street Site																		
201.115.135	At Whole Block Site																		
201.115.135	Temporary Lighting																		
201.115.135	At Arthur Street Site																		
201.115.135	At Whole Block Site																		
201.115.135	Temporary Water																		
201.115.135	At Arthur Street Site																		
201.115.135	At Whole Block Site																		
201.115.135	Temporary Ventilation																		
201.115.135	At Arthur Street Site																		
201.115.135	At Whole Block Site																		
201.115.145	Environmental Control																		
201.115.145	Arthur Street Site																		
201.115.145	Noise and Vibration as build up																		
201.115.145	Environmental Dust Monitor																		
201.115.145	Filter Change (Every 3 Months per unit)																		
201.115.145	Monthly Upload of Data Per Instrument																		
201.115.145	PEST CONTROL (Mobilise)																		
201.115.145	PEST CONTROL (weekly fee)																		
201.115.150	Waste Management & Disposal																		
201.115.150	Other (please insert & specify) Waste Removal																		
201.115.160	Setting Out Control																		
201.115.160	Total Station																		
201.115.160	Dumpy Level & Staff																		
201.115.160	Theodolite																		
201.115.160	Laser Level																		
201.115.160	Pegs, Profiles, etc																		
201.115.165	Site Hoardings / Barriers																		
201.115.165	External Signage																		
201.115.165	Internal Fire and Health and Safety Signage																		
201.115.165	Piling Mats																		
201.115.165	Road Sweeping																		
201.115.165	Wheel Cleaning (allow lance wash only)																		
201.115.165	Repaint existing Hoardings to ditto																		
201.115.165	Street Hoardings 3.6m high																		
201.115.165	Adaption/take down/re-erect ditto																		
201.115.165	Maintenance/remedials to Gates																		
201.115.165	Double Doors																		
201.115.165	Fume Proof Hoardings to Platforms																		
201.115.165	Structural Hoardings to Platforms																		
201.115.165	Standard 1085 Compliant 1hr fire rated																		
201.115.165	Standard 1085 Compliant																		
201.115.165	Dismantle and dispose of all hrdgs																		
201.115.165	Containment/Armco barriers																		
201.115.165	Pedestrian walkway R&W barriers																		
201.115.165	Vehicle barriers																		
201.115.165	Gates																		
201.115.165	Entrance Gates - Personnel																		
201.115.165	XXX to be allocated																		
201.115.165	Hoarding/Pavement Licences																		
201.115.170	Security & Access Control																		
201.115.170	Access Control Base Station (computer, software, camera etc)																		
201.115.170	Full Height Turnstile																		
201.115.170	Hand Scanners																		
201.115.170	CCTV Base Station																		
201.115.170	CCTV PTZ Cameras																		
201.115.175	Site Storage																		
201.115.175	At Arthur Street Site																		
201.115.175	At Whole Block Site																		
201.115.176	Sentry Huts																		
201.115.177	Storage Container, 30'X8' inc electrics																		
201.115.180	Temporary Accommodation																		
201.115.180	Initial Temp Office	</																	

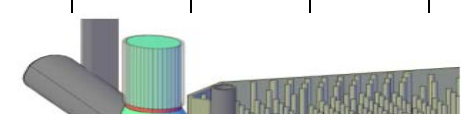
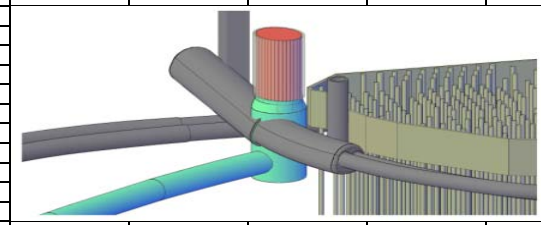
201.120 Risk		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	
		WBS Ref															Com	
201.120.100	 Project risk																	
201.120.110	Estimating uncertainty						£ -											

201.200 Enabling Works		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)																		
		WBS Ref																																	
201.200.115	Electrical																																		
201.200.115																		Remove redundant LV cables																	
201.200.115																		Remove redundant LTG, Small Power																	
201.200.125	Grouting																																		
201.200.125																		Compensation Grouting Shafts																	
201.200.125																		Compensation Grouting																	
201.200.125																		Preparation, sending and removal of equipment.																	
201.200.125																		Provision of compensation area from shaft with 2" PVC pipes																	
201.200.125																		Mix injected in pre-treatment phase																	
201.200.125																		Cement grout mix for compensation injection																	
201.200.125																		Working shift or presence of compensation injection equipment																	
201.200.125																		Micro piles for sewers protection																	
201.200.125																		Preparation, sending and removal of equipment.																	
201.200.125																		Micro piles for sewers protection																	
201.200.125																		Instrumentation and monitoring																	
201.200.125																		Provide Instruments																	
201.200.125																		Boreholes																	
201.200.125																		Instrument & Monitoring Management																	
201.200.125																		XXX to be allocated																	
201.200.125																		Instrument & Monitoring																	
201.200.126																		SAI software & maintenance																	
201.200.130																		Other																	
201.200.130																																			P13 Subway Strengthening Works
201.200.130																																			Provisional Allowance as no design
201.200.130	Off load steels and proprietary fixings																																		
201.200.130	Supply and fix steel in proprietary sizes																																		
201.200.130	Paint steels with Fire resistant paints																																		
201.200.130	Holding down bolts placed in base plates including drilling and Hilti resin																																		
201.200.130	Base Plates																																		
201.200.130	Plyboard encasement																																		
201.200.130	Paint Ply board with fire resistant paint																																		
201.200.130	Misc Fixings																																		
201.200.130	Subway Closure																																		
201.200.130	Hoardings and Pedestrian Management																																		
201.200.130	Davit Crane																																		
201.200.130	Power to the Location																																		
201.200.130	Clean Subway																																		
201.200.130	Temporary Timbers																																		
201.200.130	Access Platforms																																		
201.200.130	Allowance for repairs to floor finish																																		
201.200.130	Task Lighting																																		
201.200.130	Grouting and Packing generally																																		
201.200.130	D6 Lift Deconstruction and Builders Works																																		
201.200.130	General Items - Access, Task Lighting, lifting																																		
201.200.130	Task Lighting																																		
201.200.130	Access Ladders and Platforms																																		
201.200.130	Skips for builders waste (20yd skip mixed waste)																																		
201.200.130	2-3000 gauge plastic bags for disposal																																		
201.200.130	Respiratory Equipment																																		
201.200.130	Plastic protection screens (prevent dust into station)																																		
201.200.130	Concrete Pump																																		
201.200.130	Protection to existing services																																		
201.200.130	General Items-Soft Strip Brackets, landings, access ladders, misc items																																		
201.200.130	Remove and dispose of access ladders Ground Level																																		
201.200.130	Remove and dispose Landings Ground Level																																		
201.200.130	Remove and dispose of old service brackets and misc fixings to ground level																																		
201.200.130	Demolish Existing Lift																																		
201.200.130	Remove lift and steels from RC lift shaft to skips at ground level																																		
201.200.130	Demolish Existing Lift Walls																																		
201.200.130	Break out reinforced concrete in confined spaces with hand tools (25m3) in lift shaft walls																																		
201.200.130	Bag rubble and take to Ground level to put into skips via hoists in new lift shaft PRM																																		
201.200.130	Clean area																																		
201.200.130	Construct RC Wall to separate Services void from rest of the shaft																																		
201.200.130	Supply concrete to separation wall to form service void																																		
201.200.130	Place concrete supply and lay to Basement walls																																		
201.200.130	Rebar 250Kg per m3																																		
201.200.130	Formwork to basement walls average height 3m																																		
201.200.130	Kickers																																		
201.200.130	Connection to D6 lining shaft (vertical) subject to design																																		
201.200.130	Construct RC Wall for new Lift Housing																																		
201.200.130	Supply concrete supply and lay to Basement walls																																		
201.200.130	Place concrete supply and lay to Basement walls																																		
201.200.130	Rebar 250Kg per m3																																		
201.200.130	Formwork to basement walls average height 3m																																		
201.200.130	Kickers																																		
201.200.130	Break through existing Lift D6 shaft for lift exit at Northern Line level 84.8m																																		
201.200.130	Break out concrete by hand																																		
201.200.130	Clear waste to skips																																		
201.200.130	E/Over saw cutting 350mm deep																																		
201.200.130	Form Padstones to receive lintel																																		
201.200.130	Insert Lintel into existing structure																																		
201.200.130	Make good edges of shaft																																		
201.200.130	Metal Works to services void for access																																		
201.200.130	Access Ladder Galvanised finish with anti fall frame surround																																		
201.200.130	Intermediate landings bespoke shape circa 2.1m2 arc shape, assumed galvanised steel																																		
201.200.130	MISC																																		
201.200.130	Concrete tests (1nr per 100m3)																																		
201.200.130	Scabble edges of walls or slabs to receive new wall to form service void (0.25m wide)																																		
201.200.130	UTILITIES																																		
201.200.130	Arthur Street Utilities diversion																																		
201.200.130	Whole Block Utilities diversion																																		
201.200.130	Utilities settlement mitigations																																		
201.200.130	Group 1																																		
201.200.130	Group 2																																		
201.200.130	Group 3																																		

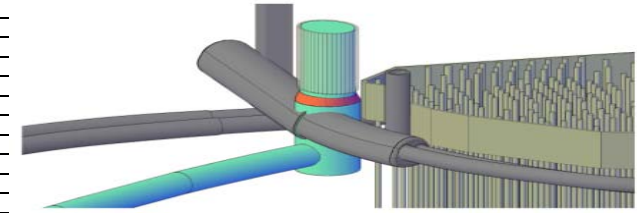
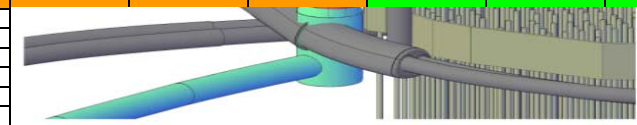
201.200 Enabling Works		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
		WBS Ref															
201.200.130			Group 4														
201.200.130			Group 5														
201.200.130			Group 6														

201.200 Enabling Works	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	
	WBS Ref																

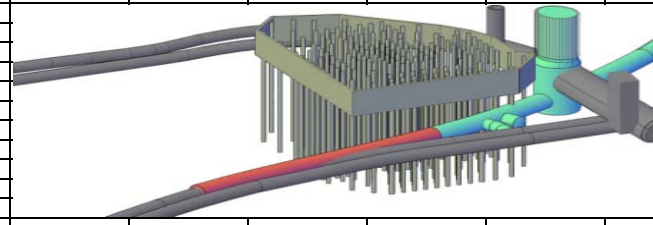
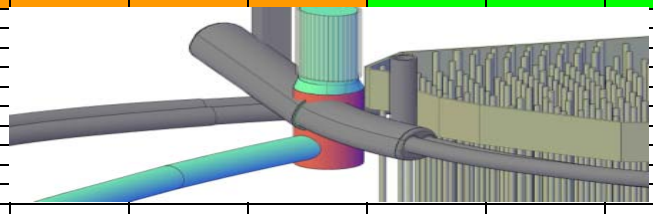
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201 210.110 Tunnel Shaft (Arthur Street)																		
201 210.110 Piling - Tunnel Access Shaft																		
Mobilisation																		
Demobilisation																		
Specialist Contractor Prelims																		
Main Piling Works																		
201 210.110 Excavation of the Shaft																		
Excavate the shaft																		
201 210.110 Arthur Street Shaft P12C Decommissioning																		
- Demolition of existing shaft to at least 1-2m below street level.																		
Demolish top of piles																		
Dispose of site																		
- Construction of RC spanning slab designed for highways loading, at least 1m thick at street level.																		
Structural Steel																		
Re Bar																		
Concrete																		
Perm Fwork																		
Rd Finish																		
White lines																		
- 2 No. composite RC concrete slabs above and below the existing KWS station tunnel.																		
Structural Steel																		
Re Bar																		
Concrete																		
Perm Fwork																		
- Steel support beams to be fixed to SCL lining, supporting sacrificial formwork.																		
Steel																		
Steel form work say																		
- RC slab cast over formwork, with dowel bars into SCL lining around perimeter.																		
Dowels																		
Structural Steel																		
Re Bar																		
Concrete																		
Perm Fwork																		
- Backfill between slab above KWS station and below pavement level slab with Lightweight Expanded Clay Aggregate such as LECA or similar.																		
Fill Leca 250Kg per m3 (07525672894)																		
201 210.110 ASTS U																		
201 210.110 Tunnel excavation																		
201 210.110 Labour																		
201 210.110 a) Excavation & Primary Lining																		
Leading Miner																		
Underground plant operator																		
Mechanical fitter																		
Nozzle man																		
Helper																		
201 210.110 b) Muck away operation																		
Loco/Loader operator																		
Underground excavator operator																		
Helper																		
201 210.110 c) External support																		
Welder																		
Electrician																		
Helper																		
Helper																		
201 210.110 Plant																		
Minidumper 6t																		
Excavator 15-30 t																		
MEWP (Mobile elevated working platform)																		
Flat bed truck CP-30 (2,3 t)																		
201 210.110 Primary Tunnel lining																		
201 210.110 Labour																		
201 210.110 a) Excavation & Primary Lining																		
Leading Miner																		
Underground plant operator																		
Mechanical fitter																		
Nozzle man																		
Helper																		
201 210.110 Plant																		
Transport with pipe																		
Mixer																		
Concrete pump (Meyco Suprema)																		
SCL Robot Meyco Oruga																		
201 210.110 Materials																		
Fiber reinforced shotcrete																		
201 210.110 ASTS M																		
201 210.110 Tunnel excavation																		
201 210.110 Labour																		
201 210.110 a) Excavation & Primary Lining																		
Leading Miner																		
Underground plant operator																		
Mechanical fitter																		
Nozzle man																		
Helper																		



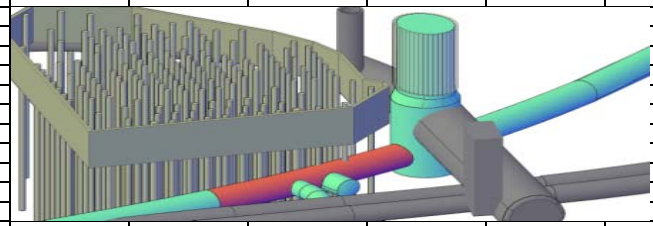
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.110	b) Muck away operation																		
201 210.110	Loco/Loader operator																		
201 210.110	Underground excavator operator																		
201 210.110	Helper																		
201 210.110	c) External support																		
201 210.110	Welder																		
201 210.110	Electrician																		
201 210.110	Helper																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Minidumper 6t																		
201 210.110	Excavator 15-30 t																		
201 210.110	MEWP (Mobile elevated working platform)																		
201 210.110	Flat bed truck CP-30 (2,3 t)																		
201 210.110	Primary Tunnel lining																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Transport with pipe																		
201 210.110	Mixer																		
201 210.110	Concrete pump (Meyco Suprema)																		
201 210.110	SCL Robot Meyco Oruga																		
201 210.110	Materials																		
201 210.110	Fiber reinforced shotcrete																		
201 210.110	ASTS T																		
201 210.110	Tunnel excavation																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	b) Muck away operation																		
201 210.110	Loco/Loader operator																		
201 210.110	Underground excavator operator																		
201 210.110	Helper																		
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201 210.110	Welder																		
201 210.110	Electrician																		
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201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Minidumper 6t																		
201 210.110	Excavator 15-30 t																		
201 210.110	MEWP (Mobile elevated working platform)																		
201 210.110	Flat bed truck CP-30 (2,3 t)																		
201 210.110	Demolition																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	b) Muck away operation																		
201 210.110	Loco/Loader operator																		
201 210.110	Underground excavator operator																		
201 210.110	Helper																		
201 210.110	c) External support																		
201 210.110	Welder																		
201 210.110	Electrician																		
201 210.110	Helper																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Minidumper 6t																		
201 210.110	MEWP (Mobile elevated working platform)																		
201 210.110	Flat bed truck CP-30 (2,3 t)																		
201 210.110	Primary Tunnel lining																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Transport with pipe																		
201 210.110	Mixer																		
201 210.110	Concrete pump (Meyco Suprema)																		
201 210.110	SCL Robot Meyco Oruga																		
201 210.110	Materials																		
201 210.110	Fiber reinforced shotcrete																		
201 210.110	Sprayed concrete to the face																		
201 210.110	ASTS L																		
201 210.110	Tunnel excavation																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		



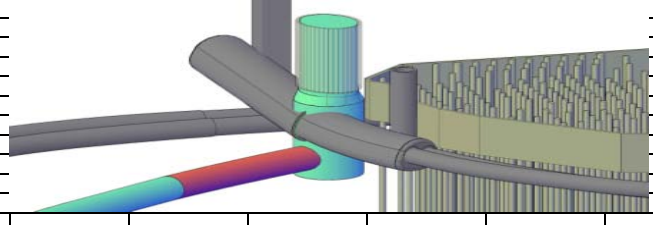
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	b) Muck away operation																		
201 210.110	Loco/Loader operator																		
201 210.110	Underground excavator operator																		
201 210.110	Helper																		
201 210.110	c) External support																		
201 210.110	Welder																		
201 210.110	Electrician																		
201 210.110	Helper																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Minidumper 6t																		
201 210.110	Excavator 15-30 t																		
201 210.110	MEWP (Mobile elevated working platform)																		
201 210.110	Flat bed truck CP-30 (2,3 t)																		
201 210.110	Demolition																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	b) Muck away operation																		
201 210.110	Loco/Loader operator																		
201 210.110	Underground excavator operator																		
201 210.110	Helper																		
201 210.110	c) External support																		
201 210.110	Welder																		
201 210.110	Electrician																		
201 210.110	Helper																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Minidumper 6t																		
201 210.110	MEWP (Mobile elevated working platform)																		
201 210.110	Flat bed truck CP-30 (2,3 t)																		
201 210.110	Primary Tunnel lining																		
201 210.110	Labour																		
201 210.110	a) Excavation & Primary Lining																		
201 210.110	Leading Miner																		
201 210.110	Underground plant operator																		
201 210.110	Mechanical fitter																		
201 210.110	Nozzle man																		
201 210.110	Helper																		
201 210.110	Plant																		
201 210.110	Transport with pipe																		
201 210.110	Mixer																		
201 210.110	Concrete pump (Meyco Suprema)																		
201 210.110	SCL Robot Meyco Oruga																		
201 210.110	Materials																		
201 210.110	Foam concrete																		
201 210.110	Fiber reinforced shotcrete																		
201 210.110	Sprayed concrete to the face																		
201 210.110	Temporary sprayed headwall																		
201 210.100	Running Tunnel																		
201 210.100	RT ST																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		



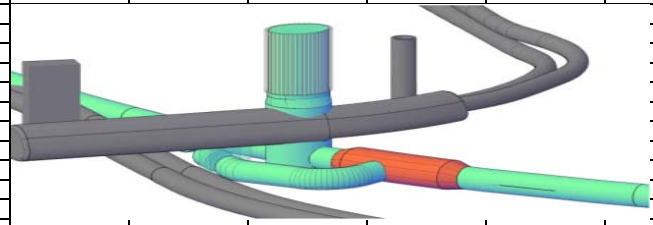
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	Concrete pump (Meyco Suprema)																		
201 210.100	SCL Robot Meyco Oruga																		
201 210.100	Materials																		
201 210.100	Foam concrete																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	Sprayed concrete to the face																		
201 210.100	Secondary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Cleaning and shotcreting																		
201 210.100	Leading Miner																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Rino																		
201 210.100	Retro																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Sprayed waterproofing																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	RT SA																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
Construction		WBS Ref																
201 210.100	Helper																	
c) External support																		
201 210.100	Welder																	
201 210.100	Electrician																	
201 210.100	Helper																	
201 210.100	Helper																	
Plant																		
201 210.100	Minidumper 6t																	
201 210.100	Rino																	
201 210.100	Excavator ITC112																	
201 210.100	MEWP (Mobile elevated working platform)																	
201 210.100	Flat bed truck CP-30 (2,3 t)																	
Primary Tunnel lining																		
Labour																		
a) Excavation & Primary Lining																		
201 210.100	Leading Miner																	
201 210.100	Underground plant operator																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
Plant																		
201 210.100	Transport with pipe																	
201 210.100	Mixer																	
201 210.100	Concrete pump (Meyco Suprema)																	
201 210.100	SCL Robot Meyco Oruga																	
Materials																		
201 210.100	Fiber reinforced shotcrete																	
201 210.100	Sprayed concrete to the face																	
201 210.100	Temporary sprayed headwall																	
Secondary Tunnel lining																		
Labour																		
a) Cleaning and shotcreting																		
201 210.100	Leading Miner																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
b) Muck away operation																		
201 210.100	Loco/Loader operator																	
201 210.100	Underground excavator operator																	
201 210.100	Dumper driver																	
201 210.100	Helper																	
c) External support																		
201 210.100	Welder																	
201 210.100	Electrician																	
201 210.100	Helper																	
Plant																		
201 210.100	Rino																	
201 210.100	Retro																	
201 210.100	MEWP (Mobile elevated working platform)																	
201 210.100	Flat bed truck CP-30 (2,3 t)																	
201 210.100	Transport with pipe																	
201 210.100	Mixer																	
201 210.100	SCL Robot Putzmeister 500																	
Materials																		
201 210.100	Sprayed waterproofing																	
201 210.100	Fiber reinforced shotcrete																	
RT N30																		
Tunnel excavation																		
Labour																		
a) Excavation & Primary Lining																		
201 210.100	Leading Miner																	
201 210.100	Underground plant operator																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
b) Muck away operation																		
201 210.100	Loco/Loader operator																	
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201 210.100	Helper																	
c) External support																		
201 210.100	Welder																	
201 210.100	Electrician																	
201 210.100	Helper																	
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201 210.100	Minidumper 6t																	
201 210.100	Rino																	
201 210.100	Excavator ITC112																	
201 210.100	MEWP (Mobile elevated working platform)																	
201 210.100	Flat bed truck CP-30 (2,3 t)																	
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a) Excavation & Primary Lining																		
201 210.100	Leading Miner																	
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201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
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201 210.100	Dumper driver																	
201 210.100	Helper																	



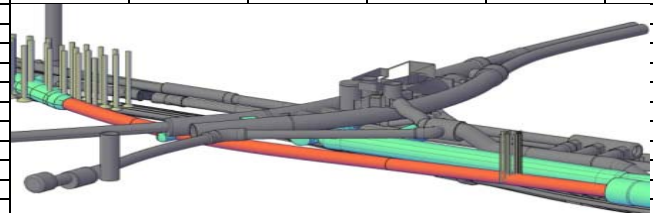
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201.210.100	c) External support																	
201.210.100	Welder																	
201.210.100	Electrician																	
201.210.100	Helper																	
201.210.100	Helper																	
201.210.100	Plant																	
201.210.100	Minidumper 6t																	
201.210.100	Rino																	
201.210.100	Excavator ITC112																	
201.210.100	MEWP (Mobile elevated working platform)																	
201.210.100	Flat bed truck CP-30 (2,3 t)																	
201.210.100	Primary Tunnel lining																	
201.210.100	Labour																	
201.210.100	a) Excavation & Primary Lining																	
201.210.100	Leading Miner																	
201.210.100	Underground plant operator																	
201.210.100	Mechanical fitter																	
201.210.100	Nozzle man																	
201.210.100	Helper																	
201.210.100	Plant																	
201.210.100	Transport with pipe																	
201.210.100	Mixer																	
201.210.100	Concrete pump (Meyco Suprema)																	
201.210.100	SCL Robot Meyco Oruga																	
201.210.100	Materials																	
201.210.100	Fiber reinforced shotcrete																	
201.210.100	Sprayed concrete to the face																	
201.210.100	Secondary Tunnel lining																	
201.210.100	Labour																	
201.210.100	a) Cleaning and shotcreting																	
201.210.100	Leading Miner																	
201.210.100	Mechanical fitter																	
201.210.100	Nozzle man																	
201.210.100	Helper																	
201.210.100	b) Muck away operation																	
201.210.100	Loco/Loader operator																	
201.210.100	Underground excavator operator																	
201.210.100	Dumper driver																	
201.210.100	Helper																	
201.210.100	c) External support																	
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201.210.100	Electrician																	
201.210.100	Helper																	
201.210.100	Plant																	
201.210.100	Rino																	
201.210.100	RETO																	
201.210.100	MEWP (Mobile elevated working platform)																	
201.210.100	Flat bed truck CP-30 (2,3 t)																	
201.210.100	Transport with pipe																	
201.210.100	Mixer																	
201.210.100	SCL Robot Putzmeister 500																	
201.210.100	Materials																	
201.210.100	Sprayed waterproofing																	
201.210.100	Fiber reinforced shotcrete																	
201.210.100	RTCC																	
201.210.100	Tunnel excavation																	
201.210.100	Labour																	
201.210.100	a) Excavation & Primary Lining																	
201.210.100	Leading Miner																	
201.210.100	Underground plant operator																	
201.210.100	Mechanical fitter																	
201.210.100	Nozzle man																	
201.210.100	Helper																	
201.210.100	b) Muck away operation																	
201.210.100	Loco/Loader operator																	
201.210.100	Underground excavator operator																	
201.210.100	Dumper driver																	
201.210.100	Helper																	
201.210.100	c) External support																	
201.210.100	Welder																	
201.210.100	Electrician																	
201.210.100	Helper																	
201.210.100	Helper																	
201.210.100	Plant																	
201.210.100	Minidumper 6t																	
201.210.100	Rino																	
201.210.100	Excavator ITC112																	
201.210.100	MEWP (Mobile elevated working platform)																	
201.210.100	Flat bed truck CP-30 (2,3 t)																	
201.210.100	Demolition																	
201.210.100	Labour																	
201.210.100	a) Excavation & Primary Lining																	
201.210.100	Leading Miner																	
201.210.100	Underground plant operator																	
201.210.100	Mechanical fitter																	
201.210.100	Nozzle man																	
201.210.100	Helper																	
201.210.100	b) Muck away operation																	
201.210.100	Loco/Loader operator																	
201.210.100	Underground excavator operator																	
201.210.100	Dumper driver																	
201.210.100	Helper																	
201.210.100	c) External support																	
201.210.100	Welder																	



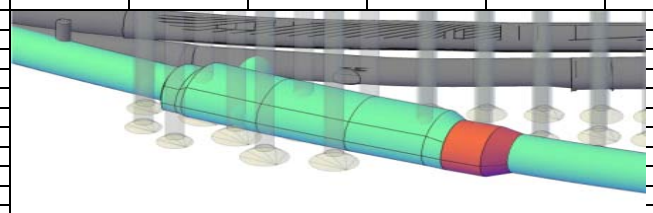
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	Concrete pump (Meyco Suprema)																		
201 210.100	SCL Robot Meyco Oruga																		
201 210.100	Materials																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	Sprayed concrete to the face																		
201 210.100	Secondary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Cleaning and shotcreting																		
201 210.100	Leading Miner																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Rino																		
201 210.100	Retro																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Sprayed waterproofing																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	RT S																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		



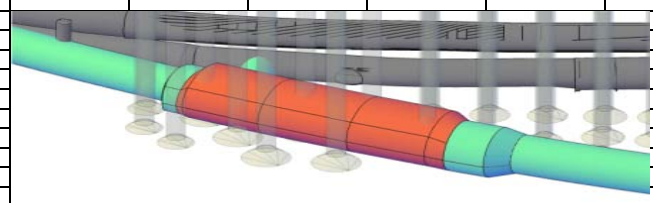
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	Concrete pump (Meyco Suprema)																		
201 210.100	SCL Robot Meyco Oruga																		
201 210.100	Materials																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	Sprayed concrete to the face																		
201 210.100	Secondary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Cleaning and shotcreting																		
201 210.100	Leading Miner																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Rino																		
201 210.100	Retro																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Sprayed waterproofing																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	RTN																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
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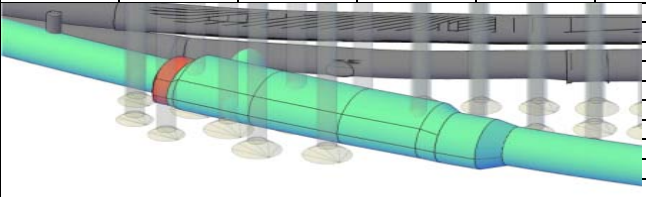
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	Concrete pump (Meyco Suprema)																		
201 210.100	SCL Robot Meyco Oruqa																		
201 210.100	Materials																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	Sprayed concrete to the face																		
201 210.100	Secondary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Cleaning and shotcreting																		
201 210.100	Leading Miner																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Rino																		
201 210.100	Retro																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Sprayed waterproofing																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	RT NPC 1																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Retroexcavator																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	Sprayed concrete to the face																		
201 210.100	Secondary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Cleaning and shotcreting																		
201 210.100	Leading Miner																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Rino																		
201 210.100	Retro																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Sprayed waterproofing																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	RT NPC II																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator 15-30 t																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
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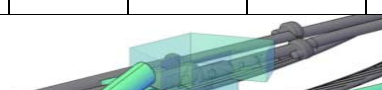
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
Construction		WBS Ref																
201 210.100	a) Excavation & Primary Lining																	
201 210.100	Leading Miner																	
201 210.100	Underground plant operator																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
201 210.100	Plant																	
201 210.100	Transport with pipe																	
201 210.100	Mixer																	
201 210.100	SCL Robot Putzmeister 500																	
201 210.100	Materials																	
201 210.100	Fiber reinforced shotcrete																	
201 210.100	Sprayed concrete to the face																	
201 210.100	Secondary Tunnel lining																	
201 210.100	Labour																	
201 210.100	a) Cleaning and shotcreting																	
201 210.100	Leading Miner																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
201 210.100	b) Muck away operation																	
201 210.100	Loco/Loader operator																	
201 210.100	Underground excavator operator																	
201 210.100	Dumper driver																	
201 210.100	Helper																	
201 210.100	c) External support																	
201 210.100	Welder																	
201 210.100	Electrician																	
201 210.100	Helper																	
201 210.100	Plant																	
201 210.100	Rino																	
201 210.100	Retro																	
201 210.100	MEWP (Mobile elevated working platform)																	
201 210.100	Flat bed truck CP-30 (2,3 t)																	
201 210.100	Transport with pipe																	
201 210.100	Mixer																	
201 210.100	SCL Robot Putzmeister 500																	
201 210.100	Materials																	
201 210.100	Sprayed waterproofing																	
201 210.100	Fiber reinforced shotcrete																	
201 210.100	RT NPC III																	
201 210.100	Tunnel excavation																	
201 210.100	Labour																	
201 210.100	a) Excavation & Primary Lining																	
201 210.100	Leading Miner																	
201 210.100	Underground plant operator																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
201 210.100	b) Muck away operation																	
201 210.100	Loco/Loader operator																	
201 210.100	Underground excavator operator																	
201 210.100	Dumper driver																	
201 210.100	Helper																	
201 210.100	c) External support																	
201 210.100	Welder																	
201 210.100	Electrician																	
201 210.100	Helper																	
201 210.100	Helper																	
201 210.100	Plant																	
201 210.100	Minidumper 6t																	
201 210.100	Rino																	
201 210.100	Excavator 15-30 t																	
201 210.100	MEWP (Mobile elevated working platform)																	
201 210.100	Flat bed truck CP-30 (2,3 t)																	
201 210.100	Demolition																	
201 210.100	Labour																	
201 210.100	a) Excavation & Primary Lining																	
201 210.100	Leading Miner																	
201 210.100	Underground plant operator																	
201 210.100	Mechanical fitter																	
201 210.100	Nozzle man																	
201 210.100	Helper																	
201 210.100	b) Muck away operation																	
201 210.100	Loco/Loader operator																	
201 210.100	Underground excavator operator																	
201 210.100	Dumper driver																	
201 210.100	Helper																	
201 210.100	c) External support																	
201 210.100	Welder																	
201 210.100	Electrician																	
201 210.100	Helper																	
201 210.100	Helper																	
201 210.100	Plant																	
201 210.100	Minidumper 6t																	
201 210.100	Rino																	
201 210.100	MEWP (Mobile elevated working platform)																	
201 210.100	Flat bed truck CP-30 (2,3 t)																	
201 210.100	Primary Tunnel lining																	
201 210.100	Labour																	
201 210.100	a) Excavation & Primary Lining																	
201 210.100	Leading Miner																	
201 210.100	Underground plant operator																	
201 210.100	Mechanical fitter																	



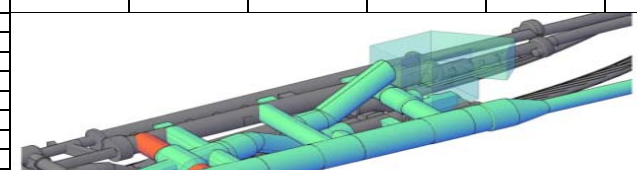
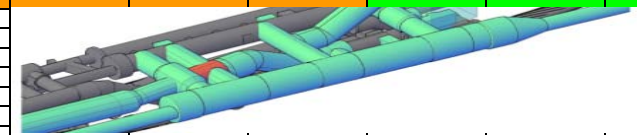
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	Sprayed concrete to the face																		
201 210.100	Temporary sprayed headwall																		
201 210.100	Secondary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Cleaning and shotcreting																		
201 210.100	Leading Miner																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Rino																		
201 210.100	Retro																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Transport with pipe																		
201 210.100	Mixer																		
201 210.100	SCL Robot Putzmeister 500																		
201 210.100	Materials																		
201 210.100	Sprayed waterproofing																		
201 210.100	Fiber reinforced shotcrete																		
201 210.100	RT NT																		
201 210.100	Tunnel excavation																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Demolition																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		
201 210.100	b) Muck away operation																		
201 210.100	Loco/Loader operator																		
201 210.100	Underground excavator operator																		
201 210.100	Dumper driver																		
201 210.100	Helper																		
201 210.100	c) External support																		
201 210.100	Welder																		
201 210.100	Electrician																		
201 210.100	Helper																		
201 210.100	Helper																		
201 210.100	Plant																		
201 210.100	Minidumper 6t																		
201 210.100	Rino																		
201 210.100	Excavator ITC112																		
201 210.100	MEWP (Mobile elevated working platform)																		
201 210.100	Flat bed truck CP-30 (2,3 t)																		
201 210.100	Primary Tunnel lining																		
201 210.100	Labour																		
201 210.100	a) Excavation & Primary Lining																		
201 210.100	Leading Miner																		
201 210.100	Underground plant operator																		
201 210.100	Mechanical fitter																		
201 210.100	Nozzle man																		
201 210.100	Helper																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201.210.100	Plant																	
201.210.100	Transport with pipe																	
201.210.100	Mixer																	
201.210.100	Concrete pump (Meyco Suprema)																	
201.210.100	SCL Robot Meyco Oruga																	
201.210.100	Materials																	
201.210.100	Foam concrete																	
201.210.100	Fiber reinforced shotcrete																	
201.210.100	Sprayed concrete to the face																	
201.210.100	Secondary Tunnel lining																	
201.210.100	Labour																	
201.210.100	a) Cleaning and shotcreting																	
201.210.100	Leading Miner																	
201.210.100	Mechanical fitter																	
201.210.100	Nozzle man																	
201.210.100	Helper																	
201.210.100	b) Muck away operation																	
201.210.100	Loco/Loader operator																	
201.210.100	Underground excavator operator																	
201.210.100	Dumper driver																	
201.210.100	Helper																	
201.210.100	c) External support																	
201.210.100	Welder																	
201.210.100	Electrician																	
201.210.100	Helper																	
201.210.100	Plant																	
201.210.100	Rino																	
201.210.100	Retroexcavator																	
201.210.100	MEWP (Mobile elevated working platform)																	
201.210.100	Flat bed truck CP-30 (2,3 t)																	
201.210.100	Transport with pipe																	
201.210.100	Mixer																	
201.210.100	SCL Robot Putzmeister 500																	
201.210.100	Materials																	
201.210.100	Sprayed waterproofing																	
201.210.100	Fiber reinforced shotcrete																	
201.210.100	P25 - End Bearing Pile Clash Mitigation																	
201.210.100	General Items - Access, Task Lighting, lifting and falsework																	
201.210.100	Task Lighting																	
201.210.100	Mobile Access Ladders and Platforms																	
201.210.100	Concrete Pump																	
201.210.100	Davit Crane (plant to lift steel needle pins in place)																	
201.210.100	False work allowance (provisional sum) and form work curved																	
201.210.100	Load out gang 4 men 7 nights aweek 10 weeks (£25 per hour, £200 per shift each)																	
201.210.100	3 inch pump																	
201.210.100	Respiratory Equipment																	
201.210.100	Civils Works Generally																	
201.210.100	Drill and fix dowels into SCL tunnel lining																	
201.210.100	600mm bars at 300mm cc in two dimensions embedded 300mm with Hilti Resin or similar																	
201.210.100	Additional Waterproofing at dowel penetration areas																	
201.210.100	Reinforcement bar 25mm																	
201.210.100	Reinforcement bar 32mm																	
201.210.100	Structural Steel (assume as 305x305x283) 3nr 4.8m long per pile + extra																	
201.210.100	Cut Key holes in existing piles 1.8m dia max																	
201.210.100	Grout to 21 nr steel sections																	
201.210.100	Ram Jacks 275t each (4 weeks)																	
201.210.100	Site visit, and Ram Jack Installation																	
201.210.100	Supply Concrete S3 C35/40N/mm2																	
201.210.100	Place Concrete C40 S3																	
201.210.100	Cut piles, piles 1.8 m dia max 5 metre height																	
201.210.100	Break up concrete with hand tools (removal assumed picked up with javier/spain quants)																	
201.210.100	Additional Re bar around steel 305 x 305 section (not designed)																	
201.210.100	Extra over misc concrete to cover any exposed steels																	
201.210.100	MISC																	
201.210.100	Concrete tests (1nr per 100m3)																	
201.210.100	Grout Testing																	
201.210.100	North - RT invert Tunnels																	
201.210.100	Reinforced In-situ concrete																	
201.210.100																		
201.210.100																		
201.210.100	South - RT invert Tunnels																	
201.210.100	Reinforced In-situ concrete																	
201.210.100																		
201.210.100																		
201.210.105	Tunnel crossover																	
201.210.105	NL CT																	
201.210.105	Tunnel excavation																	
201.210.105	Labour																	
201.210.105	a) Excavation & Primary Lining																	
201.210.105	Leading Miner																	
201.210.105	Underground plant operator																	
201.210.105	Mechanical fitter																	
201.210.105	Nozzle man																	

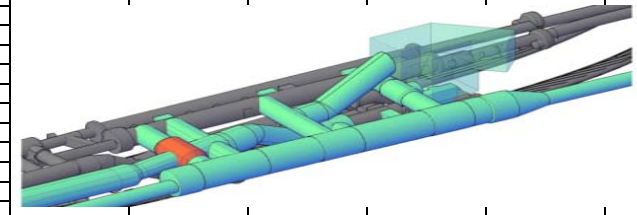


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Sprayed concrete to the face																		
201 210.105	Secondary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Cleaning and shotcreting																		
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Rino																		
201 210.105	Retro																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Sprayed waterproofing																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	NL CP1																		
201 210.105	Tunnel excavation																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		

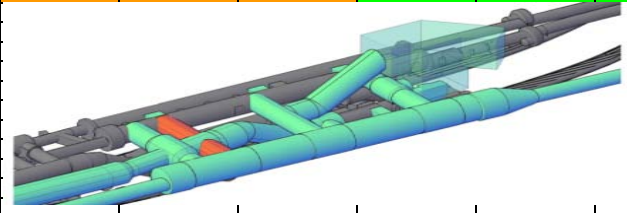


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Sprayed concrete to the face																		
201 210.105	Temporary sprayed headwall																		
201 210.105	Secondary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Cleaning and shotcreting																		
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Rino																		
201 210.105	Retro																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Sprayed waterproofing																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	MEP Cross Passage N1																		
201 210.105	Mechanical																		
201 210.105	Cross Passage N1 area ready for M&E work																		
201 210.105	Sprinkler Pipe work 1st Fix																		
201 210.105	Pump drainage																		
201 210.105	Sprinkler pipework 2nd Fix																		
201 210.105	Electrical																		
201 210.105	Install CMS																		
201 210.105	Install Comms Cabling																		
201 210.105	1st Fix lighting																		
201 210.105	1st Fix Comms Assets																		
201 210.105	2nd Fix Lighting																		
201 210.105	2nd Fix Comms Assets																		
201 210.105	2nd Fix Fire alarm assets																		
201 210.105	Testing & Commissioning																		

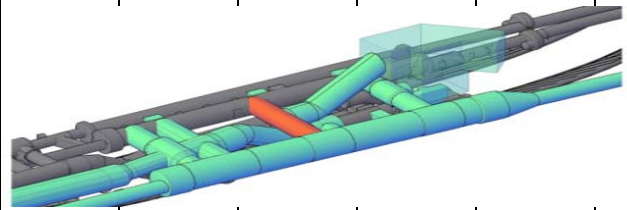
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
Construction		WBS Ref																
201 210.105 NL CC1																		
201 210.105 Tunnel excavation																		
201 210.105 Labour																		
201 210.105 a) Excavation & Primary Lining																		
201 210.105 Leading Miner																		
201 210.105 Underground plant operator																		
201 210.105 Mechanical fitter																		
201 210.105 Nozzle man																		
201 210.105 Helper																		
201 210.105 b) Muck away operation																		
201 210.105 Loco/Loader operator																		
201 210.105 Underground excavator operator																		
201 210.105 Dumper driver																		
201 210.105 Helper																		
201 210.105 c) External support																		
201 210.105 Welder																		
201 210.105 Electrician																		
201 210.105 Helper																		
201 210.105 Helper																		
201 210.105 Plant																		
201 210.105 Minidumper 6t																		
201 210.105 Rino																		
201 210.105 Excavator 15-30 t																		
201 210.105 MEWP (Mobile elevated working platform)																		
201 210.105 Flat bed truck CP-30 (2,3 t)																		
201 210.105 Demolition																		
201 210.105 Labour																		
201 210.105 a) Excavation & Primary Lining																		
201 210.105 Leading Miner																		
201 210.105 Underground plant operator																		
201 210.105 Mechanical fitter																		
201 210.105 Nozzle man																		
201 210.105 Helper																		
201 210.105 b) Muck away operation																		
201 210.105 Loco/Loader operator																		
201 210.105 Underground excavator operator																		
201 210.105 Dumper driver																		
201 210.105 Helper																		
201 210.105 c) External support																		
201 210.105 Welder																		
201 210.105 Electrician																		
201 210.105 Helper																		
201 210.105 Helper																		
201 210.105 Plant																		
201 210.105 Minidumper 6t																		
201 210.105 Rino																		
201 210.105 MEWP (Mobile elevated working platform)																		
201 210.105 Flat bed truck CP-30 (2,3 t)																		
201 210.105 Primary Tunnel lining																		
201 210.105 Labour																		
201 210.105 a) Excavation & Primary Lining																		
201 210.105 Leading Miner																		
201 210.105 Underground plant operator																		
201 210.105 Mechanical fitter																		
201 210.105 Nozzle man																		
201 210.105 Helper																		
201 210.105 Plant																		
201 210.105 Transport with pipe																		
201 210.105 Mixer																		
201 210.105 SCL Robot Putzmeister 500																		
201 210.105 Materials																		
201 210.105 Fiber reinforced shotcrete																		
201 210.105 Sprayed concrete to the face																		
201 210.105 Secondary Tunnel lining																		
201 210.105 Labour																		
201 210.105 a) Cleaning and shotcreting																		
201 210.105 Leading Miner																		
201 210.105 Mechanical fitter																		
201 210.105 Nozzle man																		
201 210.105 Helper																		
201 210.105 b) Muck away operation																		
201 210.105 Loco/Loader operator																		
201 210.105 Underground excavator operator																		
201 210.105 Dumper driver																		
201 210.105 Helper																		
201 210.105 c) External support																		
201 210.105 Welder																		
201 210.105 Electrician																		
201 210.105 Helper																		
201 210.105 Plant																		
201 210.105 Rino																		
201 210.105 Retro																		
201 210.105 MEWP (Mobile elevated working platform)																		
201 210.105 Flat bed truck CP-30 (2,3 t)																		
201 210.105 Transport with pipe																		
201 210.105 Mixer																		
201 210.105 SCL Robot Putzmeister 500																		
201 210.105 Materials																		
201 210.105 Sprayed waterproofing																		
201 210.105 Fiber reinforced shotcrete																		
201 210.105 NLCP2																		
201 210.105 Tunnel excavation																		
201 210.105 Labour																		
201 210.105 a) Excavation & Primary Lining																		



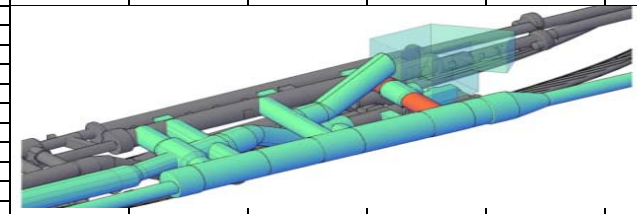
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Minidumper 6t																		
201.210.105	Rino																		
201.210.105	Excavator 15-30 t																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Demolition																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Minidumper 6t																		
201.210.105	Rino																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Primary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	Sprayed concrete to the face																		
201.210.105	Temporary sprayed headwall																		
201.210.105	Secondary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Cleaning and shotcreting																		
201.210.105	Leading Miner																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Rino																		
201.210.105	Retro																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Sprayed waterproofing																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	MEP Cross Passage N2																		
201.210.105	Mechanical																		
201.210.105	Cross Passage N2area ready for M&E work																		
201.210.105	Sprinkler Pipe work 1st Fix																		
201.210.105	Pump drainage																		
201.210.105	Sprinkler pipework 2nd Fix																		
201.210.105	Electrical																		
201.210.105	Install CMS																		



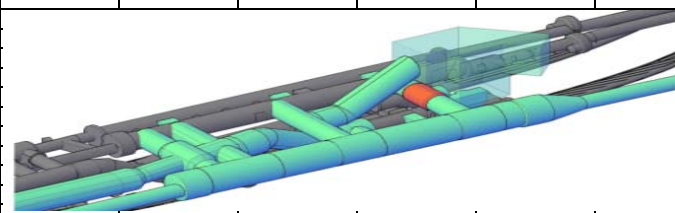
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.105	Install Comms Cabling																		
201 210.105	1st Fix lighting																		
201 210.105	1st Fix Comms Assets																		
201 210.105	2nd Fix Lighting																		
201 210.105	2nd Fix Comms Assets																		
201 210.105	2nd Fix Fire alarm assets																		
201 210.105	Testing & Commissioning																		
201 210.105	NLCP3																		
201 210.105	Tunnel excavation																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Sprayed concrete to the face																		
201 210.105	Temporary sprayed headwall																		
201 210.105	Secondary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Cleaning and shotcreting																		
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Rino																		
201 210.105	Retro																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		



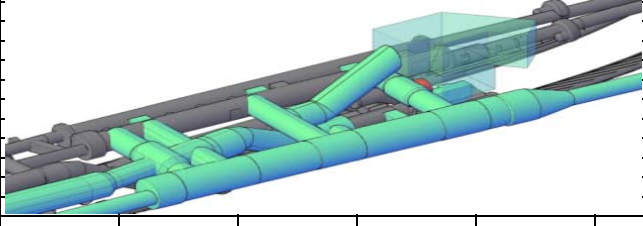
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201 210.105	SCL Robot Putzmeister 500																	
201 210.105	Materials																	
201 210.105	Sprayed waterproofing																	
201 210.105	Fiber reinforced shotcrete																	
201 210.105	MEP Cross Passage N3																	
201 210.105	Mechanical																	
201 210.105	Cross Passage N3 area ready for M&E work																	
201 210.105	Sprinkler Pipe work 1st Fix																	
201 210.105	Pump drainage																	
201 210.105	Sprinkler pipework 2nd Fix																	
201 210.105	Electrical																	
201 210.105	Install CMS																	
201 210.105	Install Comms Cabling																	
201 210.105	1st Fix lighting																	
201 210.105	1st Fix Comms Assets																	
201 210.105	2nd Fix Lighting																	
201 210.105	2nd Fix Comms Assets																	
201 210.105	2nd Fix Fire alarm assets																	
201 210.105	Testing & Commissioning																	
201 210.105	NLCP4																	
201 210.105	Tunnel excavation																	
201 210.105	Labour																	
201 210.105	a) Excavation & Primary Lining																	
201 210.105	Leading Miner																	
201 210.105	Underground plant operator																	
201 210.105	Mechanical fitter																	
201 210.105	Nozzle man																	
201 210.105	Helper																	
201 210.105	b) Muck away operation																	
201 210.105	Loco/Loader operator																	
201 210.105	Underground excavator operator																	
201 210.105	Dumper driver																	
201 210.105	Helper																	
201 210.105	c) External support																	
201 210.105	Welder																	
201 210.105	Electrician																	
201 210.105	Helper																	
201 210.105	Helper																	
201 210.105	Plant																	
201 210.105	Minidumper 6t																	
201 210.105	Rino																	
201 210.105	Excavator 15-30 t																	
201 210.105	MEWP (Mobile elevated working platform)																	
201 210.105	Flat bed truck CP-30 (2,3 t)																	
201 210.105	Demolition																	
201 210.105	Labour																	
201 210.105	a) Excavation & Primary Lining																	
201 210.105	Leading Miner																	
201 210.105	Underground plant operator																	
201 210.105	Mechanical fitter																	
201 210.105	Nozzle man																	
201 210.105	Helper																	
201 210.105	b) Muck away operation																	
201 210.105	Loco/Loader operator																	
201 210.105	Underground excavator operator																	
201 210.105	Dumper driver																	
201 210.105	Helper																	
201 210.105	c) External support																	
201 210.105	Welder																	
201 210.105	Electrician																	
201 210.105	Helper																	
201 210.105	Helper																	
201 210.105	Plant																	
201 210.105	Minidumper 6t																	
201 210.105	Rino																	
201 210.105	MEWP (Mobile elevated working platform)																	
201 210.105	Flat bed truck CP-30 (2,3 t)																	
201 210.105	Primary Tunnel lining																	
201 210.105	Labour																	
201 210.105	a) Excavation & Primary Lining																	
201 210.105	Leading Miner																	
201 210.105	Underground plant operator																	
201 210.105	Mechanical fitter																	
201 210.105	Nozzle man																	
201 210.105	Helper																	
201 210.105	Plant																	
201 210.105	Transport with pipe																	
201 210.105	Mixer																	
201 210.105	SCL Robot Putzmeister 500																	
201 210.105	Materials																	
201 210.105	Fiber reinforced shotcrete																	
201 210.105	Sprayed concrete to the face																	
201 210.105	Temporary sprayed headwall																	
201 210.105	Secondary Tunnel lining																	
201 210.105	Labour																	
201 210.105	a) Cleaning and shotcreting																	
201 210.105	Leading Miner																	
201 210.105	Mechanical fitter																	
201 210.105	Nozzle man																	
201 210.105	Helper																	
201 210.105	b) Muck away operation																	
201 210.105	Loco/Loader operator																	
201 210.105	Underground excavator operator																	
201 210.105	Dumper driver																	



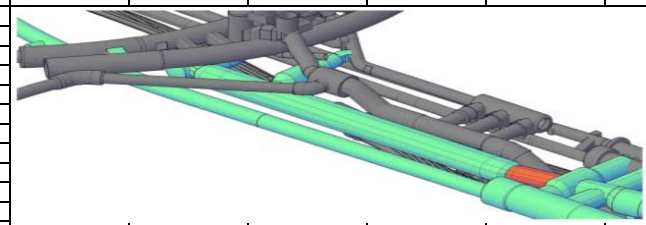
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Rino																		
201 210.105	Retro																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Sprayed waterproofing																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Cross Passage N4																		
201 210.105	Mechanical																		
201 210.105	Cross Passage N4 area ready for M&E work																		
201 210.105	Ventilation Services & Fire rated duct																		
201 210.105	Sprinkler Pipe work 1st Fix																		
201 210.105	Air Conditioning Pipework																		
201 210.105	Fire hydrant Pipework																		
201 210.105	Condenser Pipework																		
201 210.105	Pump drainage																		
201 210.105	Sprinkler pipework 2nd Fix																		
201 210.105	Electrical																		
201 210.105	Install CMS																		
201 210.105	Install Comms Cabling																		
201 210.105	1st Fix lighting																		
201 210.105	1st Fix Comms Assets																		
201 210.105	2nd Fix Lighting																		
201 210.105	2nd Fix Comms Assets																		
201 210.105	2nd Fix Fire alarm assets																		
201 210.105	Testing & Commissioning																		
201 210.105	NL CC2																		
201 210.105	Tunnel excavation																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		



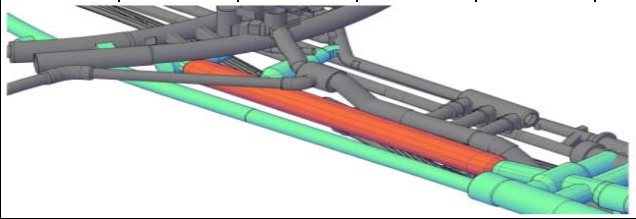
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	Sprayed concrete to the face																		
201.210.105	Temporary sprayed headwall																		
201.210.105	Secondary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Cleaning and shotcreting																		
201.210.105	Leading Miner																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Rino																		
201.210.105	Retro																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Sprayed waterproofing																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	NL LCA																		
201.210.105	Tunnel excavation																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Minidumper 6t																		
201.210.105	Rino																		
201.210.105	Excavator 15-30 t																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Demolition																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Minidumper 6t																		
201.210.105	Rino																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Primary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Fiber reinforced shotcrete																		



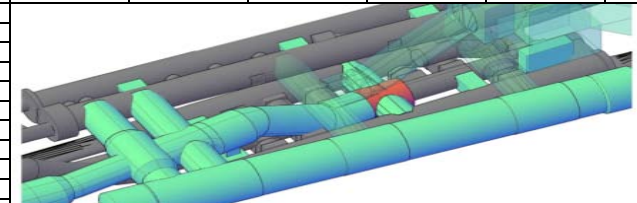
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201.210.105	Sprayed concrete to the face																		
201.210.105	Secondary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Cleaning and shotcreting																		
201.210.105	Leading Miner																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Rino																		
201.210.105	Retro																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Sprayed waterproofing																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	CLL1																		
201.210.105	Tunnel excavation																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Minidumper 6t																		
201.210.105	Rino																		
201.210.105	Excavator 15-30 t																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Demolition																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Minidumper 6t																		
201.210.105	Rino																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Primary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	Sprayed concrete to the face																		
201.210.105	Secondary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Cleaning and shotcreting																		



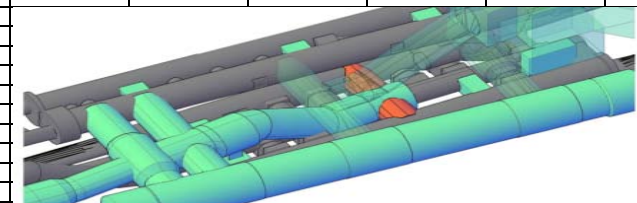
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Rino																		
201 210.105	Retro																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Sprayed waterproofing																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	CLL TV																		
201 210.105	Tunnel excavation																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Sprayed concrete to the face																		
201 210.105	Secondary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Cleaning and shotcreting																		
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		



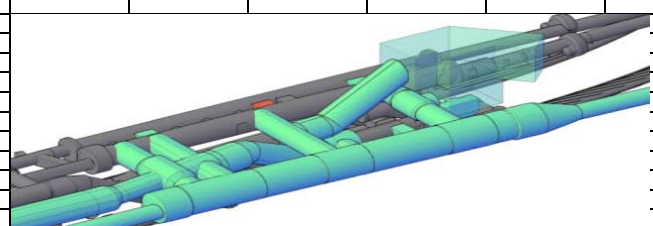
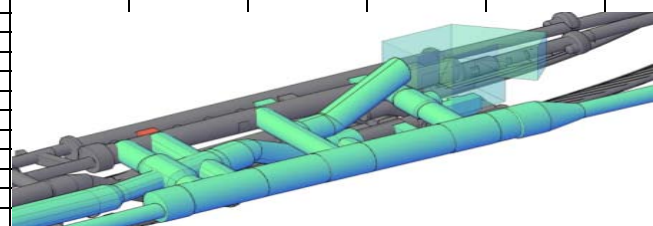
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
Construction		WBS Ref																
201.210.105	b) Muck away operation																	
201.210.105	Loco/Loader operator																	
201.210.105	Underground excavator operator																	
201.210.105	Dumper driver																	
201.210.105	Helper																	
201.210.105	c) External support																	
201.210.105	Welder																	
201.210.105	Electrician																	
201.210.105	Helper																	
201.210.105	Plant																	
201.210.105	Rino																	
201.210.105	Retro																	
201.210.105	MEWP (Mobile elevated working platform)																	
201.210.105	Flat bed truck CP-30 (2,3 t)																	
201.210.105	Transport with pipe																	
201.210.105	Mixer																	
201.210.105	SCL Robot Putzmeister 500																	
201.210.105	Materials																	
201.210.105	Sprayed waterproofing																	
201.210.105	Fiber reinforced shotcrete																	
201.210.105	MEP Central Line Connection 1 and 2																	
201.210.105	Mechanical																	
201.210.105	CL Area ready to commence M&E works																	
201.210.105	Ventilation Services (Incl Fire Rated Duct)																	
201.210.105	Sprinkler Pipework 1st fix (for escalator travelator)																	
201.210.105	Pump drainage																	
201.210.105	Sprinkler pipework 2nd fix																	
201.210.105	Electrical																	
201.210.105	Install CMS																	
201.210.105	Install LV cabling																	
201.210.105	Install Comms Cabling																	
201.210.105	1st Fix Comms Assets																	
201.210.105	1st fix Fire alarm assets																	
201.210.105	1st Fix Lighting																	
201.210.105	Small power																	
201.210.105	2nd Fix Comms Assets																	
201.210.105	2nd Fix Fire alarm assets																	
201.210.105	2nd Fix Lighting																	
201.210.105	Testing & Commissioning																	
201.210.105	DLR CT																	
201.210.105	Tunnel excavation																	
201.210.105	Labour																	
201.210.105	a) Excavation & Primary Lining																	
201.210.105	Leading Miner																	
201.210.105	Underground plant operator																	
201.210.105	Mechanical fitter																	
201.210.105	Nozzle man																	
201.210.105	Helper																	
201.210.105	b) Muck away operation																	
201.210.105	Loco/Loader operator																	
201.210.105	Underground excavator operator																	
201.210.105	Dumper driver																	
201.210.105	Helper																	
201.210.105	c) External support																	
201.210.105	Welder																	
201.210.105	Electrician																	
201.210.105	Helper																	
201.210.105	Helper																	
201.210.105	Plant																	
201.210.105	Minidumper 6t																	
201.210.105	Rino																	
201.210.105	Excavator 15-30 t																	
201.210.105	MEWP (Mobile elevated working platform)																	
201.210.105	Flat bed truck CP-30 (2,3 t)																	
201.210.105	Demolition																	
201.210.105	Labour																	
201.210.105	a) Excavation & Primary Lining																	
201.210.105	Leading Miner																	
201.210.105	Underground plant operator																	
201.210.105	Mechanical fitter																	
201.210.105	Nozzle man																	
201.210.105	Helper																	
201.210.105	b) Muck away operation																	
201.210.105	Loco/Loader operator																	
201.210.105	Underground excavator operator																	
201.210.105	Dumper driver																	
201.210.105	Helper																	
201.210.105	c) External support																	
201.210.105	Welder																	
201.210.105	Electrician																	
201.210.105	Helper																	
201.210.105	Helper																	
201.210.105	Plant																	
201.210.105	Minidumper 6t																	
201.210.105	Rino																	
201.210.105	MEWP (Mobile elevated working platform)																	
201.210.105	Flat bed truck CP-30 (2,3 t)																	
201.210.105	Primary Tunnel lining																	
201.210.105	Labour																	
201.210.105	a) Excavation & Primary Lining																	
201.210.105	Leading Miner																	
201.210.105	Underground plant operator																	
201.210.105	Mechanical fitter																	
201.210.105	Nozzle man																	



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	Concrete pump (Meyco Suprema)																		
201 210.105	SCL Robot Meyco Oruga																		
201 210.105	Materials																		
201 210.105	Foam concrete																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Sprayed concrete to the face																		
201 210.105	Temporary sprayed headwall																		
201 210.105	Secondary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Rino																		
201 210.105	Brokk 330																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	Spiles concrete pump																		
201 210.105	Materials																		
201 210.105	Sprayed waterproofing																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	DLR CP																		
201 210.105	Tunnel excavation																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		



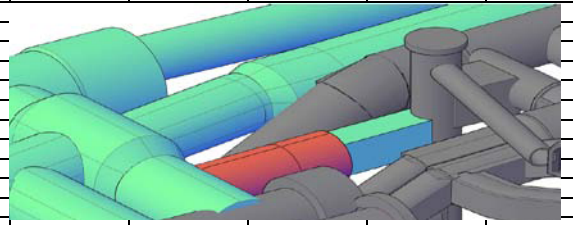
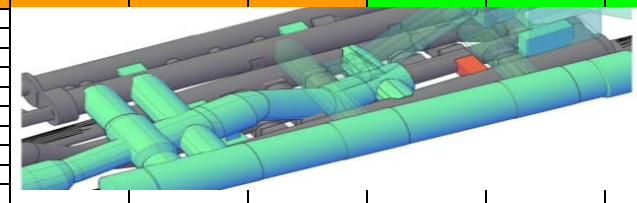
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201.210.105	Plant																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	Concrete pump (Meyco Suprema)																		
201.210.105	SCL Robot Meyco Oruqa																		
201.210.105	Materials																		
201.210.105	Foam concrete																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	Sprayed concrete to the face																		
201.210.105	Secondary Tunnel lining																		
201.210.105	Labour																		
201.210.105	a) Cleaning and shotcreting																		
201.210.105	Leading Miner																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Rino																		
201.210.105	Retro																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Sprayed waterproofing																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	SQ NL2																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	SQ NL3																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		



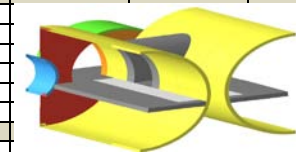
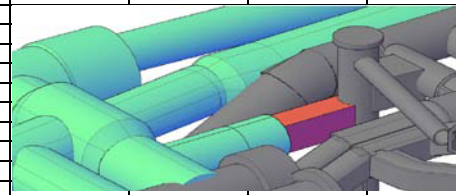
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201.210.105	SQ NL4																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	SQ CP1																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	SQ CP2																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	SQ CP3																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		

201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	SQ DLR1																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	SQ DLR2																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	Steel beams																		
201.210.105	MEP DLR Passages SQDLR 1 & 2																		
201.210.105	Electrical																		
201.210.105	Install Comms Cabling																		
201.210.105	1st Fix Comms Assets																		
201.210.105	2nd Fix Comms Assets																		
201.210.105	2nd Fix Fire alarm assets																		
201.210.105	Testing & Commissioning																		
201.210.105	SQ DLR3																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		

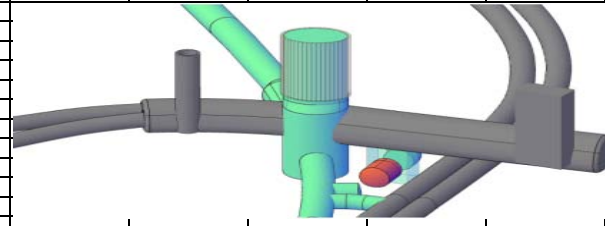
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Carpenter																		
201 210.105	b) Muck away operation																		
201 210.105	Dumper driver																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Plant																		
201 210.105	Concrete pump																		
201 210.105	Vibrator																		
201 210.105	Mini excavator																		
201 210.105	Breaker																		
201 210.105	Spiles hydraulic installer																		
201 210.105	Compressor																		
201 210.105	Huron																		
201 210.105	MIXTA																		
201 210.105	Materials																		
201 210.105	Lattice girders																		
201 210.105	Formwork																		
201 210.105	Concrete																		
201 210.105	Steel beams																		
201 210.105	NL TCA																		
201 210.105	Tunnel excavation																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	Excavator 15-30 t																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Demolition																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	b) Muck away operation																		
201 210.105	Loco/Loader operator																		
201 210.105	Underground excavator operator																		
201 210.105	Dumper driver																		
201 210.105	Helper																		
201 210.105	c) External support																		
201 210.105	Welder																		
201 210.105	Electrician																		
201 210.105	Helper																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Minidumper 6t																		
201 210.105	Rino																		
201 210.105	MEWP (Mobile elevated working platform)																		
201 210.105	Flat bed truck CP-30 (2,3 t)																		
201 210.105	Primary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Excavation & Primary Lining																		
201 210.105	Leading Miner																		
201 210.105	Underground plant operator																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		
201 210.105	Helper																		
201 210.105	Plant																		
201 210.105	Transport with pipe																		
201 210.105	Mixer																		
201 210.105	SCL Robot Putzmeister 500																		
201 210.105	Materials																		
201 210.105	Fiber reinforced shotcrete																		
201 210.105	Sprayed concrete to the face																		
201 210.105	Temporary sprayed headwall																		
201 210.105	Secondary Tunnel lining																		
201 210.105	Labour																		
201 210.105	a) Cleaning and shotcreting																		
201 210.105	Leading Miner																		
201 210.105	Mechanical fitter																		
201 210.105	Nozzle man																		



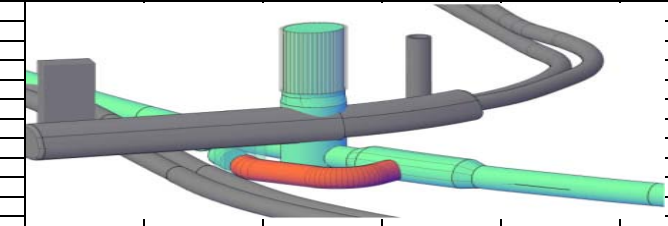
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201.210.105	Helper																		
201.210.105	b) Muck away operation																		
201.210.105	Loco/Loader operator																		
201.210.105	Underground excavator operator																		
201.210.105	Dumper driver																		
201.210.105	Helper																		
201.210.105	c) External support																		
201.210.105	Welder																		
201.210.105	Electrician																		
201.210.105	Helper																		
201.210.105	Plant																		
201.210.105	Rino																		
201.210.105	Retro																		
201.210.105	MEWP (Mobile elevated working platform)																		
201.210.105	Flat bed truck CP-30 (2,3 t)																		
201.210.105	Transport with pipe																		
201.210.105	Mixer																		
201.210.105	SCL Robot Putzmeister 500																		
201.210.105	Materials																		
201.210.105	Sprayed waterproofing																		
201.210.105	Fiber reinforced shotcrete																		
201.210.105	SQ NL D6																		
201.210.105	Tunnel excavation and Concrete																		
201.210.105	Labour																		
201.210.105	a) Excavation & Primary Lining																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Nozzle man																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	b) Muck away operation																		
201.210.105	Dumper driver																		
201.210.105	c) External support																		
201.210.105	Electrician																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Mini excavator																		
201.210.105	Breaker																		
201.210.105	Spiles hydraulic installer																		
201.210.105	Compressor																		
201.210.105	Huron																		
201.210.105	MIXTA																		
201.210.105	Materials																		
201.210.105	Lattice girders																		
201.210.105	Formwork																		
201.210.105	Concrete																		
201.210.105	NL COLUMN REMOVAL																		
201.210.105	Labour																		
201.210.105	Leading Miner																		
201.210.105	Underground plant operator																		
201.210.105	Mechanical fitter																		
201.210.105	Helper																		
201.210.105	Carpenter																		
201.210.105	Welder																		
201.210.105	Plant																		
201.210.105	Concrete pump																		
201.210.105	Vibrator																		
201.210.105	Materials																		
201.210.105	Steel frames																		
201.210.105	Steel rings																		
201.210.105	Concrete																		
201.210.105	Formwork																		
201.210.105	RC WORKS WITHIN THE NEW STRUCTURES																		
201.210.105	NL LCA																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	NLCT																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	Steel																		
201.210.105	NL CP 1																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	Steel																		
201.210.105	NL CC 1																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	Steel																		
201.210.105	NL CP 2																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	Steel																		
201.210.105	NL CP 3																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	Steel																		
201.210.105	NL CP 4																		
201.210.105	190mm Dense Concrete Block Work																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	NL CC 2																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	SQ NL 2																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	SQ NL 3																		
201.210.105	Reinforced In-situ concreteSecondary Structure																		
201.210.105	SQ NL 4																		



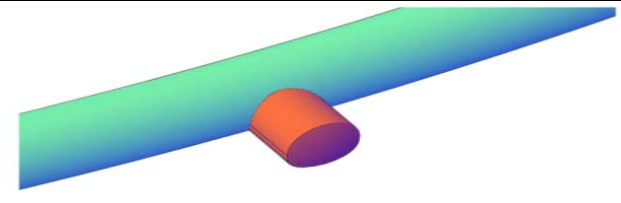
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	SQ CP 1																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	SQ CP 2																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	SQ CP 3																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	NL LMC																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	CLL 1																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Steel																		
201 210.105	CLL TV																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Steel																		
201 210.105	HVS SP1																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	HVS																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Steel																		
201 210.105	HVS SP2																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	SQ SL																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	CLL 2																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Steel																		
201 210.105	SQ CP																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Steel																		
201 210.105	CL CT																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	CL LMC																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	CL EB																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	CL UMC																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	DLR CT																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Steel																		
201 210.105	SQ DLR 1																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	SQ DLR 2																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	SQ DLR 3																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	DLR EB																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.105	DLR UMC																		
201 210.105	Reinforced In-situ concreteSecondary Structure																		
201 210.115	Tunnel Auxilliary structures																		
201 210.115	AST SA																		
201 210.115	Tunnel excavation																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Excavator ITC112																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Excavator 15-30 t																		
201 210.115	Demolition																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Brokk 330																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Primary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Transport with pipe																		
201 210.115	Mixer																		
201 210.115	Concrete pump (Meyco Suprema)																		
201 210.115	SCL Robot Meyco Oruqa																		
201 210.115	Materials																		
201 210.115	Fiber reinforced shotcrete																		
201 210.115	Sprayed concrete to the face																		
201 210.115	Temporary sprayed headwall																		
201 210.115	AST AT																		
201 210.115	Tunnel excavation																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Brokk 330																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Demolition																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Brokk 330																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Primary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Transport with pipe																		
201 210.115	Mixer																		
201 210.115	Concrete pump (Meyco Suprema)																		
201 210.115	SCL Robot Meyco Oruqa																		
201 210.115	Materials																		
201 210.115	Fiber reinforced shotcrete																		
201 210.115	Sprayed concrete to the face																		
201 210.115	RT SNN																		

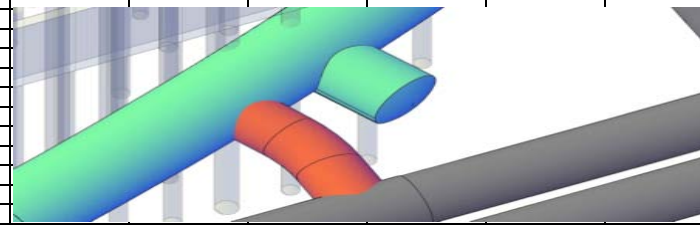
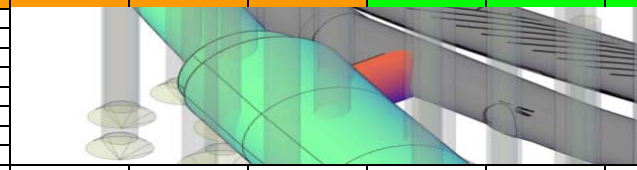


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201 210.115 Tunnel excavation																		
201 210.115 Labour																		
201 210.115 a) Excavation & Primary Lining																		
201 210.115 Leading Miner																		
201 210.115 Underground plant operator																		
201 210.115 Mechanical fitter																		
201 210.115 Nozzle man																		
201 210.115 Helper																		
201 210.115 b) Muck away operation																		
201 210.115 Loco/Loader operator																		
201 210.115 Underground excavator operator																		
201 210.115 Dumper driver																		
201 210.115 Helper																		
201 210.115 c) External support																		
201 210.115 Welder																		
201 210.115 Electrician																		
201 210.115 Helper																		
201 210.115 Helper																		
201 210.115 Plant																		
201 210.115 Minidumper 6t																		
201 210.115 Rino																		
201 210.115 Excavator 15-30 t																		
201 210.115 MEWP (Mobile elevated working platform)																		
201 210.115 Flat bed truck CP-30 (2,3 t)																		
201 210.115 Demolition																		
201 210.115 Labour																		
201 210.115 a) Excavation & Primary Lining																		
201 210.115 Leading Miner																		
201 210.115 Underground plant operator																		
201 210.115 Mechanical fitter																		
201 210.115 Nozzle man																		
201 210.115 Helper																		
201 210.115 b) Muck away operation																		
201 210.115 Loco/Loader operator																		
201 210.115 Underground excavator operator																		
201 210.115 Dumper driver																		
201 210.115 Helper																		
201 210.115 c) External support																		
201 210.115 Welder																		
201 210.115 Electrician																		
201 210.115 Helper																		
201 210.115 Helper																		
201 210.115 Plant																		
201 210.115 Minidumper 6t																		
201 210.115 Rino																		
201 210.115 MEWP (Mobile elevated working platform)																		
201 210.115 Flat bed truck CP-30 (2,3 t)																		
201 210.115 Primary Tunnel lining																		
201 210.115 Labour																		
201 210.115 a) Excavation & Primary Lining																		
201 210.115 Leading Miner																		
201 210.115 Underground plant operator																		
201 210.115 Mechanical fitter																		
201 210.115 Nozzle man																		
201 210.115 Helper																		
201 210.115 Plant																		
201 210.115 Transport with pipe																		
201 210.115 Mixer																		
201 210.115 SCL Robot Putzmeister 500																		
201 210.115 Materials																		
201 210.115 Fiber reinforced shotcrete																		
201 210.115 Sprayed concrete to the face																		
201 210.115 Temporary sprayed headwall																		
201 210.115 Secondary Tunnel lining																		
201 210.115 Labour																		
201 210.115 a) Cleaning and shotcreting																		
201 210.115 Leading Miner																		
201 210.115 Mechanical fitter																		
201 210.115 Nozzle man																		
201 210.115 Helper																		
201 210.115 b) Muck away operation																		
201 210.115 Loco/Loader operator																		
201 210.115 Underground excavator operator																		
201 210.115 Dumper driver																		
201 210.115 Helper																		
201 210.115 c) External support																		
201 210.115 Welder																		
201 210.115 Electrician																		
201 210.115 Helper																		
201 210.115 Plant																		
201 210.115 Rino																		
201 210.115 Retro																		
201 210.115 MEWP (Mobile elevated working platform)																		
201 210.115 Flat bed truck CP-30 (2,3 t)																		
201 210.115 Transport with pipe																		
201 210.115 Mixer																		
201 210.115 SCL Robot Putzmeister 500																		
201 210.115 Materials																		
201 210.115 Sprayed waterproofing																		
201 210.115 Fiber reinforced shotcrete																		
201 210.115 RT SNS																		
201 210.115 Tunnel excavation																		
201 210.115 Labour																		
201 210.115 a) Excavation & Primary Lining																		

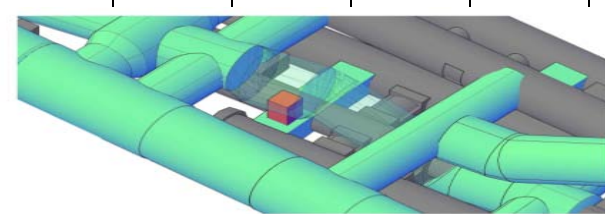


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Excavator 15-30 t																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Demolition																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Primary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Transport with pipe																		
201 210.115	Mixer																		
201 210.115	SCL Robot Putzmeister 500																		
201 210.115	Materials																		
201 210.115	Fiber reinforced shotcrete																		
201 210.115	Sprayed concrete to the face																		
201 210.115	Temporary sprayed headwall																		
201 210.115	Secondary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Cleaning and shotcreting																		
201 210.115	Leading Miner																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Rino																		
201 210.115	Retro																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Transport with pipe																		
201 210.115	Mixer																		
201 210.115	SCL Robot Putzmeister 500																		
201 210.115	Materials																		
201 210.115	Sprayed waterproofing																		
201 210.115	Fiber reinforced shotcrete																		
201 210.115	RT CPN																		
201 210.115	Tunnel excavation																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		

201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Excavator 15-30 t																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Demolition																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Primary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Transport with pipe																		
201 210.115	Mixer																		
201 210.115	SCL Robot Putzmeister 500																		
201 210.115	Materials																		
201 210.115	Fiber reinforced shotcrete																		
201 210.115	Sprayed concrete to the face																		
201 210.115	Temporary sprayed headwall																		
201 210.115	Secondary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Cleaning and shotcreting																		
201 210.115	Leading Miner																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Plant																		
201 210.115	Rino																		
201 210.115	Retro																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Materials																		
201 210.115	Sprayed waterproofing																		
201 210.115	RT CPS																		
201 210.115	Tunnel excavation																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		



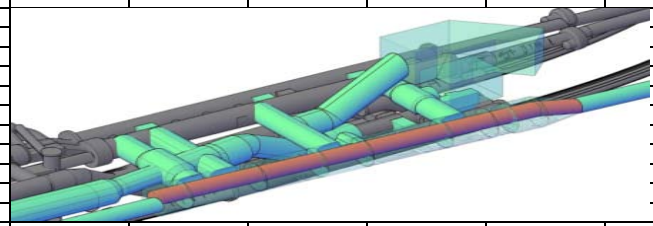
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	Excavator 15-30 t																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Demolition																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 6t																		
201 210.115	Rino																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Primary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Transport with pipe																		
201 210.115	Mixer																		
201 210.115	Concrete pump (Meyco Suprema)																		
201 210.115	SCL Robot Meyco Oruga																		
201 210.115	Materials																		
201 210.115	Fiber reinforced shotcrete																		
201 210.115	Sprayed concrete to the face																		
201 210.115	Temporary sprayed headwall																		
201 210.115	Secondary Tunnel lining																		
201 210.115	Labour																		
201 210.115	a) Cleaning and shotcreting																		
201 210.115	Leading Miner																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Loco/Loader operator																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Plant																		
201 210.115	Rino																		
201 210.115	Retro																		
201 210.115	MEWP (Mobile elevated working platform)																		
201 210.115	Flat bed truck CP-30 (2,3 t)																		
201 210.115	Materials																		
201 210.115	Sprayed waterproofing																		
201 210.115	SQ AS																		
201 210.115	Tunnel excavation																		
201 210.115	Labour																		
201 210.115	a) Excavation & Primary Lining																		
201 210.115	Leading Miner																		
201 210.115	Underground plant operator																		
201 210.115	Mechanical fitter																		
201 210.115	Nozzle man																		
201 210.115	Helper																		
201 210.115	b) Muck away operation																		
201 210.115	Underground excavator operator																		
201 210.115	Dumper driver																		
201 210.115	Helper																		
201 210.115	c) External support																		
201 210.115	Welder																		
201 210.115	Electrician																		
201 210.115	Helper																		
201 210.115	Helper																		
201 210.115	Plant																		
201 210.115	Minidumper 4t																		
201 210.115	Skip																		
201 210.115	MEWP (Mobile elevated working platform)																		



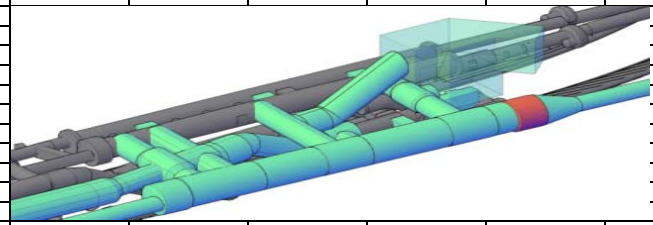
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201.210.115	Flat bed truck CP-30 (2,3 t)																		
201.210.115	Spider Crane																		
Primary Tunnel lining																			
Labour																			
a) Excavation & Primary Lining																			
201.210.115	Leading Miner																		
201.210.115	Underground plant operator																		
201.210.115	Mechanical fitter																		
201.210.115	Nozzle man																		
201.210.115	Helper																		
Plant																			
201.210.115	Transport with pipe																		
201.210.115	Mixer																		
201.210.115	Concrete pump (Meyco Suprema)																		
Materials																			
201.210.115	Wire mesh																		
201.210.115	Fiber reinforced shotcrete																		
Station Platfor Tunnel																			
RTT pilot																			
Tunnel excavation																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
b) Muck away operation																			
201.210.120	Loco/Loader operator																		
201.210.120	Underground excavator operator																		
201.210.120	Dumper driver																		
201.210.120	Helper																		
c) External support																			
201.210.120	Welder																		
201.210.120	Electrician																		
201.210.120	Helper																		
201.210.120	Helper																		
Plant																			
201.210.120	Minidumper 6t																		
201.210.120	Rino																		
201.210.120	Excavator ITC112																		
201.210.120	MEWP (Mobile elevated working platform)																		
201.210.120	Flat bed truck CP-30 (2,3 t)																		
Primary Tunnel lining																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
Plant																			
201.210.120	Transport with pipe																		
201.210.120	Mixer																		
201.210.120	Concrete pump (Meyco Suprema)																		
201.210.120	SCL Robot Meyco Oruga																		
Materials																			
201.210.120	Fiber reinforced shotcrete																		
RTT Enlarg																			
Tunnel excavation																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
b) Muck away operation																			
201.210.120	Loco/Loader operator																		
201.210.120	Underground excavator operator																		
201.210.120	Dumper driver																		
201.210.120	Helper																		
c) External support																			
201.210.120	Welder																		
201.210.120	Electrician																		
201.210.120	Helper																		
201.210.120	Helper																		
Plant																			
201.210.120	Minidumper 6t																		
201.210.120	Rino																		
201.210.120	Retroexcavator																		
201.210.120	MEWP (Mobile elevated working platform)																		
201.210.120	Flat bed truck CP-30 (2,3 t)																		
Demolition																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
b) Muck away operation																			
201.210.120	Loco/Loader operator																		
201.210.120	Underground excavator operator																		



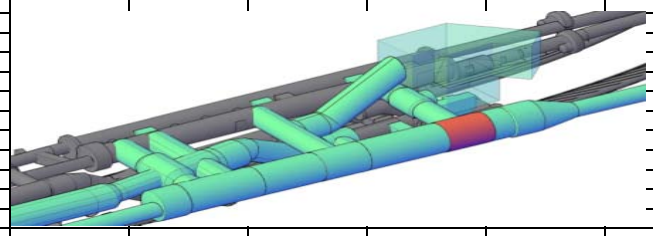
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Primary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	Sprayed concrete to the face																		
201 210.120	Secondary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Cleaning and shotcreting																		
201 210.120	Leading Miner																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Rino																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Sprayed waterproofing																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	Pilot Tunnel																		
201 210.120	Tunnel excavation																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	Brokk 330																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Demolition																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	b) Muck away operation																		
201 210.120	c) External support																		
201 210.120	Plant																		
201 210.120	Primary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Transport with pipe																		



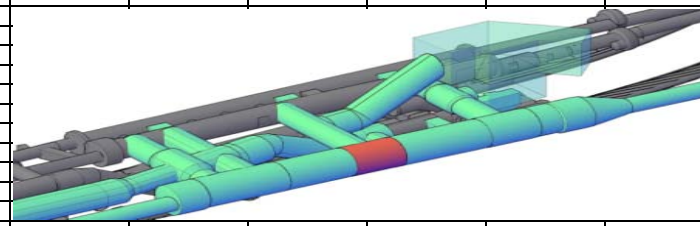
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201.210.120	Mixer																		
201.210.120	SCL Robot Putzmeister 500																		
Materials																			
201.210.120	Sprayed waterproofing																		
201.210.120	Fiber reinforced shotcrete																		
PT ES Enlarg																			
Tunnel excavation																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
b) Muck away operation																			
201.210.120	Loco/Loader operator																		
201.210.120	Underground excavator operator																		
201.210.120	Dumper driver																		
201.210.120	Helper																		
c) External support																			
201.210.120	Welder																		
201.210.120	Electrician																		
201.210.120	Helper																		
201.210.120	Helper																		
Plant																			
201.210.120	Minidumper 6t																		
201.210.120	Rino																		
201.210.120	Excavator 15-30 t																		
201.210.120	MEWP (Mobile elevated working platform)																		
201.210.120	Flat bed truck CP-30 (2,3 t)																		
Demolition																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
b) Muck away operation																			
201.210.120	Loco/Loader operator																		
201.210.120	Underground excavator operator																		
201.210.120	Dumper driver																		
201.210.120	Helper																		
c) External support																			
201.210.120	Welder																		
201.210.120	Electrician																		
201.210.120	Helper																		
201.210.120	Helper																		
Plant																			
201.210.120	Minidumper 6t																		
201.210.120	Rino																		
201.210.120	MEWP (Mobile elevated working platform)																		
201.210.120	Flat bed truck CP-30 (2,3 t)																		
Primary Tunnel lining																			
Labour																			
a) Excavation & Primary Lining																			
201.210.120	Leading Miner																		
201.210.120	Underground plant operator																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
Plant																			
201.210.120	Transport with pipe																		
201.210.120	Mixer																		
201.210.120	SCL Robot Putzmeister 500																		
Materials																			
201.210.120	Fiber reinforced shotcrete																		
201.210.120	Sprayed concrete to the face																		
Secondary Tunnel lining																			
Labour																			
a) Cleaning and shotcreting																			
201.210.120	Leading Miner																		
201.210.120	Mechanical fitter																		
201.210.120	Nozzle man																		
201.210.120	Helper																		
b) Muck away operation																			
201.210.120	Loco/Loader operator																		
201.210.120	Underground excavator operator																		
201.210.120	Dumper driver																		
201.210.120	Helper																		
c) External support																			
201.210.120	Welder																		
201.210.120	Electrician																		
201.210.120	Helper																		
Plant																			
201.210.120	Rino																		
201.210.120	Retro																		
201.210.120	MEWP (Mobile elevated working platform)																		
201.210.120	Flat bed truck CP-30 (2,3 t)																		
201.210.120	Transport with pipe																		
201.210.120	Mixer																		
201.210.120	SCL Robot Putzmeister 500																		
Materials																			
201.210.120	Sprayed waterproofing																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201.210.120	Fiber reinforced shotcrete																	
201.210.120	PT T1 Enlarg																	
201.210.120	Tunnel excavation																	
201.210.120	Labour																	
201.210.120	a) Excavation & Primary Lining																	
201.210.120	Leading Miner																	
201.210.120	Underground plant operator																	
201.210.120	Mechanical fitter																	
201.210.120	Nozzle man																	
201.210.120	Helper																	
201.210.120	b) Muck away operation																	
201.210.120	Loco/Loader operator																	
201.210.120	Underground excavator operator																	
201.210.120	Dumper driver																	
201.210.120	Helper																	
201.210.120	c) External support																	
201.210.120	Welder																	
201.210.120	Electrician																	
201.210.120	Helper																	
201.210.120	Helper																	
201.210.120	Plant																	
201.210.120	Minidumper 6t																	
201.210.120	Rino																	
201.210.120	Excavator 15-30 t																	
201.210.120	MEWP (Mobile elevated working platform)																	
201.210.120	Flat bed truck CP-30 (2,3 t)																	
201.210.120	Demolition																	
201.210.120	Labour																	
201.210.120	a) Excavation & Primary Lining																	
201.210.120	Leading Miner																	
201.210.120	Underground plant operator																	
201.210.120	Mechanical fitter																	
201.210.120	Nozzle man																	
201.210.120	Helper																	
201.210.120	b) Muck away operation																	
201.210.120	Loco/Loader operator																	
201.210.120	Underground excavator operator																	
201.210.120	Dumper driver																	
201.210.120	Helper																	
201.210.120	c) External support																	
201.210.120	Welder																	
201.210.120	Electrician																	
201.210.120	Helper																	
201.210.120	Helper																	
201.210.120	Plant																	
201.210.120	Minidumper 6t																	
201.210.120	Rino																	
201.210.120	MEWP (Mobile elevated working platform)																	
201.210.120	Flat bed truck CP-30 (2,3 t)																	
201.210.120	Primary Tunnel lining																	
201.210.120	Labour																	
201.210.120	a) Excavation & Primary Lining																	
201.210.120	Leading Miner																	
201.210.120	Underground plant operator																	
201.210.120	Mechanical fitter																	
201.210.120	Nozzle man																	
201.210.120	Helper																	
201.210.120	Plant																	
201.210.120	Transport with pipe																	
201.210.120	Mixer																	
201.210.120	SCL Robot Putzmeister 500																	
201.210.120	Materials																	
201.210.120	Fiber reinforced shotcrete																	
201.210.120	Sprayed concrete to the face																	
201.210.120	Secondary Tunnel lining																	
201.210.120	Labour																	
201.210.120	a) Cleaning and shotcreting																	
201.210.120	Leading Miner																	
201.210.120	Mechanical fitter																	
201.210.120	Nozzle man																	
201.210.120	Helper																	
201.210.120	b) Muck away operation																	
201.210.120	Loco/Loader operator																	
201.210.120	Underground excavator operator																	
201.210.120	Dumper driver																	
201.210.120	Helper																	
201.210.120	c) External support																	
201.210.120	Welder																	
201.210.120	Electrician																	
201.210.120	Helper																	
201.210.120	Plant																	
201.210.120	Rino																	
201.210.120	Retro																	
201.210.120	MEWP (Mobile elevated working platform)																	
201.210.120	Flat bed truck CP-30 (2,3 t)																	
201.210.120	Transport with pipe																	
201.210.120	Mixer																	
201.210.120	SCL Robot Putzmeister 500																	
201.210.120	Materials																	
201.210.120	Sprayed waterproofing																	
201.210.120	Fiber reinforced shotcrete																	
201.210.120	PT T2 Enlarg																	
201.210.120	Tunnel excavation																	
201.210.120	Labour																	



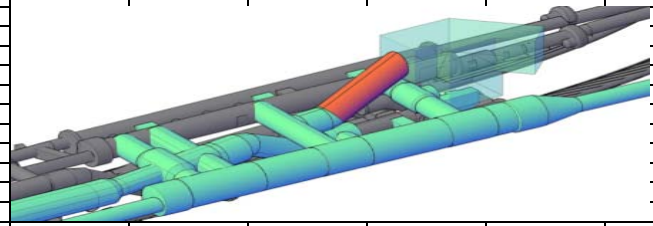
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	Excavator 15-30 t																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Demolition																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Primary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	Sprayed concrete to the face																		
201 210.120	Secondary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Cleaning and shotcreting																		
201 210.120	Leading Miner																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Rino																		
201 210.120	Retro																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Sprayed waterproofing																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	PT T3 Enlarg																		
201 210.120	Tunnel excavation																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		



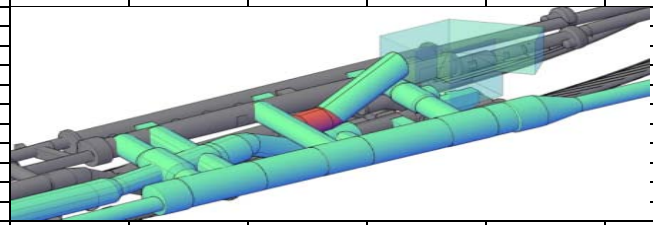
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	Excavator 15-30 t																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Demolition																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Primary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	Sprayed concrete to the face																		
201 210.120	Secondary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Cleaning and shotcreting																		
201 210.120	Leading Miner																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Rino																		
201 210.120	Retro																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Sprayed waterproofing																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	PT EN																		
201 210.120	Tunnel excavation																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		

201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	Excavator 15-30 t																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Demolition																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Minidumper 6t																		
201 210.120	Rino																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Primary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Excavation & Primary Lining																		
201 210.120	Leading Miner																		
201 210.120	Underground plant operator																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	Sprayed concrete to the face																		
201 210.120	Secondary Tunnel lining																		
201 210.120	Labour																		
201 210.120	a) Cleaning and shotcreting																		
201 210.120	Leading Miner																		
201 210.120	Mechanical fitter																		
201 210.120	Nozzle man																		
201 210.120	Helper																		
201 210.120	b) Muck away operation																		
201 210.120	Loco/Loader operator																		
201 210.120	Underground excavator operator																		
201 210.120	Dumper driver																		
201 210.120	Helper																		
201 210.120	c) External support																		
201 210.120	Welder																		
201 210.120	Electrician																		
201 210.120	Helper																		
201 210.120	Plant																		
201 210.120	Rino																		
201 210.120	Retro																		
201 210.120	MEWP (Mobile elevated working platform)																		
201 210.120	Flat bed truck CP-30 (2,3 t)																		
201 210.120	Transport with pipe																		
201 210.120	Mixer																		
201 210.120	SCL Robot Putzmeister 500																		
201 210.120	Materials																		
201 210.120	Sprayed waterproofing																		
201 210.120	Fiber reinforced shotcrete																		
201 210.120	Existing Southbound Platform																		
201 210.120	Mechanical																		
201 210.120	Existing Southbound Platform available for M&E installation																		
201 210.120	WVRF Plant room installation incl. Ventilation																		
201 210.120	CER room air conditioning and ventilation																		
201 210.120	Sprinkler pipe 1st fix																		
201 210.120	Cleaners store water services																		
201 210.120	Fire hydrant installation 1st fix																		
201 210.120	Drainage services																		
201 210.120	Pump drainage south tunnel + North tunnel sump																		
201 210.120	Sprinkler pipework 2nd fix																		
201 210.120	Fire hydrant installation 2nd fix																		
201 210.120	Electrical																		
201 210.120	Install CMS																		
201 210.120	Install Comms Cabling																		
201 210.120	1st Fix Comms Assets																		

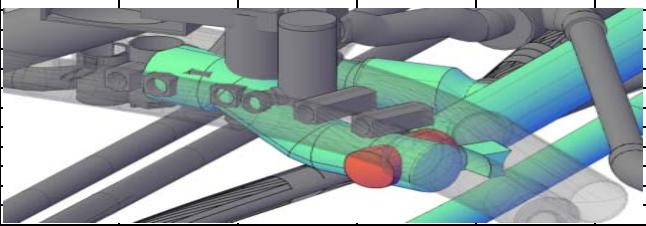
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		WBS Ref																	
201.210.120	1st fix Fire alarm assets																		
201.210.120	1st Fix Lighting																		
201.210.120	2nd Fix Comms Assets																		
201.210.120	2nd Fix Fire alarm assets																		
201.210.120	2nd Fix Lighting																		
201.210.120	Testing & Commissioning																		
201.210.120	New Southbound Platform																		
201.210.120	Mechanical																		
201.210.120	New Southbound Platform available for M&E installation																		
201.210.120	Ventilation duct																		
201.210.120	WVRF Plant room installation incl. Ventilation																		
201.210.120	CER room air conditioning and ventilation																		
201.210.120	Sprinkler pipe 1st fix																		
201.210.120	Condenser Pipework																		
201.210.120	Cleaners store water services																		
201.210.120	Fire hydrant installation 1st fix																		
201.210.120	Drainage services																		
201.210.120	Pump drainage south tunnel + North tunnel sump																		
201.210.120	Sprinkler pipework 2nd fix																		
201.210.120	Fire hydrant installation 2nd fix																		
201.210.120	Electrical																		
201.210.120	Install LV Distribution Equipment																		
201.210.120	Install CMS																		
201.210.120	Install LV cabling																		
201.210.120	Install Comms Cabling																		
201.210.120	Install Distribution Board																		
201.210.120	1st Fix Small power																		
201.210.120	1st Fix Earthing and Bonding																		
201.210.120	1st Fix Comms Assets																		
201.210.120	1st fix Fire alarm assets																		
201.210.120	1st Fix Lighting																		
201.210.120	2nd Fix Small Power																		
201.210.120	2nd Fix Earthing and Bonding																		
201.210.120	2nd Fix Comms Assets																		
201.210.120	2nd Fix Fire alarm assets																		
201.210.120	2nd Fix Lighting																		
201.210.120	Testing & Commissioning																		
201.210.120	Triple escalator barrels																		
201.210.150	NL EB																		
201.210.150	Tunnel excavation																		
201.210.150	Labour																		
201.210.150	a) Excavation & Primary Lining																		
201.210.150	Leading Miner																		
201.210.150	Underground plant operator																		
201.210.150	Mechanical fitter																		
201.210.150	Nozzle man																		
201.210.150	Helper																		
201.210.150	b) Muck away operation																		
201.210.150	Loco/Loader operator																		
201.210.150	Underground excavator operator																		
201.210.150	Dumper driver																		
201.210.150	Helper																		
201.210.150	c) External support																		
201.210.150	Welder																		
201.210.150	Electrician																		
201.210.150	Helper																		
201.210.150	Helper																		
201.210.150	Plant																		
201.210.150	Rino																		
201.210.150	MEWP (Mobile elevated working platform)																		
201.210.150	Flat bed truck CP-30 (2,3 t)																		
201.210.150	Spider crane																		
201.210.150	Demolition																		
201.210.150	Labour																		
201.210.150	a) Excavation & Primary Lining																		
201.210.150	Leading Miner																		
201.210.150	Underground plant operator																		
201.210.150	Mechanical fitter																		
201.210.150	Nozzle man																		
201.210.150	Helper																		
201.210.150	b) Muck away operation																		
201.210.150	Loco/Loader operator																		
201.210.150	Underground excavator operator																		
201.210.150	Dumper driver																		
201.210.150	Helper																		
201.210.150	c) External support																		
201.210.150	Welder																		
201.210.150	Electrician																		
201.210.150	Helper																		
201.210.150	Helper																		
201.210.150	Plant																		
201.210.150	Rino																		
201.210.150	MEWP (Mobile elevated working platform)																		
201.210.150	Flat bed truck CP-30 (2,3 t)																		
201.210.150	Primary Tunnel lining																		
201.210.150	Labour																		
201.210.150	a) Excavation & Primary Lining																		
201.210.150	Leading Miner																		
201.210.150	Underground plant operator																		
201.210.150	Mechanical fitter																		
201.210.150	Nozzle man																		
201.210.150	Helper																		
201.210.150	Plant																		
201.210.150	Transport with pipe																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.150	Mixer																		
201 210.150	Concrete pump (Meyco Suprema)																		
201 210.150	SCL Robot Meyco Oruga																		
201 210.150	Materials																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Cleaning and shotcreting																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Retro																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	Concrete pump (Meyco Suprema)																		
201 210.150	SCL Robot Meyco Oruga																		
201 210.150	Materials																		
201 210.150	Sprayed waterproofing																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	MEP Escalators TH to NL																		
201 210.150	Mechanical																		
201 210.150	Ticket hall to NL escalator installation available																		
201 210.150	1st & 2nd fix ductwork																		
201 210.150	Fire Rated Insulation																		
201 210.150	Sprinkler Pipework 1st Fix																		
201 210.150	Sump pump drainage																		
201 210.150	Sprinkler pipework 2nd fix																		
201 210.150	Electrical																		
201 210.150	Install CMS																		
201 210.150	Install Comms Cabling																		
201 210.150	1st Fix Lighting																		
201 210.150	1st Fix Comms Assets																		
201 210.150	2nd Fix lighting																		
201 210.150	2nd Fix Comms Assets																		
201 210.150	2nd Fix Fire alarm assets																		
201 210.150	Testing & Commissioning																		
201 210.150	NL LMC																		
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	Excavator 15-30 t																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Demolition																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		

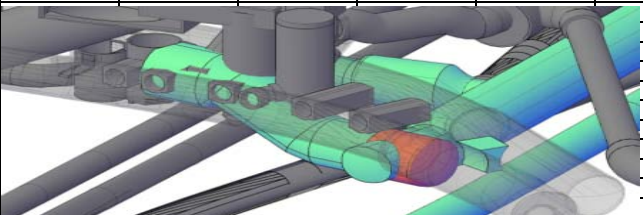


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Primary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	c) External support																		
201 210.150	Plant																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Temporary sprayed headwall																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Cleaning and shotcreting																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Retro																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Sprayed waterproofing																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	CLL 2																		
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	Excavator 15-30 t																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Demolition																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		

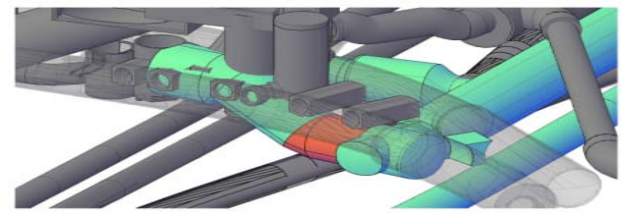


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201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Primary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Temporary sprayed headwall																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Brokk 330																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	Spiles concrete pump																		
201 210.150	Materials																		
201 210.150	Sprayed waterproofing																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	CL CT																		0.0
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	Excavator 15-30 t																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Demolition																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	MEWP (Mobile elevated working platform)																		

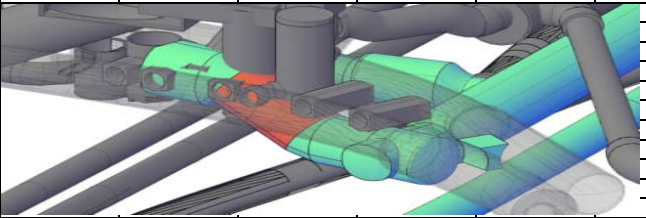


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		Construction	WBS Ref															
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Primary Tunnel lining																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Underground plant operator																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Transport with pipe																	
201 210.150	Mixer																	
201 210.150	SCL Robot Putzmeister 500																	
201 210.150	Materials																	
201 210.150	Foam concrete																	
201 210.150	Fiber reinforced shotcrete																	
201 210.150	Sprayed concrete to the face																	
201 210.150	Temporary sprayed headwall																	
201 210.150	Secondary Tunnel lining																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	b) Muck away operation																	
201 210.150	Loco/Loader operator																	
201 210.150	Underground excavator operator																	
201 210.150	Dumper driver																	
201 210.150	Helper																	
201 210.150	c) External support																	
201 210.150	Welder																	
201 210.150	Electrician																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Rino																	
201 210.150	Brokk 330																	
201 210.150	MEWP (Mobile elevated working platform)																	
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Transport with pipe																	
201 210.150	Mixer																	
201 210.150	Spiles concrete pump																	
201 210.150	Materials																	
201 210.150	Sprayed waterproofing																	
201 210.150	Fiber reinforced shotcrete																	
201 210.150	CL LMC																	
201 210.150	Tunnel excavation																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Underground plant operator																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	b) Muck away operation																	
201 210.150	Loco/Loader operator																	
201 210.150	Underground excavator operator																	
201 210.150	Dumper driver																	
201 210.150	Helper																	
201 210.150	c) External support																	
201 210.150	Welder																	
201 210.150	Electrician																	
201 210.150	Helper																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Minidumper 6t																	
201 210.150	Rino																	
201 210.150	Excavator 15-30 t																	
201 210.150	MEWP (Mobile elevated working platform)																	
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Demolition																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Underground plant operator																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	b) Muck away operation																	
201 210.150	Loco/Loader operator																	
201 210.150	Underground excavator operator																	
201 210.150	Dumper driver																	
201 210.150	Helper																	
201 210.150	c) External support																	
201 210.150	Welder																	
201 210.150	Electrician																	
201 210.150	Helper																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Minidumper 6t																	
201 210.150	Rino																	
201 210.150	MEWP (Mobile elevated working platform)																	
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Primary Tunnel lining																	

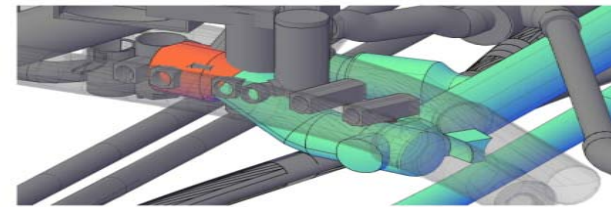


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201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
Construction		WBS Ref																
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Underground plant operator																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Transport with pipe																	
201 210.150	Mixer																	
201 210.150	SCL Robot Putzmeister 500																	
201 210.150	Materials																	
201 210.150	Foam concrete																	
201 210.150	Fiber reinforced shotcrete																	
201 210.150	Sprayed concrete to the face																	
201 210.150	Secondary Tunnel lining																	
201 210.150	Labour																	
201 210.150	a) Cleaning and shotcreting																	
201 210.150	Leading Miner																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	b) Muck away operation																	
201 210.150	Loco/Loader operator																	
201 210.150	Underground excavator operator																	
201 210.150	Dumper driver																	
201 210.150	Helper																	
201 210.150	c) External support																	
201 210.150	Welder																	
201 210.150	Electrician																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Rino																	
201 210.150	Retro																	
201 210.150	MEWP (Mobile elevated working platform)																	
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Transport with pipe																	
201 210.150	Mixer																	
201 210.150	SCL Robot Putzmeister 500																	
201 210.150	Materials																	
201 210.150	Sprayed waterproofing																	
201 210.150	Fiber reinforced shotcrete																	
201 210.150	CL EB																	0.0
201 210.150	Tunnel excavation																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Underground plant operator																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	b) Muck away operation																	
201 210.150	Loco/Loader operator																	
201 210.150	Underground excavator operator																	
201 210.150	Dumper driver																	
201 210.150	Helper																	
201 210.150	c) External support																	
201 210.150	Welder																	
201 210.150	Electrician																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Minidumper 6t																	
201 210.150	Rino																	
201 210.150	Excavator 15-30 t																	
201 210.150	MEWP (Mobile elevated working platform)																	
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Demolition																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	
201 210.150	Underground plant operator																	
201 210.150	Mechanical fitter																	
201 210.150	Nozzle man																	
201 210.150	Helper																	
201 210.150	b) Muck away operation																	
201 210.150	Loco/Loader operator																	
201 210.150	Underground excavator operator																	
201 210.150	Dumper driver																	
201 210.150	Helper																	
201 210.150	c) External support																	
201 210.150	Welder																	
201 210.150	Electrician																	
201 210.150	Helper																	
201 210.150	Plant																	
201 210.150	Minidumper 6t																	
201 210.150	Rino																	
201 210.150	MEWP (Mobile elevated working platform)																	
201 210.150	Flat bed truck CP-30 (2,3 t)																	
201 210.150	Primary Tunnel lining																	
201 210.150	Labour																	
201 210.150	a) Excavation & Primary Lining																	
201 210.150	Leading Miner																	

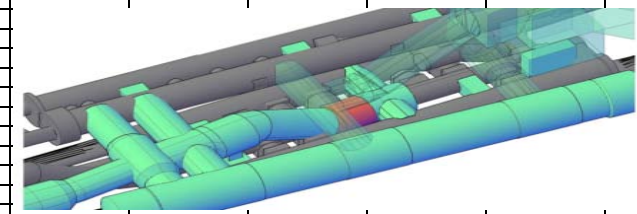


201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	Concrete pump (Meyco Suprema)																		
201 210.150	SCL Robot Meyco Oruga																		
201 210.150	Materials																		
201 210.150	Foam concrete																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Cleaning and shotcreting																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Retro																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Sprayed waterproofing																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	MEP Escalator NL to CL																		
201 210.150	Mechanical																		
201 210.150	Escalator barrel NL to CL ready for M&E works																		
201 210.150	1st & 2nd fix ductwork																		
201 210.150	Fire Rated Insulation																		
201 210.150	Sprinkler Pipework 1st Fix																		
201 210.150	Sump pump drainage																		
201 210.150	Sprinkler pipework 2nd fix																		
201 210.150	Electrical																		
201 210.150	Install CMS																		
201 210.150	Install Comms Cabling																		
201 210.150	1st Fix Lighting																		
201 210.150	1st Fix Comms Assets																		
201 210.150	1st fix Fire alarm assets																		
201 210.150	2nd Fix lighting																		
201 210.150	2nd Fix Comms Assets																		
201 210.150	2nd Fix Fire alarm assets																		
201 210.150	Testing & Commissioning																		
201 210.150	CL UMC																		
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	Excavator 15-30 t																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Demolition																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		

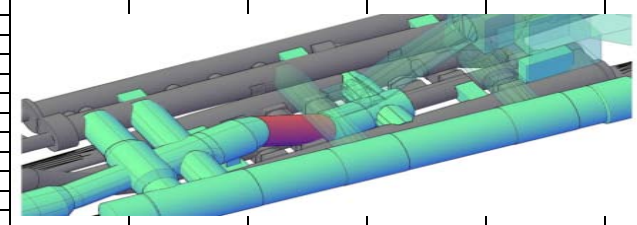


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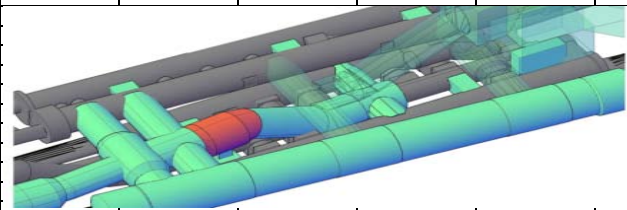
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Primary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	Concrete pump (Meyco Suprema)																		
201 210.150	SCL Robot Meyco Oruga																		
201 210.150	Materials																		
201 210.150	Foam concrete																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Cleaning and shotcreting																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Retro																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Forepoling D>88.9mm																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	DLR LMC																		
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	Excavator 15-30 t																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Demolition																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		



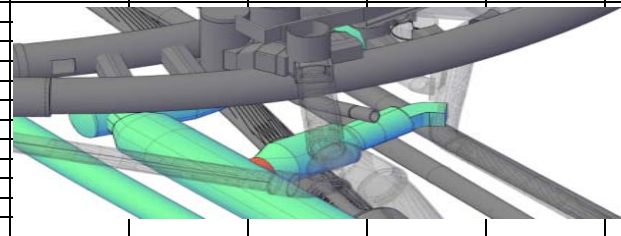
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Primary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	Concrete pump (Meyco Suprema)																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Foam concrete																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Cleaning and shotcreting																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Retro																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Sprayed waterproofing																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	DLR EB																		
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Skip																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Spider Crane																		
201 210.150	Demolition																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		



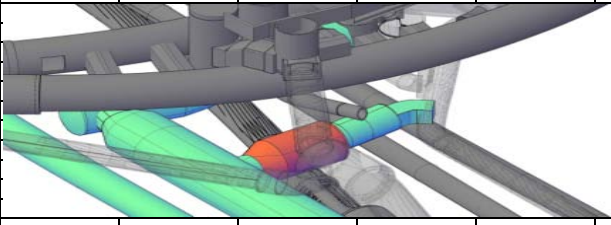
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
Construction		WBS Ref																	
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Skip																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Primary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	Concrete pump (Meyco Suprema)																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Foam concrete																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	Sprayed concrete to the face																		
201 210.150	Secondary Tunnel lining																		
201 210.150	Labour																		
201 210.150	a) Cleaning and shotcreting																		
201 210.150	Leading Miner																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Rino																		
201 210.150	Retro																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		
201 210.150	Transport with pipe																		
201 210.150	Mixer																		
201 210.150	SCL Robot Putzmeister 500																		
201 210.150	Materials																		
201 210.150	Sprayed waterproofing																		
201 210.150	Fiber reinforced shotcrete																		
201 210.150	MEP Escalators NL to DLR																		
201 210.150	Mechanical																		
201 210.150	Escalator barrel NL to DLR ready for M&E works																		
201 210.150	1st & 2nd fix ductwork																		
201 210.150	Fire Rated Insulation																		
201 210.150	Sprinkler Pipework 1st Fix																		
201 210.150	Sump pump drainage																		
201 210.150	Sprinkler pipework 2nd fix																		
201 210.150	Electrical																		
201 210.150	Install CMS																		
201 210.150	Install Comms Cabling																		
201 210.150	1st Fix Lighting																		
201 210.150	1st Fix Comms Assets																		
201 210.150	2nd Fix lighting																		
201 210.150	2nd Fix Comms Assets																		
201 210.150	2nd Fix Fire alarm assets																		
201 210.150	Testing & Commissioning																		
201 210.150	DLR UMC																		
201 210.150	Tunnel excavation																		
201 210.150	Labour																		
201 210.150	a) Excavation & Primary Lining																		
201 210.150	Leading Miner																		
201 210.150	Underground plant operator																		
201 210.150	Mechanical fitter																		
201 210.150	Nozzle man																		
201 210.150	Helper																		
201 210.150	b) Muck away operation																		
201 210.150	Loco/Loader operator																		
201 210.150	Underground excavator operator																		
201 210.150	Dumper driver																		
201 210.150	Helper																		
201 210.150	c) External support																		
201 210.150	Welder																		
201 210.150	Electrician																		
201 210.150	Helper																		
201 210.150	Helper																		
201 210.150	Plant																		
201 210.150	Minidumper 6t																		
201 210.150	Rino																		
201 210.150	Excavator 15-30 t																		
201 210.150	MEWP (Mobile elevated working platform)																		
201 210.150	Flat bed truck CP-30 (2,3 t)																		



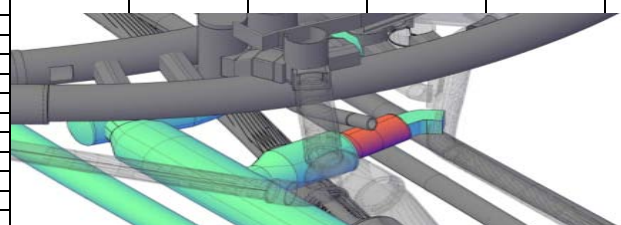
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.150 Demolition																			
201 210.150 Labour																			
201 210.150 a) Excavation & Primary Lining																			
201 210.150 Leading Miner																			
201 210.150 Underground plant operator																			
201 210.150 Mechanical fitter																			
201 210.150 Nozzle man																			
201 210.150 Helper																			
201 210.150 b) Muck away operation																			
201 210.150 Loco/Loader operator																			
201 210.150 Underground excavator operator																			
201 210.150 Dumper driver																			
201 210.150 Helper																			
201 210.150 c) External support																			
201 210.150 Welder																			
201 210.150 Electrician																			
201 210.150 Helper																			
201 210.150 Helper																			
201 210.150 Plant																			
201 210.150 Minidumper 6t																			
201 210.150 Rino																			
201 210.150 MEWP (Mobile elevated working platform)																			
201 210.150 Flat bed truck CP-30 (2,3 t)																			
201 210.150 Primary Tunnel lining																			
201 210.150 Labour																			
201 210.150 a) Excavation & Primary Lining																			
201 210.150 Leading Miner																			
201 210.150 Underground plant operator																			
201 210.150 Mechanical fitter																			
201 210.150 Nozzle man																			
201 210.150 Helper																			
201 210.150 Plant																			
201 210.150 Transport with pipe																			
201 210.150 Mixer																			
201 210.150 SCL Robot Putzmeister 500																			
201 210.150 Materials																			
201 210.150 Fiber reinforced shotcrete																			
201 210.150 Sprayed concrete to the face																			
201 210.150 Secondary Tunnel lining																			
201 210.150 Labour																			
201 210.150 a) Cleaning and shotcreting																			
201 210.150 Leading Miner																			
201 210.150 Mechanical fitter																			
201 210.150 Nozzle man																			
201 210.150 Helper																			
201 210.150 b) Muck away operation																			
201 210.150 Loco/Loader operator																			
201 210.150 Underground excavator operator																			
201 210.150 Dumper driver																			
201 210.150 Helper																			
201 210.150 c) External support																			
201 210.150 Welder																			
201 210.150 Electrician																			
201 210.150 Helper																			
201 210.150 Plant																			
201 210.150 Rino																			
201 210.150 Retro																			
201 210.150 MEWP (Mobile elevated working platform)																			
201 210.150 Flat bed truck CP-30 (2,3 t)																			
201 210.150 Transport with pipe																			
201 210.150 Mixer																			
201 210.150 SCL Robot Putzmeister 500																			
201 210.150 Materials																			
201 210.150 Sprayed waterproofing																			
201 210.150 Fiber reinforced shotcrete																			
201 210.160 New HV Room & Mess room																			
201 210.160 HVS SP1																			
201 210.160 Tunnel excavation																			
201 210.160 Labour																			
201 210.160 a) Excavation & Primary Lining																			
201 210.160 Leading Miner																			
201 210.160 Underground plant operator																			
201 210.160 Mechanical fitter																			
201 210.160 Nozzle man																			
201 210.160 Helper																			
201 210.160 b) Muck away operation																			
201 210.160 Loco/Loader operator																			
201 210.160 Underground excavator operator																			
201 210.160 Dumper driver																			
201 210.160 Helper																			
201 210.160 c) External support																			
201 210.160 Welder																			
201 210.160 Electrician																			
201 210.160 Helper																			
201 210.160 Helper																			
201 210.160 Plant																			
201 210.160 Minidumper 6t																			
201 210.160 Rino																			
201 210.160 Excavator 15-30 t																			
201 210.160 MEWP (Mobile elevated working platform)																			
201 210.160 Flat bed truck CP-30 (2,3 t)																			
201 210.160 Demolition																			
201 210.160 Labour																			
201 210.160 a) Excavation & Primary Lining																			



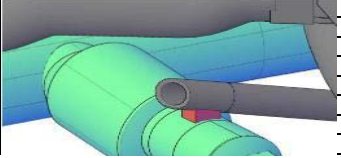
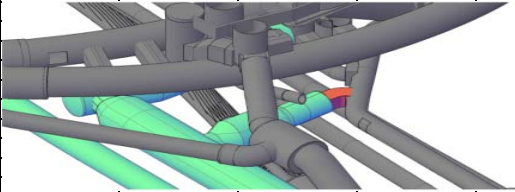
201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Minidumper 6t																		
201 210.160	Rino																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Primary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	SCL Robot Putzmeister 500																		
201 210.160	Materials																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	Sprayed concrete to the face																		
201 210.160	Secondary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Cleaning and shotcreting																		
201 210.160	Leading Miner																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Rino																		
201 210.160	Retro																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	SCL Robot Putzmeister 500																		
201 210.160	Materials																		
201 210.160	Sprayed waterproofing																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	HVS																		
201 210.160	Tunnel excavation																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Minidumper 6t																		
201 210.160	Rino																		
201 210.160	Excavator 15-30 t																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Demolition																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Minidumper 6t																		
201 210.160	Rino																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Primary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	SCL Robot Putzmeister 500																		
201 210.160	Materials																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	Temporary sprayed headwall																		
201 210.160	Secondary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Cleaning and shotcreting																		
201 210.160	Leading Miner																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Rino																		
201 210.160	Retro																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	SCL Robot Putzmeister 500																		
201 210.160	Materials																		
201 210.160	Sprayed waterproofing																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	HVS SP2																		
201 210.160	Tunnel excavation																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Minidumper 6t																		
201 210.160	Rino																		
201 210.160	Excavator 15-30 t																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Demolition																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Minidumper 6t																		
201 210.160	Rino																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Primary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	SCL Robot Putzmeister 500																		
201 210.160	Materials																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	Sprayed concrete to the face																		
201 210.160	Temporary sprayed headwall																		
201 210.160	Secondary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Cleaning and shotcreting																		
201 210.160	Leading Miner																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Loco/Loader operator																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Rino																		
201 210.160	Retro																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	SCL Robot Putzmeister 500																		
201 210.160	Materials																		
201 210.160	Sprayed waterproofing																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	SQ SL																		
201 210.160	Tunnel excavation and Concrete																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	Carpenter																		
201 210.160	b) Muck away operation																		
201 210.160	Dumper driver																		
201 210.160	c) External support																		
201 210.160	Electrician																		
201 210.160	Plant																		
201 210.160	Concrete pump																		
201 210.160	Vibrator																		
201 210.160	Mini excavator																		
201 210.160	Breaker																		
201 210.160	Spiles hydraulic installer																		
201 210.160	Compressor																		
201 210.160	Huron																		
201 210.160	MIXTA																		
201 210.160	Materials																		
201 210.160	Lattice girders																		
201 210.160	Formwork																		
201 210.160	Concrete																		
201 210.160	HVSCL																		
201 210.160	Tunnel excavation																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	Underground excavator operator																		
201 210.160	Dumper driver																		



201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries	
		Construction	WBS Ref																
201 210.160	Helper																		
201 210.160	c) External support																		
201 210.160	Welder																		
201 210.160	Electrician																		
201 210.160	Helper																		
201 210.160	Helper																		
201 210.160	Plant																		
201 210.160	Minidumper 4t																		
201 210.160	Skip																		
201 210.160	MEWP (Mobile elevated working platform)																		
201 210.160	Flat bed truck CP-30 (2,3 t)																		
201 210.160	Spider Crane																		
201 210.160	Primary Tunnel lining																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	b) Muck away operation																		
201 210.160	c) External support																		
201 210.160	Plant																		
201 210.160	Transport with pipe																		
201 210.160	Mixer																		
201 210.160	Concrete pump (Meyco Suprema)																		
201 210.160	Materials																		
201 210.160	Wire mesh																		
201 210.160	Fiber reinforced shotcrete																		
201 210.160	SQ NLDLR MR (New mess room)																		
201 210.160	Tunnel excavation and Concrete																		
201 210.160	Labour																		
201 210.160	a) Excavation & Primary Lining																		
201 210.160	Leading Miner																		
201 210.160	Underground plant operator																		
201 210.160	Mechanical fitter																		
201 210.160	Nozzle man																		
201 210.160	Helper																		
201 210.160	Carpenter																		
201 210.160	b) Muck away operation																		
201 210.160	Dumper driver																		
201 210.160	c) External support																		
201 210.160	Electrician																		
201 210.160	Plant																		
201 210.160	Concrete pump																		
201 210.160	Vibrator																		
201 210.160	Mini excavator																		
201 210.160	Breaker																		
201 210.160	Spiles hydraulic installer																		
201 210.160	Compressor																		
201 210.160	Huron																		
201 210.160	MIXTA																		
201 210.160	Materials																		
201 210.160	Lattice girders																		
201 210.160	Formwork																		
201 210.160	Concrete																		
201 210.165	Lift shaft																		
201 210.165	SQ DLR UMC SFA																		
201 210.165	Tunnel excavation																		
201 210.165	Labour																		
201 210.165	a) Excavation & Primary Lining																		
201 210.165	Leading Miner																		
201 210.165	Underground plant operator																		
201 210.165	Mechanical fitter																		
201 210.165	Nozzle man																		
201 210.165	Helper																		
201 210.165	b) Muck away operation																		
201 210.165	Underground excavator operator																		
201 210.165	Dumper driver																		
201 210.165	Helper																		
201 210.165	c) External support																		
201 210.165	Welder																		
201 210.165	Electrician																		
201 210.165	Helper																		
201 210.165	Helper																		
201 210.165	Plant																		
201 210.165	Minidumper 4t																		
201 210.165	Skip																		
201 210.165	MEWP (Mobile elevated working platform)																		
201 210.165	Flat bed truck CP-30 (2,3 t)																		
201 210.165	Spider Crane																		
201 210.165	Primary Tunnel lining																		
201 210.165	Labour																		
201 210.165	a) Excavation & Primary Lining																		
201 210.165	Leading Miner																		
201 210.165	Underground plant operator																		
201 210.165	Mechanical fitter																		
201 210.165	Nozzle man																		
201 210.165	Helper																		
201 210.165	b) Muck away operation																		
201 210.165	c) External support																		
201 210.165	Plant																		
201 210.165	Transport with pipe																		
201 210.165	Mixer																		

201.210 Tunnels & Shafts		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
		WBS Ref																
201 210.165	Concrete pump (Meyco Suprema)																	
201 210.165	Materials																	
201 210.165	Wire mesh																	
201 210.165	Fiber reinforced shotcrete																	

201.220 Station Box/Station Structure		Programme WBS Ref	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.220.100	Couplers to tie into piles (20mm coupler) 500mm vertical c/c and 300mm horizontal C/C																
201.220.100	Basement Walls Block Work Against Lining walls with Cavity fair finish one side 110.00 over three levels to Raft Slab @ 98.00																
201.220.100	Lay paint grade block work fair finish one side 12Kn Block 140mm																
201.220.100	Rebar 25Kg per m2																
201.220.100	Paint block work to one side 2 coats																
201.220.100	RC Works below 96.50m to PRM Shaft																
201.220.100	Walls cast against contiguous piled structure																
201.220.100	Supply concrete Walls supply and lay to PRM lift shaft below 96.5m																
201.220.100	Place concrete Walls supply and lay to PRM lift shaft below 96.5m																
201.220.100	Rebar at 250Kg per m3																
201.220.100	Formwork to walls																
201.220.100	Water proofing system																
201.220.100	Water bars and hydrophilic strips cast in place																
201.220.100	Couplings to tie into contiguous piled wall say one every 150mm horizontally and one every 300mm vertically																
201.220.100	1600mm thk walers cast against contiguous piled wall in PRM shaft (3nr)																
201.220.100	Supply concrete Walers supply to PRM lift shaft below 96.5m																
201.220.100	Place concrete Walers lay to PRM lift shaft below 96.5m																
201.220.100	Rebar to above 250Kg per m3																
201.220.100	Formwork to soffit and propping requirement 2m approx																
201.220.100	Formwork to Edge of slab and water proofing ne 2.0m																
201.220.100	Couplings to tie into contiguous piled wall say one every 150mm horizontally and one every 300mm vertically																
201.220.100	Ground bearing slab commencing at 84.80 metres, Assumed BOC 83.30																
201.220.100	Supply concrete supply and lay below ground																
201.220.100	Place concrete supply and lay below ground																
201.220.100	Formwork to edge of slab for void ne 2m width																
201.220.100	Water Proofing System																
201.220.100	Couplings to tie into contiguous piled wall say one every 150mm horizontally and one every 300mm vertically																
201.220.100	Rebar																
201.220.100	Surface finish																
201.220.100	In situ Escalator support beam 600 x 600mm deep TOB 108.66																
201.220.100	Supply Concrete for support beam																
201.220.100	Place Concrete for support beam																
201.220.100	Rebar 300Kg per m3																
201.220.100	Concrete finish top of beam area																
201.220.100	Formwork requiring propping to under side of beam																
201.220.100	Formwork to edge of beam																
201.220.100	Couplings to tie into RC Wall																
201.220.100	Temporary Access Requirement (MEWP 1 week)																
201.220.100	Inclined Walling Beam with prop across escalator void																
201.220.100	Mass of CHS Prop 30mm thk wall 600mm dia (outside wall to outside wall) 9 metres long																
201.220.100	Painting one hour protection column above finished in white																
201.220.100	Supply concrete for thickening of walls to act as load distributor/ walling beam to CHS Prop																
201.220.100	Place concrete for thickening of walls to act as load distributor/ walling beam to CHS Prop																
201.220.100	Rebar 250 Kg per m3																
201.220.100	Walls to PRM Lift shaft only, above level 84.8 -115 (assumed 250mm thk, rebar 300Kg per m3 and formwork to two sides)																
201.220.100	Supply concrete to Form Lift Shaft Wall from 115 to 84.8																
201.220.100	Place concrete to Form Lift Shaft Wall from 115 to 84.8																
201.220.100	Rebar to Lift Shaft Walls 300Kg per m3																
201.220.100	Formwork to walls for Lift Shaft																
201.220.100	Form Voids in Lift Shaft Construction (Guestimate)																
201.220.100	Kickers to Wall (from one floor)																
201.220.100	Walls to PRM Staircase and Service Voids, above level 84.8 -115 (assumed 250mm thk, rebar 300Kg per m3 and formwork to two sides)																
201.220.100	Supply concrete to Form Staircase and Service Voids																
201.220.100	Place Concrete to Form Staircase walls																
201.220.100	Rebar to Lift Shaft Walls																
201.220.100	Formwork to walls for Lift Shaft																
201.220.100	Form Voids in Lift Shaft Construction (Guestimate)																
201.220.100	Kickers to Wall (over 6 floors)																
201.220.100	Load Bearing walls to Escalator from Under side of Ground floor to Basement Level 1																
201.220.100	Supply concrete to Walls (assumed ave height is equal to 3m)																
201.220.100	Place concrete to Walls (assumed ave height is equal to 3m)																
201.220.100	Rebar to above (assume steel tied so no couplers)																
201.220.100	Kickers																
201.220.100	Form work to walls Fair face two sides																
201.220.100	Misc Items																
201.220.100	FOSROC Concur WB (Wax slip joint)																
201.220.100	Supply C8/10 C111A S3																
201.220.100	Place in 50mm beds C8/10 C111A Pump S3 mix																
201.220.100	Trail finish to Lean mix (to except FOSROC)																
201.220.100	Supply concrete for capping beam																
201.220.100	Place Concrete to capping beam																
201.220.100	Rebar for capping beam																
201.220.100	Finish to TOC capping beam																
201.220.100	Form Works to Edge of beam 1.5 - 2 metres wide capping beam																
201.220.100	Formwork to soffit and falsework for capping beam																
201.220.100	Form drip to underside of floors at perimetre 20 x 20mm																
201.220.100	Blockwork ties to concrete lining wall (1 every 450mm C/C along walls)																
201.220.100	Drain channel between block work and lining wall formed of water proof mortar																
201.220.100	75mm dia STAINLESS steel down pipe cast into drainage channel and structural floors and walling beams between block and lining wall																
201.220.100	Inspection hatches every 10m per floor around perimetre in blockwork dry wall 1000 x1200mm (4 floors)																
201.220.100	Vertical movement joints in Block work Wall say every 6 metres																
201.220.100	Damp proof Blockwork																
201.220.100	Concrete tests (1nr per 100m3)																
201.220.100	Scabbie edges of walls or slabs																
201.220.100	Lower PRM Shaft																
201.220.100	Foreman																
201.220.100	Filter																
201.220.100	Welder																
201.220.100	Underground labour / Miner																
201.220.100	Carpenter																
201.220.100	General Operative																
201.220.100	Steel beams UC305 x 305 x 98																
201.220.100	Concrete																
201.220.100	Formwork																
201.220.100	Excavator																

201.220 Station Box/Station Structure		Programme WBS Ref	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)																		
201.220.100	Lower PRM Shaft connection to DLR Concourse and Platform																																		
201.220.100																		Foreman																	
201.220.100																		Filter																	
201.220.100																		Welder																	
201.220.100																		Carpenter																	
201.220.100																		Underground labour / Miner																	
201.220.100																		General Operative																	
201.220.100																		Steel columns																	
201.220.100																		Concrete																	
201.220.100																		Formwork																	
201.220.100																		Crane																	
201.220.105																		Frame																	
201.220.105																																			Kickers to columns
201.220.105																																			Couplers to columns
201.220.105																																			Formwork ne 1m wide
201.220.105	Supply concrete to columns																																		
201.220.105	Place concrete to columns																																		
201.220.105	Reinforcement at 300kg per m3																																		
201.220.105	Columns to everything below Ground Floor level																																		
201.220.105	600 x 600mm square columns from +115 to 98.00 (14m long)																																		
201.220.105	Kickers to columns																																		
201.220.105	Formwork																																		
201.220.105	Supply concrete to columns																																		
201.220.105	Place concrete to columns																																		
201.220.105	Reinforcement at 300kg per m3																																		
201.220.105	Couplers elsewhere (included in slabs)																																		
201.220.115	Roof																																		
201.220.115																		Ticket Box Roof																	
201.220.115																		Supply C40 Pump mix S3 Concrete to OSD Floor Ticket Box Roof																	
201.220.115																		Place C40 Pump mix S3 concrete to OSD Floor Ticket Box Roof																	
201.220.115																		Steel at 250Kg per m3																	
201.220.115																		Couplers to OSD @ 75mm C/C horizontally and 2 nr vertically for half perimeter 32mm																	
201.220.115																		Perimetre Formwork 0.9m high																	
201.220.115																		Formwork requiring propping to under side of OSD floor or ticket box roof																	
201.220.115																		Concrete Finish																	
201.220.115																																			
201.220.120	Stairs																																		
201.220.120																		Stairs and Landings to PRM Shaft																	
201.220.120																		Pre Cast or Insitu stair case to PRM Shaft 0.18m rise and 0.25m tread																	
201.220.120																		Nosings for above (anti slip tape) wet slip of in excess of 40																	
201.220.120	External Walls																																		
201.220.125																		Pre cast or insitu landings to PRM shaft ((678mm approx)Guesstimate)																	
201.220.125	Load Bearing wall to separate OSD with Ticket Box at Ground floor to First Floor Level (Half approx perimeter)																																		
201.220.125																		Supply concrete to walls																	
201.220.125																		Place concrete to walls																	
201.220.125																		Rebar to above																	
201.220.125																		Kickers																	
201.220.125																		Form work to walls Fair face two sides																	
201.220.125																		Assumed Couplers to tie in OSD Structure (two rows of couplers every 75mm, along the length)																	
201.220.125																																			
201.220.125																																			
201.220.125																																			
201.220.150	Mechanical & Electrical works																																		
201.220.150																		PRM Riser and Staircase Installation																	
201.220.150																		Mechanical																	
201.220.150																		PRM & staircase available for M&E works																	
201.220.150																		Ventilation Services																	
201.220.150																		Pressurization Ductwork																	
201.220.150																		Sprinkler Pipework 1st Fix																	
201.220.150																		Air Conditioning Pipework																	
201.220.150																		Fire Hydrant Pipework																	
201.220.150																		Condenser Pipework																	
201.220.150	Pump drainage																																		
201.220.150	Sprinkler pipework 2nd Fix																																		
201.220.150	Fire rated Insulation																																		
201.220.150	Electrical																																		
201.220.150	Install CMS																																		
201.220.150	Electrical																																		
201.220.150	1st Fix Lighting																																		
201.220.150	2nd Fix Lighting																																		
201.220.150	Testing & Commissioning																																		
201.220.150	Basement Areas																																		
201.220.150	Mechanical																																		
201.220.150	Ventilation duct work																																		
201.220.150	Sprinkler Pipework 1st Fix																																		
201.220.150	Above ground drainage/rainwater pipework																																		
201.220.150	Condenser Pipework																																		
201.220.150	Install VRF water cooled plant																																		
201.220.150	Sprinkler pipework 2nd fix																																		
201.220.150	Electrical																																		
201.220.150	Install basement Containment																																		
201.220.150	Install LV switchpanels																																		
201.220.150	Install Distribution Boards																																		
201.220.150	Install OLB																																		
201.220.150	Install UPS																																		
201.220.150	Install LV Cabling																																		
201.220.150	1st fix small power																																		
201.220.150	1st fix lighting																																		
201.220.150	1st fix lighting control																																		
201.220.150	2nd fix small power																																		
201.220.150	2nd fix lighting																																		
201.220.150	2nd fix lighting control																																		
201.220.150	1st fix fire alarm																																		
201.220.150	2nd fix fire alarm																																		
201.220.150	1st Fix Earthing and Bonding																																		
201.220.150	2nd Fix Earthing and Bonding																																		
201.220.150	Testing and commissioning																																		
201.220.150	Sub-Escalator Plant Room Level																																		
201.220.150	Mechanical																																		
201.220.150	Intermediate Level Plant area available for M&E work																																		
201.220.150	Install Ductwork																																		
201.220.150	Sprinkler pipework 1st fix																																		
201.220.150	Install Fans & Ventilation Equip																																		
201.220.150	Sprinkler pipework 2nd fix																																		
201.220.150	Fire rated Insulation																																		
201.220.150	Electrical																																		
201.220.150	Electrical Containment																																		
201.220.150	Install LV Cables																																		
201.220.150	1st fix Lighting																																		
201.220.150	1st fix Fire alarm																																		
201.220.150	1st fix comms																																		
201.220.150	1st Fix Small power																																		
201.220.150	Fire alarm 2nd fix																																		
201.220.150	2nd fix Lighting																																		
201.220.150	2nd fix comms																																		
201.220.150	2nd fix Small Power																																		

201.230 Ticket Hall		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.230.130	Construction Type	Programme					£ -					£ -					0.00
Windows & External Doors																	
201.230.130			Glazed Curtain Walling														
201.230.130			Portland Stone Cladding														
201.230.130			Aluminum Rainscreen Cladding														
Internal Walls and Partitions																	
201.230.135			Block walls														
201.230.135			Supply C40 for RC Walls														
201.230.135			Place C40 for RC Walls														
201.230.135			Vertical Formwork to RC Walls														
201.230.135			Reinforcement to RC Walls														
201.230.135			Cast in Voids														
Internal Doors																	
201.230.140			Single fire doors														
201.230.140			Boswick Gates (1 set 4.5x4.5m)														
201.230.140			Boswick Gates (1 set 14x4.5m) Double leaf														
201.230.140			Standard metal double doors														
201.230.140			Boswick type gates														
Wall Finishes																	
201.230.145			Wall cladding														
201.230.145			Cladding to Columns														
201.230.145			Painting to Front of House														
Floor Finishes																	
201.230.150			Terrazzo tiling on screed														
201.230.150			100mm Screed														
Ceiling Finishes																	
201.230.155			Fully accessible suspended ceiling														
Fittings and Furnishings																	
201.230.160			Fire Screen														
201.230.160			Glazed Hand Rail														
201.230.160			Flip up Flood Barrier														
201.230.160			Mat Well														
201.230.160			Double Doors														
Mechanical & Electrical works																	
201.230.165			Building work in connection (Joint and Fire Selent)														
201.230.165			Install ductwork														
201.230.165			Domestic Pipework														
201.230.165			Install condenser pipework														
201.230.165			BOH Ventilation														
201.230.165			Sprinkler Pipework 1st Fix														
201.230.165			Install Heat rejection plant														
201.230.165			Domestic Pipework 2nd Fix														
201.230.165			Sprinkler pipework 2nd fix														
201.230.165			Sanitaryware fitout 2nd fix (staff/Disabled)														
201.230.165			Fire rated Insulation														
Electrical																	
201.230.165			Electrical Containment														
201.230.165			Install LV Cables														
201.230.165			1st fix Lighting														
201.230.165			1st Fix fire alarm														
201.230.165			1st fix comms														
201.230.165			1st fix Small Power														
201.230.165			Install Distribution Boards														
201.230.165			1st fix FOH lighting														
201.230.165			2nd fix Fire Alarm														
201.230.165			2nd fix lighting														
201.230.165			2nd Fix FOH lighting														
201.230.165			2nd fix comms														
201.230.165			2nd fix Small Power														
201.230.165			Testing and Commissioning														

201.240 Concourse	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	Comments/Queries
	WBS Ref																
Northern Line Concourse (New)																	

201.250 Circulation Areas / Passages		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.250.135 Internal Walls and Partitions		Construction Type															
201.250.135	NL CP 3	Internal Walls and Partitions															
201.250.135		Dense Concrete Blockwork															
201.250.135		Wall Access Hatch															
201.250.135	NL CP 4	Internal Walls and Partitions															
201.250.135		Wall Access Hatch															
201.250.135		190mm Reinforced Blockwork Walls															
201.250.135	NL CC 2	Internal Walls and Partitions															
201.250.135		Dense Concrete Blockwork															
201.250.135		Wall Access Hatch															
201.250.135	SQ AS	Internal Walls and Partitions															
201.250.135		Dense Concrete Blockwork															
201.250.135		Wall Access Hatch															
201.250.140	Internal Doors																
201.240.140	NL LCA	Internal Doors															
201.240.140		Held Open Fire Doors															
201.240.145	Wall Finishes																
201.250.145	NL LCA	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CT	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CP 1	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CC 1	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CP 2	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CP 3	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CP 4	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	NL CC 2	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	SQ NL 2	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145		E/O for Connection Details															
201.250.145	SQ NL 3	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145		E/O for Connection Details															
201.250.145	SQ NL 4	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145		E/O for Connection Details															
201.250.145	SQ CP 1	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145		E/O for Connection Details															
201.250.145	SQ CP 2	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145		E/O for Connection Details															
201.250.145	SQ CP 3	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145		E/O for Connection Details															
201.250.145	NL EB	Public Areas															
201.250.145		VE Cladding to Escalator Barrels															
201.250.145	NL LMC	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	CLL 1	Public Areas															
201.250.145		Tiling on Render															
201.250.145		Skirting Straight															
201.250.145	CLL TV	Public Areas															
201.250.145		Skirting Straight															
201.250.145		VE Cladding to Escalator Barrels															
201.250.145	HVS SP1	Public Areas															
201.250.145		Painting -BOH															
201.250.145		Dust Sealed Floors															
201.250.145	HVS	Public Areas															
201.250.145		Painting -BOH															
201.250.145		Dust Sealed Floors															
201.250.145	HVS SP2	Public Areas															
201.250.145		Painting -BOH															
201.250.145		Dust Sealed Floors															
201.250.145	SQ SL																

201.250 Circulation Areas / Passages		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.250.150	Floor Finishes	Programme															
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ NL 4																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ CP 1																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ CP 2																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ CP 3																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	NL EB																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150	NL LMC																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	CLL 1																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	CLL TV																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	HVS SP1																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	HVS																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	HVS SP2																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ SL																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	CLL 2																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ CP																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	CL CT																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	CL LMC																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	CL EB																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150	CL UMC																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	DLR CT																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	DLR CP																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ DLR 1																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150																	
201.250.150																	
201.250.150	SQ DLR 2																

201.250 Circulation Areas / Passages		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.250.150	Floor Finishes	Programme															
201.250.150	Public Areas																
201.250.150	Terrazzo tiling on screed																
201.250.150	100mm Screed																
201.250.150	DLR LMC																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150	Terrazzo tiling on screed																
201.250.150	100mm Screed																
201.250.150	DLR EB																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150	DLR UMC																
201.250.150	Floor Finishes																
201.250.150	Public Areas																
201.250.150	Terrazzo tiling on screed																
201.250.150	100mm Screed																
201.250.150	Cross Passages 3/P03 & 3P04																
201.240.155	Ceiling Finishes																
201.250.155	NL LCA																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	NL CT																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	NL CP 1																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	NL CC 1																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	NL CP 2																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	NL CP 3																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	CMS Cladding																
201.250.155	NL CP 4																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	CMS Cladding																
201.250.155	NL CC 2																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	CMS Cladding																
201.250.155	SQ NL 2																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	SQ NL 3																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	SQ NL 4																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	SQ CP 1																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	SQ CP 2																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	SQ CP 3																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	NL LMC																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	CMS Cladding																
201.250.155	CLL 1																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	CLL TV																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	CMS Cladding																
201.250.155	SQ SL																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	CMS Cladding																
201.250.155	CLL 2																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																
201.250.155	Accoustic Lining																
201.250.155	CMS Cladding																
201.250.155	SQ CP																
201.250.155	Ceiling Finishes																
201.250.155	Public Areas																

201.255 Operations Rooms		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.255.135		WBS Ref															
201.255.135	Riser Room 1																
201.256.135	Internal Walls and Partitions																

201.256 Staff Facilities/Rooms		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
		Programme															Corr
		WBS Ref.															
201.256.135	Internal Walls and Partitions																
201.256.134	Disabled WC																
201.256.135	Internal Walls and Partitions																
201.256.135	Dense Concrete Blockwork																
	Cleaners TeaPoint																
201.256.135	Internal Walls and Partitions																
201.256.135	Dense Concrete Blockwork																
	Staff WC																
201.256.135	Internal Walls and Partitions																
201.256.135	Dense Concrete Blockwork																
	Mess Kitchen																
201.256.135	Internal Walls and Partitions																
201.256.135	Dense Concrete Blockwork																
	Hallway 5																
201.256.135	Internal Walls and Partitions																
201.256.135	Dense Concrete Blockwork																
201.256.135	Windposts																
201.256.140	Internal Doors																
	Disabled WC																
201.256.140	Internal Doors																
201.256.140	Single 1Hr Fire rated Doors Set																
201.256.140	Fire Sealent																
	Cleaners TeaPoint																
201.256.140	Internal Doors																
201.256.140	Single 1Hr Fire rated Doors Set																
201.256.140	Fire Sealent																
	Staff WC																
201.256.140	Internal Doors																
201.256.140	Single 1Hr Fire rated Doors Set																
201.256.140	Fire Sealent																
	Mess Kitchen																
201.256.140	Internal Doors																
201.256.140	Single 1Hr Fire rated Doors Set																
201.256.140	Fire Sealent																
	Hallway 4																
201.256.140	Internal Doors																
201.256.140	Single 1Hr Fire rated Doors Set																
201.256.140	Fire Sealent																
	Hallway 5																
201.256.140	Internal Doors																
201.256.140	Single 1Hr Fire rated Doors Set																
201.256.140	Fire Sealent																
201.256.145	Wall Finishes																
	Disabled WC																
201.256.145	Wall Finishes																
201.256.145	Painted fair faced concrete/blockwork																
	Cleaners TeaPoint																
201.256.145	Wall Finishes																
201.256.145	Painted fair faced concrete/blockwork																
201.256.145	Tiled Finish																
	Staff WC																
201.256.145	Wall Finishes																
201.256.145	Painted fair faced concrete/blockwork																
	Mess Kitchen																
201.256.145	Wall Finishes																
201.256.145	Painted fair faced concrete/blockwork																
201.256.145	Tile on Blockwork																
	Hallway 4																

201.256.145	Wall Finishes																		
	Hallway 5																		
201.256.145	Wall Finishes																		
201.256.145	Painted fair faced concrete/blockwork																		
201.256.150	Floor Finishes																		
	Disabled WC																		
201.256.150	Floor Finishes																		
201.256.150	Dust Sealed Power Float Finish																		
	Cleaners TeaPoint																		
201.256.150	Floor Finishes																		
201.256.150	Screeding Floor Finish																		
	Staff WC																		
201.256.150	Floor Finishes																		
201.256.150	Dust Sealed Power Float Finish																		
	Mess Kitchen																		
201.256.150	Floor Finishes																		
201.256.150	Dust Sealed Power Float Finish																		
	Hallway 4																		
201.256.150	Floor Finishes																		
201.256.150	Dust Sealed Power Float Finish																		
	Hallway 5																		
201.256.150	Floor Finishes																		
201.256.150	Dust Sealed Power Float Finish																		
201.256.155	Ceiling Finishes																		
	Disabled WC																		
201.256.155	Ceiling Finishes																		
201.256.155	Fully accessible suspended ceiling																		
	Cleaners TeaPoint																		
201.256.155	Ceiling Finishes																		
201.256.155	Fully accessible suspended ceiling																		
	Staff WC																		
201.256.155	Ceiling Finishes																		
201.256.155	Fully accessible suspended ceiling																		
	Mess Kitchen																		
201.256.155	Ceiling Finishes																		
201.256.155	Fully accessible suspended ceiling																		
	Hallway 4																		
201.256.155	Ceiling Finishes																		
201.256.155	Fully accessible suspended ceiling																		
	Hallway 5																		
201.256.155	Ceiling Finishes																		
201.256.155	Fully accessible suspended ceiling																		
201.256.160	Fittings and Furnishings																		
	Disabled WC																		
201.256.156	Fixtures and Fittings																		
201.256.157	WC Fixtures and Fittings																		
201.255.160	Cleaners Sink																		
	Cleaners TeaPoint																		
	Fixtures and Fittings																		
201.255.160	Cleaners Sink																		
	Staff WC																		
	Fixtures and Fittings																		
201.255.160	WC Fixtures and Fittings																		
201.255.160	Cleaners Sink																		
	Mess Kitchen																		
	Fixtures and Fittings																		
201.255.160	Kitchen Facilities																		
201.255.160	Furniture																		

201.270	Station Signage	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
	Station Signage	Programme															
201.270.100	Station Signage-Non Illuminated																
201.270.100	Directional Sign																
201.270.100	Size 1200 x 400mm																
201.270.100	Projected from wall																
201.270.100	Suspended																
201.270.100	Emergency Do Not Enter																
201.270.100	Suspended																
201.270.100	Emergency Exit																
201.270.100	Projected from wall																
201.270.100	Lift Signage																
201.270.100	Wall mounted																
201.270.100	Wall mounted																
201.270.100	PHP Beacon																
201.270.100	Projected from wall																
201.270.100	Exit Guide Panel																
201.270.100	Wall mounted																
201.270.100	Identification Sign																
201.270.100	Projected from wall																
201.270.100	Lift Signage																
201.270.100	Wall mounted																
201.270.100	Wall mounted																
201.270.100	PHP Beacon																
201.270.100	Projected from wall																
201.270.100	Emergency Do Not Enter																
201.270.100	Transom incorporated into transom below fascia																
201.270.100	Identification Sign																
201.270.100	Fascia integrated into station entrance fascia																
201.270.100	Station Roundel																
201.270.100	Projected from side of building																
201.270.100	Directional Sign																
201.270.100	Suspended																
201.270.100	Projected from PES																
201.270.100	Wall mounted																
201.270.100	Emergency Exit																
201.270.100	Ceiling mounted																
201.270.100	Projected from PES																
201.270.100	Projected from wall																
201.270.100	Wall mounted																
201.270.100	Wall mounted																
201.270.100	Lift Signage																
201.270.100	Wall mounted																
201.270.100	Wall mounted																
201.270.100	Line Diagram																
201.270.100	Wall mounted																
201.270.100	Network Diagram																
201.270.100	Wall mounted																
201.270.100	PHP Beacon																
201.270.100	Projected from wall																
201.270.100	Suspended																
201.270.100	Roundal Panel																
201.270.100	Wall mounted																
201.270.100	Undefined Operational Noticeboards Signage and the like																
201.270.100	Customer Information Screen																
201.270.100	Wall mounted																
201.270.100	Directional Sign																
201.270.100	Projected from PES																
201.270.100	Emergency Exit																
201.270.100	Projected from PES																
201.270.100	Exit Guide Panel																
201.270.100	Wall mounted																
201.270.100	Line Diagram																
201.270.100	Wall mounted																

201.270	Station Signage	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)	
			Programme	Programme														
201.270.100	Network Diagram																	
201.270.100	Wall mounted																	
201.270.100	PHP / Fire Hydrant Beacon																	
201.270.100	Projected from wall																	
201.270.100	Roundel Panel																	
201.270.100	Wall mounted																	
201.270.100	Trackside Roundel																	
201.270.100	Wall mounted																	
201.270.100	Customer Information Screen																	
201.270.100	Wall mounted																	
201.270.100	Directional Sign																	
201.270.100	Projected from PES																	
201.270.100	Emergency Exit																	
201.270.100	Projected from PES																	
201.270.100	Wall mounted																	
201.270.100	Exit Guide Panel																	
201.270.100	Wall mounted																	
201.270.100	Line Diagram																	
201.270.100	Wall mounted																	
201.270.100	Network Diagram																	
201.270.100	Wall mounted																	
201.270.100	PHP / Fire Hydrant Beacon																	
201.270.100	Projected from wall																	
201.270.100	Roundel Panel																	
201.270.100	Wall mounted																	
201.270.100	Trackside Roundel																	
201.270.100	Wall mounted																	
201.270.100	Emergency Exit																	
201.270.100	Projected from wall																	
201.270.100	Emergency Exit																	
201.270.100	Projected from wall																	
201.270.100	Directional Sign																	
201.270.100	Projected from wall																	
201.270.100	Emergency Do Not Enter																	
201.270.100	Suspended																	
201.270.100	Emergency Exit																	
201.270.100	Projected from wall																	
201.270.100	Lift Signage (Directory)																	
201.270.100	Wall mounted																	
201.270.100	Lift Signage (Identification)																	
201.270.100	Wall mounted																	
201.270.100	Line Diagram Panel																	
201.270.100	Wall mounted																	
201.270.100	PHP / Fire Hydrant Beacon																	
201.270.100	Projected from wall																	
201.270.100	PHP Beacon																	
201.270.100	Projected from wall																	
201.270.100	Directional Sign																	
201.270.100	Projected from wall																	
201.270.100	Suspended																	
201.270.100	Emergency Exit																	
201.270.100	Projected from wall																	
201.270.100	Line Diagram Panel																	
201.270.100	Wall mounted																	
201.270.100	PHP / Fire Hydrant Beacon																	
201.270.100	Projected from wall																	
201.270.100	PHP / Fire Hydrant Beacon																	
201.270.100	Projected from wall																	
201.270.100	PHP Beacon																	
201.270.100	Projected from wall																	
201.270.100	Totem, including monolith and fingerposts																	
201.270.100	As generic station totem family drawings																	
201.270.100	Powered Access Equipment																	

201.270		Station Signage		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.270.100		Detailed Design		Programme															Cor

201.300 Lifts & Escalators		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
		WBS Ref															
201.300.100	Escalator System																
201.300.97	Escalator CL																
201.300.98	Escalators NL to DLR																
201.300.99	Escalators TH to Basement																
201.300.100	Escalators Basement to NL																
201.300.105	Passenger Conveyor																
201.300.105	Moving Walkways																
201.300.120	Traction Lift																
201.300.120	Lifts																

201.510 Electrical (AC Only)		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.510.120	Tunnel Lighting																
201.510.115	Electrical																
201.510.115	Tunnel area available for lighting																
201.510.115	Install Tunnel Lighting Distribution Equipment																
201.510.115	Install containment J Hangers																
201.510.115	Install Tunnel Lighting Cables																
201.510.115	Install Tunnel Lights																
201.510.115	Install Tunnel Power Cables																
201.510.115	Install Tunnel Power Outlets																
201.510.115	Testing & Commissioning																

201.520 Communications & Other Systems		Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.520.140	Other Systems						0.00										
201.520.140			Install Motor Control panels (MCP)														
201.520.140			1st fix BMS equipment														
201.520.140			Install Cabling														
201.520.140			2nd fix BMS equipment														
201.520.140			BMS Commissioning														

201.610	External Works	Programme	Labour Type (from the LRM)	Labour Code (from LRM)	Shifts (Nr)	Labour Rate (from LRM £/Shift)	Labour Total (£)	Description	Amount	Unit of Measure (UoM)	Rate (£/UoM)	Materials Total (£)	Description	Amount	Unit (day / week / other)	Rate (£/Unit)	Plant Total (£)
201.610.120	Forecourt & Paving																
Whole Block Work Site																	
201.610.120	Break Kerb Line																
201.610.120	Additional Cannon Street Access cost																
201.610.120	Break Out Paving and Sub Base																
201.610.120	Dispose of off Site																
201.610.120	Compact Bottom of Excavation																
201.610.120	Type 1 Sub Base																
201.610.120	Regulating Course C8/10 Lean Mix																
201.610.115	Supply and Lay COL Shallow Mount Bollards																
201.610.120	C35 Infill Concrete																
201.610.120	Slab Pavement																
201.610.120	Kerbing Stones																
201.610.120	Edgings																
201.610.120	Temporary Edge Deta l																
201.610.120	Works around services chambers and protection																
201.610.120	Set Level of Chamber / Cover																
Nicholas Lane Access Road																	
201.610.120	Break Kerb Line																
201.610.120	Break out existing paving/road and sub base to 250mm																
201.610.120	Dispose off site to tip (assume grab)																
201.610.120	Saw cut to KWS and Nicholas Lane junction 300mm deep																
201.610.120	Excavate trench 300m deep 300mm wide for key to ramp at KWS junction with Nicholas Street																
201.610.120	Dispose off site																
201.610.120	Supply Concrete to Form ramp up from road level at KWS to Top of existing pavement in Nicholas Lane from concrete																
201.610.120	Compact bottom of excavation																
201.610.120	Supply Regulation Course Concrete C8/10 lean mix 200mm																
201.610.120	Supply and lay ATG Access Ltd City of London Bollards (Shallow Mount System)																
201.610.120	E/Over for removable bollards as above																
201.610.120	Supply and lay C35 Concrete mix to Bollard base structure 150mm thk slab																
201.610.120	Supply and lay Block paving 90mm thk (existing is black asphalt cold rolled)																
201.610.120	Install Granite Drop Kerbs include bed and haunch																
201.610.120	Install Granite Transition kerbs																
201.610.120	Install Kerbs																
201.610.120	Install PCC edging against existing paving																
201.610.120	Temporary works (Temporary edgings against existing construction)																
201.610.120	Tarmac/ Concrete																
201.610.120	Work around Service chambers and protection to them																
201.610.120	Re-level /set covers and frames (100mm approx)																
201.610.120	Signage (no through road etc)																
Nicholas Lane Access Road																	
201.610.120	Removal of Piling Matt																
201.610.120	Breakdown Gantry Crane Base																
201.610.120	Back filling of Aurthur Street Shaft																
201.610.120	Planning off Aurthur Street																
201.610.120	Installation of New Granite Kerb Line																
201.610.120	Lay 150mm MOT type 1 road base																
201.610.120	Lay 150mm Dense Base Course																
201.610.120	Lay 80mm Dense Base Course																
201.610.120	Lay 20mm HRA Wearing Course																
201.610.120	Lay 50mm Wearing Course to Pvement																
201.610.120	Work around Service chambers and protection to them																
201.610.120	Re-level /set covers and frames (100mm approx)																
201.610.120	Road Markings																
201.610.120	Signage (no through road etc)																
201.610.140	Road Markings																
201.610.140	Linial Markings																

Appendix 6.3 Business Case Assistant (BCA) and BCA Assumptions Template

The Output form tab of the Business Case Assistant is attached here and is taken from Excel documents DRA_BCA MODEL_UPLIFTED 23 07 2013.xls and DRA_BCA ASSUMPTIONS MODEL_UPLIFTED 22 7 13.

Appendix 6.4 Passenger Modelling

The summary results of the Legion model are attached here and is taken from the Contractor's Works Information WI 2400.

Appendix 6.5 Risk Register

Risk No	Title	Risk Owner	Cause	Effect	Description
BA2-001	(RO1) TfL inflationary calculation underestimated potential costs	Employer	TfL forecast for indexation is insufficient	Additional project cost over and above what has been allowed for in the base estimate	TfL inflationary calculation methodologies leads to insufficient financial allowance for indexation increase
BA2-015	(RO1) Implications of a lengthy blockade not acceptable to stakeholders	Employer	Complexity of construction and logistics (sequence of works), breakout working into existing operational tunnels, internal escalator and lift works, track laying and signals testing.	Requirement to design alternative methodologies / carry out more works in engineering hours	Closure duration required by the scheme may not be acceptable to stakeholders
BA2-010	(RO1) Emerging, non-TfL projects (e.g. Corporation of London, other major organisations) impacts on project works, results in time delays and traffic management issues. (over and above what has been included in the Works Information)	Employer	Emerging projects, lack of understanding of integration impacts. Office redevelopment peak in 2015; possible impact on Bank SCU traffic management.	Time delays, traffic management issues, additional project cost. Requirement to re-evaluate transport strategy	Emerging, non-LU projects (e.g. Corporation of London, other major organisations) impacts on project works, results in time delays and traffic management issues.
BA2-053	(RO1) Inability/ delay to secure funding associated with proposed schedule and cost profile following the annual spending review	Employer	Changes in business requirements. Internal governance takes longer than anticipated	Schedule prolongation	Inability / delay to secure funding associated with proposed schedule and cost profile following the annual spending review or funding is granted but over a longer programme
BA2-029	(RO1) Inability to negotiate the purchase of Crown Land (Crown Land; Greenwich Hospital - Property Acquisition) (A23)	Employer	CPO justification does not satisfy requirements	Delays and additional costs	Inability to negotiate the purchase of Crown Land (Crown Land; Greenwich Hospital - Property Acquisition)
BA2-031	(RO1) Adverse market conditions when project goes to Tender (including risk of insufficient available tunnelling resource)	Contractor	Adverse market conditions when project goes to tender . Significant alternative workload (e.g. Crossrail and Thames Tideway) combined with reduced pool of skilled labour for hand dug tunnelling	Limited interest from supply chain or inflated prices for scarce resources	Overheated market conditions generally. Specific concerns include limited supply of skilled tunnelling resource
BA2-018	(RO1) TfL business drivers demand changes to project requirements and scope following contract award	Employer	Internal pressure for scope changes	Variation to contract, increased time and cost, revisit contract, re-price	TfL business drivers demand changes to project requirements and scope following contract award - (scope change not fully funded by business)
BA2-073	(RO1) Legal challenge of ICE process	Employer	Unsuccessful Contractors puts in claim re: fairness / application of criteria/ negotiation of innovation	Delays to negotiation over and above scheduled negotiation period	Legal challenge of ICE process on fairness leads to delays to the project
BA2-041	(RO1) Inadequate engagement and buy in from internal Employer stakeholders, station operation and maintenance teams prevents handover into use/operations.	Employer	Poor internal stakeholder management/engagement; conflicting stakeholder priorities	Lack of programme integration; programme delay & additional cost	Engagement with internal Employer stakeholders and station operation and maintenance teams is inadequate.
BA2-008	(RO2) Environmental Impact Assessment approved but with onerous conditions	Employer	Covers 67 potentially affected buildings. Demolition not adequately managed, unacceptable crowding on bus/tube/ground; insecure pedestrian routes, unacceptable performance (Highway network), larger land take	Objections, delays to the programme, cost impact to find alternative solutions , alternative working methods	Environmental Impact Assessment approved but with onerous conditions: Noise and vibration, Traffic and transport air quality, demolition and excavated material
BA2-007	(RO2) Planning approval for OSD delayed or granted with onerous conditions.	Employer	There is a requirement for planning approval for consent to demolish. Incomplete documentation; CoL not accepting submission: current design not compliant with policy	Increases risk to TWA - may lead to requirement to apply for planning for OSD & TWA at the same time .	Conservation area consent / planning approval for OSD delayed or granted with onerous conditions
BA2-042	(RO2) Disruption posed by special interest group: e.g. pressure groups during construction	Employer	Lack of engagement with external stakeholders, conflicting interests	Programme delayed by informal/formal action; additional costs	Disruption posed by external stakeholders: e.g. pressure groups during the works
BA2-066	(RO2) TWA takes longer than 21 months to be delivered due to a longer Inquiry / Judicial Review	Employer	Longer Public Inquiry; changes required in the design; poor preparation; exceptional volumes of objections	Re-design, additional costs due to new solution required	TWA takes longer than 21 months to be delivered due to a longer Inquiry/ judicial review
BA2-005	(RO2) Failure to develop a robust transport case resulting in delay to submission in respect of Contractor obligations	Contractor	Failure to develop a robust transport due to design not meeting all the project requirements	Project delay and cost implications of redesign and resubmission	Failure to gain the Mayor approval to submit
BA2-047	(RO2) Inconsistency of documents and weak key witnesses at Inquiry beyond contractor obligations	Employer	Inconsistency of project team . Volume of documentation.	Delay to decision	Inconsistency of documents and weak key witnesses at enquiry

Risk No	Title	Risk Owner	Cause	Effect	Description
BA2-090	(RO2) Failure to produce adequate documents and witnesses to support the TWA process	Contractor	Inconsistency of designers . Volume of documentation.	Delay to decision	Failure to produce adequate documents and witnesses to support the TWA process
BA2-002	(RO3) Unexpected conditions of services/utilities - water mains, gas mains, telecoms. Allowance in the base case not sufficient	Employer	Condition of asset in worse condition than survey indicated	Increased costs from requirement to strengthen asset and insurance deductibles if survey works causes damage to services.	Concern around cast iron nature of sewer/water mains - limited allowance in estimate for diversions/strengthening, IT infrastructure, gas, water, telecoms, unknown unknowns, DLR settlement
BA2-004	(RO3) Specific design solution on how to deal with piles strike proposed does not work	Contractor	Selected design solutions are inadequate to deal with piles strike given the data provided in the works information	Alternative solutions may be considered at additional cost and time delay - acquisition of buildings * Would increase if DLR Head shunt progressed	The specific design solutions developed by the Contractor to deal with piles strike proposed does not work
BA2-012	(RO3) Inability to meet the Northern Line closure in accordance with the programme and the site information	Contractor	Construction methodology - delays in programme, deadlines not achieved	Delays to project up to 1 year, severe costs to the project to coordinate with other lines closures	Works are delayed beyond the 3 month buffer allowed for in the programme/ works take longer leading to an Inability to meet the NL closure in accordance with the programme
BA2-086	(RO3) Unforeseen impact on TfL rail infrastructure within the constraints of the Site Information provided	Contractor	Proximity of works to existing assets. Poor understanding of asset conditions/ unclear Safe Load Assessment (SLA)	Settlement causing prolonged closure of adjacent tunnels etc. leads to programme delay	Major safety-related impact on TfL rail infrastructure (Employer and DLR assets)
BA2-013	(RO3) Depth and location of piles to existing structures is worse than the Site Information has identified	Employer	Limited information available, as built incorrect	Pile collision . Requirement to change design or repair damage	Uncertainty as to depth and location of piles to existing structures leads to potential pile hit
BA2-024	(RO3) Settlement impact on St Mary Abchurch & Mansion House greater than allowed in for design within the constraints of the site information	Contractor	Poor condition, very fragile state of asset. Design is correct however level of settlement is outside the limits of settlement .	Additional protective and remedial works. additional costs and potential severe time impact Any costs of damage if design is correct but settlement is outside the limit of settlement will be covered by insurance . Any damage within the settlement limits will be covered by the contractor. Any damage caused by incorrect design will be covered by the contractor. * DLR head shunt inclusion in the scheme would increase impact of risk	Settlement impact on St Mary Abchurch structure & Mansion House greater than allowed in for design
BA2-035	(RO3) Settlement impact on 3rd party buildings greater than allowed in for design (excluding St Mary Abchurch & Mansion house) within the constraints of the Site Information provided	Contractor	Poor condition of asset	Additional protective and remedial works. Additional costs and programme delay	Impact of settlement much greater than design solution given for assumed construction method
BA2-069	(RO3) Designated Network Operator (DNO) power supply capability not adequate leading to load application rejection	Employer	DNO capability unknown	Cost increase and impact on programme	Designated Network Operator (DNO) power supply capability unknown leading to load application rejection
BA2-026	(RO3) The cost of delivering the signalling systems is higher than anticipated	Employer	Signalling systems are incompatible requiring a replacement system. (Currently to be priced by the Contractors however LU could identify costs from the market to carry out the works)	Increased project costs	The cost of delivering the signalling systems is higher than anticipated
BA2-059	(RO3) Insufficient time allowed for in programme for design and assurance approvals from LU/stakeholders delay timescales	Contractor	Unclear approvals process, multiple issues raised due to conflicting concerns/interests	Programme delay and associated costs	Protracted design and assurance approvals from LU/stakeholders delay timescales. (Concept and Compliance)
BA2-072	(RO3) Unforeseen ground conditions outside GBC report impact on tunnelling	Employer	Inaccurate surveys / surveys carried out but do not capture all ground conditions	Alternative solutions required leading to redesign and increased implementation costs	Unforeseen ground conditions (tunnelling)
BA2-076	(RO3) Slow mobilisation of the project team following contract award	Contractor	Following sign off the contract there may be a delay in recruiting the tender identified staff	Delays to the project and possible quality issues	There may be an initial delay following signing of the contract if the contractor team cannot be mobilised
BA2-092	(RO3) Contractor time risk for unexpected conditions of services/utilities - sewer, water mains, gas mains, telecoms. Allowance in the base case not sufficient	Contractor	Failure of the contractor to meet his obligations of the works information	Increased costs, damage to services. Contractor will bear the programme delay	Concern around cast iron nature of sewer/water mains - limited allowance in estimate for diversions/strengthening, IT infrastructure, gas, water, telecoms, unknown unknowns, DLR settlement

Risk No	Title	Risk Owner	Cause	Effect	Description
BA2-033	(RO3) Flooding to station due to works	Contractor	Damage to water utilities, from settlement caused by tunnelling	Additional costs associated with remedial works, reputational risk to LU	Flooding to station due to works
BA2-014	(RO3) Performance failure of supply chain and bankruptcy (post contract award)	Contractor	Industry demand for potential supply chain to work on other projects	Disruption to programme	Performance failure of supply chain, delayed escalator/lift delivery (main and sub contractors)
BA2-017	(RO3) Unforeseen obstructions -MoD utilities- not identified in the built environment or Site Information	Employer	Uncertainty around MoD utilities in the area. Limited information available	Re-design, works stopped, delays	Unforeseen MoD utilities not identified in the built environment
BA2-034	(RO3) Revised tunnelling route required due to internal and external (political) pressure	Employer	Tunnelling route sensitivity, political pressure for change (Mansion House) - potential for pile clashes	Redesign, re scoping of tunnelling route, additional cost and time	Revised tunnelling route required due to internal and external (political) pressure (e.g. as a result of sensitivity around high-profile buildings)
BA2-037C	(RO3) Possible systems integration risk between SSIU and SCU as set out in SSIU Project Requirement Statement (reference LUSTN-0002167-SPC-000002)	Contractor	Multiple projects and lack of co-ordination	Programme delays, additional design and installation. Lack of opportunity to integrate. Late design changes required	Possible systems integration risk. Non-signalling-related, centred on interface with Stations System Interface Upgrade Project,
BA2-037E	(RO3) Possible systems integration risk between SSIU and SCU beyond that set out in SSIU Project Requirement Statement (reference LUSTN-0002167-SPC-000002)	Contractor	Multiple projects and lack of co-ordination	Programme delays, additional design and installation. Lack of opportunity to integrate. Late design changes required	Possible systems integration risk. Non-signalling-related, centred on interface with Stations System Interface Upgrade Project,
BA2-044	(RO3) Discovery of archaeological artefacts	Employer	Discovery during site works, inadequate surveys	Programme delay & additional cost	Discovery of unexploded bombs, archaeology.
BA2-045	(RO3) Presence of ground contamination (in excess of GBC)	Employer	Poor survey information in KWS site	Programme delay & additional cost	Unforeseen ground contamination
BA2-057	(RO3) Unforeseen frustrated access	Employer	Engineering trains not available, constraints around pway	Programme delayed; additional cost	Frustrated access (i.e. inability to access Employer-controlled areas of existing station as a result of Employer operational reasons).
BA2-067	(RO3) Discovery of unforeseen asbestos - Station and any associated properties, over and above what could reasonably be expected	Employer	Discovery of unforeseen asbestos	Additional cost, programme delay	Discovery of unforeseen asbestos over and above allowance in cost plan
BA2-074	(RO3) Delays to obtaining contractor approvals within the agreed LUL approval process	Employer	The approval of contractor documents may take longer than initially expected	Delays to the project	Works are delayed/ gates are missed due to onerous approvals process
BA2-078	(RO3) - Untimely response from PFIs to timely requests from contractor	Employer	PFIs do not perform to schedule	Delays to the project	Project delays from PFIs taking longer to respond / carry out works than first envisaged
BA2-088	(RO3) Sewers: diversion infrastructure/ access and availability may not be sufficient to enable protection works to be installed.	Employer	Flow to sewer is likely to have to be reduced to enable the installation of strengthening/ lining . Sewer flow is likely to need to be diverted and possibly undertaken in period of dry weather . Access to sewers for this work may also be difficult e.g. London Bridge sewer has previously been strengthened by access through night time road closures of King William Street.	Alternative method required which may cost additional money and delays	Cannot divert sewers to carry out protection works
BA2-064	(RO3) Exceptionally adverse weather	Employer	Particularly adverse weather conditions. Less frequent than 1/ 10 years	Deliveries delayed, concrete production delayed etc.	Exceptionally adverse weather
BA2-089	Construction methodology around construction within proximity of the live utilities from Shaft 3/782 and 3/781	Contractor	Construction of the CL escalator in conjunction with the requirement to maintain the HV transformers in operation during the works	Additional protection / requirement to provide an additional , larger transformer in an alternative location	There may be a requirement to provide an alternative transformer for the station in lieu of retaining the existing one
BA2-046	(RO3) Operational - Severity of safety measures required to run station during construction	Contractor	Extensive re routing of customers including additional customers re-routed via King William Street It is likely that an additional staff costs will be covered by the Signal Requirements Team (SRT) however there may be additional costs for PA announcements, signage and there may be a risk that additional staff for the Central line are not funded by SRT or SRT may not be able to supply all additional staff which may lead to a requirement to seek external employees.	-Potential cost of additional extra staff not supplied by SRT and signage / PA announcements. Negative publicity	Operational - Severity of safety measures required to run station during construction

Risk No	Title	Risk Owner	Cause	Effect	Description
BA2-061	(RO2) Lack of consistency of key resources	Employer	Death or incapacity of an inspector/key resource.	Loss of key people at enquiry leading to delay.	Lack of consistency of key resources
BA2-068	(RO3) Unknown conditions and location of LU station services/assets/ grey assets over and above what is in the Site Information	Employer	Poor information available. Insufficient surveys undertaken	Additional cost and time delays for upgrade, surveys, investigations at project cost	Unknown conditions and location of LU station services/assets e.g. cabling substandard etc.
BA2-077	(RO3) Industrial action (Industry Wide)	Employer	Political change - proposed changes to working practices	Delays to work if site access is frustrated	Works may be delayed / access may be frustrated due to industrial action
BA2-079	(RO3) - H&S incident- there may be a incident on site which could delay the works	Contractor	H&S incident on site	Delay to the project and reputational impact	There is a risk that should there be a HS& incident on site there may be delays / reputational impact on the project
BA2-087	(RO3)Artesian wells liners on the tunnel alignment within the constraints of the Site Information provided	Contractor	Artesian wells along or close to the new tunnel alignment will be impacted by the construction works	Provision of new wells or modification to existing building services may be required. To mitigate this tunnelling method will need to allow for passing through sleeved wells. Existing wells may have to be capped / filled to prevent contamination	Artesian wells - well liners on the tunnel alignment - conduit to the chalk aquifer, will need to be removed during the construction process.
BA3-001	LU reject the tall plant concession	Contractor	Contractor does not follow the required procedure to obtain approval for the concession	Assumptions relating to the execution of the works, methodology, timing, costs , risks etc. will have to be re-assessed. This may result in additional costs.	A set of assumptions, relating to tall plant concession, with resulting cost / schedule implications to be factored into the base cost / schedule and risk register.
BA3-002	Unavailability of preferred location for accommodation	Contractor	There may be a delay in securing the accommodation as required	Inefficient working resulting in delays and costs	Consider alternative suitable accommodation
BA3-003	Under measurement of quantities	Contractor	Underestimation of project complexity	Target Cost too low	General checks
BA3-004	Delays caused by logistics in and around the constrained worksites	Contractor	Logistical arrangements to execute the works (lorries, plant, storage etc. are heavily constrained by limitations imposed due to the central London of the worksites	Severe restrictions are placed upon Dragados which could delay the works and increase costs above pre-contract assumptions	Develop traffic management and logistics plan. Model assumptions and take cognisance of these in the base cost, schedule and risk register
BA3-005	Delays in connection with the obtaining of all consents needed to enable the construction of the works	Contractor	CoLC and other agencies have limited resources and /or protracted consents processes	Programme delays and increased costs	Early engagement with CoLC and other agencies to ensure consents are granted to meet the LU / Dragados's timescales
BA3-006	Delays caused by a failure to comply with the noise and vibration limits stated in the Works Information for the works	Contractor	Section 61 agreement breached having used all best practicable means.	The works are delayed / restructured. Lower productivity	Develop robust working procedures in the Environmental Plan and implement these at the contract outset
BA3-007	Generic / Site-wide Materials and equipment handling difficulties on platforms	Contractor	Limited space at LU platforms to move equipment and materials in and out of work site affects production	1. Delays to the works 2. Increased risk of injury	Early site surveys, liaison with LU and other stakeholders. Implement effective worksite controls and working arrangements / coordination with others. Plan and cost estimate to be based on assumptions and risks identified.
BA3-008	Damage and repair to finished works	Contractor	Completed works are not sufficiently protected	Extra works required	Standard level of protection.
BA3-010	Station does not meet LUL standards at handover	Contractor	Designs and / or materials do not comply with LU's standards	Rework. Programme delays and additional costs	Work closely with LUL to ensure all materials, designs etc. meet their standards. Develop good stakeholder relations with LUL from the contract outset and throughout the works
BA3-011	M&E Contractors delayed due to lack of coordination with system wide contracts	Contractor	System-wide works could adversely affect the Dragados by delaying the programme of works either directly or indirectly.	There could be delays or increased costs	Review of information supplied at tender stage to highlight specific risk, impacts and mitigating actions
BA3-014	Generic / Site-wide MEP Programme Risk during commissioning and handover period	Contractor	Insufficient time for commissioning.	Commissioning and handover delayed	Work early with system-wide contractors and other contractors. Develop a robust plan and schedule of risks to identify and work around any potential delays and cost increases.
BA3-015	Generic / Site-wide Handover / Handback requirements underestimated	Contractor	Health and safety files, Inspection testing commissioning handover and bringing into use (LUL)	Additional costs due to underestimated requirements	Develop a robust testing and commissioning plan. Develop this in concert with all affected stakeholders to ensure it is comprehensive, realistic and achievable
BA3-016	EMC compliance failure of permanent works	Contractor	EMC tests may fail as a system even if the individual constituents pass.	Incurs unplanned expense, possibly programme delays	External specialist to be engaged, financial risk provision to be applied
BA3-019	Compensation grouting over stresses tunnels	Contractor	Lack of available information	Costs or delays	Review of information supplied at tender stage to highlight specific risk, impacts and mitigating actions
BA3-020	Friction pile footings deeper than shown within the Site Information provided	Employer	Lack of available information	Costs or delays	Review of information supplied at tender stage to highlight specific risk, impacts and mitigating actions

Risk No	Title	Risk Owner	Cause	Effect	Description
BA3-021	Depth of pile shoes are at higher level than within the Site Information provided	Employer	Lack of available information	Costs or delays	Review of information supplied at tender stage to highlight specific risk, impacts and mitigating actions
BA3-022	Access assumptions are incorrect	Contractor	Assumptions are incorrect	Costs, delays or other objectives may be adversely affected	Work closely with LUL etc. to ensure any uncertainty is addressed
BA3-024	Scope Uncertainty	Contractor	Unknown when estimating quants, prices etc.	Costs or delays	Scope or quants are over / under estimated
BA4-001	Design Costs are underestimated	Contractor	Lack of knowledge of extent or scope requirements Underestimation of design requirements	Delays to programme and consequential increase in design fees	There is a risk that the amount of design input required is underestimated
BA4-005	3rd Party compensation costs are insufficient	Employer	Requirement to provide compensation costs for affected neighbouring buildings	Additional cost / potential for delays to negotiate compensation	There may be a requirement to provide additional compensation costs over and above what has been allowed for.
BA4-007	COL object to OSD as does not comply with planning brief	Employer	OSD produced does not comply with planning brief	Delays / redesign required	CoL may be object due to OSD not complying with planning brief
BA4-008	During construction it is found that design assumptions are incorrect	Contractor	A number of assumptions will be made for the design which may prove to be incorrect	Changes to design / delays	There is a risk that the design assumptions made prove to be incorrect
BA4-009	Late station handback after closures	Contractor	Works overrun	Impact on operational railway	There may be a delay to handback over the station following closures which would impact on the operational railway
BA4-010	Missed planned closures	Contractor	Works required prior to closures are not complete	Closure not used / new closure needs to be booked	Delay to work and reputational impact
BA4-011	Installation of TAMs causing unacceptable settlement	Contractor	TAM installation cause settlement	Delays to works	The installation of the TAMs could cause settlement which could slow the works down / lead to remedial works required
BA4-012	Space application rejected	Employer	Alternative project may have requested space	Requirement to redesign to work around	Space allocation rejected leading to requirement to redesign or resubmit
BA4-013	Insufficient allowance for training	Employer	Full scope of training has not been allowed for	Additional costs to cover staff training	There may be additional costs / delays to complete training
BA4-014	Design buildability - as built drawings are incorrect	Employer	Existing LUL as built are incorrect	Requirement to redesign to work around	There may be delays / changes to design to accommodate incorrect as built drawings
BA4-016	Floating slab track identified by contractor is not type approved and may require more works	Contractor	Type approval may not be granted	Alternative solution may be required	Delays / additional cost may be incurred from alternative track slab proposal
BA4-017	Additional works required at Moorgate to support blockade	Employer	Additional staff accommodation / staff to facilitate blockade	Additional cost to cover staff costs and accommodation	There may be an increase in cost due to a requirement to provide staff accommodation and extra staff for the blockade period
BA4-018	Insufficient slack in Central Line Invert cables	Contractor	Existing condition of central line invert cables	Additional cost to provide additional cabling	There may be a risk of additional cost from a requirement to provide extra central line invert cables
BA4-019	Delayed access	Employer	May not get Vacant Possession for KWS site at required time	Delays to start on site	There may be a delay to start on site due to inability to gain access to site at required time
BA4-020C	Additional works to existing tunnels	Contractor	Tie-ins may require additional works due to methodology not working	Additional works / costs	The methodology proposed may result in additional costs to remediate the tunnels
BA4-020E	Additional works to existing tunnels	Employer	Tie-ins may require additional works due to existing asset not being in the expected condition	Additional works / costs	The condition of the tunnels may result in additional costs to remediate the tunnels
BA4-021C	Access assumptions to carry out monitoring are incorrect	Employer	Access may not be granted to key sites for monitoring within the process outlined in the Works Information	Delays to securing monitoring equipment	There may be a delay to start of works if there is insufficient monitoring evidence recorded
BA4-021E	Access assumptions to carry out monitoring are incorrect as described in the Works Information	Employer	Access may not be granted to key sites for monitoring	Delays to securing monitoring equipment	There may be a delay to start of works if there is insufficient monitoring evidence recorded
BA4-022	Plant failures	Contractor	Key plant fails on site	Cost to replace / time delay	There may be a time delay associated with plant failures of key pieces of kit
BA4-023	Scope of monitoring exceeds budget	Contractor	Monitoring requirements underestimated	Increased costs associated with additional monitoring	There may be an increased in costs due to an increase in monitoring scope
BA4-024C	Maintenance of new works during construction / existing works that cannot be accessed due to contractor works	Contractor	Insufficient allowance for maintenance of the works during construction	There may be additional costs to cover maintenance of the works	There maybe additional costs associated with maintenance of the station during construction
BA4-024E	Maintenance of existing station during construction	Employer	Insufficient allowance for maintenance of the works during construction	There may be additional costs to cover maintenance of the works	There maybe additional costs associated with maintenance of the station during construction
BA4-025C	Concessions not granted (ALARP)	Contractor	Existing and proposed concessions may not be granted	Delays to works / requirement to redesign	There may be additional costs associated with a requirement to resolved un approved concessions
BA4-025E	Concessions not granted	Employer	Existing and proposed concessions may not be granted	Delays to works / requirement to redesign	There may be additional costs associated with a requirement to resolved un approved concessions
BA4-026	Access is not permitted during stage 1 for enabling works	Employer	Enabling works may not be able to be carried out prior to TWA approval	Impact on programme	There may be delays to the project from a requirement to carry out enabling works later than planned in the contractor programme
BA4-027	Potential requirement to provide permanent strengthening to bridge	Employer	Authority may require strengthening works to be permanent	Additional cost and time to carry out works	There may be additional cost and time to the programme to permanently strengthen the bridge

Risk No	Title	Risk Owner	Cause	Effect	Description
BA4-028C	Piling within 6m inclusion zone within ALARP	Contractor	Existing LUL standard for protection of infrastructure	Alternative methodology required	There may be a requirement to provide an alternative methodology to meet the requirements
BA4-028E	Piling within 6m inclusion zone	Employer	Existing LUL standard for protection of infrastructure	Impact on ticket hall size	Alternative solution which may not meet business case requirements
BA4-029C	Extra CCTV required for ring of steel at Arthur Street	Contractor	Works imposed on existing CCTV provision for local site facilities	Additional costs	There may be additional cost from a requirement to provide additional CCTV
BA4-029E	Extra CCTV required for ring of steel at Arthur Street	Employer	TWAO related requirements	Additional costs	There may be additional cost from a requirement to provide additional CCTV
BA4-030	Requirement to increase tunnel diameter if use of floating track slab	Employer	Floating track slab solution may require bigger tunnel	Increased cost and delays in constructing floating track slab	There may be an increased in cost and potential programme delay from a requirement to make the tunnels bigger to accommodate the floating track slab
BA4-032	Requirement to carry out works in 3x8 shifts vs 2/12 shifts	Employer	Safety concerns	Additional cost but potential saving on time	There may be additional cost associated with alternative shift patterns
BA4-035	Pan TfL L&E contract	Contractor	Currently do not have a manufacturing slot booked for 12no escalators + travelators	Delays to the project	There maybe delays associated with securing and gaining delivery of lifts and escalators
BA4-044	Requirement to provide additional traffic management / lorry specifications to comply with cyclist safety measures / bus stop changes	Contractor	TfL guidelines	Additional project costs	TfL guidelines change to stipulate additional protection to cyclists
BA4-045	Insurance costs greater than expected	Employer	Market hardens, or insurers don't like the design or construction methodology , event on other project	Increased in insurance premiums	Additional insurance costs to be covered by the project
BA4-046	Cost of planning resource from CoL	Employer	CoL may charge LUL for planning resource	Additional project costs	CoL may be cross charge LUL for planning resources to meet the BSCU requirements
BA4-047	Risks associated with demolition	Contractor	Existing structures may not be as expected	Additional costs and time delays	There may be greater work than anticipated in carrying out the demolition on site leading to additional costs and time delays
BA4-048	Issues with existing cable migration from old HV system to new (LU and DNO) following surveys	Employer	Cable may not be in anticipated condition	Additional costs	There may be additional costs to replace cabling
BA4-049	Additional cabling/containment for incoming feeds from Mile End and Liverpool St and outgoing to St Paul should cable jointing not be acceptable	Employer	Cable jointing may not be acceptable	Requirement to provide additional cabling to allow for no jointing	There may be additional costs associated with a requirement to provide additional cabling to avoid jointing
BA4-050	IM costs exceed those allowed for	Employer	IM costs / relocation, demobilisation and remobilisation	Additional project costs	There may be additional project costs from IM requirements being greater than anticipated

Appendix 6.6 Programme

Activity ID	Activity Name	Original Duration	Start	Finish	3	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
BSCU Dragados R8 (Costed)					27-Jul-21, BSCU Dragados R8 (Costed)														
Stage 1 (TWA & Design)					23-Feb-16, Stage 1 (TWA & Design)														
Key Dates					23-Feb-16, Key Dates														
DES0000	Contract Award	0	22-Jul-13*		Contract Award														
DES1000	Starting date	0	01-Aug-13		Starting date														
DES1010	Planned Key Date 1: Completion of all Concept Designs to S1538	0		02-May-14	Planned Key Date 1: Completion of all Concept Designs to S1538														
DES11350	Terminal float to KD1 (Concept Design)	28	02-May-14	30-May-14	Terminal float to KD1 (Concept Design)														
DES7800	Contract Key Date 1: (Contract Data Part 1) Completion of all Concept Designs to S1538	0	30-May-14		Contract Key Date 1: (Contract Data Part 1) Completion of all Concept Designs to S1538														
DES1030	Planned KD3: TWAO support information submission to LUL	0		10-Jun-14	Planned KD3: TWAO support information submission to LUL														
DES11370	Terminal float to KD3 (TWAO support)	42	10-Jun-14	22-Jul-14	Terminal float to KD3 (TWAO support)														
DES1040	LUL TWAO submission date	0	16-Jul-14		LUL TWAO submission date														
DES7820	Contract Key Date 3: (Contract Data Part 1) TWAO support information	0	22-Jul-14*		Contract Key Date 3: (Contract Data Part 1) TWAO support information														
DES1050	Planned Key Date 2: Completion of all designs to Compliance to S1538	0		26-Jan-16	Planned Key Date 2: Completion of all designs to Compliance to S1538														
DES11360	Terminal float to KD2 (Compliance Design)	28	26-Jan-16	23-Feb-16	Terminal float to KD2 (Compliance Design)														
DES7810	Contract Key Date 2: (Contract Data Part 1) Completion of all designs to Compliance to S15	0	23-Feb-16*		Contract Key Date 2: (Contract Data Part 1) Completion of all designs to Compliance to S15														
Milestones					27-Jul-21, Milestones														
Project Wide					27-Jul-21, Project Wide														
C1350	Starting day	0	01-Aug-13		Starting day														
C1310	Stage 2 Works Commencement Notice	0		20-Apr-16	Stage 2 Works Commencement Notice														
C3030	Sectional Completion 1	0		13-Aug-20	Sectional Completion 1														
C3020	Deterministic completion	0		22-Apr-21	Deterministic completion														
C3080	TRA (After QSRA)	96	22-Apr-21	27-Jul-21	TRA (After QSRA)														
C3040	Planned Completion Date (P80)	0	27-Jul-21*		Planned Completion Date (P80)														
C4370	Completion Date	0	27-Jul-21*		Completion Date														
Arthur Street Area					20-Apr-16, Arthur Street Area														
C1290	Start on Arthur Street Shaft	0	20-Apr-16	20-Apr-16	Start on Arthur Street Shaft														
New Southbound running tunnel					07-Sep-18, New Southbound running tunnel														
C1490	Commence running tunnel full production	0	03-Jan-17		Commence running tunnel full production														
C1540	Commence platform enlargement	0	03-Apr-17		Commence platform enlargement														
C1600	Complete platform enlargement	0	18-Sep-17		Complete platform enlargement														
C1720	Completion of new South Bound Tunnel	0		07-Sep-18	Completion of new South Bound Tunnel														
Whole Block Area					09-Jul-18, Whole Block Area														
C1440	Start on Whole Block site	0	20-Apr-16		Start on Whole Block site														
C1580	Shaft excavation in Whole Block commence	0	15-Sep-17		Shaft excavation in Whole Block commence														
C1590	Demolition complete	0	27-Sep-17		Demolition complete														
C1700	Access opened from Whole Block to NL level tunnels	0	09-Jul-18		Access opened from Whole Block to NL level tunnels														
Blockade					13-Aug-20, Blockade														
C2080	Closure Commencing date	0	21-Apr-20	21-Apr-20	Closure Commencing date														
C3580	Northern Line northbound tunnel open for traffic with no stopping trains at the station (Oppo	0	30-May-20		Northern Line northbound tunnel open for traffic with no stopping trains at the st														
C2620	Closure Finishing date	0		13-Aug-20	Closure Finishing date														