5. Raft construction

The main areas can be seen in the pour layout below; we have based the construction of the raft foundation on the following principles:

a. 140kg of reinforcement per m3

b. 1te fixed per operative day, gang sizes vary from 6 to 12 operatives.

c. 300m3 concrete pours optimum [this is likely to be increased once the contractor has familiarised themselves with the site constraints]

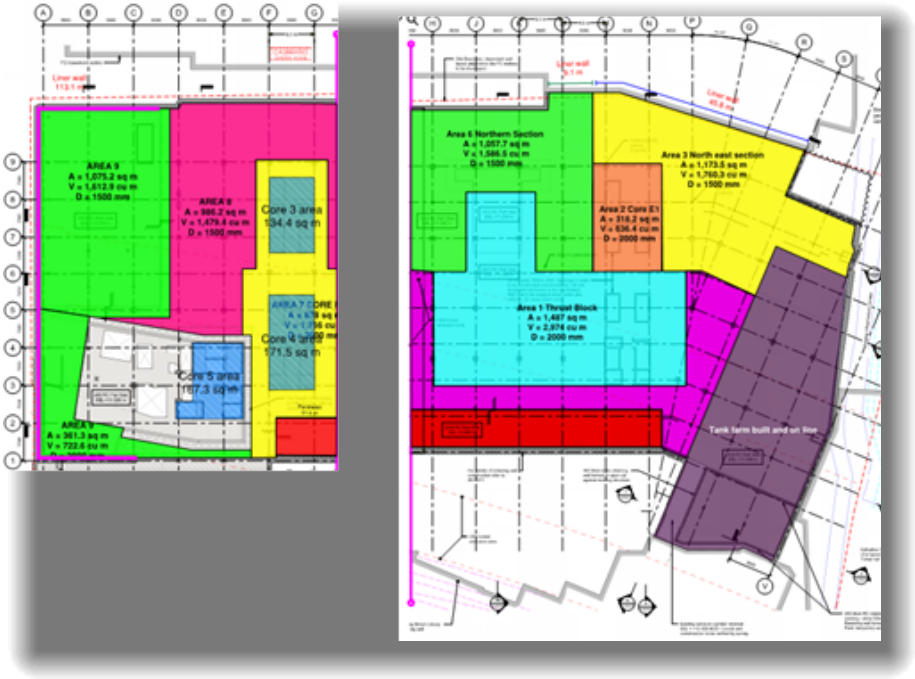


Figure 6 – Basement raft construction

6. Core construction – Crane assisted jump

The main part of the thrust block area [blue above right] also is the footing for the main cores in the east. We start to construct these once the thrust block is cast. We have based these on a crane assisted method [50% hook for each core] and a typical 8-day construction cycle. Alternative faster methods may be adopted during programme development and discussions with the trade contractors.

7. Tower crane strategy

All cranes have been positioned not to oversail adjoining land 'out-of-service'; the 'in-service' radius of each crane would be restricted to ensure no oversailing of FCI and adjacent highways.

The eastern part of the site is larger than the west. We have governed the construction programme for the east by 3 no tower cranes. When the west building starts, we foresee one additional crane being brought into service, giving a total of 4 cranes across the site. We believe that is a balanced position. These are likely to be large luffing jib cranes that will have radius limiters to avoid lifting over neighbouring properties. Initially, we propose to locate the cranes in the central linear atrium about Grid Line 06, following the core completion cranes can be located upon the cores to free any works from being tied up in the basement.

8. ‘Leave behind’ Upper Ground slab & Construct L01 before L02

Due to the height of L02 above LG [14m], we have planned to construct the L01 slab before L02, however leaving the UG slab behind. This may change but is the basis for the programme issue.

9. Transfer slab construction typical

The rates used for the progressive install of the L02 transfer deck are as follows, the tower cranes will be shared to carry out these works. The activities follow behind the progressing L01 slab, which in turn follows the progress of the LG slabs below.

a.	Install PC beam shells	1	no/day
b.	Install timber trusses	5	no/day
c.	Fix reinforcement to beams/slab	10.7	te/day
d.	Concrete	47.8	m3/day

10. Heavy transfer steels Installation

We believe these will need to be installed progressively from west to the east by mobile craneage located upon the back propped LG slab. This can be confirmed when the final location of the tower cranes is known.

11. Mini cores wall | slab | wall

The mini cores at the east and west extremes are unlikely to be constructed as jump forms ahead of the main floor plates. Due to their size and simplicity, it makes more sense to build these from the cast floor slabs, at the same time the precast columns are being installed. These mini cores should not become a critical activity when compared with the vastness of the main floor plates.

12. Install raking hangers, then remove LG to u/s of L02 temporary tower supports

We have allowed supporting the L02 slab at the affected corners from support towers passing their load back into the basement until the raking hangers can be connected from the L02 slab to Level 04 of the mini cores. Once the load path is final then the towers below can be cleared and the glazing between L02 and LG can commence.

13. Superstructure

Simplistically we have constructed the eastern PT slabs with 3 cranes generating 475m2 of slab per week each, in total 1425 m2 per week. This is a peak and there are some periods where the total output would be lower. Stripping of falsework is based upon the principle of - Level 6 cast > Level 03 can be cleared.

14. Steel above Loading Bay structure to L02

This must follow the truss and slab construction of the loading bay. We have positioned this to be constructed during the period L01 is under construction and before L02. The logic of this is to complete the work and hook time before the main superstructure above L02 starting where any demand of hook time for this element will slow down the main slab construction/production.

15. Typical Envelope

We have planned for the installation of a typical 1500mm wide unitised façade, installed from the floor plate and not by tower crane. The units will be transported vertically by construction hoist. The start logic is as follows, level 2 brackets start once L02 is clear of all falsework, the unitised installation at L02 starts once the brackets are complete at L02 and L03, and so on. 2 teams are installing 9 panels per day each, totalling 18 no panels daily.

16. Atrium Roof

Once L08 has been cleared of all falsework, access is gained to the atrium roof area. We have assumed a non-scaffolded approach, installing the atrium trusses by tower crane at 2 no/day the secondary beams at 4 no/day and 25m2 per day of glazing.

17. Glazing LG to L02

The start of this activity is held by the completion of the UG slab, which was skipped during the construction of the frame. The majority of the frame and glazing to the lower levels can be installed from this point. However, the 2 areas where the temporary support towers associated with the raking hangers are located will need to be cleared before the glazing can be completed.

18. Cat A fit-out/WCs included in the period

We have a standard duration of 18 weeks for a 15,000 ft2 zone of Cat A. We have calculated that the eastern section has 4 zones of Cat A on each of L02 to L08 inclusive, so in total there is a 21-week duration, say on L02 on this floor, with the floor above starting 4 weeks after this.

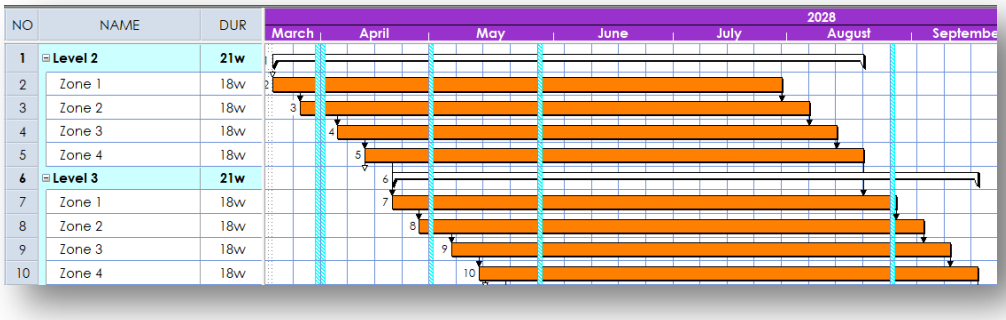


Figure 7 – Programme extract depicting typical 18 week Cat A Fit-out period

19. Library Fit-Out LG, UG & L01

This follows the installation of the Glazing between LG and L02, we have allowed 52 weeks for this element in the east, the precise nature of the fit-out still needs to be determined but we feel that 52 working weeks should be adequate for a broad range of finishes.

20. Roof Plantroom

3 weeks after the L11 slab has been cast, waterproofing and early finishes start, this goes on for 10w before the main plant is landed into position. Any plantroom close-ups precede a 20w services connection/plantroom fit-out period before the roof plantroom is ready to join in the commissioning process.

22. Commissioning

The commissioning strategy for the building has not been fully developed at this point. For the programme, we have assumed an 11-week activity that follows the completion of any area of the fit-out.

We also have a 6 month period that starts from the completion of the last main area of services installation of the following areas.

a. Roof Plantroom

b. Basement Plantroom

c. Risers

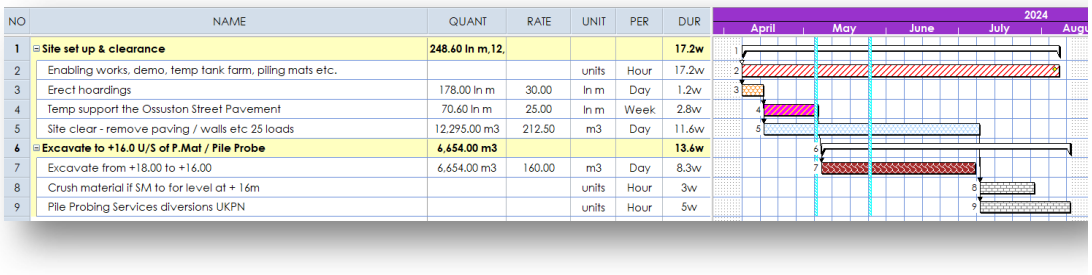
In the instance of this programme, the roof plantroom is the critical element.

23. East and West FF relationship

We have maintained a 21-week finish to finish relationship between the east and the west buildings. This achieves the previous completion date noted.

<u>Crossrail 2 (CR2) Deep shaft construction</u>

1. The enabling works contract is based upon the following activities, preceding the main contractor's access. If the timing can be improved, it would be better for these activities to be included within the main CR2 contract.



NO	NAME	QUANT	RATE	UNIT	PER	DUR
1	**Site set up & clearance**	**248.60 ln m,12,**				**17.2w**
2	Enabling works, demo, temp tank farm, piling mats etc.			units	Hour	17.2w
3	Erect hoardings	178.00 ln m	30.00	ln m	Day	1.2w
4	Temp support the Ossuston Street Pavement	70.60 ln m	25.00	ln m	Week	2.8w
5	Site clear - remove paving / walls etc 25 loads	12,295.00 m3	212.50	m3	Day	11.6w
6	**Excavate to +16.0 U/S of P.Mat / Pile Probe**	**6,654.00 m3**				**13.6w**
7	Excavate from +18.00 to +16.00	6,654.00 m3	160.00	m3	Day	8.3w
8	Crush material if SM to for level at + 16m			units	Hour	3w
9	Pile Probing Services diversions UKPN			units	Hour	5w

Figure 8 – Programme extract detailing enabling works

2. All secant to the west installed before the main deep shaft formation.
3. Secant piling carried out from +16.000m
4. The northern section of LG constructed top-down in this contract – linking up with the section in the east, provides uninterrupted access from Midland Road once the corresponding eastern section of the top-down has been built.

5. We have maintained the programme periods previously provided by the specialist, but we have applied quantities of materials and more detail to the programme to supplement the vehicle trip calculation required for the planning application. The main periods for the CR2 shaft construction are as follows;

- Site set up, shallower secant piling & excavation to main piling level 7 months
- Dewatering & Stage 1 Excavation +16.00m to B1 & Deep piles 6 months
- Deep excavation, RC works back to B1 17 months

Construction of the Western Building

The main logic follows the patterns and outputs of the preceding Eastern Building. The key links between the two are that the west starts with one tower crane to support the reinforcement fixing for B1. Then the west superstructure follows on the corresponding east superstructure.

So, for example the L06 slab in the west follows the L06 slab in the east. This logic provides a sensible workflow on site. Also, we have capped the number of tower cranes on the project to 4, so the west is dependent on hook time coming available from the east; this is linked to the superstructure programme in the east freeing up hook time for the west.

9. Please confirm the standard working hours for the site, noting that the standard working hours for construction sites in Camden are as follows:

- 8.00am to 6pm on Monday to Friday
- 8.00am to 1.00pm on Saturdays
- No working on Sundays or Public Holidays

The standard working hours for the site will comply with the requirements of 'Guide for Contractors in Camden' which for clarity are as follows;

- 8.00am to 6.00pm on Monday to Friday
- 8.00am to 1.00pm on Saturdays
- No working on Sundays or Public Holidays

There may be a requirement for work outside these hours for activities such as:

- Tower crane erection/dismantling works,
- Mechanical Plant delivery,
- Utilities / Statutory Connections,
- Services shut down and emergency repairs.

These activities may require working outside the standard working hours and should the need arise, prior communication with sufficient notice and suitable application for extension of working hours will be provided to local stakeholders / LB Camden.

Community Liaison

A neighbourhood consultation process must have been undertaken prior to submission of the CMP first draft.

This consultation must relate to construction impacts and should take place following the granting of planning permission in the lead up to the submission of the CMP. A consultation process specifically relating to construction impacts must take place regardless of any prior consultations relating to planning matters. This consultation must include all of those individuals that stand to be affected by the proposed construction works. These individuals should be provided with a copy of the draft CMP, or a link to an online document. They should be given adequate time with which to respond to the draft CMP, and any subsequent amended drafts. Contact details which include a phone number and email address of the site manager should also be provided.

Significant time savings can be made by running an effective neighbourhood consultation process. This must be undertaken in the spirit of cooperation rather than one that is dictatorial and unsympathetic to the wellbeing of local residents and businesses.

These are most effective when initiated as early as possible and conducted in a manner that involves the local community. Involving locals in the discussion and decision making process helps with their understanding of what is being proposed in terms of the development process. **The consultation and discussion process should have already started, with the results incorporated into the CMP first draft submitted to the Council for discussion and sign off.** This communication should then be ongoing during the works, with neighbours and any community liaison groups being regularly updated with programmed works and any changes that may occur due to unforeseen circumstances through newsletters, emails and meetings.

Please note that for larger sites, details of a construction working group may be required as a separate S106 obligation. If this is necessary, it will be set out in the S106 Agreement as a separate requirement on the developer.

Cumulative impact

Sites located within high concentrations of construction activity that will attract large numbers of vehicle movements and/or generate significant sustained noise levels should consider establishing contact with other sites in the vicinity in order to manage these impacts.

The Council can advise on this if necessary.

10. Sensitive/affected receptors

Please identify the nearest potential receptors (dwellings, business, etc.) likely to be affected by the activities on site (i.e., noise, vibration, dust, fumes, lighting etc.).

Figure 9 below indentifies potential receptors that are likely to be affected by the demolition and constrcution works proposed.

These are also tabulated to provide a summary of the receptor and the likely impacts.

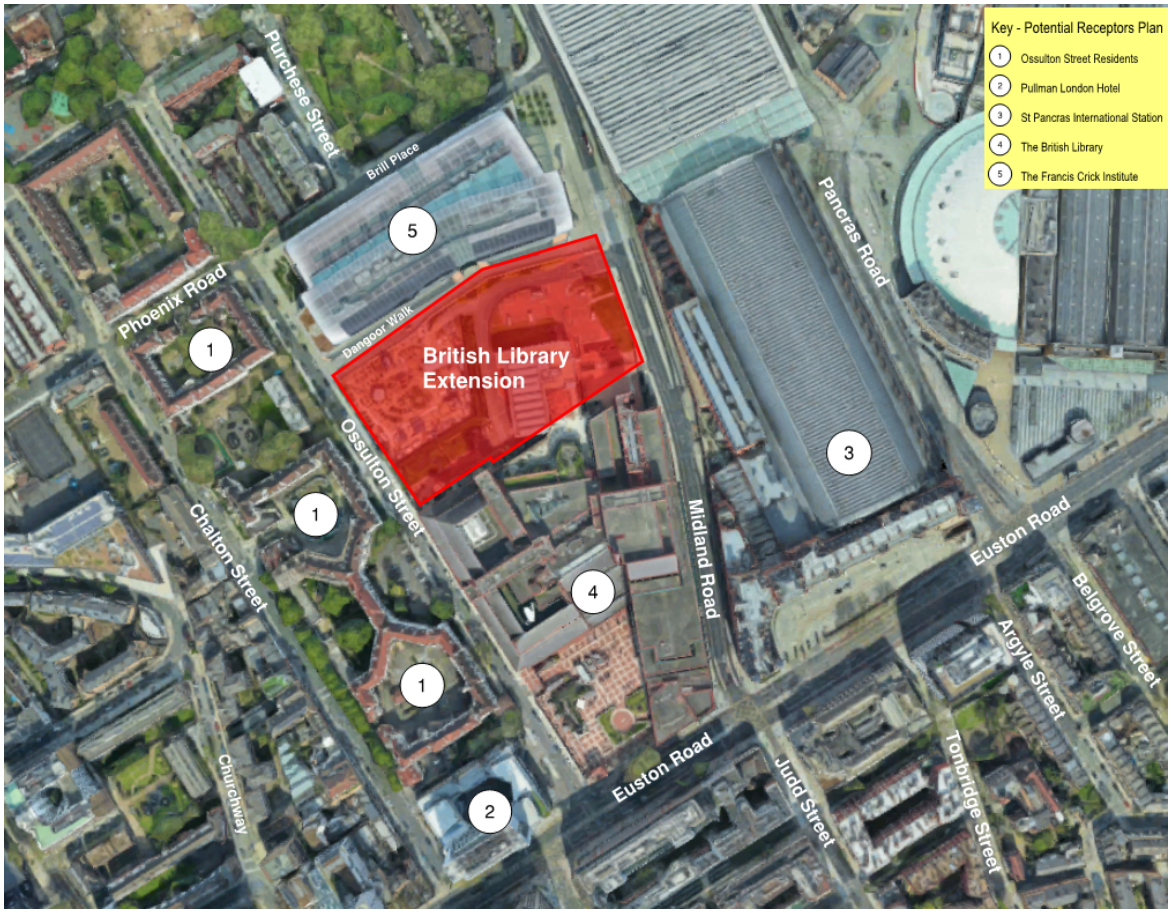


Figure 9 – Potential Key Receptor Plan