

Groundwater was found to be present between approximately 105 to 108mOD, flowing in a north westerly direction. Groundwater monitoring locations and results are presented in Figure 2.5 and Table 3.2 respectively.



Groundwater flow direction marked by blue arrows.

Figure 3.1 Groundwater mointoring locations

Table 3.2 Groundwater monitoring summary

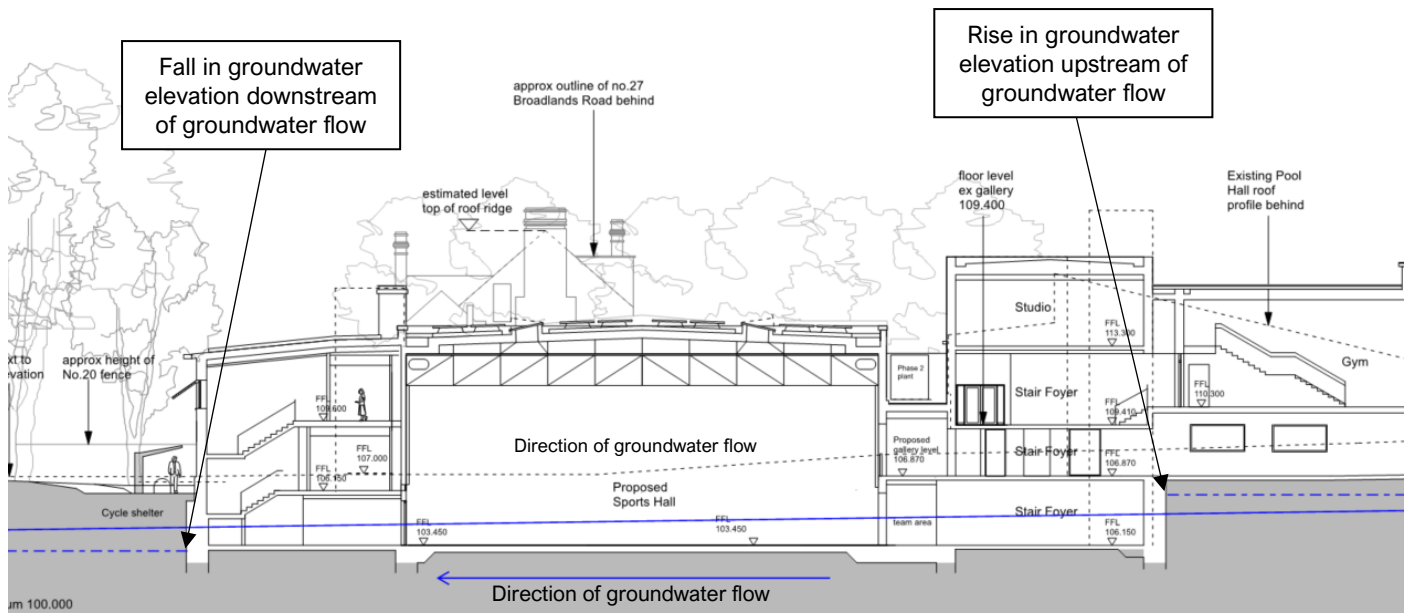
Location	Ground Level (mOD)	Groundwater Elevation (mOD)			
		08/08/2024	13/08/2024	21/08/2024	28/08/2024
WS02	106.7	104.96	104.92	104.95	104.98
BH01	109.1	106.67	106.64	106.32	106.62
BH101	105.7	-	-	-	104.07
BH102	106.8	-	-	-	105.54
BH103	108.1	-	-	-	106.54
BH104	109.9	-	-	-	108.19

4. Hydrogeological Assessment

4.1. Overview

The foundations, earth retention system and basement substructure elements will have an inherent impact on the groundwater regime within the Highgate Mallinson Sports Centre site footprint and overarching hydrogeological model of the area surrounding the site.

The key interaction mechanism and expected impact on groundwater and the hydrogeological regime is graphically presented in Figure 4.1. The proposed basement will form an obstruction for groundwater flow, causing it to flow around the development. This will lead to a rise in groundwater elevation upstream of the flow (southeast), and a subsequent fall downstream (northwest).



Existing groundwater level indicatively marked by solid blue line.

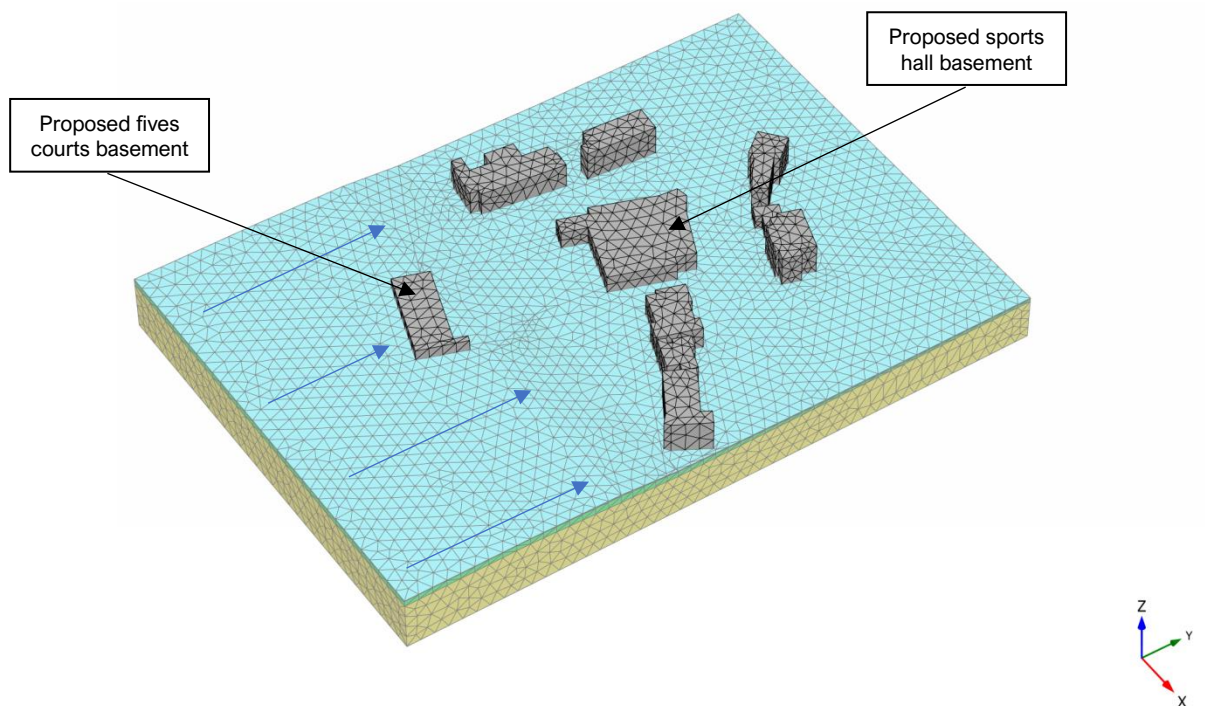
New groundwater level indicatively marked by dashed blue line.

Figure 4.1 Expected impact of the proposed basement on the hydrogeological regime

It is noted that the area where the sports pitch flood basin is proposed becomes waterlogged during winter months. In order to capture this, groundwater has been brought up to +109mOD here, although groundwater monitoring suggests a resting water table at +108mOD.

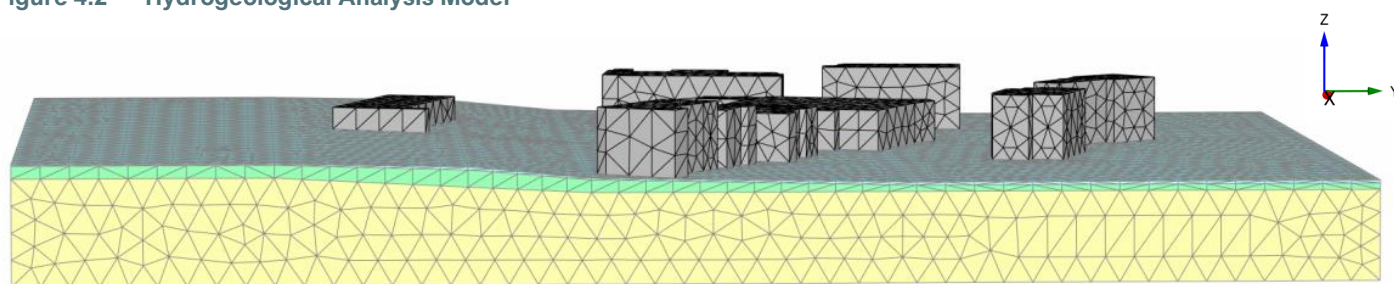
4.2. Hydrogeological Impact Modelling

The proposed basement and neighbouring properties have been modelled in Plaxis 3D geotechnical finite element analysis software. The proposed basements have been modelled to their true depth (3.7mbgl at the sports hall and 4.0mbgl at the fives courts), and the neighbouring properties have all conservatively been modelled with a 4m-deep basement in the absence of information. The purpose of the assessment is to determine the rise or fall in groundwater at the location of the neighbouring properties and capture a potential cumulative damming effect of the proposed basement and assumed neighbouring basements.



Direction of groundwater flow indicated by blue arrows.

Figure 4.2 Hydrogeological Analysis Model



London Clay and Claygate Member shown in yellow, Head Deposits in green and Made Ground in blue.

Figure 4.3 Hydrogeological Analysis Model Cross Section

The impact assessment output shows vectors of groundwater flow around the proposed basement obstacle, with a rise in groundwater head upstream of the direction of groundwater flow (southeast) and a fall in groundwater head upstream of groundwater flow (northwest). The maximum rise in groundwater head was found to be 77mm and the maximum fall in groundwater head was found to be 53mm at the location of the neighbouring properties.

Groundwater elevation plots pre- and post-basement construction are presented on Figure 4.4 which suggest that the wider hydrogeological regime will remain largely the same as its current condition following construction of the proposed basement.

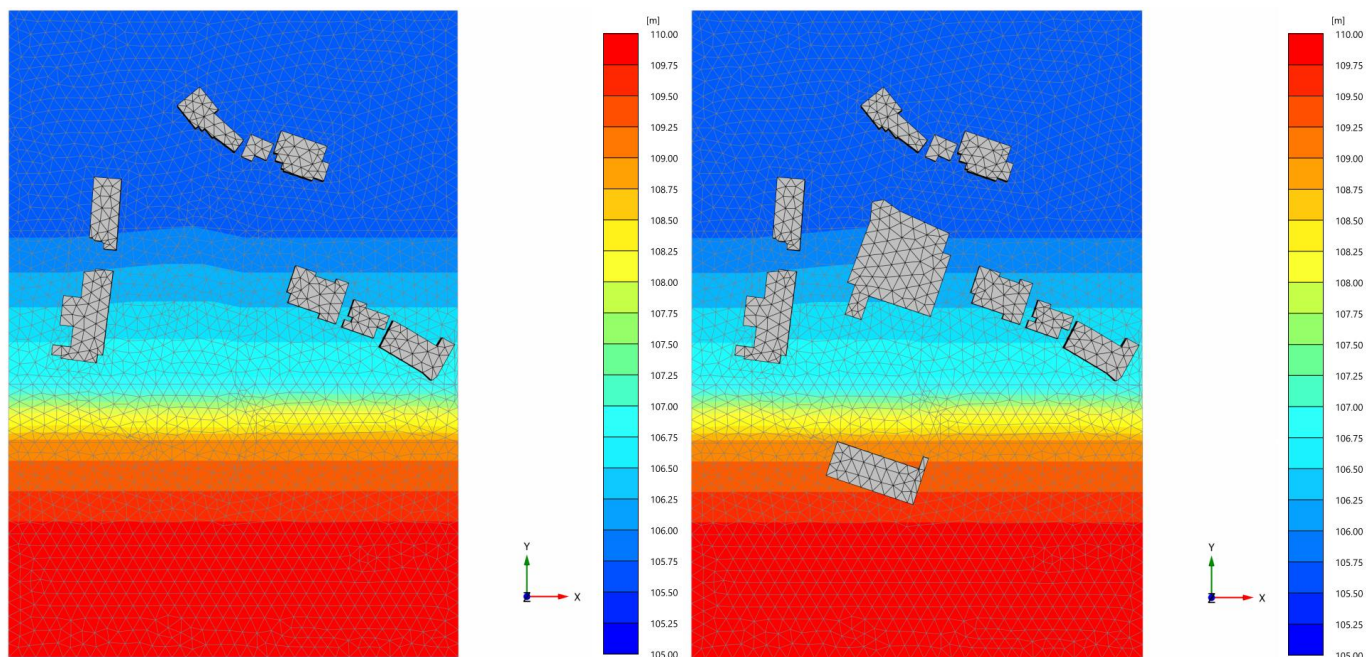


Figure 4.4 Predicted groundwater elevation (mOD) pre basement construction (left) and post basement construction (right)

5. Closing Remarks

The hydrogeological study report has been prepared in order to review the impact of the proposed Highgate Mallinson Sports Centre basement on the neighbouring buildings. The general topography across the site and groundwater monitoring data has been assessed in order to inform the evaluation of the ground model.

The ground model comprises Made Ground overlying Head Deposits, Claygate Member, and the London Clay Formation. The preliminary conceptual hydrogeological model suggests that any groundwater flows in a northwesterly direction.

A hydrogeological model has been built in Plaxis 3D finite element analysis software. The model considers the proposed basements at their true depth, and conservatively assumes that every neighbouring property has a basement of 4m depth in the absence of information.

The analysis showed that a rise in groundwater of approximately 77mm and fall of 53mm can be expected due to the construction of the proposed basement. It is concluded that the wider hydrogeological regime will remain largely the same as its current condition following construction of the proposed basement.



A-squared Studio

A-squared Studio Engineers Ltd

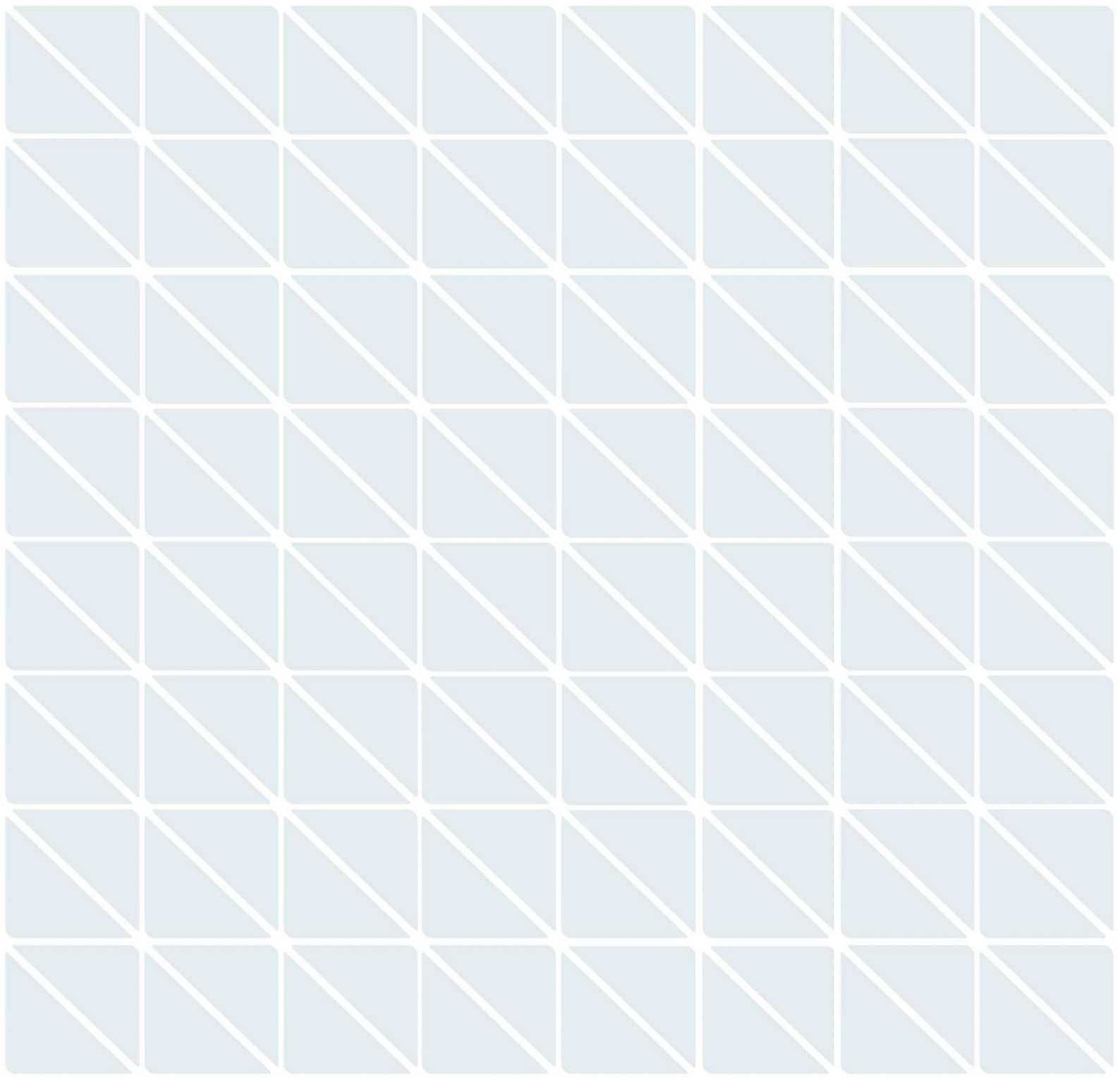
One Westminster Bridge Rd
London, SE1 7XW

020 7620 2868

contact@a2-studio.com

www.a2-studio.com

This document has been prepared for the sole benefit, use and information of Highgate School for the purposes set out in the report or instructions commissioning it. The liability of A-squared Studio Engineers Ltd in respect of the information contained in the document is as per the A-squared Terms & Conditions and will not extend to any third party. All concepts and proposals are copyright © September 2024. Issued in commercial confidence





Appendix I: Outline Construction Management Plan

Highgate School

Outline Construction Management Plan For Mallinson Sports Centre

August 2024

Delivering Quality | Safe & Sound



Contents

1. Executive Summary	3
2. Overall Programme	4
3. Programme & Logistics Commentary	7
4. Programme Assumptions	14
5. Risks & Mitigation	15
6. Waste Management	16
7. Noise & Dust Mitigation	17

Blue Sky Building

Level 5
7-8 Market Place
London W1W 8AG

T: +44 (0)20 7831 5950
E: info@blueskybuilding.com

www.blueskybuilding.com

REGISTRATION NO. 07816133

1. Executive Summary

Blue Sky Building was appointed to carry out a review of the construction programme and logistics for the phased refurbishment and extension of the Mallinson Sports Centre, on behalf of Highgate School.

This report considers the programme and logistics impact of the project. These proposals can be considered as an Outline Construction Management Plan for inclusion in the Planning Application Submission and subsequently to form the basis of detailed Plans by the Contractors when appointed.

The Mallinson Sports Centre project involves the improvement and extension of the existing sports facilities on Bishopswood Road.

The current facilities include a sports hall, swimming pool (currently being refurbished), fives courts and squash courts. The proposed works will replace the fives courts with new, freeing up space for a second sports hall and the refurbishment of the existing hall. An infill building that improves circulation between the retained buildings, plus a practice pitch complete the scheme.

An initial phase of works is currently underway to refurbish the swimming pool building. Those works are scheduled to be complete in 2019, before the commencement of the phases included in this report.

Programme Summary

Our Overall Summary Programme (section 2) follows the phasing included in the school's master programme. Forecast durations are based on what we would consider a realistic delivery programme against which Highgate School might consider to add contingency in overall development planning terms, and set shorter targets when procuring the works.

A key point will be discovery and evaluation of unknowns as they arise. Refurbishment and structural adaption of buildings carries risks of additional or prolonged works due to unexpected finds.

Building structures and services should be thoroughly explored and surveyed to the fullest possible extent that can be accommodated in the live environment before conclusion of designs.

Programme Periods

Our programme periods are based on the outline design currently available and will be subject to fluctuation as design develops. The allocation of works into phases should also be carefully considered, to ensure efficiencies of procurement where possible and to maximise the advance preparation to make later practical to build.

There will be works that can be approached with more vigour during periods of school closures and the final programme should take benefit of those occasions as far as possible. Care should be taken however not to rely too heavily on holidays, as long delays can accrue if time slots are missed.

General Deliveries

Construction access from Bishopswood Road is restricted for the scale of works involved, as car parking along its length limits accessibility. Early approaches to the local authority should explore what medium term parking restrictions might be implemented to improve vehicle movements and the safety of pupils and road users.

Some access is achievable via Broadlands Road, although the quiet nature of the road and extensive resident's parking are an issue. It will serve the early stages of the new sports hall construction but becomes of limited use once the basement starts to be executed.

Cranage & Logistics

Construction of the new sports hall, fives courts, and practice pitch all include some considerable excavations. Vehicle movements and sizes will need to be carefully planned to suit the pattern of vehicle and pedestrian use of the local streets. Also the site is edged by important trees which need to be considered in terms of lifting methodology.

We have offered suggestions of cranes and plant in the programme commentary but it will be essential that contractors are fully aware of the constraints at tender stage and are able to ensure that final designs are matched to methodology.

2. Overall Programme

Site Context

The Mallinson Sports Centre is separate from the central part of the Highgate School “island site” and has frontages on Bishopswood Road and Broadlands Road.

The site comprises a series of sports facility buildings which are to be refurbished and replaced. Although mostly given over to sport there is also some academic use of the site (the Music Centre) and more when temporary classrooms are positioned on the MUGA. The properties around the site are further academic use (Highgate Junior School) and high end residential.

Both roads are relatively quiet residential streets although they are heavily used for car parking and highly trafficked during morning and afternoon “school run” hours. Broadlands Road parking spaces are generally residents parking only but much of Bishopswood Road is uncontrolled and therefore very busy from early in the working day. Construction vehicle access is possible to both frontages, but vehicle size and timing will need strict control.

Logistics and Transport

Given the context of the site and the nature of the proposed works, deliveries to site and methods of materials handling will require detailed planning and consultation with the local authority and TfL, particularly for larger vehicles. The design of the buildings going forward should progress with due consideration of the limits on space, such that many components can be delivered in small, manageable loads.

Plant and craneage is also a consideration for the piling, basement and superstructure elements, where the design must be matched to methodology and plant sizing.

Site Establishment & Accommodation

The most economic site set up might depend on how the various phases of work are let. There would be potential economies if the projects were combined and site accommodation could be established in a single location or with limited moves. However, one location that suits all of the works is not easily identified and works are likely to be procured in phases. Consideration should be given to maintaining hoardings and site accommodation between phases where sensible to do so.

Phasing

Inevitably there will be a need to use school holiday times for key works that can best be done when there is less school activity.

Whilst it can be risky to schedule too many critical points to meet a holiday period the start and end of each major phase is best geared to holidays to ensure the smoothest transitions.

At commencement of each phase buildings and site areas need to be made safe and secure to a standard that meets CDM regulations. Remaining live services in the buildings or in the ground would be made safe and temporary power and water installations installed. Redundant services must be traced, isolated and identified as safe before temporary works, stripping out or breaking ground get underway. Fire and smoke detection should be adapted for site conditions, and to maintain live school areas.

Hoardings and gates will be erected as required to each site as each phase progresses.

2. Overall Programme

Summary Programme and Sequence

Our overall summary programme follows overleaf. The sequence is taken initially from the Scholl Master programme and durations are based on the outline design information and our assumptions.

A detailed breakdown of each individual phase appears in the next section of this document. We have not shown the refurbishment of the pool building that is currently in progress.

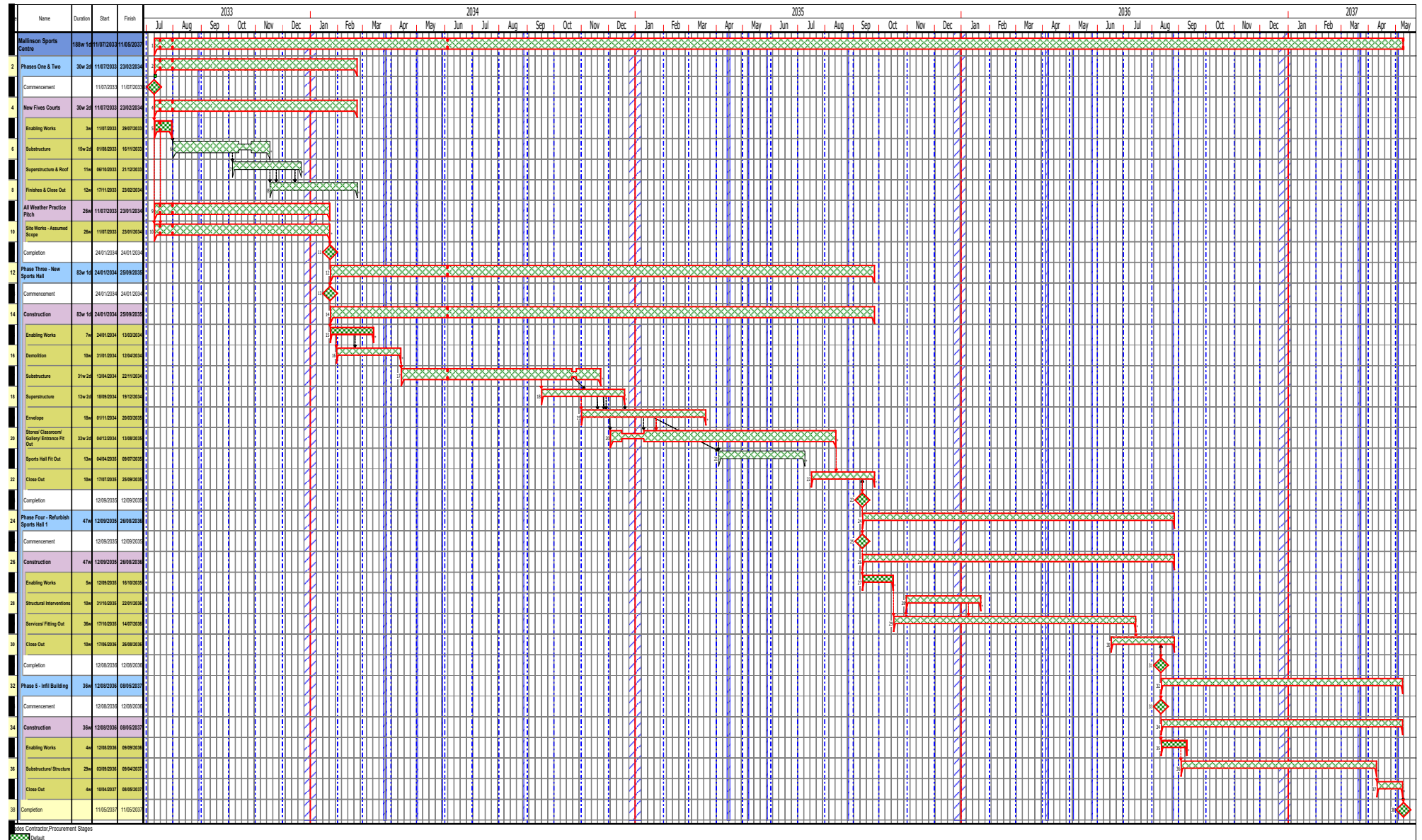
The key sequence identified is:

1. The construction of the new fives courts. This is required to be completed first in order to allow demolition of the existing courts which occupy the site of the new sports hall. Alternative facilities would be impractical, so the new courts are essential to be built first.
 - 1.1 Practice pitch. Although not essential to the overall sequence there is logistical sense in undertaking this landscaping exercise (with considerable lorry movements) in parallel to the Fives project, as they can share a gate and access road.
2. The new Sports Hall. This is the largest phase of construction requiring the demolition of the existing Fives courts and squash court building, plus the formation of basement space.
3. Refurbishment of the existing Sports Hall – which can be allowed to close once the new hall is brought into use.
4. The final phase – constructing the infill building between the Pool and existing hall.

Please refer to Overall Summary Programme Overleaf.

2. Overall Programme

Strategic Works Programme



3. Programme & Logistics Commentary

New Fives Courts

The site appears open and relatively clear of physical constraints. Consideration needs to be given to the ongoing access requirements for pupils moving to and from the ongoing sports facilities, versus the need for constructing vehicle access.

Currently pupils move backwards and forwards inside the boundary railing – which will cross the main vehicle access point.

This might be manageable during most of the construction works by managing the timing and marshalling of deliveries, although the number of vehicles during the bulk excavation stage will be high and will need priority. Pupil movements on the pavement outside the boundary fence (if they exist) would be similarly affected, but directing them to cross the road would be equally hazardous.

Service access to the rear of the sports hall would also be curtailed, although that could be managed through the building site with proper compliance to site rules.

A long term (for the duration of the Fives project) temporary access of crossover, fence removal and ramp would be needed, plus the arrangement of parking suspensions.



3. Programme & Logistics Commentary

New Fives Courts (continued)

The site offers the potential of a route through to the proposed Practice Pitch. The construction logistics for the two projects would benefit from some sharing of the route and timing. Alternatively, the pitch area could be a site for a temporary footpath to the existing sports facilities if access there can work.

We assume that the temporary classrooms will be in place on the existing MUGA when this project takes place, so foot traffic routes and volumes will be different to the current pattern.

Early enabling works will comprise forming the site with solid secure hoardings, gates and crossover onto Bishopswood Road. We would expect these operations to be manageable in term time with some limiting of work hours around school start and finish and class changeovers. With the site safely enclosed there may be some minor preparation of the sports hall wall (re-siting of camera brackets and the like) and checks for the location of the land drain and any unexpected underground services.

Site accommodation might be established locally, or in a centralised location (combined with other projects) or a combination of both. Site services for the works should involve taking power and water supplies from existing services in the vicinity (in preference to using generators and bowsers).

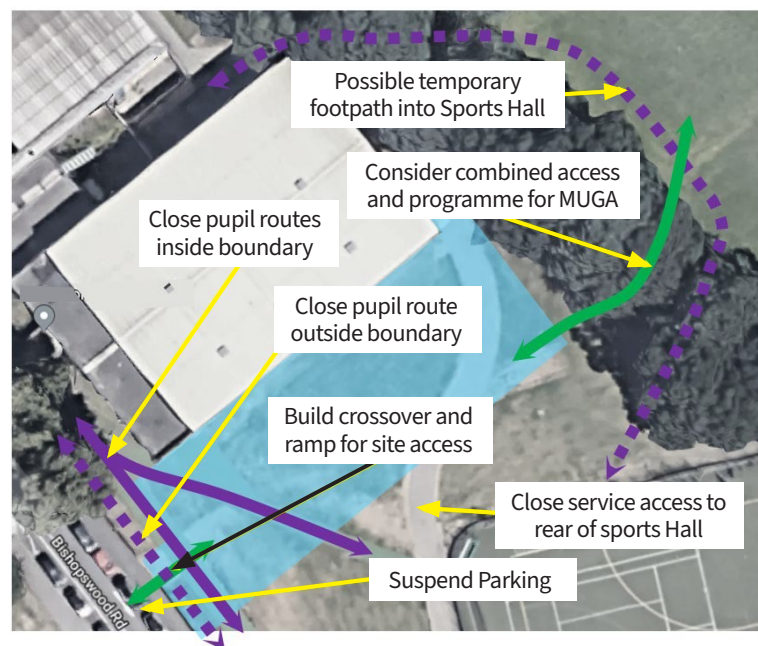
Substructure works involving piling, excavating and concreting will be 2-3 months of critical activity with the heaviest traffic flow. Plant would be sized as appropriate for the scale of project. The heaviest activities in terms of traffic and nuisance will be the bulk excavation and the concrete raft.

We have programmed the bulk dig as three weeks based on 10 x 8 wheel tipper trucks per day. The raft pour amounts to around 32 x 6 m3 concrete trucks and might be poured in two or three separate pours. Those operations should be manageable in term time but might be quicker if they happened to fall into holiday periods, when more lorries could be scheduled into the working day.

The superstructure and roof works timetable is governed by the brickwork element. We envisage a traditional approach with scaffold rising with the walls, four bricklayers, with ready mixed mortar delivered daily in tubs, and bricks delivered and offloaded by Hiab. Steelwork would follow closely behind, erected using a spider crane operating in close proximity to each lift, followed closely by roof decking and finishes.

Finishing trades are minimal, we assume, with lighting and small services only plus court marling and some decoration. We have identified when the substation would be available to commence fit out and assume that it is critical to later works rather than the Fives courts themselves.

The overall programme for the Fives courts we have identified is 30 weeks or around seven months.



3. Programme & Logistics Commentary

Practice Pitch

The location of the proposed Practice Pitch suggests that coordinating site logistics and timing with the Fives Courts would be beneficial. We have assumed the scope and some constraints pending further discussions but would suggest that the two projects share the same access road as described for the Fives Courts.

We have allowed in our timings for a fully boarded hoarding rather than fence in order to provide some protection against noise for the neighbours and temporary classrooms. Whilst there is no demolition or heavy construction there will be plant and lorries in operation throughout the working day.

It appears likely that the combined programmes could cause unacceptable peaks in traffic, especially during term time, if excavation of the pitch site coincides with concrete pours for example. Our overall programme of 27 weeks is presented without linking the two, subject to further discussion.

We assume there is space to create a temporary access road to the pitch alongside the new courts, but if that is not the case then the pitch might be better to be built entirely before the courts. We have also assumed that access is available for full size (eight wheel) tippers through the existing tree line. If this is not the case and small vehicles or dumpers are needed then the dig programme period will be lengthened.



The route through to the pitch area traverses the tree line

3. Programme & Logistics Commentary

New Sports Hall

Once the new Fives Courts have been commissioned and brought into use the existing courts can be closed and taken out of school use and prepared for demolition. The squash court building could possibly be taken out of use earlier, which would allow an asbestos survey to be done and early notification achieved.

We understand that an asbestos register exists and that relatively small levels of asbestos are likely to be present in the buildings. If not completed beforehand a full Refurbishment and Demolition survey would be carried out as soon as both buildings are vacant, with licenced contractors being appointed for removal, and formal notices submitted in due time to meet the programme.

Existing access gates will be closed, and hoardings erected to the full extent of the sports hall site, including the frontage of the refurbished swimming pool and as close to the existing sports hall entrance as possible, in order to maximise the scope of works. We propose site accommodation to be positioned behind the swimming pool, subject to suitability of the space and available drainage. That space could allow accommodation to remain in place for future phases. Sectional hutting could be used rather than cabins as the tree canopies could prevent lifting in of whole units.

The Sports Hall site has frontages on both Broadlands Road and Bishopswood Road, both of which are heavily tree lined. The proposed changes to landscaping, including some tree removals would best be carried out at the start of the project to maximise accessibility and to protect the trees.

Gates would be located on both frontages. Broadlands Road is the most suitable access point at the start of the works but becomes of limited use when the basement starts to be constructed. The construction of a larger gate and gantry at road level on Bishopswood road will provide a key access for loading muck away lorries by grab, once bulk excavation is underway.



Potential Broadlands Gate Position

3. Programme & Logistics Commentary

New Sports Hall (continued)

Demolition scaffolds will be erected around both the fives court and the squash court building while the interiors are stripped of all non-structural elements, including asbestos if found. Hard demolition will be a combination of dismantling of roofs and precast elements (the squash court walls for example), and breaking by a ground based 360o excavator fitted with shear and grapple jaws. There is enough space on the site for demolition waste to be sorted into recyclable waste streams before removal for processing. Concrete will be crushed and retained on site for use in a piling platform. All hardstandings and foundations will be cleared, and the site left graded to the required levels.

Local drainage diversions may be needed before piling can start to ensure that live facilities can continue to function. Temporary routes or over pumping may be necessary subject to surveys and completion of detailed design. A piling mat of crushed concrete using demolition waste augmented with imported material will be laid over the site area.

Our programme is based on a single piling rig, boring piles for the contiguous perimeter wall first, followed by load bearing piles.

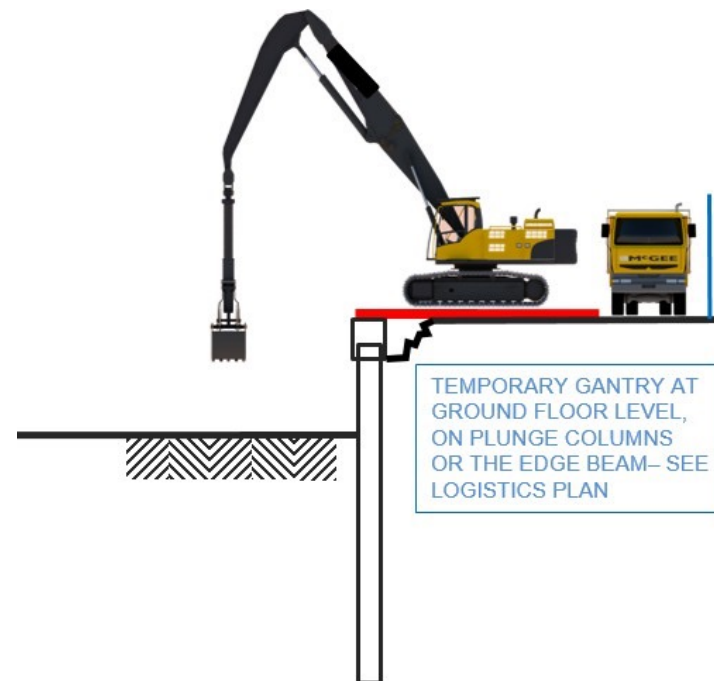
Piling should be sequenced to allow excavation of the deeper basement to commence while the piling completes towards the pool building. Concrete would be delivered by ready mix wagon and delivered directly to the point of placing for as long as possible. Later pours may need the addition of a concrete pump.

As the contiguous piling progresses the capping beam will be formed in sections. Piles inside the footprint would be blind bored and cast from ground level ahead of bulk excavation.

Bulk excavation material to basement level would be removed by grab to lorries parked off road on the Bishopswood Road. We envisage a steel gantry supported on plunge columns or the capping beam. Temporary propping is assumed to be minimal, limited to the deeper basement area.

As the bulk excavation completes, below slab drainage and slab preparation will proceed. Capping beam to the deeper basement and pile caps or ground beams will be cast first followed by the ground bearing slabs at basement levels.

Crane for the superstructure construction is difficult given the proximity of large trees around the site. A fixed tower crane would be difficult to erect and probably inefficient for the duration required and erecting the frame entirely by mobiles likely to cause damage to trees. We propose that a spider or self-erecting crane is delivered once the ground bearing slab for the main hall is in place and lowered into the basement using a mobile in Bishopswood Road.



Indicative Muck Away Arrangement

3. Programme & Logistics Commentary

New Sports Hall (continued)

The crane would operate inside the hall and may require Trackway or similar laying over the slab for additional load transfer and protection. Materials would be delivered in appropriate quantities via the gantry and erected using the internal crane. The sequence would need to be carefully managed working towards the gantry and the machine lifted out from the final bay. Our diagram shows a Unic battery powered model which has enough reach and is ideal for working inside as the space becomes more enclosed.

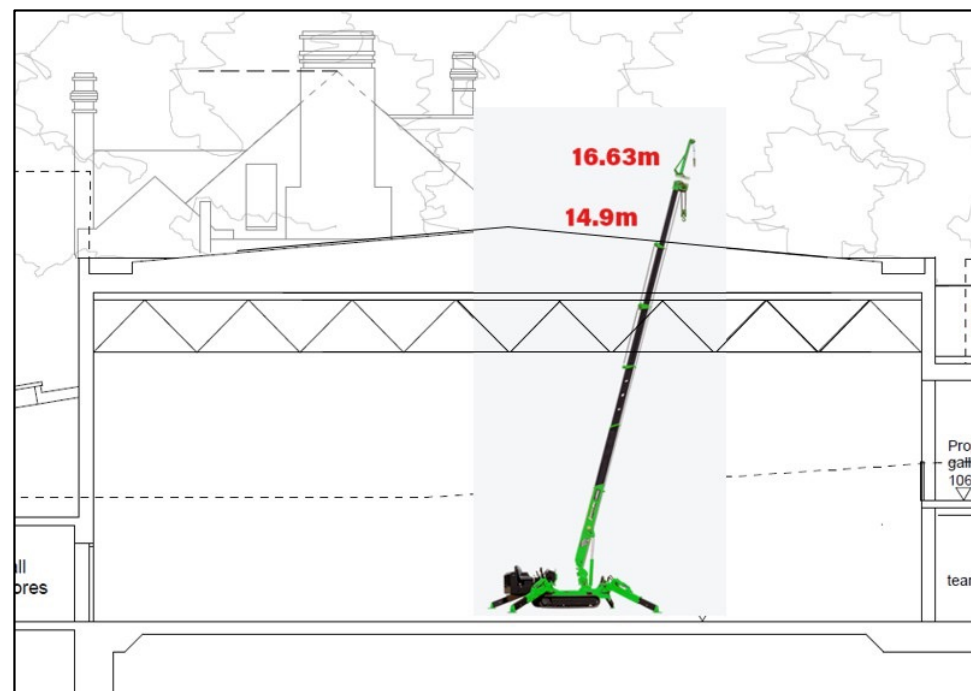
However, its capacity is quite low and a larger, diesel model could be needed depending on steel weights when design is further progressed.

The crane would remain in place to lift as many frame and envelope components as possible before removal. The building would be surrounded in external scaffolds with lifting beams, winches or platform hoists to move envelope materials vertically. The Broadlands Road gate would remain usable by smaller vans for material deliveries and the lay-by in the gantry location would stay for larger vehicles.

Fitting out of the large sports hall space would best be served by scissor lift platforms and consideration would be needed to what temporary arrangement can be made to get platforms of a suitable size down to that level. Alternatively, aluminium scaffold towers can be erected.

Occasional mobile crane visits will be required for roof plant deliveries, unless plant can be broken down into small components and assembled at roof level. Short term road closure of Bishopswood Road would be needed on each lift.

Finally, the scaffold is removed, and the external works completed by hand or using small machines.



Spider Crane

3. Programme & Logistics Commentary

Refurbish Existing Sports Hall

Once the new sports hall is commissioned and brought into use the existing hall can be closed for refurbishment.

Works would commence with the creation of a temporary entrance way that can serve the new hall and swimming pool. Further studies would need to prove the most appropriate route but exit doors should be able to be brought into use as the pupil's way in while the existing hall is out of use.

Internally entrances and corridors between the pool area and the older sports hall would be closed off with fire rated partitions to safely segregate the construction site from live areas. Services would be traced and isolated as necessary to make working areas safe. Some additional installation could be required in the early stages to keep the swimming pool and other areas live.

The works will be difficult to serve logistically as vehicles cannot easily enter the site. We have shown kerbside unloading with temporary barriers in place. Such arrangements would be timed to miss break times when pupils are traversing the area and would be sufficient for a light refurbishment scope. If the scope were to develop further, with a larger structural or envelope content then additional measures may be warranted, including constructing a temporary lay-by or a full pavement gantry.

Site accommodation could initially re-use the units installed for the new sports hall phase of construction or be located inside the existing building. Our logistics proposals include a full perimeter scaffold but that could be reduced to mobile platforms depending on the scope of works required to the external envelope.

A full Refurbishment and Demolition asbestos survey would be carried out as soon as the building is vacant, with licenced contractors being appointed for removal, and formal notices submitted for removal of some or all the asbestos material, subject to resolution of the full scope of works.

Our programme of 47 weeks is based on the known minor structural interventions of stairs and structural openings followed by a light re-servicing and re-decoration of the building. Internal works would be undertaken by traditional means using aluminium scaffold towers unless small MEWPs can be got into the spaces.

On completion of the works the new permanent entrance space would be opened up and prior temporary measures removed. Site set up, including accommodation and hoardings would be reduced to suit the final phase of construction.

Infill Building

The final phase of construction involves the completion of the infill building connecting the new and refurbished spaces centrally. The building may comprise some modular units, subject to further design development and buildability (lifting of whole units might be precluded by the access).

Our programme assumes that the building will be constructed from lightweight components, delivered in small quantities and offloaded at kerbside as for the Sports Hall refurbishment. We indicate that a pair of lifting beams linked by a roof walkway/ scaffold gantry could be employed to take material up and over the (in use) building below.

Any opportunity to complete difficult elements of work, including foundations and below ground drainage in parallel to earlier phases should be taken in order to make use of better access when parts of the centre are closed to users. Wet trades should be as limited as possible in the design.

4. Programme Assumptions

- No allowance for temporary accommodation or facilities for the continuation of sports activity.
- Contiguous pile wall is self-supporting cantilever with minimal temporary works.
- Progressive installation of rain water pipes and hoppers connected to permanent drain.
- New external cladding will comprise stick system curtain wall/ rendered panellised system. Inner skin assumed as Metsec or similar SFS system to allow early progress of fit out with outer skin progressing to non-critical programme.
- Logistics proposals acceptable to LBH for deliveries and craneage.
- Cladding and fit out materials selection can be procured in the time allowed.
- Fire strategy will be achievable to accommodate live school areas.
- Programme allows for removal of normal levels of asbestos expected for buildings of this age and type. Full R&D surveys to establish content and allow formal notices to be served before site start.
- No allowance for removal of contaminated spoil.
- All necessary permissions in respect to party wall agreements, rights of way etc. will be obtained to allow the programme to proceed as drafted.
- Programme is based on a working week Mon – Fri 08.00 to 18.00, Saturday 08.00 to 13.00.
- Planning & reserved matters can be dealt with within the proposed programme parameters.
- Noisy structural works, demolition and piling are allowed to be carried out in line with normal local authority timescales, i.e. minimum of four hours per day.
- Vacant possession of the sites means “all of the site” and no access or constraints will need to be considered other than those which are directly associated with the works. This also means that all loose FFE will have been removed.
- We have assumed that the extent of service terminations, isolations & reconnections required within the existing spaces, are restricted to those services affected by the proposed works. We have made no allowances for substantial upgrading, of incoming utilities.
- No allowance in the programme for any “down-time” associated with environmental matters.
- Crane licenses if necessary, for the over-sailing of buildings or highways will be granted.
- Procurement route has not been assessed. Start on site dates are as advised by Highgate School.
- Full rights of access assumed from Bishopswood Road and Broadlands Road.
- Refurbished building to be served from existing utility supplies or, at worst new connections to mains in the immediate vicinity. No allowance for external diversions.
- Existing sewer and drain connections assumed to be adequate for the new project.
- Highways and footways are capable of taking the temporary vehicle and crane loading.
- All statutory service providers to deliver services to allow the programme to proceed as drafted.
- Piling to the new sports hall to be undertaken from ground level.
- Frame is light section steel construction
- Roof structure to be metal deck plus traditional roof finishes.
- Stairs to be lightweight steel treads (Stairmaster or similar).
- No extensive tank construction or rainwater attenuation measures allowed for.
- No allowance for discovery and removal of munitions.
- No allowance for archaeological investigation.
- Fixed furniture included in contractors scope. Loose furniture, sports equipment and FF&E to be by school separately.

5. Risks & Mitigation

Key Risk / Issues	Mitigation
Substructure	
Foundation design (piles) and rig access to the site	Piling specialist input at an early stage to ensure the design is matched to a rig size and methodology that works with the site access
Excavation plant and accessibility for excavation of practice pitch area	Consider methodology and whether tree line can be retained.
Below ground services diversions delay substructure construction	Early identification of works required with intrusive surveys undertaken as necessary.
Superstructure	
Structural interventions to the existing sports hall building could extend the programme	Early intrusive structural investigations to inform the design and methodology.
Steel frame to new sports hall requires considered methodology and crane plan. Supply chain appreciation needed or risk of extended programme	Ensure clarity of site constraints in tender documents.
Temporary works loadings may not work for existing structure.	Establish loading constraints with Engineer prior to tender returns. Ensure tenderers have a workable solution in their returns.
General	
Full consideration of on-site, school and public health and safety at all stages of planning and execution.	Detailed risk analysis of site operations.
A strategy to minimise disruption to the school, local environment and adjoining properties/ owners.	Positive approach to neighbours – newsletters/site talks.
A methodology to secure the highest quality.	Samples/mock-ups prepared in advance and signed off.
Full consideration of both site and public health and safety at all stages of planning and execution	Detailed risk analysis of site operations
A realistic preconstruction period which provides the best input to the Client and Design Team	Ensure strategic programme and procurement route allows sufficient time to coordinate all aspects of the project
Provide above industry average facilities for the workforce	Make the site attractive to the workforce. Attract best tradesmen
Safe segregation of M&E services between site and occupied school areas	Early surveys and identification of services. Safe system of work throughout stripping out and construction phases.
Multiple phases could be procured singly, for economy of scale but subsequent delays between phases could then be expensive	Consider procurement routes and include cost options or escape routes from contracts

Key Risk / Issues	Mitigation
Logistics / LBH & Neighbours	
Demolition and piling impact for noise and general disruption to neighbours and school functions.	Contractor to ensure environmental monitoring is in place and a robust demolition plan is agreed with LBH and neighbours.
Works to build temporary classrooms clashes with access to Fives Court construction leading to delays	Early alignment of programmes. Contingency plan for late works.
Hours of Work conflict between LBH, neighbours and school.	Beware conflicting desires for noisy work times. Contractor to ensure pre-agreement before finalising programme.
Gate accesses not agreed	Consider alternative access strategies and potential alternative methodologies as a contingency plan.
Welfare location unavailable	Make a contingency plan for the projects that meets programme strategy and dates
Oversailing agreements restrict crane operations	Review crane positions and make early approaches to neighbours if required
School Access impacted by construction	Early agreement of delivery strategy with school and regular review with contractors
Continuity of Building Services to school and neighbouring property.	Ensure before services are terminated that all systems are truly separated and will continue to function.
Construction deliveries too disruptive or dangerous to ongoing school activities and movements	Agree vehicle slots for school use separately to contractor. Agree phased parameters of closing in hoardings with due attention to CDM requirements. Use lessons learned from Pool contract.

6. Waste Management

Site Waste Management

The Contractor will use working methods that minimise waste. Any waste arising from the site will be properly categorised and dealt with in accordance with appropriate legislation.

Opportunities for re-using or recycling construction or demolition waste should be explored and implemented.

The Contractor will carry out the works in such a way that, as far as is reasonably practicable, the amount of spoil and waste (including groundwater, production water and run-off) to be disposed of is minimised.

The disposal of all waste or other materials removed from the Site will be in accordance with the requirements of the Environment Agency, Control of Pollution Act (COPA), 1974, Environment Act 1995, Special Waste Regulations 1996, Duty of Care Regulations 1991 and the Waste Management Regulations 2011.

In general, and in accordance with the principles of the UK Government's 'Waste Strategy 2010', a principal aim during demolition and construction will be to reduce the amount of waste generated and exported from the Development site.

- This approach complies with the waste hierarchy whereby the intention is first to minimise, then to treat at source or compact and, finally, to dispose of off-site as necessary. All relevant Contractors will be required to investigate opportunities to minimise and reduce waste generation, such as:
- Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme.
- Implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste.
- Attention to material quantity requirements to avoid over-ordering and generation of waste materials.
- Re-use of materials wherever feasible (e.g. re-use of crushed concrete from demolition for the piling platform; re-use of excavated soil for landscaping).

- The Government has set broad targets of the use of reclaimed aggregate, and in keeping with best practice, Contractors will be required to maximise the proportion of materials recycled.
- Segregation of waste at source.
- Re-use and recycling of materials off-site where re-use on-site is not practical (e.g. through use of an off-site waste segregation facility and re-sale for direct re-use or re-processing). Our expectations in this regard are shown in the table opposite.

The Contractor's CEMP is to include the full environmental management requirements and Site Waste Management Plan.

Material	Target	Probable Location
Architectural salvage	100% re-used	Several architectural salvage companies in London.
Metals	100% recycled	Every effort will be made to recycle these materials on site with any surplus being taken to waste transfer station.
Hardcore (brick/block/concrete etc.)	100% recycled	To be crushed on site and reused in the piling mat and used as inert fill after removal from site.
Excavated material/clay etc.	100% recycled	100% processed for re-use as fill (subject to analysis).
Timber	Up to 85% re-used	We will attempt to salvage any re-usable timber for hoardings, battening, shuttering etc, for possible use on site with the balance being retained by the Contractor.
Mixed waste	The amount re-used will depend on the material	An absolute minimum will remain for transport to landfill.
Asbestos	100% landfill	Taken to a licensed site.

7. Noise & Dust Mitigation

The Contractor will monitor and control levels of noise and vibration from the site.

Measures for reducing such levels are set out in this section. A prior approval via Section 61 of the Control of Pollution Act 1974 is proposed.

Noise Control

The Contractor's environmental team will undertake a noise assessment using noise-predicting software that projects noise levels at adjoining properties based on the emissions made by specific equipment. This noise assessment will be carried out in accordance with BS5228-1: 2009+A1: 2014 'Code of Practice for noise and vibration on construction and open sites'.

This assessment allows the Contractor to select the most appropriate plant, methodology and controls to minimise disruptions of buildings at close proximity of the adjacent structures (sensitive receptors) and in particular the neighbouring residents, during the demolition and structural work phases.

Noise levels will be monitored by the Contractor during the course of the works. Haringey Borough Council shall be given access to all noise readings if required as soon as they become available.

Although the noise levels to be included in a formal agreement between the Contractor and Haringey Borough Council are the maximum to be allowed, at sensitive locations the Contractor will be requested to achieve, where practicable, noise levels lower than the specified limits.

Noise Control Provisions – Screens and Scaffolds

Throughout the demolition and structural stages all works will take place behind an encapsulation scaffold clad in fire rated Monarflex sheeting (or similar).

The encapsulation scaffold provides the following benefits during the demolition construction stages of the works:

- It acts as a visual screen hiding the on-going works.
- Dust arising will be contained.
- With the use of the sheeting, (and the addition of acoustic blankets near particularly sensitive locations) noise is contained.

The encapsulation scaffolding will be erected before any of the demolition works commence. The scaffold will then be struck progressively in line with the demolition sequence, remaining one lift above the working floor throughout the demolition works.



Monarflex Encapsulation Scaffold



7. Noise & Dust Mitigation

Vibration Control

The measures taken to reduce the acoustics of these operations will assist in mitigating the effects of vibration on neighbours, their property and the existing building to be retained.

A digital seismograph measuring device will be used to measure the amount of vibration produced during these works. Where elevated levels are recorded the source will be investigated and, where possible, alternative techniques employed to reduce the levels.

The Contractor will comply with the vibration levels established by agreement with Haringey Borough Council.

Air Quality

The Contractors will, as far as reasonably practical, seek to control and limit emissions to the atmosphere in terms of gaseous and particulate pollutants from tools and equipment used on site and dust from construction activities.

The site activities will be assessed for the control of dust & emissions during construction & demolition. The contractors must submit a statement to Haringey Borough Council for approval identifying proposed dust control measures before work starts. Special precautions must be taken when materials containing asbestos are encountered.

Throughout the project, the Contractor will ensure the following:

- Where potential dust producing activities are taking place, the screens remain in position. This will include all demolition, piling, excavation and structural works.
- There is no burning of waste materials on site.
- There is an adequate water supply on the site.
- Disposal of run-off water from dust suppression activities and cleaning is in accordance with the appropriate legal requirements.
- All dust control equipment is maintained in good condition and record maintenance activities.
- Strip inside of the building before any demolition of the structure and envelope.

- Site hoarding, barriers and scaffolding are kept clean.
- Loading of material into lorries within designated loading area.
- If necessary, clean public road and pavement using wet sweeping methods.
- All vehicles carrying loose or potentially dusty material to or from the site are fully sheeted.
- Minimise the amount of demolished or excavated material held on site.
- Sheet, seal or damp down unavoidable stockpiles and skips of material held at site, where required.
- Avoid double handling of material wherever reasonably practicable.
- Ensure water suppression is used during demolition operations.
- Use enclosed rubble chutes and conveyors where reasonably practicable or use water to suppress dust emissions from such equipment.
- Sheet or otherwise enclose loaded bins and skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Use prefabrication of goods and materials to reduce the need for grinding, sawing and cutting on site wherever reasonably practicable.
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
- The engines of all vehicles delivering to site are not left running unnecessarily to prevent exhaust.
- That conveyor equipment will be well maintained, with regular servicing and maintenance carried out.
- The Contractors will ensure that dust monitoring will be carried out during potential dust producing activities. The assessment will look at the dust raising potential of construction activities proximity to potential receptors and the duration of construction activities at each location.
- No materials produced as a result of the site development or clearance shall be burned on site.

Introducing Blue Sky Building, Founded On Excellence

Who We Are

In 2012, Julian Daniel, our Founder and Managing Director spotted the opportunity to create a company of his own, Blue Sky Building, which would embody the enthusiasm and passion he feels for the industry.

Blue Sky Building is an innovative construction management company which delivers unique solutions. Our founding directors boast a combined experience of over eight decades, uniting their background in the delivery of bespoke construction with the expertise and skills needed to manage complex engineering and construction projects, particularly in the midst of the kind of city centre environment prevalent in London and the South East.

We act as a trusted collaborator, setting the kind of standards other constructors aspire to, by offering our clients quality, professionalism and innovation. We've built our reputation upon offering a bespoke service each time, tailored to meet the individual needs of each client.

We know our industry and understand how the construction process works. We study our clients' business and we understand the wider business climate, bringing all three together in a pursuit of excellence which is as relentless as it is refreshing.

At Blue Sky Building, no resource is more valuable than the people charged with delivering our vision. The principles we work around are excellence, quality and safety and the values underpinning our work are intelligence, honesty, integrity and trust.

We have been responsible for some of the most complex and challenging projects in the UK, carried out for a number of prestigious clients in conjunction with their professional consultants.

Our Promise

- A focus on the client;
- Clarity of leadership and direction;
- Accessible and practical advice;
- Input and ownership up to Director level;
- Appropriate and timely communication;
- Simple solutions to complex issues;
- Advice which is independent and maintains the integrity of the clients' procurement process;
- In depth knowledge of the market and links to key trade Contractors; and
- Value added throughout - from design, through procurement and on to construction

Some of our Clients





Blue Sky Building

Level 5
7-8 Market Place
London W1W 8AG

T: +44 (0)20 7831 5950

E: info@blueskybuilding.com

www.blueskybuilding.com



A-squared Studio

A-squared Studio Engineers Ltd

One Westminster Bridge Rd
London, SE1 7XW

020 7620 2868

contact@a2-studio.com

www.a2-studio.com

