

GLA Circular Economy Statement

Written Report

Highgate School MSC



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GLA Circular Economy Statement

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Introduction

Highgate School has appointed Eight Versa to provide a Circular Economy Statement for the Greater London Authority (GLA) detailed planning application.

This statement sets out to meet the London Plan 2021 Policy SI 7 'Reducing waste and supporting the circular economy'.

The statement shows that the development is in line with the London Borough of Haringey strategic policy SP4 'Working towards a low carbon Haringey'.

The Circular Economy Statement has been developed using the 'London Plan Guidance for Circular Economy Statements' issued in March 2022.

The purpose of this document is to outline actions taken to incorporate circular economy into the design of the new development. It sets out how circular economy principles, design approaches and the concept of building in layers have informed the design.

This document should be accompanied by the following supporting documents:

- Pre-Demolition and Pre-Redevelopment Audit (KaNect, October 2022)
 - Bill of Materials (Cost Estimate by G+T)
 - Operational Waste Management Note (KaNect September 2022)
 - WLC Report (Peter Deer and Associates, October 2022)
 - GLA CES template (Eight Versa, December 2022)
- Including recycling and waste reporting, building weight calculations & recycled content.

The scheme comprises the redevelopments of the Mallinson Sports Centre (MSC), Bishopswood Road, Highgate. The total GIA of the retained existing and proposed new development is 5,873 m².

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The Scheme

Description of Site

The scheme comprises the redevelopments of the Mallinson Sports Centre (MSC), on Bishopswood Road, Highgate. The site is located in the London Borough of Haringey.

The redevelopment is being carried out in four phases and includes the refurbishment of the existing buildings, extensions, and a new building, to create a single sports centre. Phase one has been completed in which the Pool Hall has been refurbished in 2020.

The existing structures comprise of:

- The main MSC building which includes the pool hall, main sports hall, changing rooms, entrance hall, gym, centre offices and other sports spaces
- Fives courts building
- Squash courts building

The redevelopment of the MSC includes:

- Refurbishment works to the existing sports hall and main building.
- Demolition of the Five Courts and Squash building.
- Construction of a new sport hall, teaching classroom and staff offices on the site of Five courts and Squash building.
- Construction of new extensions for studios, main entrance, café and circulation areas, and new outdoor covered Five Courts.
- Landscaping works of the Orchard Site playing field.

The total GIA of the MSC Sports Centre (including retained existing and proposed new development) is: 5,873m².

The Use Class of the development is for indoors sports, recreation, or fitness: E

A plan of the ground floor of the proposed MSC sports centre is shown in Figure 1.

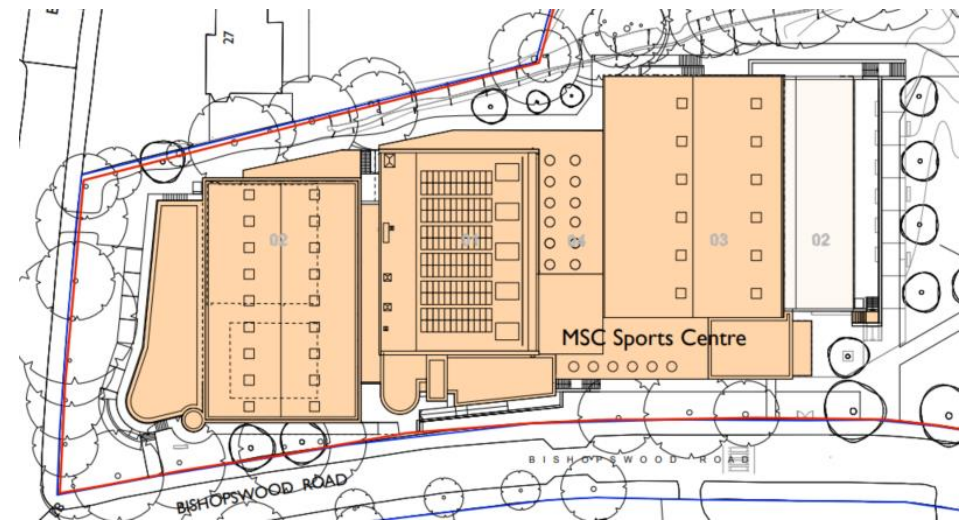


Figure 1: Proposed ground floor plan

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Approaches Adopted for Circularity

The circular economy design approaches can be found in the GLA CES template and are summarised below.

Existing structures design principles

The main design approach for the existing structures is *partial retention and refurbishment*. Initial design studies have considered a complete demolition and new build. Since then, the school and design team have made significant efforts to incorporate circularity in the new development, choosing the direction of retention and refurbishment, where possible. An estimated 80% of the original structures will be retained.

Initial work to the sports centre has been carried out in 2020, during which the pool hall has been refurbished. The end-of-life of the existing structures have therefore been extended to match the new constructions.

The aim is to continue to retain essential elements of the existing structures that have long-term value and to provide spaces that are up to the current technical standard. The existing structures, with alterations and extensions plus the new structure will be integrated into a whole, single sports centre.

To assess which elements and materials could be retained, a Pre-demolition and a Pre-development Audit has been carried out. The following has been concluded:

- Main MSC building: Significant quantities of carbon-heavy elements of the building are retained in place, such as foundations, structural frame and external walls.
- The Squash building and Five courts are in poor structural condition and not up to current standards. These structures will therefore be demolished.

Specific attention has been paid by the design team to divert waste arising from the demolition and refurbishment works from landfill. The aim is to reuse as much waste as possible on-site and integrate the materials into the overall wider redevelopment scheme of the school.

As part of the external works, the sports field playing surface at the Orchard site will be developed to also function as a flood basin to store water in case of future flooding events. The playing field is therefore designed with grass banks, requiring landscaping and material for backfilling.

The design of the grass banks around the playing field and landscaping works have created an opportunity for the following materials to be crushed, downcycled and reused on-site as backfill:

- Brick waste is to be crushed to aggregate. Whole bricks could be reused in the landscaping.
- Concrete blocks are to be crushed to aggregate
- Clay/soil from the basement excavation
- Glass is to be separated and crushed on-site and used either as backfill or other landscaping.

Other waste materials will be reused and recycled off-site. Potentially, the roof structure of the Squash courts building could be recycled. For more detailed information on how each material will be disposed of, see the Pre-demolition Audit and Pre-Redevelopment Audit in the Appendices.

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New structures design principles

This section will give a summary of the circular economy approaches applied to the new structure. These are further explained in the CLA CES template.

The new structures consist of the following:

- New dry sports hall, with basement, classrooms, and offices on the site of the Five courts and Squash building.
- New dance studio extension between swimming pool and dry sports hall.
- New extensions for studios, main entrance, café and circulation areas, and new outdoor covered Five Courts.

Building Relocation

Due to the design of the steel posts and beam structure of the new sports hall, there will be opportunities for building relocation at the end of life. The structure makes use of mechanical fixings that allow disassembly. The structure could therefore be disassembled into components, transported, and rebuilt on a different site.

Component or material reuse

As stated in the previous section, waste materials arising from the demolition will be downcycled and directly reused on-site as aggregate and soil for the Orchard Site playing fields. The possibilities need to be determined by the design team

Design for Longevity

The strategy for longevity is to design with durable, high quality and low maintenance materials. The substructure, main structural components, and brick façade have a long-life expectancy. The secondary components such as windows, doors and louvres are of high quality and capable of retaining their value. The external works and internal spaces have also been designed for minimal maintenance to minimise and mitigate the need for premature replacement of components.

Design for Adaptability and Flexibility

The substructure and main structural elements have been designed for longevity; therefore, as these structures have a long-life expectancy, the development needs to be able to adapt to any future alterations, rearrangements or additions to suit other uses or patterns of use.

The steel structure of the sports hall has been designed as a large space frame with little interior support. The large open space makes flexibility of internal structures and fit out possible, as they have no structural, load bearing function. The CLT floor panels and the drywall partitions are easily moved and removed. The building services are easily accessed and replaced. The equipment is modular and can be adjusted according to the user requirements.

Design for Replaceability

The design team has considered facilitating the replacement of materials and components. The facades are constructed of steel, brick, and windows. The windows are replaceable to meet the needs of future new standards and uses. Damaged bricks are easily replaced. Internal blockwork/drywall partition walls could be disassembled and replaced to comply with the new required standards and uses. The building services are designed to be accessible, adjustable, and easily replaceable.

Design out waste

The team has worked closely to ensure that waste is designed out at every stage. Waste arising from the demolition and refurbishment of the existing structures has been minimised by reusing the existing structures.

The main principles that have been applied to minimise waste from production and construction is by reusing as much material as possible on-site. This reduces waste from product sourcing, transportation, and construction. The site waste management plan will also include procedures and commitments to sort and divert waste from landfill

Waste arising from operations are to be reduced by setting waste targets for the school. To achieve the targets, the school has a waste management strategy and a waste policy. The facilities management team monitors operational waste and are actively working to reduce the waste sent to landfill. Waste streams are carefully separated and sorted using signage and different bins and bins stores.

Demolition waste is reduced by choosing materials for the new structures that are reusable or recyclable at the end of life.

Opportunities to reduce embodied carbon emissions have been explored. An options appraisal of three main structures for the new sports hall have been carried out. See the WLC report in the Appendices.

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End of Life Strategy

An end-of-life strategy is required as per section 4.7 of the GLA Circular Economy Guidance. It includes the end-of-life strategy for the entire development and assumptions on end-of-life scenarios for the main building elements.

The End-of-Life Strategy of the development

The development has been designed for longevity and is expected to have a life span of over 100 years. As the development has a long-life expectancy, it should be able to anticipate and absorb future changes with regards to function and standards. The building design allows ease of future refurbishment and enables the reuse of materials at the end-of-life stage of installed products.

Communication and storage

It is essential that the End-of-Life strategy is communicated to the future building owners, managers, and occupiers. The school has a large estate maintenance and project management team and is an experienced building owner with a resource of construction knowledge.

A H&S file and O&M maintenance guide, records of the development will be kept including as-built drawings, guidance in product specifications and drawings of elemental interfaces that clarify means of disassembly. This will facilitate the building deconstruction at the end-of-life.

The school has a large estate maintenance and project management team that will store the files on site and in the school's cloud-based storage system.

Design for repair, refurbish, refit and end of life

The following points summarise the key building elements and their functional disassembly features, how they should be repaired, replaced and what the end-of-life scenario is.

Structural frame

- The steel columns and beams have mechanical fixtures and can be disassembled, reused, or recycled at the end-of life. Larger elements, such as trusses can be disassembled into individual elements for reuse/recycling. The structural grid allows reconfiguration of the entire layout and therefore could be reused in a future redevelopment with similar use requirements, such as warehouses, covered markets, storage depots etc.

Floor slabs

- The mezzanine floors are constructed with a primary steel structure, a secondary timber structure and modular plywood floor decking/CLT panels. As these elements are internal and coated, they will require little maintenance or replacement. The elements are expected to be directly reusable at end of life, due to the standard sizes of the slabs. The elements are also recyclable.

Cladding

- Bricks have been specified as the main cladding material to match the surrounding aesthetics. Benefits are that they are readily and locally available for replacement and have a high degree of durability. The lime-mortar allows for the bricks to be disassembled and directly reused as whole bricks at their end of life.

Insulation

- Rockwool/mineral wool insulation has been chosen over rigid insulation, as the batts are easily removable and could be directly reused or recycled.

Parapet wall coping

- Portland stone copings and aluminium copings will be used for the external walls. Portland stone is extremely durable and easy to repair due to a high quality and detailing. At the end of life, the stone can easily be disassembled due to the lime mortar. Aluminium copings could be reused as a whole unit or recycled.

Windows

- Windows will be double glazed, aluminium framed. The windows are to be of high quality, requiring minimum maintenance. The window units could be directly reused in another development at the end of life and would require only minimal upgrades to seals and coating. Aluminium and glass can both be recycled or downcycled.

Roof panels

- The primary roof structure is steel, and the secondary structure is timber. CLT panels are being considered. Timber joists can be reused directly at end of life or reused in other timber products.

External louvres

- The external solar louvres are proposed to be aluminium with stainless steel fixings. The materials are durable with low maintenance and are easily replaced or adjusted. Aluminium louvres can be reused as a complete element at the end of life.

External metal handrails and balustrades

- The balustrades will be constructed of metal, glass, and timber capping elements. As these components have a site-specific configuration, it will be difficult to reuse as an entire element at the end of life. However, when disassembled, steel, glass and timber can be readily recycled.

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Recycled content & Construction waste targets

According to policy requirement, 20% of the building material elements are to be comprised of recycled or reused content.

The targets for waste efficiency and diversion from landfill are stated below. These are the minimum waste policy requirements.

- Diversion from landfill for reuse, recycling or recovery:
 - o Demolition: 95% tonnage
 - o Excavation: 95% tonnage
 - o Construction: 95% tonnage

It is expected that the contractor will monitor and record waste, water and energy use on site which will assist them in maximising efficient use of resources. It is also expected that the main contractor will minimise the quantity of waste sent to landfill. This will be supported by:

- Pre-demolition audit (PDA) – an analysis of existing structures being considered for demolition.
- Site Waste or Resource management plan (RMP) – A management plan for waste from demolition, excavation, and construction with targets for efficiency
- Diversion from landfill records – Waste must be recorded for different waste streams and targets for diversion from landfill must be achieved.

Anticipated recycled content & waste quantities

For the CES template, the estimated Bill of Materials has been used to calculate the quantities of the main types of materials and considers the demolition of the previous structure and the newly added structures. Figure 2 shows a list of the main material types and the assumptions used in the estimation of waste arisings from the development.

The total weight of the materials in the new structures (cell F445 without demolitions works from existing building) can be found in the GLA CES template and is 6,498 tonnes.

The assumptions for the end of life are based on RICS default values if unknown. The construction waste factor and recycled content are based on OneClick default values of specific or generic materials used in the WLC assessment. Please refer to the GLA CES template for the waste arisings in tonnes.

It is likely that the development will aim to have a higher recycled content than the industry averages. However, it is difficult to determine at this stage without knowledge of the specified materials and products.

Material Type	Assumption for end of life	Recycled content by mass	Construction waste factor
Aluminium	57% Recycling 43% Other disposal	35%	10%
Asphalt & bitumen	100% Special disposal method	0%	10%
Bricks	95% Recycling 5% Other disposal	0%	5%
Carpet	100% Plastic landfill	0%	10%
Concrete ready-mix	95% Recycling 5% Other disposal	0%	4%
Concrete prefab	95% Recycling 5% Other disposal	0%	0%
Concrete blocks	95% Recycling 5% Other disposal	0%	7.5%
Glass	95% Recycling 5% Other disposal	0%	1%
Rockwool	Up to 50% recycling The rest inert waste landfill	16%	8%
Plasterboard	100% Special disposal method	60%	12.5%
Rock and stone	100% Reusable	0%	4.5%
Soil & aggregates	50% Reusable	100%	15%
Structural steel	80% Recycling 20% Other disposal	20%	3.3%
Timber	50% Recycling 50% Composting	0%	16.7%
Ceramic	95% Recycling 5% Other disposal	0%	15%

Figure 2: Assumptions for the estimated Bill of Material reporting

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Key commitments

The targets related to circular economy are summarised below and can be found in the GLA CES template.

	Target
1	A pre-redevelopment audit (PRA) and pre-demolition audit (PDA) has been carried out to determine with great degree of detail the reusability/recyclability of the materials in the existing structure.
2	A whole life carbon (WLC) assessment in line with London Plan has been undertaken to determine the embodied and operational carbon emissions. The aim is to minimize quantities and embodied carbon of materials used.
3	It needs to be determined what percentage of the construction waste from the demolition and refurbishment will be recycled on-site and used for the Orchard Site playing field development.
4	It has been agreed with the design team that at least 20% of the content of the materials specified for the proposed building will be from either reused or recycled sources, according to the GLA's requirements. To achieve this, the quantities of purchased materials and their recycled content will be monitored throughout the procurement process. Material suppliers holding EPD or ISO 14021 certifications who will be able to demonstrate the actual recycled content will be favoured in the selection process.
5	It has been agreed with the design team that at least 95% of the total materials specified in the proposed building should be recyclable at the end of their life. To achieve this, the quantities of purchased materials and their recyclability properties will be monitored throughout the procurement process. Material suppliers holding EPD or ISO 14021 certifications who will be able to demonstrate the actual recyclability will be favoured in the selection process.
6	It has been agreed with the design team that at least 65% of operational/municipal waste will be recycled by 2030. To achieve this, the school has a waste management strategy and policy. The facilities management team monitors operational waste and are actively working to reduce the waste sent to landfill.

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Appendices

1. Pre-Demolition and Pre-Redevelopment Audit (KaNect, October 2022)
2. Operational Waste Management Note (KaNect September 2022)
3. Bill of Materials (Cost Estimate by G+T)



Pre-Demolition and Pre-Redevelopment Audit Report

Mallinson Sports Centre

Client: Highgate School

Prepared: October 2022

Document Control

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1	30 June 2022	Draft Report v1 for Issue	Nafey Afan Resources and Waste Management Consultant	Kat Lees Resources and Waste Management Consultant
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1. Introduction

KaNect Limited ('KaNect') has been commissioned by Highgate School ('Client') to prepare this Pre-Demolition and Pre-Redevelopment Audit Report ('Report') in support of the redevelopment of the Mallinson Sports Centre (MSC) site ('Site') located in London Borough of Haringey (LBH).

As per the BREEAM New Construction 2018 (UK), a total of 5 credits can be obtained for the Wst 01 Construction Waste Management criteria. These credits are split into four parts (for Simple Buildings) including:

- **One Credit** – Pre-Demolition Audit:
 - Complete a pre-demolition audit of any existing buildings, structures or hard surfaces being considered for demolition. This audit will:
 - » Be carried out at Concept Design stage by a competent person prior to strip-out or demolition works
 - » Guide the design, consider materials for reuse and set targets for waste management
 - » Engage all contractors in the process of maximising high-grade reuse and recycling opportunities
 - Refer to the audit in the resource management plan (RMP)
 - Compare actual waste arisings and waste management routes used with those forecasts and investigate significant deviations from planned targets
- **One Credit** – Construction resource efficiency: preparing a compliant Resource Management Plan (RMP) with the aim of minimising and monitoring waste.
- **Two Credits** – Simple buildings – RMP measurements and Reporting
- **One Credit** – Simple buildings – Diversion from landfill

As per the London Plan Guidance: Circular Economy Statement (Ref. 1), to meet Policy SI7 (B) of the London Plan (Ref. 2) one of the requirements is to submit a Pre-Redevelopment audit. The Pre-Redevelopment audit is a tool for understanding whether existing buildings, structures and materials can be retained. The Pre-Redevelopment audit should outline an explanation of the existing buildings on the site and brief description of state of their repair. The details should include: the building's age, key materials, photos of typical internal spaces and facades, and site plans.

The extent or details required to complete the Pre-Redevelopment audit is not mentioned by the Greater London Authority (GLA), however, based on KaNect's experience of working on these Audit reports, we have included the information in Section 2, that would be useful in understanding the approach adopted for the redevelopment of the Proposed Development.

2. Site Information

Site Location

The MSC is located on the Bishopswood Road campus of the School estate in close proximity to other important School buildings such as the Mills Centre, the Dining Hall, the PrePrep School and the Junior School.

Existing Site

The MSC Site comprises of the following buildings:

- Main MSC building including Pool Hall, and
- Five Courts and Squash Courts

Main MSC building (including Pool Hall):

The main building comprises the Pool Hall and associated changing rooms, which was the first building on the site, and then the main sports hall with associated ancillary accommodation, gym, entrance hall, centre offices and other sports spaces.

The MSC presents a low formed building to Bishopswood Road, appearing single storey in relation to the street level and stepping down between the two main parts. The structural frame is articulated, but otherwise the building is plain, functional, and introverted, and unresponsive to its site or neighbours.

Five Courts and Squash Courts

The Fives building is located in the north-east corner of the site. The courts, named after the game of 'Eton Fives' a traditional doubles game of hand tennis played at Eton School, are comprised of red brick with rendered walls enclosing courts on three sides with projecting features and steps involved in game play. The group of eight courts, constructed as four back-to-back, were built in the early twentieth century. The fully glazed roof may have been added later rather than incorporated in the original design.

The indoor Squash Courts building on the north-west side of the site adjacent to Fives, is a system-built construction with exposed concrete panels. The building contains two squash courts. The building has uninsulated walls and roof causing severe maintenance issues, and due to the quality of its construction is at the end of its useful building life cycle.

Figure 1, Figure 2, Figure 3, Figure 4 and Figure 5 provides the images of the buildings on site.

Figure 1 MSC Building prior to the Refurbishment of the Pool



Figure 2 MSC Building – 2



Figure 3 Northern Squash Courts



Figure 4 Five Courts



Existing Site Analysis

To establish whether retrofitting would be a suitable option, in comparison to the demolition of the existing buildings (on-Site), several parameters were analysed. These parameters have been outlined in this section, however, for more details please refer to the MSC Design and Access Statement prepared by Ed Toovey architects.

Existing Fabric Condition

For the main MSC building (excluding the Pool Hall and the changing rooms which were refurbished in 2020), the general structural and fabric condition is satisfactory. However, a building of this age and type of construction attracts a higher degree of maintenance and running cost compared with a modern construction.

There is very little thermal insulation provided and as a result there is a greater heat loss through the building fabric than modern construction. There is scope to improve the level of thermal insulation, for example, by installing secondary or double glazing and increasing the insulation to roofs. However, there is very little scope to improving the heat loss through walls, other than lining them internally, which would involve major disruption and cost. There are some required repairs externally, for example renewal of the roof coverings, re-pointing of brickwork, replacement of windows, which will require a significant cost outlay by the School.

However, the proposed strategy of this application, to retain the sound elements of existing construction and to extend with new construction on the three principle sides, will allow existing external walls to become in some cases internal, so that the new highly insulated modern construction of external walls will take on the task of energy and heat retention. Overall, this strategy of expansion will also improve the overall performance of the building fabric. Roof covering and insulation will need to be addressed on a case-by-case basis.

The Squash building is of poor construction by modern standards, with no insulating characteristics and heat loss issues that will increasingly require extensive maintenance, so is at the end of its useful life functionally. Combining its poor fabric state with its poor appearance and taking account of its location that effectively blocks sensible development in this area of the site, this building is therefore proposed for demolition.

The Fives building will have a higher degree of maintenance and running cost compared with a modern construction, however its retention would significantly compromise the rational and most efficient development of the site, so is also proposed for demolition.

Based on the above analysis, it was concluded that the demolition of some of the existing buildings (Five Courts and the Squash building) would be a more suitable option.

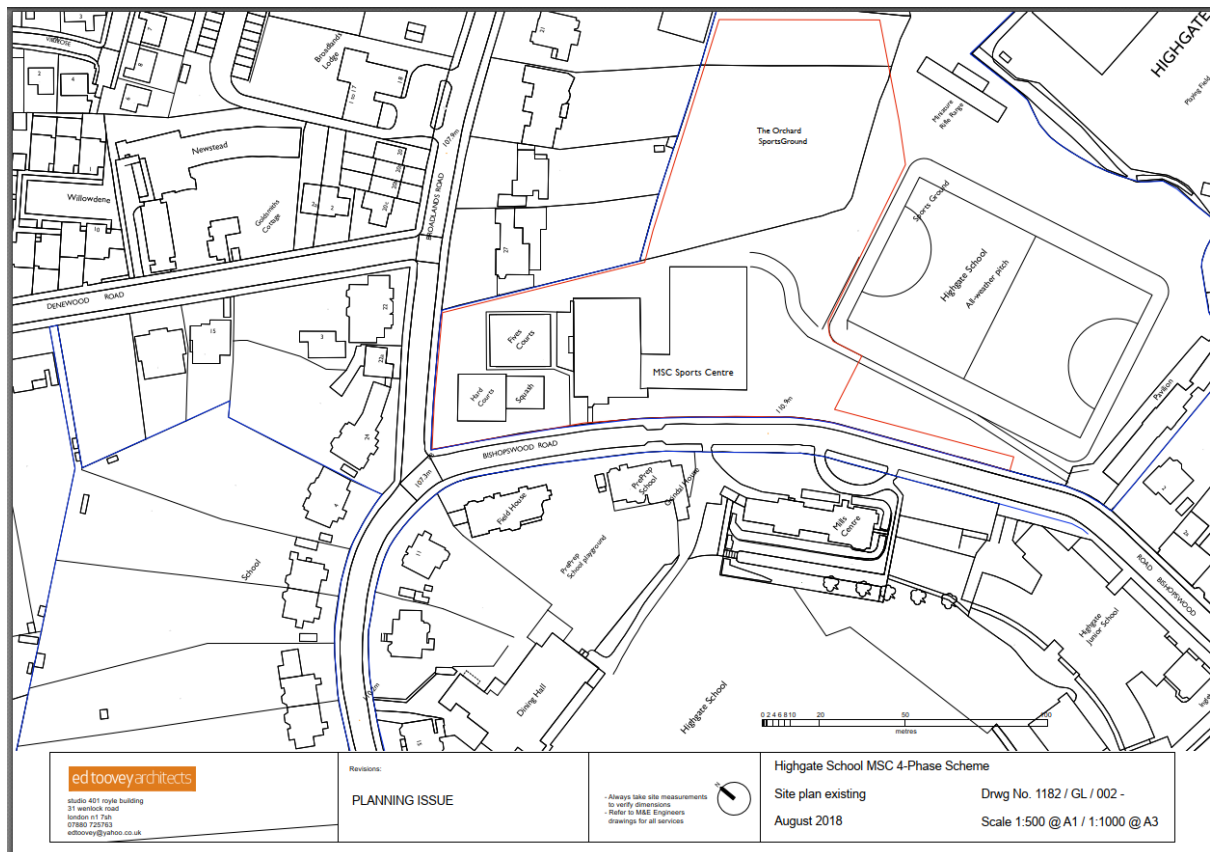
3. Proposed Works

As part of the redevelopment of the MSC Site, the existing Five Courts building, and the Squash building will be demolished. However, alteration and refurbishment works will be undertaken on the existing sports hall and the existing main building including:

- New north-west extension for a second indoor sports hall with associated new circulation corridor, viewing gallery, access stairs and lift, with ancillary spaces for storage and plant, and a teaching block extension for Combined Cadet Force and Outdoor Education classrooms and offices, with associated storage.
- New south extension to the existing sports hall for 8 no. new external covered Fives Courts with run-off area one level below local ground level.
- New south-west extension and alterations to the existing building to create an enhanced Entrance with Foyer, reception and café, and with improved new access stairs down to the existing changing rooms, and lift to all levels.
- Alterations to the existing sports hall to enhance natural lighting by new rooflights, with interior changes to associated spaces.
- New east extension in the existing outdoor courtyard to provide additional studio / gym spaces and form connections back to the changing rooms, with ancillary external storage for sports use.
- Re-planning, re-grading and landscaping of the existing sports playing area to the east of the existing sports hall, an area known as “The Orchard” – in part to improve sports activity facilities, and in part to provide a temporary flood basin to mitigate potential surface water flooding based on future climate change predictions.

Figure 5 shows the existing Site plan.

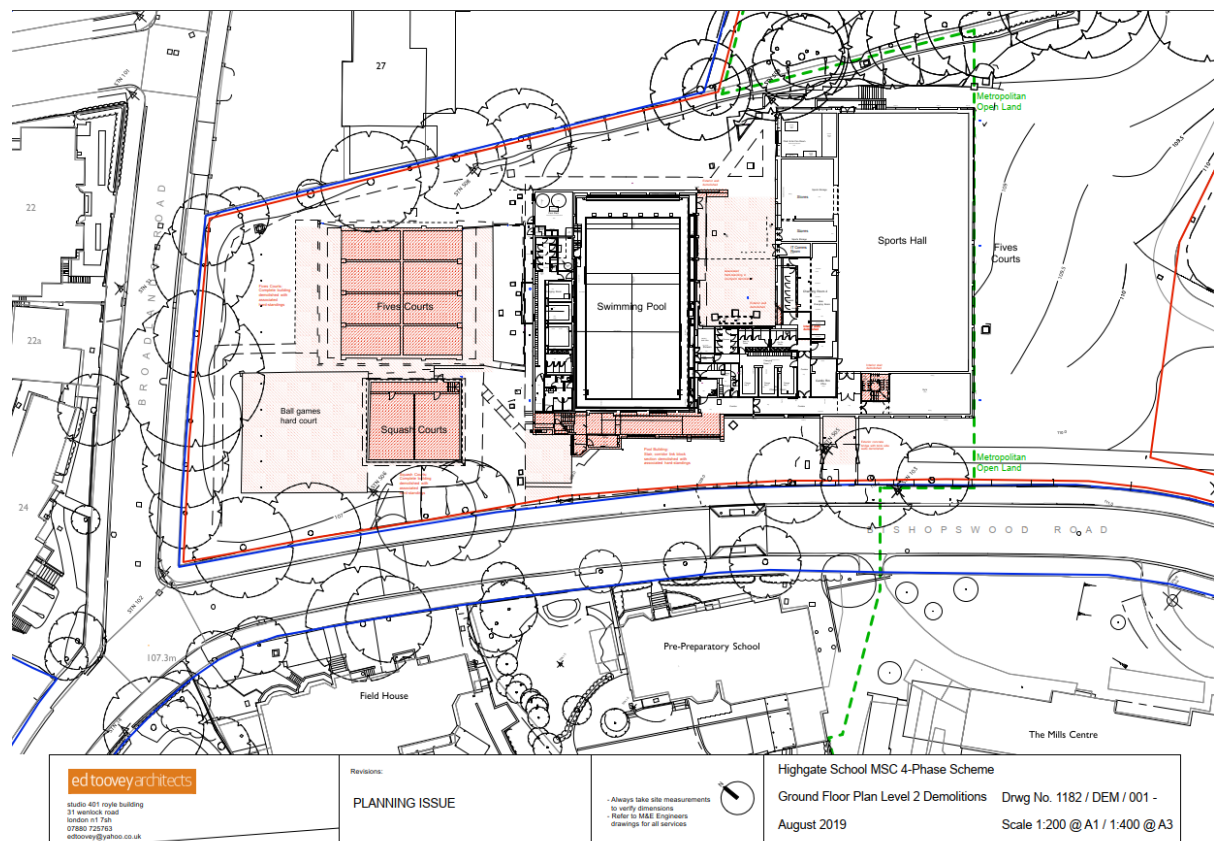
Figure 5 Existing Site Plan



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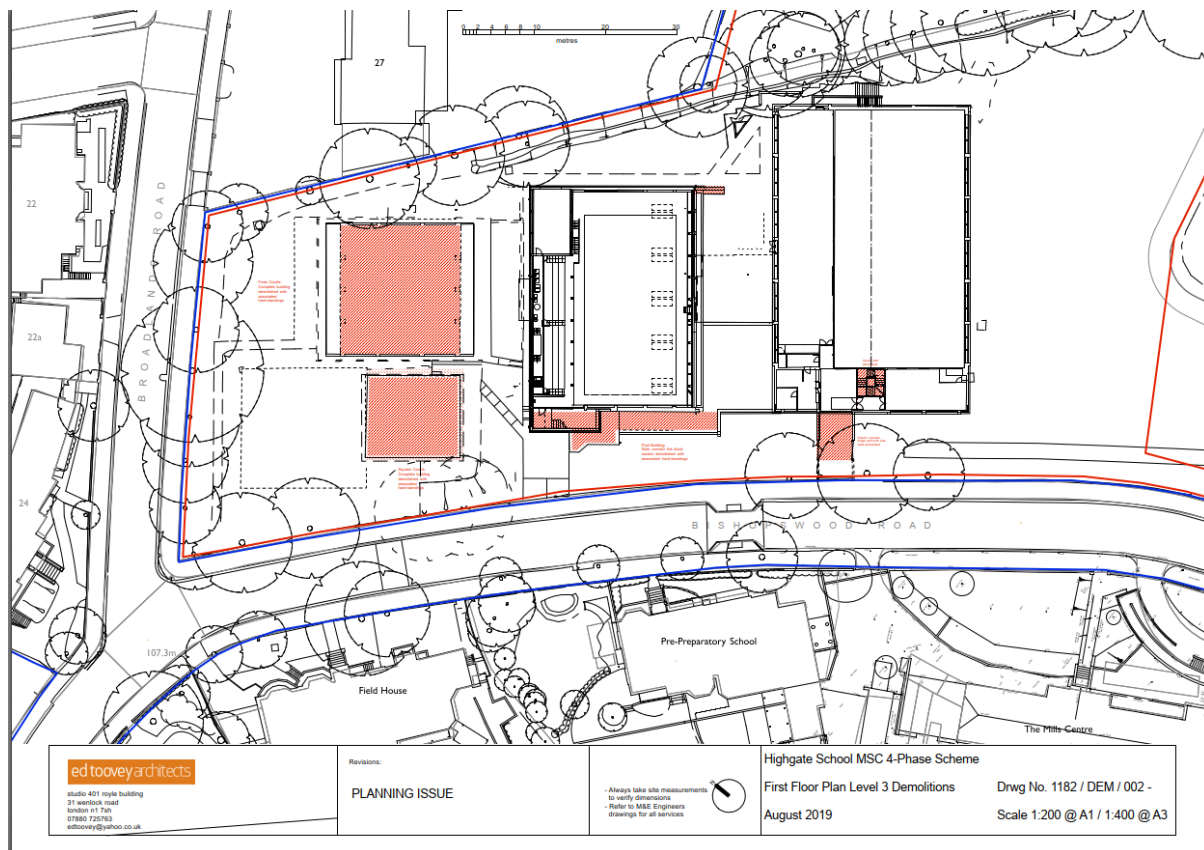
Figure 6, Figure 7 and Figure 8 provides the demolition plans.

Figure 6 Ground Floor Demolition Plans



Please note that this Figure is not drawn to scale

Figure 7 First Floor Demolition Plan



Please note that this Figure is not drawn to scale

Figure 8 Roof Demolition Plan



Please note that this Figure is not drawn to scale

4. Aims and Objectives

The main aim of the Report is to understand whether the existing buildings, structures and materials can be retained, refurbished, or incorporated into the new development. This report will also help to identify and quantify the materials that might be generated on-Site (if the buildings undergo demolition) and to provide the Client with this information to assist the Client in maximising the recovery of material for subsequent high grade or value applications.

The objectives of this Report are to:

- Provide brief information on the existing buildings, structures on site and their condition,
- Identify the types and quantities of key materials present in the existing buildings, structures, and hard services,
- Identify potential applications and any related issues for the reuse and recycling of the key waste/materials in accordance with the waste hierarchy,
- Identify opportunities for reuse and recycling on-Site and off-Site,
- Identify local re-processors or recyclers for recycling of materials,
- Identify overall recycling targets where appropriate,
- Identify reuse targets where appropriate, and
- Identify overall landfill diversion rate for all key materials.

5. Key Principles

The Waste Hierarchy

Clause 12 of The Waste (England and Wales) Regulations 2011 requires that anyone involved in the import, generation, collection, transferring, recovery, or disposal of waste must take all such measures available to apply the waste hierarchy.

This Report considers the waste hierarchy and encourages materials identified on-Site to be reused before they are sent for recycling, recovery, or disposal. The main principles of the waste hierarchy are summarised in Figure 9.

Figure 9 Waste Hierarchy¹



¹ Department of Environment, Food & Rural Affairs (Defra), Waste Hierarchy Guidance (updated by KaNect Limited)

The Circular Economy

A Circular Economy (CE) is a systematic approach to economic development designed to benefit businesses, society, and the environment. In contrast to the 'take make waste' linear model, a Circular Economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources. The Circular Economy activity focuses on design that is regenerative and restorative. This is based on three principles:

- Design out waste and pollution,
- Keep products and materials in use, and
- Regenerate natural systems.

This Report can help encourage a Circular Economy by:

- Influencing the wider design team to consider reclamation and reuse of waste/materials found on-Site to be incorporated in the proposed MSC development, avoiding disposal of valuable materials, and
- Identifying reuse and re-processors companies for materials found on-Site, extending the products useful life before being remanufactured.

Figure 10 demonstrates the key stages and principles used when applying the Circular Economy to the built environment.

Figure 10 Applying Circular Economy Principles to Building Design²



² Building Revolutions, David Cheshire, RIBA Publications 2016

6. Methodology

A Site visit was carried out by competent persons: ‘... who has appropriate knowledge of buildings, waste and options for reuse and recycling of different waste streams’

A Site visit was undertaken by Chartered Building Surveyor Tom Lawrence and Chartered Waste and Resource Manager Kat Lees on 20 May 2022.

The Site visit consisted of a non-intrusive visual audit of building fabric to the external and internal parts of the buildings to be demolished.

Subsequently, a workshop was held on 7 June 2022 with the Design Team to discuss the existing conditions of the buildings and the potential to reuse materials on-Site.

Exclusions and Assumptions

The following assumptions, exclusions and caveats apply to this Report:

- This Report is based purely on the findings of a non-intrusive visual survey.
- Where clear line of sight/access was not available to attain measurements e.g., thicknesses, best judgement and assumptions have been made.
- All facing bricks elevations are assumed to be brick/cavity installations.
- Where areas of build frame were not visible, the size and lengths of the columns were assumed.
- 5% of the volume of concrete reinforcement is assumed to be steel.
- Information on the pile foundations were assumed, whereas no allowance was made for the removal of foundations or any excavation.
- It is assumed that the demolition would be to the ground floor level.
- Small power, data, and large specialist plants or any other mechanical, electrical, and plumbing (MEP) equipment are not considered within this Report.
- It is assumed that all furniture, equipment, and miscellaneous non-fixed items installed by the tenants will be removed by the tenants, therefore, these are not considered within this Report.
- It is assumed that there will be no insulation in the stud walls.
- Apart from the paving via the central atrium, no other hardstanding has been considered as part of this Report.

The information provided within this Report is based on visual inspection (non-intrusive) of the existing Site. Where elements of the Site were inaccessible, assumptions are made based on professional judgement. It is understood that the quantities provided within this Report might vary, therefore, the principal contractor will be responsible for monitoring and reporting these changes (if any).

7. Key Waste/Materials Identified

The following section describes the key waste/materials identified, their location, and images taken during the Site visit. Based on the condition of the waste/materials and their market demand, a circularity rating (i.e., how likely is the material reused on/off-Site) for the waste/materials has been provided (based on professional judgement) to determine whether they can be reused, recycled, or sent for recovery or disposed to landfill as a last resort.

The circularity rating is based on the following key shown in Table 1. The ratings and related descriptions are recommendations for the waste management route of the materials identified; the exact routes for the materials will be determined by the appointed demolition contractor (when appointed).

Table 1 Circularity Rating

Indicator	Description
	Good condition and reuse of this material is possible.
	Wear and tear – this material is likely to be recycled. Alternatively, this indicator may be used if the material is in a good condition but there is no market for reuse and therefore must be recycled.
	Poor condition/not reusable or non-recyclable material, this may be due to several reasons such as there being no end market for the material to be recycled (e.g., composite materials) or due to the small quantity of the material present, which therefore makes it unviable to recycle separately. This material is likely to be sent to landfill or energy recovery.

Concrete

Please see Table 2 for the location and the quantities of the Concrete found on-Site. Image 1 - Image 2 shows the concrete elements found on-Site.

Table 2 Location and Quantities of Concrete

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	532.95	1,492.26
Total	532.95	1,492.26

Recommendation

★ For all the concrete elements, it is recommended that the concrete is sent to a local re-processor and crushed off-Site and used as a recycled aggregate. The recycled aggregate can be further used as a construction material for the proposed redevelopment of the Site.



Image 1 Concrete Slabs

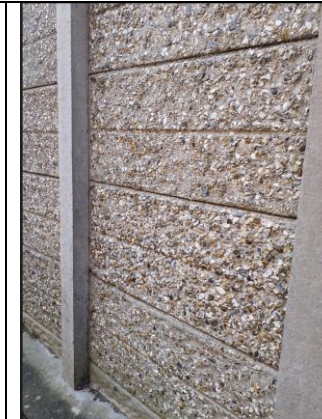


Image 2 Concrete Columns

Bricks

Please see Table 3 for the location and the quantities of Bricks (including external walls) found on-Site. Image 3 - Image 4 shows the bricks found on-Site.

Table 3 Location and Quantities of Bricks

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	43.40	114.58
Total	43.40	114.58

Recommendation

★ ★ Overall, the bricks are in good condition for reuse. However, these bricks need to be matched with the requirements of the Proposed Development (including colour) prior to reuse. Considering, these do not meet the requirements of the Proposed Development, then these bricks need to be sent off-Site for recycling or reuse (depending on the needs of the development).



Image 3 Brick Wall



Image 4 Brick Wall

Suspended Grid Minera Tiles

Please see Table 5 for the location and the quantities of Suspended Grid Mineral Tiles found on-Site. Image 5 shows the Suspended Grid Mineral Tiles found on-Site.

Table 4 Location and Quantities of Suspended Grid Mineral Tiles

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	1.73	5.19
Total	1.73	5.19

Recommendation

★ For all metal found on-Site, it is recommended that it is recycled off-Site.



Image 5 Suspended Grid Mineral Tiles

Metals

Please see Table 5 for the location and the quantities of Metals (including aluminium roof) found on-Site. Image 6 - Image 7 shows the metals found on-Site.

Table 5 Location and Quantities of Metals

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	55.91	141.70
Total	55.91	141.70

Recommendation

★ For all metal found on-Site, it is recommended that it is recycled off-Site.



Image 6 Aluminium Roof



Image 7 Mixed Metal Fence

Timber and Timber Products

Please see Table 6 for the location and the quantities of Timber and timber products (including structural timber and doors) found on-Site. Image 8 - Image 9 shows the timber and timber products found on-Site.

Table 6 Location and Quantities of Timber and Timber Products

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	3.44	2.41
Total	3.44	2.41

Recommendation

★ Where high quality solid timber cannot be reclaimed, it is recommended that it is sent for recycling.

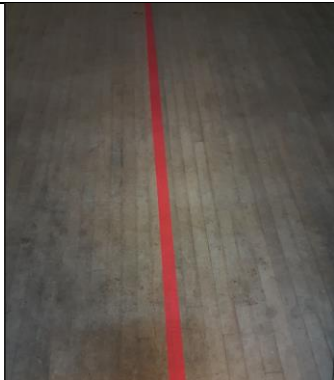


Image 8 Timber Floorboard



Image 9 Structural Timber

Plasterboard (Other Gypsum containing material)

Please see Table 7 for the location and the quantities of Plasterboard (other gypsum containing material) found on-Site. Image 10 shows the plasterboard (other gypsum containing material) found on-Site.

Table 7 Location and Quantities of Plasterboard

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	5.63	3.38
Total	5.63	3.38

Recommendation

★ Reuse of plaster (gypsum materials) is not yet possible, assuming a best case, this material would be recycled.

★ It is currently not possible to separate and recycle plaster from walls. It is therefore envisioned this material would be disposed off.



Image 10 Plasterboard

Glass

Please see Table 8 for the location and the quantities of Glass found on-Site.

Table 8 Location and Quantities of Glass

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	0.02	0.05
Total	0.02	0.05

Recommendation

★ It is recommended that it be sent off-Site to be crushed and recycled into new products.

Asphalt (containing bituminous material)

Please see Table 9 for the location and the quantities of Asphalt (containing bituminous material) found on-Site.

Table 9 Location and Quantities of Bituminous material

Building	Approximate Quantity (m ³)	Approximate Quantity (tonnes)
MSC	1.32	1.41
Total	1.32	1.41

Recommendation

★ This material should be sent for recycling off-site. In case there is any contamination present then the asphalt cores samples can be taken and tested.

Lighting

The number of lightbulbs (fluorescent tubes and Light Emitting Diodes (LED)) identified totalled 38. Please see Table 10 for the location and quantities. Image 11 - Image 12 shows the lighting found on-Site.

Table 10 Location and Quantities of Lighting

Building	Approximate Quantity No of Fluorescent Units	Approximate Quantity No of LED
MSC	10	28
Total	10	28

Recommendation

★ ★ The reuse of lightbulbs and their fixtures is likely impractical; it is therefore likely that LED lighting would be recycled, whereas older incandescent lightbulbs would be sent for energy recovery.



Image 11 Fluorescent Lighting



Image 12 LED Lighting

8. Identified Materials Type and Estimated Quantities

Estimated quantities of the materials anticipated to be generated during the demolition process are provided in Table 11. The estimated volumes are based on the Site visit and do not consider the actual skip volumes that may result from the Site (i.e., does not account for bulking and the inevitable voids within the skip during disposal). Figure 11 and Figure 12 shows the percentage breakdown of waste identified during the Site visit.

It should be noted that the recovery potential provided within Table 11 is based on the best practices as suggested by Waste and Resource Action Programme (WRAP). Therefore, this should be used as a reference only. Whereas the % of materials to be reused or recycled in Table 13 provides the quantities the design team intend to use onsite.

Table 11 Estimated Quantities of Materials

Material	European Waste Catalogue Code (EWC)	Volume (m³)	% of Total Volume (m³)	Tonnes (t)	% of Total Tonnage (t)	Recovery Potential (%) (Best Practice) i.e. % diverted from landfill	Recovery Potential (i.e., m³ diverted from landfill)	Disposal to Landfill/ Energy from Waste (m³)	Recovery Potential (i.e., Tonnes diverted from landfill)	Disposal to Landfill/ Energy from Waste (Tonnes)
Concrete	17-01-01	532.95	83%	1,492.26	85%	100%	532.95	-	1,492.26	-
Bricks	17-01-02	43.40	7%	114.58	7%	100%	43.40	-	114.58	-
Suspended Grid Mineral Ceiling Tile	17-09-04	1.73	0.3%	5.19	0.3%	75%	1.30	0.43	3.89	1.30
Metals	17-04-05	55.91	9%	141.70	8%	100%	55.91	-	141.70	-
Timber and Timber Products	17-02-01	3.44	1%	2.41	0.1%	95%	3.27	0.17	2.29	0.12
Plasterboard (other gypsum containing materials)	17-08-02	5.63	1%	3.38	0.2%	95%	5.34	0.28	3.21	0.17
Glass	17-02-02	0.02	0.003%	0.05	0.003%	100%	0.02	-	0.05	-
Asphalt containing (bituminous material)	17-03-03	1.32	0.2%	1.41	0.1%	95%	1.25	0.07	1.34	0.07
Total		644.39	100%	1,760.96	100%		643.68	0.95	1,759.57	1.66

The % might not add up to 100% due to rounding

The numbers may not add up due to rounding

Figure 11 Approximate Quantities of Materials (%) by Volume

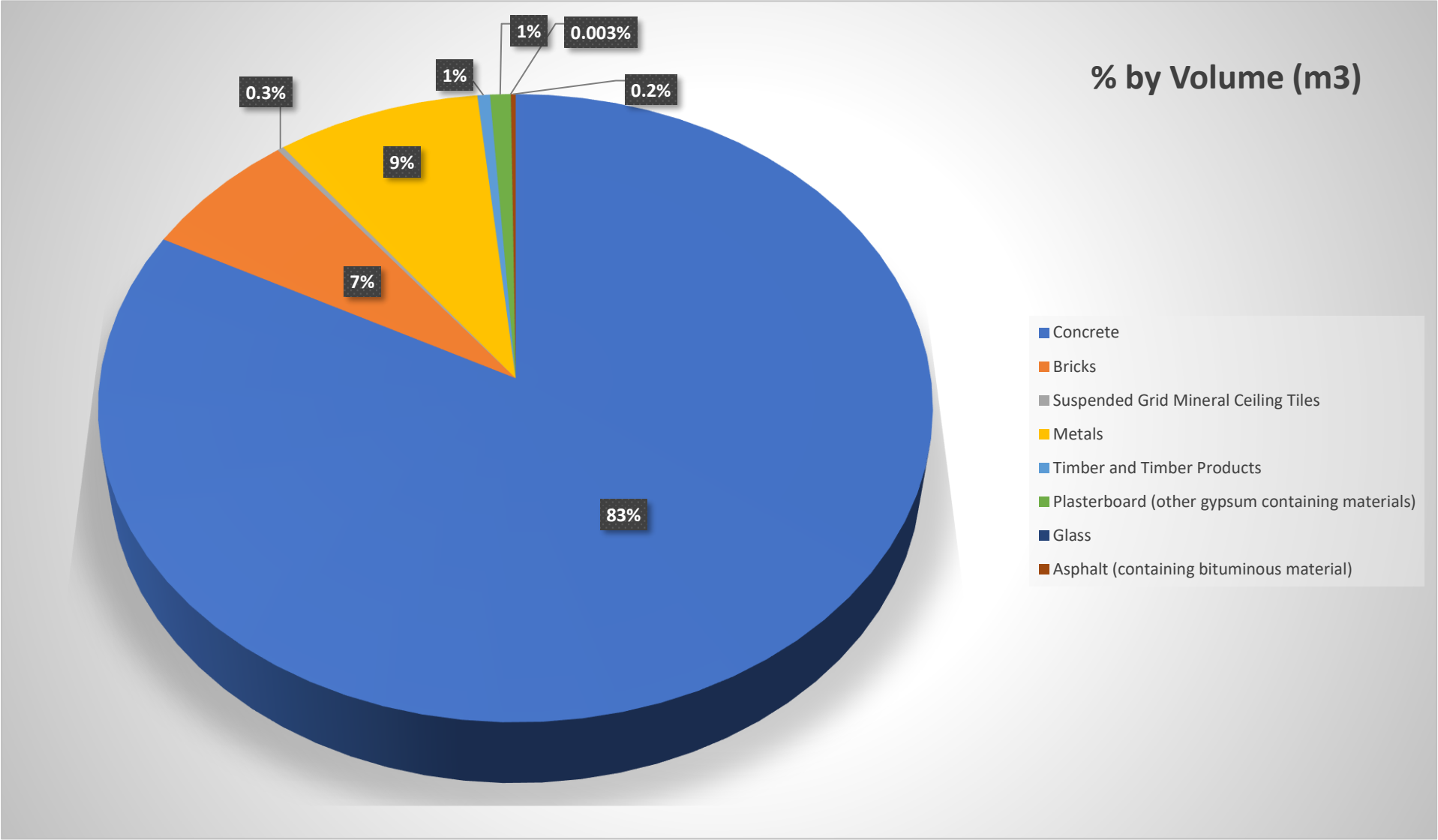
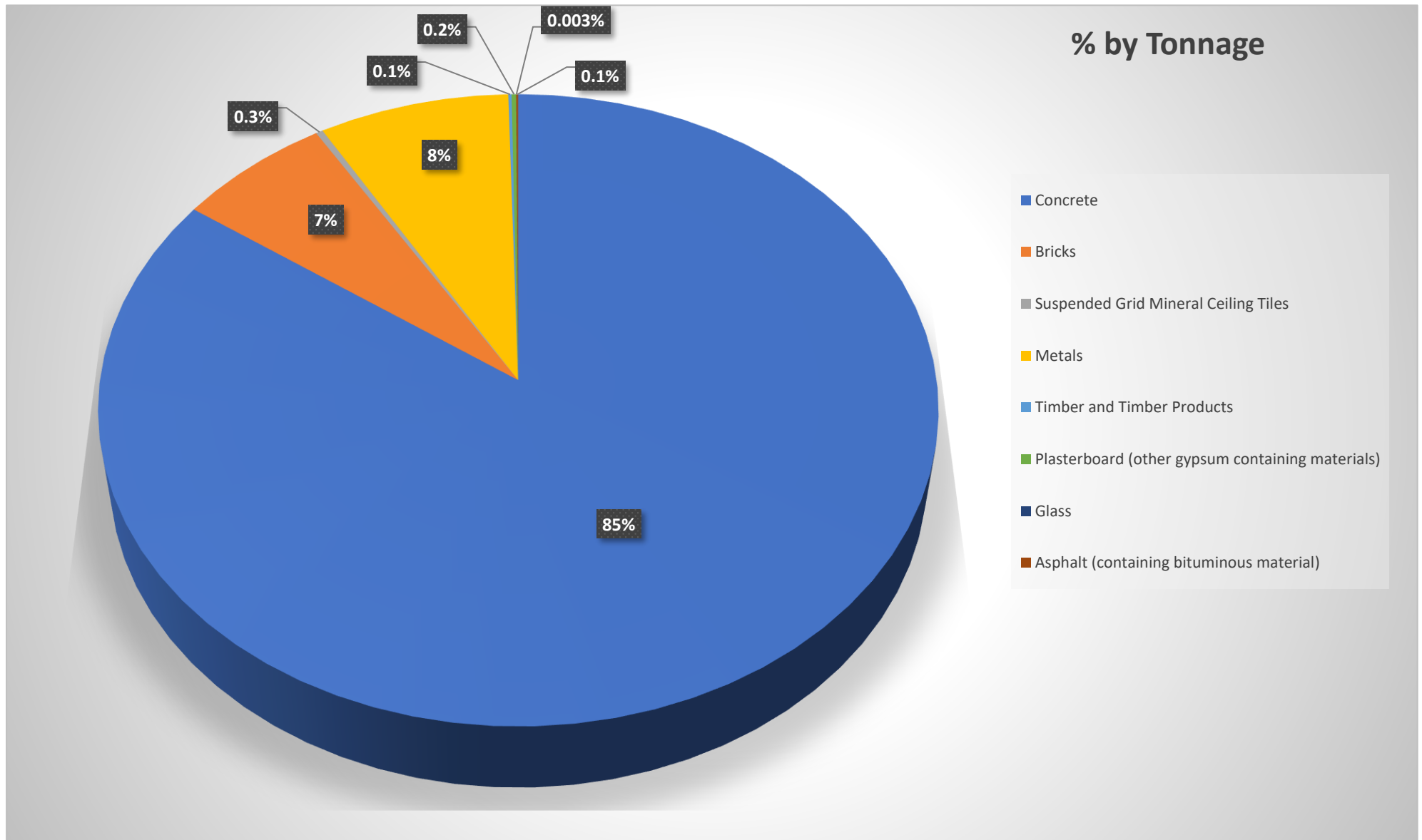


Figure 12 Approximate Quantities of Materials by Weight (tonnage)



It can be noted from Table 11, that approximately 99% of the demolition waste can be recovered.

9. Waste Management Opportunities

A workshop was held with the design team (including but not limited to the structural engineers, landscaping architects and the design team) on 7 June 2022. The purpose of the workshop was to discuss the condition of the existing buildings to understand whether these buildings or any components can be retained. Within this workshop information on the materials identified was also discussed along with the potential of reusing and recycling these materials during the redevelopment of the Proposed Development.

The key provided in Table 12 has been adopted to show the opportunity of each waste/material identified.

Table 12 Opportunities Key

Key	Description
	Reduction in landfill costs
	Reduced environmental impact
	Less carbon/energy intensive
	Preserve natural resources
	Corporate social responsibility

Based on the discussions undertaken during the workshop, the potential opportunities for reusing and recycling the waste/material generated on-Site as well as the benefits of such initiatives have been identified in Table 13.

There are several opportunities to apply the waste hierarchy and Circular Economy to the buildings being demolished and examples of local reprocessing and recycling facilities have been identified, where appropriate, in this Report. However, these facilities suggested in Table 13 are not an exhaustive list. The final choices of the recommendations made within this Report will need to be determined by the demolition contractor, based on the costs and benefits of the options presented. There are clear benefits to implementing waste reduction initiatives, these include:

- Reducing costs associated with disposal,
- Realising financial benefits by diverting waste from landfill, and
- Environmental and social benefits of implementing the waste hierarchy and Circular Economy.

Table 13 Waste Reduction Opportunities

Material Type	Circularity Rating	Suggestion					Opportunity	Constraints	Example Reprocessors
		on-Site reuse	on-Site recycling	off-Site reuse	off-Site recycling	off-Site Disposal			
Concrete	★	At this stage it is assumed that 0% (by volume) of concrete will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	It is envisioned that approximately 40% by volume (i.e., approximately 213 m ³ of the concrete material will be crushed on site and tested, for new slab, road, and path bases.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the remaining material would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled (on and off-Site) and therefore not be subject to disposal to landfill.	   	Additional space to keep materials segregated.	A list of recycling companies that collect crushed aggregate are provided in Table 14.
Bricks	★ ★	It is envisioned that approximately 30% by volume (i.e., approximately 13.02 m ³ of the bricks will be reused on site for garden walls and concealed walls.	At this stage it is assumed that 0% (by volume) of bricks will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	Based on the condition and quality (subject to testing) approximate 50% (by volume) of the remaining material would be – Reuse off-Site.	Based on the condition and quality (subject to testing) approximate 50% (by volume) of the remaining material would be recycled off-Site.	At this stage it is assumed that 100% of this material would either be re-used or recycled and therefore not be subject to disposal to landfill.	   	Additional space to keep materials segregated to then transport off-Site for crushing.	Globe Chain is a reuse marketplace that connects companies with charities, Small and Medium size Enterprises (SME) and individuals to redistribute unneeded construction material while collating social, environmental and economic data GlobeChain https://www.globechain.co.uk Salvage opportunities for bricks: https://www.salvoweb.com

								Additional time in the demolition programme will have to be allowed and it is likely to incur increased demolition costs, however, there will be a resale value for the bricks, and it would considerably reduce the amount of material that is downcycled for secondary aggregates.	
Suspended Grid Mineral Ceiling Tiles	 	At this stage it is assumed that 0% (by volume) of this material will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	Based on the condition and quality (subject to testing) approximate 50% (by volume) would be – Reuse off-Site.	Based on the condition and quality (subject to testing) – approximate 50% (by volume) would be recycled off-Site.	At this stage it is assumed that 100% of this material would either be re-used or recycled and therefore not be subject to disposal to landfill.	   	Additional space required to keep material segregated.	Armstrong Ceiling Solutions have a recycling service for acoustic ceiling tiles https://www.armstrongceilingsolutions.co.uk/en-gb/performance/sustainable-building-design/recycling-programmes

Metals	★	At this stage it is assumed that 0% (by volume) of this material will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the material would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled and therefore not be subject to disposal to landfill.		Additional space to keep materials segregated.	EMR Scrap Metal http://www.emr-group.com/
Timber and Timber Products	★	It is envisioned that approximately 10% by volume (i.e., approximately 0.34 m ³ of this material will be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the remaining material would be recycled off-Site	At this stage it is assumed that 100% of this material would be reused or recycled and therefore not be subject to disposal to landfill.		Additional space to keep materials segregated. .	Globechain https://www.globechain.co.uk Community Wood Recycling can reclaim wood and reuse it: https://www.communitywoodrecycling.org.uk/

Plasterboard (other gypsum containing materials)	 	At this stage it is assumed that 0% (by volume) of this material will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the material would be recycled off-Site	Based on the condition and quality (subject to testing) – some material may be disposed off-Site	   	Additional space to keep materials segregated. .	British – Gypsum https://www.britisgypsum.com/about-us/csr/environmental-challenges/plasterboard-recycling Junk Removal London provides collection services for plasterboard: http://junkremovalsolutions.com/plasterboard-collection/
Glass		At this stage it is assumed that 0% (by volume) of glass will be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) would be recycled off-Site	At this stage it is assumed that 100% of this material would be recycled and therefore not be subject to disposal to landfill.	   	Additional space to keep materials segregated. .	May Glass Recycling: https://www.mayglassrecycling.co.uk/services Nationwide Waste Services: https://www.nationwidewasteservices.co.uk/recycling/ Guardian Glass https://www.guardianglass.com/gb/en Pilkington Glass Manufacturing https://www.pilkington.com/

Asphalt (containing bituminous material)	★	At this stage it is assumed that 0% (by volume) of this material will be reused on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be reused on-Site.	At this stage it is assumed that 0% (by volume) of this material will be recycled on-Site. However, it is proposed that a specialised contractor is taken on board during the demolition and construction phase, who will re-evaluate the quality of the material and incorporate measures that will allow some % of this material to be recycled for use on-Site.	0% (by volume) will be reused off-Site	Based on the condition and quality (subject to testing) - 100% (by volume) of the material would be recycled off-Site	Based on the condition and quality (subject to testing) – some material may be disposed off-Site		Additional space to keep materials segregated.	A list of recycling companies that collect crushed aggregate are provided in Table 14
Lighting	★ ★	At this stage it is assumed that 0% (by quantity) of lighting will be reused on-Site.	At this stage it is assumed that 0% (by quantity) of lighting will be recycled on-Site.	At this stage it is assumed that 0% (by quantity) of lighting will be reused on-Site.	Only low energy light bulbs and fluorescent light tubes are recyclable. Incandescent (old-fashioned) light bulbs cannot be recycled. Therefore, 100% (by weight) would be recycled off-Site	Based on the condition and quality (subject to testing) – some material may be disposed off-Site.		Additional disposal costs.	Recolight: https://www.recolight.co.uk/ BPR Group http://www.bprgroup.co.uk/ Globechain https://www.globechain.co.uk Salvo https://www.salvoweb.com/

Waste contractors in the area that collect multiple construction streams (segregated) are shown in Table 14. This list is not intended to be comprehensive, and waste generators will need to meet their legal duty of care by making sure that any waste produced is managed responsibly and only given to businesses authorised to take it. The presence of a company on the list below does not remove the requirement for waste generators to carry out their own duty of care checks.

Table 14 Waste Companies in London, which collect multiple Construction, Demolition and Excavation (CD&E) Waste Streams

Waste Company
Capital Waste www.Capwaste.co.uk
London Waste Removal Service www.Londonwasteremovalservic.co.uk/demolition
O'Donovan Waste Disposal https://www.odonovan.co.uk/
Junk Bunk Limited https://junkbunk.co.uk/
Swift Waste Management https://swiftwaste.co.uk/
Powerday https://powerday.co.uk/
Bywaters https://www.bywaters.co.uk/

10. General Guidance for Management of Demolition Materials and Waste

This pre-demolition and pre-redevelopment audit have been conducted to allow material and waste management to be considered in the early stage of the project. The Client, Architect and Demolition Contractor should be involved in the material and waste management process from the offset. This will allow for effective planning to realise the value of materials on-Site and their subsequent management (i.e., consideration of the waste hierarchy).

The reuse of material on-Site or on a nearby similar project is the ideal option from an environmental and economic perspective. The Client and Architect are best positioned to consider these options and enable these initiatives. Doing so also often results in reduced transportation, reducing embodied CO₂ emissions and costs associated with material management on the project. To maximise this opportunity, it is advised that the following are considered:

- Opportunities for reuse on-Site,
- Safe storage of these items on-Site, in a separate storage area if feasible,
- Opportunities for reuse by the Client on other projects,
- Opportunities for reuse on local/similar projects,
- Advertisement of specific items on websites (e.g., www.salvo.co.uk),
- Contacting local architectural salvage merchants about specific items, and
- Selling or gifting items locally.

Waste arisings during demolition works should be continually monitored to provide a thorough understanding of the types and amounts of waste coming from the Site. This data collection will help with the continual improvement of material and waste management on-Site. Data collection can also be used to help set more demanding waste segregation targets for future demolition and refurbishment projects.

11. Recommendations and Next Steps

The type and quantities of material present on-Site have been identified, and opportunities to apply the principles of waste hierarchy and Circular Economy applied to different material types, with local reprocessing and recycling facilities identified. Ahead of construction works taking place, the following recommendations and next steps are suggested:

- Lifecycle analysis of new construction materials for the Proposed Development, in conjunction with the reuse/recycling of materials as identified in this Report.
- Embed the recommendations within this Report in the design process at pre-tender stage so the measures in relation to reuse and recycling targets are included in the awarded construction contract.
- Engagement with construction material suppliers to explore opportunities for takeback schemes.
- Where takeback schemes with suppliers are not possible, it is recommended that early engagement with reprocessing and recycling companies take place, to best capture recyclable materials and avoid downcycling.
- It is recommended that the materials identified within this Report are incorporated into a Site Waste Management Plan (SWMP)/Construction Resource Management Plan (CRMP) for effective management of waste. This is considered good practice on all construction projects and is a key step in facilitating diversion from landfill.
- Identify storage areas on-Site as appropriate for the types and quantities of waste anticipated to be produced during construction works. These areas should allow for the successful segregation of waste, as appropriate to avoid contamination of the different waste and material streams.
- All staff should have appropriate levels of training to enable the segregation of waste is achieved. Waste management information should be included within the Site induction for all personnel. It is recommended that a Reporting procedure SWMP/CRMP is put in place to catalogue the materials/waste produced, which is regularly updated. This will allow for the appropriate organisation of the transport for materials/waste on-Site and prevent stock piling.
- Further to this, it is recommended that a Waste Champion is nominated by the principal contractor to facilitate management of the SWMP/CRMP. This role would also aim to allow that the waste hierarchy is always considered, with the emphasis being on reducing, reusing, and recycling before landfill disposal is considered.

Once the principal contractor is commissioned to undertake the construction works, the following should be considered:

- The principal contractor should engage all contractors in the process of maximising high-grade reuse and recycling opportunities, and
- The principal contractor should refer to the Pre-Demolition and Pre-Redevelopment Audit Report in the SWMP/CRMP.

12. Further Information

In addition to the resources detailed in Table 13, further information pertaining to the sustainable waste management for construction projects can be found through the following sources:

- Bioregional, Reclaimed Buildings Product Guide:
<https://www.bioregional.com/resources/reclaimed-building-products-guide>

13. References

- Ref. 1 Greater London Authority (GLA), (2022); London Plan Guidance – Circular Economy Statements
- Ref. 2 GLA, (2021); The London Plan – The Spatial Development Strategy for Greater London



Operational Waste Management Note

Project: Highgate School

Client: Highgate School

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Document Control

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01	21/09/2022	Draft Issue for Comments	Nafey Afan Resource and Waste Management Consultant	Kat Lees Resources and Waste Management Consultant
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Executive Summary

- i. KaNect Limited ('KaNect') has been commissioned by Highgate School ('Client') to prepare an Operational Waste Management Note ('Note') for the proposed Highgate School Development ('Proposed Development') located in the administrative boundary of London Borough of Haringey (LBH).
- ii. The principal aim of this Note is to demonstrate how sustainable methods for waste and recycling management have been considered for the operational phase of the Proposed Development. Furthermore, with regards to waste and recycling management within the Proposed Development, this Strategy has the following aims:
 - To contribute towards achieving current and long-term government, Greater London Authority (GLA), North London Waste Authority (NLWA) and LBH targets for waste minimisation, recycling and re-use;
 - To comply with all applicable legal requirements for handling operational waste;
 - To achieve high standards of waste management performance, through giving due consideration to the waste generated during operation of the Proposed Development; and
 - To provide a convenient, clean, and efficient waste management strategy that enhances the operation of the Proposed Development and promotes recycling.
- iii. Once operational, the Proposed Development is anticipated to produce 94,279 (L) of waste from all buildings per week, equating to approximately 422 tonne per year (i.e., based on the following approximate densities: Mixed dry recyclables (MDR) – 41 kg/m³, Food – 563 kg/m³ and Residual waste – 73 kg/m³).
- iv. The Proposed Development will comprise of three schools including the Pre-Preparatory School for pupils aged 4-7 years, Junior School for pupils aged 7-11 years and Senior School for pupils aged 11-18 years.
- v. A total of three central bin stores have been provided to cater the Proposed Development. With one combined bin store providing space to hold waste and recycling bins for the Pre-Preparatory School and the Junior School, one bin store for the Senior School and one bin store for storing Food waste bins for the cafeteria area. It should be noted that the bin stores provided for the Pre-Preparatory School, Junior School and the Senior School will only provide space to hold bins for Mixed Dry Recycling (MDR) and Residual/General waste and all Food waste bins will be located behind the cafeteria area.
- vi. For the Pre-Preparatory School and Junior School, small bins/transparent liners will be provided within and outside the buildings, that will allow the students and the staff to deposit their waste and recycling material into. Every day (or as required), the facilities management team will collect these bins/liners and empty them into the larger bins provided within the central bin store. On the day of collection (or as agreed), the facilities management team will move the bins (to be collected) from the central bin store to Bishopswood Road, from where it will be collected.
- vii. Similar to the Pre-Preparatory School and Junior School, small bins/transparent liners will be provided within and outside the buildings of the Senior School. Every day (or as required), the facilities management team will collect these and empty them into the larger bins located within the central bin store. On the day of collection (or as required), the facilities management team will move the bins (to be collected) from the central bin store to Southwood Lane, from where it will be collected. For the Senior School The council's refuse collection vehicle (RCV) will park within 10 m distance to the bin presentation area, from where, the council's collection operatives will wheel the bins to the RCV and empty these. The collection operatives will return the empty

- viii. The Food waste bins that are provided for the cafeteria will be taken to Bishopswood Road for collection by the facilities management team.
- ix. It is understood that the MDR/recycling waste from all the school buildings will be collected by LBH, whereas the other waste streams will be collected by private waste collection contractor.
- x. Once collected and emptied, the facilities management team will return the bins into their respective central bin stores.
- xi. These provisions will result in waste produced during the operation of the Proposed Development being managed in accordance with the Waste (England and Wales) Regulations, 2011 (as amended). Additionally, all waste infrastructure introduced to the Proposed Development will comply with guidelines published by the GLA and LBH, British Standard (BS) 5906:2005 Waste Management in Buildings Code of Practice and Part H6 of the Building Regulations (2010).

1. Introduction

- 1.1 This Operational Waste Management Note (hereafter referred to as the 'Note') has been prepared by KaNect Limited ('KaNect') for Highgate School (hereafter referred to as the 'Client') for the proposed Highgate School Development (hereafter referred to as the 'Proposed Development') located within the administrative boundary of London Borough of Haringey (LBH).

Strategy Overview

- 1.2 Through the lens of the Circular Economy Model, the Strategy aims to promote a circular approach by exploring opportunities for reusing and recycling during the operation of the Proposed Development in accordance with the Waste Hierarchy.
- 1.3 Following on from the prevention and reduction of waste, this Strategy will encourage the separation and sorting of waste and recycling in-line with the Waste Hierarchy. Measures will be implemented to maximise the amount of material arising from the Proposed Development that is recycled/composed and minimise the amount of waste that is sent to landfill.
- 1.4 This Strategy provides a review of the requirements placed upon the Proposed Development under legislation and implemented policy at all levels of government (i.e., national (England), regional (Greater London Authority (GLA) and North London Waste Authority (NLWA)) and local (LBH). Consideration has also been given to the requirements included in local standards, local planning policy and guidance documents to comply with relevant objectives and targets.
- 1.5 The methodology used to identify and estimate volumes of waste generated during operation of the Proposed Development is provided in the Section 5. Following this, the approach taken towards waste management within the Proposed Development is discussed. This includes a breakdown of the waste management process, including waste handling, storage area provision, and collection arrangements. All waste reduction measures are compliant with British Standards 5906:2005 (Ref. 1), the Waste (England and Wales) Regulations, 2011 (as amended) (Ref. 2) and Part H6 of the Building Regulations (2010) (incorporating all amendments) (Ref. 3) Document (hereafter referred to as 'Part H6').
- 1.6 This Strategy has been written by KaNect, using information provided by the Client.

2. Waste Hierarchy and Circular Economy

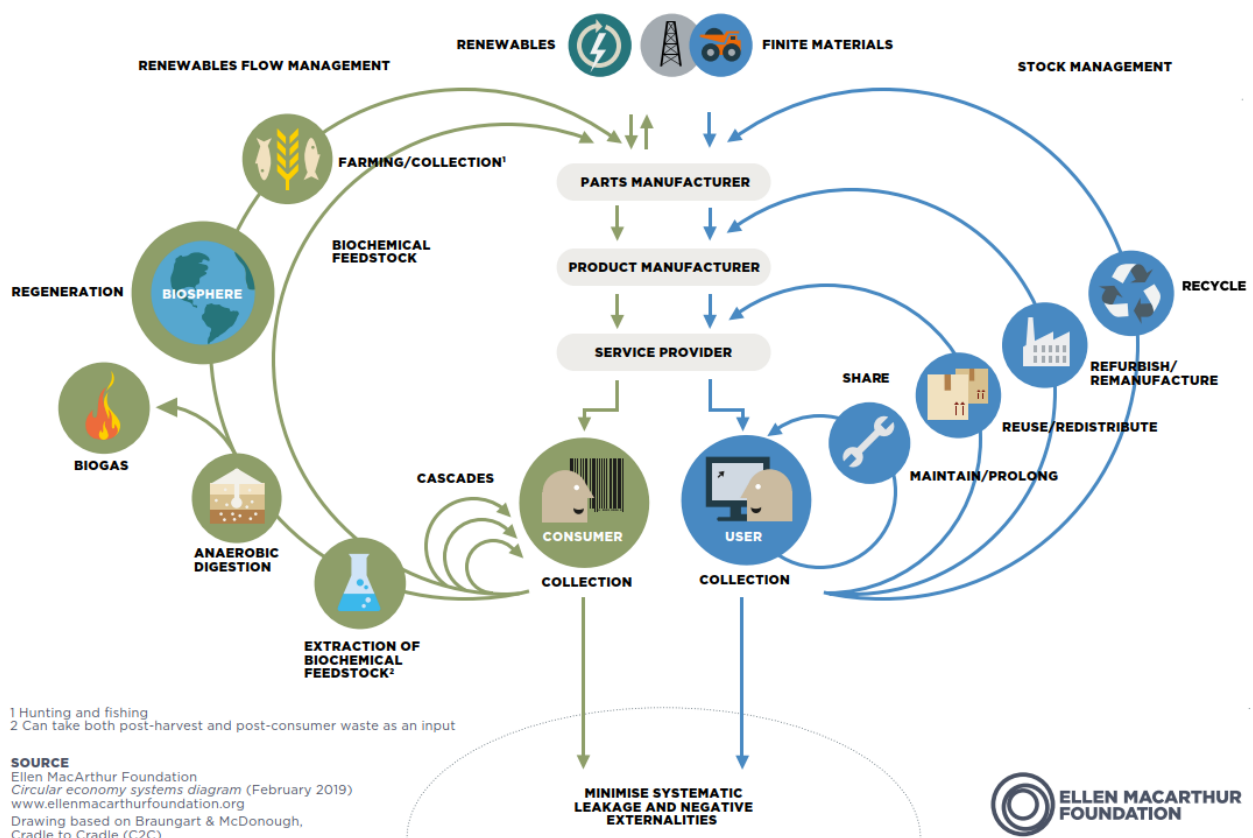
- 2.1 The Waste Hierarchy encourages the management and reduction of waste material. It is representative of a complex process influenced by the optimal management of any given product/waste material. A basic representation of the Waste Hierarchy is provided in Figure 1.

Figure 1 Waste Hierarchy



- 2.2 The prevention of waste sits at the top of the Waste Hierarchy. Prevention involves trying to reduce the amount of waste generated in the first place, for example by redesigning a product to use less, and fewer materials during manufacture.
- 2.3 The generation of waste in the UK has historically been linked with economic growth, as demonstrated by a marked decline in waste generation timed with the onset of the recession in 2008. The Circular Economy Model (see Figure 2) aims to decouple economic growth from resource consumption, by keeping resources in use for as long as possible and trying to regenerate them at the end of their life.

Figure 2 Circular Economy Model



- 2.4 It is likely that the future of waste prevention will look to adopt leasing/rental business models on a range of items (i.e., white goods, tools, phones, and clothes) which in doing so will promote an economy of repair and refurbishment. Reduction of waste will also occur by reducing the amount of packaging per item through innovation. Several initiatives will be explored to reduce waste arising from the Proposed Development including:
- Furniture Share between the School buildings;
 - Use of Recycled Paper; and
 - Collaboration with Charities for Food waste.
- 2.5 Reuse is the next tier of the Waste Hierarchy; it can involve the cleaning or repairing of products so they can be reused and redistributed as the same product. This helps to prevent products being disposed of once they become broken or dirty. Innovative exchange platforms to enable the reuse of materials include Globechain.
- 2.6 The third tier of the Waste Hierarchy and outermost loop of the Circular Economy Model is recycling – the act of turning waste materials into new products. Recycling benefits the environment as it reduces the consumption of raw materials and diverts waste materials from final disposal routes (i.e., landfill and incineration).
- 2.7 The fourth tier of the Waste Hierarchy is other recovery. This means that the waste material that cannot be recycled, it may be possible to recover energy in the form of ‘waste to energy’. This process can help to reduce carbon emissions.
- 2.8 Disposal is the final tier of the Waste Hierarchy. This would imply that the waste material collected are of no value (‘economic and environment’) and as a last resort are sent to the landfill (or incineration without energy recovery) for disposal. Due to the negative effects towards the environment (that may include impacts to air quality, climate change etc.), this is the least sustainable option.

3. Legislation/Planning Policy

- 3.1 A summary list of the legislation relevant to the management of operational waste is provided in this section:

National Waste Legislation

- The Animal By-Products (England) Regulations 2009 (as amended) (Ref. 4),
- Clean Neighbourhoods and Environment Act 2005 (as amended) (Ref. 5),
- Control of Pollution Act (COPA) 1974 (as amended) (Ref. 6),
- The Controlled Waste (England and Wales) Regulations 2012 (as amended) (Ref. 7),
- The Environment Act 1995 (Ref. 8),
- Environmental Protection Act 1990 (EPA) (Ref. 9),
- The Landfill Tax Regulations 1996 (as amended) (Ref. 10),
- The List of Wastes (England) Regulations (as amended) (Ref. 11),
- The Pollution Prevention and Control (Fees) (Miscellaneous Amendments) Regulations 2017 (Ref. 12),
- The Producer Responsibility Obligations (Packaging Waste) Regulations 2007 (as amended) (Ref. 13),
- The Hazardous Waste Regulations 2005 (as amended) (Ref. 14),
- The Waste (England and Wales) Regulations, 2011 (as amended),
- The Waste Batteries and Accumulators Regulations 2009 (as amended) (Ref. 15), and
- The Waste Electrical and Electronic Equipment (WEEE) Regulations 2015 (Ref. 16).
- The Environmental Act 2021 (Ref. 17).

Waste and Planning Policy

- 3.2 The national, regional, and local waste and recycling management planning policies in Table 1 contain information applicable to the Proposed Development.

Table 1 Waste and Recycling Management Policies

Waste Planning Policy Document	Date	Policy	Detail
A Green Future: Our 25 Year Strategy to Improve the Environment (Ref. 18)	2018	Chapter 4: Increasing resource efficiency and reducing pollution and waste	• Make sure that resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing, and recycling. • Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2025.
Our Waste, Our Resources: A Strategy for England (Ref. 19)	2018	1.1.1 1.1.4 1.3.2 2.3.1 3.1.1	• Extended Producer Responsibility - The Extended Producer Responsibility (EPR) is “a policy approach through which a producer’s responsibility for a product is extended to the post-use stage. This incentivises producers to design their products to make it easier for them to be reused, dismantled and/or recycled at end of life”, this also applies to certain materials within the construction and demolition section. • Deposit Return Scheme - In a Deposit Return Scheme (DRS), a small deposit will be added to the price of a drink container brought to a store. Once the container has been used, the consumer will dispose of it in a reverse vending machine and the deposit will be returned to the consumer. • Consistent Collections - Subject to consultation, legislation enforcing the government to “specify a core set of materials to be collected by all local authorities and waste operators” will be introduced. It is envisioned that specifying a consistent set of dry recyclable materials to be collected from all households and businesses will improve England's recycling rate, (subject to consultation) it will include mandatory separate food waste collections. At the current time these policy instruments are out for consultation and (subject to proposals) will be rolled out from 2023.
Regional			
The London Plan (Ref. 20)	2021	The London Plan Policy SI 7 Reducing Waste and Supporting the Circular Economy	This policy states that waste reduction and reduction in the quantity of waste going for disposal from London can be achieved by promoting circular economy i.e. • By encouraging the reuse of material and by using fewer resources in the production and distribution of products, • By ensuring that zero biodegradable or recyclable waste is sent to landfill by 2026, • By meeting the set recycling targets (i.e. 65% for municipal waste by 2030), • By designing developments that would provide adequate, flexible, and easily accessible storage space to support collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

		The London Strategy Policy T7 Deliveries, Servicing and Construction	• This policy states that development proposals must consider the use of rail/water for the transportation of material with increased levels of direct vision on waste. • Development plans and development proposals should facilitate sustainable freight movement by rail, waterways and road. • At large developments, facilities to enable micro-consolidation should be provided, with management arrangements set out in Delivery and Servicing Plans.
London Environment Strategy (Ref. 21)	2018	Policy 7.2.2	• Targets a 65% recycling rate for municipal waste (this is broken down into a 50% recycling target for household waste and a 75% target for business waste by 2030) and specifies that no biodegradable or recyclable waste will be sent to landfill by 2026.
District and Local			
North London Joint Waste Strategy (Ref. 22)	2009	Objectives	• To minimise the amount of municipal wastes arising, • To maximise recycling and composting rates, • To reduce greenhouse gases by disposing of less organic waste in landfill sites, • To co-ordinate and continuously improve municipal wastes minimisation and management policies in North London, • To manage municipal wastes in the most environmentally benign and economically efficient ways possible through the provision and co-ordination of appropriate wastes management facilities and services, • To ensure that services and information are fully accessible to all members of the Community, • To maximise all opportunities for local regeneration, • To ensure an equitable distribution of costs, so that those who produce or manage the waste pay for it.
North London Waste Plan Proposed Submission (Ref. 23)	2019	S01	• States "to support the movement of North London's waste as far up the waste hierarchy as practicable, to ensure environmental and economic benefits are maximised by utilising waste as a resource".
		S02	• States "to support the use of sustainable forms of transport and minimise the impacts of waste movements including on climate change".
Haringey Local Plan, Development Management Policies (DMP) (Ref. 24)	2017	Policy DM4	• All proposals should consider how to sustainably manage waste arising from the development during the design, construction and occupation phases of new developments. • All proposals will be required to make on-site provision for general waste, the separation of recyclable materials and organic material for composting. The on-site provision must: ○ Ensure adequate dedicated internal and external storage space to manage the volume of waste arising from the site

4. The Proposed Development

- 4.1 The Proposed Development will comprise of three schools including Pre-Preparatory School, Junior School and Senior School. Table 2 provides information on the number of pupils in each school.

Table 2 Pupil Breakdown Per School

School	Number of Pupils
Pre-Preparatory School	140
Junior School	400
Senior School	1,220
Total Students	1,760
Staff Members	650
Total Pupils	2,410

For estimating the waste and recycling arising from the Proposed Development, the staff members have been divided into three schools.

5. Methodology

School

- 5.1 A bespoke methodology has been developed by using the existing waste storage and collection data. The total quantities of waste collected from the existing school buildings was divided by the number of pupils to get the quantities of waste and recycling material arising per pupil. Table 3 provides the methodology used for estimating the waste and recycling material arising from the Proposed Development.

Table 3 Methodology for School

Methodology	Storage Requirements
Bespoke	12.17 L of MDR per person (including staff) per Week 25.10 L of Residual Waste per (including staff) per Week 1.84 L of Food Waste per (including staff) per Week

- 5.2 It should be noted that the MDR will constitute of all recycling streams (including):

- Paper and Cardboard;
- Mixed Plastics;
- Glass; and
- Metals (which is believed to be in small quantities).

6. Management Strategy

Waste and Recycling Arisings

6.1 Based on the methodology provided in Table 3 , the estimated weekly waste and recycling material arising from the Proposed Development are provided in Table 4.

Table 4 Weekly Waste and Recycling Arisings

School	Number of Students	Staff Members	Total Occupants	MDR (Litre/Week)	Food (Litre/Week)	Residual (Litre/Week)	Total
Pre-Preparatory	140	216	356	4,333		8,937	13,270
Junior School	400	216	616	7,498		15,464	22,962
Senior School	1,220	218	1,438	17,503		36,099	53,602
Cafeteria					4,445		4,445
Total	1,760	650	2,410	29,334	4,445	60,500	94,279

For estimating the waste and recycling arising from the Proposed Development, the staff members have been divided into three schools.

For cafeteria, it is assumed that all pupils will be using this facility, therefore, this will be the only place where Food waste is generated.

6.2 However, it is anticipated that the MDR will be collected weekly by LBH, whereas the Food waste and Residual waste will be collected twice every week. Considering this, the waste and recycling arisings are provided in Table 5.

Table 5 Waste Arisings (Weekly for MDR and Twice per Week for Food and Residual)

School	Number of Students	Staff Members	Total Pupil	MDR (Litre/Week)	Food (Litre/Week)	Residual (Litre/Week)	Total
Pre-Preparatory	140	216	356	4,333		5,362	9,695
Junior School	400	216	616	7,498		9,278	16,776
Senior School	1,220	218	1,438	17,503		21,659	39,162
Cafeteria					2,667		2,667
Total	1,760	650	2,410	29,334	2,667	36,299	68,300

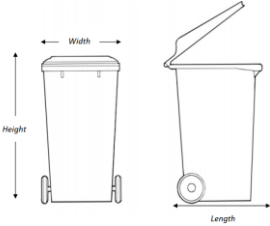
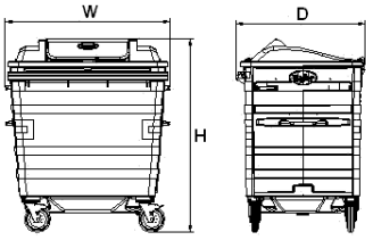
For estimating the waste and recycling arising from the Proposed Development, the staff members have been divided into three schools.

The Proposed Development is assumed to be operational for 5 days every week.

Storage Containers

6.3 Table 6 provides the example dimensions of storage containers ('bins') that are proposed to be used. Please note that bin dimensions may vary between different manufacturers, therefore, these dimensions provided should be used as reference only.

Table 6 Standard Bin Dimensions

Bin	Dimensions	Land Uses and Type of Waste the Bins are Used for
	Capacity (L): 240	For Food Waste
	Height (mm): 1,100*	
	Length (mm): 740*	
	Width (mm): 580*	
	Height (mm): 1,360*	
	Length (mm): 764*	
	Width (mm): 1,371*	
	Capacity (L): 1,100	For MDR & Residual Waste
	Height (mm): 1,410*	
	Length (mm): 1,000*	
	Width (mm): 1,265*	

*Bin dimensions might vary between manufacturers

Waste and Recycling Storage Requirements and Management Strategy

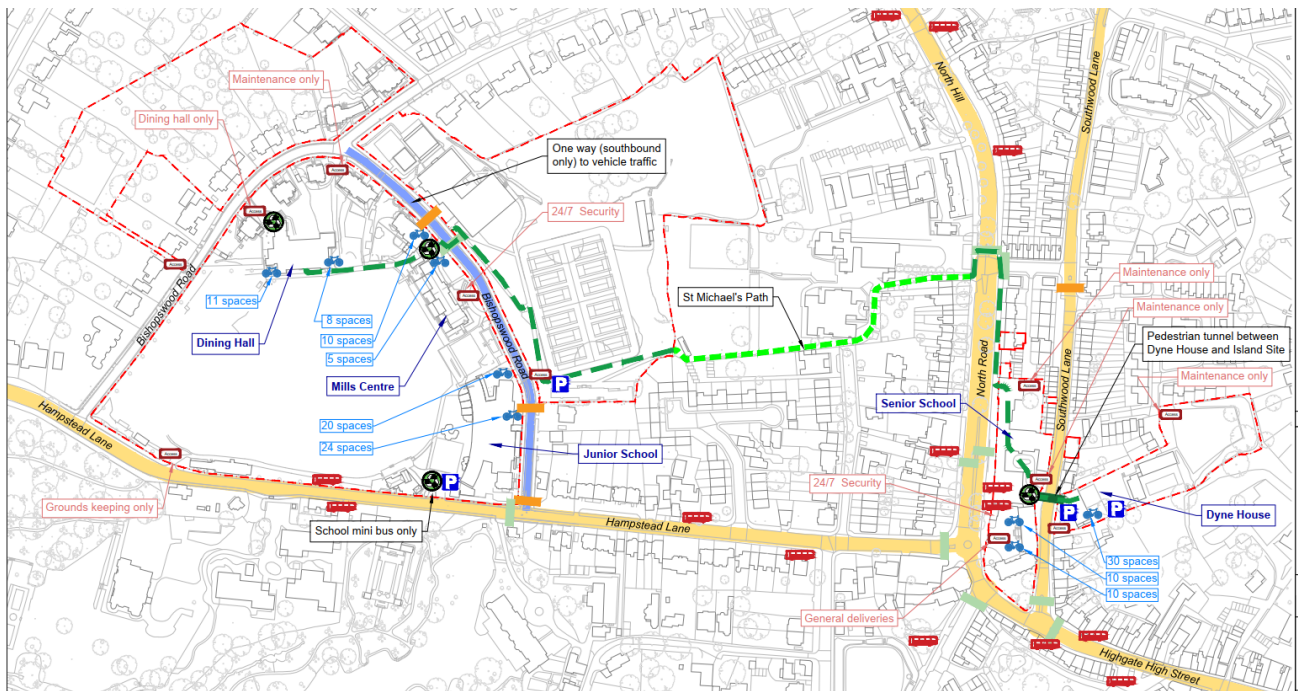
6.4 Based on the waste and recycling arisings as provided in Table 5, the subsequent storage requirements are provided in Table 7.

Table 7 Waste and Recycling Storage Requirements based on Weekly Collection for MDR and Twice per Week Collection for Food and Residual Waste

School	MDR	Food	Residual	Total
Pre-Preparatory and Junior School	11 × 1,100 L		14 × 1,100 L	25 × 1,100 L
Senior School	16 × 1,100 L		20 × 1,100 L	36 × 1,100 L
Cafeteria		12 × 240L		12 × 240L
Total	27 × 1,100 L	12 × 240L	34 × 1,100 L	61 × 1,100 L 12 × 240 L

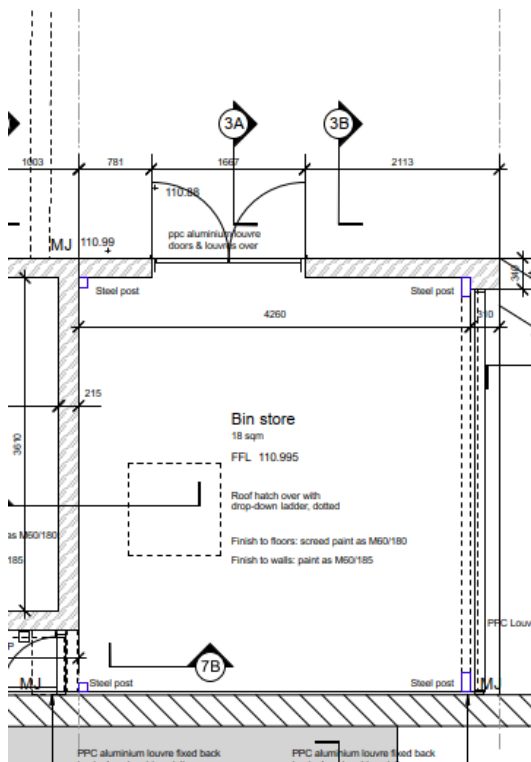
6.5 Figure 3 provides the locations of these central bin stores (marked by blue star). Whereas Figure 4 provides the proposed bin store between the Mill Centre and the pre-preparatory building.

Figure 3 Location of Central Bin Stores



Please note that this Figure is not drawn to scale. The green circles represent the bin stores.

Figure 4 Proposed Bin Store b/w Mills Lane and Pre-Preparatory School

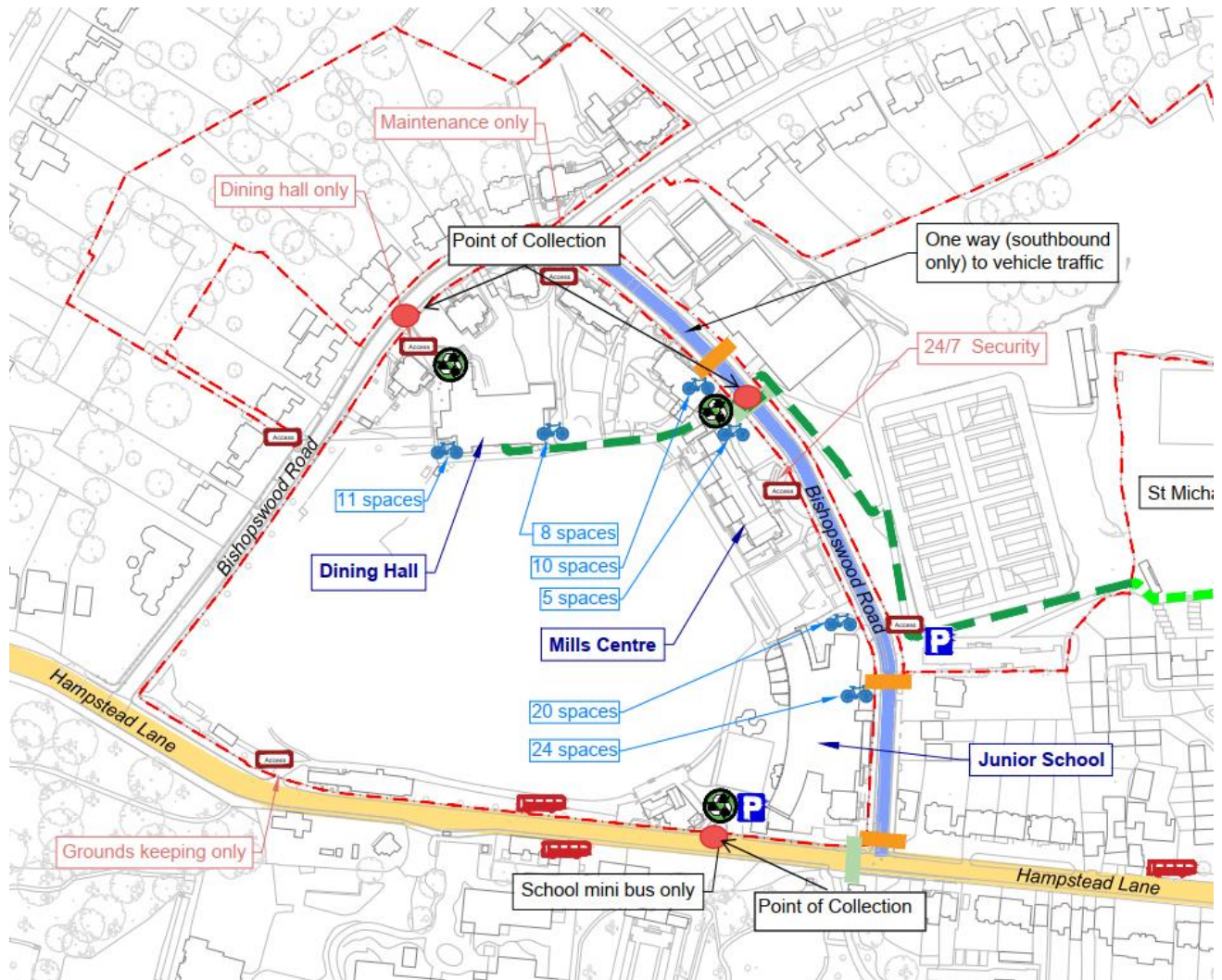


Please note that this Figure is not drawn to scale

- 6.6 Small bins or transparent liners will be provided inside and across each school, which will allow the pupils and staff to deposit their waste and recycling into. Daily (or as required), the facilities management team will take these bins/liners to the central bin stores and empty

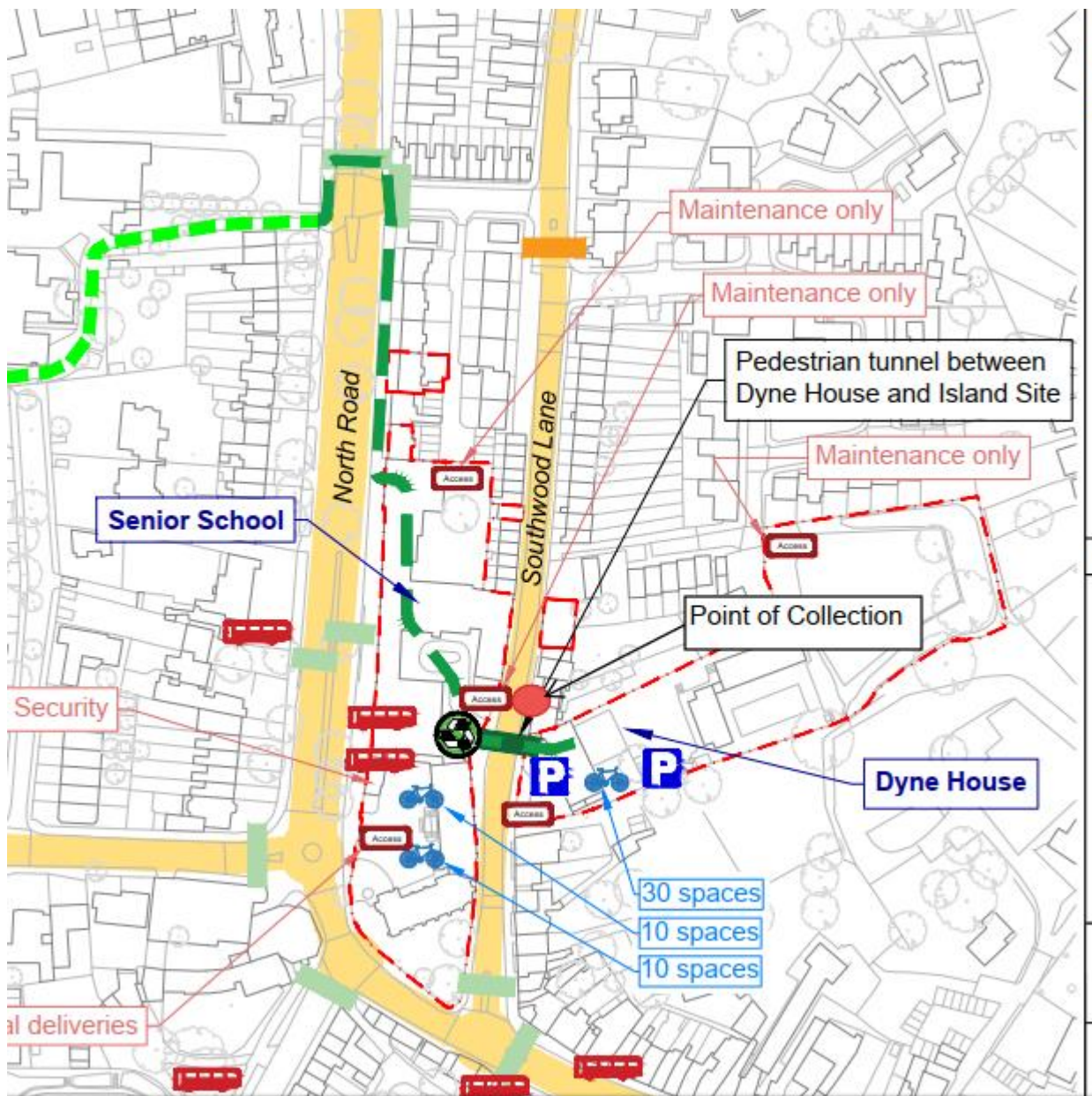
them. On the day of collection (or as agreed), for the Pre-Preparatory School, Junior School and the cafeteria, the facilities management team will wheel the bins (required for collection) to Bishopswood Road, from where these will be collected. Once emptied, the facilities management team will return these bins back to the central bin store. Please see Figure 5 for the location of collection.

Figure 5 Pre-Preparatory, Junior School and Cafeteria - Point of Collections



Please note that this Figure is not drawn to scale. Red circles represent collection points.

- 6.7 For Senior School, prior to the day of collection (or as agreed), the facilities management team will wheel the full bins (required for collection) to Southwood Lane, from where it will be collected. Once emptied, the facilities management team will transfer these empty bins back to the central bin store. Please see Figure 6 for the location of collection.

Figure 6 Senior School - Point of Collection

Please note that this Figure is not drawn to scale, Red circle represent the point of collection.

- 6.8 At this stage it is envisioned that the MDR/recycling will be collected by LBH, whereas all other wastes will be collected by private waste collection contractors.

Unique Waste

- 6.9 There is likely to be a small component of the overall waste arising from the Proposed Development that will comprise other waste streams, such as waste electrical and electronic equipment (WEEE), printer and toner cartridges and fluorescent light tubes. Building maintenance will also give rise to materials such as paints and waste lubricating oils that will require separate storage in dedicated sealed containers.
- 6.10 This type of waste is termed “unique” as it will not be produced on a regular basis and therefore its management will be on special arrangement with a registered waste handler for

the specific waste that is produced. Hazardous waste is required to be kept separate from general and bulky waste. There is space for this within the bin store for these types of waste. In addition, battery bins will be provided in different location of the schools. Separate arrangements will be made by the building management team for the safe disposal of these waste streams, as covered by the Hazardous Waste (Amendment) Regulations 2016 and WEEE Regulations 2015. All waste management will have to comply with Environmental Protection Act 1990 and The Waste (England and Wales) (Amendment) Regulations 2014.

7. Monitoring

- 7.1 The facilities management team will be responsible for monitoring the small bins and liners that are placed around the schools, to check for any contamination. If contamination is noted, then the facilities management will remove the contamination and deposit it into the correct bin or liner.
- 7.2 The facilities management team will also keep a record of the quantities of waste of waste being generated. Similarly, the collection contractor will also be responsible to do so. All this data will be kept in records with the facilities management team.

8. Waste and Recycling Storage and Collection Provision

- 8.1 In accordance with BS EN 840, as set out in BS 5906:2005, all waste containers within the Proposed Development will be stored under cover in a specially designed waste storage room, which will be built to the same general standard for commercial premises. The walls and roofs of this store will be formed of non-combustible, robust, secure and impervious material, and have a fire resistance of one hour when tested in accordance with BS 476-21 - Fire tests on building materials and structures: Part 21 (Ref. 25), whilst the door of the store will be made of steel, and will have a fire resistance of 30 minutes when tested in accordance with BS 476-22 - Fire tests on building materials and structure: Part 22 (Ref. 26).
- 8.2 Further to these requirements, the Proposed Development will also comply with the guidance set out in BS 5906:2005 and Part H6 as provided below:

Location

- Bin stores will be located at vehicle access level.
- Bin stores will be away from the main entrance to the building.
- Waste and recycling containers will be sited so that the containers can be taken to the collection point without being taken through a building unless it is a porch, garage, car port or other open space.
- External storage areas for waste and recycling containers will be away from windows and ventilators and preferably be in shade or under shelter.

Convenience

- Wheelie bins will be located no further than 15 m from the point of collection.

- Bulk waste containers will be located no further than 10 m from the point of collection.

Screening or covering

- The waste and recycling containers housed will be big enough to fit as many containers as are necessary to facilitate collection and will be high enough for lids to open and close where lidded containers are installed. Internal housing layouts will allow all containers to be accessed by users.
- Bins will be fitted with close fitting lids to prevent vermin access.
- Internal built storage areas will conform to BS 5906:2005.

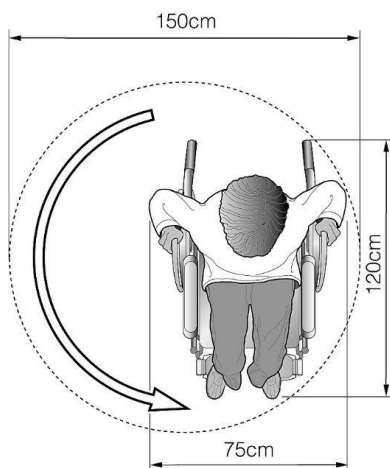
Signage

- Waste and recycling storage areas will be marked, and signs should be provided in the bin stores.
- There are a number of industry standard colours that are accepted for different categories of waste and recycling. These will not to be used when the bin doesn't hold the specific waste and recycling category.
- Users will be made aware of the fire risk from waste and recycling storage. This will be done using signage and displaying the danger when waste and recycling materials are stored carelessly.
- All roads will be clearly marked and controlled to prevent unauthorised parking

Accessibility

- Waste and recycling storage areas will be located in a position that provides easy and safe access for both waste and recycling producers and collectors. In addition, this will also provide an ease of use for older persons, persons short of stature and people with disabilities.
- Internal and external facilities for buildings will be designed for older persons and persons with disabilities as set out by the Disability and Discrimination Act (DDA), as specified in BS 8300:2001 (Ref. 27).
- Waste and recycling storage areas will provide a clear turning circle with a minimum diameter of 1,500 mm for wheelchair users, as specified in Part M of the Building Regulations (Ref. 28) and shown in Figure 7.

Figure 7 Example Wheelchair Turning Circle



Access paths and roads

- All doors and pathways will be 200 mm wider than any bins that are required to pass through or over them.
- Routes from bin storage areas to collection points will be as straight as possible with no kerbs or steps. Gradients will be no greater than 1:12 and surfaces should be smooth and sound, concrete rather than flexible. Dropped kerbs will be installed as necessary.
- There will be no steps and projections at the entrance of a bin store.
- The bin store will be external to the building or capable of being isolated from the main building. This will ensure access to the main building will not be used through the bin store.
- Roads will have a minimum width of 5 m.

Vehicle Access

- Adequate waste and recycling storage arrangements will be made so that waste and recycling does not need to be placed on the public highway other than immediately before it is due to be collected.
- Roads will be arranged so that collecting vehicles can continue mainly in a forward direction.
- Vehicles will not be reversing.
- Vehicles operating in service areas will enter and leave in a forward-facing direction.

Materials and finishing

- The walls and roofs of the bin store will be formed of non-combustible robust and secure materials with a smooth finish suitable of washing down. The door of the bin store will be made of steel.

Safety and anti-social behaviour

- Location of the bin store will be considered to minimise environmental impacts and nuisance from anti-social behaviour.
- The door of the bin store will be capable of being opened from the inside as well as the outside for reasons of safety.
- Unsightly bins can damage the visual amenity and contribute to increased level of anti-social nuisance such as odour and litter. Therefore, bins are planned carefully and will not be stored in a publicly accessible area.

Fire safety

- Stored waste and recycling material will be identified as a potential hazard in any fire risk assessment.
- Internal bin stores will be constructed within a fire compartment structure which is designed to contain a fire.
- Suitably sized manual fire extinguishers will be deployed. For larger risks, a dedicated automatic fire sprinkler or water mist system will be considered.

- The walls and roofs of the bin store will have a fire resistance of one hour when tested in accordance with BS 476-21. The door of the bin store will be made of steel or have a fire resistance of 30 minutes when tested in accordance with BS 476-22.

Ventilation and Lighting

- Bin stores will be lit to be safe for facilities management team and collection operatives to use and service during darkness hours.
- Permanent ventilators will be provided giving a total ventilation area of not less than 0.2 m². Passive ventilators will be fly and vermin proof and will be located near to the ceiling and floor of the bin store as possible but away from windows and dwellings.
- Electrical lighting will consist of sealed bulkhead fittings with houses related to IP65 in BS EN 60529:1992 (Ref. 29) for the purpose of cleaning down with hoses and inevitable splashing.
- Luminaires will be low energy light fittings or low energy lamp bulbs, controlled by a proximity detection or time delay button to prevent lights being left on.

Maintenance

- Arrangements will be made for the cleaning of the bin store with water. A hose union tap should be provided in agreement with the local water authority and the Environment Agency.
- The floor of the bin store will have a suitable fall towards the drainage point. Gullies will be positioned not to be in the track of container wheels and should incorporate a trap which maintains a seal, even during prolonged periods of disuse

Landscaping Waste

- 8.3 The landscaping contractor will be responsible for removing the landscaping waste from the Proposed Development where and when generated.

Sanitary Waste

- 8.4 The sanitary waste arising from the Proposed Development will be collected in-situ i.e., a specialist waste contractor will be commissioned to collect this type of waste directly from the generation points.

9. Summary

- 9.1 In keeping with national, regional (London) and local (NLWA and LBH) policy, this Note demonstrates how the Proposed Development will continue to promote sustainable waste and recycling management methods.
- 9.2 In following the Waste Hierarchy, the Proposed Development will promote resource efficiency to help reduce potential environmental impacts as a result. This Strategy has firstly looked to prevent waste, reuse resources where possible and recycle materials, minimising the generation of waste.
- 9.3 The Proposed Development includes sufficient space to enable best practice recycling methods and flexibility in the future. This Strategy shows how the Proposed Development has segregated and provided space for Recycling, Food and Residual streams.
- 7.4 Alongside striving towards local policy objectives, this Strategy can help achieve wider district goals such as reaching recycling targets (65% of municipal waste) alongside providing adequate, flexible, and easily accessible bin store to support recyclables and food waste as set by the London Strategy – 2021.

10. References

- Ref. 1 British Standards Institute (BSI), (2005); BS 5906:2005, Waste Management in Buildings – Code of Practice
- Ref. 2 Her Majesty Statutory Office (HMSO), (2011); The Waste (England and Wales) Regulations (as amended)
- Ref. 3 Department for Communities and Local Governments (DCLG), (2013); Building Regulations – Approved Document H: Drainage and Waste Disposal (Incorporating 2010, 2013, and 2015 amendments)
- Ref. 4 HMSO, (2011); The Animal By-Products (Enforcement) Regulations 2011.
- Ref. 5 HMSO, (2015); Clean Neighbourhoods and Environment Act 2015.
- Ref. 6 HMSO, (1989); Control of Pollution Act 1989.
- Ref. 7 HMSO, (2012); The Controlled Waste (England and Wales) Regulations 2012.
- Ref. 8 HMSO, (1995); Environment Act 1995.
- Ref. 9 HMSO, (1990); Environmental Protection Act 1990.
- Ref. 10 HMSO, (1996); The Landfill Tax Regulations 1996.
- Ref. 11 HMSO, (2005); The List of Wastes (England) Regulations 2005.
- Ref. 12 HMSO, (2017); The Pollution Prevention and Control (Fees) (Miscellaneous Amendments) Regulations.
- Ref. 13 HMSO, (2007); The Producer Responsibility Obligations (Packaging Waste) Regulations 2007.
- Ref. 14 HMSO, (2005); The Hazardous Waste Regulations 2005 (as amended)
- Ref. 15 HMSO, (2009); The Waste Batteries and Accumulators Regulations 2009.
- Ref. 16 HMSO, (2013); The Waste Electrical and Electronic Equipment (WEEE) (as amended)
- Ref. 17 HMSO, (2021); The Environmental Act
- Ref. 18 HMSO, (2018); A Green Future: Our 25 Year Strategy to Improve the Environment.
- Ref. 19 HMSO, (2018); Our Waste, Our Resources: A Strategy for England.
- Ref. 20 Greater London Authority (GLA) (2021); London Strategy, Spatial Development Strategy for Greater London.
- Ref. 21 GLA (2018); London Environment Strategy.
- Ref. 22 North London Waste Authority (NLWA), (2009); Joint Waste Strategy
- Ref. 23 NLWA, (2019); Waste Plan Proposed Submission
- Ref. 24 London Borough of Haringey (LBH), (2017); Local Plan, Development Management Policies
- Ref. 25 BSI, (1987); BS 476-21, Fire tests on building materials and structures: Part 21.
- Ref. 26 BSI, (1987); BS 476-22, Fire tests on building materials and structures: Part 22.
- Ref. 27 BSI, (2009); BS 8300:2001 – Design of buildings and their approaches to meet the needs of disabled people.
- Ref. 28 DCLG, (2010); Building Regulations – Approved Document M – Access to and use of buildings (2015) (Amendment 2016).
- Ref. 29 BSI, (1992); BS EN 60529:1992, Specification for degrees of protection provided by enclosures (IP code)

Mallinson Sports Centre - 4 Phase Development Order of Cost Estimate (Phases 2 - 4)

Highgate School

04 July 2022 **DRAFT FOR COMMENT**

CONTROL ISSUE SHEET

Revision	Status	Prepared By (name/position/date)	Authorised By (name/position/date)
-	DRAFT	Evie Dwyer/ Assistant Surveyor/ 21 November 2018	Katie Coulson/ Partner/ 21 November 2018
1	DRAFT	Evie Dwyer/ Project Surveyor/ 15 February 2019	Richard Harris/ Partner/ 15 February 2019
2	DRAFT	Evie Dwyer/ Project Surveyor/ 03 September 2019	Richard Harris/ Partner/ 04 September 2019
3	DRAFT	David Mimmagh/ Senior Associate/ 04 July 2022	Katie Coulson/ Partner/ 04 July 2022

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- 2** Total Development Cost Summary
- 3** Development Cost Summary by Phase
- 4** Executive Summary Commentary
- 5** Construction Cost Summary by Phase
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- 6b.** Building Works Estimate - Phase 2b The Orchard Site
- 6b.** Building Works Estimate - Phase 2c New Sports Hall
- 6c.** Building Works Estimate - Phase 3 Existing Sports Hall
- 6d.** Building Works Estimate - Phase 4 Changing Rooms and Extension
- 7** Notes and Assumptions
- 8** Exclusions
- 9** Design Information
- 10** Area Schedule
- 11** Inflation Calculation
- 12** Reconciliation
- 13** Architectural GA's

1. EXECUTIVE SUMMARY

1. EXECUTIVE SUMMARY



1. Cost Summary

Description	£
Phase 2a - Fives Courts	1,480,000
Phase 2b - The Orchard Site	1,210,000
Phase 2C - New Sports Hall	9,320,000
Phase 3 - Extension & Changing Rooms	1,990,000
Phase 4 - Existing Sports Hall	3,300,000
Phase 2b - New Sports Hall	770,000
Sub-Total	18,070,000
Main Contractor Preliminaries	3,250,000
Main Contractor OH&P	1,280,000
Costs associated w/ phasing	410,000
Risk Allowance	2,261,680
Inflation	5,080,000
Total (Construction Cost)	30,351,680
Professional Team Fees	5,464,800
Client Direct Works	500,000
VAT (20%)	7,264,960
ROUNDED DEVELOPMENT COST	£43,581,440



2. Key Headlines



The total rounded development cost currently sits at circa £43.6mil. This includes construction cost, professional fees and VAT.



This estimate includes for Phases 2a, 2b, 2c, 3 and 4 of the 4 Phase Mallinson Sports Hall Development.



*The project is phased as follows:
Phase 2a - Fives Court
Phase 2b - The Orchard Site
Phase 2c - New Sports Hall
Phase 3 - Changing Rooms & Extension
Phase 4 - Existing Sports Hall*



A number of assumptions have been made due to the level of design information we have at this stage. Please refer to sections 7 & 8 to review.

2. TOTAL DEVELOPMENT COST SUMMARY

2. TOTAL DEVELOPMENT COST SUMMARY

CLIENT / DEVELOPMENT COST		Total (£)	%
1	Construction Cost (Phases 2 - 4 + External Works)	30,360,000	69.6
2	Project / Design Team Fees	5,464,800	12.5
3	Client Direct Costs	500,000	1.1
Sub Total		36,324,800	83.3
4	Employer Change Risk Allowance	Excluded	
5	Employer Other Risk Allowance	Excluded	
Sub Total		36,324,800	83.3
6	VAT 20.0%	7,264,960	16.7
Total Estimated Development Cost		43,589,760	100.0

ESTIMATED ROUNDED DEVELOPMENT COST**£****43,590,000****100**

3. TOTAL DEVELOPMENT COST SUMMARY BY PHASE

3. DEVELOPMENT COST SUMMARY BY PHASE
DEVELOPMENT COST - 2a. FIVES

			Total (£)	£/m² GIA	%
1	Construction Cost (based on GIA of 337m²)		2,440,000	7,240	70.6
2	Project / Design Team Fees	18.0%	439,200	1,303	12.7
	Sub Total		2,879,200	8,544	83.3
3	Employer Change Risk		Excluded		
4	Employer Other Risk		Excluded		
	Sub Total		2,879,200	8,544	83.3
5	VAT	20.0%	575,840	1,709	16.7
	Total Estimated Development Cost		3,455,040	10,252	100.0

ESTIMATED ROUNDED CONSTRUCTION COST	£	3,460,000	2,343	100
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DEVELOPMENT COST - 2b. THE ORCHARD SITE

			Total (£)	£/m² GIA	%
1	Construction Cost (based on area of 1789m²)		1,990,000	1,112	70.6
2	Project / Design Team Fees	18.0%	358,200	200	12.7
	Sub Total		2,348,200	1,313	83.3
3	Employer Change Risk		Excluded		
4	Employer Other Risk		Excluded		
	Sub Total		2,348,200	1,313	83.3
5	VAT	20.0%	469,640	263	16.7
	Total Estimated Development Cost		2,817,840	1,575	100.0

ESTIMATED ROUNDED CONSTRUCTION COST	£	2,820,000	1,576	100
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DEVELOPMENT COST - 2c. NEW SPORTS HALL

			Total (£)	£/m² GIA	%
1	Construction Cost (based on GIA of 2,506m²)		15,310,000	6,109	70.6
2	Project / Design Team Fees	18.0%	2,755,800	1,100	12.7
	Sub Total		18,065,800	7,209	83.3
3	Employer Change Risk		Excluded		
4	Employer Other Risk		Excluded		
	Sub Total		18,065,800	7,209	83.3
5	VAT	20.0%	3,613,160	1,442	16.7
	Total Estimated Development Cost		21,678,960	8,651	100.0

ESTIMATED ROUNDED DEVELOPMENT COST	£	21,680,000	8,651	100
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DEVELOPMENT COST - 3. CHANGING ROOMS AND EXTENSION

			Total (£)	£/m² GIA	%
1	Construction Cost (based on GIA of 571m²)		3,440,000	6,025	70.6
2	Project / Design Team Fees	18.0%	619,200	1,084	12.7
	Sub Total		4,059,200	7,109	83.3
3	Employer Change Risk		Excluded		
4	Employer Other Risk		Excluded		
	Sub Total		4,059,200	7,109	83.3
5	VAT	20.0%	811,840	1,422	16.7
	Total Estimated Development Cost		4,871,040	8,531	100.0

ESTIMATED ROUNDED DEVELOPMENT COST	£	4,870,000	8,529	100
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3. DEVELOPMENT COST SUMMARY BY PHASE
DEVELOPMENT COST - 4. EXISTING SPORTS HALL

			Total (£)	£/m² GIA	%
1	Construction Cost (based on GIA of 1,477m²)		5,880,000	3,981	70.6
2	Project / Design Team Fees	18.0%	1,058,400	717	12.7
	Sub Total		6,938,400	4,698	83.3
3	Employer Change Risk		Excluded		
4	Employer Other Risk		Excluded		
	Sub Total		6,938,400	4,698	83.3
5	VAT	20.0%	1,387,680	940	16.7
	Total Estimated Development Cost		8,326,080	5,637	100.0

ESTIMATED ROUNDED DEVELOPMENT COST	£	8,330,000	5,640	100
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DEVELOPMENT COST - EXTERNAL WORKS

			Total (£)	£/m² GIA	%
1	Construction Cost		1,300,000	880	70.7
2	Project / Design Team Fees	18.0%	234,000	158	12.7
	Sub Total		1,534,000	1,039	83.4
3	Employer Change Risk		Excluded		
4	Employer Other Risk		Excluded		
	Sub Total		1,534,000	1,039	83.4
5	VAT	20.0%	306,800	208	16.7
	Total Estimated Development Cost		1,840,800	1,246	100.0

ESTIMATED ROUNDED DEVELOPMENT COST	£	1,840,000	1,246	110
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DEVELOPMENT COST - CLIENT DIRECT COSTS

			Total (£)	£/m² GIA	%
1	Construction Cost		500,000	339	83.3
	Sub Total		500,000	339	83.3
2	Employer Change Risk		Excluded		
3	Employer Other Risk		Excluded		
	Sub Total		500,000	339	83.3
4	VAT	20.0%	100,000	68	16.7
	Total Estimated Development Cost		600,000	406	100.0

ESTIMATED ROUNDED DEVELOPMENT COST	£	600,000	406	100
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TOTAL DEVELOPMENT COST (PHASES 2 - 4 + EXTERNAL WORKS + CLIENT DIRECT COSTS)	£	43,600,000	29,519	100
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4. EXECUTIVE SUMMARY COMMENTARY

4. EXECUTIVE SUMMARY COMMENTARY

This Cost Estimate has been based upon high level details provided by Ed Toovey Architects, Pringuer James Structural Engineers and Peter Deer & Associates Services Engineers.

This report provides an order of cost for the phases 2 - 4 of the Mallinson Sports Centre Development. This will involve the construction of a new sports hall, a sunken amphitheatre, new fives courts, an extension to the existing buildings and refurbishment of the existing sports hall and changing rooms.

The total estimated Development Cost includes a £500k allowance for Client/ Development items as advised by Stephen Freeth. Employer Change and Employer Other Risk has also been excluded.

CLIENT / DEVELOPMENT COST		Total (£)	%
1	Construction Cost	30,360,000	69.6
2	Project / Design Team Fees	18% 5,464,800	12.5
3	School Direct Works	500,000	1.1
	To include:		
	Computers and General Hardware		
	Electronic Rifle Range		
	Furniture for Offices and Café		
	Sports Equipment		
	Storage Racks		
	White Goods		
	Small Sundry Items		
	Sub Total	36,324,800	83.3
5	Employer Change Risk Allowance	Excluded	-
6	Employer Other Risk Allowance	Excluded	-
	Sub Total	36,324,800	83.3
7	VAT	20% 7,264,960	16.7
	Total Estimated Development Cost	43,589,760	100.0

ESTIMATED ROUNDED DEVELOPMENT COST	£	43,590,000	100
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Estimated construction costs have been prepared at current day (3Q 2022) prices. We have included inflation based on the programme details provided by Highgate School. A further breakdown of this can be found in section 11.

Allowances have been included for main contractor's preliminaries at 18% and overheads and profit at 6% across all works. Design and construction risk allowances totalling 10% have been included, to reflect the status of the design and the nature of the works.

The total Construction Cost includes for construction works only and excludes pre-construction services agreements, S106/S278, CIL payments, land acquisition, developer direct costs, employer risk allowances and contributions.

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CONSTRUCTION COST		Total (£)	%
1	Construction Cost - Fives	1,480,000	4.9
2	Construction Cost - The Orchard Site	1,210,000	4.0
3	Construction Cost - Sports Hall 2	9,320,000	30.7
4	Construction Cost - Studio	1,990,000	6.6
5	Construction Cost - Sports Hall 1	3,300,000	10.9
6	External Works	770,000	2.5
7	Main Contractor's Preliminaries	3,250,000	10.7
8	Provisional allowance for complications associated with phasing	410,000	1.4
9	Main Contractor's OH&P	1,280,000	4.2
	Building Works Total	23,010,000	76
10	Design Development Risk Allowance	1,150,000	3.8
11	Construction Risk Allowance	1,110,000	3.7
	Sub Total	25,270,000	83
12	Tender Inflation Estimate	4,670,000	15.4
13	Construction Inflation Estimate	410,000	1.4
	Total Estimated Construction Cost	30,350,000	100

ESTIMATED ROUNDED CONSTRUCTION COST	£	30,350,000	100
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5. CONSTRUCTION COST SUMMARY BY PHASE

5. CONSTRUCTION COST SUMMARY BY PHASE

CONSTRUCTION COST - 2a. FIVES			Total (£)	£/m² GIA	%
0	Facilitating / Demolition Works		-	-	0.0
1	Substructure		521,767	1,548	21.4
2	Superstructure		615,155	1,825	25.2
3	Internal Finishes		88,440	262	3.6
4	Fixtures and Fittings		55,200	164	2.3
5	Services		128,361	381	5.3
6	External Works		75,000	223	3.1
	Sub Total		1,483,923	4,403	60.8
7	Main Contractor's preliminaries	18.0%	267,106	793	11.0
8	Provisional allowance for complications associated with phasing	2.0%	35,021	104	1.4
9	Main Contractor's Overheads and Profit	6.0%	105,062	312	4.3
	Building Works Total		1,891,112	5,612	77.5
10	Design Development Risk Allowance	5.0%	94,556	281	3.9
11	Construction Risk Allowance	5.0%	94,556	281	3.9
	Sub Total		2,080,223	6,173	85.3
12	Tender Inflation Estimate	15.70%	326,540	969	13.4
13	Construction Inflation Estimate	1.33%	31,995	95	1.3
	Total Estimated Construction Cost		2,438,757	7,237	100.0

ESTIMATED ROUNDED CONSTRUCTION COST	£	2,440,000	7,240	100
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CONSTRUCTION COST - 2b. THE ORCHARD			Total (£)	£/m² GIA	%
0	Facilitating / Demolition Works		37,345	21	1.9
1	Substructure		632,335	353	31.8
2	Superstructure		42,000	23	2.1
3	Internal Finishes		-	-	0.0
4	Fixtures and Fittings		225,000	126	11.3
5	Services		30,000	17	1.5
6	External Works		242,975	136	12.2
	Sub Total		1,209,655	676	60.8
7	Main Contractor's preliminaries	18.0%	217,738	122	11.0
8	Provisional allowance for complications associated with phasing	2.0%	28,548	16	1.4
9	Main Contractor's Overheads and Profit	6.0%	85,644	48	4.3
	Building Works Total		1,541,584	862	77.5
10	Design Development Risk Allowance	5.0%	77,079	43	3.9
11	Construction Risk Allowance	5.0%	77,079	43	3.9
	Sub Total		1,695,743	948	85.3
12	Tender Inflation Estimate	15.70%	266,186	149	13.4
13	Construction Inflation Estimate	1.33%	26,081	15	1.3
	Total Estimated Construction Cost		1,988,011	1,111	100.0

ESTIMATED ROUNDED CONSTRUCTION COST	£	1,990,000	1,112	100
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5. CONSTRUCTION COST SUMMARY BY PHASE

CONSTRUCTION COST - 2c. NEW SPORTS HALL				Total (£)	£/m² GIA	%
0	Facilitating / Demolition Works			130,050	52	0.8
1	Substructure			2,434,928	972	15.9
2	Superstructure			3,301,540	1,317	21.6
3	Internal Finishes			897,180	358	5.9
4	Fixtures and Fittings			-	-	0.0
5	Services			2,379,524	950	15.5
6	External Works			168,500	67	1.1
	Sub Total			9,311,722	3,716	60.8
7	Main Contractor's preliminaries	18.0%		1,676,110	669	11.0
8	Provisional allowance for complications associated with phasing	2.0%		219,757	88	1.4
9	Main Contractor's Overheads and Profit	6.0%		659,270	263	4.3
	Building Works Total			11,866,858	4,735	77.5
10	Design Development Risk Allowance	5.0%		593,343	237	3.9
11	Construction Risk Allowance	5.0%		593,343	237	3.9
	Sub Total			13,053,544	5,209	85.3
12	Tender Inflation Estimate	15.70%		2,049,059	818	13.4
13	Construction Inflation Estimate	1.33%		200,770	80	1.3
	Total Estimated Construction Cost			15,303,373	6,107	100.0

ESTIMATED ROUNDED CONSTRUCTION COST	£	15,310,000	6,109	100
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CONSTRUCTION COST - 3. CHANGING ROOMS AND EXTENSION				Total (£)	£/m² GIA	%
0	Facilitating / Demolition Works			16,800	29	0.5
1	Substructure			334,836	586	9.8
2	Superstructure			427,550	749	12.5
3	Internal Finishes			164,360	288	4.8
4	Fixtures and Fittings			132,300	232	3.9
5	Services			891,110	1,561	26.0
6	External Works			15,000	26	0.4
	Sub Total			1,981,955	3,471	57.7
7	Main Contractor's preliminaries	18.0%		356,752	625	10.4
8	Provisional allowance for complications associated with phasing	2.0%		46,774	82	1.4
9	Main Contractor's Overheads and Profit	6.0%		140,322	246	4.1
	Building Works Total			2,525,804	4,423	73.6
10	Design Development Risk Allowance	5.0%		126,290	221	3.7
11	Construction Risk Allowance	5.0%		126,290	221	3.7
	Sub Total			2,778,384	4,866	80.9
12	Tender Inflation Estimate	21.82%		606,326	1,062	17.7
13	Construction Inflation Estimate	1.40%		47,552	83	1.4
	Total Estimated Construction Cost			3,432,262	6,011	100.0

ESTIMATED ROUNDED CONSTRUCTION COST	£	3,440,000	6,025	100
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5. CONSTRUCTION COST SUMMARY BY PHASE

CONSTRUCTION COST - 4. EXISTING SPORTS HALL			Total (£)	£/m² GIA	%
0	Facilitating / Demolition Works		185,800	126	3.2
1	Substructure		193,232	131	3.3
2	Superstructure		727,105	492	12.4
3	Internal Finishes		695,058	471	11.8
4	Fixtures and Fittings		-	-	0.0
5	Services		1,474,541	998	25.1
6	External Works		25,050	17	0.4
	Sub Total		3,300,786	2,235	56.1
7	Main Contractor's preliminaries	18.0%	594,142	402	10.1
8	Provisional allowance for complications associated with phasing	2.0%	77,899	53	1.3
9	Main Contractor's Overheads and Profit	6.0%	233,696	158	4.0
	Building Works Total		4,206,522	2,848	71.5
10	Design Development Risk Allowance	5.0%	210,326	142	3.6
11	Construction Risk Allowance	5.0%	210,326	142	3.6
	Sub Total		4,627,174	3,133	78.7
12	Tender Inflation Estimate	25.23%	1,167,622	791	19.9
13	Construction Inflation Estimate	1.40%	81,411	55	1.4
	Total Estimated Construction Cost		5,876,208	3,978	99.9
ESTIMATED ROUNDED CONSTRUCTION COST			£ 5,880,000	3,981	100

CONSTRUCTION COST - EXTERNAL WORKS			Total (£)	£/m² GIA	%
1	External Works		767,480	208	59.0
	Sub Total		767,480	208	59.0
2	Main Contractor's preliminaries	18.0%	138,146	37	10.6
3	Main Contractor's Overheads and Profit	6.0%	54,338	15	4.2
	Building Works Total		959,964	260	73.8
4	Design Development Risk Allowance	5.0%	47,998	13	3.7
5	Construction Risk Allowance	5.0%	10,516	3	0.8
	Sub Total		1,018,478	276	78.3
6	Tender Inflation Estimate	25.23%	257,003	70	19.8
7	Construction Inflation Estimate	1.40%	17,919	5	1.4
	Total Estimated Construction Cost		1,293,401	351	99.5
ESTIMATED ROUNDED CONSTRUCTION COST			£ 1,300,000	352	100

6a. BUILDING WORKS ESTIMATE - PHASE 2a
FIVES COURTS

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
<u>0</u>	<u>Facilitating / Demolition Works</u>				
	No works				

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
1	<u>Substructure</u>				
1.1	Excavation				
1	Excavation of lowered Fives Court for berm; assumed arisings to be remain on site, assumed uncontaminated material	1,595	m ³	60	95,700
2	Allowance for propping	1	item	12,000	12,000
3	Provisional allowance for berming ground behind wall	1	item	17,000	17,000
1.2	Piling				
1	Allowance for piling design	1	item	2,500	2,500
2	Allowance for piling mat	1	item	4,000	4,000
3	Provision of plant and rig, mobilisation, erection, maintenance and demobilisation	1	item	6,000	6,000
4	Allowance for installation of guide wall	38	m	115	4,370
5	Allowance for contiguous piled wall, assumed 8m length in total; 4m below ground; including reinforcement cages and disposal of arisings	42	nr	2,050	86,100
6	Pile testing	1	item	2,800	2,800
7	Provisional allowance for standing time	1	item	2,800	2,800
8	Allowance for capping beam to contiguous piles	38	m	180	6,840
9	Concrete to lining wall to face of contiguous piles; assumed 200mm thick	30	m ³	180	5,400
10	Reinforcement to the above; assumed 120kg/m ³	3.60	t	1,800	6,480
11	Allowance for formwork to sides of wall	304	m ²	60	18,240
1.3	Retaining Walls				
1	Concrete to retaining wall; assumed 300mm thick	35	m ³	180	6,300
2	Reinforcement to the above; assumed 150kg/m ²	5.25	t	1,800	9,450
3	Allowance for formwork to sides of wall	232	m ²	60	13,920
4	Allowance for waterproofing walls	232	m ²	35	8,120

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
<u>1</u>	<u>Substructure (Cont'd)</u>				
1.4	Basement Floor Construction				
1	Compacting bottom of excavation	583	m ²	15	8,745
2	Concrete blinding; 50mm thick	583	m ²	20	11,660
3	Concrete to basement floor slab; 250mm slab	146	m ³	180	26,280
4	Allowance for enhanced finish to slab	583	m ²	90	52,237
5	Reinforcement to the above; assumed 150kg/m ³	21.90	t	1,800	39,420
6	Allowance for waterproofing to slab	583	m ²	35	20,405
1.5	Below Ground Drainage				
1	Provisional allowance for below ground drainage	1	item	55,000	55,000

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
2	<u>Superstructure</u>				
2.1	Frame				
1	Allowance for steel frame structure, including all fixtures, fittings and fire proofing	1	item	85,000	85,000
2.2	Roof				
1	Allowance for decking on metal bracing and trusses	253	m ²	225	56,925
2	Allowance for green roof; assumed extensive, no allowance for irrigation	253	m ²	340	86,020
3	Allowance for rooflights	56	m ²	975	54,600
2.3	Stairs and ramps				
1	Allowance for steel stairs; 1 storey from ground level to lower level Fives Courts; including handrail	2	nr	18,000	36,000
2.4	External walls				
1	Brickwork walls to separate courts	185	m ²	510	94,350
2	Allowance for brick piers	8	nr	6,000	48,000
3	Allowance for coping stone	64	m	280	17,920
4	Brickwork fence; assumed 2m high	44	m ²	510	22,440
5	Allowance for buttress to courts	8	nr	6,000	48,000
6	Provisional allowance to re-face South wall of Sports Hall 1	216	m ²	280	60,480
2.5	Windows and External Doors				
	No works				
2.6	Internal Walls and Partitions				
	No works				
2.7	Internal doors				
1	Single door	2	nr	1,700	3,400
2	Double door	1	nr	2,020	2,020

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
3	<u>Internal Finishes</u>				
3.1	Wall Finishes				
1	Allowance for painted render finish	840	m ²	80	67,200
3.2	Floor Finishes				
1	Floor paint; to courts	294	m ²	60	17,640
2	Floor finish to escape corridor and switchroom	60	m ²	60	3,600
3.3	Ceiling Finishes				
	No works				

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
<u>4</u>	<u>Fittings, Furnishings and Equipment</u>				
1	Provisional allowance for handrail and balustrade to bermed wall; assumed glazed	69	m ²	800	55,200

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services</u>				
5.1	Sanitary appliances				
	No works				
5.2	Disposal installations				
1	Rainwater & surface water drainage generally	337	m ²	35	11,795
5.3	Water installations				
	No works				
5.4	Heat source				
	No works				
5.5	Space heating and air treatment				
	No works				
5.6	Ventilation systems				
	No works				
5.7	Electrical installations				
1	LV main switchboards; and main LV distribution	337	m ²	45	15,098
2	Earthing and bonding	337	m ²	6	1,887
3	Lighting to fives courts; including controls, cabling, containment etc.	337	m ²	100	33,700
4	Extra over for emergency lighting	337	m ²	10	3,370
5	Allowance for external lighting	1	item	10,000	10,000
5.8	Fuel installations				
	No works				

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
5.9	Lift and conveyor installations				
	No works				
5.10	Protection installations				
1	Lightning protection systems	337	m ²	15	5,055
5.11	Communication installations				
1	Fire alarm systems; including interfaces with mechanical plant, AV systems, lifts and bridges	337	m ²	25	8,425
2	CCTV installation covering entrances and lift lobbies etc.	337	m ²	15	5,055
3	Public address system	337	m ²	15	5,055
5.13	Special installations				
	No works				
5.14	Preliminaries and testing and commissioning				
1	Testing and commissioning of building services installations	1.5	%	99,440	1,492
2	Trade preliminaries on building services installations	12.5	%	99,440	12,430
5.15	Incoming services				
1	Electrical supply from substation	1	item	15,000	15,000

6a. BUILDING WORKS ESTIMATE - Phase 2a Fives Courts

Item	Description	Quantity	Unit	Rate	Total
<u>6</u>	<u>External Works</u>				
1	Provisional allowance for external works to make good surrounding area	1	item	15,000	15,000
2	Provisional allowance for attenuation tanks	1	item	60,000	60,000

Total Building Works Estimate 1,483,923

6b. BUILDING WORKS ESTIMATE - PHASE 2b

THE ORCHARD SITE

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
0	<u>Facilitating / Demolition Works</u>				
1	Provisional allowance for site clearance	4,115	m ²	3	12,345
2	Allowance for tree removal	10	nr	2,500	25,000

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
<u>1</u>	<u>Substructure</u>				
1.1	Excavation				
1	Provisional allowance for excavation of sunken amphitheatre to achieve levels; including disposal off	6,500	m ³	75	487,500
2	Provisional allowance for excavation of sunken amphitheatre; to be reused on site	550	m ²	35	19,250
2	Extra over cost for forming bunds with excavated material	550	m ²	35	19,250
4	Allowance for excavation of pitch and disposal off site; assumed inert material, assumed 500mm deep based on Sports for England guidance	900	m ³	75	67,500
1.2	Below Ground Drainage				
1	Provisional allowance for drainage associated with flood mitigation	1	item	12,000	12,000
2	Allowance for drainage system including excavation and disposal; assumed simple system of pipes with attenuation tank and slit chambers	1,789	m ²	15	26,835

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
2	<u>Superstructure</u>				
2.1	Frame				
1	Provisional allowance for structural works required to form sunken amphitheatre; no design details	1	item	30,000	30,000
2.2	Roof				
	No works				
2.3	Stairs and ramps				
1	Allowance for timber stairs set into bank of sunken amphitheatre	1	item	12,000	12,000
2.4	External walls				
	No works				
2.5	Windows and External Doors				
	No works				
2.6	Internal Walls and Partitions				
	No works				
2.7	Internal doors				
	No works				

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
<u>3</u>	<u>Internal Finishes</u>				
3.1	Wall Finishes				
	No works				
3.2	Floor Finishes				
	No works				
3.3	Ceiling Finishes				
	No works				

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
<u>4</u>	<u>Fittings, Furnishings and Equipment</u>				
1	Allowance for timber seats to grass banks	1	item	225,000	225,000

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
<u>5</u> <u>Services</u>					
1	Provisional allowance for external lighting	1	item	30,000	30,000

6b. BUILDING WORKS ESTIMATE - Phase 2b The Orchard Site

Item	Description	Quantity	Unit	Rate	Total
6	<u>External Works</u>				
1	Allowance for sports pitch ; including sub-base, base, and surface	1,020	m ²	80	81,600
2	Provisional allowance for line markings; pending further design details	1	item	6,000	6,000
3	Allowance for turfing to amphitheatre	1,515	m ²	25	37,875
4	Provisional allowance for turfing to surrounding area; extent unclear	1,200	m ²	25	30,000
5	Allowance for new trees	13	nr	2,500	32,500
6	Provisional allowance for forming spillway; no design details	1	item	25,000	25,000
7	Provisional allowance for planting to surrounding area	1	item	30,000	30,000

Total Building Works Estimate 1,209,655

6b. BUILDING WORKS ESTIMATE - PHASE 2c
NEW SPORTS HALL

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
0	<u>Facilitating / Demolition Works</u>				
1	Allowance for demolition and disposal of existing Fives Court	313	m ²	170	53,210
2	Allowance for demolition and disposal of existing squash courts	150	m ²	340	51,000
3	Ground floor corridor and entrance part of pool building	76	m ²	340	25,840

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
1	<u>Substructure</u>				
1.1	Basement Excavation				
1	Allowance for temporary propping	1	item	60,000	60,000
2	Allowance for basement excavation including disposal of material off site; assumed inert material, assumed both levels 3m deep	4,955	m ³	90	445,950
3	Provisional allowance for unforeseen ground conditions	1	item	28,000	28,000
4	Allowance for below ground service trench from external plant area	1	item	15,000	15,000
1.2	Piling				
1	Allowance for piling design	1	item	12,000	12,000
2	Allowance for craneage (assumed not required)				Excluded
3	Allowance for piling mat	1	item	30,000	30,000
4	Provision of plant and risk, mobilisation, erection, maintenance and demobilisation	1	item	12,000	12,000
5	Allowance for installation of guide wall	185	m	115	21,275
7	Allowance for contiguous piled retaining wall; based on 450mm dia. piles, 7.5m total length with 4m embedment at 600 c/c, including reinforcement cages	332	nr	1,350	448,200
8	Allowance for 300mm dia tension piles at 6m centres	27	nr	3,500	94,500
9	Allowance for 750w x 750dp reinforced capping beam	185	m	560	103,600
10	Allowance to trim top of piles heads; including disposal off site	359	nr	60	21,540
11	Allowance for 250mm thick RC lining wall; including waterproof admixture	139	m ³	280	38,920
12	Allowance for formwork to the above	555	m ²	45	24,975
13	Allowance for reinforcement to the above; assumed 90kg/m ³	12.5	t	1,800	22,518
14	Allowance for waterproofing to basement walls	555.0	m ²	70	38,850

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
1	<u>Substructure (Cont'd)</u>				
15	Allowance for cavity drain	185.0	m	90	16,650
16	Disposal of arisings from piles	507	m ³	60	30,420
17	Pile testing	1	item	12,000	12,000
18	Provisional allowance for standing time	1	item	12,000	12,000
19	Provisional allowance for piling to North Entrance pending design details; including reinforcement cages, trimming heads of piles, disposal of arisings, pile caps, ground beams etc.	195	m ²	560	109,200
1.3	Basement Floor Construction				
1	Compacting bottom of excavation	1,332	m ²	2	2,664
2	Concrete to basement floor slab including waterproof additive; 400mm thick	533	m ³	280	149,240
3	Extra over allowance for thickening where required including waterproof additive; additional 300mm thick	78	m ³	280	21,840
4	Allowance for reinforcement to slab; assumed 90kg/m ³	47.97	t	1,800	86,346
5	Allowance for concrete blinding; assumed 50mm thick	1,332	m ²	15	19,980
6	Allowance for waterproofing to slab	1,332	m ²	70	93,240
7	Allowance for 300mm thick crushed stone backfill	400	m ³	60	24,000
8	Allowance for lift pits	3	nr	5,000	15,000
9	Allowance for drainage below slab; manholes, gullies etc.	1	item	60,000	60,000
10	Allowance for movement joints	450	m	60	27,000
11	75mm screed	1,332	m ²	60	79,920
1.4	Ground Floor Construction				
1	Ground floor CLT slab; 160mm thick	444	m ³	300	133,200
2	Allowance for fire protection, accoustics, connections to structure etc	444	m ²	60	26,640
3	Ground floor concrete slab; assumed 300thick	30	m ³	280	8,400

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
<u>1</u>	<u>Substructure (Cont'd)</u>				
4	Allowance for reinforcement to slab; assumed 90kg/m ³	2.70	t	1,800	4,860
1.5	Below Ground Drainage				
1	Provisional allowance for below ground drainage	1	item	85,000	85,000

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
2	<u>Superstructure</u>				
2.1	Frame				
1	Allowance for glulam structure, steel structure including all fixtures, fittings and fire proofing	2,506	m ²	400	1,002,400
2	Allowance to clad external columns to gym overhang	5	nr	3,000	15,000
2.2	Upper Floors				
1	160mm deep CLT flooring	616	m ²	300	184,800
2	Allowance for fire protection, accoustics, connections to structure etc	616	m ²	60	36,960
2.3	Roof				
1	Allowance for substrate, waterproofing and insulation to green roof area	976	m ²	115	112,240
2	Allowance for green roof; assumed extensive, no allowance for irrigation	976	m ²	335	326,960
3	Allowance for subsrate, waterproofing. Insulation and roof finishes	526	m ²	250	131,500
4	Allowance for lift overrun	3	nr	6,000	18,000
5	Allowance for rooflights	111	m ²	1,200	133,200
6	Allowance for rainwater goods	1,309	m ²	35	45,815
7	PV Panels to Phase 01 sports hall; as per Life Build tender return	1	item	35,000	35,000
8	New roof to south lobby	1	item	10,000	10,000
2.4	Stairs and ramps				
1	Stair structure, assumed pre-cast concrete; from basement level to first floor; £/storey	2	nr	9,000	18,000
2	Stair structure, assumed pre-cast concrete; curved profile; from basement level to second floor; £/storey	3	nr	12,000	36,000
3	Stair structure, assumed pre-cast concrete; from basement level to ground floor gallery; £/storey	1	nr	12,000	12,000
2	<u>Superstructure (Cont'd)</u>				

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
4	Stair structure, assumed pre-cast concrete; from basement level -1 to mezzanine level; £/storey	4	nr	12,000	48,000
5	Stair structure, assumed pre-cast concrete; curved profile; from basement level to second floor; £/storey	4	nr	12,000	48,000
2.5 External walls					
1	Assumed brick and block cavity wall construction	962	m ²	500	481,000
2	Allowance for full height curtain walling	85	m ²	1,050	89,250
3	Allowance for zinc cladding	121	m ²	225	27,225
2.6 Windows and External Doors					
1	Provisional allowance for aluminium framed windows	84	m ²	1,000	84,000
2	Glazed entrance door; double	4	nr	6,000	24,000
3	Glazed entrance door; double, assumed automated	1	nr	8,500	8,500
4	Double louvered door	3	nr	4,000	12,000
5	Acoustic louvre	1	nr	3,000	3,000
6	1.5 leaf door	1	nr	3,000	3,000
2.7 Internal Walls and Partitions					
1	Internal plasterboard stud partition	1,276	m ²	135	172,260
2	300 thick RC walls to form lift shaft	285	m ²	250	71,250
3	Glazed partitions	20	m ²	900	18,000
2.8 Internal doors					
30 1	Single Door	37	nr	1,700	62,900
2	Double Door	14	nr	2,020	28,280
3	Glazed Double Door	1	nr	3,000	3,000

3 Internal Finishes

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
3.1	Wall Finishes				
1	Paint and plaster to walls generally	5,500	m ²	35	192,500
2	Allowance for full height tiling to WC/Showers	180	m ²	170	30,600
3	Provisional allowance for line markings	1	item	6,000	6,000
3.2	Floor Finishes				
1	Allowance for screed	1,699	m ²	35	59,465
2	Allowance for timber floor to sports hall, studio and gym; assumed sprung	981	m ²	225	220,725
3	Allowance for tiling to wc's/showers	41	m ²	135	5,535
4	Allowance for carpet tiles to classrooms	496	m ²	70	34,720
5	Allowance for hard wearing rubber flooring to circulation and viewing gallery	910	m ²	90	81,900
6	Allowance for floor paint to plantroom	78	m ²	20	1,560
3.3	Ceiling Finishes				
1	Allowance for acoustic plasterboard on suspended ceiling system; including decoration to hall, gym and studio	1,316	m ²	90	118,440
2	Allowance for acoustic plasterboard on suspended ceiling system; including decoration to general areas	981	m ²	135	132,435
3	Allowance for finish to soffit of gym overhang	38	m ²	350	13,300

4 Fittings, Furnishings and Equipment

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
	No works				

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5.1 Sanitary appliances					
1	Wash hand basin	4	nr	500	2,000
2	Accessible WC suite with fittings and wash hand basin	1	nr	2,250	2,250
3	WCs	4	nr	500	2,000
4	Showers	4	nr	1,700	6,800
5	Cleaner's sink	1	nr	850	850
6	External tap	1	nr	280	280
5.2 Disposal installations					
1	Rainwater & surface water drainage generally	1,336	m ²	40	53,440
2	Soil, waste & vent pipes to all appliances	21	nr	560	11,760
3	Drainage to plant areas	81	m ²	40	3,240
4	Allowance for connections to drains & sump pumps	1	item	5,600	5,600
5.3 Water installations					
1	Water mains storage, booster set, distribution pipework etc.	2,506	m ²	15	37,590
2	Cold water services to appliances	15	nr	500	7,500
3	Allowance for leak detection & shut-off valves to toilets	2	nr	570	1,140
4	Cat 5 break tank and pump unit with purge discharge	1	item	3,000	3,000
5	Centralised hot water generation based on indirect storage cylinders	1	nr	12,000	12,000
6	Hot water services to appliances; flow and return	10	nr	730	7,300
5.4 Heat source					
1	Air source heat pumps 2000 x 800 x 1800	3	nr	10,000	30,000
2	Allowance for LTHW pumps and pressurisation and primary LTHW circulation to AHUs and in risers	2,506	m ²	20	50,120

5.0 Services (Cont'd)

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5.5 Space heating and air treatment					
1	2No. AHU's 2500 x 1800 x 2200	2	nr	40,000	80,000
2	Air source heat pumps 2000 x 800 x 1800	3	nr	15,000	45,000
3	Distribution ductwork, vents, turrets etc.	2,506	m ²	100	250,600
4	Radiator heating to classrooms, stores and common parts etc.	1,134	m ²	50	56,700
5	Radiant panels to sports halls	857	m ²	30	25,710
6	Heating/cooling by VRF	124	m ²	225	27,900
5.6 Ventilation systems					
1	Dedicated toilet/store/cafe extract systems	46	m ²	170	7,820
2	Plantroom extract ventilation	81	m ²	85	6,885
5.7 Electrical installations					
1	LV main switchboards; and main LV distribution	2,506	m ²	45	112,770
2	Allowance for power supplies to automatically actuated windows and rooflights	1	item	28,000	28,000
3	Single phase distribution boards in individual classrooms	4	nr	700	2,800
4	Three phase distribution boards in individual classrooms	1	item	1,350	1,350
5	Electrical supplies to main plant and lifts	2,506	m ²	15	37,590
6	Earthing and bonding	2,506	m ²	6	15,036
7	General small power installations	2,506	m ²	35	87,710
8	Lighting to Sports halls; including controls, cabling, containment etc.	947	m ²	100	94,700
9	Lighting to offices, classrooms and technical areas: luminaires, wiring controls, containment, accessories	661	m ²	115	76,015
10	Lighting to other areas: luminaires, wiring controls, containment, accessories	783	m ²	85	66,555

5.0 Services (Cont'd)

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
11	Extra over for emergency lighting	2,506	m ²	6	15,036
12	Allowance for external lighting	1	item	17,000	17,000
5.8 Fuel installations					
1	Internal gas pipework, valves etc.; and connections to boilers	1	item	3,500	3,500
5.9 Lift and conveyor installations					
1	Passenger/Goods lift: serving 3 storeys	3	nr	95,000	285,000
5.10 Protection installations					
1	Lightning protection systems	2,506	m ²	6	15,036
5.11 Communication installations					
1	New digital controls system linked to central school controls monitoring station	2,506	m ²	50	125,300
2	Fire alarm systems; including interfaces with mechanical plant, AV systems, lifts and bridges	2,506	m ²	25	62,650
3	Disabled refuge communication system	9	nr	850	7,650
4	Disabled toilet/shower assistance system	1	nr	1,150	1,150
5	CCTV installation covering entrances and lift lobbies etc.	2,506	m ²	15	37,590
6	Access control: external doors only	1	item	17,000	17,000
7	Access control: internal doors (provisional allowance)	1	item	17,000	17,000
8	Intruder detection system	2,506	m ²	6	15,036
9	Provisional allowance for data installations	2,506	m ²	20	50,120
10	Provisional allowance for AV installations	2,506	m ²	25	62,650
11	Public address system	2,506	m ²	15	37,590
5.13 Special installations					
No works					

5.0 Services (Cont'd)

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5.14 Preliminaries and testing and commissioning					
1	Testing and commissioning of building services installations	1.5	%	1,744,319	26,165
2	Trade preliminaries on building services installations	12.5	%	1,744,319	218,040
5.15 Incoming services					
1	Allowance for incoming water main	1	item	12,000	12,000
2	Allowance for incoming gas main	1	item	50,000	50,000
3	Electrical supply from substation	1	item	25,000	25,000
4	Allowance for incoming communications	1	item	2,000	2,000
5	Allowance for connecting phase 01 into new gas supply	1	item	17,000	17,000

6b. BUILDING WORKS ESTIMATE - Phase 2c New Sports Hall

Item	Description	Quantity	Unit	Rate	Total
1	Allowance for covered cycle racks (circa 65m ²)	1	item	60,000	60,000
2	Allowance for forming ramp to entrance	1	item	17,000	17,000
3	Allowance for paving to entrance area	90	m ²	350	31,500
4	Allowance for steps to entrance	1	item	30,000	30,000
5	Provisional allowance for external works to make good surrounding area	1	item	30,000	30,000

Total Building Works Estimate	9,311,722
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6d. BUILDING WORKS ESTIMATE - PHASE 4 CHANGING ROOM AND EXTENSION

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
0	<u>Facilitating / Demolition Works</u>				
1	Provisional allowance to clear site	1	item	6,000	6,000
2	Allowance to strip out all finishes, fixtures and fittings and M&E to existing corridor, cardio room and changing	180	m ²	60	10,800

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
1	<u>Substructure</u>				
1	Allowance for piling design	1	item	5,600	5,600
2	Allowance for craneage (assumed not required)				Excluded
3	Allowance for piling mat	1	item	12,000	12,000
4	Provision of plant and risk, mobilisation, erection, maintenance and demobilisation	1	item	12,000	12,000
5	Provisional allowance for piling to extension pending design details; including reinforcement cages, trimming heads of piles, disposal of arisings, pile caps, ground beams etc.	272	m ²	730	198,560
6	Pile testing	1	item	6,000	6,000
7	Provisional allowance for standing time	1	item	6,000	6,000
1.2	Ground Floor Construction				
1	Ground floor slab; assumed 250mm thick	68	m ³	300	20,400
2	Allowance for reinforcement; assumed 90kg/m ³	6.12	t	1,800	11,016
3	Allowance for formwork to slab	98	m ²	70	6,860
4	Allowance for insulation to slab	272	m ²	35	9,520
5	75mm screed	98	m ²	60	5,880
6	Provisional allowance for works at interface with existing	1	item	6,000	6,000
1.3	Below Ground Drainage				
1	Provisional allowance of works to below ground drainage	1	item	35,000	35,000

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
2	<u>Superstructure</u>				
2.1	Frame				
1	Allowance for steel frame structure, including all fixtures, fittings and fire proofing (GIA of 272m ²)	1	item	140,000	140,000
2.2	Upper Floors				
	No works				
2.3	Roof				
1	Allowance for substrate, waterproofing, insulation and finish to roof to studio and stores	389	m ²	225	87,525
2	Allowance for rooflights	24	m ²	1,200	28,800
2.4	Stairs and ramps				
	No works				
2.5	External walls				
1	Assumed brick and block cavity wall construction	124	m ²	510	63,240
2.6	Windows and External Doors				
1	Provisional allowance for aluminium framed windows; full extent unclear; assumed 20% of new external walls	25	m ²	1,000	25,000
2	Double doors	4	nr	3,000	12,000
2.7	Internal Walls and Partitions				
1	Internal plasterboard stud partition	91	m ²	135	12,285
2	Provisional allowance for folding partition	1	item	17,000	17,000
2.8	Internal doors				
1	Double doors	15	nr	2,100	31,500
2	Single doors	6	nr	1,700	10,200

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
3	<u>Internal Finishes</u>				
3.1	Wall Finishes				
1	Paint and plaster generally	890	m ²	35	31,150
2	Allowance for full height tiling to WC>Showers	144	m ²	170	24,480
3.2	Floor Finishes				
1	Latex levelling screed to existing	180	m ²	35	6,300
2	Allowance for cushioned vinyl sports floor to studio and cardio room	199	m ²	170	33,830
3	Vinyl flooring to circulation	113	m ²	60	6,780
4	Tiling to changing rooms	89	m ²	135	12,015
5	Floor paint to external stores	40	m ²	20	800
3.3	Ceiling Finishes				
1	Allowance for acoustic plasterboard on suspended ceiling system; including decoration to studio and changing rooms	288	m ²	135	38,880
2	Allowance for plasterboard on suspended ceiling system; including decoration to circulation	113	m ²	90	10,125

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
4	<u>Fittings, Furnishings and Equipment</u>				
1	Allowance for lockers	56	nr	1,200	67,200
2	Allowance for cubicles for showers	6	nr	3,500	21,000
3	Benches to changing rooms	22	m	1,700	37,400
4	Allowance for shelving to store	1	item	1,700	1,700
5	Allowance for kitchenette	1	item	5,000	5,000

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
5 Services					
5.1 Sanitary appliances					
1 Sink units		1	nr	850	850
2 Wash hand basin		1	nr	500	500
3 WC's		1	nr	500	500
3 Showers		5	nr	1,700	8,500
4 Accessible showers		1	nr	2,250	2,250
5 Cleaner's sink		1	nr	850	850
5.2 Disposal installations					
1 Rainwater & surface water drainage generally		613	m ²	40	24,520
2 Soil, waste & vent pipes to all appliances		10	nr	560	5,600
3 Drainage to plant areas		47	m ²	40	1,880
4 Allowance for connections to drains & sump pumps		1	item	5,600	5,600
5.3 Water installations					
1 Water mains storage, booster set, distribution pipework etc.		613	m ²	15	8,925
2 Cold water services to appliances		10	nr	510	5,100
3 Allowance for leak detection & shut-off valves to toilets		1	nr	560	560
4 Centralised hot water generation based on indirect storage cylinders		1	nr	11,200	11,200
5 Hot water services to appliances; flow and return		9	nr	730	6,570
5.4 Heat source					
1 Boiler plant: room sealed condensing 160kW; including flues		1	nr	17,000	17,000
2 Allowance for LTHW pumps and pressurisation and primary LTHW circulation to AHUs and in risers		613	m ²	20	12,358

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
5.5	Space heating and air treatment				
1	Existing AHU relocated from existing ground floor courtyard to new flat roof (3200 x 900 x 1700)	1	nr	10,000	10,000
2	AHU 2450 x 1800 x 2200	2	nr	40,000	80,000
3	Air source heat pumps 2000 x 800 x 1800	9	nr	15,000	135,000
4	Distribution ductwork, vents, turrets etc.	571	m ²	100	57,100
5	Radiator heating to classrooms, stores and common parts etc.	216	m ²	50	10,886
6	Heating/cooling by VRF	183	m ²	200	36,600
7	Supplemental cooling to IT/comms room	1	item	11,200	11,200
5.6	Ventilation systems				
1	Dedicated toilet/ staff/kitchen extract systems	48	m ²	170	8,160
2	Plantroom extract ventilation	47	m ²	85	3,995
5.7	Electrical installations				
1	LV main switchboards; and main LV distribution	571	m ²	45	25,581
2	Allowance for power supplies to automatically actuated windows and rooflights	1	item	16,800	16,800
3	Single phase distribution boards in individual classrooms	1	nr	680	680
4	Three phase distribution boards in individual classrooms	1	nr	1,350	1,350
5	Electrical supplies to main plant and lifts	571	m ²	15	8,565
6	Earthing and bonding	571	m ²	10	5,710
7	General small power installations	571	m ²	35	19,985
8	Lighting to offices, classrooms and technical areas: luminaires, wiring controls, containment, accessories	191	m ²	115	21,965
9	Lighting to other areas: luminaires, wiring controls, containment, accessories	380	m ²	85	32,300

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
10	Extra over for emergency lighting	571	m ²	6	3,198
11	Allowance for external lighting	1	item	10,000	10,000
5.8	Fuel installations				
1	Internal gas pipework, valves etc.; and connections to boilers	1	item	1,700	1,700
5.9	Lift and conveyor installations				
1	No works				
5.10	Protection installations				
1	Lightning protection systems	571	m ²	10	5,710
5.11	Communication installations				
1	New digital controls system linked to central school controls monitoring station	571	m ²	60	34,260
2	Fire alarm systems; including interfaces with mechanical plant, AV systems, lifts and bridges	571	m ²	25	14,275
3	Disabled toilet/shower assistance system	1	nr	1,150	1,150
4	CCTV installation covering entrances and lift lobbies etc.	571	m ²	15	8,565
5	Access control: external doors only	1	item	12,000	12,000
6	Access control: internal doors (provisional allowance)	1	item	17,000	17,000
7	Intruder detection system	571	m ²	6	3,198
8	Provisional allowance for data installations	571	m ²	20	11,420
9	Provisional allowance for AV installations	571	m ²	25	14,275
10	Public address system	571	m ²	15	8,565
5.13	Special installations				
	No works				

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
5.14	Preliminaries and testing and commissioning				
1	Testing and commissioning of building services installations	1.5	%	743,956	11,159
2	Trade preliminaries on building services installations	12.5	%	743,956	92,994
5.15	Incoming services				
1	Allowance for incoming water main	1	item	12,000	12,000
2	Allowance for incoming gas main	1	item	12,000	12,000
3	Electrical supply from substation	1	item	17,000	17,000
4	Allowance for incoming communications	1	item	2,000	2,000

6d. BUILDING WORKS ESTIMATE - Phase 3 Changing Rooms & Extension

Item	Description	Quantity	Unit	Rate	Total
<u>6</u>	<u>External Works</u>				
1	Provisional allowance for external works to make good surrounding area	1	item	15,000	15,000

Total Building Works Estimate 1,981,955

6c. BUILDING WORKS ESTIMATE - PHASE 3 EXISTING SPORTS HALL

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
0	<u>Facilitating / Demolition Works</u>				
1	Allowance to strip out existing floor finishes and M&E where required to hall	655	m ²	60	39,300
2	Allowance to strip out existing floor finishes, ceilings, internal partitions and M&E to studio, stores, function room and gym	431	m ²	60	25,860
3	Allowance for demolition of existing external walls to facilitate extension	204	m ²	60	12,240
4	Provisional allowance for propping	1	item	23,000	23,000
5	Allowance to strip roof to existing function room and office	160	m ²	115	18,400
6	Demolition of existing staircase	1	nr	7,000	7,000
7	Allowance for birdcage scaffold to provide high level access to sports hall area during refurbishment works	1	item	60,000	60,000

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
1	<u>Substructure</u>				
1.1	Piling				
1	Allowance for piling design	1	item	6,000	6,000
2	Allowance for craneage (assumed not required)				Excluded
3	Allowance for piling mat	1	item	12,000	12,000
4	Provision of plant and risk, mobilisation, erection, maintenance and demobilisation	1	item	12,000	12,000
5	Provisional allowance for piling to extension pending design details; including reinforcement cages, trimming heads of piles, disposal of arisings, pile caps, ground beams etc.	123	m ²	730	89,790
6	Pile testing	1	item	6,000	6,000
7	Provisional allowance for standing time	1	item	6,000	6,000
1.2	Ground Floor Construction				
1	Ground floor slab; assumed 250mm thick	31	m ³	300	9,300
2	75mm screed	122	m ²	60	7,320
3	Allowance for reinforcement; assumed 90kg/m ³	2.79	t	1,800	5,022
4	Allowance for formwork to slab	79	m ²	70	5,530
5	Allowance for insulation to slab	122	m ²	35	4,270
1.3	Below Ground Drainage				
1	Provisional allowance for alterations to existing below ground drainage	1	item	30,000	30,000

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
2	<u>Superstructure</u>				
2.1	Frame				
1	Allowance for steel frame structure, including all fixtures, fittings and fire proofing (GIA of 122m ²)	1	item	115,000	115,000
2.2	Upper Floors				
1	Allowance for forming mezzanine, including associated structural works (GIA of 129m ²)	1	item	115,000	115,000
2.3	Roof				
1	Allowance for substrate, waterproofing, insulation and Kalzip finish to entrance foyer and extension	298	m ²	280	83,440
2	Allowance for installation of rooflights to new roof	12	m ²	1,200	14,400
3	Allowance for rainwater goods to new roof	298	m ²	35	10,430
4	Allowance for installation of rooflights to existing roof	24	m ²	1,300	31,200
5	Provisional allowance for modifications to rainwater goods to existing roof	1	item	6,000	6,000
2.4	Stairs and ramps				
1	Stair structure, assumed pre-cast concrete; from lower ground to ground floor; £/storey	1	nr	10,000	10,000
2	Stair structure, assumed pre-cast concrete; from ground floor to mezzanine; £/storey	1	nr	10,000	10,000
2.5	External walls				
1	Assumed brick and block cavity wall construction	256	m ²	510	130,560
2	Allowance for full height curtain walling to balcony	20	m ²	1,000	20,000
3	Provisional allowance for works to make good existing brickwork to the rear of the sports hall	1	item	40,000	40,000

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
2	<u>Superstructure (Cont'd)</u>				
2.6	Windows and External Doors				
1	Provisional allowance for aluminium framed windows; full extent unclear; assumed 20% of new external walls	55	m ²	1,000	55,000
2	Double glazed doors	4	nr	4,500	18,000
3	Double doors	4	nr	3,000	12,000
2.7	Internal Walls and Partitions				
1	Internal plasterboard stud partition	225	m ²	135	30,375
2.8	Internal doors				
1	Single door	4	nr	1,700	6,800
2	Double door	9	nr	2,100	18,900

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
3	<u>Internal Finishes</u>				
3.1	Wall Finishes				
1	Paint and plaster to walls generally	2,460	m ²	60	147,600
2	Allowance for full height tiling to WC>Showers	115	m ²	170	19,550
3	Provisional allowance for line markings	1	item	12,000	12,000
3.2	Floor Finishes				
1	Latex levelling screed	2,453	m ²	20	49,060
2	Allowance for cushioned vinyl sports floor to sports hall, studio and gym	1,514	m ²	170	257,380
3	Vinyl flooring to circulation and café	716	m ²	90	64,154
4	Carpet to offices and staff welfare	230	m ²	70	16,100
5	Tiling to WC's	115	m ²	135	15,525
3.3	Ceiling Finishes				
1	Allowance for acoustic plasterboard on suspended ceiling system; including decoration to studio and function room	203	m ²	135	27,405
2	Allowance for plasterboard on suspended ceiling system; including decoration to circulation, WC's and offices	963	m ²	90	86,285

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
<u>4</u>	<u>Fittings, Furnishings and Equipment</u>				
	No works				

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services</u>				
5.1	Sanitary appliances				
1	Sink units	3	nr	850	2,550
2	Wash hand basin	3	nr	510	1,530
3	Accessible WC suite with fittings and wash hand basin	1	nr	2,240	2,240
4	WCs	3	nr	510	1,530
5	Cleaner's sink	1	nr	850	850
5.2	Disposal installations				
1	Rainwater & surface water drainage generally	768	m ²	40	30,720
2	Soil, waste & vent pipes to all appliances	12	nr	560	6,720
3	Allowance for connections to drains & sump pumps	1	item	5,600	5,600
5.3	Water installations				
1	Water mains storage, booster set, distribution pipework etc.	1,477	m ²	15	21,505
2	Cold water services to appliances	12	nr	510	6,120
3	Allowance for leak detection & shut-off valves to toilets	2	nr	560	1,120
4	Centralised hot water generation based on indirect storage cylinders	1	nr	5,600	5,600
5	Hot water services to appliances; flow and return	8	nr	730	5,840
5.4	Heat source				
1	Boiler plant: room sealed condensing 160kW; including flues	1	nr	17,000	17,000
2	Allowance for LTHW pumps and pressurisation and primary LTHW circulation to AHUs and in risers	1,477	m ²	20	29,776

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
5.5	Space heating and air treatment				
1	AHU 2450 x 1800 x 2200	1	nr	40,000	40,000
2	Radiant panels and warm air heating to sport halls	655	m ²	30	19,650
3	Distribution ductwork, vents, turrets etc.	1,477	m ²	100	147,700
4	Radiator heating to classrooms, stores and common parts etc.	903	m ²	50	45,511
5	Heating/cooling by VRF	489	m ²	225	110,025
5.6	Ventilation systems				
1	Dedicated toilet/store/cafe extract systems	100	m ²	170	17,000
5.7	Electrical installations				
1	LV main switchboards; and main LV distribution	1,477	m ²	45	66,170
2	Allowance for power supplies to automatically actuated windows and rooflights	1	item	28,000	28,000
3	Single phase distribution boards in individual classrooms	2	nr	675	1,350
4	Three phase distribution boards in individual classrooms	2	nr	675	1,350
5	Electrical supplies to main plant and lifts	1,477	m ²	15	22,155
6	Earthing and bonding	1,477	m ²	10	14,770
7	General small power installations	1,477	m ²	35	51,695
8	Lighting to Sports halls; including controls, cabling, containment etc.	882	m ²	100	88,200
9	Lighting to offices and technical areas: luminaires, wiring controls, containment, accessories	293	m ²	115	33,695
10	Lighting to other areas: luminaires, wiring controls, containment, accessories	253	m ²	85	21,505

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
11	Extra over for emergency lighting	1,477	m ²	6	8,271
12	Allowance for external lighting	1	item	15,000	15,000
5.8	Fuel installations				
1	Internal gas pipework, valves etc.; and connections to boilers	1	item	1,700	1,700
5.9	Lift and conveyor installations				
1	Lift from ground to first	1	nr	70,000	70,000
5.10	Protection installations				
1	Lightning protection systems	1,477	m ²	10	14,770
5.11	Communication installations				
1	New digital controls system linked to central school controls monitoring station	1,477	m ²	60	88,620
2	Fire alarm systems; including interfaces with mechanical plant, AV systems, lifts and bridges	1,477	m ²	25	36,925
3	Disabled refuge communication system	3	nr	850	2,550
4	Disabled toilet/shower assistance system	1	nr	1,150	1,150
5	CCTV installation covering entrances and lift lobbies etc.	1,477	m ²	15	22,155
6	Access control: external doors only	1	item	17,000	17,000
7	Access control: internal doors (provisional allowance)	1	item	17,000	17,000
8	Intruder detection system	1,477	m ²	6	8,271
9	Provisional allowance for data installations	1,477	m ²	20	29,540
10	Provisional allowance for AV installations	1,477	m ²	25	36,925
11	Public address system	1,477	m ²	15	22,155
5.13	Special installations				
	No works				

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
5	<u>Services (Cont'd)</u>				
5.14	Preliminaries and testing and commissioning				
1	Testing and commissioning of building services installations	1.5	%	1,239,510	18,593
2	Trade preliminaries on building services installations	12.5	%	1,239,510	154,939
5.15	Incoming services				
1	Allowance for incoming water main	1	item	8,500	8,500
2	Allowance for incoming gas main	1	item	28,000	28,000
3	Electrical supply from substation	1	item	23,000	23,000
4	Allowance for incoming communications	1	item	2,000	2,000

6c. BUILDING WORKS ESTIMATE - Phase 3 Existing Sports Hall

Item	Description	Quantity	Unit	Rate	Total
<u>6</u>	<u>External Works</u>				
1	Allowance for tiling to balcony	24	m ²	300	7,200
2	Allowance for handrail and balustrade to balcony; assumed glazed, assumed 1.5m high	21	m ²	850	17,850

Total Building Works Estimate 3,300,786

6c. EXTERNAL WORKS

6c. BUILDING WORKS ESTIMATE - Phase 5 Site Wide External Works

Item	Description	Quantity	Unit	Rate	Total
<u>0</u>	<u>Facilitating / Demolition Works</u>				
1	Provisional allowance for preparing site for installation of new turfing, paths and paving	3,689	m ²	10	36,890
<u>1</u>	<u>Substructure</u>				
	No works				
<u>2</u>	<u>Superstructure</u>				
	No works				
<u>3</u>	<u>Internal Finishes</u>				
	No works				
<u>4</u>	<u>Fittings, Furnishings and Equipment</u>				
1	Provisional allowance for benches/outdoor seating	1	item	12,000	12,000
2	Provisional allowance for bins/other furniture etc.	1	item	6,000	6,000
<u>5</u>	<u>Services</u>				
1	Provisional allowance for external lighting	1	item	28,000	28,000
<u>6</u>	<u>External Works</u>				
1	Allowance for turfing	2,349	m ²	35	82,215
2	Allowance for kerbs/edgings	904	m	60	54,240
3	Allowance for permeable coloured asphalt paths	763	m ²	170	129,710
4	Allowance for paving to entrance areas and viewing platform to Fives Court	408	m ²	350	142,800
5	Provisional allowance for planting/shrubbery	1	item	60,000	60,000
6	Allowance for new trees	34	nr	2,500	85,000
7	Allowance to form new service entrance	1	item	17,000	17,000
8	Allowance for new railings (assumed 2.5m high)	505	m ²	225	113,625

Total Building Works Estimate
767,480

7. NOTES AND ASSUMPTIONS

7. NOTES AND ASSUMPTIONS

PROJECT OVERVIEW

- 1 This report provides an indicative cost estimate for the 4 phase works to the MSC Sports Centre. The works include the construction of a new fives court, a sunken amphitheatre, a new sports hall, the refurbishment of the existing sports hall and changing rooms and an extension to the changing rooms.

PROGRAMME

- 1 Inflation levels have been calculated as per the 'Indicative Capital Projects Programme' dated 28 February 2022. Please refer to section 10 for more details.

INFORMATION USED TO PREPARE THIS ESTIMATE

- 1 This Cost Estimate has been based upon the information listed in section 9 of the report.
- 2 We have made a number of assumptions/exclusions which will require to be confirmed

STATUS OF DESIGN

- 1 RIBA Stage 2

KEY ASSUMPTIONS

- 1 Please note that we are in position of high level information only and therefore costs should be treated as strictly broad and indicative.
- 2 Please refer to the detailed build up for all other key assumptions and allowances.
- 3 Estimated costs are construction costs prepared using current prices (3rd Qtr 2022).
- 4 Allowances have been included for main contractor preliminaries costs (18%) and main contractor's overheads and profit (6%) across all construction works.
- 5 Design and construction risk allowances totalling 10% have been included to reflect the status of the design and the nature of works.
- 6 Employer Change and Employer Other risk allowances have been excluded.
- 7 No allowance has been made for working outside of normal working hours.
- 8 Areas have been taken from the plans listed within section 8.
- 9 The internal areas are subject to construction and measurement tolerances.
- 10 Areas are intended for the production of the Cost Plan only and should not be relied upon for any other purpose.
- 11 The project has been costed on the basis of current Building Regulations and makes no allowance for the results of the Consultation Paper with Government regarding *Banning the use of Combustible materials in the external walls of high-rise residential buildings* and any other further changes to the Building Regulations such as the introduction of secondary means of escape etc.
- 12 We have assumed that the current design complies with current building regulations.
- 13 We have assumed that the finalised external works will be carried out in phase 4. We have included nominal allowances for making good surrounding areas following the completion of each phase.
- 14 We have assumed that ALL excavated material from forming the Fives Court will be used to berm the wall. No allowance has been made to dispose of material off site.
- 15 We have used Pringuer James sketches for the Fives Court and Substation option, but omitted the substation portion of works from these sketches.
- 16 We have used Pringuer James sketches for Phase 2.
- 17 We have assumed all rebar levels - these should be reviewed in more detail by the structural engineer.
- 18 We have assumed that all new building/extension are to be constructed using a steel frame. We have included lump sum allowances pending receipt of design details.
- 19 We have made notional allowances for below ground drainage.
- 20 We have assumed all finishes.
- 21 The quantity of excavated material for the sunken amphitheatre should be viewed as an allowance at present, we do not have any details on the current levels, therefore this exercise is a rough estimate.
- 22 We have made a provisional allowance for any structural works required to form the sunken amphitheatre as we currently have no design information.
- 23 We have made a provisional allowance for forming the spillway to the sunken amphitheatre as we currently have no design information.
- 24 We have made allowances for a new pitch to be installed in the sunken amphitheatre. The build up and rates for this have been included as advised for the OC Sports Field.
- 25 We have allowed for the drainage system to the new pitch to extend across the whole of the sunken amphitheatre.
- 26 We have made no allowance for any works to form a substation.
- 27 We have included an allowance for connecting the new gas main to the Phase 1 works.
- 28 We have included an allowance for complications involved with the phasing of the works of 2%.
- 29 We have included £500k of client direct costs as directed by Stephen Freeth. Please see summary page for what this allocation covers.
- 30 We have assumed that green roofs are to be extensive and are to require no additional structural works. We have made no allowance for irrigation to the green roofs.
- 31 We have assumed that the existing roof to the existing sports hall and changing rooms will remain. We have made no allowance for works to the façade of the sports hall.
- 32 We have assumed that although rooflights are not shown currently to the fives courts, these will be included.
- 33 We have made no allowance to any works associated with the tree roots.
- 34 Please note, this does not include any costs associated with Phase 1 of the 4 Phase Scheme.
- 35 Please note, this does not include costs associated with a new substation.
- 36 We have made no allowance for any FF&E to the 3 phases and assume these are part of the school direct works.
- 37 We have made no allowance for Thames Water permissions.
- 38 We have no allowances for floodlighting etc. to the sunken amphitheatre.

PROCUREMENT

- 1 The procurement strategy for the works is not yet decided, however it is assumed that it will be a competitive process, let over 3 individual phases.

INFLATION

- 1 Please refer to section 10.

8. EXCLUSIONS

8. EXCLUSIONS

The following should be read in conjunction with the Executive Summary and are a list of items not yet able to be included within this cost plan; however, we would like to discuss them further with yourselves and your advisors to determine whether some or all of the following can be included in the cost plan:

- | | |
|---|---|
| 1 Land acquisition costs and fees | 21 Working outside of normal working hours |
| 2 Client finance, legal or marketing costs | 22 Mock ups, prototypes, off site benchmarks and the like |
| 3 Planning and building regulation fees | 23 Loose fittings, furnishings and equipment and external furniture |
| 4 Project insurances | 24 Fees, works or costs associated with abnormal ground conditions |
| 5 Section 106 / 278 Contributions | 25 Underpinning of adjoining structures |
| 6 Fees or costs associated with rights of light agreement, party wall awards, oversailing agreements etc | 26 Archaeological investigations and exploratory or resulting works |
| 7 Community Infrastructure Levy Contributions or similar | 27 Diversion of existing below ground services |
| 8 Costs resulting from zero carbon requirements or offset charges | 28 Costs associated with LUL surveys and monitoring |
| 9 Currency and exchange rate fluctuations | 29 Increased design criteria for bomb protection |
| 10 Statutory changes | 30 IT hardware / active hubs |
| 11 Benefits arising from any potential Capital Allowances or other government incentives / grants | 31 Connection to district heating system |
| 12 Works outside of the site boundary except where specifically stated | 32 Power factor correction and harmonics |
| 13 Costs resulting from tariffs or other charges following the withdrawal of the UK from the European Union | 33 Audio visual installations and equipment |
| 14 Public art installations or contributions | 34 Spares and maintenance costs |
| 15 Phasing of the works | 35 FF&E (except where noted) |
| 16 Any additional equipment to that listed in the cost plan | 36 Works to the façade and roof of the existing sports hall |
| 17 School direct works (other than where noted) | 37 Any costs in connection with Phase 1 of the 4 phase scheme |
| 18 Changes to current building regulations | 38 Any works associated with the tree roots |
| 19 Asbestos removal | 39 Future changes to Building Regulations |
| 20 Removal of any hazardous material and dealing with unforeseen ground conditions | |

9. DESIGN INFORMATION

9. SCHEDULE OF DESIGN INFORMATION USED

This Cost Estimate has been prepared using the following design information and should be read in conjunction with all sections of this report.

Drawing List (Ed Toovey Architects Architectural)	Drawing Ref.	Rev No.	D.O.I
Location plan existing	GA/011		
Site plan existing	GL/002		
Site plan proposed	GL/012		09/05/22
Ground floor plan level 2 demolitions	DEM/001		
First floor plan level 3 demolitions	DEM/002		
Roof plan demolitions	DEM/003		
Section AA fire strategy	FR/021		18/05/22
Ground floor plan level 2 existing	GA/001		
First floor plan level 3 existing	GA/002		
Roof plan existing	GA/003		
Elevation west existing	GE/001		
Elevation north existing	GE/002		
Elevation south existing	GE/003		
Elevation east existing	GE/004		
Elevations squash + Fives existing	GE/005		
Elevation north pool hall existing	GE/006		
Elevation north proposed	GE/012		22/05/22
Section AA existing	GS/001		
Section BB existing	GS/002		
Section DD existing	GS/004		
Section FF existing	GS/006		
Basement plan level 1 proposed	GA/010		23/06/22
Ground floor plan level 2 proposed	GA/011		23/06/22
First floor plan level 3 proposed	GA/012		23/06/22
Roof plan level proposed	GA/014		18/05/22
Second floor plan level 4 proposed	GA/031		23/06/22
Elevation south proposed	GE/013		22/05/22
Elevation east proposed	GE/014		22/05/22
Section AA proposed	GS/011		18/05/22
Section BB proposed	GS/012		09/05/22
Section DD proposed	GS/014		09/03/22
Section FF proposed	GS/016		09/03/22

Other Information	Drawing Ref.	Rev No.	D.O.I
Stephen Freeth E-mail ref. Client Direct Costs dated 05/11/18	-	-	

Drawing List (Pringuer James structural)	Drawing Ref.	Rev No.	D.O.I
General arrangement of Basement B0	P2B-B0-DR-S-009	01	17/06/22
General arrangement of Ground Floor	P2B-00-DR-S-010	01	17/06/22

Drawing List (Services)	Drawing Ref.	Rev No.	D.O.I
SK220425ac 1-8 Preliminary HVAC proposals	-	-	

Drawing List (Robert Myers Associates Landscaping)	Drawing Ref.	Rev No.	D.O.I
Landscape Strategy Report dated 15/06/2022	733.01 (RP)001	A	
	-	-	

10. AREA SCHEDULE

10. AREA SCHEDULE

<u>Phase 02a - Fives Courts</u>	<u>TOTAL (Covered Area)</u>
Fives Court	337
Total	337

<u>Phase 02b - The Orchard</u>	<u>TOTAL</u>
Sunken ampitheatre	1,789
Total	1,789

<u>Phase 02c - New Sports Hall</u>	<u>TOTAL</u>
Basement -1	1,332
Ground Floor	558
First Floor	544
Mezzanine	66
Roof (Enclosed Space)	6
Total	2,506

<u>Phase 03 - Existing Changing Rooms & Extension</u>	<u>TOTAL</u>
Ground Floor	571
Total	571

<u>Phase 04 - Existing Sports Hall</u>	<u>TOTAL</u>
Ground Floor	819
First Floor	556
Mezzanine	102
Total	1,477

11. INFLATION CALCULATION

11. INFLATION CALCULATION
Basis of Calculation
Phase 2a, 2b and 2c.

Base Date	July 2022
Start on Site	October 2027
Date for Completion	November 2028

Phase 3.

Base Date	July 2022
Start on Site	October 2028
Date for Completion	November 2029

Phase 4.

Base Date	July 2022
Start on Site	October 2029
Date for Completion	November 2030

**G&T Annual Tender Price Indices:
(published 2nd Quarter 2022)**

2022	5.50%
2023	3.50%
2024	2.50%
2025	2.30%
Assumed 2026	2.30%
2027	2.50%
2028	2.80%
2029	2.80%
2030	3.00%

Phases 2a, 2b and 2c.
From Base Date to Start on Site:

August 2022 to December 2022	$\frac{5}{12}$	x	5.50%	2.29%
January 2023 to December 2023	$\frac{12}{12}$	x	3.50%	3.50%
January 2024 to December 2024	$\frac{12}{12}$	x	2.50%	2.50%
January 2025 to December 2025	$\frac{12}{12}$	x	2.30%	2.30%
January 2026 to December 2026	$\frac{12}{12}$	x	2.30%	2.30%
January 2027 to September 2027	$\frac{9}{12}$	x	2.50%	1.88%

Compounded: 15.70% **15.70%**

From Start on Site to Mid-Point of Construction:

October 2027 to December 2027	$\frac{3}{12}$	x	2.50%	0.63%
January 2028 to March 2028	$\frac{3}{12}$	x	2.80%	0.70%

Compounded: 1.33% **1.33%**

Phase 2a & 2b inflation from current day to mid-point of construction: 17.03%

Phase 3.
From Base Date to Start on Site:

August 2022 to December 2022	$\frac{5}{12}$	x	5.50%	2.29%
January 2023 to December 2023	$\frac{12}{12}$	x	3.50%	3.50%
January 2024 to December 2024	$\frac{12}{12}$	x	2.50%	2.50%

	12			
January 2025 to December 2025	$\frac{12}{12}$	x	2.30%	2.30%
January 2026 to December 2026	$\frac{12}{12}$	x	2.30%	2.30%
January 2027 to December 2027	$\frac{12}{12}$	x	2.50%	2.50%
January 2027 to December 2027	$\frac{12}{12}$	x	2.50%	2.50%
January 2028 to September 2028	$\frac{9}{12}$	x	2.80%	2.10%
Compounded:				21.82%
				21.82%

10. INFLATION CALCULATION

From Start on Site to Mid-Point of Construction:

October 2028 to December 2028	$\frac{3}{12}$	x	2.80%	0.70%
January 2028 to March 2028	$\frac{3}{12}$	x	2.80%	0.70%
Compounded:				1.40%
				1.40%

Phase 3 inflation from current day to mid-point of construction: **23.23%**

Phase 4.

From Base Date to Start on Site:

August 2022 to December 2022	$\frac{5}{12}$	x	5.50%	2.29%
January 2023 to December 2023	$\frac{12}{12}$	x	3.50%	3.50%
January 2024 to December 2024	$\frac{12}{12}$	x	2.50%	2.50%
January 2025 to December 2025	$\frac{12}{12}$	x	2.30%	2.30%
January 2026 to December 2026	$\frac{12}{12}$	x	2.30%	2.30%
January 2027 to December 2027	$\frac{12}{12}$	x	2.50%	2.50%
January 2027 to December 2027	$\frac{12}{12}$	x	2.50%	2.50%
January 2028 to December 2028	$\frac{12}{12}$	x	2.80%	2.80%
January 2029 to September 2029	$\frac{9}{12}$	x	2.80%	2.10%
Compounded:				25.23%
				25.23%

From Start on Site to Mid-Point of Construction:

October 2029 to December 2029 $\frac{3}{12} \times 2.80\%$ **0.70%**

January 2030 to March 2030 $\frac{3}{12} \times 2.80\%$ **0.70%**

Compounded: 1.40% **1.40%**

Phase 4 inflation from current day to mid-point of construction: 26.64%

NB: The above Inflation Calculation should be treated as an indicative guide only. It will require further review given the time elapsing between the date of this estimate and the proposed start on site / completion of works.

12. RECONCILIATION

11. RECONCILIATION FROM PREVIOUS REPORT

Mallinson Sports Centre - 4 Phase Development - Order of Cost Estimate (Phases 2-4) dated 4th Sept '19	£30,720,000
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Five Courts

1. Inflation from 3rd quarter 2019 to 3rd quarter 2022	£350,000	
2. Inflation from 3rd quarter to mid point of construction	£510,000	
3. Re-measure of latest scheme, new escape corridor added.	<u>£40,000</u>	£900,000

Orchard

4. Inflation from 3rd quarter 2019 to 3rd quarter 2022	£330,000	
5. Inflation from 3rd quarter 2022 to mid point of construction	<u>£410,000</u>	£740,000

New Sports Hall

6. Inflation from 3rd quarter 2019 to 3rd quarter 2022	£1,720,000	
7. Inflation from 4th quarter 2022 to mid point of construction	£3,190,000	
8. Revised basement including omission of Basement level 2, increase in liner wall from 150mm thick to 250mm thick, basement slab increased from 250mm thick to 400mm thick, changes to piling layout.	(£350,000)	
9. Increase in area of first floor and introduction of Glulam columns and beams and CLT slabs	£650,000	
10. Increase in area of green roof, 2Nr additional lift overruns. Solid roof added over plant area. Roof added over lobby area.	£250,000	
11. Introduction of additional staircases and increase in staircase widths	£170,000	
12. Additional external wall area due to increase in first floor area.	£350,000	
13. Additional area to first floor (partitions, finishes, doors etc)	£225,000	
14. Additional lift and lifts serving additional level	£250,000	
15. Lift shafts changed from blockwork to 250mm thick concrete	£75,000	
16. Miscellaneous changes	<u>£150,000</u>	£6,680,000

Studios

17. Inflation from 3rd quarter 2019 to third quarter 2022	£475,000	
18. Inflation from 3rd quarter 2022 to mid point of construction	£930,000	
19. Introduction of air source heat pumps	<u>£295,000</u>	£1,700,000

Existing Sports Hall

20. Inflation from 3rd quarter 2019 to 3rd quarter 2022	£440,000	
21. Inflation from 3rd quarter 2022 to mid point of construction	£1,770,000	
22. New lift	<u>£100,000</u>	£2,310,000

External Works

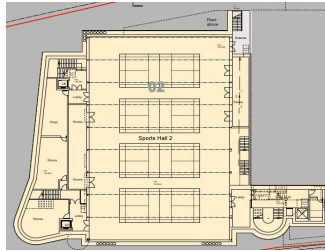
23. Inflation from 3rd quarter 2019 to 3rd quarter 2022	£140,000	
24. Inflation from 3rd quarter 2022 to mid point of construction	£390,000	
25. Update based on current scheme	<u>£20,000</u>	£550,000

Tender price inflation from start on site and up to mid point of construction is based on draft capital programme dated 28 February 2022

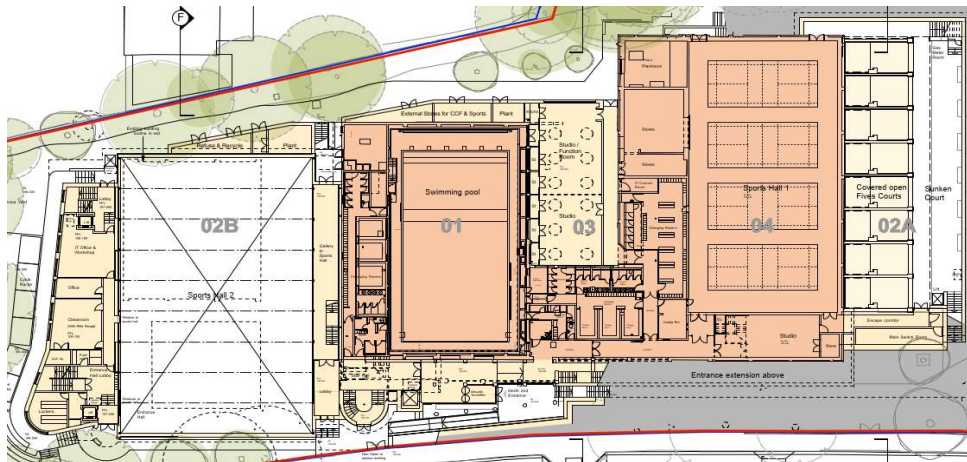
Mallinson Sports Centre - 4 Phase Development - Order of Cost Estimate (Phases 2-4) dated 4th July '22	£12,880,000	£43,600,000
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13. ARCHITECTURAL GA'S

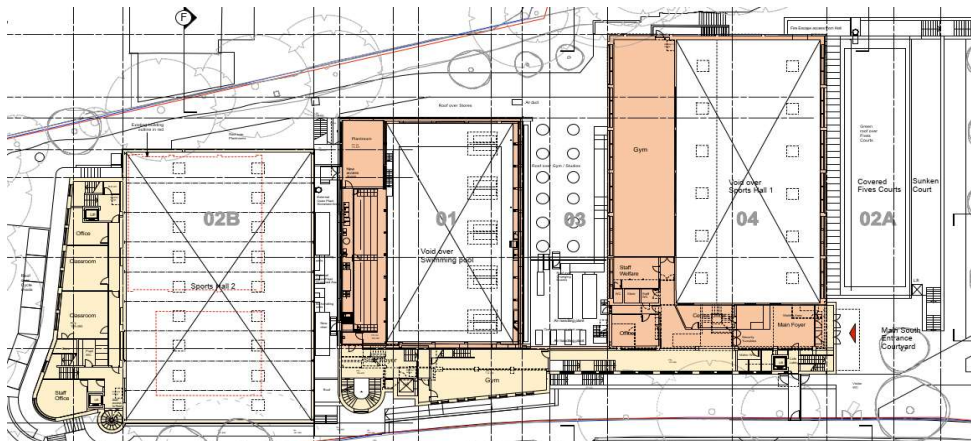
BASEMENT



GROUND FLOOR



FIRST FLOOR



SECOND FLOOR / ROOF

