

+44(0) 1443 803 540  
info@ashfieldsolutions.com  
ashfieldsolutions.com

## Planning & Development

Remediation Strategy and Verification Plan  
Burnt Mill Academy, Harlow

Bowmer and Kirkland Limited

Burnt Mill Academy, First avenue, Harlow, Essex, CM20 2NR

## Document Control

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# 1 Introduction

## 1.1 Terms of Reference

Ashfield Solutions Limited (“Ashfield”) has been appointed by Bowmer and Kirkland Limited (“B+K” or the “Client”), on behalf of the Department for Education (“DfE”) and Burnt Mill Academy Trust (who operate multiple schools in the area), to prepare a Remediation Strategy and Verification Plan to address potential land quality related risks associated with the redevelopment of Burnt Mill Academy, First Avenue, Harlow, CM20 2NR (“the site”). The site location can be seen in Drawing 01 and the proposals are discussed in Section 1.2, below and Section 2.

## 1.2 Planning Context & Objectives

A planning application has been granted by Harlow Council (“Local Planning Authority” or “the council”), under consent ‘HW/FUL/23/00096’ for the following proposed works:

*“Demolition of the existing school buildings and sports facilities and erection of a replacement school and sports facilities with associated access, parking and landscaping”.* The full planning application is included as Appendix A.

In relation to land conditions, site remediation and the context of this report, the notice of approval states the following:

**“8.** *If unexpected contamination is discovered at any time during the implementation of the development to which this permission relates, work in the affected area shall immediately cease and the contamination shall be reported to the local planning authority. Work in the affected area shall not resume until works for the remediation of said contamination have been approved in writing by the local planning authority. The development shall then be carried out in accordance with any agreed remediation and verification measures.*

*REASON: In the interests of human health and to accord with policy PL10 of the Harlow Local Development Plan 2020.”*

**“12.** *Prior to the commencement of the development to which this permission relates (excluding groundworks, site clearance and demolition), a report detailing the results of an intrusive geo-environmental investigation as recommended by section 6 of Phase 1 Geo-Environmental Desk Study Report reference HSP2021-C3825- GGPI-392 rev A and dated 26/11/2022 shall be submitted to and approved in writing by the local planning authority. The report shall include details of any necessary remediation measures and the development shall then be carried out in accordance with the approved remediation measures, if any.*

*REASON: In the interests of human health and to accord with policy PL10 of the Harlow Local Development Plan, December 2020.”*

The principal objective of this document is to provide details on the works required to address land contamination related risks, and to support the planning application associated with the redevelopment of the site. This shall ensure that, following redevelopment, the site does not qualify as 'contaminated land' under Part 2A of the Environmental Protection Act 1990 in relation to the intended use.

With regard to the proposed conditions above, this Remediation Strategy seeks to address the latter part of Condition 12 (*"details of any necessary remediation measures and the development shall then be carried out in accordance with the approved remediation measures"*) and is subject to the approval of Harlow Council. Provisions for dealing with unexpected contamination that may be encountered during the course of the works (i.e. Condition 8) are also provided within this report.

### 1.3 Document Scope

This report has been undertaken in general accordance with Land Contamination: Risk Management ("LCRM") (Environment Agency (EA), 2020). The scope of this Remediation Strategy comprises:

- A summary of background information and site environmental setting;
- A summary of the results of the risk assessment and final conceptual model adopted for the site;
- A remediation options assessment including selection of final remediation options;
- The methodology for dealing with an unexpected contamination should it arise during redevelopment;
- The methodology and verification requirements for remediation works; and
- The duties of specific parties (where known) for different aspects of the remediation and verification.

### 1.4 Sources of Information

In preparing the remediation strategy the following documents were consulted:

- Phase 1 Geo-Environmental Desk Study Report, Burnt Mill Academy, Harlow, HSP Consulting Engineers Limited, November 2021. Ref. HSP2021-C3825-G-GPI-392.
- Phase II Geo-Environmental Assessment Report, Burnt Mill Academy, Harlow, HSP Consulting Engineers Limited, November 2021. Ref. HSP2022-C3825-G-GPII-601- FINAL. ("HSP 2021")
- Lucion Services Limited (Jan 2022) Asbestos Management Survey Report. Ref. SRP1056-LUC-XX-XX-T-B-0001-066
- Burnt Mill Academy, Harlow, Proposed School Redevelopment, Geo-Environmental and Geotechnical Report, Earth Science Partnership Limited, Revision 2, July 2023. Ref. ESP.8511.3873 ("ESP 2023")
- Flood Risk Assessment, Burnt Mill Academy, Frist Avenue, Harlow, HSP Consulting. Ref. HSP2021-C3825-C&S-FRASI-441.

The environmental setting and land contamination risk assessments are provided in the documents listed above. This remediation strategy provides relevant summary information from the existing documents, and we recommend the reader refers to the source documents for further detailed site information.

The HSP Consulting Engineers Limited (“HSP”) 2021 report and Earth Science Partnership Limited (“ESP”) 2023 report form the basis of environmental risk at the site.

## 1.5 Report Limitations

This report has been prepared with reasonable due care and diligence in accordance with industry good practice and guidance. This remedial strategy has been presented based upon the findings of investigations carried out by others. Third party information, including site investigation reports, have been relied upon in good faith, but Ashfield cannot guarantee the validity of third-party data. No investigation method is capable of completely identifying all ground conditions that might be present in soil or groundwater under a site and there is always a risk that unidentified contamination may be encountered during ground works.

The report has been prepared for the exclusive benefit of the Client and those parties designated by them for the purpose of providing information on the remediation and validation works to be undertaken during the enabling works and construction phases of the development. The conclusions presented in this report represent Ashfield’s best professional judgement based upon the information available and conditions existing as of the date of this report.

**Important:** This document is a strategy document only. The appointed contractor for the works will be required to provide detailed remediation method statements providing details of how the requirements of the strategy will be implemented and integrated with the construction works. This report does not provide a geotechnical appraisal of ground conditions with respect to the suitability of foundations or future structures, nor does it intend to identify a need for any associated geotechnical ground improvement works. This report is not to be considered as a specification of works.

## 2 Background Information

### 2.1 Context

This section presents a summary of the environmental setting of the site as determined by the previous assessments listed in Section 1.4. The reader is referred to these reports for further details.

### 2.2 Site Location and Current Land Use

The site comprises the existing Burnt Mill Academy located off First Avenue, Harlow, CM20 2NR, centred on National Grid Reference (NGR) 545445, 210863. The site occupies a rectangular shaped area of approximately 5.5 hectares.

The built area of the site is split level, with an elevation of approximately 65 m Above Ordnance Datum ("AOD") at the entrance (southern boundary) reducing to approximately 61.5 m AOD at the rear of the eastern corner of the buildings. The changes in elevation are provided by steps, ramps, slopes and retaining walls. Topography across the playing fields rises gently from approximately 61.5 m AOD in the southwestern corner to approximately 64.7 m AOD at the north-eastern boundary. A steep downward slope is present along part of the north-eastern boundary of the site to accommodate the change in level between the playing field and adjoining rear gardens of residential properties.

The school buildings all located in the southern third of the site and are a mixture of two to four storey structures with the north of the site comprising natural grass sports pitches. A chimney and plant room are located within one of the buildings in the east of the site however the chimney and solid fuel boiler are no longer in use are the buildings are currently heated using mains gas.

Surrounding land usage includes:

- A footpath and parkland to the immediate northern site boundary with an industrial estate present approximately 60m, beyond.
- Residential properties with associated gardens adjoining Altham Grove to the immediate east.
- To the South of the site in proximity to the school's entrance is First Avenue which is in turn bounded to the south by generally more residential properties and gardens.
- To the west of the site is Harlow Town Park with Harlow Skate Park and Harlow & District Scout Head Quarters .

### 2.3 Proposed development

The proposal would include a new main school super block building, separate sports centre, a Multi-Use Games Area ("MUGA"), carpark, swimming pool and all ancillary works and landscaping. The whole site illustrative master plan for the development is included as Appendix B.

It is understood that the development proposed is to be undertaken in phases, broadly comprising:

- Staged demolition of the current school building, commencing with the west wing.
- Construction of the proposed Super Block.

- Demolition of current buildings within the southeast, construction of a new sports centre (including a swimming pool), and car parking.
- Removal/demolition of the current sports hall and hard-play areas, prior to the construction of the hard cover MUGA, cycle shelter and reinstatement of the former hard play area.

The existing hard surfaced MUGA to the north of the school buildings is anticipated to be converted to natural turf to form an extension to the surrounding playing fields and the replacement MUGA would be provided within the existing built footprint of the school. In terms of the impact on the playing fields, during the majority of the construction period it is proposed that a temporary teaching block would be sited in the southern part of the playing field.

The school is to remain in operation throughout its redevelopment with a temporary classroom to be constructed in the fields to the north to enable this. The appointed remediation / earthworks contractor shall implement a range of mitigation and monitoring measures to demonstrate that the works do not pose a risk of harm to occupants of the school.

## 2.4 Asbestos within Existing Buildings

An asbestos survey undertaken by Lucion Services Limited in 2021/2022 (Ref: SRP1056-LUC-XX-XX-T-B-0001-066) identified asbestos containing materials (“ACM”) within the existing school buildings, which consisted of Chrysotile and Amosite. As such the removal of the ACM will need to be undertaken by a licensed asbestos removal contractor prior to the proposed building demolition (please refer to Section 6).

## 2.5 Site History

The HSP Desk Study indicates that the site was undeveloped and greenfield with the current Burnt Mill School identified on historical mapping from the mid 1960’s onwards, with gradual addition of buildings and hard play areas on subsequent map editions.

The ESP report indicates that prior to school construction, a valley-like structure was present in the northern two thirds of the site (area of the current grass pitches) and subsequently filled pre-construction of the school. Due to historic contours, up to 7m depth of filling is possible in the deepest part of the former valley, likely reducing to the south towards the existing school. Between the 1920s and the late 1940s, two large gravel pits were excavated to the west/southwest of the site and were later infilled to form Town Park located off-site to the southwest boundary.

The site investigation report states *“anecdotal evidence gathered during the walkover with the premises manager indicates that potential asbestos containing materials (ACM) have been buried under part of the schools playing field. No exact location was provided during the walkover but it is understood to be adjacent to the eastern boundary of the site.”* There is no formal record of this.

Anecdotal evidence provided within the HSP 2021 report indicated that a mound of buried construction & demolition waste containing asbestos containing material is present along the eastern boundary in proximity to the MUGA. The anticipated buried asbestos area is shown approximately in Drawing 2.

## 2.6 Hydrology and Flooding

A Flood Risk Assessment was produced by HSP consulting for the site. In summary:

- The proposed development lies within an area categorised as Flood Zone 1.
- The nearest main river is the “Stort Navigation” located approximately 590 m from the northern border of the site. It is a canalised section of the River Stort. There are no identified ordinary watercourses within a 350 m radius of the site.
- The development is anticipated, in notional terms, a like-for-like replacement of existing.
- With respect to flooding the site is not considered to be at an unacceptable risk of flooding from any source.
- The site offers the potential to reduce existing flooding risk associated with drainage infrastructure.

## 2.7 Geology and Physical Ground Conditions

### Published Geology

The desktop assessment undertaken by HSP indicates that the site is likely to be underlain by superficial Glaciofluvial Deposits (sands and gravels) in the north and south with a band of Lowestoft Formation (Glacial Till) expected in the centre. The superficial deposits are anticipated to be underlain by bedrock of the London Clay Formation.

No Made Ground is indicated on-site based on the BGS mapping. However, considering the earthworks some would be expected, particularly in the infilled valley. Made Ground is indicated to the west/southwest in the infilled gravel pits located off-site.

### Proven Ground Conditions

In general, the exploratory holes from both the HSP 2021 and ESP 2023 intrusive investigations identified that the site is generally underlain by Made Ground, Lowestoft Formation, Glaciofluvial Deposits, and the London Clay Formation.

The geological conditions encountered during the intrusive investigations are summarised below in table 1.

Table 1 – Ground Conditions Summary – Development Area

Strata	Description	Depth Range Top (m)	Depth Range Base (m)	Thickness Range (m)
Topsoil	<p><b>HSP 2021</b></p> <p>These deposits are record as “<i>generally comprising soft brown sandy gravelly Clay with frequent rootlets and gravels of quartzite</i>”.</p>	0.0	0.5	0.1 - 0.5
	<p><b>ESP 2023</b></p> <p>Topsoil generally present above the made ground deposits in the south of the site.</p>			

Made Ground	<p><b>HSP 2021</b></p> <p>Made ground was present in seven of boreholes comprising “grey asphalt concrete overlying red brown gravelly slightly clayey sandy sub-base. Deposits of blue grey sandy slightly gravelly Clay fill with gravels of brick concrete and flint were also encountered.”</p>	0	2.5 – 8.5* (*Depths of 8.5m anticipated in the former valley area)	0.3 – 8.5
	<p><b>ESP 2023</b></p> <p>In the southern portion of the site the Made Ground deposits are considered to be generally less than 1m thick and are comprised of reworked natural material with fragments of brick, concrete, porcelain and tarmac.</p> <p>Thick Made Ground was confirmed in the north of the site with the base unproven at 5m in WS106. ESP estimate fill depths of up to approximately 7m or more. This fill is likely associated with the former valley shown on historical mapping.</p>			
Lowestoft Formation	<p><b>HSP 2021</b></p> <p>These deposits are subordinate within the Glaciofluvial deposits and as such were encountered at shallow depths above the Glaciofluvial Deposits and at depth beneath the Glaciofluvial deposits. Material contained “bands of loose orange-brown clayey slightly gravelly sand, soft to firm brown gravelly clay and firm grey mottled brown clay.”</p>	0.1	5	0.8 – 4.9
	<p><b>ESP 2023</b></p> <p>Locally present beneath the Made Ground deposits on site. Generally comprised firm to stiff grey mottled orange-brown gravelly sandy silty clay with clasts of chalk and flint</p>			
Glaciofluvial Deposits	<p><b>HSP 2021</b></p> <p>These deposits were indicated to contain “bands of soft to firm brown slightly gravelly Clay, loose to medium dense orange, brown clayey Sand and Gravel. Loose to medium brown clayey gravelly sand.”</p>	0.28	4.5 - 25	1.30 – 20.50
	<p><b>ESP 2023</b></p> <p>Present beneath the Made Ground and probable Lowestoft Formation (where present). It was variable in composition mainly comprising coarse grained soils (sands and gravels) with deeper bands of gravelly clay.</p>			
London Clay Formation	<p><b>HSP 2021</b></p> <p>Not encountered.</p>	18 -19.7	>25	7.00+

	<p><b>ESP 2023</b></p> <p>Was not fully penetrated in any of the boreholes were encountered and generally comprised stiff to very stiff silty clay with occasional fine sand-sized selenite crystals.</p>			
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## 2.8 Hydrogeology and Groundwater

### Published Information

The Glaciofluvial Deposits are classified as a Secondary A Aquifer. The superficial Lowestoft Formation deposits in the centre of the site are classified as a Secondary Aquifer (Undifferentiated). The London Clay Formation deposits are classified as an Unproductive Aquifer. Furthermore, the site is not located within a Source Protection Zone and there are no recorded licenced groundwater abstractions within 1 km of the site.

### Proven Hydrogeology

#### HSP 2021

Only two groundwater strikes were recorded during advancement of the windowless sample boreholes and cable percussive boreholes as part of the HSP site investigation. A strike was recorded within WS02 at 1.50m bgl which is likely a perched water body due to a permeability contrast in the ground conditions (i.e. where coarse grained soils overlie fine grained soils). A strike was also recorded at 11.50m bgl within CP02 which was within a confined coarse-grained layer overlain and underlain by fine grained soils.

Many of the installations were wet at the base or dry, with the exception of WS03 and WS10A which were located to the north of the school. No consistent groundwater body was recorded across the site, however localised perched water bodies appear to be present.

#### ESP 2023

At the time of writing, two rounds of groundwater monitoring have been completed by ESP. ESP consider that the main groundwater body beneath the site is within the deeper glaciofluvial deposits/upper London Clay. Localised perched water bodies also appear to be present within the Made Ground in the area of the infilled valley or locally within the superficial deposits due to permeability contrast in the nature of the soils.



## 3 Risk Assessment Summary

### 3.1 Previous Assessments

As discussed in Section 1.3, the site has been subjected to a number of previous geo-environmental investigations. The following documents were used to inform this remediation strategy:

- Phase I Geo-Environmental Desk Study Report, Burnt Mill Academy, Harlow, HSP Consulting, November 2021. Ref. HSP2021-C3825-G-GPI-392
- Phase II Geo-Environmental Assessment Report, Burnt Mill Academy, Harlow, HSP Consulting Engineers Limited, November 2021. Ref. HSP2022-C3825-G-GPII-60I- FINAL.
- Burnt Mill Academy, Harlow, Proposed School Redevelopment, Geo-Environmental and Geotechnical Report, July 2023. Ref. ESP.8511.3873 - 02

It is the key outputs from the above works, specifically the final conceptual site model presented within the 2023 Geo-environmental and Geotechnical report prepared by ESP that form the basis of the remediation strategy presented herein.

### 3.2 Contamination Assessment

A summary of the relevant contamination information from the available is present below in Table 2.

Table 2 - Contamination Summary

Scope of works undertaken	<p><b>HSP 2021</b></p> <p>This investigation comprised 12 no. windowless sampled boreholes to a maximum depth of 5 m and 4 no. cable percussion boreholes to a maximum depth of 15m.</p>
	<p><b>ESP 2023</b></p> <p>This investigation was comprised of 4 no. trail pits excavated to a depth of between 1.5 and 2.1 m. A total of 11 no. hand excavated pits to depths of between 0.25 and 1.2 m. 5 no. cable percussion boreholes to a depth of between 16.9 and 25 m. 6 no. total windowless sample drillholes to depths between 3 and 5 m</p>
Soil Contamination Testing	<p><b>HSP 2021</b></p> <p>18 no. samples were tested for a suite of typical contaminants. This included 8 no. samples of Made Ground, 8 no. samples of natural superficial soils and 2 no. samples of possible Made Ground consisting of re-worked natural soils (area of infilled valley).</p> <p>The soil analysis results were screened against assessment criteria for a residential use without home grown produce. Isolated exceedances of Lead (WS03 at 2.2 m depth) and Arsenic (WS04 at 0.8 m depth) were identified. It was noted that these guideline values were conservative. The sample from WS03 (in the area of the infilled valley) was within a layer described as having 'dark black staining and an organic odour' and may be Made Ground. The elevated level of Arsenic was recorded in natural Glaciofluvial Deposits.</p> <p>A site-specific assessment criterion (SSAC) was generated for Arsenic using the CLEA model. The SSAC for Arsenic (66mg/kg) was higher than the concentration recorded, therefore the risk to human health was considered low (HSP, 2022). Due to the depth of the elevated lead concentration, it was considered a low risk to human health, however if earthworks were proposed and levels reduced, further consideration would be required.</p>

	<p><b>ESP 2023</b></p> <p>In total 32 no. samples of shallow soils were tested across the site. 16 no. were sourced from the general Made ground, 8 no. samples from the natural deposits and 8 no. samples from shallow soils in the area of suspected buried ACM.</p> <p>The majority of determinants analyses were below their respective GAC. When compared to the residential without plant uptake guidelines, slight elevated concentrations of lead were recorded in the Made Ground (probable sub-base) in WS108 at 0.2 m depth (340mg/kg) and in the possible Made Ground (organic layer) in WS03 at 2.2 m depth (330 mg/kg). An isolated elevated level of arsenic was also identified in the natural Glaciofluvial Deposits in WS04 at 0.8 m depth (50 mg/kg). PAHs were identified above the limit of detection, but below the appropriate GAC.</p> <p>The generic assessment criteria adopted are considered conservative. When reviewed against the guideline values for commercial and public open space end uses, all elevated values fall below their respective assessment criteria. The levels also fall below SSAC developed as part of the previous report (HSP, 2022).</p>
<p>Asbestos Contamination</p>	<p><b>HSP 2021</b></p> <p>No evidence of asbestos was identified in the 8 no. samples of Made Ground that was screened. However, anecdotal evidence suggested buried ACM may be present in the east portion and this was not targeted although WS10 and WS10A were close.</p>
	<p><b>ESP 2023</b></p> <p>A total of 38 no. samples were screened for the presence of asbestos by ESP. 23 no. of these samples were from hand pits in the area of suspected buried ACM in the northeast. 9 no. samples screened confirmed the presence of asbestos, both (white) chrysotile and (brown) Amosite. 7 no. of these were encountered in the area of suspected buried ACM area. Where asbestos was identified further quantification analysis was undertaken.</p> <p>The Made Ground within the buried asbestos area consisted of a topsoil layer (including brick, concrete and porcelain fragments) overlying a geotextile membrane followed by re-worked natural soils with some rubble (e.g. brick and concrete) and other man-made materials (e.g. slag, metal and plastic).</p> <p>The geotextile layer was present in 5 no. hand pits (HP02, HP03, HP08, HP09 and HP10) at a depth of between 0.25m and 0.6m. Asbestos quantification percentages for samples above the geotextile were between &lt;0.001 and 0.003 % total mass. Below the geotextile the results were between 0.004 and 0.140 % total mass.</p> <p>Additionally, localised shallow asbestos contamination was also encountered in the school ground (WS104 – inc. ACM 0.756 %) and on the existing playing field(0.013%).</p> <p>The reader is referred to Appendix D which summarise the asbestos positive samples.</p>
<p>Visual evidence of Contamination</p>	<p><b>HSP 2021</b></p> <p>No visual or olfactory evidence of contamination was noted in the majority of the exploratory hole arisings during the ground investigation. Dark brown staining and a slight organic odour was recorded within WS02 between 3.75m begl and 4.00m begl.</p>
	<p><b>ESP 2023</b></p> <p>No obvious visual evidence of contamination or asbestos was identified by ESP.</p>

Other than the asbestos ESP did not identify any other contaminants of concern. Broadly speaking, the identified contamination concentrations across the site are low and were not considered by ESP to pose a risk to the proposed development.

### 3.3 Ground Gas & Soil Vapours

#### HSP 2021

Four rounds of ground gas monitoring were undertaken. The result of monitoring indicates that elevated concentrations of methane and carbon dioxide have been recorded within two boreholes, WS02 and WS10a with a maximum steady state methane concentration of 10.6% by volume in air and maximum steady state carbon dioxide concentrations of 5.7% by volume in air. Steady state gas flows have been recorded ranging from 0.1l/hr to 4.9l/hr in WS02. Methane concentrations within the remaining boreholes were below the limits of detection, together with Carbon Dioxide concentrations recorded between 0.3% and 4.5% volume in air and steady state gas flows recorded up to a maximum of 0.1l/hr.

WS02 and WS10a are located within the central section of the site where the proposed two storey temporary classrooms will be located during the construction phase of this project. No elevated gas concentrations have been recorded within any of the other exploratory hole locations across the site.

From the results above, the maximum steady state gas screening value for WS02 and WS10a is 0.519l/hr. The results from WS02 and WS10a were assessed in line with the guidance provided in BS8485:2015 + A1:2019 Code of Practice of the design of protective measures for methane and carbon dioxide ground gas for new buildings and CIRIA Document C665 'Assessing Risks Posed by Hazardous Ground Gases to Buildings'. Comparison of these results with Table 2 of BS8485:2015 + A1:2019 indicates that the site falls into a Characteristic Situation 2 and therefore ground gas protection measures will be required as part of the temporary classroom development located within the central section of the site.

#### ESP 2023

The following on and off-site sources have been identified within the ESP report:

- Made ground across the site, including likely thicker deposits within an identified infilled valley to the north of the existing school.
- Organic / possible relict Topsoil layers within WS02 and WS03 in the infilled valley area.
- Infilled gravel pits located off-site to the west which have been infilled with unknown materials. The closest is located 123m to the west of the site.

The ESP monitoring reveals methane levels ranging from below the detection limit (0.2%) to 2.1% and carbon dioxide levels from below the detection limit (0.1%) to 10.0%. Elevated levels of carbon dioxide were observed in well WS10A, while methane concentrations were highest in WS106, both situated north of the existing school in the infilled valley area. Oxygen depletion was noted in wells with increased methane and carbon dioxide levels, particularly in the infilled valley region (e.g., WS105, WS106). Previous visits recorded maximum methane concentrations of 10.6% and carbon dioxide concentrations of 5.7%, with the highest levels in WS02 within the infilled valley.

The maximum gas flow rate of 39l/hr in well BH105d was disregarded due to its design for water sampling and monitoring at depth, and the flooded interface between Glaciofluvial Deposits and London Clay causing anomalous results. Flows in the shallow well (BH105s) were lower and diminished over time, with no recorded flows since the 5th visit. Following current guidelines (e.g., BS8485 and NHBC), the well BH105d is deemed unsuitable for gas monitoring, and its maximum flow values were not used in the risk assessment. The highest flow reading, 6.0l/hr in BH101, is considered appropriate

for risk characterization, excluding BH105d, as steady-state readings in all boreholes were lower than this.

The monitoring results from eleven visits, including historical data, were utilised to compute Gas Screening Values (GSV) for the site. The calculation followed the methodology outlined in CIRIA C665 (Wilson et al, 2007). Initially, a worst-case GSV, in accordance with BS8485 standards, was determined by multiplying the maximum recorded flow in any standpipe (excluding peak instantaneous flows) with the maximum gas concentration in any other standpipe. Despite BS8485 recommending that results for a worst-case check should be from the same zone and strata, the study considered all monitoring wells across the site, excluding BH105d, due to the conceptual ground model's variability and potential pathways between strata and zones.

ESP have concluded that based on the worst case Gas Screening Value (GSV), the site would be classified as Characteristic situation CS-2 (CIRIA C665:2007).

### 3.4 Conceptual Site Model

A final CSM for the site in the context of the proposed development has been developed in accordance with LCRM. This is based on a ground model of the site's physical conditions and an exposure model of the possible contaminant linkages. The key outputs of the contamination risk assessment in terms of the RPLs requiring risk mitigation are presented in the following section.

The general term contaminant can be used to cover LCRM 'source, contaminant and pollutant'. 'Relevant Pollutant Linkage' is used in favour of LCRM term 'contaminant linkage'.

In relation to the proposed redevelopment of the site, a number of active human health RPLs have been identified, some of which have been confirmed as significant and requiring risk management. The reader is referred to Section 5 and Appendix A of the ESP 2023 report for the full methodology leading to the definition of the RPLs.

The ESP report and final CSM highlights risk to construction workers, largely associated with the potential for exposure to asbestos containing material within building fabric and within shallow soil. However, these risks will be dealt with as part of control procedures to be implemented by the actor appointed contractor.

Table 3 presents the final CSM, identifying the exposure pathways relevant for the development and requiring mitigation.

**Table 3** – Summary of Identified RPLs Requiring Mitigation

RPL Ref.	Source	Pathway	Receptor	Classification of Consequence	Classification Probability	Risk Category	Further investigation or Remedial Action to be Taken
RPL-1	Potential contaminants in shallow soils. (Inorganics, hydrocarbons & organics)	Direct contact/ inhalation/ ingestion of contaminated soil or dust	Site Users	Medium – potential for chronic levels	Low Likelihood	Low/ Moderate Risk	Appropriate specification / verification of cover layer soils in landscaped and sports pitch areas.  Adopt protective Human Health Generic Criteria. All cover layer soils to meet the pitch/landscaping requirements with respect to chemical, physical, structural suitability and required thickness.
		Direct contact/ inhalation/ ingestion of contaminated soil or dust	Construction/ Maintenance Workers	Minor – standard	Likely	Low Risk	Risk mitigated through adoption of standard Health and Safety control measures for brownfield sites. PPE likely to be sufficient.  <b>Not considered further in remediation strategy.</b>
		Leaching of soil contaminants	Impact on Groundwater	Medium – potential for chronic levels	Unlikely	Low Risk	The overall risk is considered to be low; no further assessment or remediation is warranted.

RPL Ref.	Source	Pathway	Receptor	Classification of Consequence	Classification Probability	Risk Category	Further investigation or Remedial Action to be Taken
							<b>Not considered further in remediation strategy.</b>
RPL-2	Asbestos in existing buildings	Inhalation of fibres	Demolition Workers / Ground Workers	Medium – potential for chronic levels	High Likelihood	High Risk	All the ACM identified within the asbestos survey forming part of the existing school building should be removed by a licensed specialist contractor prior to demolition. Risk to be dealt with by contractor in accordance with relevant health and safety legislation and guidance (e.g. CAR2012). <b>Not considered further in remediation strategy.</b>
RPL-3	Asbestos in shallow soils – General Made Ground	Inhalation of fibres	Site Users /construction/maintenance workers	Medium – potential for chronic levels	High Likelihood	High Risk	Further site wide testing and delineation by remediation contractor as part of remediation works.
RPL-4	Asbestos in shallow soils in areas of buried ACM				High Likelihood	High Risk	Appropriate specification / verification of cover layer soils in landscaped and sports pitch areas.  Risk to construction workers mitigated through adoption of standard Health and Safety control measures for brownfield sites.

RPL Ref.	Source	Pathway	Receptor	Classification of Consequence	Classification Probability	Risk Category	Further investigation or Remedial Action to be Taken
							<b>Not considered further in remediation strategy.</b>
RPL-5	Soil sulphate and pyrite	Aggressive groundwater	Buried concrete	Mild – damage to structures	High Likelihood	Moderate risk	Specification of appropriate building materials e.g. sulphate resistant concrete and chemical resistant membranes.
RPL-6	Hazardous ground Gas / Vapours	Asphyxiation/poisoning. Injury due to explosion	Site Users/ Visitors	Sever – acute risk.	Likely	High Risk	Appropriate specification, design, installation, and verification of ground gas mitigation by suitably experienced and qualified contractors.
		Damage through explosion.	Building property	Sever – acute risk.		High Risk	
		Asphyxiation/poisoning. Injury due to explosion	Construction and Maintenance workers.	Sever – acute risk.		High risk	
RPL-7	Radon Gas	Migration into buildings	Site Users	Medium – potential for chronic levels .	Unlikely	Low Risk	No radon protection required.

## 4 Remedial Options Appraisal

### 4.1 Introduction

The primary aim of any remediation scheme is to reduce risks associated with each contaminant linkage to a level that is acceptable for the proposed use. These are the 'technical objectives' and, to a greater extent, determine the methods of remediation. It is also necessary to consider the wider 'management objectives' to ensure that the remediation scheme is compatible with viable development of the site, and having regard for financial, commercial, legal and societal factors.

Having identified the objectives of the remediation, the next stage is to translate these into measures against which compliance against the objectives can be assessed, these are termed 'remediation criteria'. The following corresponds to LCRM: Stage 2 – Options Appraisal.

### 4.2 Site Phased Development

To reiterate, the school is to remain operational whilst the redevelopment is to take place, it is envisioned that the re-development will be conducted in multiple phases to minimising the impact to current school users.

To summarise, multiple areas of the current school buildings will need to be subjected to asbestos removal and survey before that can be safely demolished until the earthworks can be undertaken and the new buildings constructed. As a result of the phased demolition/construction requirements a set of temporary classrooms are to be constructed within the north grass field area. These will be required until the new dedicated school building has been complete, they will then be subsequently deconstructed and removed. There is a Phasing Plan produced by B+K that can be viewed in Appendix C.

### 4.3 Remediation Objectives

The management objectives of the remediation (i.e. the required remediation outcome) are as follows:

- [1]. Ensure that, following redevelopment, the site does not qualify as 'contaminated land' under Part 2A of the Environmental Protection Act 1990 in relation to the intended use.
- [2]. Demonstrate that the site is suitable for use to Harlow Council (as statutory consultee), and discharge all relevant expected land contamination planning conditions;
- [3]. Minimise requirement for long-term monitoring or maintenance obligations;
- [4]. Maximise environmental sustainability, in particular by minimising waste production, favouring waste reuse and recycling, minimising importing of materials, minimising vehicle movements, and minimising energy use; and,
- [5]. Avoid unacceptable health and safety risks during remediation, earthworks, and subsequent construction, to both site workers and neighbours.

In addition to the management objectives, the following key technical objectives are relevant:

- [1]. Maximise the sustainable on-site retention of materials and reuse within the development.
- [2]. Ensure that site-won materials generated by the necessary earthworks (and in-situ soils) are chemically and physically suitable for reuse within the development, in accordance with a



Materials Management Plan in-line with the CL:AIRE DoWCoP. Specifically, this will include the appropriate specification and verification of imported and site won material.

- [3]. Fully mitigate risk to buildings, future site users and buried services from harmful ground gases.
- [4]. Take full advantage of the earthworks to visually inspect the subsurface ground conditions across the site with the appropriate management of any “unexpected contamination” that may be encountered.

## 4.4 Remediation Criteria

Remediation criteria are measures against which compliance against the objectives can be assessed.

They have been set as follows:

- [1]. Compliance concentrations in imported and site-won soils verified as below their applicable human health criteria protective of the proposed end use.
- [2]. Verified thicknesses of placed and verified cover materials in designated soft cover areas.
- [3]. To take into account both the chemical and physical nature of the site soils to ensure they are suitable for their final location/depth within the development layout (either imported or where reused).
- [4]. Verification of the installation of ground gas mitigation measures.
- [5]. Providing evidence that all below ground building materials and services have been specified to account for potentially hazardous ground conditions and that suitable materials have been adopted in the scheme.

## 4.5 Feasible Remediation Options

In accordance with LCRM, a remediation options appraisal has been undertaken as included in Appendix E. However, it is important to recognise that the range of potential options that can be applied on the site is restricted by the following:

- [1]. The school must remain operational during the majority of the development and as such the risk to both the construction workers and current site users (pupils, staff and visitors) must be considered during all phases of work.
- [2]. The intrusive site investigation has identified the potential for a significant quantity of buried demolition material containing ACM in close proximity to the eastern boundary of the site. It is unlikely to be feasible in terms of cost, sustainability and health and safety grounds to remove the mound off-site for disposal.

Based on the identified relevant pollutant linkages and the assessment of different remediation approaches, the following remedial measures are required at the site:

- [1]. Site wide confirmatory soils testing, particularly to delineate the extent of the buried asbestos mound, hotspot areas identified by ESP and establish potential for wider asbestos contamination across the site in any soft cover areas that are proposed to remain e.g. existing sports pitches.
- [2]. A suitably robust cover system installed in any areas of soft cover, in particular across the full extent of the buried asbestos mound and any other soft cover areas that are required as part of the development.
- [3]. Remediation to be incorporated within general site earthworks. This will involve a cut and fill earthworks in conjunction with appropriate materials management and robust verification of soils to demonstrate suitability for use.

- [4]. Ground gas protection incorporated within buildings.
- [5]. Buried concrete and water pipes account for potentially aggressive / hazardous ground conditions.
- [6]. A Materials Management Plan (“MMP”) is implemented to manage the excavation, processing, and maximum reuse of suitable material;
- [7]. Long term management procedures will be required to ensure the integrity of soft cover areas (pitches, landscaped areas), including restrictions on excavations and a long-term programme of inspections and maintenance plans.

## 5 Remediation Strategy

### 5.1 Introduction

Implementation of the remediation strategy will be in accordance with documented quality assurance procedures to be prepared by the appointed earthworks contractor. These will include the following:

- **Site Specific Remediation / Earthworks Method Statement** – This document will set out the contractor's detailed, site-specific methodology for delivering the works and requirements for gathering data to demonstrate the effectiveness of the remediation. Detailed designs are not included in this remediation strategy and will be produced after contract award in due course.
- **Verification Report** – A verification report will provide a complete record of the remediation activities undertaken at the site, verification data collected and proof of compliance with remediation objectives and criteria. It will also include descriptions of the works with associated 'as built' drawings and details of any unforeseen conditions encountered during the works and how they were dealt with.

In addition to the above, the appointed contractor (for all phases of works) will be required to secure all necessary permits and licences to allow remediation to be undertaken and prepare appropriate Health and Safety risk assessments and method statements.

### 5.2 Outline Scope of Works

The works will comprise the following key tasks. These are set out under the following headings.

Pre-construction Tasks (Section 6) Comprising:

- **Task 1:** Project set-up and management. Including liaison with and agreements sought from the Local Authority, EA and Health and Safety Executive, where necessary. With appropriate permits / licences / consents / approvals granted.
- **Task 2:** Pre-works ("baseline") air quality boundary monitoring for dust and asbestos fibres before earthworks commence (to be continued during earthworks).

Remediation Implementation (Section 7) Measures to address the RPLs and associated potentially unacceptable land contamination risks to human health. To include the following tasks:

- **Task 3:** Delineation of buried asbestos mound and identified hotspots.
- **Task 4:** Confirmatory testing in all areas of soft cover that are to remain in situ i.e., sports pitches.
- **Task 5:** Reduced level dig to formation level with appropriate stockpiling, segregation, screening (as necessary) and verification of excavated soils to determine re-use potential.
- **Task 6:** Asbestos contamination – Mound feature
- **Task 7:** Installation of ground gas protection
- **Task 8:** Appropriate concrete design and mitigation of aggressive ground conditions.
- **Task 9:** Clean service corridors / buried services protection as necessary.
- **Task 10: Verification (Section 8)** - Comprising the gathering of information to confirm the effectiveness of remediation and preparation of the Verification Report.
- **Task 11 (Sections 9):** Environmental Management and Monitoring
- **Task 12 (Sections 10):** Ongoing Maintenance and Monitoring.

The following sections provide detail of the above tasks.

## 6 Pre-Construction Phase

### 6.1 Task 1: Project and Team Set-up

Prior to commencement of site activities, detailed planning of the project shall be undertaken including reaching agreement of this strategy with Harlow Council. The project is to be operated under the Construction, Design and Management (“CDM”) Regulations, (2015) with Bowmer and Kirkland acting as the Principal Contractor.

Under the CDM regulations, a Principal Designer should be appointed, who would provide the Preconstruction Information Pack (“PCIP”). Acting as Principal Contractor, Bowmer and Kirkland will provide a site-specific Construction Phase Health and Safety Plan (“CPHASP”) and Construction Environmental Management Plan (“CEMP”) prior to works commencing.

The Principal Designer will review the CPHASP and notify the local office of the Health and Safety Executive (“HSE”) of the works prior to commencing (via form F10). As Principal Contractor, Bowmer and Kirkland will have overall responsibility for Health and Safety Management of the works.

An earthworks contractor will be appointed by Bowmer and Kirkland who will have responsibility for the implementation of works in accordance with this strategy. The appointed earthworks contractor shall prepare a detailed method statement for these works and obtain appropriate approvals, licences, consents and permits prior to commencement. The appointed earthworks contractor shall provide suitably experienced and trained geo-environmental supervision during any excavation and verification works.

The earthwork contractor’s method statement will provide a site-specific methodology for implementation of the works and requirements for gathering data to demonstrate the effectiveness of the remediation. This shall be submitted to Bowmer and Kirkland for approval prior to commencement of the works.

In addition to this strategy, the earthworks contractor will be responsible for implementing any MMP for the site developed by a suitably qualified and experienced consultant.

### 6.2 Asbestos

All staff for all earthworks activities should be made aware of the possible presence for asbestos within the soils anywhere on the site.

During the earthworks operation, all excavated soils and the formation level shall be inspected for incidental suspect visible ACM and, if encountered, any visible ACM will be handpicked and disposed of by a suitably qualified contractor. All contractor(s) will need to determine the appropriate CAR-2012 licensing status of their work activities potentially involving asbestos.

The groundworks Contractor shall develop an appropriate protocol to mitigate exposure of the workforce and general public should be in place with due respect to his duties under the Control of Asbestos Regulations 2012 and with reference to the Joint Industry Working Group Asbestos in Soil and Construction & Demolition (C&D) Materials guidance (published by CL:AIRE) titled “Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction &

Demolition materials: Industry Guidance” (shortened name CAR-SOIL™). Standard industry practices, in accordance with CIRIA C765 (2017) “Asbestos in soil and made ground good practice site guide”. It is the earthworks contractor's responsibility to decide, based on the information presented, whether the works required are notifiable and/or require the assistance of a ‘Licensed Asbestos Removal Contractor’.

The Contractor will need to prepare a risk assessment which identifies a safe system of work to handle the asbestos containing soils which is likely to include asbestos awareness training, a protocol for unexpected finds (should gross asbestos material be identified) as well as safe working procedures such as damping down of excavations and stockpiles in line with general dust generation mitigation.

The Contractor should determine the need for appropriate levels of PPE and/or RPE and any associated air monitoring as required.

The appointed earthworks contractor will need to have suitable experience of working in a similar setting, with similar ground conditions and with the contaminants of concern present at the site, in particular asbestos containing materials and asbestos in soil.

Independent supervision and verification of the works shall be undertaken by a geo-environmental consultant to be appointed by Bowmer and Kirkland. The consultant shall be independent of the appointed groundworks contractor. The roles and responsibilities of both the earthworks contractor and the independent geo-environmental consultant with regard to the verification and sharing of information shall be clearly identified at the start of the project and detailed in the remediation method statement.

## 6.3 Task 2: Baseline Monitoring

Detections of asbestos have been made in several soil samples retrieved from the soil material present on site. On this basis it is presumed that further asbestos contamination may be encountered during the works.

Consequently, reassurance boundary air quality monitoring will be undertaken before site works commence to establish baseline conditions and include airborne asbestos fibres, dust and VOC vapours. This monitoring will continue during any site activities involving disturbance of the identified ACM mound in proximity east site boundary and any working involving the remediation of the two identified asbestos hotspots.

Asbestos boundary air monitoring results during works shall be compared with acceptable maximum standards set by the HSE. For asbestos these air monitoring procedures and limits are given in HSG 248 entitled “Asbestos: The analysts’ guide for sampling, analysis and clearance procedures” and CAR 2012. The appointed contractor shall provide details of the monitoring programme to be adopted for the works including appropriate thresholds for dust and VOC vapours.

## 7 Remediation Implementation

### 7.1 Task 3 – Delineation of buried asbestos mound and identified asbestos hotspots.

The contractor shall undertake a delineation exercise to accurately determine the extent of the buried asbestos mound. This is likely to be established by the excavation of trial pits on a close spacing. This exercise shall determine the full extent of cover system to be applied to the mound feature. The appointed contractor shall provide their details proposals for delineation of the mound to the Client for approval.

Notwithstanding the area of the buried asbestos mound, two potential hotspots of asbestos contamination were encountered, in the school grounds (WS104 including ACM) at 0.3m depth and on the existing playing field (WS106) at 0.2 m depth. Robust delineation of these areas shall be undertaken by the contractor based upon their own defined methodology. This shall determine appropriate re-use mechanism on site for affected material or requirement for off-site disposal.

The specific methodology for all soil sampling and in particular asbestos in soils shall be documented by the contractor and issued to the Client in advance of works commencing. This should follow the requirements as set out within the SoBRA Soil Sampling Protocol for Asbestos in Soil. The Contractor's chosen laboratory must be UKAS/MCERTS accredited for all individual contaminants of concern.

### 7.2 Task 4 – Confirmatory Testing of Soft Cover Areas

Supplementary confirmation testing should be carried out on all areas of soft cover that are to be left in situ as part of the development to confirm that shallow soils do not pose a risk to school users. Areas such as the grass pitches to the north of the site are to remain in place with only limited work to the existing hard cover play area MUGA to the south. Shallow soil sampling shall be undertaken on a 25m grid spacing across the pitches area with near surface samples retrieved.

The results of the laboratory analysis should be compared with the soils assessment criteria in Tables 5 and 6 within Section 7.9.

### 7.3 Task 5 - Reduced Level Dig to Formation Level

It is anticipated that the reduced level dig shall be undertaken in a phased manner with timings to be determined by the construction programme. The level of cut required will be dictated by the final development layout and required formation levels of the individual elements of the development.

A key objective of the works shall be to maximise the re-use of excavated soils generated by earthworks activities. The investigation undertaken to date indicates that the soils (namely the Lowestoft Formation) may be suitable for retention within the development (i.e. as use as fill), subject to confirmation of chemical and physical suitability.

A contamination watching brief will need to be maintained during excavation, with ground conditions inspected for both visual and olfactory evidence of contamination including possible ACMs. Robust materials management procedures shall be implemented, the key principles of which are set out below:

- The extent of excavation will be set out to guide the excavator operators.
- Excavated soils will be loaded direct to dumper trucks for haulage to a dedicated stockpiling area within the site, pending verification testing to establish suitability for reuse within soft cover areas as outlined in Section 7.9.
- A full-time contamination watching brief will be stationed throughout the operation to direct the excavations and assess the ground for evidence of the following unsuitable materials:
  - Asbestos Containing Materials.
  - Deleterious materials such as accumulations of organic / vegetative matter.
  - Visual evidence of ground contamination e.g. significant accumulations of ash, hydrocarbon staining of soil and asbestos containing materials.
  - Accumulations of general waste materials (plastic, glass, domestic and construction wastes).

The above materials are considered unsuitable for reuse in the development and shall be robustly segregated by the contractor and placed in a dedicated area pending classification and appropriate off-site disposal as outlined in Section 7.11.

## 7.4 Task 6 - Asbestos Contamination – Mound Feature

It is understood that the asbestos impacted buried soils in proximity to the sites eastern boundary are to be excavated and placed and capped beneath the area of the historical MUGA to the west of the buried asbestos soil's locations (see slide 7, Appendix C) which will then be reinstated as a grass pitch area. A cover system shall be placed across the full extent of the buried asbestos soils. This shall comprise a suitable thickness of verified soil (either site won Lowestoft Formation or clean verified imported) placed upon a geotextile no dig layer. The thickness of placed soil shall be determined through discussion with the appointed landscape architect and any depth-specific planting requirements. It is envisaged that no unauthorised digging will be allowed across the area and therefore the typically adopted 600mm thickness may be reduced. The final cover system to be adopted for the asbestos impacted soils shall be provided to the LPA in good time with the development programme for acceptance.

To confirm the removal of asbestos-impacted soil from the mound, delineation testing should be conducted on all sides and the base of the excavation. Upon successful verification, the excavation will be backfilled with an appropriate thickness of clean site-won or imported soil. This process will ensure the secure and compliant handling of the asbestos-impacted soils.

During the excavation of any known asbestos impacted soils the development team and contractors must follow current Health and Safety Executive (HSE) and Joint Industry Working Group guidelines, especially 'Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition Materials: Industry Guidance [CAR-SOIL]. Contractors need to determine the appropriate licensing status for activities involving asbestos.

Air monitoring for asbestos is mandatory during earthworks, with results compared to HSE standards outlined in HSG 248 and CAR 2012. Monitoring must be conducted by a UKAS accredited laboratory, and the limit used should adhere to guidance levels, with a preference for the most stringent HSE limit.



Results are acceptable only if they fall below this limit, and efforts should be made to minimize exposure to asbestos during work activities.

As mentioned above, it is proposed that excavated asbestos impacted soil from the asbestos mound feature is to be placed in the adjacent field area to the west which is anticipated to be developed as an informal grass pitch. Due to the informal nature of the areas end-use with no formal drainage system being required at the time of writing, the asbestos impacted material is to be placed beneath a geotextile no dig layer and a minimum of 300mm clean verified cover layer.

Should the excavated asbestos impacted material need to be stockpiled temporarily prior to its re-use beneath the area of the historical MUGA, the Contractor should consult the guidance provided in section 7.7 of this strategy.

## 7.5 Unexpected Contamination

The Local Authority will be notified immediately upon of any discoveries of significant unexpected contamination i.e. contamination that alters the final CSM for the site and requires further consideration of risk mitigation to that presented in this strategy.

Should any previously unidentified material suspected (by visual or olfactory means) of being contaminated be encountered during the development of the site, then the following protocol should be implemented:

- Works in the affected area should be suspended and the client and appointed geo-environmental representative notified. The area shall be made safe either by fencing or temporary backfilling.
- The contractor shall provide a methodology outlining immediate actions with regard to site Health and Safety and to limit the potential for contaminants to migrate.
- Appropriate investigations to establish the extent of the materials in question shall be undertaken.
- Depending upon the extent and hence volume of material present, the materials may be removed and appropriately stored / contained to enable construction activities to continue.
- The findings of the investigation and recommendations shall be discussed and agreed with the relevant Regulator(s)
- Updates made to the remediation strategy to be made if deemed necessary. Necessary changes to the agreed Remediation Strategy, arising during the course of the works, are to be agreed in writing with the Local Authority prior to being undertaken on site.

## 7.6 Sourcing of Material

Imported soils and engineering fill material should be 'fit for purpose' and should be sourced from well-established 'reputable' local/national traceable supplier(s) and conform to relevant standards.

Any imported soils for use in soft cover areas should be from an "as-dug" greenfield source, not expected to be contaminated. Prior to importation of topsoil or subsoil from a commercial supplier, certification should be obtained from the supplier detailing the source site, its previous and current land use and relevant test results. A copy of this should be forwarded to the appointed geo-environmental consultant for review and comparison against the applicable criteria. Prior to import to site of any soil materials, the results shall be presented to the LPA, via the appointed geo-environmental

consultant, for agreement. If the proposed source is not from a commercial supplier, the source shall be tested prior to import to confirm it is appropriate for use within the cover system.

Following import to site (regardless of the source), chemical testing of the imported soils will be required to confirm the soils imported are the same as those sampled at the source site. See Section 7.8 for requirements of soils testing. Material which is imported and subsequently found to fail the criteria will need to be removed from site to an appropriate facility.

As required under Duty of Care, the import of materials between two sites is required to be supported by appropriate tracking documentation (such as transfer/delivery notes).

## 7.7 Stockpiling of Materials

All site won soils and imported topsoil, subsoil and other fill materials, should be stockpiled at a suitable location on site. Copies of the carrier's consignment notes should be retained, and a copy forwarded to the appointed geo-environmental consultant.

Imported topsoil and subsoil should be stockpiled separately and away from areas designated for stockpiling of site won soils or potential sources of contamination. Soils should be stockpiled on separator layers to prevent cross contamination.

Separate stockpiles should also be created for each different source. Soil stockpiles are to be kept below 2m in height at all times and traffic on the stockpiles shall be minimised. Stockpiles should be kept to such a size to allow representative samples to be collected.

All stockpiles should be identified with clear signage and each stockpile of imported material should be given a clear reference number and designated sheet recording the following:

- Identification reference;
- Material type (e.g. imported topsoil / site won soil);
- Source site;
- The carrier's consignment note reference number;
- The approximate volume (number of loads); and
- Which plots the material is to be used on and where.

### Stockpiling of Asbestos impacted Material

Should soil material known to contain asbestos be temporarily stockpiled, this will require additional management to that outlined above. This should include:

- Choosing a suitable area for stockpiling that is away from public access and water sources.
- Dampening down of the area/stockpile when material is worked/moved.
- A physical barrier system should be implemented to prevent unauthorised access.
- Covering the stockpile with a secure impermeable material such as polyethylene sheeting to prevent dispersion of fibres.
- Clearly marking the stockpile with warnings indicating the presence of asbestos and restricting access.
- Keeping the height of the stockpile as low as possible to reduce the potential for wind erosion and fibre release.

- Monitoring of the stockpile should be undertaken to ensure the containment measure are effective and that there is no damage to the covering for example.
- Keep clear documentation of the stockpile, including its location, contents, monitoring results, and any actions taken to address issues.

## 7.8 Physical Requirements of Fill Materials

Imported topsoil should conform to the requirements of BS 3882:2015 (Specification for Topsoil and requirements for use), or as detailed by the Landscape Architect's Specification. The imported material is to be confirmed by visual inspection of the material by the appointed geo-environmental engineer.

Imported soils and engineering fills (e.g. sub base) should be free of asbestos, metal, plastic, wood, glass, tarmac, brick, paper, concrete or other potentially hazardous foreign material which could cause injury. In addition, all materials must be free from aggressive / invasive weeds (especially Japanese Knotweed and Giant Hogweed) and bulk vegetative growth, in order to ensure negligible risk of subsequent weed problems.

Based upon investigation to date, it is anticipated that some anthropogenic materials will be present with in the sites made ground material, mainly comprising fragments of brick with occasional inclusions of plastic, metal and glass. For re-use, site won soils shall be free from asbestos (both as ACM and free fibres). However, the presence of minor inclusions of anthropogenic materials will not preclude the reuse of site won soil, subject to compliance with the Sports Pitch Specification and Landscape Architects Specification.

The physical properties of all imported engineering fill (e.g. Type 1/6F5/6F2 etc.) for use beneath buildings, roads, utility corridors shall comply with the appropriate engineering specification(s).

### Geotechnical Requirements

The earthworks contractor will be responsible for undertaking any geotechnical testing as required and following the requirements of the relevant geotechnical / engineering specifications. With regard to the remediation strategy the following key points are noted:

- Cover system soils shall be placed to minimise potential settlement and the cover system being compromised.
- Appropriate action should be undertaken to restore physical condition (e.g. soil structure) and drainage characteristics of topsoil and subsoil that has been compacted during construction.
- The geotechnical properties of the base layer on which the gas membrane is to be placed at the base of the building void shall be appropriately specified.

## 7.9 Chemical Requirements of Fill Materials

### Placed Soils

A key aspect of the remediation strategy is the filling to final levels with soils verified as chemically and physically suitable for their intended usage.

For all imported soils as part of the cover system, certification from the commercial supplier should be reviewed prior to import, or if not a commercial supplier, then the soils should be tested at source prior to import to site for review against the adopted criteria. Chemical testing will then be required once

the material arrives at site. Testing should be undertaken at a rate of one test per 250m<sup>3</sup>, with a minimum of three tests per import round.

For site won material, this should be tested at a rate of one test per 100m<sup>3</sup> prior to use. Depending on the source or variability of imported material, the appointed geo-environmental consultant may, at their discretion, request additional testing to be undertaken.

The results of chemical testing of all material to be used in the cover system are to be compared with the criteria presented in Table 5 & 6 below. If any of these thresholds are exceeded the material shall be considered to be unsuitable and disposed of off-site. The criteria to be adopted for the works include those protective to human health and to landscape planting from potential phytotoxicity risk.

All analysis of soils shall be screened against the Soils Assessment Criteria ("SAC") presented in tables 5 and 6 on the following pages to determine their final placement within the development. The adopted SACs are to provide the protection of health of users of the school. The detailed technical justification for the selection of SACs is set out in Appendix F.

The following tables present stringent SAC for soft cover areas where the potential for exposure to contamination is greatest and less stringent criteria suitable for soils beneath hardcover, buildings and placement at depths of greater than 600mm beneath clean cover. This provides the greatest scope for retention of soils within the development and reflects the varying forms of ground cover which comprise the development. Wherever the contractor is in any doubt as to the most suitable criteria to apply then the candidate set for soft-landscaped areas should be adopted initially (Table 5).

**Table 5** - SACs for Surface Soils in Soft standing Areas in mg/kg (unless stated)

Substance	Candidate SAC
Arsenic	40
Cadmium	11 <sup>(1)</sup>
Chromium	910
Copper	1,000 <sup>(1)</sup>
Lead	310
Mercury	10 <sup>(1)</sup>
Nickel	180
Selenium	430
Zinc	1,000 <sup>(1)</sup>
Total Cyanide	24
Asbestos	Not Present Via: Visual assessment AND Stage 1 Screen/ID
Sum TPH Fractions	500 <sup>(2)</sup>
TPH (C5 - C8)	50
TPH (C8 - C10)	30
TPH (C10 - C12)	130
TPH (C12 - C35)	Via Sum
Benzene	0.1
Sum TEX	1 <sup>(1)</sup>
Sum 16-PAH	250 <sup>(2)</sup>
Naphthalene	2.3
BaP 'Coal Tar'	5.3
Other 16-PAHs	Via Sum
Total Phenols	10 <sup>(1)</sup>
Soil pH (Potential skin irritant)	pH 6 to 9
Deleterious, noxious & odorous materials	Qualitative 'absence'
Notes: (1) Lowered from published criteria (2) Included to provide a pragmatic limiting value	

**Table 6 - SACs for Building Footprints & Hard Cover Areas / Deep Soils in mg/kg (unless stated)**

Substance	Soils beneath Building Footprints	Soils Beneath Hard Cover Areas	Deeper Soils (>600mm) beneath Surface Soils	Soils Beneath Capping Layer with Geotextile No-dig Layer
Arsenic	170	170	170	170
Cadmium	50 <sup>(1)</sup>	50 <sup>(1)</sup>	50 <sup>(1)</sup>	50 (1)
Chromium	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>
Copper	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>
Lead	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>
Mercury	50 <sup>(1)</sup>	50 <sup>(1)</sup>	50 <sup>(1)</sup>	50 (1)
Nickel	800	800	800	800
Selenium	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>	1,000 <sup>(1)</sup>
Zinc	2,000 <sup>(1)</sup>	2,000 <sup>(1)</sup>	2,000 <sup>(1)</sup>	2,000 <sup>(1)</sup>
Total Cyanide	200 <sup>(2)</sup>	200 <sup>(2)</sup>	200 <sup>(2)</sup>	200 (2)
Asbestos	No ACMs visually present Stage 2 results (chrysotile only) at <0.01%.	No ACMs visually present Stage 2 results (chrysotile only) at <0.01%.	No ACMs visually present Stage 2 results (chrysotile only) at <0.01%.	No ACMs visually present. Stage 2 results at <0.1%.
Sum TPH Fractions	750 <sup>(2)</sup>	1,000 <sup>(2)</sup>	1,000 <sup>(2)</sup>	1,000 <sup>(2)</sup>
TPH (C5 - C8)	50	Via Sum	Via Sum	Via Sum
TPH (C8 - C10)	30	Via Sum	Via Sum	Via Sum
TPH (C10 - C12)	130	Via Sum	Via Sum	Via Sum
TPH (C12 - C35)	Via Sum	Via Sum	Via Sum	Via Sum
Benzene	0.1	1 <sup>(1)</sup>	1 <sup>(1)</sup>	1 <sup>(1)</sup>
Sum BTEX	1 <sup>(1)</sup>	10	10	10
Sum 16-PAH	250 <sup>(2)</sup>	500 <sup>(2)</sup>	500 <sup>(2)</sup>	500 <sup>(2)</sup>
Naphthalene	2.3	Via Sum	Via Sum	Via Sum
BaP 'Coal Tar'	25 <sup>(2)</sup>	25 <sup>(2)</sup>	25 <sup>(2)</sup>	25 <sup>(2)</sup>
Other 16-PAHs	Via Sum	Via Sum	Via Sum	Via Sum
Total Phenols	10 <sup>(1)</sup>	50 <sup>(1)</sup>	50 <sup>(1)</sup>	50 (1)
Notes: (1) Lowered from published criteria; (2) Included to provide a pragmatic limiting value				

## 7.10 Engineering Fill

Imported engineering fill (e.g. Type 1/6F5/6F2 etc.) for use beneath buildings, roads, within utility corridors etc shall only be sourced from well-established 'reputable' local/national traceable supplier(s), conform to relevant standards and shall be asbestos free.

Where materials are derived from natural aggregates (e.g. quarry), upon provision of appropriate testing / certification from the supplier no further independent testing shall be required.

Recycled aggregates may be acceptable for use in the scheme. However, these shall require acceptable certification from the supplier and testing once the material arrives at site. Testing should be undertaken at a rate of one test per 250m<sup>3</sup>, with a minimum of three tests per import round. The use of recycled aggregates shall be as approved by the Client and appointed geo-environmental consultant.

Movement of demolition material to another site should be carried out under waste legislation, unless the WRAP Quality Protocol (2004) for the production of aggregates from inert waste applies or the material has otherwise met the end of waste test.

## 7.11 Task 7 – Ground Gas Protection

A full assessment of ground gas is presented within section 4.5 of the ESP report. Based on the data collected during the ground gas monitoring the site will require CS2 Gas protection.

The gas membrane protection elements should be installed by a suitably competent gas protection installation company. The key elements are:

- NVQ Level 2 qualified gas membrane installation qualification for site operatives.
- Method statement of installation against the design along with their in-house CQA process for recording their work and how they will repair any defects.

It is anticipated that the Principal Contractor shall appoint a competent contractor for the design, installation and verification of ground gas protection in accordance with BS8485:2015+A1:2019<sup>1</sup> and CIRIA Document C735<sup>2</sup>.

## 7.12 Task 8 - Requirements for Buried Concrete

ESP has assigned the design sulphate classes and aggressive chemical environment for concrete classes for the stratum at the site. The design class for each stratum are listed below:

- Made Ground: DS-2
- Lowestoft Formation: DS-2
- Glaciofluvial Deposits (coarse-grained): DS-1
- Glaciofluvial Deposits (fine-grained): DS-4
- London Clay Formation: DS-3

<sup>1</sup> Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.

<sup>2</sup> Good practice on the testing and verification of protection systems.

The reader is referred to section 6.4.2 within ESP 2023 report for a more in-depth analysis of the Sulphate attack on Buried Concrete.

Once the foundation design of the various developments and depths are agreed, a finalised assessment should be undertaken to confirm the concrete class required. The appointed contractor shall provide evidence demonstrating that all subsurface concrete (e.g. for piles and other structural elements in contact with ground) meets the required specification to the appointed structural engineer prior to use.

### 7.13 Task 9 - Service Trenches / Clean Service Corridors

Services and utility corridors should be backfilled with either suitable site-won soils, or, imported materials (e.g. granular pipe bedding) as per the specific requirements of the applicable engineering specification. Soils should be proven as suitable for use by comparison to the criteria presented in Table 5 & 6 within Section 7.9.

### 7.14 Approach to Waste Disposal

Unsuitable and/or surplus construction & demolition materials (C&D materials), excavated ground and soil materials should be removed from site and appropriately disposed/recycled at a suitably licensed facility or facilities.

Control, testing and documentation of the disposal of these materials should be undertaken by the contractor(s) under the relevant legal duty-of-care waste disposal/recycling controls. Appropriate records of estimated volumes/tonnage and dates should be maintained by the contractor(s) in a site diary (or equivalent) and relevant/necessary duty of care documentation/tickets.

It is the responsibility of the contractor(s)/client to ensure their compliance with the relevant waste regulations. These details and records should be retained by the contractor(s) and should be provided as part of Verification Reporting.



## 8 Task 10 - Verification Plan

### 8.1 General

This section represents the Verification Plan as required by LCRM Stage 3 “Remediation and Verification”. The following sets out the information to be collected and provided within the Verification Report to demonstrate the effectiveness of the remediation.

### 8.2 Soil Sampling and Verification

Confirmatory soil sampling shall be undertaken to ensure that:

- Site won materials are suitable for their intended use.
- Imported materials (e.g. subsoil/topsoil/engineering fill) are suitable for use.

To recap, the following verification testing (for chemical suitability) shall be undertaken.

- Imported topsoil / subsoil: 1 test per 250m<sup>3</sup>. Minimum of three tests per import round.
- Imported engineering fill (e.g. Type 1/6F5/6F2 etc): 1 test per 250m<sup>3</sup>. Minimum of three tests per import round.
- Site won soil: 1 test per 100m<sup>3</sup>.
- For all imported soils, certification from the commercial supplier should be reviewed prior to import, or if not a commercial supplier, then the soils should be tested at source prior to import.
- The results shall be compared to the soil assessment criteria presented in Section 7.9.

All samples are to be taken in accordance with relevant guidance and best practice (including BS 10175 and the SoBRA Soil Sampling Protocol for Asbestos in Soil). The contractor shall prepare a soil sampling method statement to ensure the collection of representative samples, for approval by the Client and appointed independent geo-environmental consultant.

All samples shall be scheduled on Chain of Custody forms prior to being dispatched to the UKAS/MCERTS accredited laboratory for analysis. All individual testing for contaminants shall be UKAS/MCERTS accredited where available. The specific collection, storage and QA/QC requirements of the appointed laboratory shall be strictly followed with deviating samples rejected.

Verification inspection and sampling shall be undertaken by the contractor’s geo-environmental supervisor.

The results of all laboratory analysis shall be compiled by the contractor and a summary spreadsheet of all results maintained and updated on a weekly basis. The summary spreadsheet shall include the results of all verification soils testing as compared against the applicable soil thresholds, thus clearly demonstrating that soils used within the scheme are suitable for their intended use on the site and where failures of the criteria have been detected. This shall be provided to the Client and independent geo-environmental consultant as requested.

## 8.3 Cover System

Regardless of the testing required in Section 8.2 above, in order to provide robust evidence that the materials placed on site meet the requirements of this Strategy, post placement testing shall be undertaken.

The Client shall commission their independent geo-environmental consultant to attend site in order to:

- Prove the thickness of the cover layer components and compliance with this Strategy.
- Obtain samples of the placed soils and undertake testing to confirm absence of contamination.

The topsoil / subsoil depth shall be validated on a 25m grid basis across all soft cover areas following installation of the material to the appropriate finished levels.

In the event that insufficient thicknesses are proven, unsuitable materials are identified, or failures of the adopted contamination criteria are encountered, the geo-environmental consultant may instruct the appointed contractor to undertake further remedial works as deemed necessary.

Photographic evidence including a clear view of each excavation with photoboard, and depths clearly shown against a levelling staff shall be obtained for incorporation within the Verification Report.

The Verification Report shall include confirmation of:

- The source of soils used and where used.
- Capping thicknesses, including photographs of the verification pits.
- The physical suitability of the material in accordance with Sections 7.7.
- Chemical test results pass when compared to the criteria in Section 7.9.

## 8.4 Ground Gas Mitigation Verification

The gas protection system will need to be fully verified in accordance with CIRIA C735 by a suitably competent ground gas specialist, independent from installation company. Due to the design, a geotechnical specialist shall also be required to perform appropriate testing on the base layer ahead of membrane installation to show design specification has been achieved.

The ground gas specialist undertaking the verification shall provide a Ground Gas Mitigation Verification Report with evidence including:

- Photographs of the installed vapour protection measures.
- Evidence of the suitability and preparation of the layer/material upon which the membrane is laid.
- The specifications for the membrane used.
- Evidence of post installation/pre slab pour quality checks of the membrane and evidence of any repairs required.
- Evidence of the competency of the installers and the independent verification engineer.

Copies of which should be provided to the geo-environmental consultant for inclusion as an appendix within the wider Remediation Verification Report.

## 8.5 Sulphate Resistant Concrete

Evidence of the use of sulphate resistant concrete shall be included within the verification report. This shall include provision of delivery tickets and correspondence from the concrete supplier confirming the appropriate specification has been delivered to site. Details will be included within the Verification Report.

## 8.6 Over-excavation of service trenches

Where protection of services is required, the Contractor will provide detailed survey drawings showing the location of clean service corridors and photographic proof of over-excavation of service trenches to the Client and the geo-environmental consultant for validation purposes. Details will be included within the Verification Report.

## 8.7 Verification Report

A verification report will be produced upon completion of the remediation works. The report will detail all works undertaken and will provide a complete record to demonstrate that the remediation has been implemented and verified and that the use of materials was in accordance with the strategy and Materials Management Plan.

The verification report will fulfil the requirements of LCRM and the relevant planning condition(s) and will be submitted to Harlow council upon the completion of works.

The report shall include the following minimum information:

- Purpose and aims of the report, including author credentials.
- Site details, including summary review of all previous investigation data.
- Correspondence documentation relating to Regulatory liaison.
- Information outlined from this document, including:
  - Ground conditions, hydrogeology and hydrology.
  - Remediation objectives.
  - Remediation methodology.
- Details of remedial works undertaken and by whom, with justification for any changes from the original strategy.
- Results of verification, validation, performance testing and monitoring as specified, including:
  - Soils verification and evidence of compliance with chemical / physical requirements
  - Cover System verification
  - Ground gas / VOC Vapour Verification Report
  - Evidence of built environment mitigation
  - Annotated site plans.
  - Details of any relevant permits, licenses, waste management documentation (including Hazardous Waste Transfer notes and Duty of Care notes to demonstrate compliance).
  - Delivery tickets for all imported soils.
  - Confirmation of any special requirements for building materials and water pipes.
- Description of final site condition at completion.
- Confirmation that remediation objectives have been met and confirmation of any post-completion maintenance requirements.

## 9 Task 11 – Environmental Management and Monitoring

### 9.1 Environmental Controls

The contractor shall outline the requirements for environmental protection during the works within a earthworks-specific Construction Environment Management Plan (“CEMP”). The CEMP will include:

- Pollution prevention and control, including the measures and controls to be employed to protect surface water and groundwater from pollution during the works e.g. from fuel spills, release of silt laden surface waters etc.
- The measures and controls to mitigate potential nuisance issues to the local residents from dust, noise, odours, soiling of roads etc.
- Specific requirements for monitoring to include requirements for dust, VOC vapour and airborne asbestos reassurance monitoring as necessary.

### 9.2 Asbestos

The development team and contractor(s) must also take account of current HSE asbestos guidance and the Joint Industry Working Group Asbestos in Soil and Construction & Demolition Materials (C&DM) guidance ('Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition Materials: Industry Guidance [CAR-SOIL]. All contractor(s) will need to determine the appropriate CAR-2012 licensing status of their work activities potentially involving asbestos.

Air monitoring for asbestos is required on an ongoing basis during any earthworks and the results shall be compared with acceptable maximum standards set by the HSE. These air monitoring procedures and limits are given in HSG 248 entitled 'Asbestos: The analysts' guide for sampling, analysis and clearance procedures and CAR 2012.

The monitoring should be undertaken by a UKAS accredited laboratory. The limit used is governed by the levels stated in the above guidance documents and the accuracy of the testing used. However, it is recommended using the most stringent limit set by the HSE. Air monitoring results are acceptable only if they fall below this limit and are as low as reasonably practicable. Exposure from work activities involving asbestos must be reduced to as far below the control limit as possible.

### 9.3 Control of Dust and Noise

Incidental dust is almost inevitable when excavating in dry conditions or when processing soil. Unacceptable dust will generally be controlled by the application of light water spray to the site surface, excavations and stockpiles. Consideration to the covering of stockpiles should also be given. Risks associated with the transport of soils that potentially contain asbestos fibres, such as dust emission, should be appropriately managed.

Reassurance dust and particulate boundary monitoring shall be undertaken during dry periods, particularly at site boundaries.

Site roads will be scraped or brushed to prevent an excessive build-up of mud. It is unlikely that mud and debris will spread beyond the Site boundary on roads. A wheel wash facility will be established at the main gate (or elsewhere), if necessary.

Noise is not expected to be a significant issue due to the remote location of the Site and operations within the boundary. All work will be conducted within reasonable normal working hours and in accordance with the planning consent.

## 9.4 Personal Monitoring

As a matter of good practice, construction workers and services personnel should follow guidance stated in 'HSG 66 Protection of Workers and the General Public during Redevelopment of Contaminated Land' during development works.

Adequate standard personal protective equipment and the implementation of basic hygiene measures will be necessary.

Ground workers and sub-surface maintenance workers should be made aware of the possibility of encountering contaminants within soils or groundwater at the site through 'toolbox' talks.

Safe working procedures should be implemented in accordance with CIRIA132, good standards of personal hygiene should be observed, and appropriate levels of PPE provided and utilised. Eating, drinking and smoking should be strictly prohibited in the development site other than in designated mess areas.

Ground operatives must be provided with access to a combination of suitable personal protective equipment (PPE) and respiratory protective equipment (RPE) for immediate use if required. When working in known area of risk, groundworkers are to have appropriate personal UKAS accredited air monitoring to monitor for the presence of airborne asbestos fibres and assess the suitability of the RPE provided. The monitoring should be carried out to provide proof that control measure effective in reducing fibre liberation as far as reasonably practicable and that provided PPE/RPE are sufficient. However, constant personal monitoring throughout the remediation process is not required.

## 9.5 Materials Management Plan

The re-use of materials shall be undertaken in accordance with the requirements of the CL:AIRE DoWCoP or other appropriate control mechanism. This shall involve the production of a MMP and completion and submission of a declaration by an independent<sup>3</sup> QP, if the information provided is satisfactory, to CL: AIRE. Records documenting materials re-use should be kept for inclusion in the final MMP verification report. In accordance with Sections 3.29, 3.30 and 3.31 of the DoWCoP, the following information shall be maintained:

- Appropriate site plans.
- Experience and qualifications of the person preparing the report in relation to the specific project.

<sup>3</sup> The Qualified Person must be totally independent to the project and have no prior knowledge.

- Description of the project.
- Description of how the use of materials links with the Remediation Strategy or Design Statement (if required).
- Reference to site investigation data.
- Reference to risk assessments (including qualitative risk assessments).
- Reference to the MMP and associated tracking system, including alterations made and why.
- Suitable for use criteria.
- Treatment records (if required).
- Laboratory analysis (if required).
- Reference to waste transfer documentation, including return loads (this may not be applicable to the use of materials within the Site of Origin scenario).
- Signed delivery tickets (possibly as an annex or alternatively there must be a clear reference out to them – this may not be applicable to the use of materials within the Site of Origin scenario).
- Record of contingency arrangement(s) that had to be implemented.
- Record of quantity of materials used; and,
- Copies of signed Declaration(s) by Qualified Person(s).

# 10 Task 12 - Long Term Monitoring and Maintenance

## 10.1 Long Term Maintenance

A comprehensive, long-term management plan shall be established to ensure that the remedial measures as required by this strategy are not compromised over the lifetime of the school, thus ensuring its occupants are protected.

The DfE sets out in detail the requirement for “Strategic Estate Management” and specifically an “Asset Management Plan”. The DfE notes that maintenance of the school forms an important element of the Asset Management Plan; it is suggested that within the Asset Management Plan the detailed requirements for inspections, restrictions and maintenance pertaining to the remedial measures within this document are captured.

The following key requirements shall be captured within the Asset Management Plan:

Details of the restrictions to be put in place in order to preserve the integrity of the cover layer e.g. establishment of “no-dig” zones (such as the proposed asbestos mound) that shall include:

- Details of the restrictions to be put in place in order to preserve the integrity of the cover layer e.g. establishment of “no-dig” zones (such as the proposed asbestos mound) that shall include:
  - Restricting planting/vegetation growth for human consumption.
  - Restricting the burrowing of animals.
  - Restricting planting species that require a greater root depth (to protect the integrity of the no dig membrane).
- Inspection schedule for all soft cover areas and maintenance requirements.
- Protocols / risk assessments / method statements where excavations are needed e.g. for maintenance / repairs / landscaping.
- Actions to be taken in event of odours.

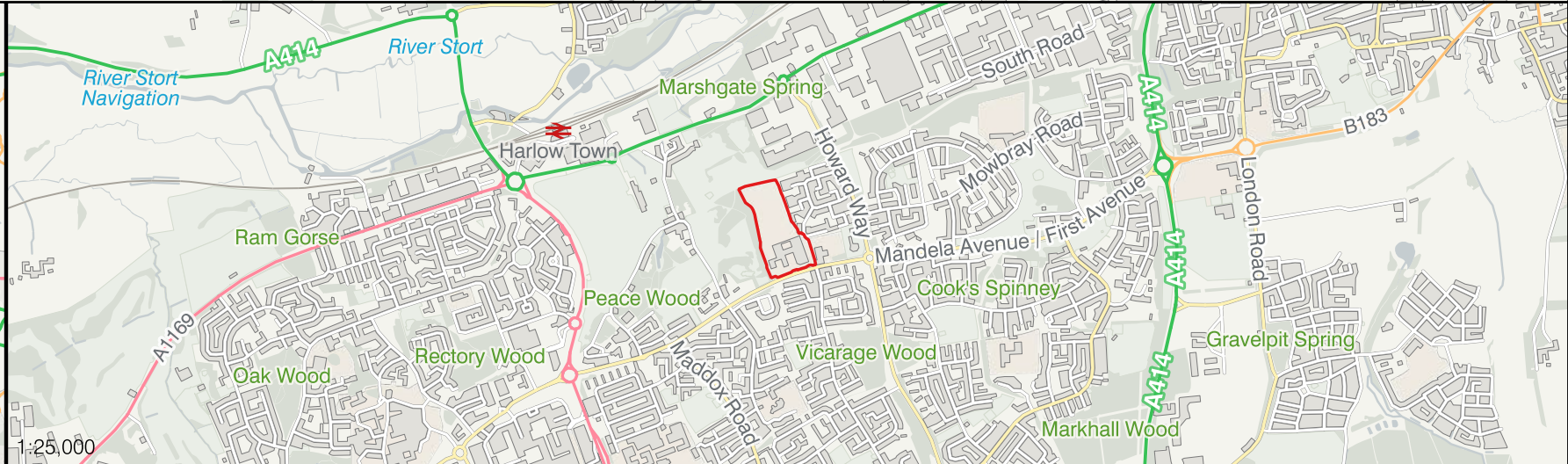
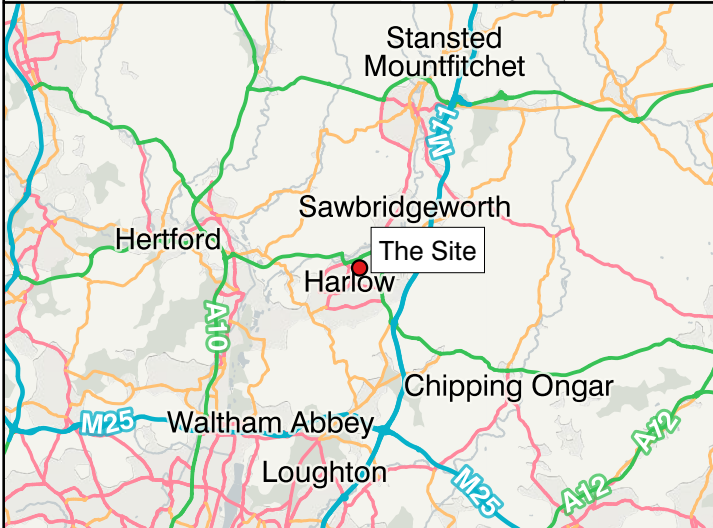
# Drawings





Legend  
 Indicative Site Boundary

Contains OS data © Crown copyright and database 2023



Client  
 Bowmer and Kirkland

Project  
 Burnt Mill Academy, First Avenue, Harlow,  
 CM20 2NR

Title  
 Site Location Plan

Report No. 160522-S01	Drawing No. 01	Revision -
Scale 1:2,000	Date 13/04/2023	Frame Size A3
Produced by LC	Drawn by LC	Approved by DS



# Appendices

# Appendix A

## Burnt Mill Comprehensive Planning Decision Notice

**DECISION NOTICE**

Town and Country Planning Act 1990

**Correspondence Address:**

Miss Cet Roberts  
DPP  
11-13 Penhill Road  
Pontcanna  
Cardiff  
CF11 9PQ

**Applicant:**

Bowmer and Kirkland on behalf of the  
Department for Education

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**Application No:** HW/FUL/23/00096 *To be quoted on all correspondence.*  
**Application Type:** Full Application  
**Location:** Burnt Mill Comprehensive School , First Avenue, Harlow, Essex  
**Proposal:** Demolition of the existing school buildings and sports facilities and erection of a replacement school and sports facilities with associated access, parking and landscaping.

In pursuance of the powers exercised by them as Local Planning Authority, this Council hereby **Grants Planning Permission** for the above development in accordance with the application specified above and the plans listed in the approved plans condition (see below). This permission is subject to compliance with the following conditions:

1. The development hereby permitted shall be begun before the expiration of three years from the date of this permission.  
**REASON: In order to comply with Section 91(1) of the Town and Country Planning Act 1990 as amended by Section 51 of the Planning and Compulsory Purchase Act 2004.**
2. The development to which this permission relates shall be carried out in accordance with the Construction Management Plan rev P01 and dated 14/11/2022 unless otherwise agreed in writing by the local planning authority. For the avoidance of doubt:
  - a) All traffic associated with the development, including deliveries, shall access the site from First Avenue and no such traffic shall be routed via Altham Grove;
  - (b) All parking associated with the development shall be contained wholly within the site;
  - (c) No demolition or construction work whatsoever shall take place beyond the hours of 08:00 to 18:00 Monday to Friday and 09:00 to 13:00 on Saturdays; and
  - (d) No demolition or construction work whatsoever shall take place on Sundays or public holidays.

**REASON: In the interests of the living conditions of neighbouring occupiers and to accord with policies PL2 and PL10 of the Harlow Local Development Plan, Development 2020.**

3. The development to which this permission relates shall be carried out in accordance with Noise Impact Assessment reference SRP1056-BHE-XX-XX-T-J-0002 rev P02 and dated 03/05/2023 unless otherwise agreed in writing by the local planning authority. For the avoidance of doubt:

- (a) Plant noise levels shall be limited to the levels specified in table 5-1;
- (b) Shock absorbing noise reduction measures shall be deployed at all times when the approved MUGA is used for hockey; and
- (c) MUGA noise levels shall be limited to the levels specified in table 6-1.

**REASON: In the interests of the living conditions of neighbouring occupiers and to accord with policies PL2 and PL10 of the Harlow Local Development Plan, Development 2020.**

4. The outdoor sports facilities to which this permission relates shall not be used beyond the hours of 08:00 to 21:30 Monday to Saturday and 08:00 to 16:00 on Sundays and public holidays unless otherwise agreed in writing by the local planning authority.

**REASON: In the interests of the living conditions of neighbouring occupiers and to accord with policies PL2 and PL10 of the Harlow Local Development Plan 2020.**

5. The development to which this permission relates shall be carried out in accordance with the recommendations contained in section 6 of Biodiversity net gain assessment, great crested newt habitat suitability assessment and desk study report reference 6116-A version 1.2 and dated 14/02/2023 unless otherwise agreed in writing by the local planning authority.

**REASON: In the interests of protected species and to accord with policy PL9 of the Harlow Local Development Plan, December 2020.**

6. The development to which this permission relates shall be carried out in accordance with Energy and Sustainability Statement reference SRP1056-CDL- XX-XX-RP-Z-7020 rev P01 and dated 16/02/2023 unless otherwise agreed in writing by the local planning authority. For the avoidance of doubt:

- (a) The development shall achieve the Building Emissions Rate ("BER") as specified in table 1-1; and
- (b) The low and zero carbon technologies required to meet this BER shall be provided prior to the beneficial occupation of the development and permanently retained thereafter.

**REASON: In the interests of sustainable design and construction and to accord with policy PL3 of the Harlow Local Development Plan, December 2020.**

7. No external lighting shall be installed on the site unless otherwise agreed in writing by the local planning authority.

**REASON: In the interests of the living conditions of neighbouring occupiers and to accord with policies PL2 and PL10 of the Harlow Local Development Plan 2020.**

8. If unexpected contamination is discovered at any time during the implementation of the development to which this permission relates, work in the affected area shall immediately cease and the contamination shall be reported to the local planning authority. Work in the affected area shall not resume until works for the remediation of said contamination have been approved in writing by the local planning authority. The development shall then be carried out in accordance with any agreed remediation and verification measures.

**REASON: In the interests of human health and to accord with policy PL10 of the Harlow Local Development Plan 2020.**

9. Prior to the commencement of the development to which this permission relates (including any groundworks, site clearance or demolition), an arboricultural method statement shall be submitted to and approved in writing by the local planning authority. The development shall then be carried out in accordance with the approved arboricultural method statement.

**REASON: In the interests of the health and longevity of trees worthy of retention and to accord with policies WE1, PL1, PL7 and PL8 of the Harlow Local Development Plan, December 2020.**

10. Prior to the commencement of the development to which this permission relates (excluding groundworks, site clearance and demolition), a surface water drainage scheme shall be submitted to and approved in writing by the local planning authority. The scheme shall include:

- (a) The results of infiltration testing carried out in accordance with BRE 365 and the relevant sections of the CIRIA SuDS Manual;
- (b) Discharge rates of no greater than 2.91L/s for all storm events up to and including the 1 in 100 year plus 45% allowance for climate change;
- (c) Evidence of agreement to discharge rates from the relevant statutory undertaker;
- (d) Sufficient storage to ensure no off-site flooding during the 1 in 100 year storm event plus 45% allowance for climate change;
- (e) Evidence that all storage features could half empty within 24 hours following the 1 in 30 year critical storm event plus 40% allowance for climate change or evidence that the drainage scheme could accommodate the 1 in 10 year plus 40% event within 24 hours of the 1 in 30 year plus 40% event;
- (f) Final modelling and calculations for all areas of the scheme;
- (g) The appropriate level of treatment for all run-off leaving the site in accordance with the Simple Index Approach in the CIRIA SuDS Manual;
- (h) Detailed engineering drawings of each component of the scheme;
- (i) A final drainage plan which shows exceedance routes, conveyance routes, finished floor levels, ground levels, the location and size of any drainage features, and the network links and nodes as used in the modelling; and
- (j) A written report summarising the final strategy and highlighting any minor changes to the approved strategy.

The approved drainage scheme shall then be implemented prior to beneficial occupation of the development and permanently retained thereafter.

**REASON: In the interests of mitigating flood risk and to accord with policy PL11 of the Harlow Local Development Plan, December 2020.**



11. Prior to the commencement of the development to which this permission relates (excluding groundworks, site clearance and demolition), a report detailing the results of a CCTV survey of any existing pipes to be reused within the proposed drainage scheme shall be submitted to and approved in writing by the local planning authority. The report shall include details of any remediation necessary to render the pipes fit for purpose. The development shall then be carried out in accordance with the approved remediation measures, if any.  
**REASON: In the interests of mitigating flood risk and to accord with policy PL11 of the Harlow Local Development Plan, December 2020.**
12. Prior to the commencement of the development to which this permission relates (excluding groundworks, site clearance and demolition), a report detailing the results of an intrusive geo-environmental investigation as recommended by section 6 of Phase 1 Geo-Environmental Desk Study Report reference HSP2021-C3825- G-GPI-392 rev A and dated 26/11/2022 shall be submitted to and approved in writing by the local planning authority. The report shall include details of any necessary remediation measures and the development shall then be carried out in accordance with the approved remediation measures, if any.  
**REASON: In the interests of human health and to accord with policy PL10 of the Harlow Local Development Plan, December 2020.**
13. Prior to the commencement of the relevant works, details of the materials and architectural features to be used in the exteriors of the approved teaching and sports blocks shall be submitted to and approved in writing by the local planning authority. The development shall then be carried out in accordance with the approved details.  
**REASON: In the interests of conserving heritage assets and the character and appearance of the area and to accord with policies WE5, PL1 and PL12 of the Harlow Local Development Plan 2020.**
14. Prior to the commencement of the development to which this permission relates (excluding groundworks, site clearance and demolition), a landscape and ecological management plan shall be submitted to and approved in writing by the local planning authority. The plan shall set out the maintenance and management procedures necessary to deliver a 37.02% net gain in area habitat units and a 701.44% net gain in linear habitat units for a period of 30 years following substantial completion of the development. The approved plan shall then be adhered to for the 30 year period.  
**REASON: In the interests of biodiversity and to accord with policy PL9 of the Harlow Local Development Plan, December 2020.**
15. Prior to the commencement of the relevant works, plans, elevations and materials schedules of the approved modular classroom, energy centre, and storage and maintenance containers shall be submitted to and approved in writing by the local planning authority. The works shall then be carried out in accordance with the approved details.  
**REASON: In the interests of conserving heritage assets and the character and appearance of the area and to accord with policies WE5, PL1 and PL12 of the Harlow Local Development Plan, December 2020.**

16. Prior to the commencement of any piling, a piling method statement shall be submitted to and approved in writing by the local planning authority. The development shall then be carried out in accordance with the approved method statement.  
**REASON: In the interests of human health and mitigating flood risk and to accord with policies PL10 and PL11 of the Harlow Local Development Plan, December 2020.**
17. Prior to the enclosure of the swimming pool, a temporary alternative facilities scheme for existing users of the swimming pool during the construction period, including the location, facilities available, programming and implementation proposals shall be submitted to and approved in writing by the local planning authority. The development shall then be carried out in accordance with the approved details.  
**REASON: To secure continuity of use of sports facility provision for existing users during construction and to accord with policy L2 of the Harlow Local Development Plan, December 2020.**
18. Prior to the removal of the existing MUGA, a scheme which ensures that the new playing field area will be provided to an acceptable quality shall be submitted to and approved in writing by the local planning authority. The scheme shall include a written specification of soils structure, proposed drainage, cultivation and other operations associated with grass and sports turf establishment and a programme of implementation. The approved scheme shall be implemented prior to beneficial occupation of the development and the land shall thereafter be permanently maintained in accordance with the scheme and made available for playing field use.  
**REASON: To ensure sufficient benefit to the development of sport and to ensure that the playing field is prepared to an adequate standard and is fit for purpose and to accord with policies L1 and L2 of the Harlow Local Development Plan, December 2020.**
19. Prior to the beneficial occupation of the development to which this permission relates, details of the approved cycle parking shall be submitted to and approved in writing by the local planning authority. The development shall then be carried out in accordance with the approved details.  
**REASON: In the interests of promoting sustainable modes of transport and to accord with policy IN1 of the Harlow Local Development Plan, December 2020.**
20. Prior to the beneficial occupation of the development to which this permission relates, details of the approved waste storage facilities shall be submitted to and approved in writing by the local planning authority. The development shall then be carried out in accordance with the approved details.  
**REASON: In the interests of conserving heritage assets and the character and appearance of the area and to accord with policies WE5, PL1 and PL12 of the Harlow Local Development Plan, December 2020.**
21. Prior to the beneficial occupation of the development to which this permission relates, a SuDS maintenance plan shall be submitted to and approved in writing by the local planning authority. The plan shall include details of who is responsible for different elements of the surface water drainage system, the maintenance activities and the frequencies of those activities.



The approved maintenance plan shall thereafter be adhered to for the lifetime of the development.

**REASON: In the interests of mitigating flood risk and to accord with policy PL11 of the Harlow Local Development Plan, December 2020.**

22. Prior to the beneficial occupation of the development to which this permission relates, a landscaping scheme shall be submitted to and approved in writing by the local planning authority. The scheme shall cover all hard and soft landscaping and include details of all materials, site preparation, planting techniques, and aftercare, and a programme of maintenance for a period of three years following implementation of the scheme. The approved landscaping scheme shall be implemented during the first planting season following substantial completion of the development.

**REASON: In the interests of conserving heritage assets and the character and appearance of the area and to accord with policies WE1, WE5, PL1, PL7, PL8 and PL12 of the Harlow Local Development Plan, December 2020.**

23. Prior to the beneficial occupation of the development to which this permission relates, a travel plan shall be submitted to and approved in writing by the local planning authority. The approved travel plan shall thereafter be adhered to for the lifetime of the development.

**REASON: In the interests of promoting sustainable modes of transport and to accord with policy IN1 of the Harlow Local Development Plan, December 2020.**

24. Prior to the beneficial occupation of the development to which this permission relates, a completed community use agreement shall be submitted to and approved in writing by the local planning authority. The agreement shall apply to at least the swimming pool, sports hall, activity studio, fitness room, multi-use games area, natural turf playing fields and supporting ancillary changing and parking facilities and shall include details of pricing policy, hours of use, access by non- educational establishment users, management responsibilities and a mechanism for review. The approved community use agreement shall thereafter be adhered to for the lifetime of the development.

**REASON: To secure well managed and safe community access to the sports facilities, to ensure sufficient benefit to the development of sport and to accord with policies L1 and L2 of the Harlow Local Development Plan, December 2020.**

25. Prior to the beneficial occupation of the development to which this permission relates, the car parking, turning and servicing areas shall be provided with a hard- bound dust-free surface and marked out as shown on the approved plans. The areas shall thereafter be permanently kept free from obstruction and retained for their intended purposes.

**REASON: In the interests of highway safety and to accord with policies IN2 and IN3 of the Harlow Local Development Plan, December 2020.**

26. Within 30 months of commencement of the development to which this permission relates, the temporary teaching facilities shall be removed from the site and the land shall be reinstated to its former condition as a playing field.

**REASON: In the interests of safeguarding sports facilities and to accord with policy L2 of the Harlow Local Development Plan, December 2020.**

27. Annual logs of SuDS maintenance, prepared in accordance with any approved SuDS maintenance plan, shall be kept for the lifetime of the development and made available for inspection upon request by the local planning authority.  
**REASON: In the interests of mitigating flood risk and to accord with policy PL11 of the Harlow Local Development Plan, December 2020.**
28. The development hereby permitted shall be carried out in accordance with the approved plans as shown listed in the table below.

<u>Plan and Document Reference</u>	<u>Date Received</u>
SRP1056-STL-XX-XX-D-A-0010 Rev P04 Site Location Plan	28.02.2023
SRP1056-STL-01-00-D-A-0100 Rev P04 Teaching Block – Proposed Ground Floor Plan	28.02.2023
SRP1056-STL-01-00-D-A-0101 Rev P04 Teaching Block – Proposed First Floor Plan	28.02.2023
SRP1056-STL-01-00-D-A-0102 Rev P04 Teaching Block – Proposed Second Floor Plan	28.02.2023
SRP1056-STL-01-00-D-A-0103 Rev P04 Teaching Block – Proposed Roof Plan	28.02.2023
SRP1056-STL-02-00-D-A-0104 Rev P05 Sports Block – Proposed Ground Floor Plan	30.03.2023
SRP1056-STL-02-00-D-A-0105 Rev P04 Sports Block – Proposed Roof Plan	28.02.2023
SRP1056-STL-ZZ-R1-D-A-0106 Rev P01 Proposed Block Plan	28.02.2023
SRP1056-STL-XX-XX-D-A-0111 Rev P01 Existing Site Demolition Plan	28.02.2023
SRP1056-STL-01-EL-D-A-0201 Rev P04 Proposed External Building Elevations – Teaching Block	28.02.2023
SRP1056-STL-02-EL-D-A-0202 Rev P04 Proposed External Building Elevations – Sports Block	28.02.2023
SRP1056-STL-01-SX-D-A-0301 Rev P01 Proposed Building Long Sections – Teaching Block	28.02.2023
SRP1056-STL-02-SX-D-A-0302 Rev P01 Proposed Building Short Sections – Teaching Block	28.02.2023
SRP1056-STL-02-SX-D-A-0303 Rev P02 Proposed Building Sections – Sports Block	30.03.2023
SRP1056-ALA-00-XX-D-L-9002 Rev P03 Landscape Illustrative Masterplan	16.03.2023
SRP1056-ALA-00-XX-D-L-9003 Rev P02 Landscape General Arrangement	28.02.2023
SRP1056-ALA-00-XX-D-L-9004 Rev P02 Fencing General Arrangement	28.02.2023
SRP1056-ALA-00-XX-D-L-9005 Rev P02 Site Sections 1 of 2	28.02.2023
SRP1056-ALA-00-XX-D-L-9010 Rev P02 Detailed General Arrangement 1 of 4	28.02.2023
SRP1056-ALA-00-XX-D-L-9011 Rev P02 Detailed General Arrangement 2 of 4	28.02.2023
SRP1056-ALA-00-XX-D-L-9012 Rev P02 Detailed General Arrangement 3 of 4	28.02.2023
SRP1056-ALA-00-XX-D-L-9013 Rev P02 Detailed General Arrangement 4 of 4	28.02.2023
SRP1056-ALA-00-XX-D-L-9014 Rev P02 Landscape Illustrative Masterplan – Whole Site	28.02.2023
SRP1056-ALA-00-XX-D-L-9016 Rev P02 Site Sections 2 of 2	28.02.2023
SRP1056-ALA-ZZ-ZZ-D-L-9024 Rev P01 Tree Protection and Removal Plan	28.03.2023
SRP1056-ALA-ZZ-ZZ-D-L-9025 Rev P01 Existing & Proposed Sports Provision	30.03.2023

SRP1056-ALA-ZZ-ZZ-D-L-9007 Rev P01 Temp Landscape General Arrangement	16.05.2023
192 22 01 Rev S-4 32' Double Stacked Complex Floor Plan & Elevations Option 2	16.05.2023
192 22 02 Rev S-2 40' x 32' Permaspace Floor Plan & Elevations	16.05.2023

**REASON: For the avoidance of doubt and in the interests of proper planning.**

29. Prior to the beneficial occupation of the development to which this permission relates. 2 no. active electric vehicle charging points shall be provided as shown on the approved plans. By the same date, all other car parking spaces shall be provided to meet a passive standard. The spaces shall thereafter be retained as such unless otherwise agreed in writing by the local planning authority.

**REASON: In the interests of promoting sustainable modes of transport and to accord with policy IN1 of the Harlow Local Development Plan, December 2020.**

30. Prior to works commencing, a communication strategy for the liaison between local residents and the school during construction of the new school shall be submitted to and agreed by the Local Planning Authority. This should set out as a minimum how regular updates will be given to residents and how residents can raise issues with a named contact. The communication strategy thereby approved shall be adhered to in full unless otherwise agreed in writing by the Local Authority.

**REASON: To protect the amenities of residents in accordance with Policy PL2 of the Harlow Local Development Plan, December 2020.**

**INFORMATIVE CLAUSES:**

1. The Local Planning Authority has acted positively and proactively in determining this application by assessing the proposal against all material considerations, including planning policies and any representations that may have been received and subsequently determining to grant planning permission in accordance with the presumption in favour of sustainable development, as set out within the National Planning Policy Framework.
2. A Groundwater Risk Management Permit from Thames Water will be required for discharging groundwater into a public sewer. Any discharge made without a permit is deemed illegal and may result in prosecution under the provisions of the Water Industry Act 1991. We would expect the developer to demonstrate what measures he will undertake to minimise groundwater discharges into the public sewer.

Permit enquiries should be directed to Thames Water's Risk Management Team by telephoning 020 3577 9483 or by emailing [trade.effluent@thameswater.co.uk](mailto:trade.effluent@thameswater.co.uk).

3. Essex County Council has a duty to maintain a register and record of assets which have a significant impact on the risk of flooding. In order to capture proposed SuDS which may form part of the future register, a copy of the SuDS assets in a GIS layer should be sent to [suds@essex.gov.uk](mailto:suds@essex.gov.uk).
4. Any drainage features proposed for adoption by Essex County Council should be consulted on with the relevant Highways Development Management Office.

5. Changes to existing water courses may require separate consent under the Land Drainage Act before works take place. More information about consenting can be found in the attached standing advice note.
6. It is the applicant's responsibility to check that they are complying with common law if the drainage scheme proposes to discharge into an off-site ditch/pipe. The applicant should seek consent where appropriate from other downstream riparian landowners.
7. The Ministerial Statement made on 18th December 2014 (ref. HCWS161) states that the final decision regarding the viability and reasonableness of maintenance requirements lies with the LPA. It is not within the scope of the LLFA to comment on the overall viability of a scheme as the decision is based on a range of issues which are outside of this authority's area of expertise.
8. We will advise on the acceptability of surface water and the information submitted on all planning applications submitted after the 15th of April 2015 based on the key documents listed within this letter. This includes applications which have been previously submitted as part of an earlier stage of the planning process and granted planning permission based on historic requirements. The Local Planning Authority should use the information submitted within this response in conjunction with any other relevant information submitted as part of this application or as part of preceding applications to make a balanced decision based on the available information.
9. All work within or affecting the highway is to be laid out and constructed by prior arrangement with, and to the requirements and satisfaction of, the Highway Authority, details to be agreed before the commencement of works. The applicants should be advised to contact the Development Management Team by email at [development.management@essexhighways.org](mailto:development.management@essexhighways.org).
10. The Highway Authority cannot accept any liability for costs associated with a developer's improvement. This includes design check safety audits, site supervision, commuted sums for maintenance and any potential claims under Part 1 and Part 2 of the Land Compensation Act 1973. To protect the Highway Authority against such compensation claims a cash deposit or bond may be required.
11. Mitigating and adapting to a changing climate is a national and Essex County Council priority. The Climate Change Act 2008 (amended in 2019) commits the UK to achieving net-zero by 2050. In Essex, the Essex Climate Action Commission proposed 160+ recommendations for climate action.

Essex County Council is working with partners to achieve specific goals by 2030, including net zero carbon development. All those active in the development sector should have regard to these goals and applicants are invited to sign up to the Essex Developers' Group Climate Charter [2022] and to view the advice contained in the Essex Design Guide. Climate Action Advice guides for residents, businesses and schools are also available.

12. All British birds, their nests and eggs are protected by law under Section 1 of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000. This makes it an offence to;

Kill, injure or take a wild bird

Take, damage or destroy the nest of any wild bird while that nest is in use or being built

Disturb any wild bird listed on Schedule 1 \* while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird

\* For a list of species included within Schedule 1 please refer to the Wildlife and Countryside Act 1981 (as amended).

**If at any time nesting birds are observed during tree work operations should cease.**

The bird nesting season usually covers the period from mid-February to the end of August, however it is very dependent on the weather and certain species of birds may nest well outside this period.

13. In Britain all species of bat are protected through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence under Section 9 of the Act to:

Intentionally kill, injure or take a bat;

Sell, hire, barter or exchange a bat, dead or alive;

Be in possession or control of a bat or anything derived from them.

As from January 2001 it has become an offence in England or Wales, intentionally or recklessly to;

Disturb a bat;

Damage, destroy or block access to the resting place of any bat.

**If at any time bats or evidence of bats are observed during tree work operations should cease.**

14. Badgers and their setts are protected under the Protection of Badgers Act 1992. It is an offence to:

disturb a badger when it is occupying a sett;

obstruct access to, or any entrance of, a badger sett;

interfere with a sett by damaging or destroying it; or

willfully kill, injure, take possession or cruelly ill-treat a badger, or attempt to do so.

If at any time badgers or evidence of badgers are observed with or adjacent to the site, development works should cease.



A licence must be obtained from Natural England before any development works commence that might affect a badger sett. Licences cannot be issued retrospectively.

A licence application must be made at least one month before any proposed works commence but good practice indicates that Natural England should be contacted at an early date to establish their requirements.

15. The applicant is advised that the proposals for the playing fields on the site should comply with the relevant industry Technical Guidance, including guidance published by Sport England, National Governing Bodies for Sport. Particular attention is drawn to Sport England's 'Natural Turf for Sport' guidance note.
16. In applying condition 13, the Council will seek to retain an element of blue feature panels on the proposed buildings.

***This decision relates only to that required under the Town and Country Planning Acts and does not convey any consent or approval which may be necessary under the Building Regulations, or from the Council under its Restrictive Covenants or as Landlord. Separate approval is required to access/use Council land. Any other consent or approval which is necessary must be obtained from the appropriate authority.***

Signed: 

**Gavin Cooper**

**Development Manager**

**On behalf of**

**Pauline Elliott**

**Interim Head of Planning and Building Control**

**(Duly Authorised Officer)**

**Planning Services**

Harlow District Council

Civic Centre

The Water Gardens

Harlow

Essex

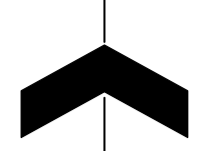
CM20 1WG

**Date: 8th June 2023**

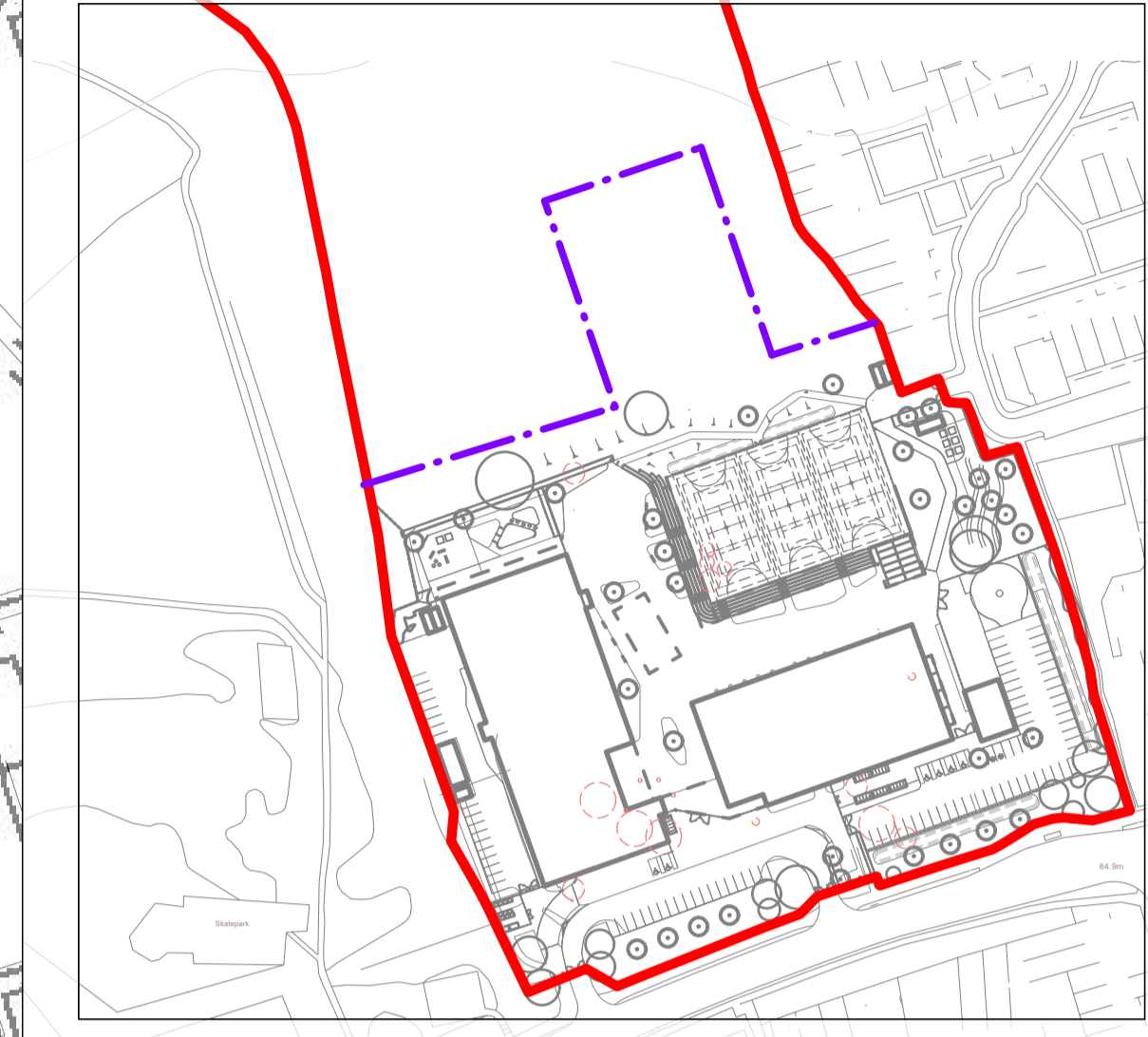
## Appendix B

### Landscape Master/ Layout plan





### SITE LOCATION PLAN NTS



**Note**

1. Do not scale from the drawing for the purposes of construction and setting out.
2. To be read in conjunction with Project Risk Register REF: XXX
3. To be read in conjunction with all other Landscape Architect's drawings

### KEY

- A** Segregated vehicular and pedestrian access into the site.
- B** Main School entrance
- C** External Dining
- D** SEN Garden
- E** Stepped seating to MUGA with canopy
- F** 3 Court MUGA  
Dimensions: 59.1 x 37.5 m
- G** Outdoor social space providing access to existing soft outdoor P.E
- H** Horticulture area
- I** Meadow Walk
- J** Orchard
- K** Canopied stores for 220no. bicycles.
- M** Main Parking with 19no. standard parking spaces, 2no. accessible parking space and 1no. drop off bay
- N** Staff Parking with 74no. standard parking spaces and 4no. accessible parking space
- O** Maintenance and storage containers
- P** Wall mounted basketball hoops, 9no.
- Q** Existing Modular Classroom Relocated.
- R** External Energy Centre
- S** Dedicated pedestrian Avenue
- T** Drop off Bay
- U** Pedestrian priority crossing

ID	RISK	MITIGATION	DATE MITIGATED
<b>RESIDUAL PROJECT RISKS</b>			

DATE	REV	DESCRIPTION OF REVISION	DRAWN BY	APPROVED BY
16/02/2023	P03	Issued for Planning	MT	LA
31/01/2023	P02	Updated to address pre-app comments.	MM	LA

**STATUS**  
**S3 - PLANNING**

**ares**  
LANDSCAPE ARCHITECTS

Ares Landscape Architects LTD  
Gatecrasher,  
51 Eyre Lane  
Sheffield  
S1 4RS  
t: 0114 276 2000  
e: hello@aresdesign.co.uk  
w: ares.eu.com

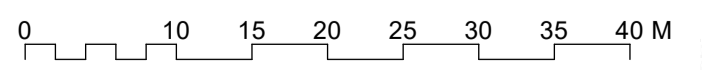
CLIENT:  
**Bowmer + Kirkland**

PROJECT TITLE:  
**Burnt Mill Academy, Harlow**

DRAWING TITLE:  
**Landscape Illustrative Masterplan**

DRAWING SCALE: 1:500  
DRAWN BY: KP  
PAPER SIZE: A1  
APPROVED BY: RA  
DRAWN DATE: 11/11/2022  
ALA PROJECT CODE: ALA771

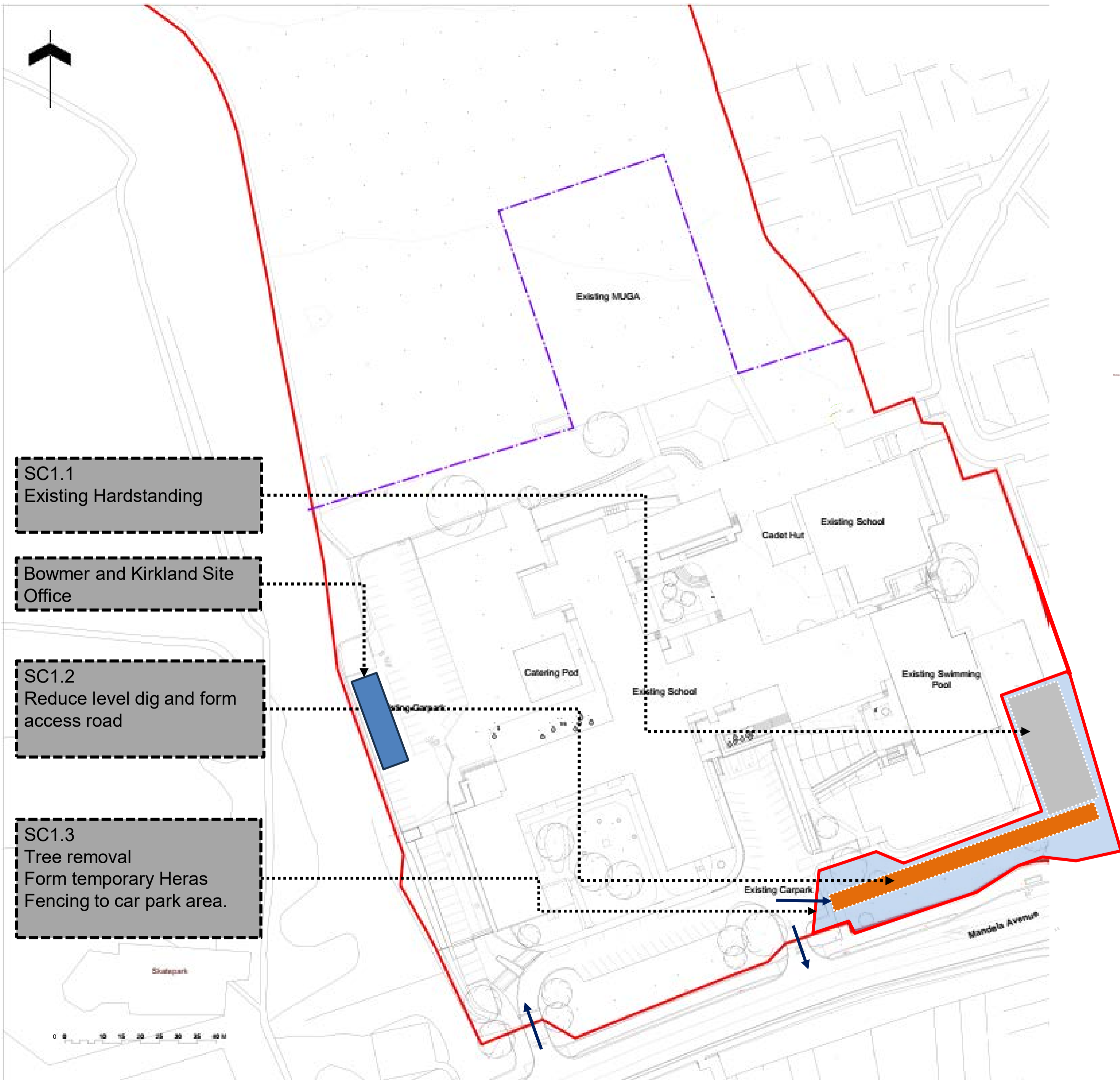
DRAWING NUMBER: **SRP1056-ALA-00-XX-D-L-9002 S3**  
STATUS: **S3**  
REVISION: **P03**





## Appendix C

SRP1056-BNK-XX-XX-I-X-2550 Section Plan P10



SC1.1  
Existing Hardstanding

Bowmer and Kirkland Site  
Office

SC1.2  
Reduce level dig and form  
access road

SC1.3  
Tree removal  
Form temporary Heras  
Fencing to car park area.

Notes

Site Boundary	
Drainage – Temporary Access Only	
Temporary Accommodation – Temporary Access Only	
Remodelling Area – Temporary Access Only	
Crane Access – Temporary Access Only	
Temporary Access Road	
Temporary Car Park	
B+K Access & Egress	

BURNT MILL ACADEMY  
SECONDARY SCHOOL  
HARLOW, ESSEX

B+K SITE PLANS

Section 1  
TEMPORARY CAR PARK









WEEK -2 – WEEK 0

File Reference

SRP1056-BNK-XX-XX-I-X-2550 –  
Sectional Completion Plans

PROGRAMME REF:  
SRP1056-BNK-XX-XX-L-X-7000\_BMA  
- CP Programme P10 14 07 23

Notes

Site Boundary	
Drainage – Temporary Access Only	
Temporary Accommodation – Temporary Access Only	
Remodelling Area – Temporary Access Only	
Crane Access & Catering Pod Install – Temporary Access Only	
Temporary Access Road (Handed Over)	
Temporary Car Park (Handed Over)	
B+K Access & Egress	

BURNT MILL ACADEMY  
SECONDARY SCHOOL  
HARLOW, ESSEX

B+K SITE PLANS

Section 2  
TEMP ACCOMMODATION

WEEK 1 – WEEK 26

File Reference

SRP1056-BNK-XX-XX-I-X-2550 –  
Sectional Completion Plans

PROGRAMME REF:  
SRP1056-BNK-XX-XX-L-X-7000\_BMA  
- CP Programme P10 14 07 23

Sibcas Blocks to be built  
in direction indicated

It should be noted that services diversions will likely be required to enable phasing and maintain operation of existing buildings.

SC2.1  
[WK 08 – WK 11 –  
indicative]  
Temporary Classroom  
Drainage Connection  
(Pump October 23)

SC2.5  
[WK 23 – 25 – indicative]  
Installation of temporary  
WC toilet block. October 23

Bowmer and  
Kirkland Site Office

Ramp Access

Skip Location

Bin Store Location

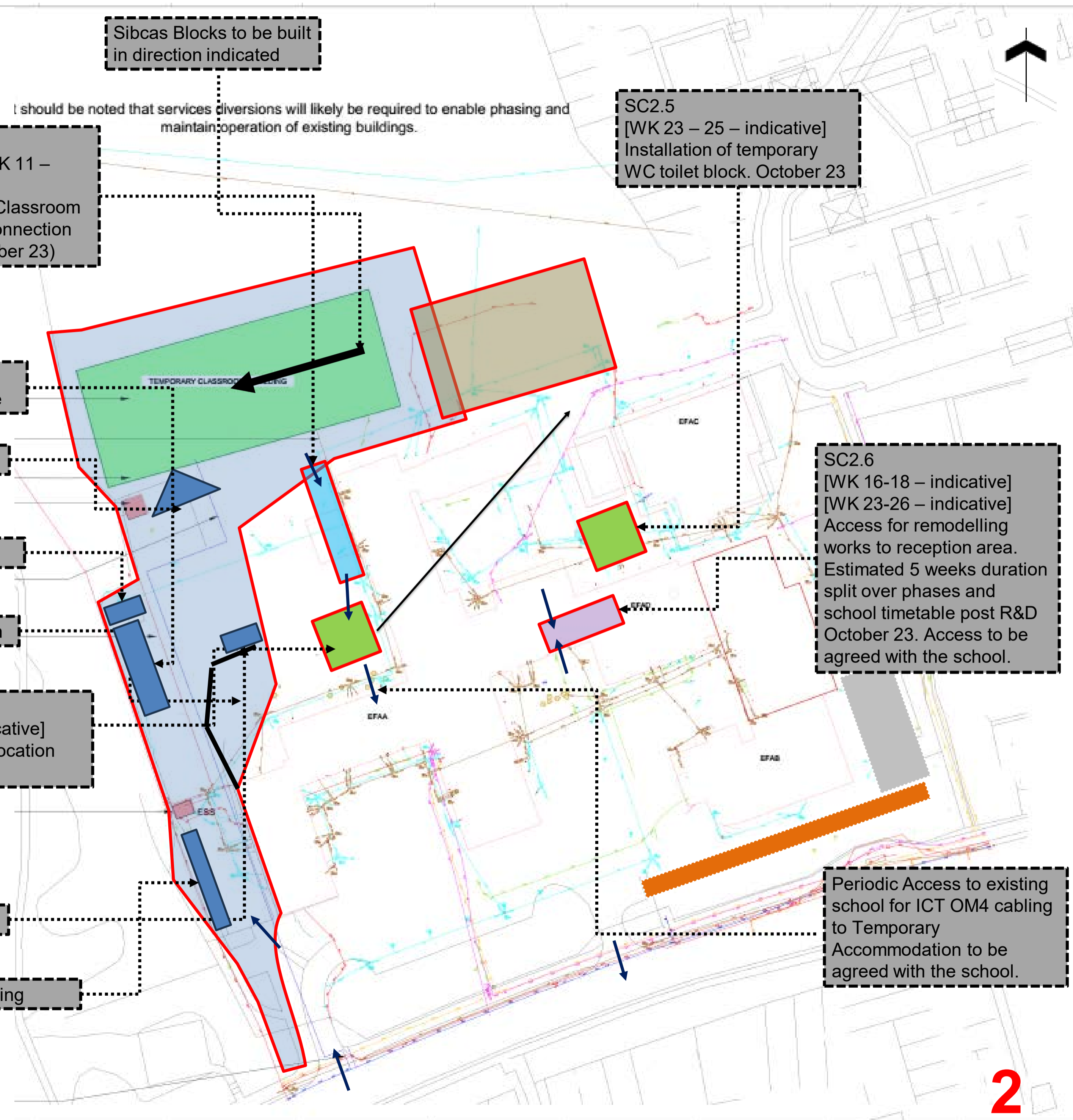
SC2.3  
[WK 21-25 – indicative]  
Catering Pod Relocation  
Poss Marquee

Skip Location

Site Parking





SC2.6  
[WK 16-18 – indicative]  
[WK 23-26 – indicative]  
Access for remodelling  
works to reception area.  
Estimated 5 weeks duration  
split over phases and  
school timetable post R&D  
October 23. Access to be  
agreed with the school.

Periodic Access to existing  
school for ICT OM4 cabling  
to Temporary  
Accommodation to be  
agreed with the school.

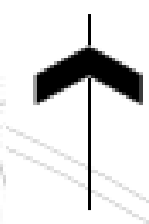




Notes

Site Boundary	
Drainage – Temporary Access Only	
Temporary Accommodation (Handed Over)	
B+K Access & Egress	

It should be noted that services diversions will likely be required to enable phasing and maintain operation of existing buildings.  
 Services in this vicinity associated to the decommissioned building are to be stripped back. Please note that some of the services may need to remain to maintain operation of existing buildings.



SC3.1  
 Demolition of West Wing and cut line works to existing building & Construction of Teaching Block

Compound

Catering Pod

SC3.2  
 Possible water connection tbc

Temporary Toilet Block

Bowmer and Kirkland Site Office

Turning Circle

Skips

Biosite

Plant

Wheel Wash

Skips

NOTE: Off Site Parking

Temp Construction Car Park Subject to Planning

BURNT MILL ACADEMY  
 SECONDARY SCHOOL  
 HARLOW, ESSEX

B+K SITE PLANS






Section 3 –  
 DEMOLITION OF WEST WING &  
 TEACHNG BLOCK CONSTRUCT  
 WEEK 26 – WEEK 94

File Reference

SRP1056-BNK-XX-XX-I-X-2550 –  
 Sectional Completion Plans

PROGRAMME REF:  
 SRP1056-BNK-XX-XX-L-X-7000\_BMA  
 - CP Programme P10 14 07 23

Notes

Site Boundary	
Temporary Accommodation – Handed Over	
Temporary Car Park	
Temporary Haul Road	
B+K Access Point	
Extend Car Park Summer Holiday To site office relocation	

BURNT MILL ACADEMY  
SECONDARY SCHOOL  
HARLOW, ESSEX

B+K SITE PLANS

Section 4 –  
REMOVE TEMP ACCOMMODATION

WEEK 100 – WEEK 115

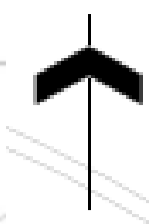
File Reference

SRP1056-BNK-XX-XX-I-X-2550 –  
Sectional Completion Plans

PROGRAMME REF:  
SRP1056-BNK-XX-XX-L-X-7000\_BMA  
- CP Programme P10 14 07 23

It should be noted that services diversions will likely be required to enable phasing and maintain operation of existing buildings.

Services in this vicinity associated to the decommissioned building are to be stripped back. Please note that some of the services may need to remain to maintain operation of existing buildings.



SC4.1  
Dismantle and take away temporary accommodation. Access only required for temporary accommodation removal and final surfacing works to car park.

SC4.1  
Demolition of Main school inc swimming pool (excluding Sports Hall however)

New Teaching Block Live (Previous Completion)

Catering Pod

Existing Sports Hall Remains Operational

Existing Cadet Hut Location

Relocated site office

Turning Circle

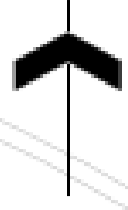
Wheel Wash

Temp Parking Spaces

64.9m



It should be noted that services diversions will likely be required to enable phasing and maintain operation of existing buildings.  
 Services in this vicinity associated to the decommissioned building are to be stripped back. Please note that some of the services may need to remain to maintain operation of existing buildings.



Site Boundary	
Remove Cadet Hut – Temporary Accommodation	
Pupil Access Route	
B+K Access Point	

SC 5.1  
 [WK 150 – 156 – indicative]  
 Relocate cadet hut

SC5.2  
 Construction of New Sports Block Post Demolition in the location of the existing school footprint.

New Teaching Block Live (Previous Completion)

Pupil Access to Sports Hall

Existing Sports Hall Remains Operational

Existing Cadet Hut Location + Catering Pod.

Extend Car Park Summer Holiday Period

Biosite

Relocated site office

Wheel Wash

Turning Circle

Additional School Parking

Site Parking

BURNT MILL ACADEMY SECONDARY SCHOOL HARLOW, ESSEX

B+K SITE PLANS

Section 5 – DEMOLITION OF MAIN SCHOOL AND CONSTRUCT SPORTS BLOCK

WEEK 102 – WEEK 174

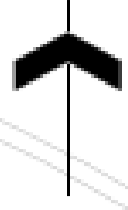
File Reference

SRP1056-BNK-XX-XX-I-X-2550 – Sectional Completion Plans

PROGRAMME REF:  
 SRP1056-BNK-XX-XX-L-X-7000\_BMA - CP Programme P10 14 07 23



It should be noted that services diversions will likely be required to enable phasing and maintain operation of existing buildings.  
Services in this vicinity associated to the decommissioned building are to be stripped back. Please note that some of the services may need to remain to maintain operation of existing buildings.



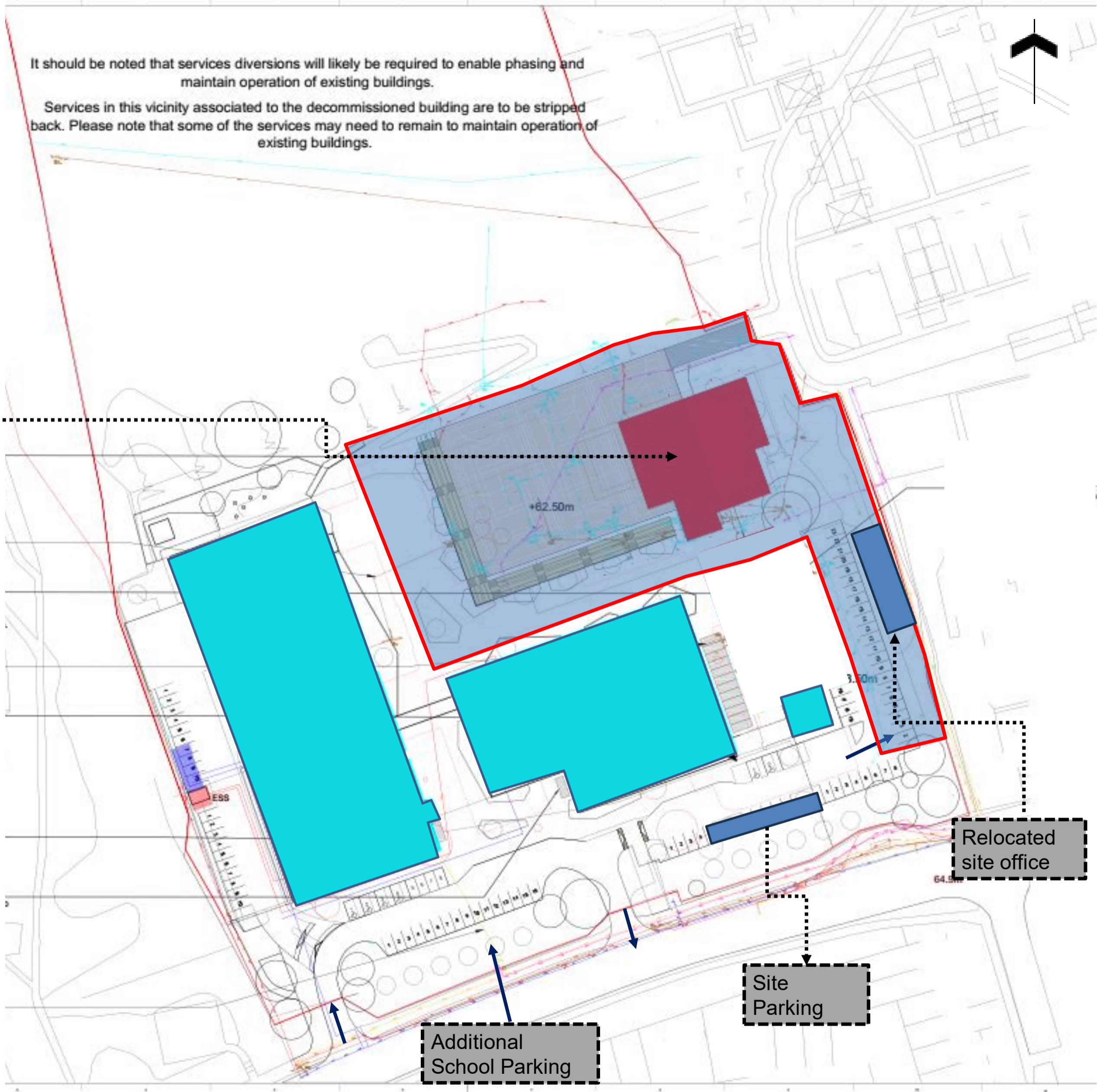
Site Boundary



B+K Access Point



Demolition of Existing Sports Hall



Relocated site office

Site Parking

Additional School Parking

BURNT MILL ACADEMY  
SECONDARY SCHOOL  
HARLOW, ESSEX

B+K SITE PLANS

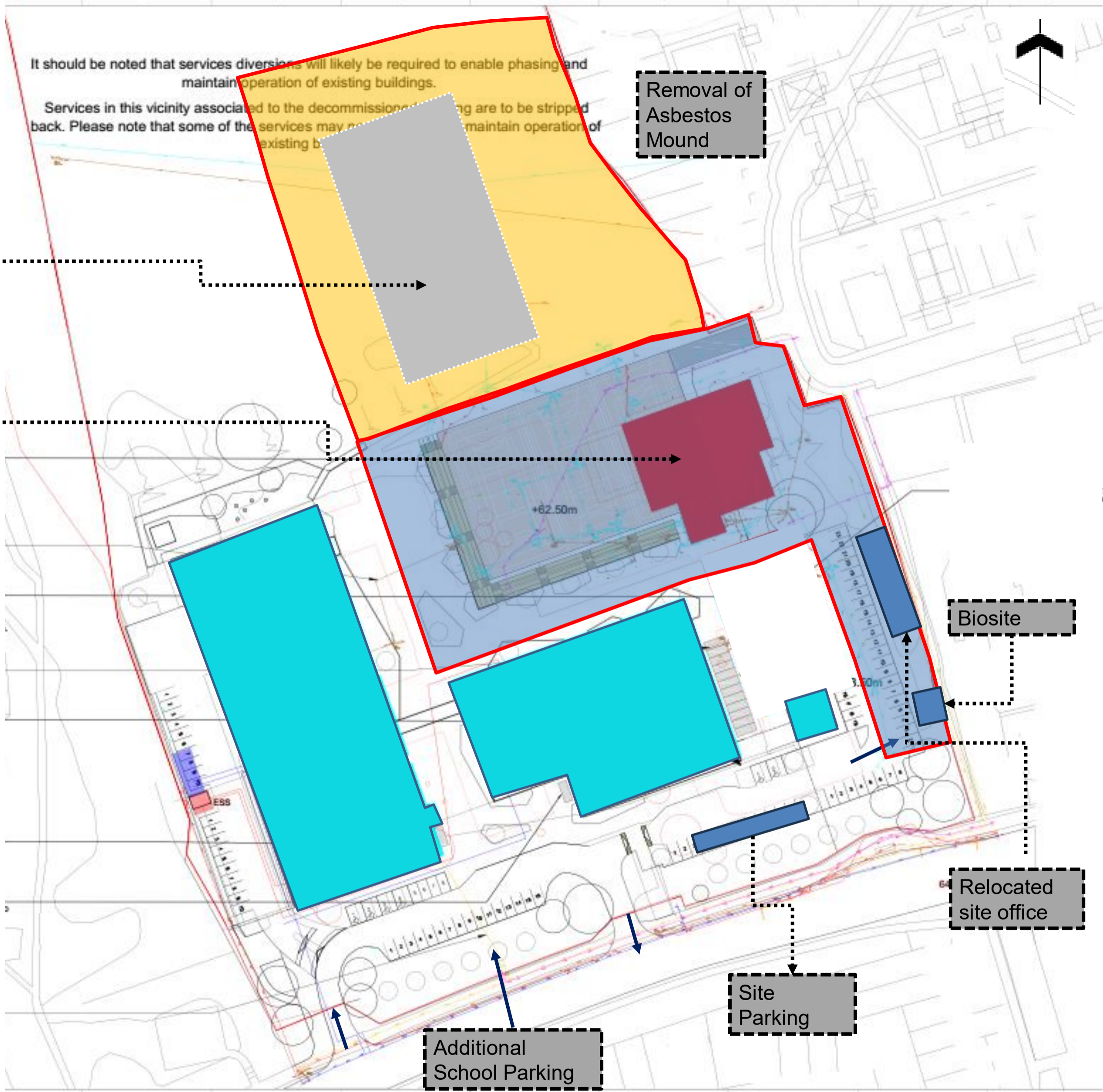
DEMOLITION OF SPORTS HALL &  
MUGA  
**NB: PHASE SHOWN FOR CLARITY  
(NO HANDOVER REQUIREMENT)**  
WEEK 174 – WEEK 186

File Reference


SRP1056-BNK-XX-XX-I-X-2550 –  
Sectional Completion Plans


PROGRAMME REF:  
SRP1056-BNK-XX-XX-L-X-7000\_BMA  
- CP Programme P10 14 07 23






Notes

Site Boundary 

Remove Existing MUGA & Grass Seeding – Temporary Access 

B+K Access Point 

BURNT MILL ACADEMY  
SECONDARY SCHOOL  
HARLOW, ESSEX

B+K SITE PLANS

Section 7 –  
CONSTRUCT MUGA

WEEK 184 – WEEK 198

File Reference

SRP1056-BNK-XX-XX-I-X-2550 –  
Sectional Completion Plans

PROGRAMME REF:  
SRP1056-BNK-XX-XX-L-X-7000\_BMA  
- CP Programme P10 14 07 23



Site Boundary



B+K Access Point



BURNT MILL ACADEMY  
SECONDARY SCHOOL  
HARLOW, ESSEX

B+K SITE PLANS

Practical Completion

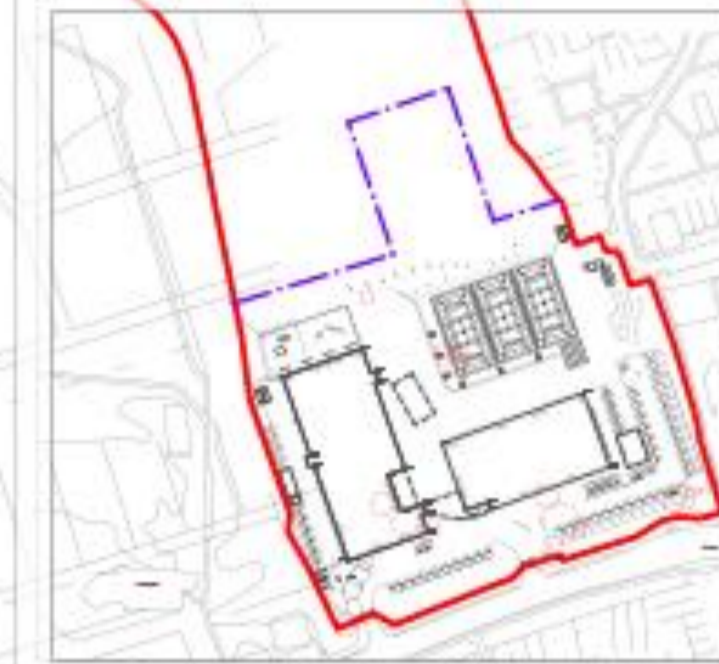
WEEK 198

File Reference

SRP1056-BNK-XX-XX-I-X-2550 –  
Sectional Completion Plans

PROGRAMME REF:  
SRP1056-BNK-XX-XX-L-X-7000\_BMA  
- CP Programme P10 14 07 23

SITE LOCATION PLAN  
NTS



- KEY CONTRACTS**
- P10 Concrete Perimeter Block Paving  
Refer to School Specific Outline  
Specification for Details
- Furniture**
- B1 Steps and Handrails  
Refer to School Specific Outline  
Specification for Details
  - B2 Terrace Amphitheatre Seating  
Refer to School Specific Outline  
Specification for Details
  - B3 Cycle Stands  
Refer to School Specific Outline  
Specification for Details
  - B4 Cycle Shelter  
Refer to School Specific Outline  
Specification for Details
  - B5 Chair Protection Barrier  
Refer to School Specific Outline  
Specification for Details
  - B6 Seating Bench  
Refer to School Specific Outline  
Specification for Details
  - B7 Litter Bin  
Refer to School Specific Outline  
Specification for Details
  - B8 Benches  
Refer to School Specific Outline  
Specification for Details
  - B9 Fully Treated  
Refer to School Specific Outline  
Specification for Details
  - B10 Railed Bench  
Refer to School Specific  
Outline Specification for Details
  - B11 Wall-mounted Basketball Hoop  
Refer to School Specific Outline  
Specification for Details
  - B12 Flat Shopping Stands  
Refer to School Specific Outline  
Specification for Details
- Fencing and Structures**
- Building Fencing  
Refer to Fencing General Arrangement for  
Details
  - Proposed Fencing & Gates  
Refer to Fencing General Arrangement for  
Details
  - Proposed Wall  
Specification to be confirmed by Structural  
Engineer



## Appendix D

### ESP's Asbestos Contamination Plan



**LEGEND**

- Site Boundary
- Proposed Building Footprint (Approximate Only)
  - Modular Classroom Relocation
  - Proposed MUGA
  - Proposed School
  - Proposed Sports Centre
  -
- Investigation Point (Asbestos Screen Result)
  - ⊕ Asbestos Detected
  - ⊕ No Asbestos Detected

**NOTES:**

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**PROJECT NAME:** BURNT MILL ACADEMY, HARLOW

**PROJECT REF:** 8511

**CLIENT:** ASHFIELD SOLUTIONS

**FIGURE 3: ASBESTOS CONTAMINATION PLAN**

<b>PREPARED:</b> CD	<b>REV.:</b> 00
<b>DATE:</b> 14/04/2023	

<b>CHECKED:</b> HD	<b>SCALE:</b> 1: 1,250
--------------------	------------------------

**esp** EARTH SCIENCE PARTNERSHIP  
 ENGINEERS  
 GEOLOGISTS  
 SCIENTISTS  
 33 Cardiff Road, Taff's Well,  
 Cardiff CF15 7RB Tel: 029 2081 3385  
 enquiries@earthsciencepartnership.com



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# Appendix E

## Site Options Appraisal

Table 7 - Remedial Options Appraisal

Remedial Activity	Effective for contamination present	Relative cost	Relative Operation Time	Comments (Practicality / Sustainability / durability)	Feasibility
Soil contamination / Asbestos mound					
Cover system	YES	£	Weeks	Will prevent contact between future site users and shallow soil and break S-P-R linkage.	YES
Excavation and Disposal	YES	£££	Weeks	Will effectively remove the source of the contamination but is much less sustainable compared to other feasible options (cost, take up of landfill space, transport issues, need to replace with clean material)	YES
In-situ Soil remediation	NO	££	Weeks	<p>In-situ soil remediation via excavation and processing for reuse may be effective to remove or reduce fragments of asbestos. However, loose fibres would likely remain in the soil limiting the locations and depth at which soils can be reused.</p> <p>In-situ processing may also assist in reducing the financial implications of disposing of waste material by further segregating visible asbestos and thereby reducing the overall waste classification of the bulk of the waste soils. Cannot be undertaken in isolation.</p> <p>Not considered suitable for low concentrations of asbestos fibres.</p>	NO
Ex-situ soil Remediation	NO	£££	Months	Ex-situ soil remediation via excavation and processing for reuse may be effective to remove or reduce fragments of asbestos. However, loose fibres would likely remain in the soil. Low concentrations of asbestos fibres would be difficult to treat. This method is labour intensive, slow and expensive and unlikely to be feasible.	YES
Materials Management (Excavation and Re-	YES	££	Weeks	Will effectively remove the source of the contamination and place it below hardstanding cover to break the pathway. Would need to be undertaken in association with a Materials Management Plan (MMP) prepared in	YES

Remedial Activity	Effective for contamination present	Relative cost	Relative Operation Time	Comments (Practicality / Sustainability / durability)	Feasibility
Soil contamination / Asbestos mound					
use of Suitable Materials)				accordance with the CL:AIRE: Definition of Waste Code of Practice (DowCop) and signed off by a Qualified Person.	
Excavation and disposal of ground gas source materials	YES	£££	Weeks	This would remove the source of the ground gas risk present on site and avert the need for gas protection. Due to the estimated amount of potential ground gas source material this would not be practical or sustainable. The school must remain in operation during the development limiting available space for major earthworks.	NO
Ground Gas membrane in buildings	YES	£	Weeks	This would sever S-P-R from the ground gas risk. The receptor at the site cannot be changed. Practical given the limited space on site during the redevelopment.	YES

# Appendix F

## Justification for the Selection of SACs

Potentially relevant soil Human Health Assessment Criteria (“HHAC”) can be selected from the following UK resources/references:

### Soil for CLEA Pathways

- 2015 LQM/CIEH GACs: 'suitable for use levels' (S4UL); latest revision August 2015
- EA/DEFRA CLEA GACs: 'soil guideline values' (SGV)
- 2009 EIC GACs; published by CL:AIRE
- DEFRA funded 'Research Project Phase-1' C4SLs; most recently revised in December 2014
- SAGTA funded 'Phase-2 Technical Reports' C4SLs; most recently published by CL:AIRE in 2022
- 2020 SoBRA Acute Generic Risk Criteria
- Higher HHAC values (~ >1,000 mg/kg / >0.1 % w/w ) should only be adopted after careful consideration.

### Notes and References

- LQM = Land Quality Management; CIEH = Chartered Institute of Environmental Health
- GAC = Generic assessment criteria; C4SL = Category 4 screening levels; EA = Environment Agency
- CLEA = contaminated land exposure assessment; DEFRA = Department for Environment, Food & Rural Affairs
- CL:AIRE = Contaminated Land: Applications in Real Environments; EIC = Environmental Industries Commission
- SAGTA = Soil & Groundwater Technology Association; SoBRA = Society of Brownfield Risk Assessment
- Technical references in Section 5.0

The following 'standard' CLEA/S4UL/C4SL land uses (and associated conceptual models) within the above HHACs references include the pathways that are relevant to the TN-1 objectives:

- Residential Use without consumption of HGP (Res-HGP)
  - Critical Receptor: female child with the exposure duration over CLEA age classes AC 1 to 6
  - HGP = Home Grown Produce
- Public Open Space near/within residential housing (POS-1)
  - Critical Receptor: female child with the exposure duration over CLEA age classes AC 4 to 9
- Public Open Space as Public Parks (POS-2)
  - Critical Receptor: female child with the exposure duration over CLEA age classes AC 1 to 6
- Commercial Use
  - Critical Receptor: female worker with exposure duration over CLEA age classes AC 17

These HHACs were calculated within the broad CLEA framework, with amendments to the CLEA approach adopted within the S4UL and C4SL methodologies.

The 2015 soil S4ULs have been adopted in preference to the older SGVs, as the S4ULs reflect updated toxicological profiles and amendments to the exposure conceptual model. The C4SLs for the Part 2A contaminated land regime provide a limited number of criteria that can be used within the town and country planning regime. The published C4SLs provide criteria that should lie within Part 2A Category 4, but would be expected to be generally closer to the Category 3/4 boundary than 'low/minimal risk' GAC/S4UL/SGV, i.e. the C4SLs describe a 'low level' of risk and are intended to provide a 'higher simple test' for deciding whether land is suitable for use under the planning regime and definitely not Contaminated Land under Part 2A.



The 2015 soil S4ULs are generally adopted in preference to the published soil C4SL as the S4ULs reflect a lower ('minimal/tolerable' versus 'low') level of risk compared to the C4SL. The exceptions are BaP & lead Pb (where the C4SL values are adopted) and cyanides & asbestos, which are discussed below. No EIC GACs are used.

The soil HHACs from these land uses are presented in Table 1 for a 1% SOM (soil organic matter) in line with the lowest published SOM and are reported to two/three significant figures (the HHACs selected from the Phase-1 C4SLs are for a 6% SOM soil).

From Table 1, there is a clear risk hierarchy for inorganic and non/low volatile substances with:

Resi-HGP < POS-1 < POS-2 < Commercial

For volatile substances (where indoor air vapour inhalation is a primary risk driver) the risk hierarchy is generally:

Resi-HGP < Commercial < POS-1 < POS-2

For banded TPH, the lowest HHAC for the relevant fractions has been selected. For PAHs, Public Health England (Ref: 2017) generally recommends the use of a coal tar benzo-a-pyrene (BaP) surrogate marker approach for assessing carcinogenic/genotoxic risks posed by 8 of the 16 PAHs in soils and this approach has been adopted using the available C4SL BaP coal tar criteria.

For cyanide species, easily liberatable (free) cyanide is the primary cyanide species of concern. Where both easily liberatable (free) and total cyanide results are available, only easily liberatable (free) cyanide results would normally be compared against the HHAC. Where only total cyanide results are available, using the cyanide HHAC is considered very conservative as it is based on acute risks posed easily liberatable (free) cyanide. The cyanide HHAC is based on a precautionary approach for acute risk via the 2020 SoBRA child value for oral pathways.

The selected phenol HHAC considers potential acute risk exposures. The asbestos 'GAC' (minimal risk level) been taken as 'not-identified' by Stage 1 testing. A typical nominal acid/alkaline soil pH range has also been adopted to flag a potential for skin irritancy via direct dermal contact.

The following discussions will help inform the selection of the candidate SACs:

#### **Surface Soils in Soft Standing Areas**

- The Resi-HGP (and to some extent POS-1) are considered to provide a risk-protective set of HHACs for these soils and for the school student receptor and adults working at the school.
- This is based on our detailed experience of CLEA modelling/assessment and the following factors: The CLEA modelling pathways outputs will be inherently much lower for AC 1-6/AC 4-9 than for the school student AC 3-19 age group (mainly due to the average lower body weights for AC1-6). The occupancy rates for the Res-HGP site use are much higher (~24 hours/ day for 365 day/ year) than for a student attending during the school year (~200 days/ year) and school hours/activities (up to 9 hours/ day). The Resi-HGP criteria include the indoor air VOC vapour inhalation pathway; this is not active for surface soils, so the Resi-HGP criteria should be risk protective for many volatile organic substances.

#### **Soils Beneath Building Footprints**

- The only active pathways is the inhalation of organic vapours inside school buildings via vapour intrusion.

- Only volatile/semi-volatile substances are of concern for these soils for the school child/adult receptors.
- In line with the discussion above, the Resi-HGP are considered to provide a risk-protective set of HHACs that could be used for the school student receptor (and adults working at the school) for addressing risks posed by organic substances in soils beneath building footprints.
- In addition, modelling outputs would be higher for bigger/taller buildings (where vapour intrusion is a primary risk driver), so the small residential building considered by the Res-HGP would be risk-protective.

#### **Soils beneath Hard Cover Areas & Deeper Soils beneath Soft Standing Areas**

- The only active pathways risk driver is the outdoor inhalation of organic vapours from diffusion out of these soils and mixing with ambient air.
- Only volatile/semi-volatile substances are of concern for these soils for the school child/adult receptors.
- Outdoor vapour inhalation is generally of low inherent concern and is not normally a risk driver pathway.

The Commercial HHAC should be appropriately risk protective for the majority of school staff/workers, although they may be under protective for some staff who work outside more of the time (e.g. grounds keepers). The Resi-HGP HHAC would be risk protective for all school staff/workers. Given these factors, it is recommended that the final selected SACs should mainly draw upon the Resi-HGP HHAC for surface soils and building footprints. The POS-1/POS-2 criteria should be risk protective for soils beneath hard cover areas and deeper soils beneath surface/near-surface soils in soft standing areas. Criteria >1,000 mg/kg (0.1 % w/w) should be applied carefully.

#### **CANDIDATE HUMAN HEALTH SACS**

The suggested candidate human health SACs are provided in Table 5 in the above document. The technical basis of the candidate SACs are the identified UK published risk-based human-health criteria; in some cases the SACs have been lowered to take into account a need/desire to limit overall contaminant loadings in site soils, especially soils at surface.

#### **Use of SACs and any derived Remedial/Compliance Criteria**

The use of the SACs (and any derived final remedial targets) must be based on professional good judgement taking into account a range of project/site-specific and wider considerations and should not be based solely on the SAC comparison with site investigation or remedial work data. It is important that the SAC/Derived-Targets are used carefully when comparing with site data and that their use appropriately takes into account the adopted sampling strategy and the underlying SAC technical basis. The SAC/Targets are typically compared to average or representative source/averaging-area concentrations, rather than maximum or isolated elevated/peak levels. Where a SAC represents a very low concentration (e.g. near to or less than method detection limit), due consideration should be given to the method detection limit and/or other practical/pragmatic criteria as well as the SAC. Background levels in the area may also need to be taken into account. The SAC/Targets are used to help judge whether identified concentrations are at sufficiently low levels that the potential risks posed by the substances will be low enough that no further action will be needed.

An SAC exceedance does not immediately imply that a substance is not 'compliant' with the criteria or that a substance poses an unacceptable risk; rather an exceedance means that some form of further consideration is warranted: a judgement should then be made to identify an appropriate way to address exceedances (this could include no further action). Where a number of exceedances are identified, further statistical consideration (e.g. using CL:AIRE 2021) and/or further quantitative risk assessment may be warranted to determine whether average/representative concentrations are in

excess of an adopted criteria. Where all of the detected substance concentrations are less than an SAC, then this would normally be taken as a strong indicator that the substance is 'compliant' with the SAC. If representative concentrations are significantly above an adopted SAC/target, then this would normally trigger further appropriate actions, such as additional statistical analysis, investigation/verification, risk assessment or further/continuing remediation/mitigation.