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ASHMOUNT SCHOOL, ISLINGTON

PART 1: BUILDING ASSESSMENT

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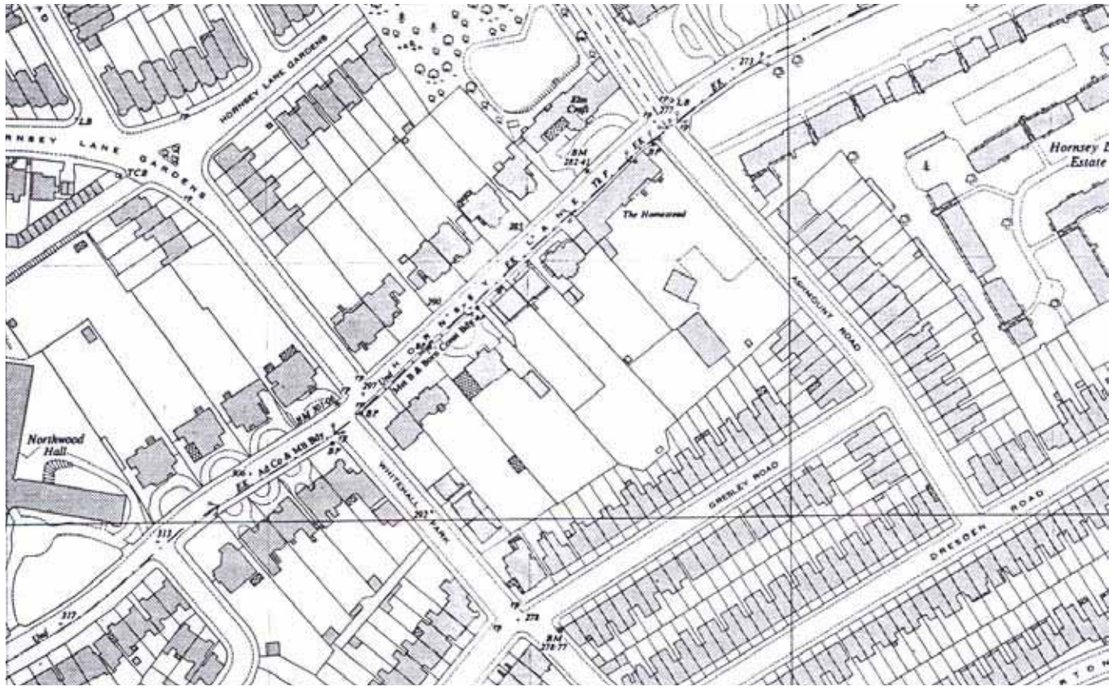


Fig.2: Ordnance Survey Map 1954

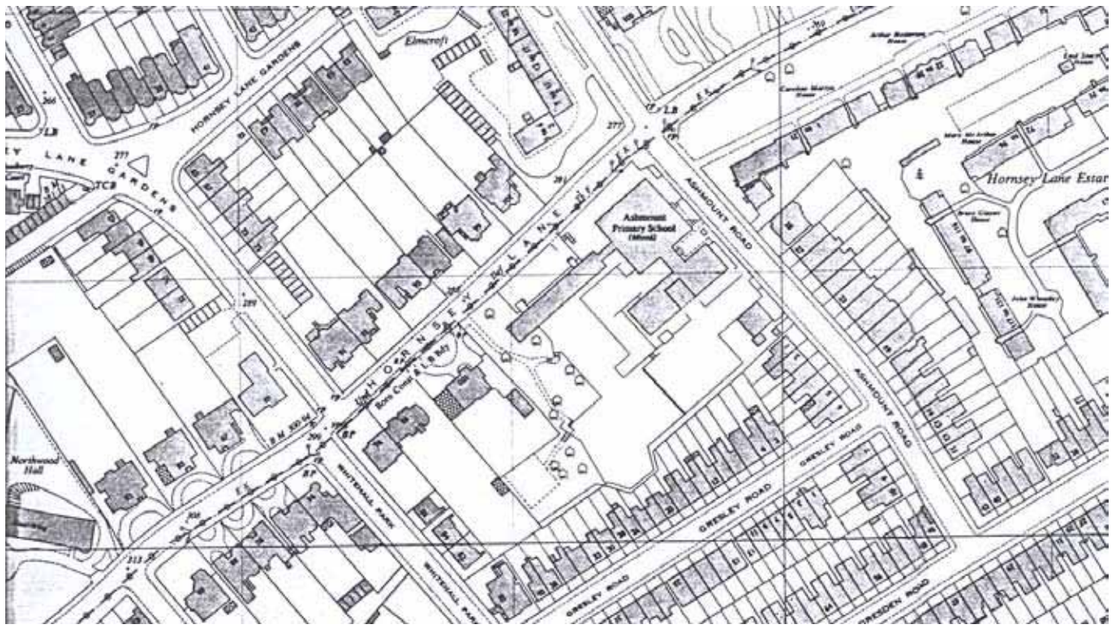


Fig.3: Ordnance Survey Map 1967

Fig. 4: A mature tree on the terrace

INTRODUCTION

Ashmount Primary School in Islington, London N5, was commissioned by London County Council and designed and built between 1954 and 1957 by Henry Thomas “Jim” Cadbury-Brown with Bolton Henessey & Partners as consulting engineers. The three linked buildings (Junior, Infant and Halls blocks), on a high, sloping site, demonstrate not only Cadbury-Brown’s allegiance to the Modern Movement at the time but also his characteristic ability to refine an existing idea into something elegant and new. Influenced by Mies van der Rohe, the combination of attention to detail and creation of a sheer “membrane” curtain wall, gave an intellectual quality to the school design that set it apart from other school buildings of the period.

Whilst a small number of inappropriate but mostly reversable alterations have taken place over the last 50 years and considerable repairs are now needed to the external envelope, the original design intentions can still be very clearly read. This document seeks to discuss the architect and his design, and proposes an assessment of the building’s significance.

Fig. 5: View of the playground

Fig. 6: View of the playground (Junior Block in background)

Fig. 7: View of the playground

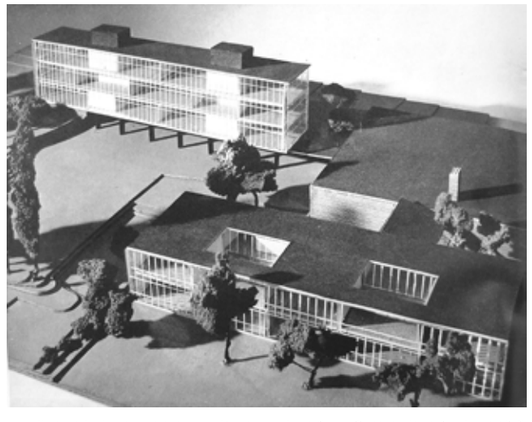


Fig. 8: Architectural model showing the Junior Block (top left), Halls Block (center right) & Junior Block foreground

Fig. 9: A retained tree & change in levels from Junior Block entrance to Hall Block

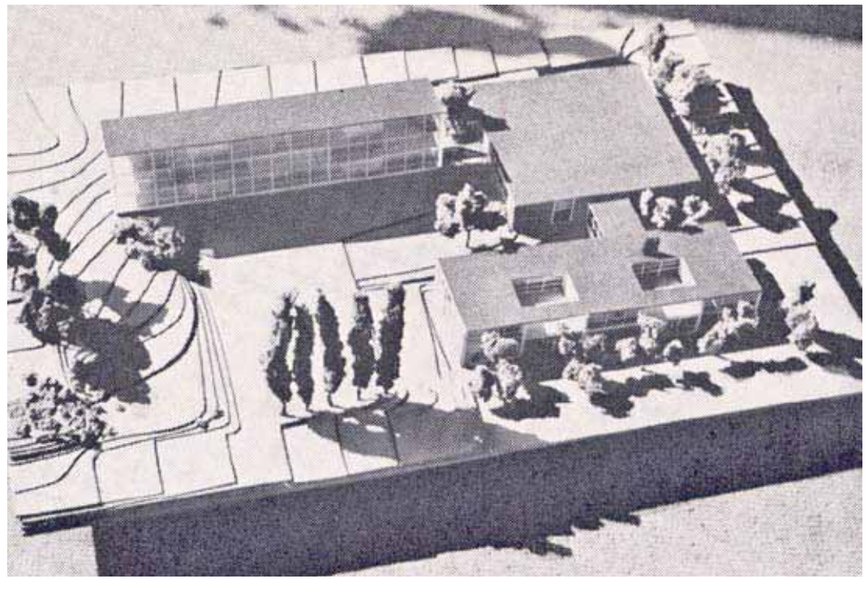


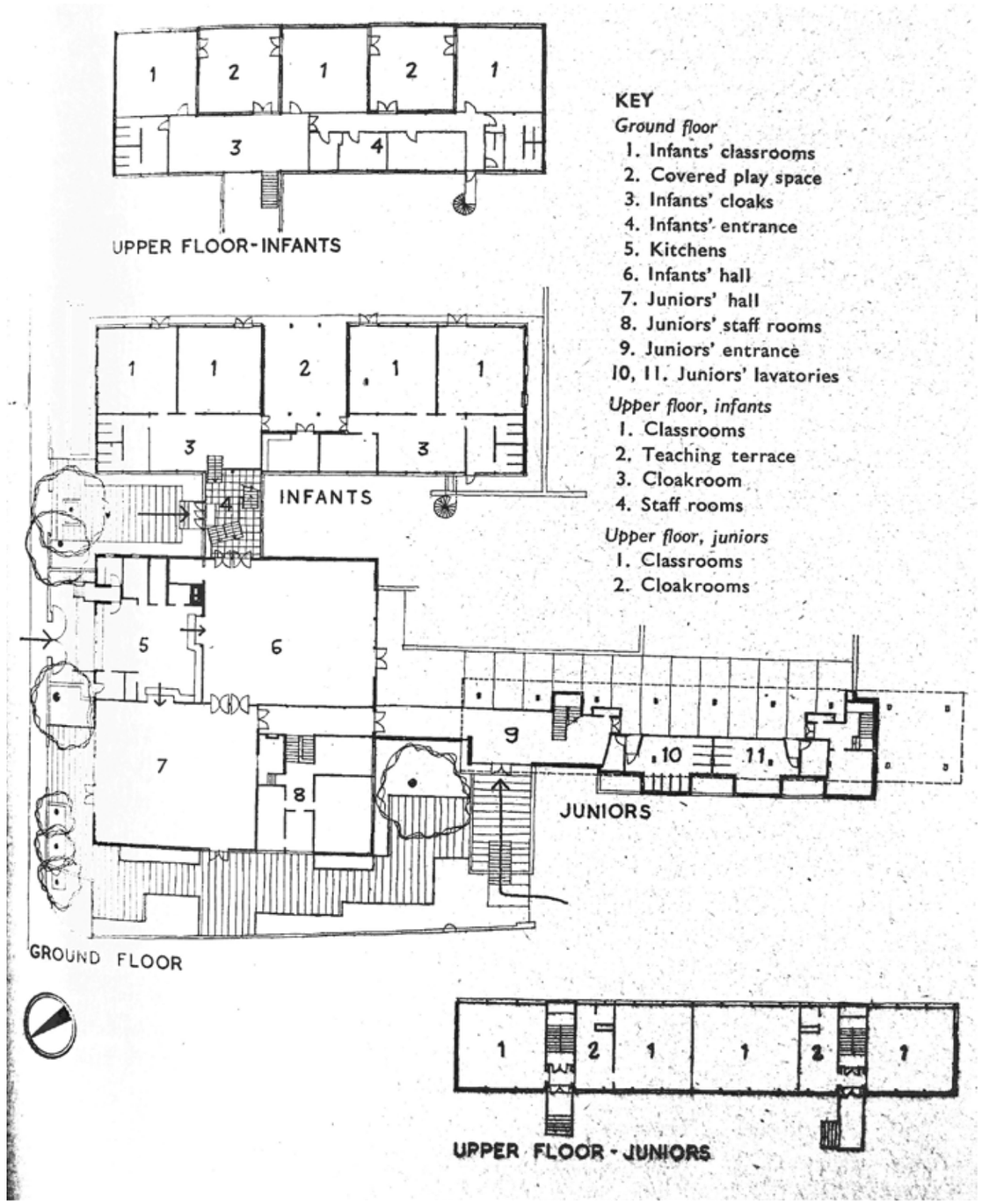
Fig. 10: A further view of the model

THE SITE

Ashmount Primary School was built on a hillside site in north London. The 1952 Ordnance Survey map shows a long house called The Homestead fronting Hornsey Lane with grounds extending down the west side of Ashmount Road. This property and the three villas to the west would be demolished to provide a site for the new school, but much of the terracing and mature tree planting was retained and the new school designed to accommodate and take advantage of it.

The site falls steeply some 25 feet from north-west to south-east and as a school site was comparatively small at about 2 acres. To make the most of the site, which needed to accommodate 720 children, the buildings were placed on the north and east sides, creating visual drama and spacious play areas for the different age groups. The three-storey Junior block on the north side is level with road but on the south side is lower where the playground extends beneath it. The Infants’ block is on two floors with the entrance at a half level. The two assembly halls, a kitchen and Junior school administration were housed in a square block at the angle of Hornsey Lane and Ashmount Road and linked to the two symmetrically planned teaching blocks.

The main entrance to the school was conceived to be from Hornsey Lane but only a few weeks before completion the decision was taken by the LCC to reposition it to the south of the Halls Block from Ashmount Road.



Flg. 11: Plan

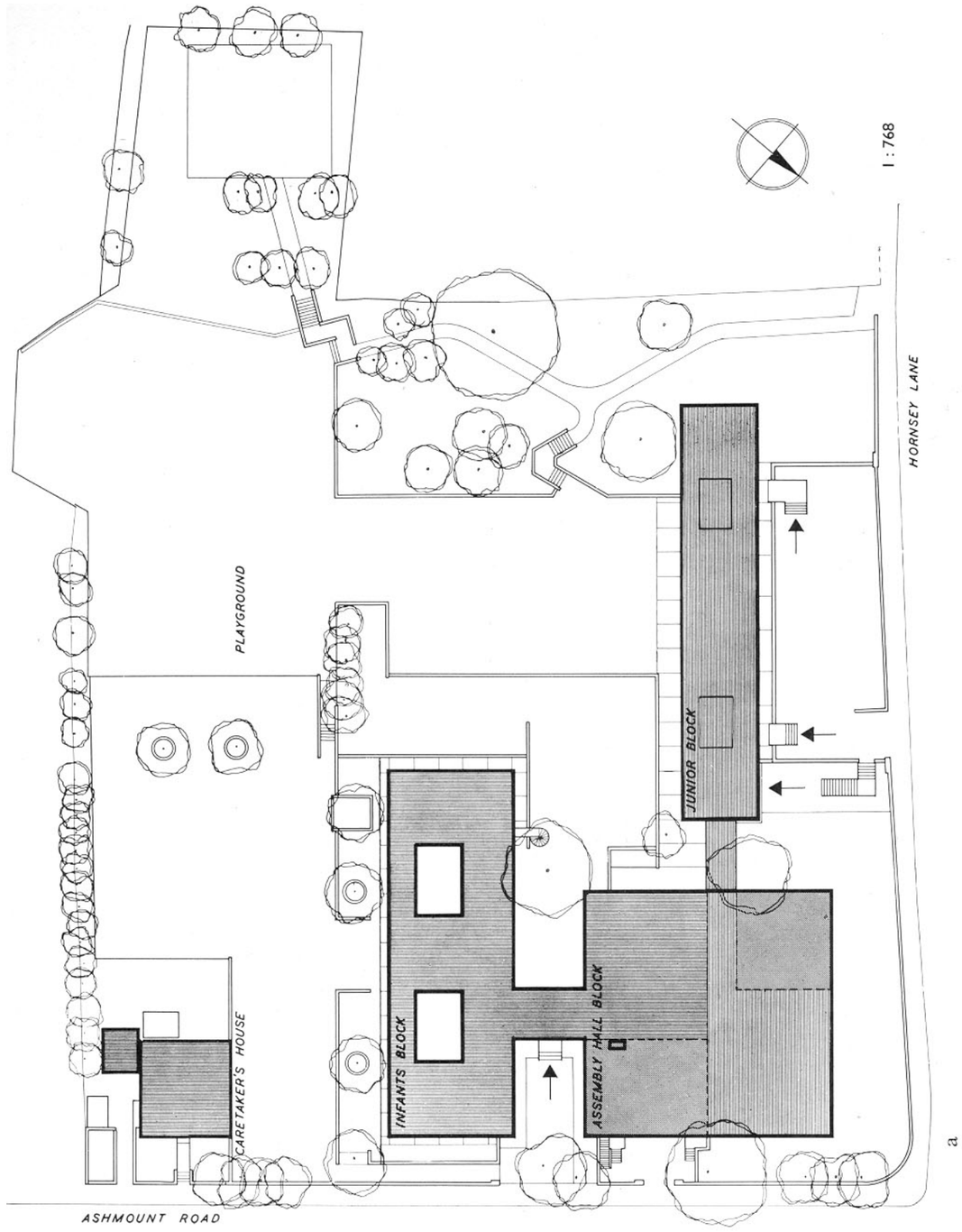


Fig. 12: Block plan

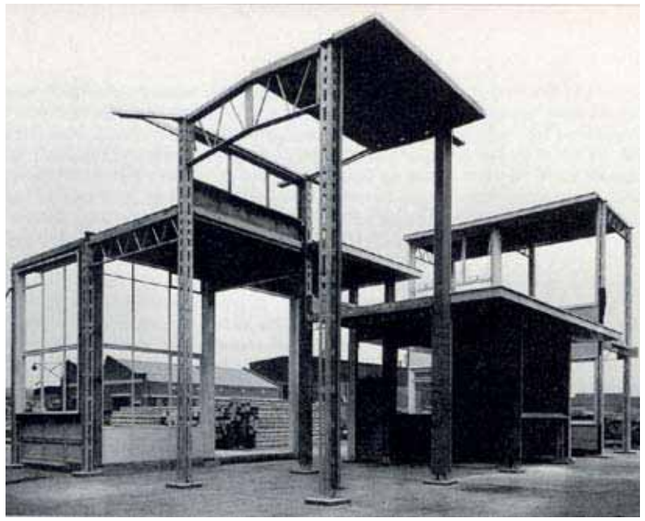


Fig. 13: Trial sections of the 8' 3" system at a mature stage, Hills Works c 1953

Fig. 14: Hills Advertisement, 1955

Fig. 15: Hills Advertisement, 1955

Fig. 16: Hills Advertisement, 1955

THE SCHOOL

The Steel Frame

In common with other Education Authorities in the late 1940s/early 1950s, the LCC had to provide for the huge increase in the post-war school population. In 1945 it was evident that throughout the country 10,000 new school places would be required within six years, and thereafter an equivalent number of secondary as well as primary places.

It was considered that a programme of this magnitude could only be carried out by regarding it as a whole and evolving a method of construction which could overcome the post-war shortages of material and labour: it was decided to make considerable use of pre-fabricated methods.

The system of prefabrication was developed at Hertfordshire County Council by an inspired and enthusiastic team of 'in house' architects who wanted to create a kit of parts rather than units of structure. By providing standardised components they hoped to give architects the tools to create up-to-date 'living' architecture. For this to work there had to be considerable dialogue and co-operation between architects and manufacturers: the Hertfordshire team discovered their ideal collaborator in Ernest Hinchcliffe of Hills and Company in West Bromwich.

Hinchcliffe had founded Hills in 1932 as a patent glazing company, since this time when it had rapidly expanded and had divisions making steel window frames, rooflights and light steel structural sections. Infected by the 1940s idealism but alive to commercial opportunities, Hinchliffe had by 1944 turned his war time manufacturing capacity to building the first of the 'Hills Presweld' houses, with steel frame and concrete cladding. By the time the Ministry of Education approached him he had already set up an experimental 8 feet 3 inches classroom unit at the West Bromwich works and was setting up plant to manufacture cladding slabs, roof blocks and floors for this and for his prefabricated houses.

The Hills system was used "off the peg" for the first school at Cheshunt, Burleigh Primary School, of 1946 which is now listed. In 1947, however, David Medd of Hertfordshire County Council architects spent time with Hills redesigning the system to make it a true grid, sufficiently flexible and practical to be used at the start of the school building programme in the autumn of that year. Every year thereafter the system's structure and components were re-scrutinized and updated for the annual programme: the cycle involved input from architect, manufacturer and end user.

The initial schools were single storey but further developed in the late 1940s/early 1950s to go up to two storeys and at Ravenscroft Secondary School, Barnet (1952-4) up to three.

Hinchcliffe was as enthusiastic as the architects in creating a structural vocabulary and committed considerable funds and expertise to the project, but in the process overstretched himself financially and when prefabricated school building became more competitive the firm foundered and closed abruptly in liquidation in 1962. Ernest Hinchcliffe and Hills had, however, by that time made a remarkable and seminal contribution to the development of prefabrication.

By 1954 more than 100 schools had been completed using the Hills light steel 8 feet 3 inch system, a great many of which were in Hertfordshire.

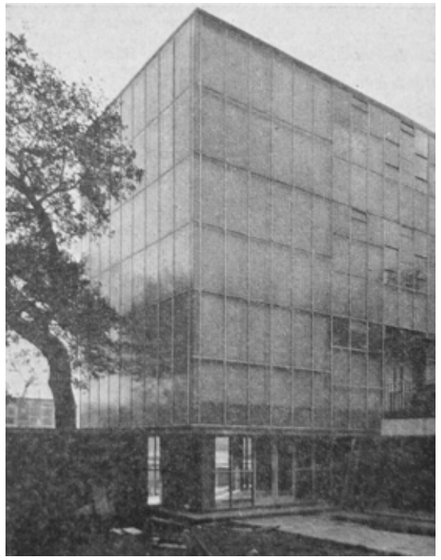


Fig. 17: Angle of the Junior Block (now Reception) showing original format with one of the existing trees, c1957

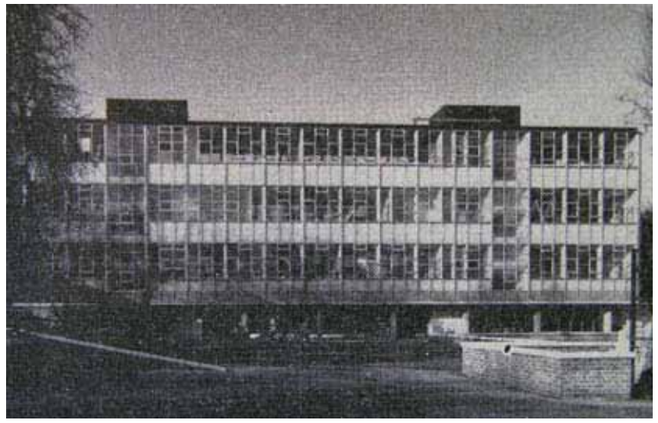


Fig. 18: Junior Block rear elevation

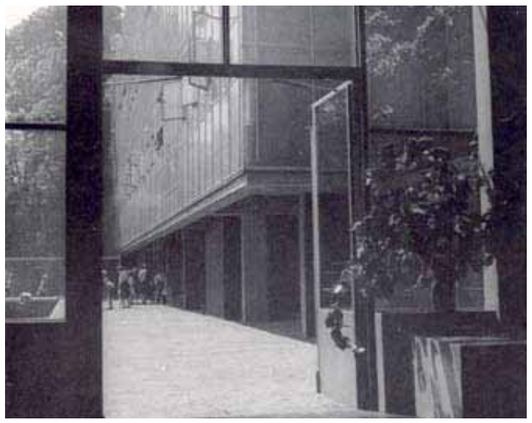


Fig. 19: Junior Block from the Assembly Hall, c 1958

Fig. 20: Angle of the Junior Block (now Reception), 2007

Fig. 21: Junior Block elevation to Hornsey Lane

Fig. 22: Junior Block elevation to Hornsey Lane

Fig. 24: Junior Block curtain wall glazing patterns

Fig. 26: Junior Block rear elevation

Flg. 23: The original curtain wall obscured glass

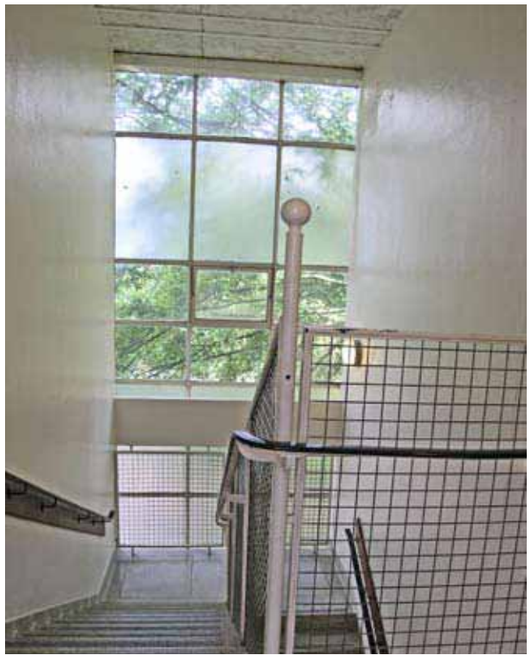
Fig. 25: Junior Block curtain wall glazing patterns

Flg. 27: Junior Block stairs

Flg. 28: Junior Block stairs

Flg. 29: Junior Block stairs

Flg. 30: Junior Block stairs



Flg. 31: Junior Block stairs

Cadbury-Brown recollects his interest in the use of similar prefabricated, sometimes demonstable and recyclable ‘clip systems’ but notes that most manufacturers at the time were not especially interested in ‘pushing the limits’ of their systems or components. Hills were an exception to this. Cadbury-Brown specifically wished to explore the possibilities inherent in the Hills system which he was excited by but believed its full potential had not yet been fully explored.

The steel frame was one of three components described by Cadbury-Brown as integral to the concept and character of Ashmount: cement encased frame, plastered infill panels and glazed screen, all of which are evident when viewing the façades.

The School as Built

When Cadbury-Brown came to design Ashmount School in 1954 a tried and tested method of construction was readily available. The LCC had taken up the Hills system in 1950 and by the mid 1950s was in the throes of a hefty school building programme. Many London primary schools of this period were built in an adapted version of the Hills & Co. 8 feet 3 inch system.

However, at Ashmount, the versatile Hills 8 feet 3 inch system was modified in collaboration with Hinchliffe. For the first time the normal 3 feet 4 inch type curtain wall system was used but in 2 feet 9 inch widths. Unusually, in the administration and infants’ block, fairly large areas of brickwork were set adjacent in the curtain walling panels in a deliberate juxtaposition of solidity and translucence. For formal reasons the brickwork throughout was always brought up from the ground.

Fig. 32: Junior Block stair land lobby

The Junior Block

The higher Junior block, raised on a bored and piled concrete platform, was given a visually taut “membrane” of curtain walling, designed in such a way that it gave a previously unseen lightness and elegance to the building. At the corners a special angle unit was devised that would take the glass continuously around the corner in front of the stanchion. The structure at roof level was emphasised by a specially designed black pressed metal capping covering the top structural member which sloped down and lapped over the curtain wall, avoiding any projection in front of it. This capping detail was also used, in conjunction with a steel fascia, over the panels of brickwork. Cadbury-Brown recalls that most other ‘Hills’ buildings featured overhanging eaves.

Interest was given to the curtain wall by the play of the aluminium cover-strip horizontal and vertical elements across the façades. At each end of the Junior block Hornsey Lane elevation, for two bays, there are no windows and the walling consists of larger units than elsewhere. The pattern continues on the façade with bands of smaller panels of obscured glass running under the windows, the central 3 bays on the central floor having dropped down windows flanked by drop down windows articulating the entrance and stair bays. Casements (Fig. 25 on Page 8) also form part of the compostion.

Fig. 33: Junior Block enfilades

Fig. 34: Junior Block enfilades

Fig. 37: Junior Block bathroom cubicles

Fig. 38: Junior Block cloakroom

Fig. 35: Junior Block angle classroom

Fig. 36: Junior Block angle classroom

Fig. 39: Junior Block cloakroom

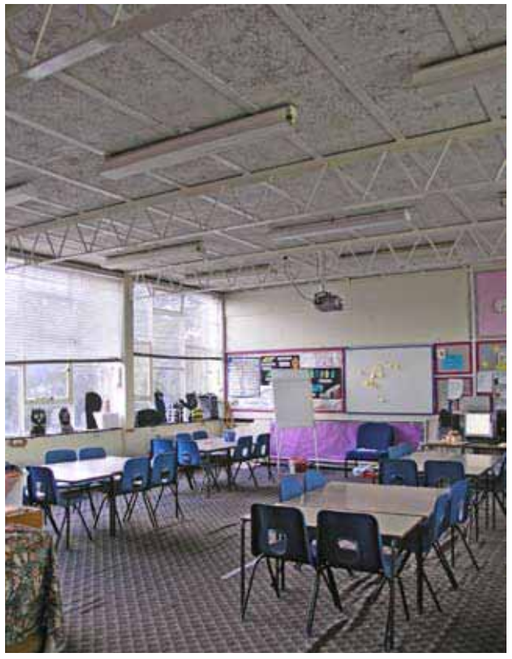


Fig. 40: Junior Block classroom

Fig. 41: Junior Block Classroom

Fig. 42: Junior Block Classroom

Fig. 43: Junior Block classroom

On the rear elevation, facing south-east, the emphasis is on windows with continuous bands of clear glass. With narrow apron bands of obscured glass, modulated to articulate the stairwell, the proportion of clear glass is increased on the 'private internal side' of the building to take advantage of views into the playground area.

The fall of the external ground levels was used to advantage on this front to provide a covered playing space (undercroft) beneath the three storeys of classrooms, the concrete structure of the platform carrying the framework being left as it came from the shuttering. Here the basement screen walling was rendered but elsewhere on the complex fairfaced brick was used.

Eschewing the fashion of the day for bright primary coloured infill panels where there was no need for windows Cadbury-Brown enhanced the Miesian sheen of the curtain walls by using obscured glass through which the dull grey-green of the rendered wood-wool slabs is visible as well as the stanchions, encased in pinkish plaster casing for fire-proofing. The idea of the the 'truthful' expression of materials and the subtle interest and character denied from 'self-finished' materials is something Cadbury-Brown explored in his practice.

Fig. 44: Unused Junior Block entrance from Hornsey Lane

Fig. 45: View to the City from top floor classroom

Internally, the Junior block layout was simple with classrooms and cloakrooms flanking the stairs at each level. Originally, there appears to have been no continuous access through the central classrooms. Lavatories were positioned to the basement where they could be accessed from the playground. Unusually, cloakrooms were next to the classrooms on each floor. Throughout, the structural beams were left exposed.

The area now in use as Reception was originally a glazed link from the Junior to the Halls block with views into the playground.

Fig. 46: Corridor from reception to the halls

Fig. 47: Juniors' Hall

Fig. 50: Infants' Hall

Fig. 51: Halls Block brickwork angle

Fig. 48: Infants' Hall

Fig. 49: Doors joining Juniors' Infants' Halls

Fig. 52: Part of the lean-to corridor

Fig. 53: The lean-to corridor

Fig. 54: Kitchen façade to Infants' Block entrance courtyard

Flg. 55: Halls Block elevation to Ashmount Road

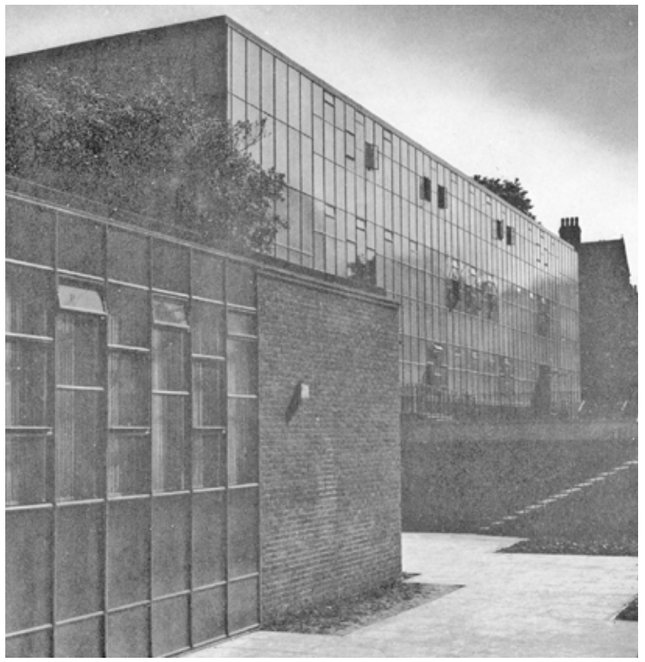


Fig. 58: The Halls Block (left) and Junior Block front elevations, c 1958

The Halls Block

This double-height Halls block was articulated with contrasting panels of glazing and masonry returns with long, full-height panels of glazing articulating the Juniors' and Infants' halls which were laid out diagonally opposite each other and linked at the angles. Staffrooms occupied the remaining northern quarter and kitchens the southern. The kitchens were mainly hidden behind brick walls with a 2-bay full height window to Ashmount Road and small, rectangular punched-through windows to the Infants' entrance courtyard façade.

The 'Tunbridge Wells' stock brick was specially selected by Cadbury-Brown and was used at the Festival of Britain. Cadbury-Brown recalls it was a relatively expensive item.

Internally the halls formed large, light and airy spaces with exposed structural beams. It is not clear how much of a draw back it was originally that the Infants' hall had to be traversed before the Infants Block could be accessed internally but a lean-to corridor was at some point much later provided around the exterior of the building to obviate this.

Fig. 56:: Halls Block elevation to Ashmount Road

Fig. 57: Halls Block elevation to Hornsey Lane

Fig. 59: Halls Block elevation to Ashmount Road

Fig. 60: Open air teaching balcony

Fig. 61 Open air teaching balcony

Fig. 62: Open air teaching balcony

Fig. 63: Open air teaching balcony

Fig. 64: Infants' Block from playground

Fig. 65: Open air teaching balcony from the playground

Fig. 66: Infants' Block elevation to entrance courtyard

Fig. 69: Infants' Block playground entrance

Fig. 67: Infants' block corridor

Fig. 68: Rear elevation of the Infants' Block with spiral stair 2007

Fig. 70: View from classroom to open air teaching balcony

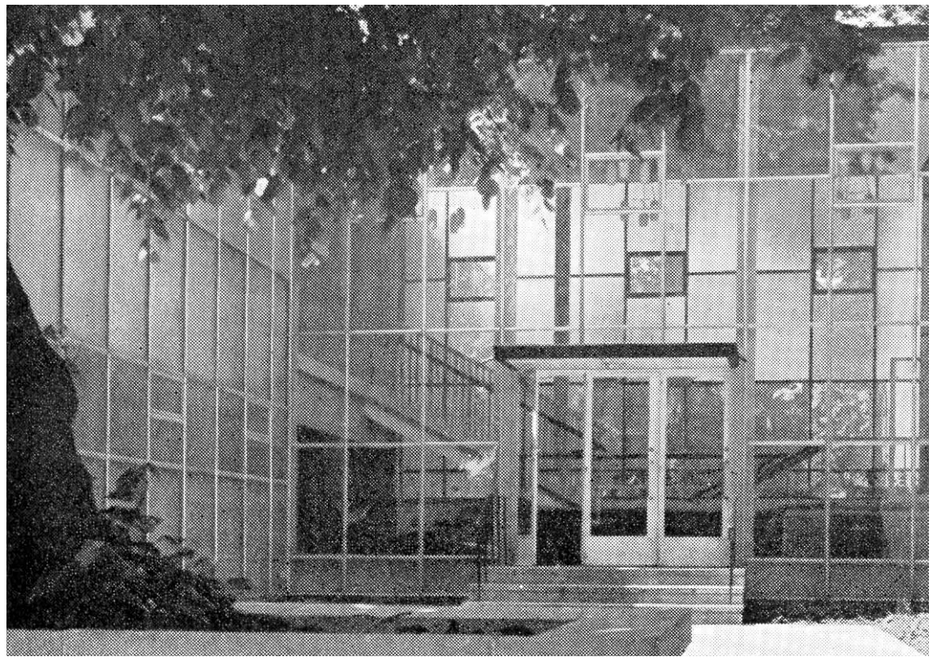


Fig. 71: Infants' Block entrance, c1958

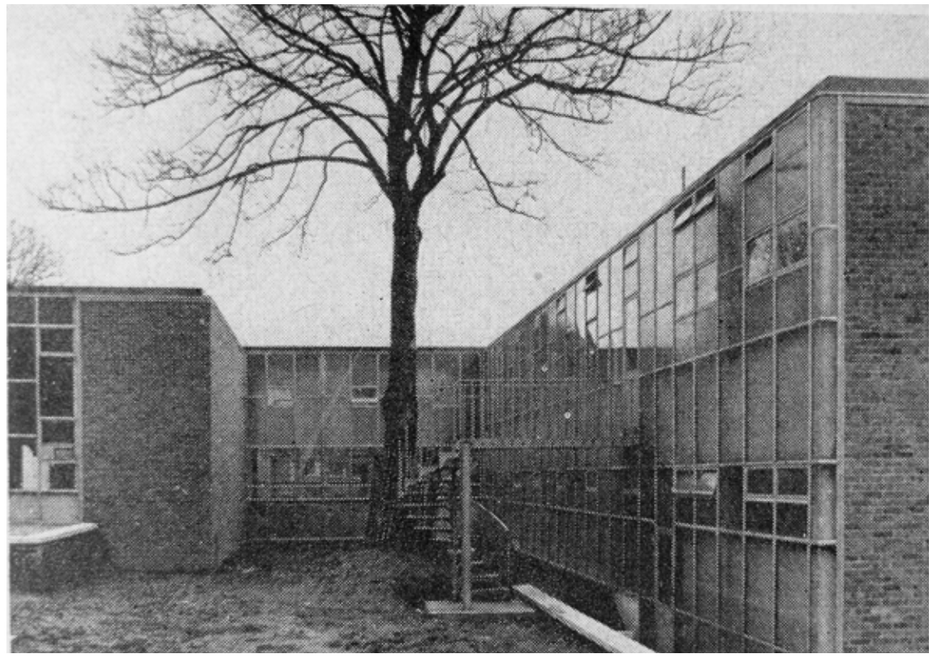


Fig. 72: Rear elevation of the Infants' Block with spiral stair (right) & rear elevation of Infants' Block entrance (centre), Infants' Hall to left, 1957

Fig. 73: Infants' Block entrance - open double height space light views into different parts of the school (and recess)

Fig. 74: Infants' Block entrance interior

Fig. 75: Infants' Block entrance interior

The Infants' Block Entrance

The main entrance to the Infants Block is at the rear of a courtyard off Ashmount Road at the North East side of the site and also provides the link between this block and the Halls block. Glazed to full height the flagstoned interior is given drama by 3 sets of steps to access the different levels.

The Infants' Block

Of two storeys, the main façade is to the south-east looking onto the playground. The full height glazed façade is articulated by a central band, originally of obscured glass and a central open ground floor play area flanked at first floor level by open air teaching terraces. The northern side has a central band and a steel spiral stair to the first floor: it also forms the south side of the Infants' entrance courtyard.

Cloakrooms and lavatories are at ground floor level where the south-facing classrooms have doors opening into dwarf-walled garden enclosures. The upper floor is accessed by stairs from the Infants' entrance and classrooms or teaching terraces are entered off a corridor. All the classrooms have their own entrances onto the terraces, forming an enfilade.

Fig. 76: Infants' Block entrance interior

Throughout, the structural beams are left exposed and on the teaching balconies form an integral part of the metalwork design with the balustrading and mesh (refer to Fig. 65).

Fig. 77: Huts on the raised terrace

Fig. 78: Huts on the raised terrace

Fig. 79: Cockerel by John Willats c1957

Fig. 80: Inappropriate metal panels to one of the Halls

Fig. 81: Reception office & waiting area in former glazed link

Fig. 82: Cockerel by John Willats c1957

Fig. 83: Inserted classroom

Fig. 84: Inappropriate blue panels on the main façade

Fig. 85: Inappropriate uPVC doors, Infants' Block

Fig. 86: Inappropriate blue panels on the Staff Room

Fig. 87: Innappropriate uPVC doors and blue Plywood replacement panelling, Infants' Block

Fig. 88: Inapporpriate timber porch to Junior Block front entrance

The Huts

The school grounds also include an elevated section of the former garden to the westernmost villa. On this land an L-shaped hutting arrangement was erected at some point.

Cost

The total cost of the school was £119,300 which worked out at about £166 per pupil place. Cadbury-Brown pointed out that cuts in some areas had to be made due to the comparatively high cost of the frame and foundations. He also indicated that whilst double glazing would have been desirable, at the time of construction the costs were prohibitive.

The Cockerel

When the school was completed in February 1957 Cadbury-Brown ran a competition at the Royal College of Art and commissioned the winner, at his own cost, John Willatts (an ex-engineer and one of his students), to provide a large sculpture of a cockerel to set on the northern boundary wall. The rigorous form and silhouette of the cockerel was intended to "contrast with the flatness and serenity of the building behind".[1]

The school contractors, Fairweathers, gave the materials for the cockerel and the steel armature was probably made at the RCA

The School Today

The school as Cadbury-Brown built it has remained remarkably intact and little altered, a testament to the thoughtfulness and quality of the design. The main alterations have been:

Replacement of some of the obscured glass panels with inappropriate blue-painted timber panels or metal panels believed to be c1991.

Additions of timber porches to the entrances, presumably temporary, as a precaution against falling cover strips or broken glass.

Formation of an enclosed reception office to the rear of a formerly glazed area that originally allowed views into the rear playground.

Formation of a single-storey lean-to corridor around the outside of the Infants' Hall.

Insertion of a small classroom extension on the landing of the Infants' block.

Insertion of inappropriate uPVC doors to former a corridor in front of the Junior block lavatories. Similar doors to the Infant's covered play area.

Upgrading of facilities, e.g. lavatories.

1 *Cadbury Brown, H T, Criticism - The Architect Replies, The Architectural Journal, 21 February 1957, p.279*

ASSESSMENT

James Dunnett has written that, “No one of his generation in Britain was more firmly committed to the Modern Movement at this stage (the early 1950s) than Cadbury-Brown”.[1]

The hard-edged character of Ashmount school reflected this Modern Movement allegiance. Cadbury-Brown made radical use of the Hills system, linking three cubical flat-roofed volumes where the glass met at the corners without a mullion and rose to the rim of the skyline, concealing the structural depth of the roof in the manner popularised by ‘High Tech’ architects some twenty years later.

He was concerned that too often the glass “membrane” related to a series of frames on a curtain wall and with his design intended to create a taut but serene effect of the whole building being covered with a Miesian sheerness. Within the membrane the dividing lines had certain freedoms and did not necessarily have to refer to the structure or plan behind it. The frame, he felt, should be liberated from the constraints of planning. Where brickwork occurred he intended it to be treated as an extension of the “membrane” and with similar tensions.

Cadbury-Brown was criticised at the time for using obscured glass panels which showed the dull olive colour of the plastered infill panels behind instead of inserting coloured panels where windows were not needed as other architects were doing.[2] But in a published reply to the criticism Cadbury-Brown made is quite clear that he did not believe primary coloured panels would have been appropriate and had deliberately taken a more subtle approach.

The more one analyses this building the more apparent it becomes that he was right not to have used brightly coloured panels. Viewed close to the effect of the grey/green plaster and pink stanchions is rather strange but standing back it can be seen that, when new, the overall effect would have been relatively fine. Cadbury-Brown defended his leaving “as found” policy, pointing out that it did not diminish the element of choice or care. He did, however, also point out that: “In my particular case choice was more than usually limited owing to unforeseen cuts which had to be made after the receipt of tenders (because of the comparatively high cost of the frame and foundations).”

Neither did Cadbury-Brown believe that white paint should be used to “give the design its necessary punch”. This, he stated, came from the aluminium cover strips which at the time were bright enough to catch the light and which he believed would later weather, becoming whiter and less metallic but still providing a contrast.

Internally, the stair balustrades of steel tube and mesh were a nod in the direction of Le Corbusier’s at the Immeuble Clarte in Geneva of 1930-2 and the ball finials were being used concurrently at Cadbury-Brown’s Art Library at Nottingham University.

Use of the fall in the ground levels and terracing gave considerable spatial drama to the site and buildings. Viewed from the playground the Junior block rises up dramatically behind the Infants’ block, enhanced by mature trees at different levels, bringing to mind Le Corbusier’s dictum that the key ingredients of urbanism are sun, space, and greenery – only after them come steel and concrete.

1 *Dunnett, James Architectural Research Quarterly supplement, vol 10, supplement 1, 2006, p5*
2 *Richards, J M The Architects’ Journal, 14 February 1957*

Ashmount School has an intellectural quality lacking in other schools of the period, with a reduction to first principles found in the pioneering schools of the 1940s. It was also set apart from the other schools by its mastery of detail, so typical of Cadbury-Brown, especially the solution of the top of the curtain wall without a projecting coping.

Fifty years after it was completed Ashmount Primary School is now, unsurprisingly, in need of repairs, but the beautiful and sophisticated design has stood the test of time and shines out little altered. Those inappropriate alterations that have taken place could be reversed to once again emphasise the elegant skin and precise finish.

Although Cadbury-Brown’s design was intellectual and elegant he never lost sight of the fact that this was a low-cost building that was intended for use by children who would enhance it with their own creativity.

The Importance of Ashmount School in the Development of the Curtain Wall

To understand the development of the curtain wall a brief outline history has been given in Appendix II From this it is evident that not only is the school a particularly early use of a free-standing curtain wall, created at the time when there was virtually no commercially developed system available but it appears that it was the first time in Britain a building of any scale had been completely clad in a glass membrane.

The Importance of Ashmount School in Cadbury-Brown’s Oeuvre

Cadbury-Brown had designed a single primary school at Harlow New Town in 1952, with separate junior and infants blocks around a courtyard, but the commission for Ashmount School gave him the opportunity not only to design substantial buildings but to put into practice his modern movement ideas.

He designed one further school in 1961-3 at Grove Vale, Great Barr in West Bromwich where he surrounded two octagonal assembly halls with pairs of classrooms in single storey pavilions set into the hillside. However, neither of the Harlow school nor that at West Bromwich have any design relationship to Ashmount apart from their whole form is adapted to their sites and generates a formal language.

Arguably Cadbury-Brown’s best known buildings are the Royal College of Art (1956-62) where he worked with Sir Hugh Casson and Robert Godden. While these powerful buildings and their setting, characteristic of Modern Movement urbanism, are of considerable importance in his oeuvre, Ashmount School, for long little known, must rank with nearly as much importance. It was at the time of building an architecturally sophisticated exercise in advanced metal and glass aesthetics, making clever use of a difficult site. Although Cadbury-Brown designed many other high quality buildings none were as ground breaking, or perhaps as exciting as Ashmount School.

Significance

English Heritage assessed the building and produced a report in September 2005 which concluded that the building was not worthy of listing as, although the architectural interest was acknowledged, it was stated that the "School has suffered from some material failure and alteration and, on balance, it lacked the very special architectural interest required to recommend buildings of this post-war date for listing". As can be seen from this current report, the alterations to the building are fairly minimal and, for the most part, would be reversible.

The argument that the building is in poor condition in some areas is also slightly curious. In many previous cases a lack of maintenance of a building has not been especially material in its assessment of significance, indeed to do so could give a regrettable direction to the upkeep of other notable properties. It would follow that the condition of a building should not be greatly considered in its assessment of significance unless it is approaching the point of substantial or total loss, in which case this would have more bearing.

At Pimlico School in Westminster the decision of the Secretary of State and results of the Public Inquiry created a precedent whereby the success and performance of the building were important to consider as well as its aesthetic and formal qualities.

There is no doubt that the condition of Ashmount School has been deteriorating, especially the façades, in recent years. However, the overall significance of Ashmount Primary School must be considered to be relatively high. This applies to the design of the three school blocks and the way that the site has been utilised. Much of the original architectural detail is quite important in particular the corner junctions in the façades and the eaves detail. The terraced grounds are unusual and the retained and mature trees are of significance.

The internal plan form is of significance only in as much as it affects the structure of the buildings, e.g. the stairs, glazed links, the open air teaching terraces. The layout of the classrooms was fairly standard and is not of high significance.

Later additions such as the huts, the inserted classroom, the inserted reception area, the external corridor are of low significance and their removal would be beneficial in reading the originally conceived form of the big complex (if problems which led to their addition could be resolved more sympathetically).

The Pressures for Change

A number of separate studies of Ashmount School have been carried out in recent times. Concerns regarding the overall condition of the building have already been referred to above, and some of these do appear to have health and safety implications. We understand that this has led to the installation of a temporary scaffold on the playground side of the Junior School block, and temporary timber entrance porches at the main entrances through the elevations on the west side of the site. It should be pointed out that, as part of this particular study into the assessment of the significance of the building, the methodology and reasoning behind the installation of this temporary protection has not been explored. A number of other criticisms have also been raised by the head teacher, and these were indeed recorded in the English Heritage report of September 2007. These include difficulty controlling the internal environment of the building - especially the temperature at particular times of the year, inadequacy of some of the circulation spaces, especially the staircases, and the connectivity, or lack of, between some areas of the building. It is clear that this will have been the main reason behind the installation of a rather unsightly modern corridor addition skirting around the outside of the Halls Block to connection the infants and junior areas.

It should be noted that a separate report (Part 3) as part of this suite of documents produced by Purcell Miller Tritton LLP, examines the fitness of the current building provision in the context of best practice today (Building Bulletin 99). Included in this report will be an assessment of current performance plus also some suggestions of how this might be improved to optimise the nature and provision of the accommodation to suit current education practice and aspirations.

There will, of course, be pressures for change. At the very least, and assuming an ongoing education use on this site, alterations to the existing buildings should be expected. Clearly one of the best ways of ensuring the long term survival of a building of importance is to maintain it in active use. It is acknowledged that this can create conflict in order that the accommodation can be improved to suit the occupancy. To a certain extent this is already accepted by Planning Policy Guidance notes. The Purcell Miller Tritton report into the education offer presented by the buildings on site will identify the extent of alterations that should be considered desirable.

There remain however other options for this site and one of these will include departure of the School itself, and conversion of the buildings for some other use. Initial thoughts are that residential units would be the most suitable, perhaps with some shared provision in the corner halls block. A new site would also need to be completed for the School and there may be significant costs and disruption in this.

The scope of this report does not include the identification and development of alternative sites for the School.

Should sufficient pressure be imposed for the School to relocate away from the site, then the initial view is that the buildings could lend themselves fairly straightforwardly to conversion.

The final option in terms of the use of the site could be to apply for demolition of all or part of the existing buildings in order to perhaps accommodate a new school within the same site or, more drastically, clear the site for a redevelopment under a new usage.

The starting point for this particular study was an initial visit by Purcell Miller Tritton LLP at the beginning of 2007, where an initial view was sought on the likely significance of the building. This was in the context that at some point Islington Council may wish to look towards its demolition. The initial view of Purcell Miller Tritton at that point was that the building appeared to be of some significance, however background research needed to be carried out in order to assess this more objectively.

Having completed this study, the conclusions on its significance are noted above.

In this context it is felt that any application to demolish and clear the site for redevelopment is likely to be strongly resisted from various quarters and has significant risk of being turned down.

This raises the question of whether any parts of the building and site might be considered of more significance than others, and therefore might be suitable for a selective approach to demolition.

It is confirmed that, besides the juniors', halls and infants' blocks, none of the other building structures are of any real significance (e.g. caretaker's house and temporary accommodation huts), and permission might be obtained for their clearing away without difficulty.

This report concludes that in particular the composition and modelling of the juniors' halls and infants' block is part of a greater whole, especially when assessing the context of the sloping site, and previously existing mature trees around which the school was constructed in the 1950s.

Any application to demolish any of the three principal component parts (juniors, infants, halls) is likely to be facing stiff opposition. In summary, however, this report suggests that the block of greatest significance is the main junior one, followed by the infant school building. The corner halls block provides a very important architectural and physical link between the two teaching blocks, although from its appearance and sometime problematic internal circulation arrangements the halls area is probably of the lowest individual significance.

Finally, one needs to look at the façades of the building made up of the Hills curtain walling system. As noted in this report, the condition of these façades are very poor indeed and, coupled with difficulties in thermal performance, it is likely that a replacement will need to be sought in the near future.

Purcell Miller Tritton's Part 2 document reviews alternative façade systems, their performance and likely adherence to the original architectural concept. It is perhaps slightly unusual and could be argued that replacement of one of the more significant elements of the original design might result in some downgrading of the significance of the building. It should be noted, however, that it is the aesthetic and formal qualities of this façade which are of high importance and this could be retained should an accurate and appropriate replacement system be available. Due to the relatively short life of the building to date compared to other more notable historic buildings, replacement of significant elements may be seen as surprising, however it should be noted that many of the buildings of a significantly greater age may well have been subject to similar extents of replacement but in a more piecemeal fashion and over clearly a much longer period. It should also be noted that Cadbury-Brown has himself stated that if a double-glazed system could have been provided within the budget for the original building, then this is the approach he would have employed.

ARCHITECTURAL DETAILS

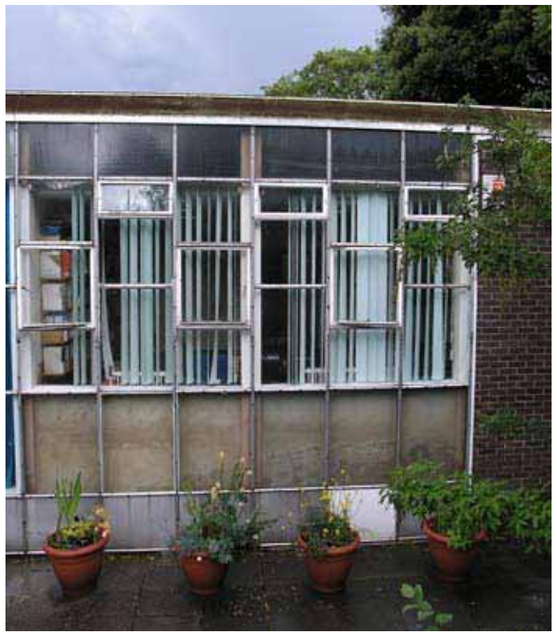


Fig. 89: Staff Room elevation to Hornsey Lane

Fig. 90: Junction of glass with brick, showing plastered frame, Halls Block

Fig. 93: Detail of skyline termination, now with ashpalt, Halls Block

Fig. 91: Steel detail, Reception

Fig. 92: Window detail Halls Block

Fig. 94: Halls Block external lean-to corridor

Fig. 95: Window & stanchion detail, Junior Block

Fig. 96: Stair detail, Junior Block

Fig. 99: Junior Block Reception - detail of steel frame, brick & glazing interface

Fig. 100: Angle detail showing stanchion & glazing at angle, Junior Block

Fig. 97: Glass angle, rear of Junior Block

Fig. 98: Juniors' Hall elevation to Hornsey Lane

Fig. 101: Updated girls' lavatories, Junior Block

Fig. 102: Updated girls' lavatories, Junior Block

Fig. 103: Window details, Junior Block

Fig. 104: Window details, Junior Block

Fig. 105: Window details, Junior Block

Fig. 106: Infatns' Block entrance stair

Fig. 107: Kitchens elevation to Ashmount Road

Fig. 108: Infatns' Block spiarl stair & Halls Block external corridor

Fig. 109: Infatns' Block spiarl stair

Fig. 110: Gap between rear of Infants' Block & lean-to corridor

Fig. 111: Infants' Block frame detail

Fig. 112: Infants' Block window detail

Fig. 113: Glass angle detail, Infants' Block

Fig. 114: Infants' Block entrance glazing details

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Ordnance Survey Maps

TQ2987 1952, 1954, 1967

Interview Notes

Christ, Kelly (Purcell Miller Tritton LLP). Interview with H.T. "Jim" Cadbury-Brown, September 2007 in Aldeburgh, Suffolk

APPENDIX I - H T CADBURY-BROWN BIOGRAPHY

Henry Thomas “Jim” Cadbury-Brown was born on 20 May 1913 in Hertfordshire and following Westminster School and the Architectural Association School he travelled on the continent visiting Germany, Vienna etc.

1935-6 he completed his formal training in the office of Erno Goldfinger and joined the MARS group. He kept in contact with Goldfinger, whose work he greatly admired, and did occasional drawings for him. In 1949 he met his future wife, a young American architect, Elizabeth Elwyn, in Goldfinger’s office to work on the Festival of Britain. They were married in 1953 and “Betty” played a central role in his practice and personal life until her death in 2002.

Prior to the outbreak of World War II (Cadbury-Brown served in the Army from 1939-45) he won an open competition for British Railways offices and moved to a flat and offices at 17 Clarges Street,Mayfair. Following a visit to the Paris exhibition in 1937 he designed a stand for the Design & Industries Association, Olympia and participated in the MARS Group exhibition at New Burlington Galleries. In 1939 he chaired the RIBA exhibition committee for “The Small House”, designed the ‘Changing Britain’ display for New York World’s Fair and the Public Welfare Exhibit in the British Pavilion with Ralph Tubbs (another of Goldfinger’s pre-war assistants).

He resumed practice in 1946 and besides work for the Council of Industrial Design and other bodies, he taught at the Architectural Association (until 1949). In 1947 he organised the practical side of the CIAM 7 Conference and began his long involvement with Aldeburgh with a first scheme for a small Festival opera house (unexecuted).

The Festival of Britain in 1951 saw his pavilion designs for Land of Britain and People of Britain, the Turntable Café, the Concourse layout and fountains. He also found time to organise the CIAM 8 Conference. Involvement in these congresses allowed him to get to know the whole core of the European Modern Movement. 1952 saw Cadbury Brown teaching sculpture one day a week at the Royal College of Arts (which he continued until 1961) and executed designs for Cook’s Spinney housing and primary school, Harlow New Town, the pre-fabricated Royal Pavilion at the Royal Norfolk Agricultural Show, and further designs for pre-fabricated houses and schools for Boulton and Paul Ltd.

In 1953 he designed the coronation decorations for Berkeley Square, further exhibition stands and further housing in Harlow New Town.

Cadbury-Brown’s break into architecture for education came in 1954 with the commission from London County Council for Ashmount Primary School (completed 1957), and the interiors of the Library and Fine Art Gallery in the Portland Building at Nottingham University. Also in this year was Albion Gardens housing for Hammersmith Borough Council.

Prestigious worked followed in 1956 with the commencement of designs (with Sir Hugh Casson and Robert Godden) for the Royal College of Art first phase. He also designed the conference room interior at the Time Life Building, New Bond Street and was appointed visiting critic at the Graduate School of Design, Harvard University.

In the ten years between 1957 and the formation of the Eric Lyons, Cadbury-Brown group partnership, he designed more interiors and housing, a Studio for Benjamin Britten at Aldeburgh and one for Henry Moore at Hampstead, Gravesend Civic Centre, Grove Vale Primary School (West Bromwich), halls of residence at Birmingham University and the much publicised Kurt Geiger shoe shop in New Bond Street (destroyed). In 1964 he moved his office and flat to 32 Neal Street, Covent Garden.

The 1967 partnership (afterwards Eric Lyons, Cadbury-Brown, Cunningham and Metcalfe) was formed to execute Lyons’ scheme for housing at World’s End, Chelsea. Within this scheme Cadbury-Brown designed Ashburnham Primary School, Church and Community Building. As consultant architect to the University of Essex he designed lecture halls and married students’ housing.

Recognition of his work came with an OBE in 1967 and in 1971 he was made an associate of the Royal Academy of Arts. This year also saw him involved in the campaign to save Covent Garden. In 1975 he was elected a full member of the Royal Academy and Professor of Architecture (a post he held until 1988).

Housing in Tavistock Crescent, Notting Hill for the Royal Borough of Kensington and Chelsea/City of Westminster was executed 1977-81 and Cadbury-Brown also designed the John Flaxman and Stanley Spencer exhibitions at the RA.

His partnership formally closed in 1984 on the expiry of the lease at Neal Street, but he then took on the Surveyorship to the RA where in the following years he designed the Library, Friends’ Room and Print Room. Cadbury-Brown’s last works were the redecoration of Dyers’ Hall, City of London and a timber footbridge over the River Wey, between Guildford and Godalming in Surrey.

APPENDIX II - JOHN WILLATTS BIOGRAPHY

John Willatts took a first class honours degree in Mechanical Sciences at Queen's College, Cambridge but then trained as a sculptor at the Royal College of Art where Cadbury-Brown was one of his tutors. Later, he took a doctorate in psychology and divided his time between working as a sculptor and carrying out research into the formal structure of pictures. He is an influential and authoritative figure in the field of drawing research and scholarship, having published and lectured widely. Willatts is now an Honorary Research Fellow of the University of Birmingham.

APPENDIX III - AN OUTLINE HISTORY OF THE CURTAIN WALL

As with many inventions, the "curtain wall" developed contemporaneously in America, Europe and Britain for different reasons with different techniques and materials. Both in Europe and America prototype curtain walls developed initially in the early C20 as individual solutions to getting more light into department stores and factories.

In Europe, noted early examples of buildings where the wall was treated as a glazed screen are the Maison du Peuple, Brussels, by Horta (1896-9), the Samaritaine Department Store, Paris, by Frantz Jourdain (1905) and a department store in the Rue de Rennes by Gutton which had an exposed frame with the glazing set between the columns and continuous over the first and second floors. Two early approaches to the all glass factory wall were Behren's AEG Turbine Factory in Berlin, 1909 and Gropius and Meyer's Fagus Factory at Aalfeld, 1911-13. Both these buildings, however, inserted large panels of glass between structural members.

The theoretical exploration of a tall building completely clad in glass seems to have been initiated by Mies van der Rohe with his two skyscraper projects of 1919 and 1920-1. Neither skyscraper was built, not least because at that time the technical problems would have been too great.

The first true curtain wall seems to have been created in America by Willis Polk for the Halliday department store building in San Francisco, 1915. The need here was to let light into the building and was achieved with columns set back from the façade. Nothing like this was seen in Europe until the building of the Bata shoe store in Prague (1927-9) designed by Ludvik Kysels, although this still did not have a full glass façade.

In Britain one of the earliest examples of a glass wall was the Daily Express building in London, 1929-31, by Owen Williams in collaboration with Ellis and Clarke. At the same time Owen Williams's pharmaceutical factory for Boots at Beeston near Nottingham, 1930-2 was one of the outstanding inter-war factory designs. One of the world's largest reinforced concrete buildings at the time, it had originally been planned with glazing that was continuous past the intermediate floor slab, but plans were changed and each floor was in the event glazed separately.

While these were substantial essays in the use of glass walls, neither had glazed curtain walls set on frames that were carried forward of the structure as in the Bauhaus, Dessau (1922-6, Walter Gropius) and Van Nelle, Rotterdam (1927, Brinkman & van der Vlugt) workshop and factory buildings. Both the Daily Express building and Boots factory relied on concrete walls at floor levels for fixings hidden by Vitrolite panels. It had, apparently, in the case of the Daily Express building, been intended to have the facing glass clear of the wall but in the event the gap had to be filled with pumice concrete to meet fire protection requirements. Although the Peter Jones department store in London, 1936 by W Crabtree, came closer to the form of the 1950s curtain wall, it too had concrete back-up walls with simple sash windows between the mullions, used both as windows and as a cladding for the painted walls.

The first British use of what would now be recognised as a glass curtain wall appears to be T P Marwick & Son's St Cuthbert's Co-operative Association store in Edinburgh, built in 1937 with a complete glass window-wall apparently to let light into a narrow site. Here the glazing was carried in front of the structure on small cantilevers from the floor slab and there was therefore no fire-stopping between the glass and the floors. Although built nearly twenty years

after the Hallidie Building in San Francisco it appears to be a unique building in Britain and well ahead of its time. It was, though, hardly published and would seem to have had little, if any, influence.

One of the earliest glass curtain wall manufacturers in Britain was Henry Hope who, in the 1930s, marketed cold-formed steel sections welded together: this system was used at Peter Jones department store. Where as in America the push behind the development of curtain walling was the use of aluminium, in England it appears to have been the glass manufacturer, Pilkingtons, who in an advertisement of 1937 extolled the virtues of curtain walls in the "New Glass Age".

However, in the interwar period the curtain wall was an aesthetic ideal, appearing before the development of the technology. Much economy driven technical research and experimentation was carried out in America at this time which allowed them after the Second World War to erect both the Alcoa and Equitable Life buildings with prefabricated aluminium panels fixed to the face of the building at the edge of the floor slabs and with the omission of a back up wall.

In 1952, the same year as the construction of the Alcoa and Equitable Life Buildings in Pitsburgh, New York saw the construction of what must be regarded as the landmark buildings in glass curtain walling, the UN Secretariat and Lever buildings. Although both presented similar architectural images, they used quite different technologies to achieve their results. The UN building used standard sliding ash windows while the Lever dispensed with opening lights as a means of limiting its air conditioning load.

Yet even by this time the need to modify existing window technology had not been recognised. Both the UN and Lever buildings were reported as having "…. developed loose, leaking windows within a year of their installation because the putty has dried out, cracked and fallen away."[1]

With the outbreak of the Second World War British manufacturing was thrown into the war effort and it was not until the post-war Hertfordshire experiments with prefabrication for schools, discussed above, that the virtues of the curtain wall were again given consideration. There was not of course, the same drive in post-war Britain as in America to develop the curtain wall. In London the 80 foot height restriction remained in force despite attempts to break through it. There had not been the same need to develop a better technology and the only technical advantage provided by a glazed wall was the amount of light it provided. Buildings were one-offs, the technology in each case developed for the particular building, and they continued to be so as architects explored the aesthetic possibilities of the available systems of construction.

In 1952 there were studies at Bryanston School, Dorset, science laboratories, designed by Architects Co-operative Partnership, in the use of curtain walling. The building was put up 'as an experiment in order to study, under site conditions, a new structural cladding system which is to be used for certain local authority school buildings'.[2] This particular building used T-section bars as the carrier for the glazing.

Two years later Hope Windows used pressed metal covers over a 4 x 4 inch T-bar structural mullion at Coventry College of Art and Technology. Hope had already been able to export its expertise for the design of pressed-steel mullioned curtain walls to the States (a laboratory building at Drake University in 1948), but there is no indication that the firm was aiming to develop a market for a standard system there. By 1956 they had developed their Windowgrid curtain walling system which was for the LCC's Parliament Hill Secondary School. This system relied upon simple galvanized steel bars to form the mullions, varying from a 3 x 5/15 inch to 4 x 3/8 inch section. Rather than pressed metal, this was then covered by an aluminium top hat section to carry the windows and a variety of wall panels, either glass, metal plywood or asbestos based.

A slightly earlier and probably the first commercial British curtain wall system was the aluminium structure of Williams and William's, Wallspan. This used hollow extrusions to form mullions and transoms with special joint spigots to take up thermal movement, the whole system designed to carry any type of window and a wide range of infill panels.

Contemporaneously, it seems, architects Cadbury-Brown at Ashmount School, London, 1954 using an adaptation of the Hill's system, and Gollins, Melvin Ward at Electrin House, 93-7 New Cavendish Street, London, 1955 using William and Williams Wallspan system designed two seminal curtain wall buildings. While Cadbury-Brown was clearly influenced by Mies van der Rohe and adapted the school system to create a membrane of glass around the building, GMW's influence seems to have come from America. It featured in a Williams and Williams advertisement, billed as "The first building in the West End of London to employ a standard curtain wall consistently over all its street façades". To comply with LCC fire regulations, this building had to have a reinforced concrete stub wall behind the blue-green Plyglass infill panels.

By 1957 I McCallum was writing in the Architectural Review[3] that the curtain wall offered, "…. the promise – and the problems – of a new vernacular." Its virtues were lightness (compared with masonry and brick), thinness (providing extra usable floor space) and economy (in the cost of the wall and in the speed of erection). The chief drawbacks, as perceived by McCallum at that date, were the complexities involved in making allowance for expansion and contraction, weatherproofing of joints and the experimental nature of some the infill panels used. He foresaw aesthetic problems in commercialized prefabrication, particularly as the as the first stages had taken place largely without the close participation of architects to refine the designs.

1 *"Sealing the Glass Curtain Wall", Architectural Forum 103 (August 1953): 132-39.*
2 *Studies at Bryanston School, Architect and Building News 202 (1952), pp.630-3*
3 *I. McCallum 'Syntax: The Contribution of the Curtain Wall to a New Vernacular', Architectural Review 121 (1957), pp.299-336*

PURCELL MILLER TRITTON

architects, designers and historic buildings consultants

ASHMOUNT SCHOOL, ISLINGT N

PART 3: EDUCATION STUDY

SEC ND DRAFT

October 2007

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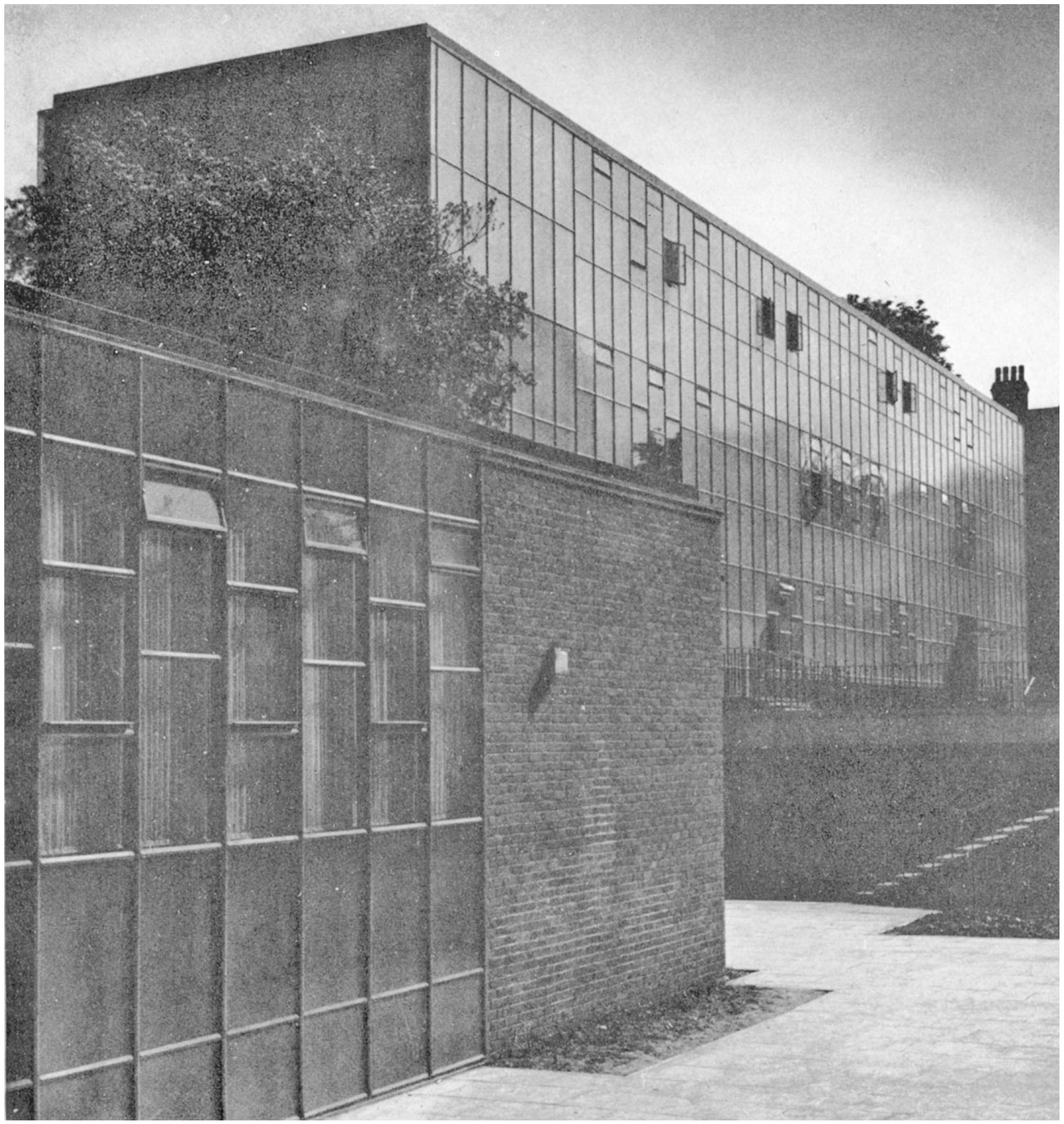


Fig. 1: The Halls Block (left) & Junior Block front elevations, c1958

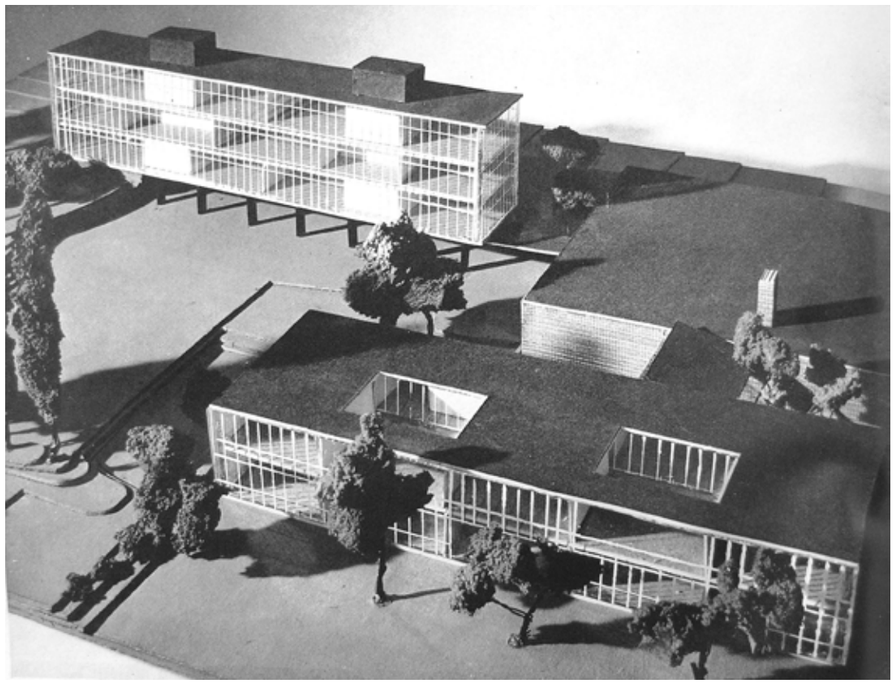


Fig. 2: Architectural model showing the Junior Block (top left), Halls Block (centre right) & Infants' Block foreground

Fig. 3: Junior Block elevation to Hornsey Lane

1.0 INTRODUCTION

Ashmount Primary School is a 2 form entry Primary School with a 52 FTE Nursery. It is located on Hornsey Lane, in the London Borough of Islington. The school occupies a generous site for an inner city location. The site provides games courts, soft and hard play areas which are larger than BB99 requires for a confined site. The sloping site includes many mature trees and play spaces at various levels providing a very attractive environment, but with inherent practical problems.

The existing school accommodation is provided in 3 linked blocks on split levels:

- Block A, two storey, Infant and Nursery Accommodation
- Block B, four storey, Junior Accommodation
- Hall Block, single storey, 2 Large Halls, Kitchen and Staff Accommodation

The school was designed and building work was completed in 1957/8. It is locally listed.

This report is Part 3 of a suite of documents and should be read with:

Part 1: Building Assessment
Part 2: Façade Study

A separate costings report, associated with these proposals, is being prepared by Davis Langdon LLP.

The original school was designed as a 3 form entry and therefore the existing school buildings provide educational accommodation that is generous in areas compared with BB99 for a 2 form entry Primary School.

However the existing buildings offer a poor quality educational environment and do not comply with current standards of Primary School design. This report looks at these current problems, and proposes how, as a refurbishment project, the existing accommodation might be improved enough to satisfactorily address these current concerns and, as far as possible, meet the requirements of BB99.

Fig. 4: Junior Block classroom

Fig. 5: Junior Block classroom

Fig. 6: Junior Block classroom

2.0 EDUCATIONAL REQUIREMENTS

Part 3 of the feasibility study is to develop a scheme to describe what would be required to refurbish the existing school buildings to provide a new Primary School to comply with current standards of school design.

The feasibility study needs to identify the school's current problems and consider the following items:

- Thermal performance of the building
- Circulation and layout
- Toilets
- Accommodation provision compared to BB99
- DDA Accessibility
- Community use of the building
- Headteacher and staff requirements
- BREEAM assessment, aiming for "very good" or higher.

The proposed refurbishment feasibility designs explore and attempt to resolve the schools current problems of suitability of condition.

The proposals to refurbish the school to provide accommodation suitable for the delivery of the modern curriculum in a fully inclusive environment then need to be reviewed; considering the following:

- Asbestos removal
- Phasing of the works
- Maintaining an operational school throughout the works on site.
- Residual educational suitability issues
- Residual environmental, building condition issues
- Costings

The objective of the study is to determine the feasibility to refurbish the existing school, to enable the local education authority, the school and other stakeholders to reach a decision on the future development.

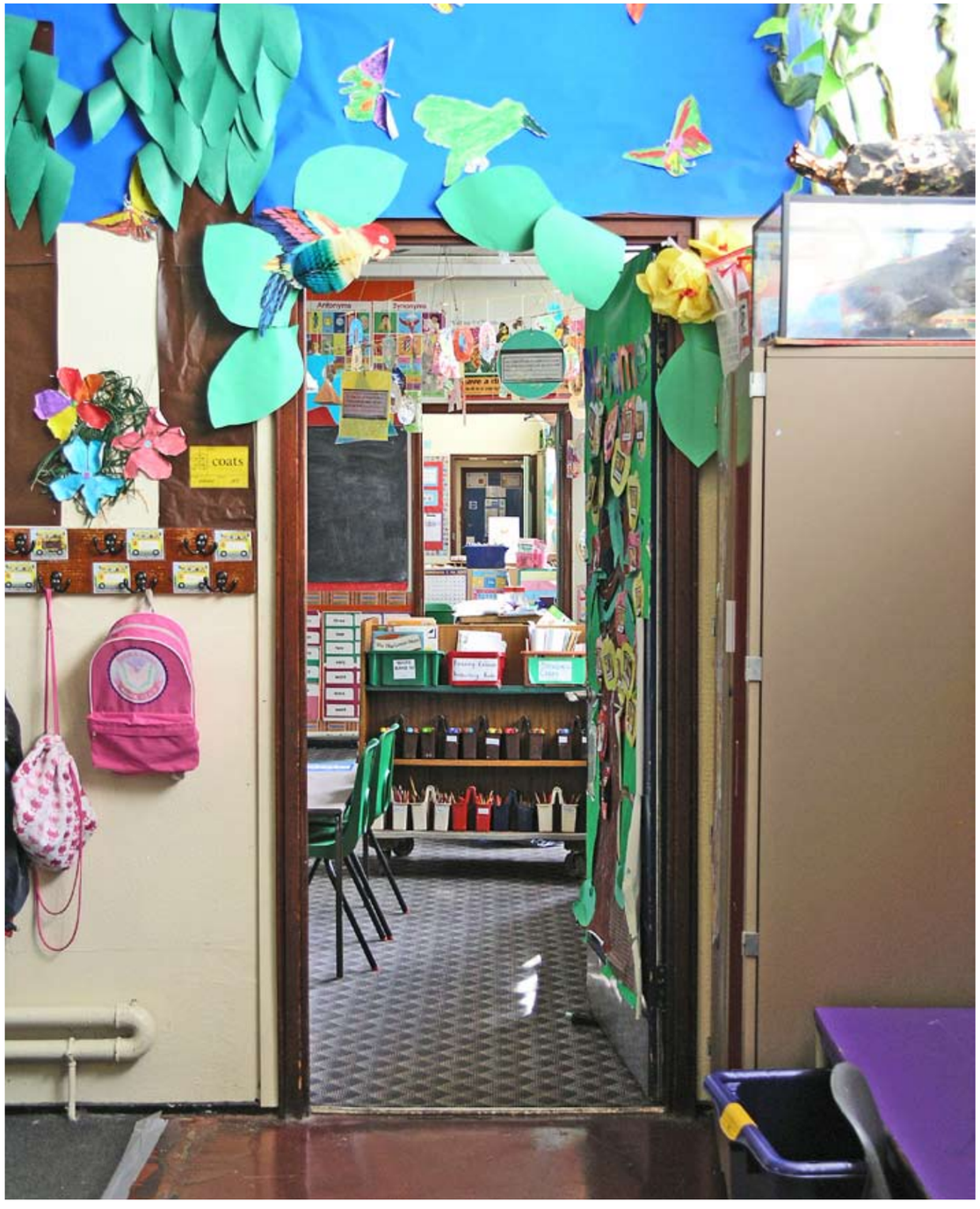


Fig.. 7: Junior Block enfilades

Fig. 8: Junior Block bathroom cubicles

Fig. 9: Junior block cloakroom

3.0 METHODOLOGY

Purcell Miller Tritton attended an initial briefing meeting with the Education Authority, the Headteacher and Facilities Manager in September 2007 when the objectives of Part 3 of this feasibility study and some of the problems of the existing school were discussed.

The existing building asset plans were made available and a site visit enabled the team to view most areas of the school.

Purcell Miller Tritton assessed the number and size of the existing teaching and non teaching spaces. A comparison area schedule has been prepared and is included in Appendix …..

The accommodation area schedule compares:

1. The BB99 requirements for a 2 form entry Primary School
2. Ashmount School's existing accommodation
3. Difference between 1 and 2
4. Option A proposals - a refurbishment within the existing envelope (more desirable given the architectural significance of the building)
5. Option B proposals - a refurbishment including new extensions (creates slightly better accommodation but at the expense of the quality of the architecture)

The accommodation schedule has a coloured key to highlight where:

- Area is over requirements of BB99
- Area meets requirements of BB99
- Area is under requirements of BB99

The schedule shows that Option A provides accommodation of an area that complies with BB99 or is more generous; excluding the following:

- two class bases are under size by 5m²
- ICT Room is under size by 13m² (as existing)

Option B provides accommodation of an area that meets the requirements of BB99 or is more generous.

4.0 FINDINGS OF THE STUDY

Existing School – Educational & Operational Difficulties/Deficiencies

Managing Pupil Movements

- logistics of moving junior pupils from 4 storey block to playground 4 times a day
- poor circulation through class bases/distraction
- insufficiency of fire escapes
- some fire escapes do not issue to external areas
- location of WCs
- inadequate width of staircases in junior block

Environment

- overheating or underheating
- too bright/glare
- poor acoustics
- no provision of drinking water to class bases
- no provision of sinks in class bases

Location/Number of WCs

- 4 storey junior block only has WC on ground floor
- allowing children to go to the toilet unsupervised can be problematic
- location of WCs makes community/out of hours use difficult
- insufficient staff WCs

Curriculum

- some undersized classrooms
- lack of storage space
- lack of grass play space

Security

- parent issues with access into school grounds/building
- children can access the main exit doors when travelling un-monitored to the ground floor WC's
- building cannot be zoned easily

Services

- existing SW drainage is very poor and backs up
- foul drainage has problems, tree roots have disrupted the drains causing back ups and leaks
- flow and return heating does not reach 4th floor of junior block
- fire alarm system is not reliable

Fig. 10: Inappropriate timber porch to Junior Block front entrance

Fig. 11: Glass angle, rear of Junior Block

Fig. 12: Part of the lean-to corridor

Fig. 13: Window details, Junior Block

External Areas

- external maintenance – the tree roots are breaking up the playground causing trip hazards, this is a major ongoing safety, maintenance and cost problem
- tree surgery, to maintain safe status because of the number of trees in the grounds, is very expensive (all trees on the site are protected)
- no vehicular access for fire engine or ambulance to the playgrounds
- existing stepped level changes prohibit access and cause maintenance and trip hazards
- no grassed play areas necessitating off-site games activities

Extended Use of School Buildings

- lack of adaptability for evening events
- no storage for group activities
- no separate access or security for rest of school when halls in use
- poor on site parking
- lack of toilets near halls and no accessible toilet
- absence of emergency/security lighting for access and escape

Building Fabric

- roof leaks
- high heating costs due to high heat loss
- no separate access or security for rest of school when halls in use
- no acoustic separation between halls

Asbestos

- Asbestos removal required

DDA

- the only safe level access into the building is via an external hall door
- no accessible WC within the building
- 2 and 4 storey buildings, no lift access
- split level play areas accessed by steps
- no designated DDA parking

Fig. 14: Infants' Block frame detail

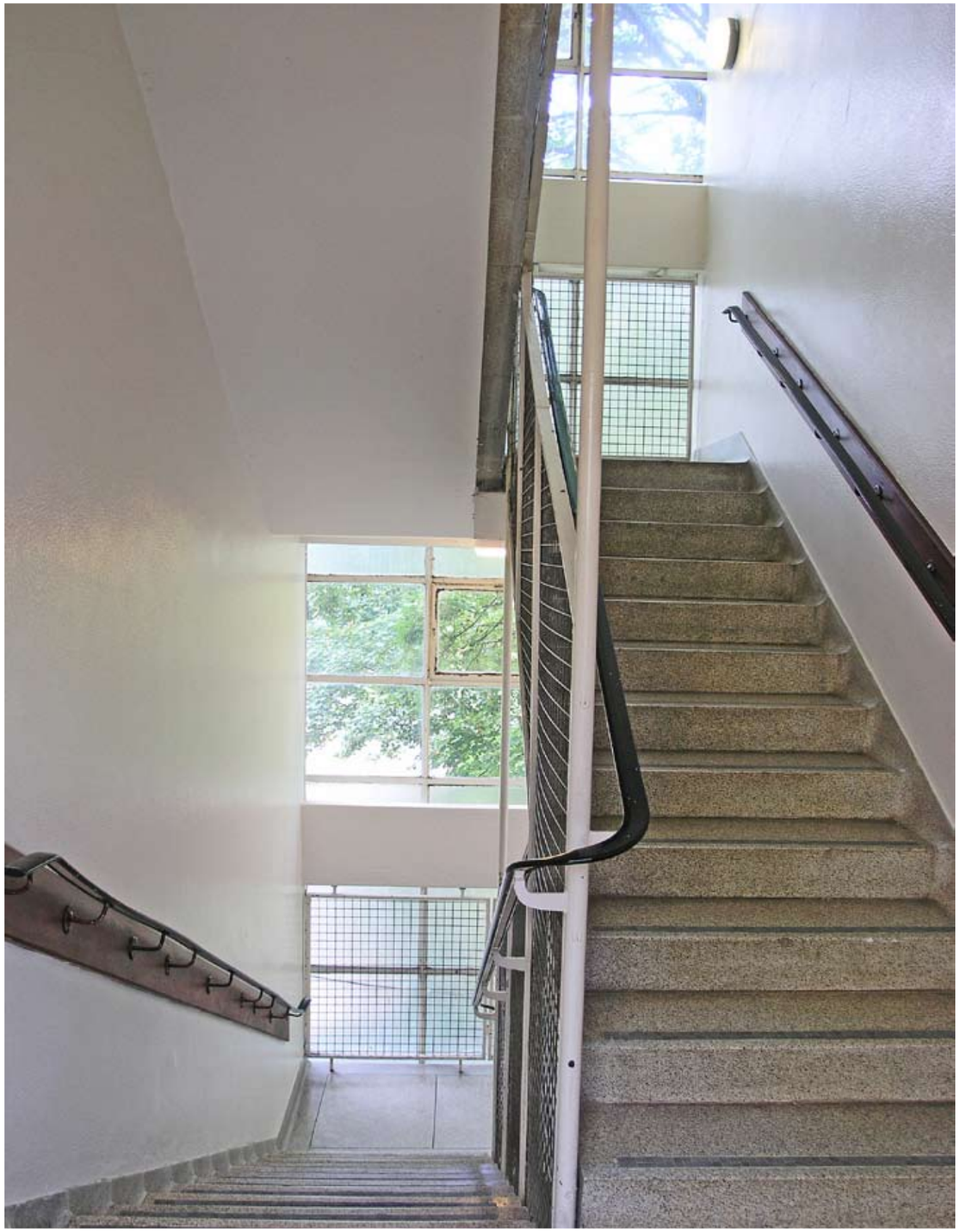


Fig. 15: Junior Block stairs

5.0 THE PROPOSALS FOR REFURBISHMENT

Option A: Proposed refurbishment contained within the existing building envelope
Option B: Proposed refurbishment with new build extensions

The proposed options incorporate improvements in the teaching environment and teaching accommodation.

The following have been identified as the principal elements to be addressed:

- Provision of teaching accommodation in line with BB99
- Provision of support space in line with BB99
- Improved circulation and layout
- Improved provision of WC's
- Making the buildings 'accessible' to physically impaired users and visitors and other disability groups under the DDA
- Improved internal environmental conditions
- Improved internal and external fabric
- Reduced energy consumption
- Improved external environment

5.1 Option A

This includes a major refurbishment utilising the existing structure of the original building and maintaining the basic characteristics of the original design.

The refurbishment assumes that the existing fabric and services have reached the end of their useful life but the basic structure of the building is sound. The structure and frame are retained and the internal layouts of the building are replanned. The curtain walling will be replaced in its entirety along with the building services including mechanical and electrical services, heating, hot and cold water and fire alarm.

The refurbishment will retain the envelope size of the original building envelope with a revised internal layout where appropriate to provide space which is closer to current educational needs.

Block A - The ground floor of the infants block (nursery area) has been internally remodelled and extended into the cloakroom area to provide appropriate size accommodation. On the first floor of the infants block the external terrace has been removed and the internal wall arrangement and layouts have been amended to provide appropriate size classbases. A lift has been added to this block to provide DDA access to both floors.

Block B - A lift has been installed to serve all four storeys of the junior school block. An accessible WC provision has been made at ground floor. The first, second and third floor have been internally remodelled to provide appropriate size classrooms with allowance in each classbase for a sink and wet area, cloakroom storage and classroom storage.

Provision has been made for a male and a female pupil toilet at first floor level and third floor level. There is provision of a DDA accessible toilet with shower, sluice and changing trolley at the second floor, indicated as a hygiene area. As part of the stripping out of the partitions and the replanning of the upper three floors to provide good size classrooms, an internal corridor has been provided. This removes the circulation through the existing classbases which causes distractions and also improves general circulation and escape in the event of a fire.

The main hall block remains largely unaltered, the existing halls, kitchen and staff room areas are of a generous size. An internal PE store and a community store has been added to the second hall. The wall between the two halls can be acoustically upgraded. A new accessible WC is added to the ground floor entrance area to provide accommodation for the school, visitors and users of the halls out of hours.

The proposed alterations to the layouts are illustrated on the accompanying plans and the resulting room sizes are listed in the comparative area schedules. The proposed refurbishment is contained within the existing building envelope and provides accommodation of an area that complies with BB99 or is more generous, excluding the following:

- Two of the classbases are undersized by 5m²
- ICT Room is under size by 13m² (as existing)

In terms of the noted educational and operational difficulties, the following are addressed by the proposed scheme:

Managing pupil movements
- lift to all floors
- classes reconfigured to have a corridor for remote circulation
- upgrading of protection to fire escapes
- new childrens WC on all upper floors

Environment
- new glazing/cladding for greater thermal and acoustic efficiency and control of glare
- new ceilings where necessary to control internal acoustic environment
- sinks in all classes

Location/Number of WC's
- 4 storey junior block WC on each floor
- toilets nearer to classes to aid supervision
- new accessible WC in entrance area
- some additional staff WC's

Curriculum
- majority of classrooms of sufficient size (see note above)
- additional storage space

Security
- parent issues with access into school grounds/building
- child access to main doors reduced by additional WC's on upper floors
- building can be zoned

Services
- Assumed these will be renewed

Extended Schools Agenda
- new accessible WC near halls increases adaptability for evening events
- new storage for group activities
- possible division by doors for segregation of halls and corridors

Building Fabric
- repair roofs and increase insulation
- new cladding reduces heat loss
- possible division by doors for segregation of halls and corridors
- upgrade walls between halls
- update block A external fire escape

DDA
- new accessible WC within the entrance area
- new lifts to 2 and 4 storey buildings
- it may be possible to remodel the entrance stair to incorporate a chair lift and add accessible parking on the paved area above

The areas which cannot be directly addressed by the scheme option A are:

Accommodation
- two class bases undersized by 5sq.m
- ICT room undedrsized by 13sq.m

Fire escape/circulation
- by careful consideration of the location of new fire doors and upgrading of existing corridors this can be mitigated, together with a robust policy for escape management
- some stair widths are still inadequate as they are fixed by the structural grid size of the building which can be addressed to an extent by management policy, for instance designating 'up' and 'down' stairs. Clearly in an escape situation all stairs are 'down'

External areas
- due to site constraints it is not possible to provide grass play areas
- parents can be managed in their entrance and waiting areas to reduce congestion
- the trees are preserved and therefore the problems of maintenance and tree roots can only be mitigated not alleviated by management policies
- due to site constraints it is not possible to significantly improve fire and ambulance access
- on site parking is not encouraged by Islington
- due to site constraints it is not possible to provide ramped access between play areas without unacceptably reducing the available play space

5.2 Option B

This is for a major refurbishment utilising the existing structure of the original building with a number of proposed new build extensions and a remodelling of the internal rooms to create more class space, toilet accommodation, storage and resource areas together with better circulation and internal communications. This option provides accommodation of an area that meets the requirements of BB99 or is more generous. All of the proposed classbases are of an appropriate size and there is an ICT Room in the infants block and a separate ICT Room in the junior school block.

Block A - The infant school block ground floor has the two nursery classbases and the two reception classbases extended into the playground area at ground floor level. At first floor the proposed extension enlarges the classroom area for the two Year 1 classrooms and the two Year 2 classrooms and allows for a separate infant school, library and ICT Room to be incorporated into this block, improving the infant schools accessibility to their own learning resource centre. An open balcony area is created between the year 1 and year 2 classes. A lift has been added to provide DDA access to both floors.

Block B - A lift has been installed to serve all four storeys of the junior school block. An accessible WC provision has been made at ground floor. The first, second and third floors have been extended towards the two ends to provide appropriate size classrooms with allowance in each classbase for a sink and wet area, cloakroom storage and classroom storage. This also gives the opportunity to remodel the stairs to provide the required widths. Provision has been made for a male and a female pupil toilet at first floor level and third floor level. There is provision of a DDA accessible toilet with shower, sluice and changing trolley at the second floor, indicated as a hygiene area. As part of the replanning of the upper three floors to provide good size classrooms, an internal corridor has been provided. This removes the circulation through the existing classbases causing distraction and also improves general circulation and escape in the event of a fire.

The main hall block remains largely unaltered, the existing halls, kitchen and staff room areas are of a generous size. An internal PE store and a community store has been added to the second hall. The wall between the two halls can be acoustically upgraded. A new accessible WC is added to the ground floor entrance area to provide accommodation for the school, visitors and users of the halls out of hours.

The revised layout and accommodation enables the existing detached music block to be removed.

In terms of the noted educational and operational difficulties, the following are addressed by the proposed scheme:

Managing pupil movements
- lift to all floors
- wider stairs to block B
- classes reconfigured to have a corridor for remote circulation
- upgrading of protection to fire escapes
- new childrens WC on all upper floors

Environment
- new glazing/cladding for greater thermal and acoustic efficiency and control of glare
- new ceilings where necessary to control internal acoustic environment
- sinks in all classes

Location/Number of WC's
- 4 storey junior block WC on each floor
- toilets nearer to classes to aid supervision
- new accessible WC in entrance area
- some additional staff WC's

Curriculum
- all classrooms of sufficient size
- additional storage space

Security
- parent issues with access into school grounds/building
- child access to main doors reduced by additional WC's on upper floors
- building can be zoned

Services
- Assumed renewed entirely

Extended schools agenda
- new accessible WC near halls increases adaptability for evening events
- new storage for group activities
- possible division by doors for segregation of halls and corridors

Building fabric
- repair roofs and increase insulation
- new cladding reduces heat loss
- possible division by doors for segregation of halls and corridors
- upgrade walls between halls
- update block A external fire escape

DDA
- new accessible WC within the entrance area
- new lifts to 2 and 4 storey buildings
- it may be possible to remodel the entrance stair to incorporate a chair lift and add accessible parking on the paved area above

The areas which cannot be directly addressed by the scheme option B are:

Fire escape/circulation
- by careful consideration of the location of new fire doors and upgrading of existing corridors this can be mitigated, together with a robust policy for escape management

External areas
- due to site constraints it is not possible to provide grass play areas
- parents can be managed in their entrance and waiting areas to reduce congestion
- the trees are preserved and therefore the problems of maintenance and tree roots can only be mitigated not alleviated by management policies
- due to site constraints it is not possible to significantly improve fire and ambulance access
- on site parking is not encouraged by Islington
- due to site constraints it is not possible to provide ramped access between play areas without unacceptably reducing the available play space

6.0 CONCLUDING COMMENTARY

In summary it can be seen that significant improvements could be made to the existing buildings in order to provide a better standard of accommodation for the pupils and staff of the school and to provide a more up-to-date learning environment that comes close to achieving the requirements of BB99.

Option B does provide a better standard than Option A, however, this is not without considerable impact on the architecture of the existing building. Part 1 of the study into Ashmount School assessed the architectural and historic significance of the site and buildings and has concluded that any applications made to either demolish or significantly alter any of the three main blocks (Infants, Junior or Halls) could result in significant opposition and carry a fairly high risk of refusal from the local authority. Option B is therefore a somewhat academic exercise in what might be achieved unhindered by consideration for the architectural value of the current buildings.

This report, therefore, strongly suggests that Option A would be the more realistic to pursue as a refurbishment plan which would stand a strong chance of being found acceptable and gaining the necessary statutory permissions. That said, the proposals would not be without some controversy. The most significant issue being the infilling of the first floor infants' external play areas in order to create additional class spaces. There might also be some critical comments about the nature of the changes to the internal accommodation, however, the Part 1 report does conclude that the internal planning of the buildings is of significantly less importance than the exterior views and the composition of the three different blocks on the site.

One of the long-standing problems of the original building was the connection between the Infants' and Junior School Blocks and, to improve this, a more recent corridor has been run around the outside of the Hall Block in a fairly architecturally unsympathetic manner. The Part 1 report stated that it would be desirable to remove this extension and bring the original elevation of the building back to good condition. In order to do this and maintain the practicalities of the covered link, it would appear to be possible to run a slightly reduced size of corridor around the inside of the Hall Block. This might be seen as slightly undesirable as it would of course impact upon the accommodation provided within. In fact, it would result in the current larger hall becoming slightly smaller and therefore the functions within each would need to be swapped over.

The question has also been asked whether it might be possible to dispose of some of the land currently within the control of the school and it would seem that the options for this are relatively limited. The Caretaker's House in the eastern corner of the site could well be sold off other uses, however any other options are likely to have an impact on the provision of accommodation or external areas. The Music Block in the south-west corner, for example, is land-locked and would therefore be of little or of no use for separate redevelopment.

If any option of trying to redevelop a new school on the site were to be taken, perhaps with partial retention of existing buildings (which might be converted for an alternative use), then this would result in a significant squeeze on the available external areas. The consequence of this would be that the new buildings, in trying to limit their footprint area, would need to be of a greater number of storeys. The current Junior Block is already fairly high compared to most surrounding buildings, however, due to the steeply sloping site and the care taken in the composition of the blocks within it, the result is quite comfortable. Should higher buildings, however, be proposed for further down the slope of the site, then due to the proximity of the even lower residential units adjacent, this would appear to be a proposal that might be difficult to achieve satisfactorily.

It would appear therefore that the better option, should education use be retained on this site, would be to consider Option A as shown in this report which would retain the architectural value of the site and the appearance of its principle buildings, yet would provide a significant improvement in the internal accommodation.

APPENDIX A - PLANS AS EXISTING

The following Survey Drawings are supplied:

2809SP - Site Plan

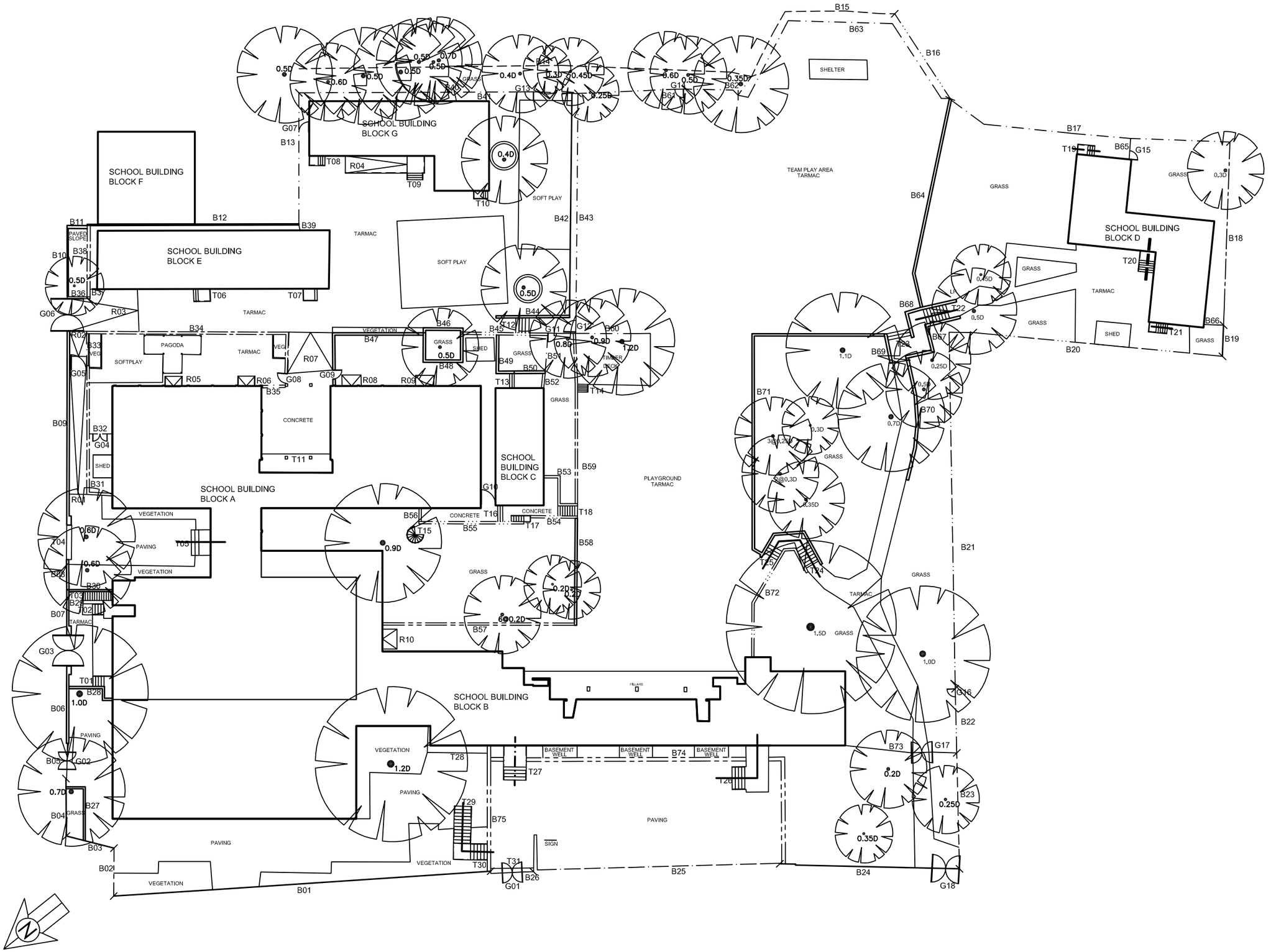
2809AG - Block A Ground Floor

2809A1 - Block A First Floor

2809BG - Block B Ground Floor

2809B1 - Block B First Floor

2809B2 - Block B Second Floor



Notes:

FENCE TYPES

- BRICK & CHAINLINK
- CHAINLINK
- TIMBER FENCING
- BRICK
- RAILING
- BRICK & RAILING
- CONCRETE & RAILING
- TIMBER & CHAINLINK
- BRICK & TIMBER
- CONCRETE & CHAINLINK

DDA INFORMATION

- ABLE BODIED AND AMBULANT ACCESS
- WHEELCHAIR ACCESS

Rev.	Amendment	Date
B	DDA Information Added	May 06
A	Prem Man Accom Added	Mar 05

Project Title:

Asset Management Plan

Site Name:

Ashmount Primary School

Drawing Title:

Site Plan

Drawing Number:

2809SP

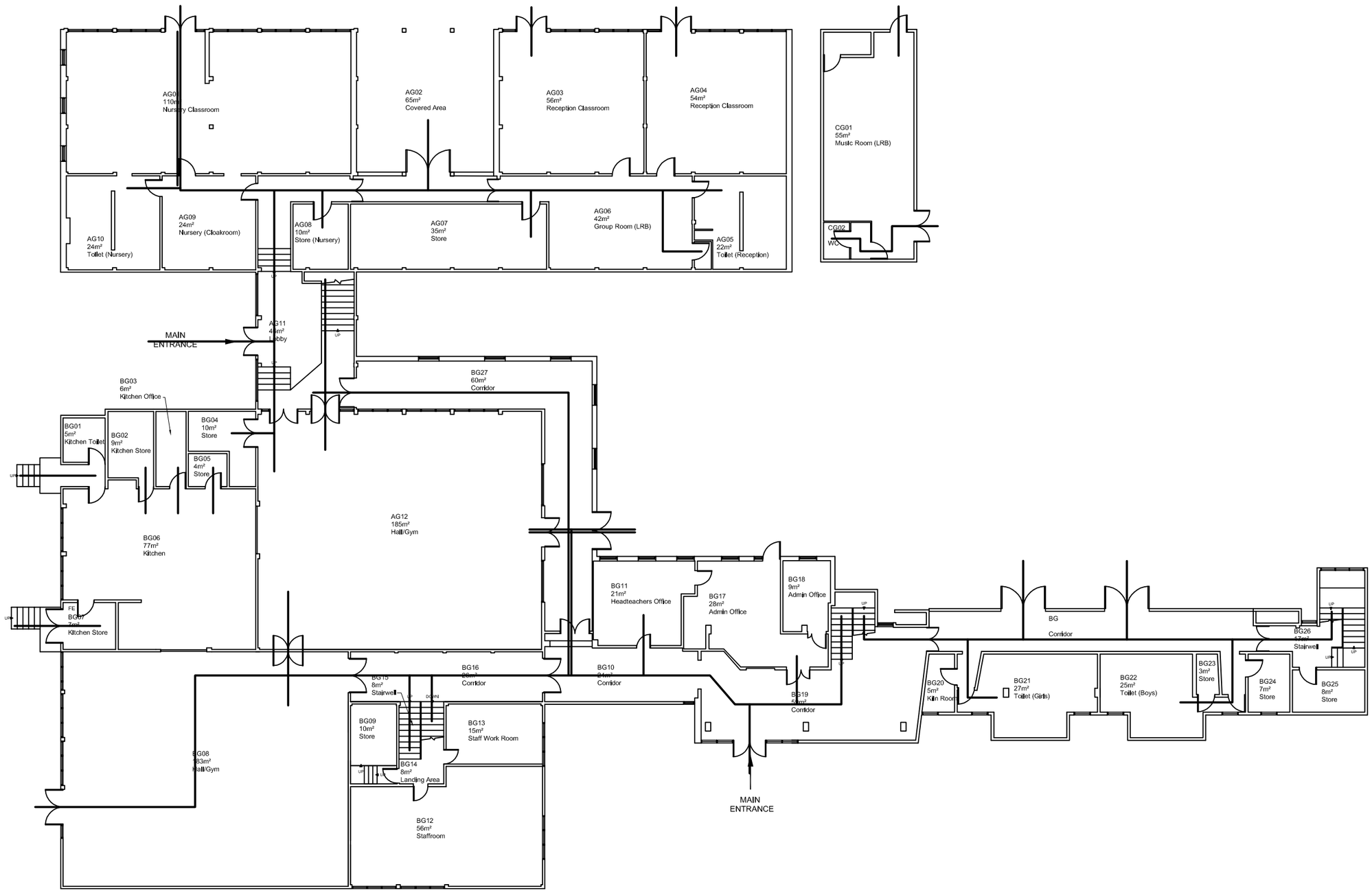
Scale: Scale to Fit

Date: March 2004

CEA@Islington

Capturing Success

Drawn: Surveyed & Drawn By: www.amp-world.co.uk



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ABLE BODIED AND AMBULANT ACCESS

WHEELCHAIR ACCESS

Rev.	Amendment	Date
B	DDA Information Added	May 06
A	Prem Man Accom Added	Mar 05

Project Title:

Asset Management Plan

Site Name:

Ashmount
Primary School

Drawing Title:

Block A
Ground Floor

Drawing Number:

2809AG

Scale: Scale to Fit

Date: March 2004

CEA@Islington

Capturing Success

Drawn: Surveyed & Drawn By:
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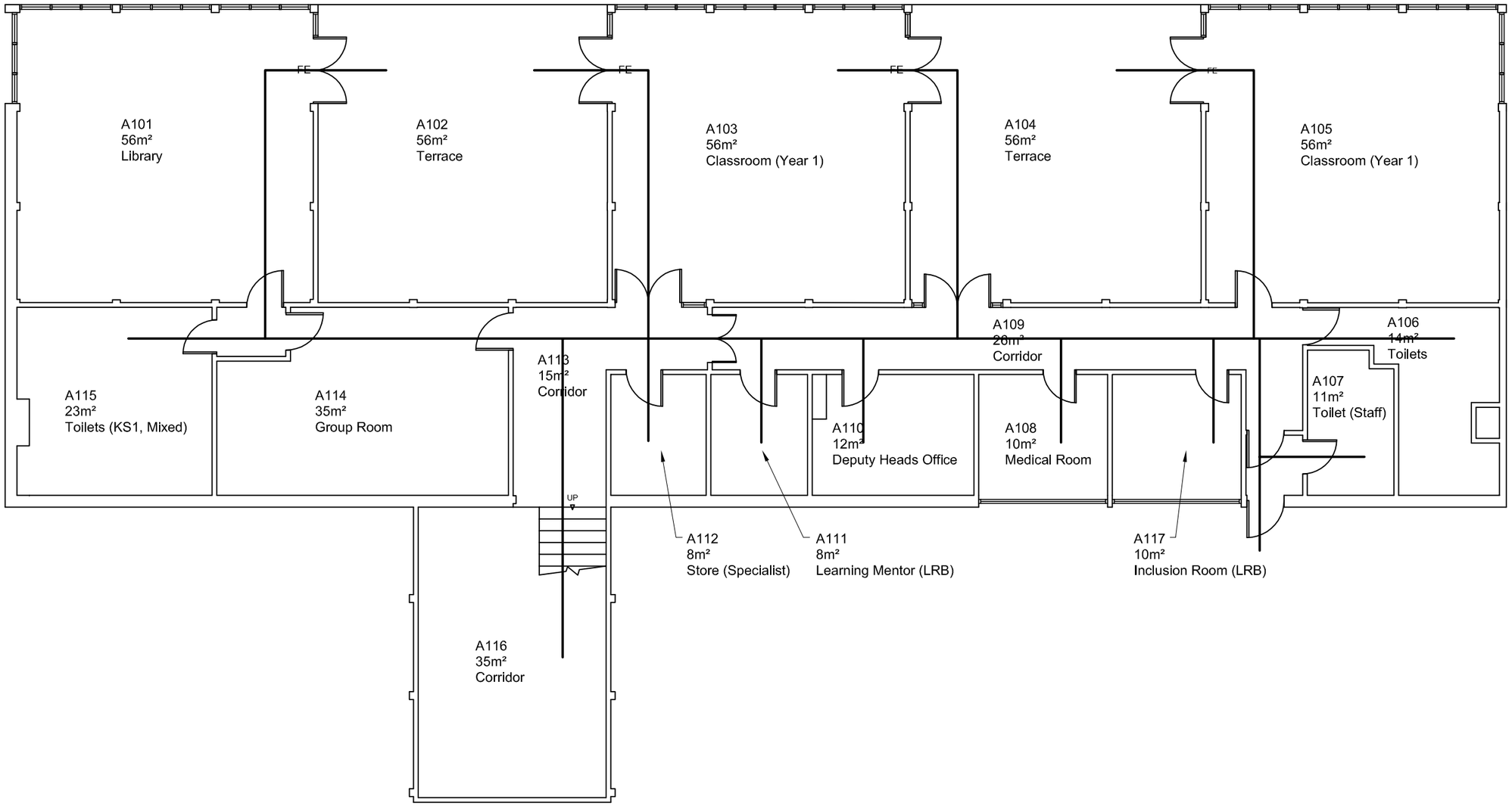

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WHEELCHAIR ACCESS

Rev.	Amendment	Date
B	DDA Information Added	May 06
A	Prem Man Accom Added	Mar 05

Project Title:

Asset Management Plan

Site Name:

Ashmount
Primary School

Drawing Title:

Block A
First Floor

Drawing Number:

2809A1

Scale: Scale to Fit

Date: March 2004

CEA@Islington

Capturing Success

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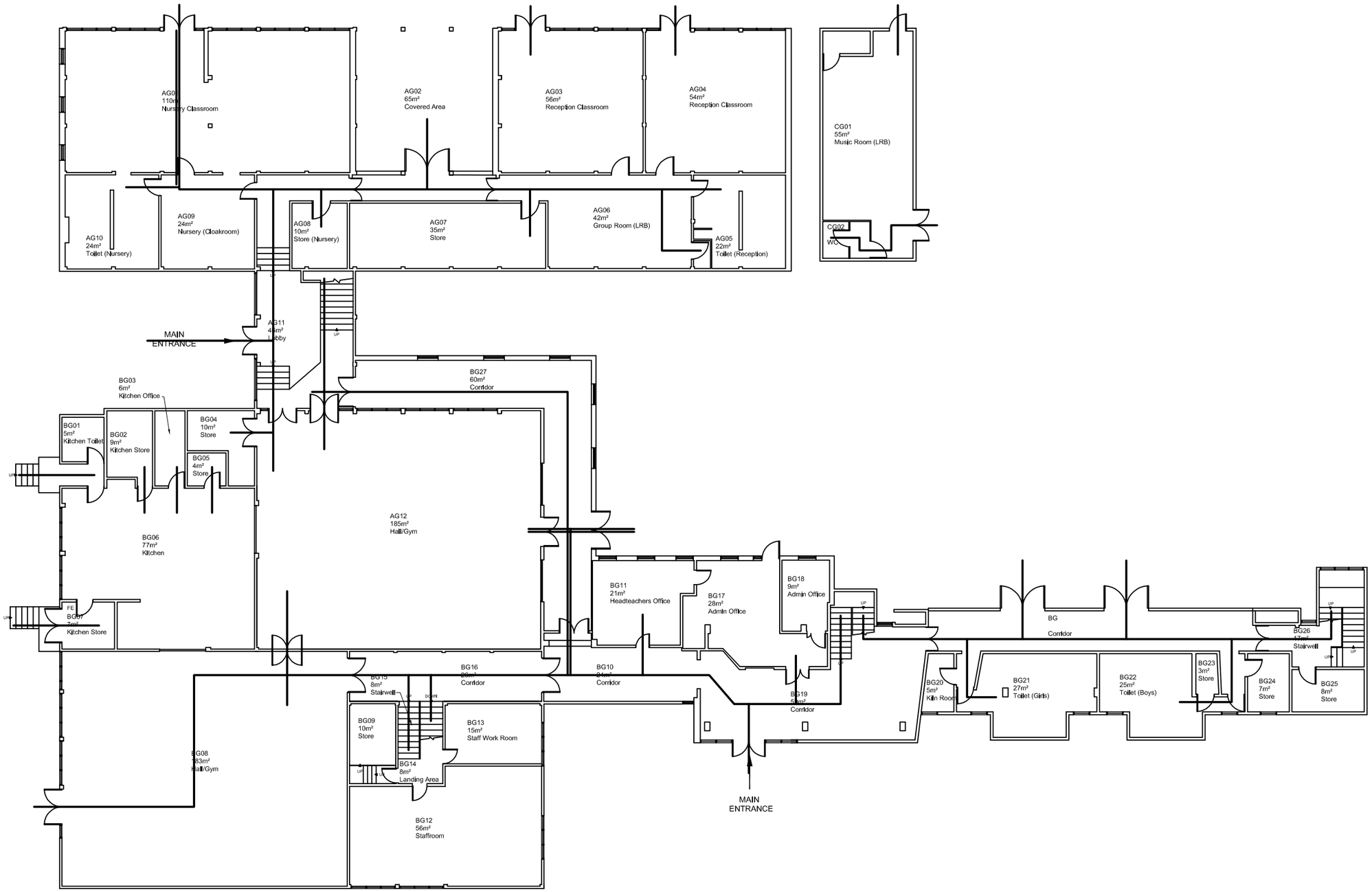

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ABLE BODIED AND AMBULANT ACCESS

WHEELCHAIR ACCESS

Rev.	Amendment	Date
B	DDA Information Added	May 06
A	Prem Man Accom Added	Mar 05

Project Title:

Asset Management Plan

Site Name:

Ashmount
Primary School

Drawing Title:

Block B
Ground Floor

Drawing Number:

2809BG

Scale: Scale to Fit

Date: March 2004

CEA@Islington

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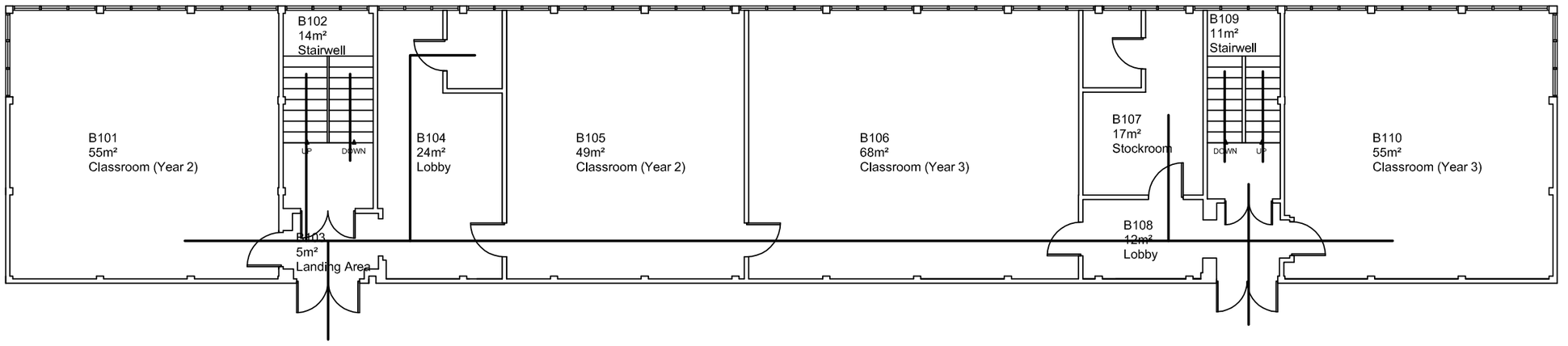

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ABLE BODIED AND AMBULANT ACCESS

WHEELCHAIR ACCESS

Rev.	Amendment	Date
B	DDA Information Added	May 06
A	Prem Man Accom Added	Mar 05

Project Title:

Asset Management Plan

Site Name:

Ashmount
Primary School

Drawing Title:

Block B
First Floor

Drawing Number:

2809B1

Scale: Scale to Fit

Date: March 2004

CEA@Islington

Capturing Success

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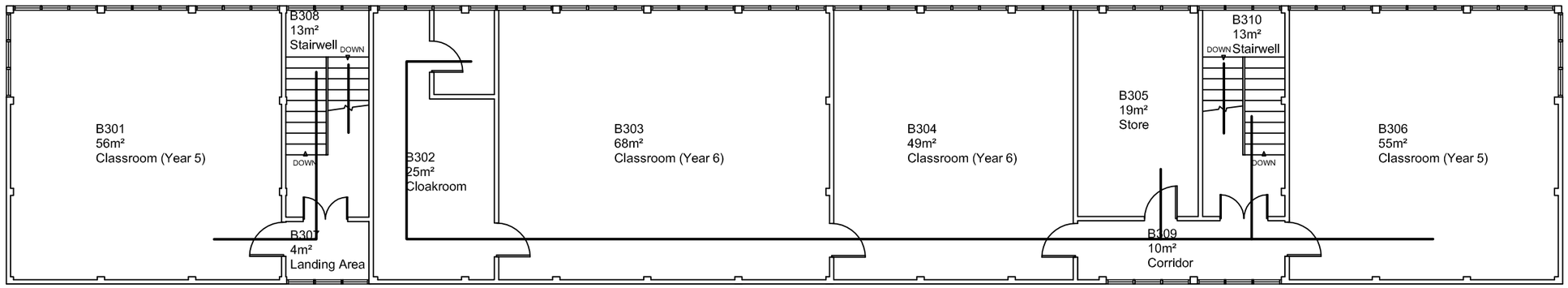

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WHEELCHAIR ACCESS

Rev.	Amendment	Date
B	DDA Information Added	May 06
A	Prem Man Accom Added	Mar 05

Project Title:
Asset Management Plan

Site Name:
Ashmount
Primary School

Drawing Title:
Block B
Second Floor

Drawing Number:
2809B2

Scale: Scale to Fit

Date: March 2004

CEA@Islington
Capturing Success

Drawn: Surveyed & Drawn By:
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APPENDIX B - PR P SED PLANS

The following proposed drawings are supplied:

231237-205	Infants' Block Option A, Ground Floor as proposed
231237-206	Infants' Block Option A, First Floor as proposed
231237-207	Juniors' Block Option A, First, Second and Third floor plans as proposed
231237-200	Education Study Option B, Ground Floor as proposed
231237-201	Infants Block Option B, First Floor as proposed
231237-202	Juniors' Block Opton B, First, Second and Third Floor plans as proposed

Infants Block A

Hall Block

GROUND FLOOR PLAN

Key

Red lines indicate demolitions

WORK IN PROGRESS

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington
SCALE: 1:200@A3
DATE: 11 Oct 2007
PROJECT: Ashmount School
DRAWN:
CHECKED:
DRAWING TITLE: Education Study, OptionB Ground Floor as proposed
JOB NUMBER: 231086
DRAWING NO.: 200
REVISION: -

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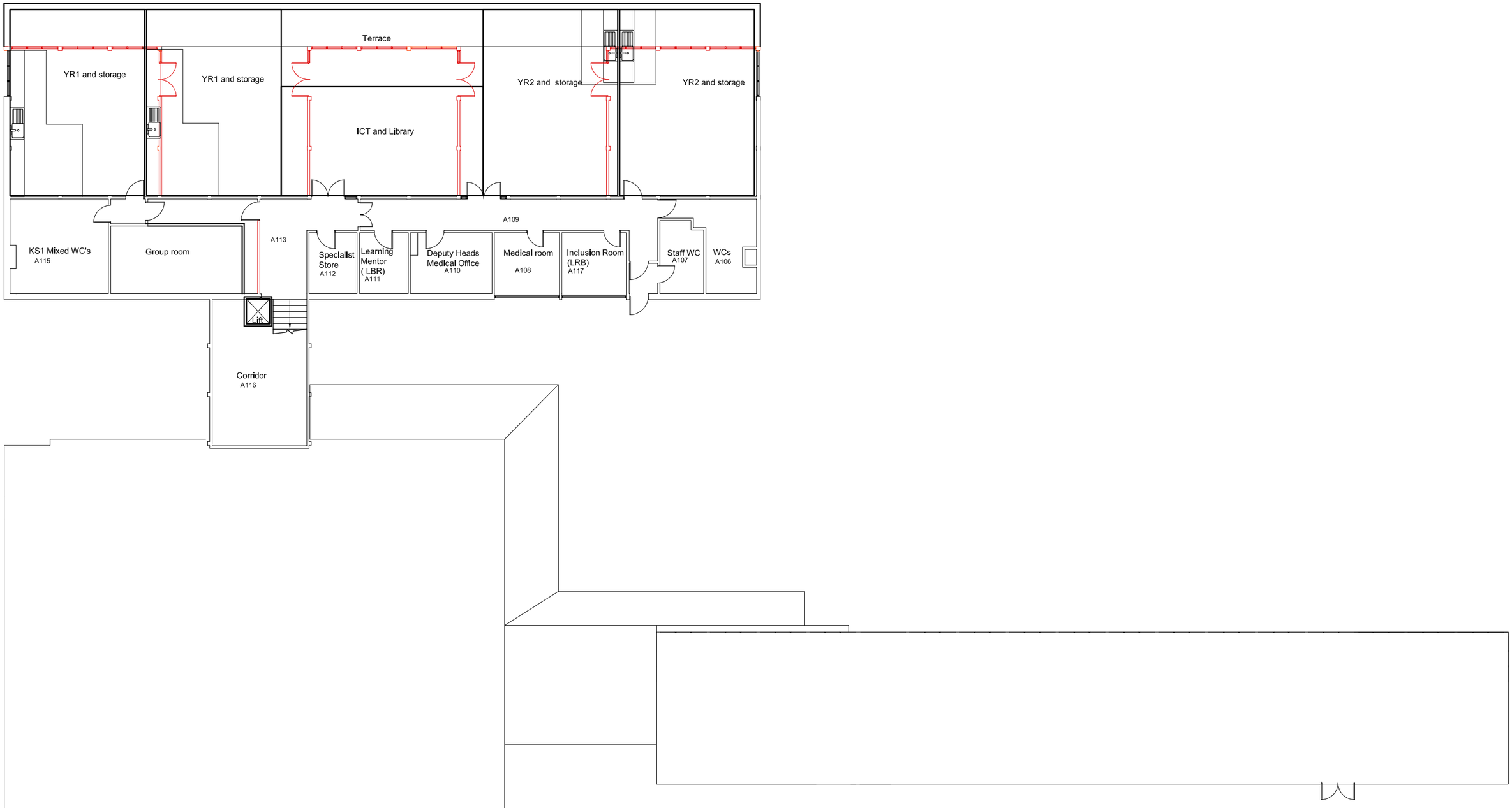
Infant Block A



For first floor Junior block B
see drawing 231237/202

FIRST FLOOR PLAN

Key

Red lines indicate demolitions

WORK IN PROGRESS

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PROJECT Ashmount School		DRAWN	CHECKED
DRAWING TITLE Infants Block Option B First Floor as proposed		JOB NUMBER **231237**	DRAWING NO. **201**
			REVISION **-**

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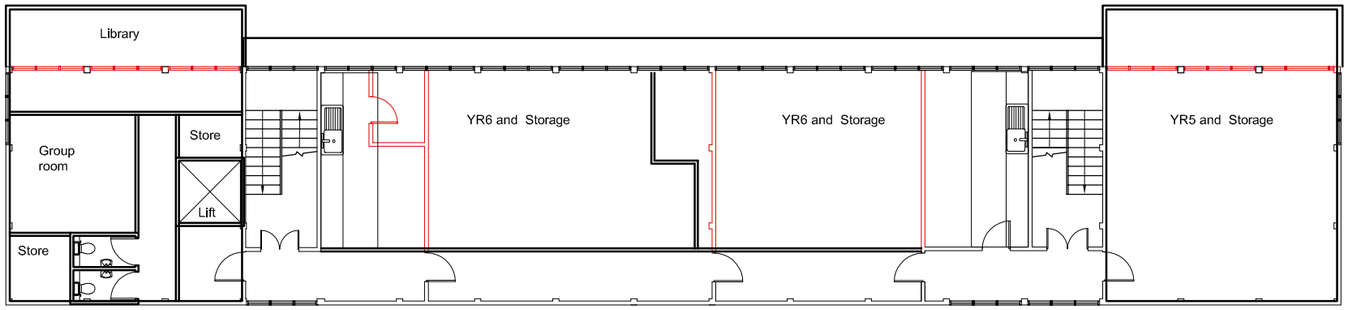
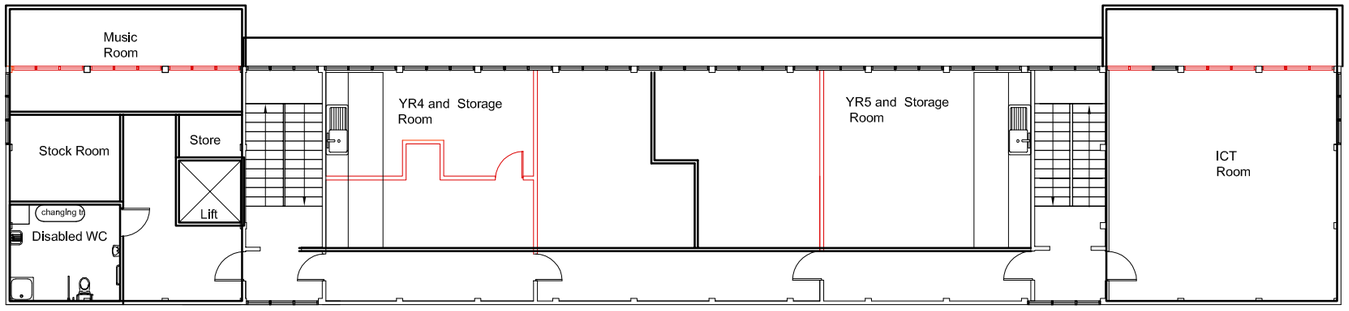
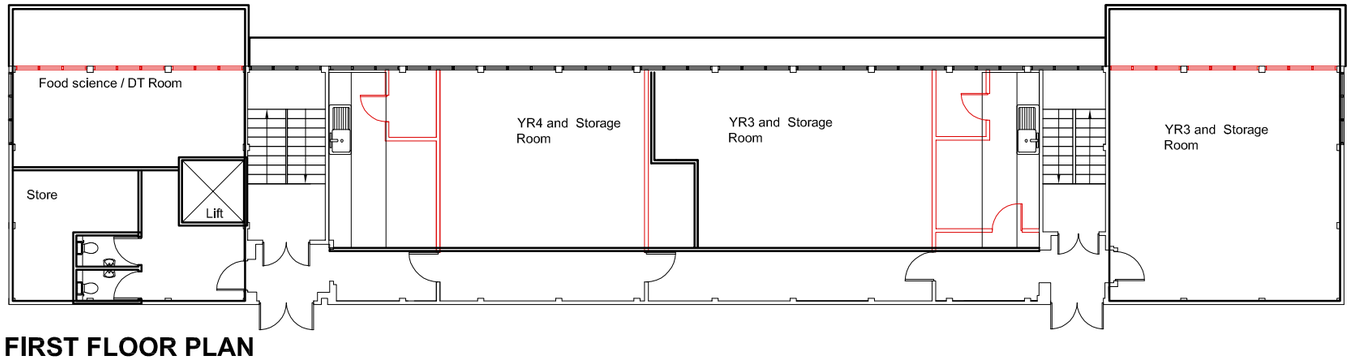
JUNIOR BLOCK B



THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

Key

Red lines indicate demolitions

WORK IN PROGRESS

REVISION DATE DRAWN CHECKED DESCRIPTION

CLIENT
London Borough of Islington

SCALE
1:200@A3

DATE
12 Oct 2007

PROJECT
Ashmount School

DRAWN

CHECKED

DRAWING TITLE
Juniors Block Option B
First, Second and Third floor plans as proposed

JOB NUMBER
231237

DRAWING NO.
202

REVISION
-

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Infants Block A

Hall Block

GROUND FLOOR PLAN

Key

Red lines indicate demolitions

WORK IN PROGRESS

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington

SCALE: 1:200@A3

DATE: 12 Oct 2007

PROJECT: Ashmount School

DRAWN

CHECKED

DRAWING TITLE: Infants Block Option A
Ground Floor as proposed

JOB NUMBER: 231237

DRAWING NO.: 205

REVISION: -

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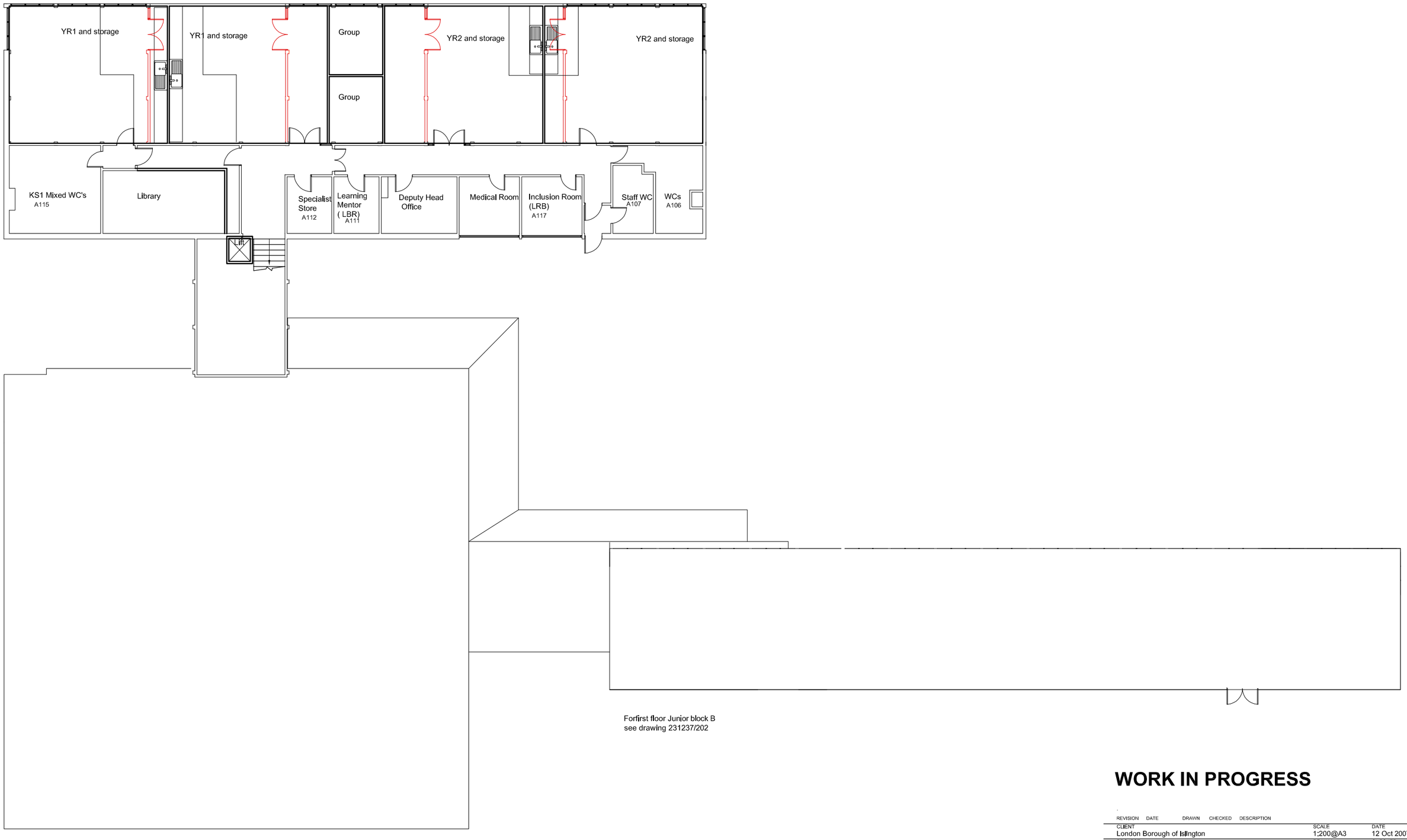
Infant Block A



Forfirst floor Junior block B
see drawing 231237/202

FIRST FLOOR PLAN

Key
Red lines indicate demolitions

WORK IN PROGRESS

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT
London Borough of Islington

SCALE
1:200@A3

DATE
12 Oct 2007

PROJECT
Ashmount School

DRAWN

CHECKED

DRAWING TITLE
Infants Block Option A
First Floor as proposed

JOB NUMBER
231237

DRAWING NO.
206

REVISION
-

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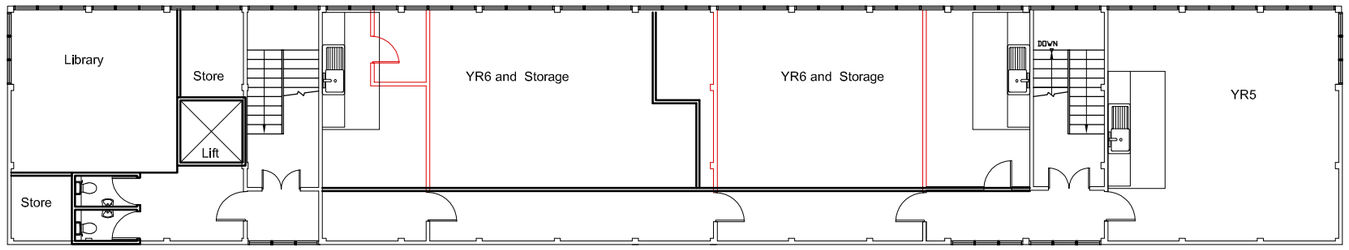
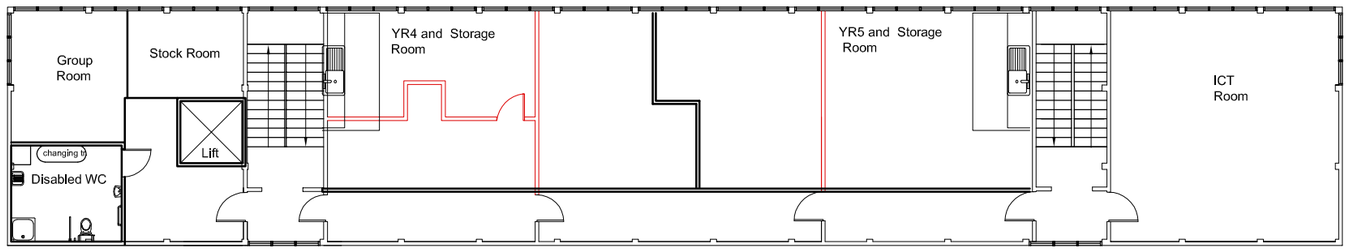
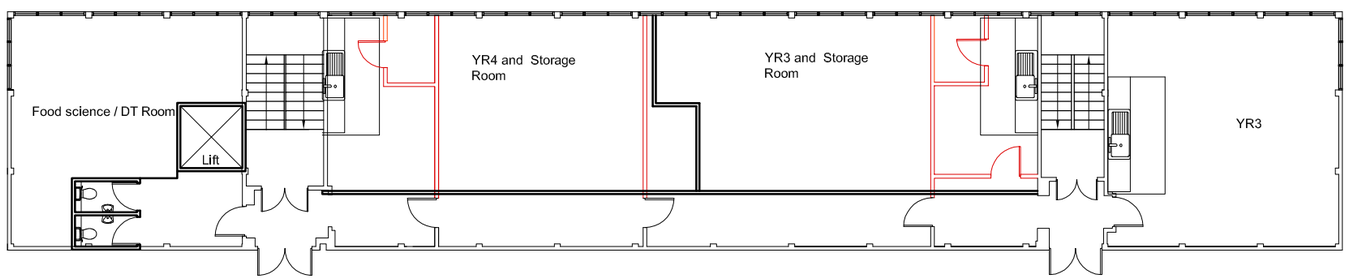
JUNIOR BLOCK B



THIRD FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

Key

Red lines indicate demolitions

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT
London Borough of Islington

SCALE
1:200@A3

DATE

PROJECT
Ashmount School

DRAWN

CHECKED

DRAWING TITLE
Juniors Block Option A
First, Second and Third floor plans as proposed

JOB NUMBER
231237

DRAWING NO.
207

REVISION
-

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APPENDIX C - C MPARATIVE AREA SCHEDULE

Ashmount Primary School and Nursery - Islington **Feasibility Study** **Job No: 231237**

Proposed area greater than required by BB99
Proposed area meets BB99 requirements
Proposed area under required for BB99

BB99 Comparative Area Schedule

Schedules (including Nursery) **TEACHING**	Max Group Size	**Average Area (m²)**	**420** +52FTE 16 Classes 2 FE+2N		Ashmount (existing)		Diff	Remodel Option A	Remodel Option B
			No of Rooms	Total Area (m²)					
Basic teaching:									
Nursery unit (total net allowance): 52x3-5yrs	26	**60**	2	120	1	110	(10)	2x60	2x60
Reception class bases:	30	**66**	2	132	2(56+54)	110	(22)	2x66	2x66
Infant class base	30	**60**	4	240	4	216	(24)	4x60	4x60
Junior class base	30	**60**	8	480	8	475	(5)	6x60 +	8x60
								2x55	
Specialist practical:									
Food/science/D&T	15	**38**	1	38	0	0	(38)	38	38
Music (S)					1	55	55	55	25
ICT suite, infants & junior combined (no of computers)			(30)	68	1	55	(16)	55	68
OR									
ICT infants			(15)	38					38
ICT juniors			(15)	38					
Halls:			2						
Main hall (used for dining)	30	**varies**	1	150	1	185	35	185	185
Small hall	30	**80**	1	80	1	183	103	165	165
Learning resource areas									
Reception Group Room			0	0	1	42	42	42	42
Library resource centre, infants & junior combined	(15-30)		1	40	1	56	16		
OR									
Infants - Library resource centre				20				22	18
Junior - Library resource centre				20				26	26
Small group room (SENco)	6	**12**	1	12	1	10	(2)		
Small group rooms	6	**9**	3	27	1	35	8	11+11+15	22+15
Large group room (S)					1	42	42	42	36
TOTAL TEACHING AREA									
Staff and admin.									
Nursery office, staff/parent room			1	5	0	0	(5)	5	5
Nursery staff room (7staff) (inc in main staff rm)			1		0	0		0	0
Heads office meeting room			1	16	1	21	5	21	21
Senior management offices		**8**	1	8	1	12	4	12	12
Office			1	9	1	9	0	9	9
Staff room			1	58	2(56+15)	71	13	71	71
General office			1	14	1	28	14	26	26
Sick bay (adjacent)		**3**	1	3	1	10	7	10	10
Entrance/reception			1	5	1	59	54		
Copier reprographics (in general office)				8		0	(8)	0	0
SEN therapy / MI room			1	12	1	10	(2)		
Interview / social services - Home Support		**8**	1	8	1	8	0	8	8
Storage									
Nursery Storage					1	10		10	10
Class storage (reception)		**3**	2	6		0	(6)	6	6
Class storage (infant and junior)		**1.5**	12	18				18	18
Specialist stores		**6 or 8**	3	24					
PE store (adjacent to hall)		**12**	1	12	0	0	(12)	12	12
PE store (external)		**4**	1	4	1	8	4	8	8
non-teaching storage									
Central stock		**8**	1	8	1	17	9	10	10
Cloakrooms/lunchbox store		**3**	12	36	4	89	47	30	36
Dining chair/table store	(no of sittings)		(3)	16	2(10+10)	20	4	20	20
Staging / appliance store			1	8	0	0	(8)	0	0
Community store		**4**	1	4	0	0	(4)	4	4
Caretakers / maintenance store - Temp			1	7	1	50	43		
Cleaners store		**1.5**	3	4.5					
Supplementary areas	(S)								
Meeting room					0				
OSHL									
Kiln (Un-used)					1	5		5	5
Private admin area									
TOTAL NET AREA									
Recommended net area (inc. Nursery)									
Non-net area									
Nursery milk food prep			1	5	0	0		5	5
Kitchen (full service)		**varies**	1	77	1	96	19	96	96
Servery (inc in larger kitchen)				8	0	0	(8)	0	0
Toilets (and personal care)									
Nursery WC		**4**	3	12	1	9		20	20
Laundry			1	4	1	3		4	4
Reception WC		**4**	3	12	1	22	10	22	22
KS1 & KS2 WC - 27+25+23+14			varies	60		89	29		
Changing Room					0	0			
Accessible toilets/hygeine facilities				16	0	0	(16)		
Staff toilets		**3.5**	5	14	3	5+13+11	15	5+13+11	5+13+11
Circulation	net x 23%			396					
Plant (inc. server)	net x 3%			52		91	39	91	91
Partitions	net x 5%			86					
TOTAL GROSS AREA									
Recommended gross area (net @ 70% of gross)									
External Areas	(Confined Sites)								
Playing fields (off site)	(Off site)					0		0	0
Soft play (informal & social)	600+2N			1,544		213	(1331)	1331	1331
Games courts (hard surfaced) MUGA	1000			1000		1000		0	0
Hard play (informal & social)	200+1 N			672		680	8	8	8
Habitat	0.5N			236		1340	1104	1104	1104
Float			rem						
TOTAL NET SITE AREA									

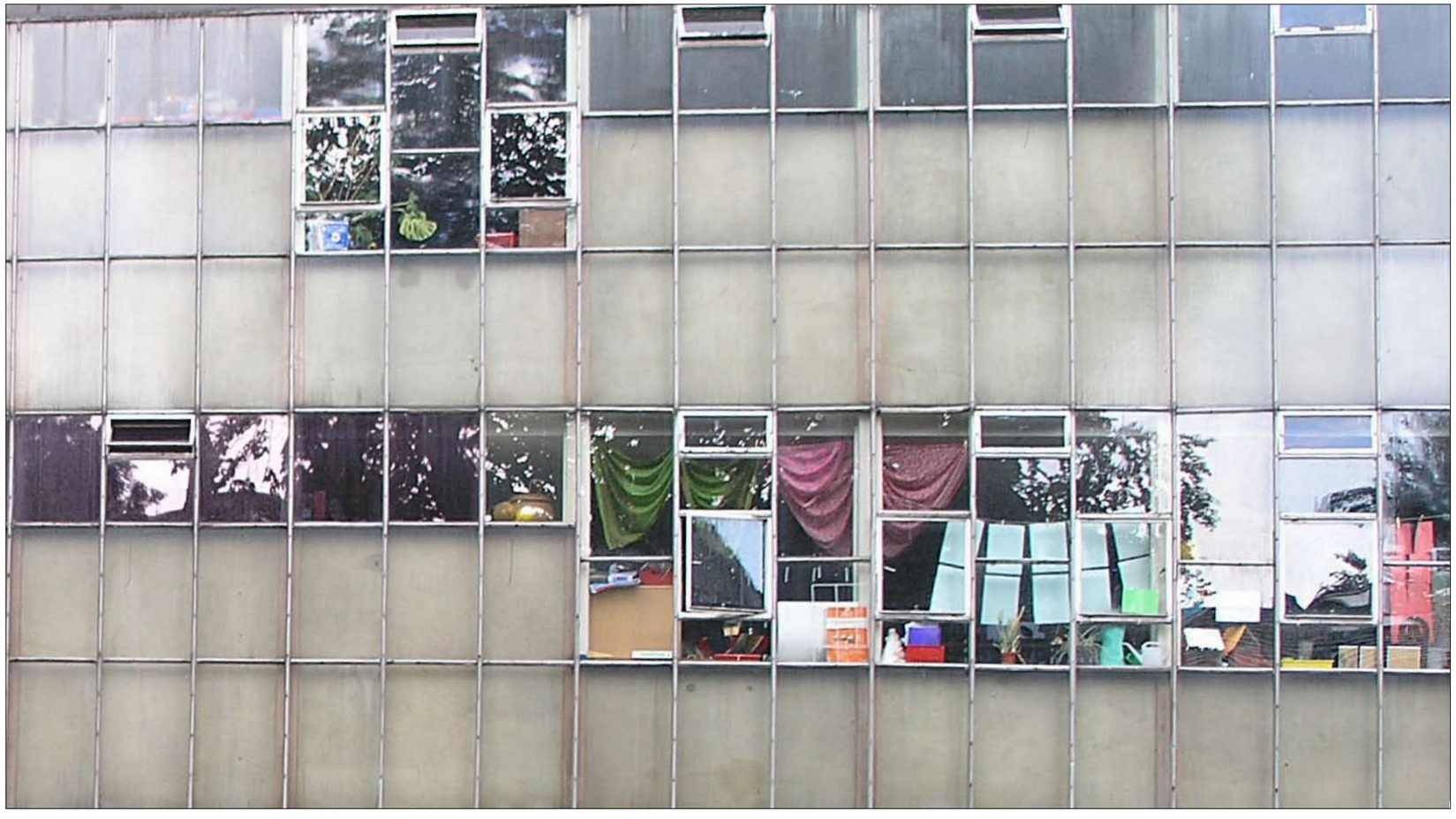
APPENDIX D - BREEAM ASSESSMENT

(To follow)

PURCELL MILLER TRITTON

architects, designers and historic buildings consultants

ASHMOUNT SCHOOL, ISLINGTON



PART 2: FAÇADE STUDY

October 2007

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CONTENTS

APPENDICES

Fig. 2: Corner detail at Ashmount School

1.0 PREAMBLE

1.1 This report prepared by Purcell Miller Tritton LLP has been commissioned by Kate Cornwall-Jones, Project Manger in the Education Department of Islington Council and relates to Ashmount School. The report should be read with Part 1: Building Assessment.

1.2 The site has been visited for inspection on 3rd and 17th July 2007 and a measured survey has been carried out researching the constructional details of the existing curtain wall system. The following survey drawings are enclosed in Appendix A:

231237-101 Ground Floor Plan as Existing
231237-102 First Floor Plan as Existing
231237-S01 Junior Block Elevations as Existing
231237-S02 Junior Block Elevations, Structural Diagrams
231237-S03 Infants Block Elevations as Existing
231237-S04 Hall Block Elevations as Existing
231237-S05 Junior Block Façade, Typical Section and Internal Elevation
231237-S10 Curtain Wall Details as Existing
231237-S11 Curtain Wall Details as Proposed

2.0 CURTAIN WALLING IN THE 1950s

2.1 The term 'curtain wall' describes a non-load bearing external wall which hangs in front of a building's primary structure independently, thus comparable to a curtain. The façade's weight and wind load are supported only by point fixings to the primary structure.

Curtain walls can be of differing materials – aluminium, steel or later PVC – and construction – fitting of components on site or prefabrication of storey-high elements – which both affect the façade's appearance.

2.2 The development of curtain walling is closely connected with the idea of rationalized construction. Already in the 1920 the architects of the modern movement demanded to revolutionise building processes by using industrial methods. The serial production of standardised components was supposed to save cost and labour.

The construction from prefabricated parts flourished in the United States already in the 1940s; in England and Europe however, due to economic crisis before WW2 and a building sector traditionally based on craftsmanship the success did not come until the 1950's.

2.3 Early curtain walls are characterised by their genesis from window construction. Windows are traditionally prefabricated elements and the rational principles of prefabrication were used for them quite early. Summarised, the development of curtain walling proceeded from large, storey high windows followed by an infill between the vertical or horizontal primary structure culminating in prefabricated cladding elements fixed to a recessed primary structure.

The idea of curtain walling required a primary structure with equal centers to which the prefabricated elements could be fixed easily in dry construction. Based on window construction the structural principle of early curtain walling was a frame with an infill panel (glass as window and obscure in fascia areas). The techniques of curtain walling however improved significantly within the 1950s.

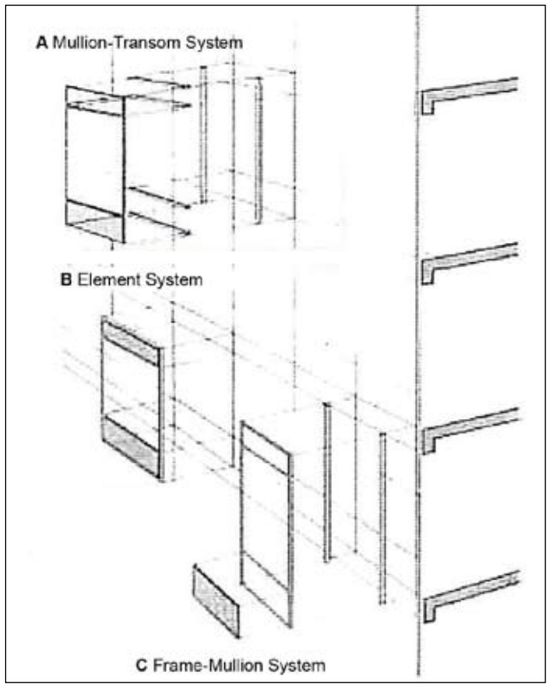


Fig. 2: Curtain Wall construction methods in the 1950s.

2.4 Three different types of construction for curtain walls can be distinguished (Fig. 2):
- Frame-Mullion System
- Element System
- Mullion-Transom System

The Frame-Mullion System is typical for early curtain walls. The structural principle is a frame which is fixed to storey high vertical members which are fixed to the edges of slightly projecting ceiling slabs. Deriving directly from window construction this structural method was the recognised system how to build a curtain wall within the 1950's.

The Element System is a further developed method in which prefabricated elements are directly fixed to the building's primary structure. This construction method provided an increased amount of prefabrication and therefore a saving of labour on site.

The Mullion-Transom System is a structure of components without a prefabricated frame. As in the Frame-Mullion System the vertical mullions are fixed to the primary structure, but horizontal transoms are fixed flexibly between the mullions, thus creating a complete framework carrying the façade's weight and wind load. The window panes and infill panels are fixed to the frame using cover strips.

2.5 Although the Mullion-Transom System, compared to the Element System, needs a larger amount of labour on site it compounded to the other construction methods in the early 1960s. This was mainly because it provided better solutions for fire protection and gave the architects a larger amount of flexibility.

The Mullion-Transom System became the accepted structural method for curtain walling on which most proprietary systems are still based. Although nowadays developed further in detail its structural principle still holds good as developed in the 1950s.

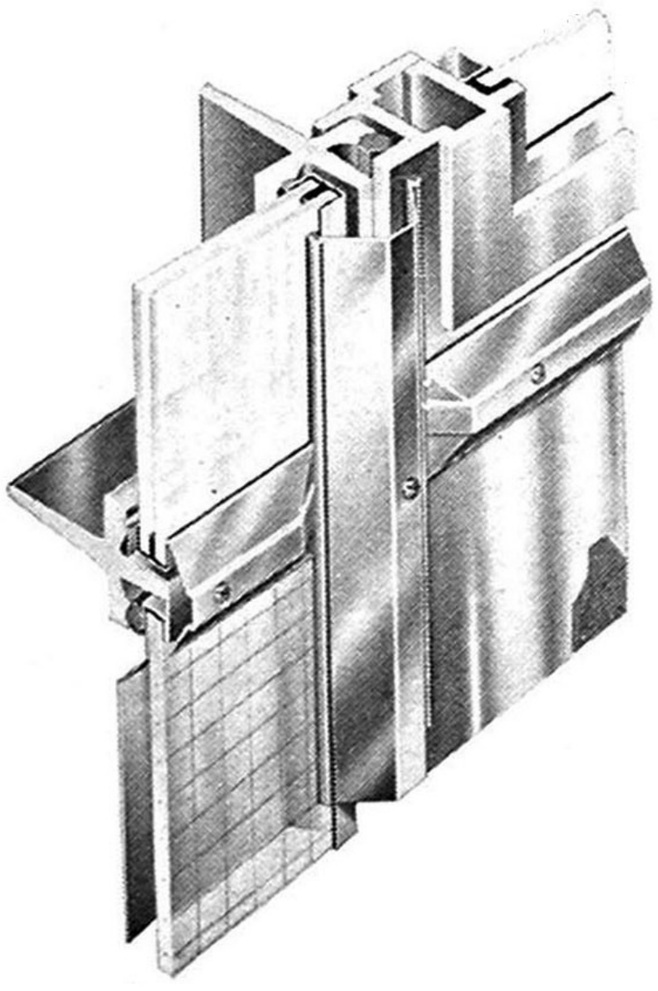


Fig.. 3: Isometric detail of the original 'Hills' system. Note that this drawing shows a double-glazed unit. It should be noted however that all glazing at Ashmount School is single thickness.

Fig.. 4: Different infill panels

Fig. 5: Welded mullion with riveted transom in the Hall Block

3.0 THE EXISTING FAÇADE SYSTEM OF ASHMOUNT SCHOOL

3.1 The glazing system of Ashmount School is a model example of a Mullion-Transom Construction. Regarding the date of its construction (1954-57) it is a very early and mature example of its kind. Especially the 3 storey high Junior Block with its mullion-less corners (Fig. 1 on Page 4) aesthetically shows the curtain-wall idea in an arrangement which was hardly known in 1950s England (refer to Part 1).

3.2 The existing curtain wall consists of prefabricated components originating from the Hills '8 feet 3 inches' system (refer to Part 1, page 7). The components are galvanized steel transoms and mullions, galvanized steel framed openable windows and aluminium cover strips (Fig. 3). All the components were fitted on site individually, so that as a result the façade is less modular than it visually appears.

The width of all bays is standardised. The entire grid of the school's floor plan is based on the dimensions of the Hills '8 feet 3 inches' system. This system requires structural bays of 8 feet 3 inches (2,514 mm) which are subdivided in 3 smaller bays of 2 feet 9 inches (838 mm). The steel framed windows and glass panes follow this standardised width but vary in height.

3.3 The building's primary structure is a skeletal steel frame with trussed horizontal beams. In the position of the lower flange of the trussed beam (except of the uppermost storey where it is the position of the upper flange) a perimeter steel angle is fixed to the external side of the steel columns (Dwg. S02 and S05 at Appendix A). Between these horizontal supports the vertical mullions are bolted using angle cleats (Fig. 6). A further angle cleat is used to fix the transoms to the ceiling slab which was probably used to adjust the mullion vertically.

It is important to note that the horizontal lines running through the external elevation do not indicate the position of the ceiling slabs. The ceiling slabs have an upstand running along their edges; it is the upper edge of this upstand which is visible from the outside (Dwg. S05 at Appendix A).

Fig. 6: Fixing detail of mullions to primary structure

3.4 In a second step horizontal transoms are fixed between the mullions, thus creating a frame in which the glass panes and openable windows can be installed. The profile section of the transoms is different from the mullions (Dwg. S10 at Appendix A) and provides a rebate to support the weight of the glass panels. Horizontally all panes and windows are hold in position by screw fixed aluminium cover strips including lead flashing. Fixed between the steel frame and the panes/windows is a 4 mm diameter rubber seal.

The cladding consists of three different materials: 4mm clear glass panes, 4mm Georgian wired glass panes and 4mm aluminium coated plywood (Fig. 4, opposite, and Dwgs. S01, S03 and S04 at Appendix A). All glazed areas consist of single glazing. Furthermore there are three different sizes of steel framed windows, the two smaller sizes are horizontally pivoted (Fig. 7) and the larger ones vertically pivoted.

Fig. 7: Horizontal pivoted steel framed window

3.5 The façades of the Hall Block (Dwg. S04 at Appendix A) have a slightly different structure although they are based on the same system using the same components. Within a height matching the adjacent two storey high Infants Block the Hall Block provides only one storey (with one exception in its north-western corner). Therefore the mullions are spanning from floor to ceiling over the double height. To allow for sufficient rigidity the mullions have a second Tee profile welded to their back (Fig. 5 and Dwg. S10 at Appendix A).

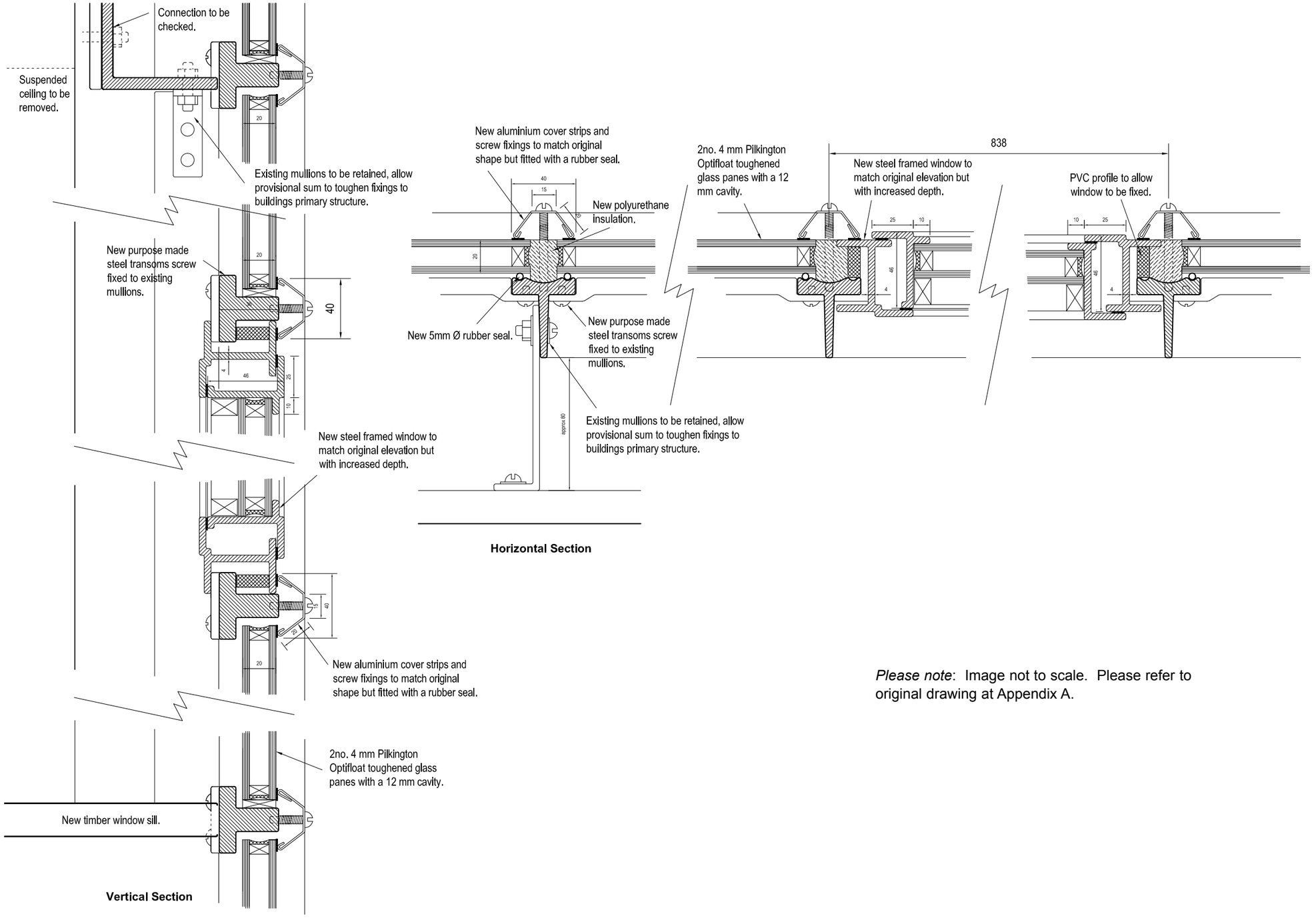


Fig. 8: Drawing S11: Proposals for upgrading the existing façade system

Please note: Image not to scale. Please refer to original drawing at Appendix A.

4.0 UPGRADING THE EXISTING FAÇADE SYSTEM

4.1 As already noted in the condition survey of Ashmount School, published by Tony Welch Associates in August 2003, the condition of the building's primary structure as well as the supporting galvanized steel frame of the façade is still sound (paragraph 301/302) but the condition of the cladding is problematic. The rubber seals have mostly failed and the cover strips are often loose. Some of the openable windows do not function properly and there are several cracked panes.

A number of attempts at remedial work have been made but these are of poor quality and only likely to be short-term in nature involving externally applied sealants where capping beads are distorted. Several areas of former Georgian wired glass panes have been replaced with blue painted plywood panels which have a detrimental affect on the appearance of the building.

4.2 In order to return the existing façades to their original serviceable condition these would need to be almost entirely dismantled and rebuilt, for a significant part with new components. Undertaking such a substantial refurbishment would also demand an improvement of the poor thermal performance of the existing façade system.

4.3 All glazed areas of the façade are single glazed and what is considered to be one of the main weaknesses of the existing façade system. As a consequence the interior of the building is too hot in summer and too cold in winter not to mention contributes to an immensely high carbon footprint of the building.

To make the building perform for most uses it is therefore essential to upgrade the existing façade system to double glazing thus increasing the overall thermal performance of the building.

4.4 Acknowledging the significance of the façade any upgrading proposal would try to keep as much of the original fabric as possible. Components that definitely have to be replaced are all existing glass panes and infill panels and also the aluminium cover strips which are in advanced state of deacay.

In a case study the retention of the existing framework, i.e. mullions and transoms, and possibly the openable windows has been considered (Dwg. S11 at Appendix A). New double glazed window panes should be fixed to the existing framework with sufficient thermal insulation in the joints; a mock-up of the existing cover strips would hide these joints.

4.5 However, the retention of the existing framework depends on two limiting factors:
- The depth of the existing rebate compared to the thickness of the new double glazed panes.
- The additional weight of the new glazing which might require additional backing to the buildings substructure.

The additional weight of new double glazed panes is not likely to cause any problems because the existing steel structure seems sound. A Feasibility Assessment carried out by The Morton Partnership (Appendix 2) confirms that the building's primary structure is robust enough to accept the increased loading of a double glazed façade system. A more detailed assessment will be necessary though to establish whether the existing perimeter angle would need to be strengthened.

The depth of the existing rebate however is too small to carry double glazed panes. The required glass specification would be two panes of 4 mm toughened glass with a cavity of at least 8 mm or better 12 mm. This gives an overall thickness of 16-20 mm which can not be supported by the existing rebate (12 mm). Welding an additional piece of steel to the transoms in order to increase the depth of the rebate is not recommended because it would severely damage the existing galvanizing coat and result the need of re-galvanizing all members, and most likely would not result in a result which is both neat in appearance and be of doubtful performance.

4.6 This observation results in a necessary replacement of all existing transoms thus providing a deeper rebate. In order to fit to the existing mullions these new transoms that would have to be purpose made.

4.7 The retention and upgrading of the existing steel windows in an upgraded system fails in two points:
- The increased depth of the surrounding glazing panes would require an increased depth of the window frames in order to have the windows leveled with the surrounding cladding.
- The depth of the existing frame does not allow to fix a bead according to British Standards behind the thicker glass.

This results in a necessary replacement of all existing windows.

4.8 To summary the case study has shown, that an upgrading of the existing façade system trying to retain most of its original fabric would automatically result in a replacement because the increased depth of new double glazed panes could not be supported by the existing transoms and windows; only the existing mullions could be retained. However, the retention of the existing mullions would result in the need of bespoke new components for the whole façade system.

4.9 This approach has therefore been set aside as both inappropriate and uneconomic.

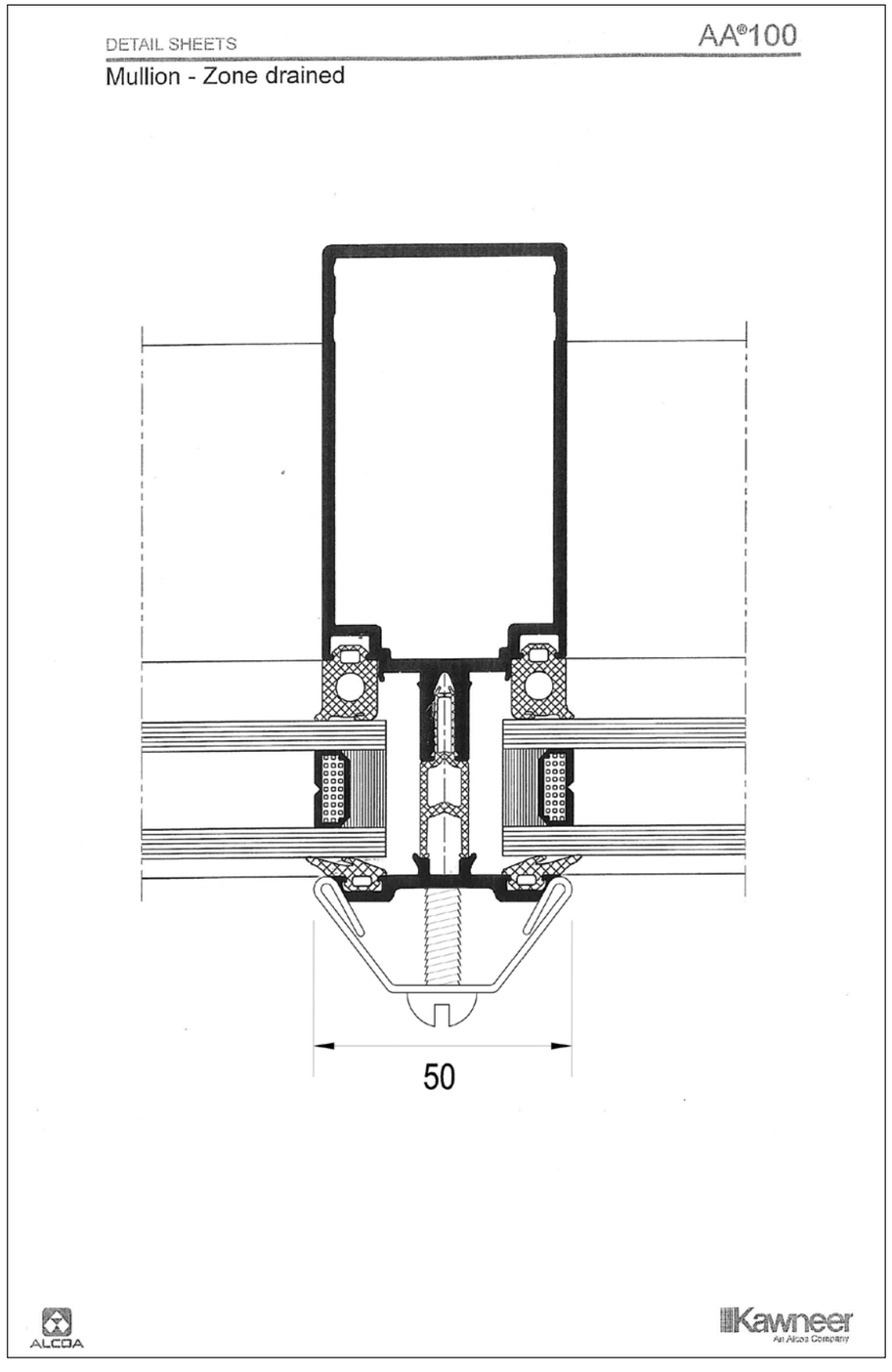


Fig. 8: Kawneer Mullion section with bespoke cover strip to match existing.

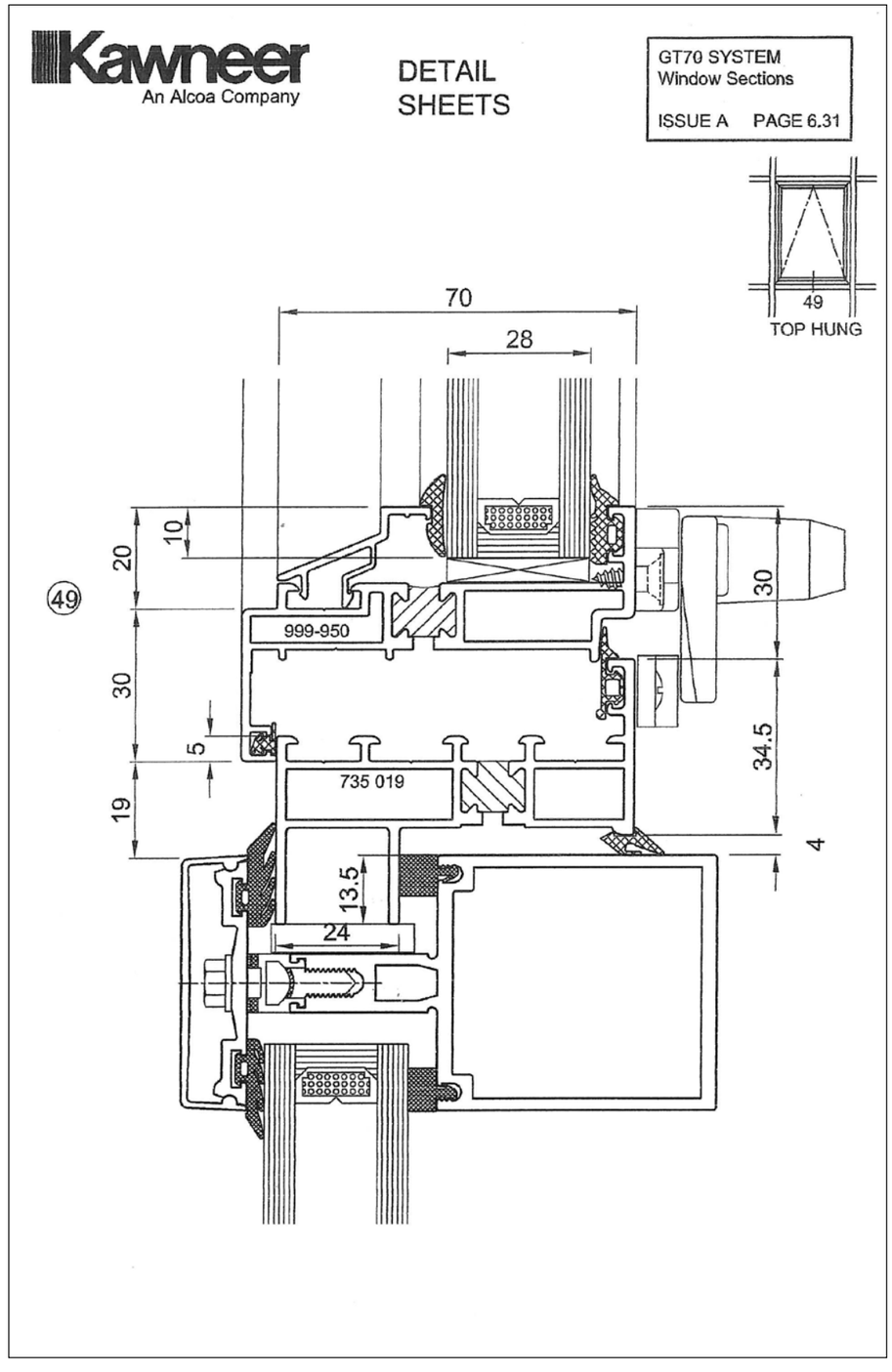


Fig. 9: Kawneer window section

5.0 REPLACING THE EXISTING FAÇADE SYSTEM

5.1 Alternatively the existing façade could be removed completely for installing a new proprietary curtain wall system to match the existing layout. That would require the proprietary components to provide sufficient flexibility to match the existing grid and to be able to incorporate non-proprietary components which should be mock-ups of the existing façade, i.e. aluminium cover strips or steel framed windows.

5.2 After having investigated several different proprietary curtain wall systems two manufacturers were invited for detail discussion and pricing; these manufacturers are Crittall and Kawneer.

It has to be noted that every new proprietary curtain wall system will result in an increased sight line of the cover strips. The minimal width of contemporary frame profiles is generally around 50mm (compared to 40mm of the existing Hills system).

5.3 The Crittall System (Fig. 10 on Page 12) is a steel frame curtain wall system which is commendably close to the existing Hills system in its details & appearance but provides double glazing. Its structural principle is as a Mullion-Transom System as described in paragraph 2.4.

The Crittal System is highly compatible with the existing primary structure of Ashmount School; there is no problem to match the grid sizes of the existing elevations. The new mullions could be fixed to the existing horizontal steel angle, however, this would need to be investigated further to assess its performance (Appendix 2, paragraph 4.2).

The aesthetic appearance would be close to existing. The only visual difference would be a slightly increased sight-line of the cover strips. The width of the existing cover strips is 40 mm, the new mock-ups (which could be provided by Crittal) would need to be 48 mm wide. A crucial detail is the reproduction of the mullion free corner detail; Crittall however states that this can be achieved in equal quality using a prefabricated angle frame.

Crittall also provides steel frame windows whose profiles almost match the existing ones but provide double glazed. Even the pivot detail of the Crittall windows is similar to the existing detail.

The thermal performance of the Crittall System would reduce the buildings carbon footprint substantially. The system is compliant to part L of the Building Regulations, though only in case of the replacement of an existing façade system. It has to be noted that as a steel frame system the framework will still have a certain amount of cold bridging so it would be unable to provide highest level of thermal performance.

5.4 The Kawneer system (Fig. 8) is an aluminium Mullion-Transom system which compared to the Crittall system will provide a better thermal performance. However, the compatibility to the existing system is less good. The Kawneer system would require a new secondary support to fix the new façade to the existing primary structure.

The aesthetic appearance of the façade would be slightly different. Externally a mock-up of the existing cover strip could be fixed to the new system with an increased sight line to 50 mm. The internal appearance of the system will be different with square profile sections compared to the slim original steel swords (which could be matched by the Crittall system).

Kawneer expressed doubts to detail the corners in the original way which therefore would require alternative solutions to be found because the mullion free corners are considered to be crucial for the buildings aesthetic appearance.

The windows provided by Kawneer (Fig. 9) have different profile sections and would appear slightly heavier compared to the original windows. The thermal performance of the Kawneer profile is of course better because their hollow aluminium sections provide thermal separation, thus reducing cold bridging.

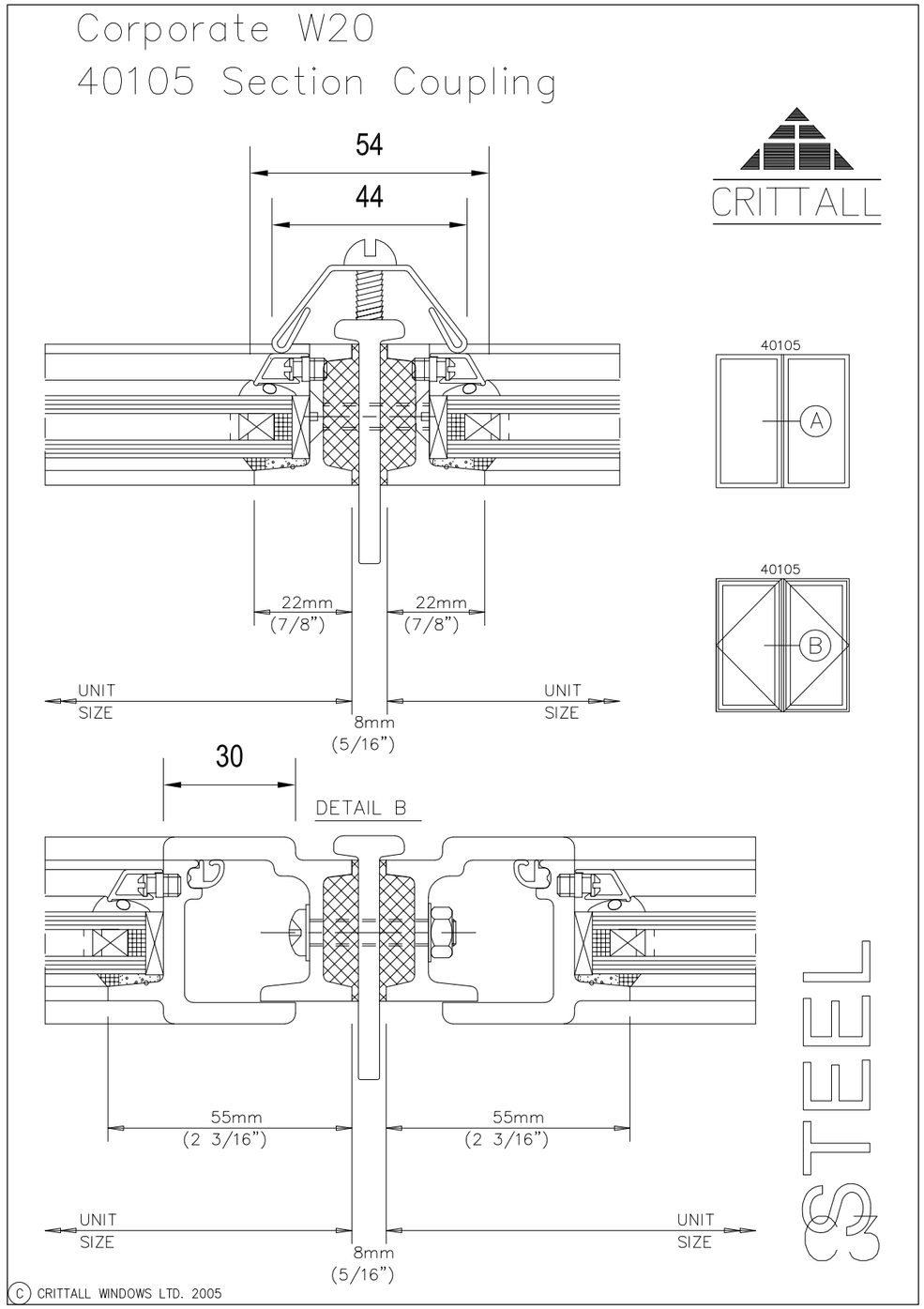


Fig. 10: Crittal Mullion and window sections with bespoke cover strip to match existing

6.0 COST

6.1 Both manufacturers, Crittal and Krawneer were invited to quote for replacing the existing façade system of Ashmount School. These quotations are based on the façade as existing, therefore not including any alterations which might occur within a general refurbishment of the building. The quotations vary slightly in their scope.

6.2 The Crittall quotation is for delivery and installation of a complete new façade system, including windows, doors, ironmongery and sealing. The Crittall quote also includes for the removal of the existing façade and a site survey with according preparation of working drawings.

The Crittall quotation assumes that general attendances would be provided by a main contractor and does therefore not allow for scaffolding and site set up.

6.3 The Kawneer quotation is also for delivery and installation of a complete new façade system including the removal of the existing façade. By contrast the Kawneer quote allows for acting as main contractor, therefore including cost for scaffolding and site set up.

6.4 Furthermore both quotations vary in allowing for different extra features like solar control glass (Krawneer) or copies of the existing cover strips (Crittall). These are essential additions which will need to be confirmed in a more detailed design stage. In the current stage a comparison of the two quotations therefore has to focus on the core cost for the new glazing system; these are processed in a spreadsheet at Appendix C, prepared by Davis Langdon LLP.

6.5 A comparison of the two quotation shows that the core cost for the new glazing system are significantly less in the Crittall quotation.

7.0 RECOMMENDATION

7.1 The case study has shown that an upgrading of the existing façade system is hardly possible. This would result in a replacement of all existing components except of the mullions; the retention of the mullions would make a bespoke replacement system inevitable, at tremendous cost.

This solution can as a consequence not compete with the investigated proprietary systems, neither in cost nor in quality.

7.2 The Crittall system provides the possibility to replace the original façade in matching aesthetics. Regarding the significance of the existing façade it is also considered to be important that the structural principle of this system is identical with the existing.

Regarding aesthetics and authenticity the Kawneer system can not compete with the Crittall system. Ashmount School is locally listed and English Heritage acknowledged the façade being of a certian significance. Therefore, permission might not be obtained for the Kawneer systems as the Crittall system is a more appropriate and authentic replacement.

Kawnneer provides a better thermal performance, however the Crittall system is still compliant to Part L of the Building Regulations and would therefore improve the existing performance sufficiently.

7.3 The quotations received from both manufacturers show that the Crittall system is more economical.

7.4 Summarizing the results of this study it can be recommended to replace the existing façade system of Ashmount School with a new proprietary system supplied and installed by Crittall windows. This system will sensitively match the aesthetic and structural principles of the existing building whilst sufficiently improving the buildings thermal performance.

APPENDIX A - SURVEY DRAWINGS

The following Survey Drawings are supplied:

231237-101 Ground Floor Plan as Existing

231237-102 First Floor Plan as Existing

231237-S01 Junior Block Elevations as Existing

231237-S02 Junior Block Elevations, Structural Diagrams

231237-S03 Infants Block Elevations as Existing

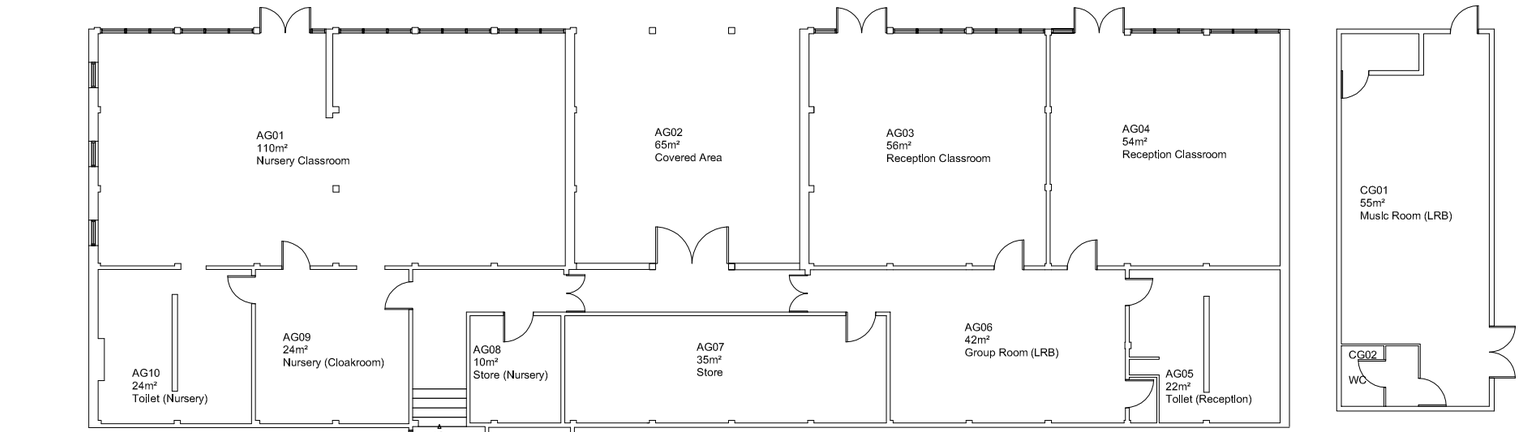
231237-S04 Hall Block Elevations as Existing

231237-S05 Junior Block Façade, Typical Section and Internal Elevation

231237-S10 Curtain Wall Details as Existing

231237-S11 Curtain Wall Details as Proposed

INFANTS BLOCK



JUNIOR BLOCK, SEMI-BASEMENT

HALL BLOCK

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT London Borough of Islington	SCALE 1/200 @ A3	DATE
PROJECT Ashmount School	DRAWN JUB	CHECKED KC
DRAWING TITLE Ground Floor Plan as Existing	JOB NUMBER **231237**	DRAWING NO. **101**

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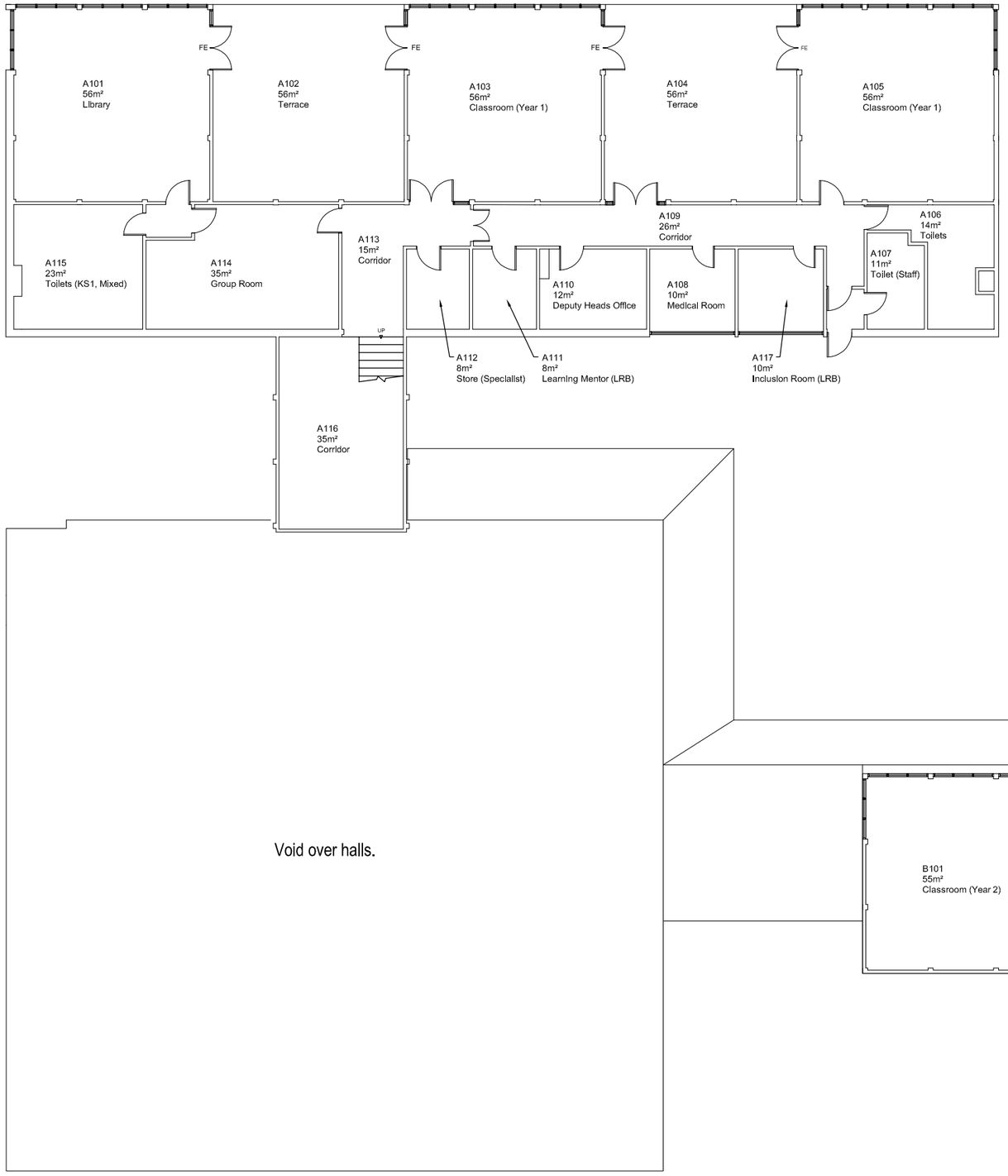
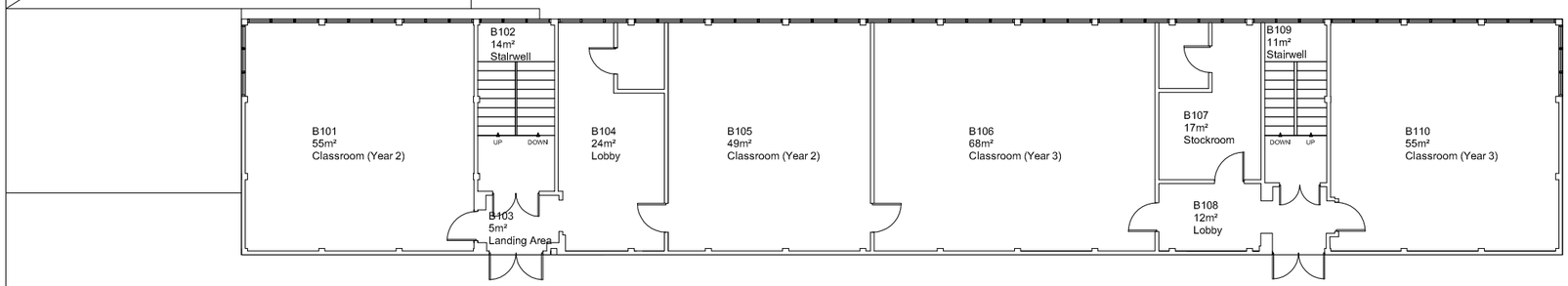
INFANTS BLOCK



HALL BLOCK



JUNIOR BLOCK

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington	SCALE: 1/200 @ A3	DATE: 24 Aug 2007
PROJECT: Ashmount School	DRAWN: JUB	CHECKED: KC
DRAWING TITLE: First Floor Plan as Existing	JOB NUMBER: 231237	DRAWING NO.: 102 — REVISION: -

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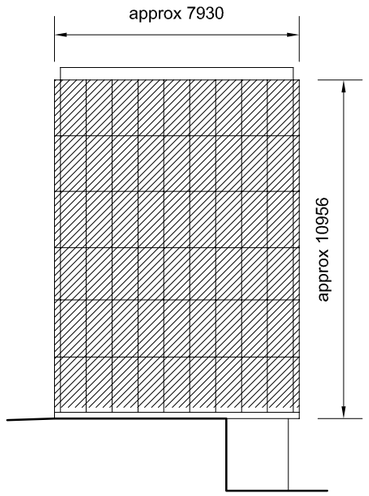
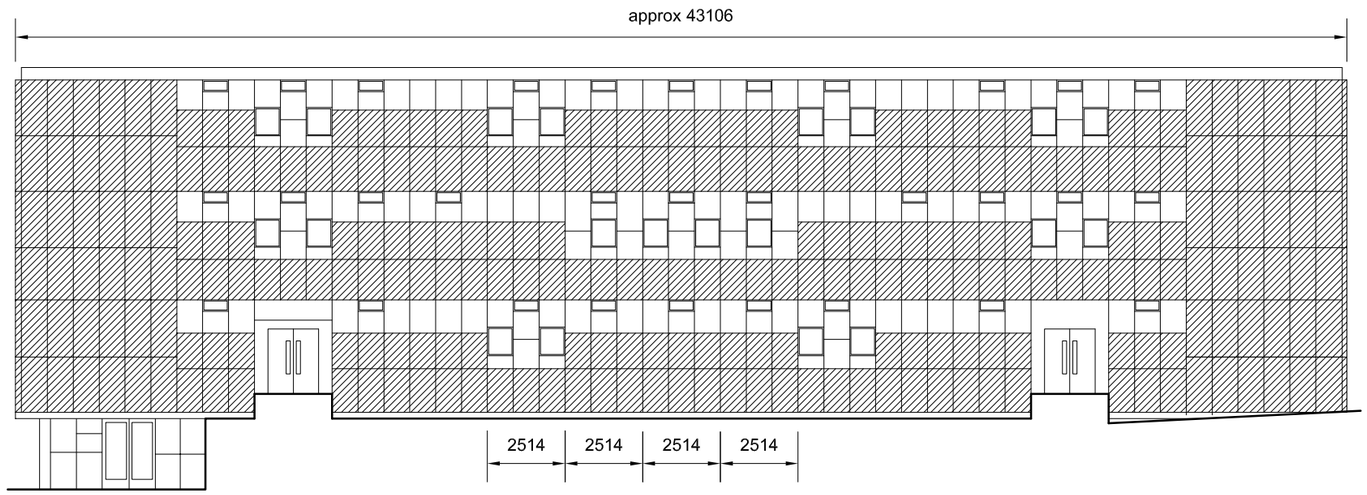
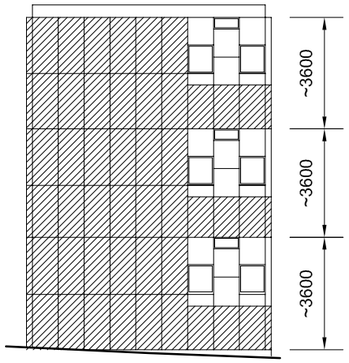


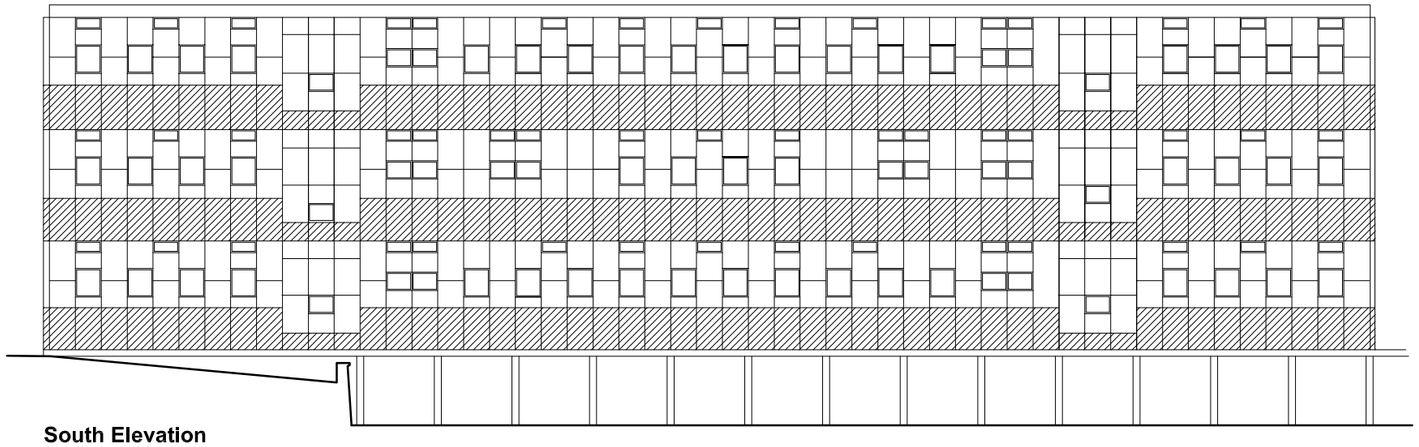
East Elevation



North Elevation



West Elevation



South Elevation

Georgian wired glass panes (stippolyte)

Aluminium clad plywood pannels inset into framing system

Vertical pivot windows

Horizontal pivot windows

Note:
All areas shown without hatching are clear float glass.

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington
SCALE: 1:200 @ A3
DATE: August 2007
PROJECT: Ashmount School
DRAWN: JUB
CHECKED: KC
DRAWING TITLE: Junior Block Elevation as Existing
JOB NUMBER: 231237
DRAWING NO. / REVISION: S01

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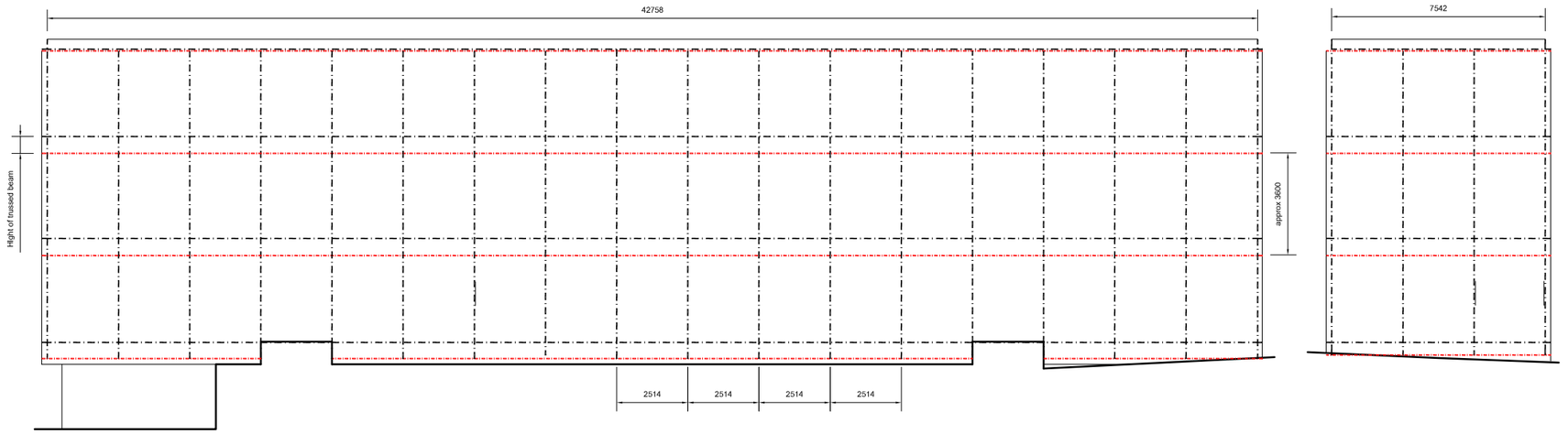
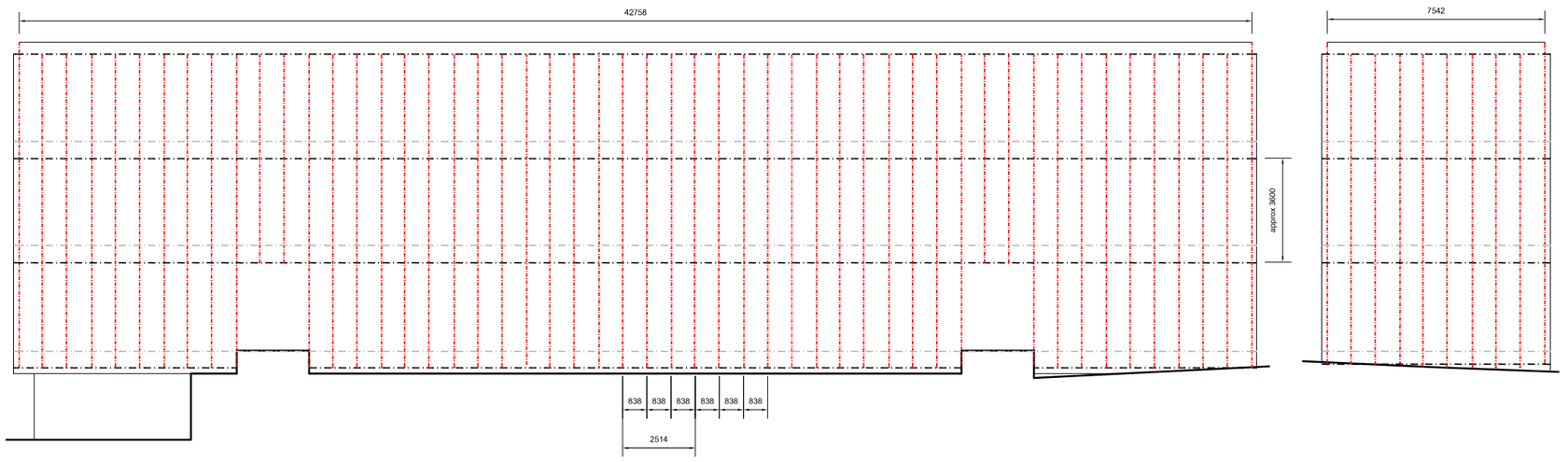


North Elevation showing the buildings primary structure

West Elevation
showing the buildings primary structure

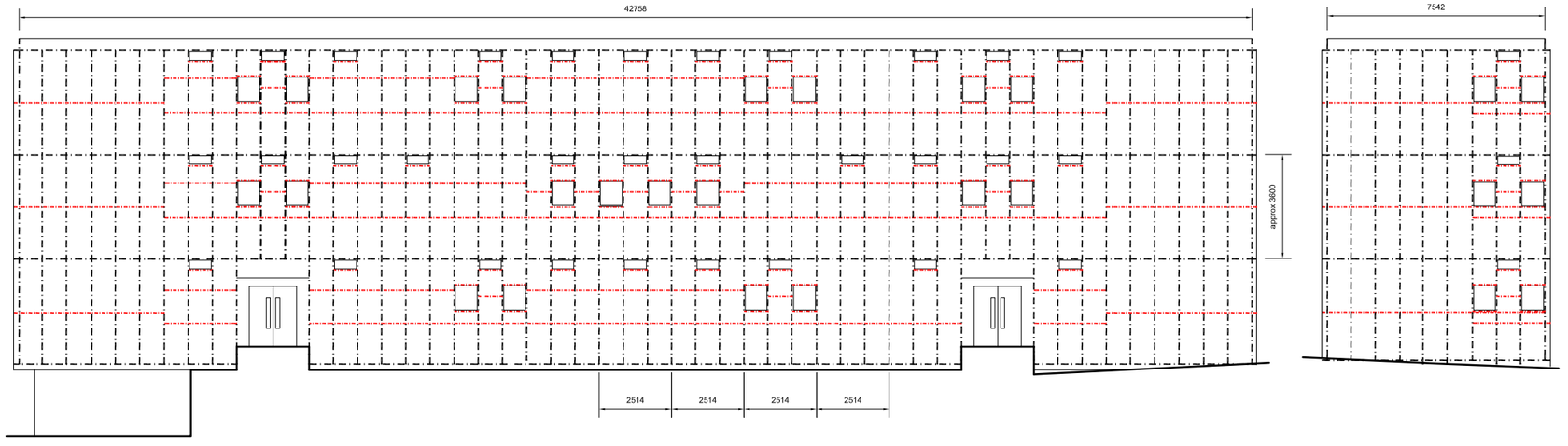
- Buildings primary steel structure
- Horizontal steel angle fixed to trussed beams to support curtain wall.



North Elevation showing the facades primary structure

West Elevation
showing the facades primary structure

- Horizontal steel angle fixed to primary steel structure to support curtain wall.
- Vertical 'T'-profile fixed to steel angle at the top as shown in Dwg 231237-S10.
- Vertical 'T'-profile fixed to floor slab using an angle cleat as shown in Dwg 231237-S10.



- Curtain wall primary structure.
- Transom profiles fixed to mullions to support glass panes and windows.

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington
PROJECT: Ashmount School
DRAWING TITLE: Junior Block Elevation Structural Diagrams

SCALE: 1:100 approx
DRAWN: JUB
JOB NUMBER: 231237
DATE: August 2007
CHECKED: KC
DRAWING NO. / REVISION: S02

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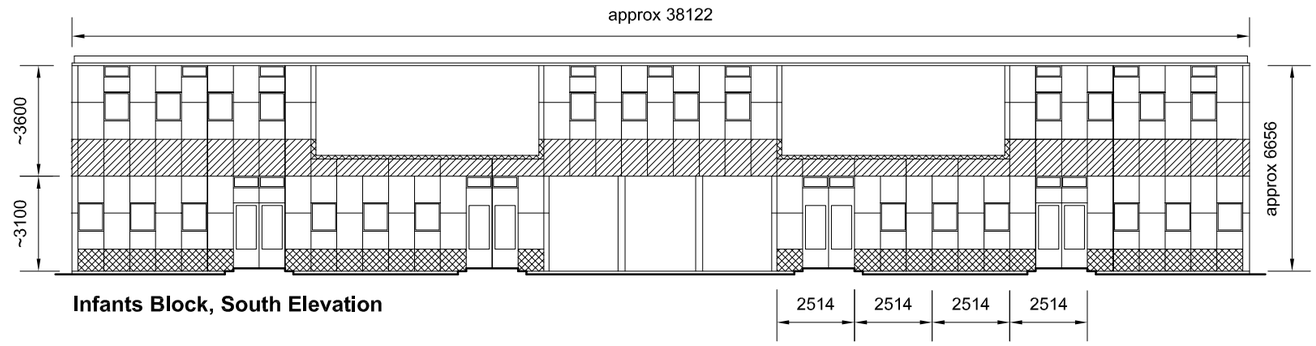
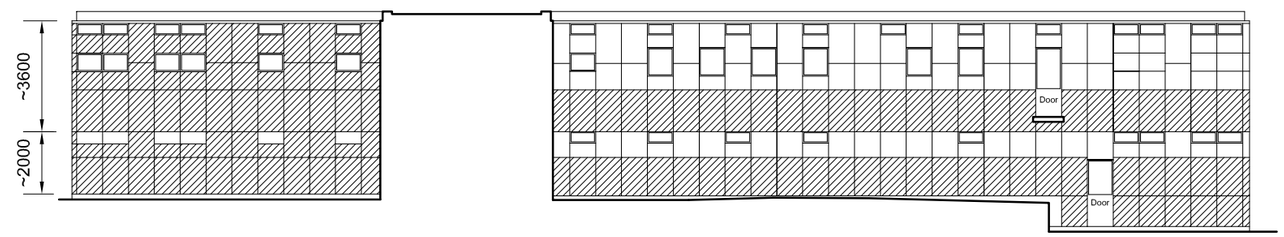


Infants Block, South Elevation



Infants Block, North Elevation

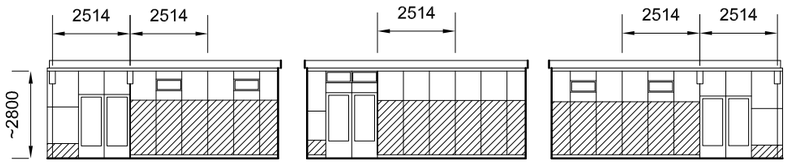
Georgian wired glass panes (stippolyte)

Aluminium clad plywood pannels inset into framing system

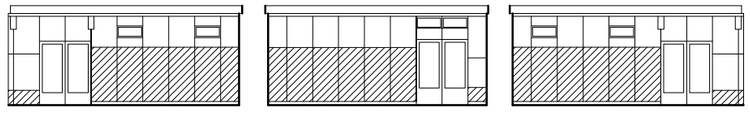
Vertical pivot windows

Horizontal pivot windows

Note:
All areas shown without hatching are clear float glass.



Infants Block, Western Terrace Elevation



Infants Block, Eastern Terrace Elevation

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington
SCALE: 1:200 @ A3
DATE: August 2007
PROJECT: Ashmount School
DRAWN: JUB
CHECKED: KC
DRAWING TITLE: Infants Block Elevations as Existing
JOB NUMBER: 231237
DRAWING NO. / REVISION: S03

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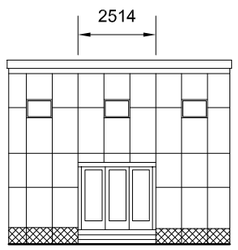
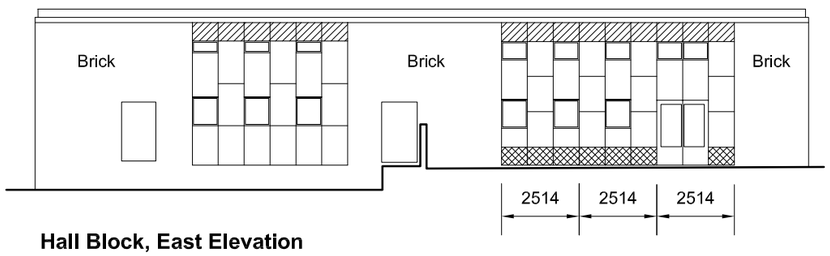
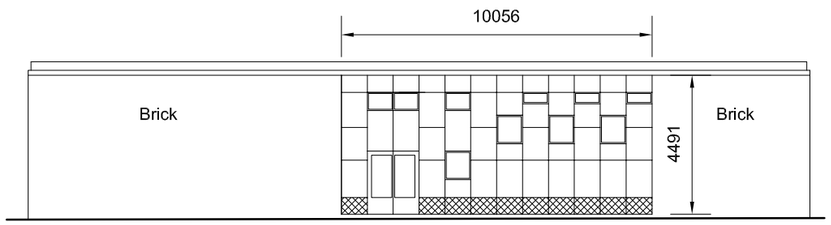


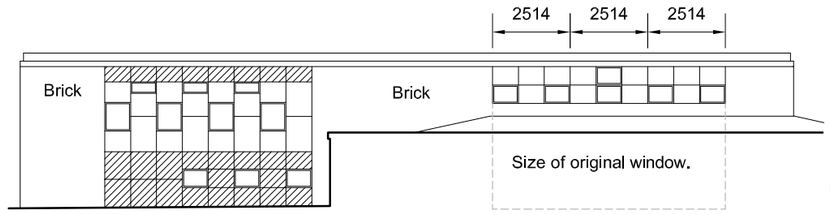
Link, East Elevation



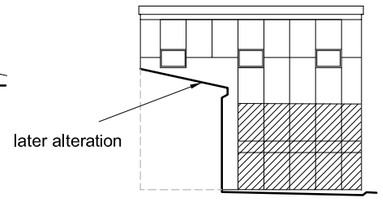
Hall Block, East Elevation



Hall Block, North Elevation



Hall Block, West Elevation



Link, West Elevation

Georgian wired glass panes (stippolyte)

Aluminium clad plywood pannels inset into framing system

Vertical pivot windows

Horizontal pivot windows

Note:
All areas shown without hatching are clear float glass.

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington	SCALE: 1:200 @ A3	DATE: August 2007
PROJECT: Ashmount School	DRAWN: JUB	CHECKED: KC
DRAWING TITLE: Hall Block Elevations as Existing	JOB NUMBER: **231237**	DRAWING NO. / REVISION: **S04**

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DO NOT SCALE FROM DRAWING
CHECK DIMENSIONS ON SITE

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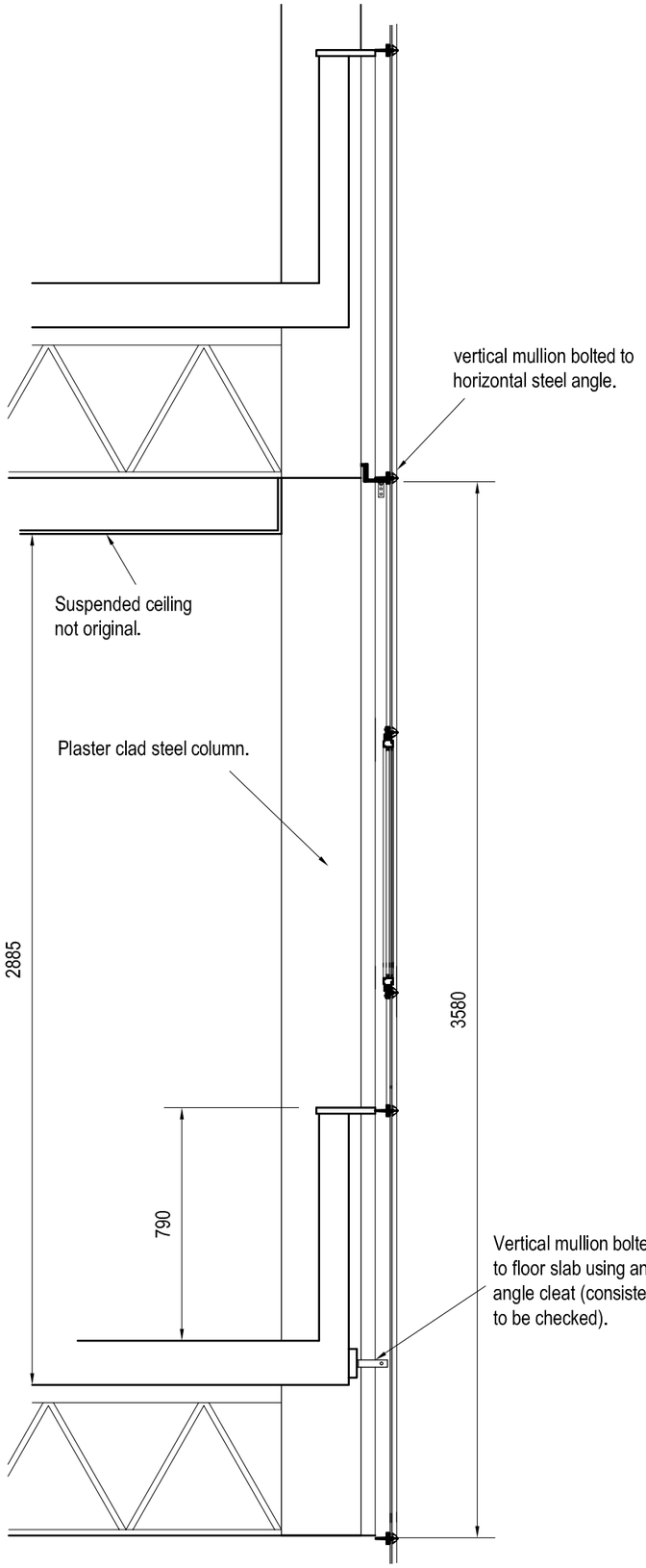
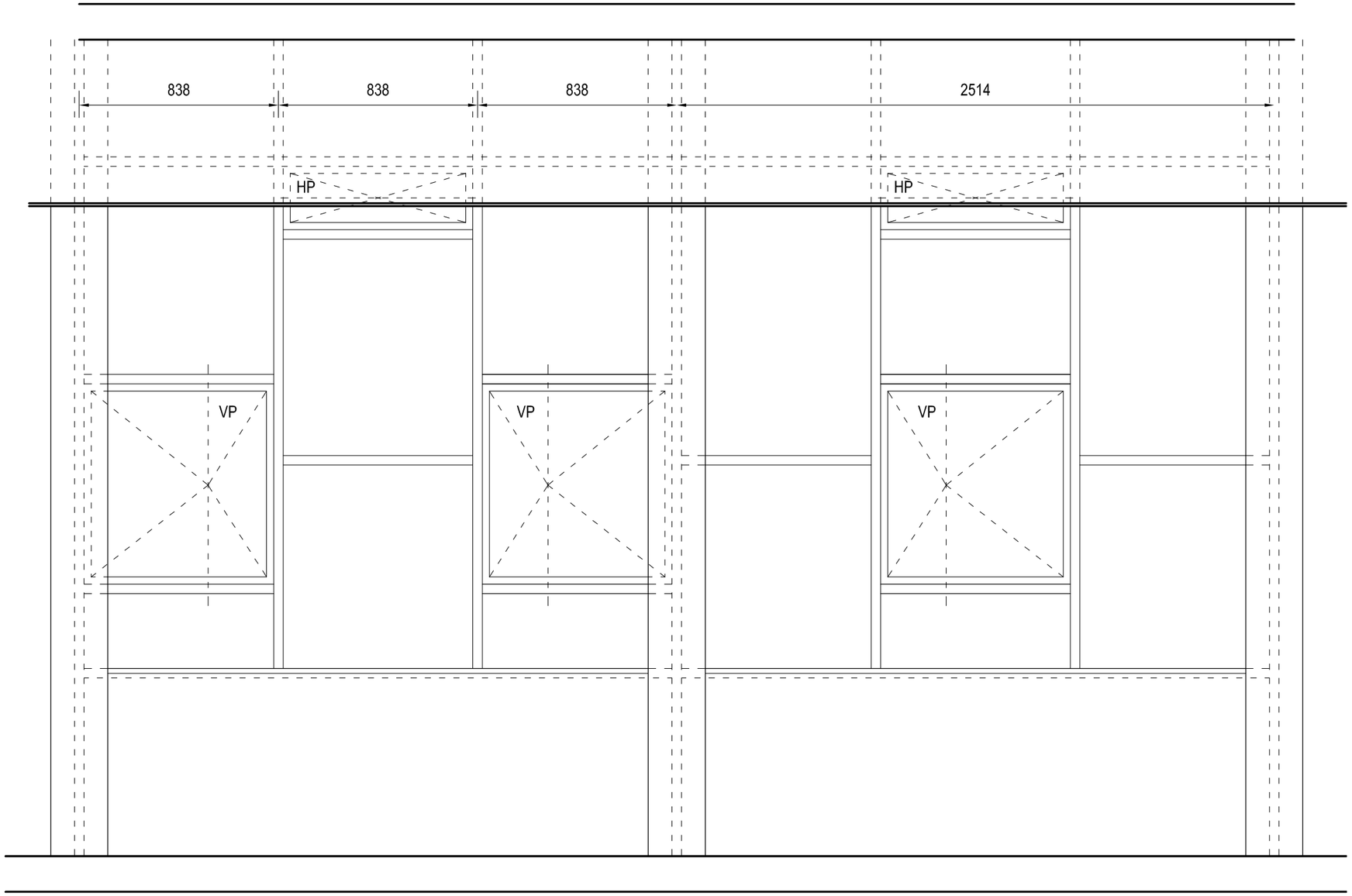


Vertical Section



VP: vertical pivot window
HP: horizontal pivot window

Internal Elevation

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington
SCALE: 1:20 @ A3
DATE: 04 Jul 2007
PROJECT: Ashmount School
DRAWN: JUB
CHECKED:
DRAWING TITLE: Junior Block Facades
Typical Section and Internal Elevation
JOB NUMBER: 231237
DRAWING NO.: S05
REVISION: -

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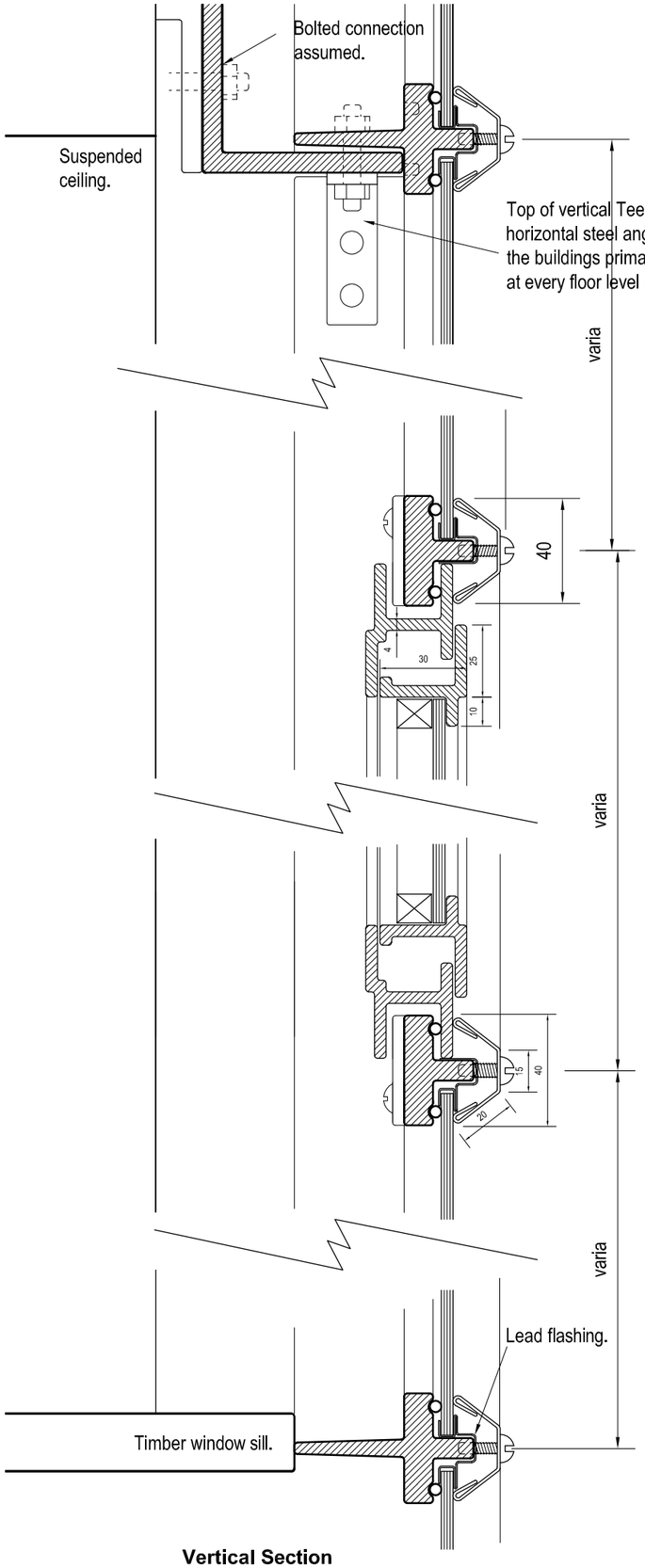
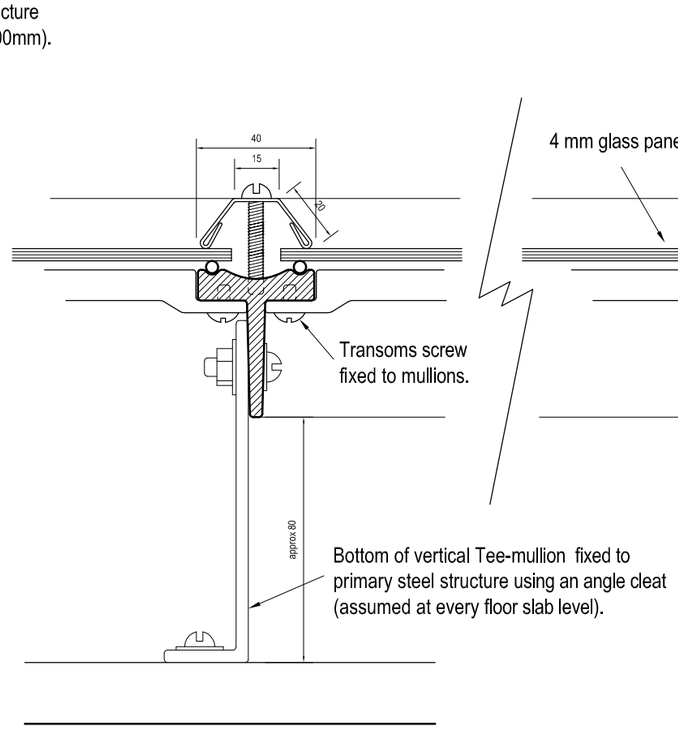
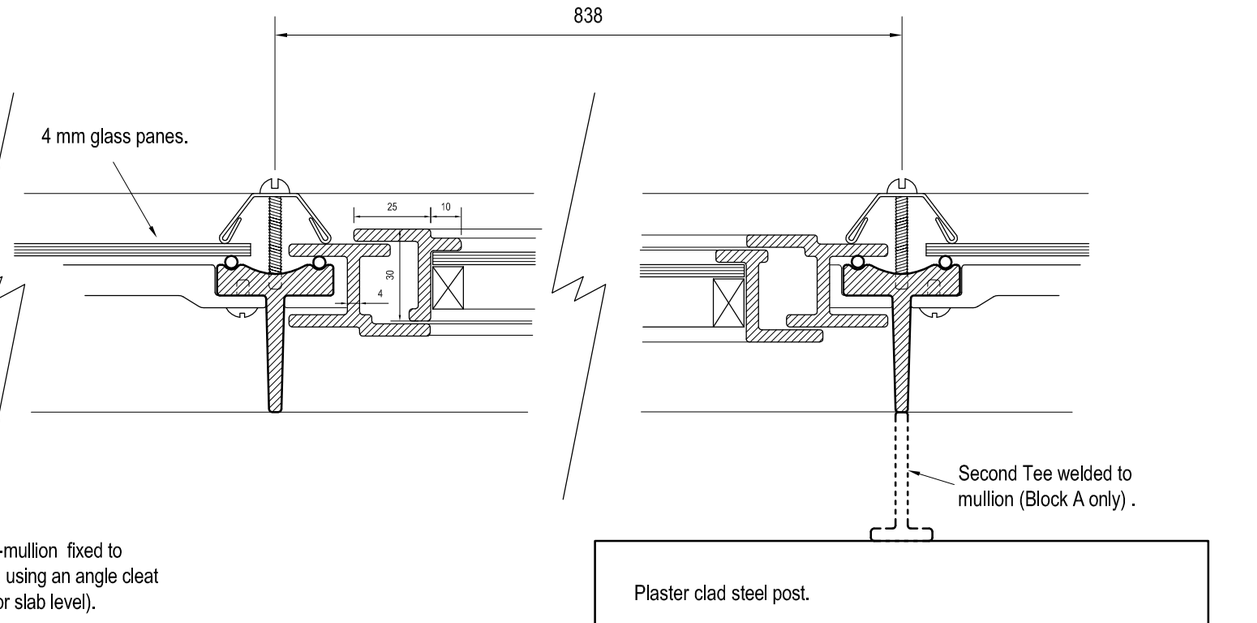
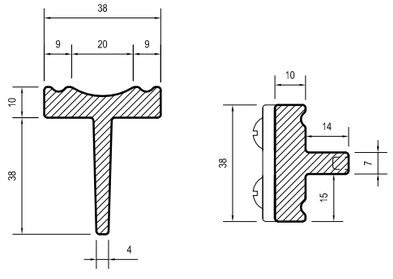


Vertical Section



Horizontal Section





Frame Sections

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington	SCALE: 1:2 @ A3	DATE: 04 Jul 2007
PROJECT: Ashmount School	DRAWN: JUB	CHECKED:
DRAWING TITLE: Curtain Wall Details as Existing	JOB NUMBER: 231237	DRAWING NO.: S10 — REVISION: -

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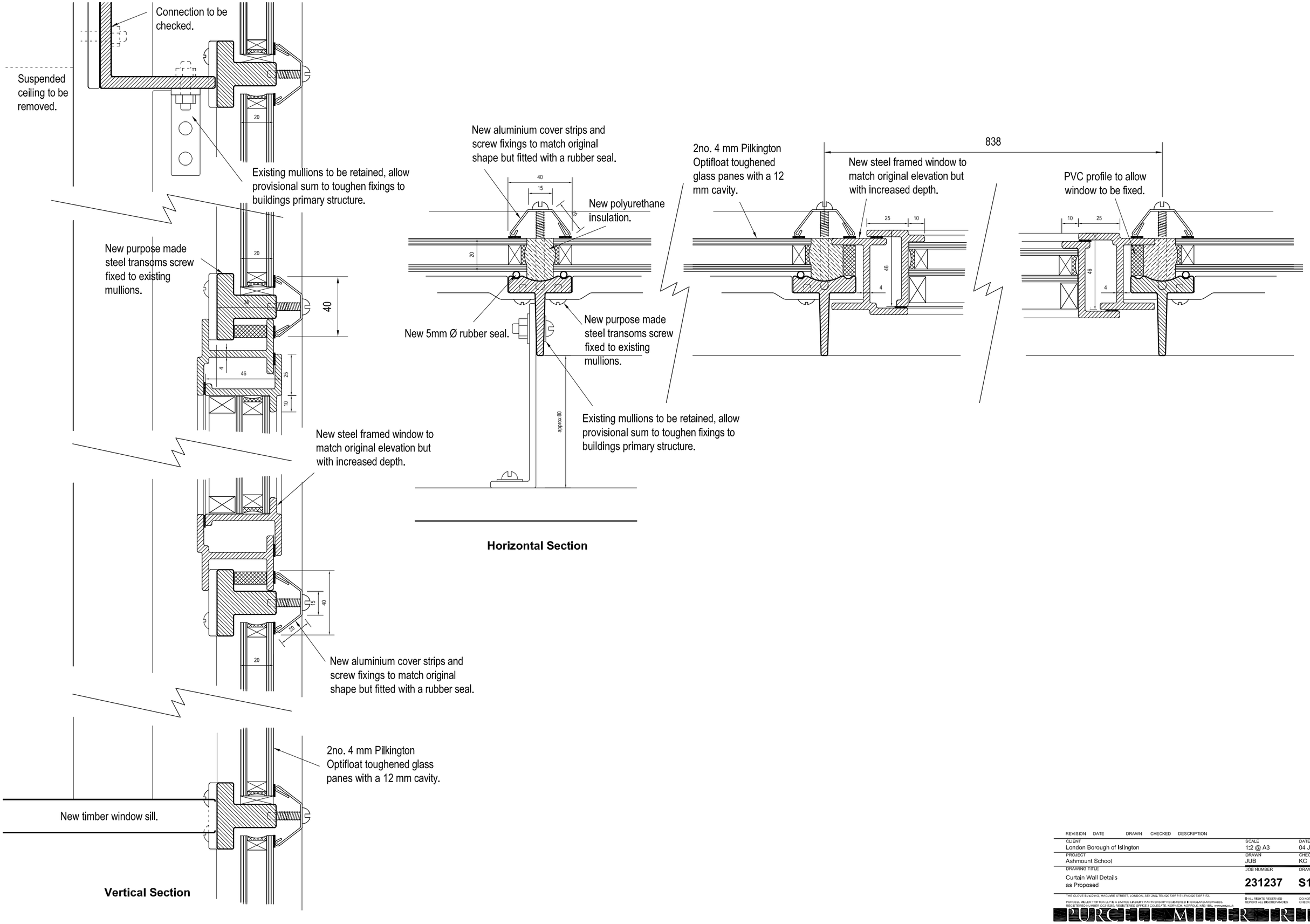

Horizontal Section

Vertical Section

REVISION	DATE	DRAWN	CHECKED	DESCRIPTION

CLIENT: London Borough of Islington	SCALE: 1:2 @ A3	DATE: 04 Jul 2007
PROJECT: Ashmount School	DRAWN: JUB	CHECKED: KC
DRAWING TITLE: Curtain Wall Details as Proposed	JOB NUMBER: 231237	DRAWING NO.: S11 — REVISION: -

PURCELL MILLER TRITTON

APPENDIX B - THE MARTIN PARTNERSHIP STRUCTURAL FEASIBILITY ASSESSMENT REPORT

The Morton Partnership

Registered in England No. 2727193

THE MORTON PARTNERSHIP LTD.

CONSULTING CIVIL & STRUCTURAL ENGINEERS,
HISTORIC BUILDING SPECIALISTS
Old Timber Yard House, 55 The Timber Yard
Drysdale Street, London N1 6ND
Tel: 020 7324 7270 Fax: 020 7729 1196
email: london@themortonpartnership.co.uk
www.themortonpartnership.co.uk

STRUCTURAL FEASIBILITY ASSESSMENT
REPLACEMENT CURTAIN WALLING
ASHMOUNT SCHOOL
LONDON N5

Architect: Purcell Miller Tritton
The Clove Building
Maguire Street
Butlers Wharf
London SE1 2NQ

Prepared by: The Morton Partnership Ltd
Old Timber Yard House
55 The Timber Yard
Drysdale Street
London N1 6ND

Date: October 2007

Ref: PC/feasrep/10948~rep01

1.0 Introduction

1.1 The Morton Partnership was appointed by Purcell Miller Tritton to carry out an assessment of the replacement curtain walling to the external elevations of Ashmount School, Hornsey.

1.2 We have been provided with the following information to assist us in reviewing the existing and proposed cladding system:-

- Part 1: Building Assessment by Purcell Miller Tritton
- Part 2: Façade Study by Purcell Miller Tritton
- Existing plans, elevations and connection details prepared by Purcell Miller Tritton
- Condition Survey on External Facades by twa Consortium dated 2003
- Preliminary Structural Report by Chamberlain Consulting LLP in May 2006
- Proposed sections by Crittal and Kawneer

1.3 This report describes in outline the proposals, the likely structural implications and their structural feasibility.

1.4 A detailed structural investigation will need to be carried out prior to the further development of these proposals. Further liaisons with specialist sub contractors will also have to be carried out to further develop the necessary connection details.

2.0 Brief Description of Existing Building

2.1 The main school buildings were constructed between 1954 and 1957. They comprise of proprietary steel frames consisting of exposed lattice beams at roof and floor levels supported on a steel modular frame of steel columns. The roof consists of wood wool slabs spanning between the lattice beams and the floor structure comprise of precast concrete units spanning between lattice beams.

2.2 The external cladding is an early form of curtain walling which essentially is hung from the principal structure and simply acts as an enclosing membrane from the elements, providing no structural support. The significance and history of the cladding system is elaborated on elsewhere in reports by other parties.

2.3 The existing principal structure has been surveyed by others and we therefore do not elaborate on this. We intend to concentrate on the curtain walling element and how this relates to the principal structure. The overall general condition of the principal structure was found to be reasonable with no obvious defects or signs of deflection or distortion noted.

2.4 The curtain wall comprises vertical T sections spanning from floor edge beam to floor edge beam. The mullions occur at every main structural column line and then divide the main structural grid into three equal bays spaced at 835mm centres. Horizontal transoms are smaller T shaped metal sections and span between vertical mullions. Sections of glazing or opening windows are then fitted between mullions and transoms and retained in position by external cover strips.

2.5 The condition of the cover strips has deteriorated and this has lead to the instigation of the feasibility study of replacing the glazing system. If left to deteriorate further there is a risk of the cover strips falling and sections of glass falling out.

2.6 The structure appears to have a continuous steel angle edge beam at each floor level. The vertical mullions are fixed to the continuous angle via a small steel cleat that has one bolted connection into the angle. The horizontal transoms are screw fixed to the vertical mullions.

2.7 The cover strips are fixed to the mullions and transoms with screws tapped into the T sections.

3.0 Structural Consequences of Proposals

3.1 It is intended to remove the current curtain wall glazing system and replace with a sensitive facsimile of the original but double glazed to improve sound and thermal insulation. It has been discussed as to whether the existing mullions and transoms can be re-used but as mentioned in the Part 2 report, this would involve having to weld an additional piece of steel to the mullions and transoms to accommodate the thicker glazing thickness. As well as affecting the galvanizing of the existing members, it is our opinion that the process of welding to these slender members would cause them to bend and buckle during the welding operation. We would concur, therefore, with Purcell Miller Tritton that by opting for double glazing it will be necessary to replace the entire glazing system, including mullions and transoms.

3.2 Replacing the original 4mm single glazing with 2 x 4mm double glazing will effectively double the dead weight of the curtain walling. This does not concern us with regard to the overall performance of the primary structure, however, close attention will need to be given as to how the curtain walling is supported on and fixed back to the main frame.

3.3 The steel angle edge beam is fixed back to the primary structure at floor and roof levels. We would recommend that these fixings are investigated to determine if they are suitable to retain and support the additional loading from the proposed new glazing system. If the angle edge beam spans between main floor beams which are located at approximately 2500mm centres, it may be necessary to strengthen this angle so that it can satisfactorily span between supports. If the angle edge beam is fixed continuously into the side of the concrete floor slabs it may be necessary to increase the number of fixings into the slab.

3.4 At floor and roof level the vertical mullions are fixed to the perimeter beams which as mentioned above are angle sections. The increase in load may induce rotation of the horizontal leg of the angle. To stiffen the angle it is possible to site weld stiffeners between the horizontal and vertical legs of the angle section at regular intervals.

3.5 The new vertical mullions will need to be fixed to the perimeter angle beam. The current fixing will need to be improved and a stronger cleat and bolt fixing will be necessary.

4.0 Conclusions

4.1 It is our opinion that with further understating of the how the primary structure relates to the curtain walling it will be structurally possible to replace the original single glazed system with the proposed double glazed system. In our opinion the principal structure is robust enough to accept the increased loading of the proposed glazing system. Although the proposed glazing is double the weight of the original it remains essentially a lightweight building cladding material.

4.2 To provide a detailed statement of what works will be necessary to the structure to upgrade the glazing, the following will need to be confirmed:-

- The perimeter beam will need to be investigated to determine how it is fixed to the principal structure.
- It will be necessary to understand if this beam spans between primary floor or roof beams or if it is fixed continuously to the floor or roof structures.
- An assessment will need to be made on the performance of the perimeter angle and a suitable enhancement detail designed if found to be necessary.

4.3 We assume that the design of the vertical mullion T sections will be carried out by the manufacturer. The design of the cleats will need to be carefully considered including how the mullions are to be fixed back to the perimeter beams and main structure and will require the input from both the manufacturer and design engineer. The cleats will need to provide additional vertical support as well as provide restraint from wind loading.

4.4 If the glazing manufacturer wishes to use a different metal other than mild steel, consideration should be given to the effects of bi-metallic corrosion. If stainless steel or aluminium mullions are specified it will be necessary to separate and isolate the mullion from the cleat fixing to the perimeter edge beam.

4.5 If it is found that the perimeter edge beam is not suitable to support the increased loads imposed by the new glazing system there are a number of ways that this member can be stiffened. Additional members and web stiffeners can be fixed to the existing steel angles to enhance their strength and further fixings can be used to upgrade the angle supports.

5.0 Limitations

5.1 No checks on load bearing capacities have been carried out on the existing structure. No other parts of the building other than those detailed in the report were inspected and we are therefore unable to state that any such parts of the building are free from defect.

5.2 The report is to the Client's brief and no liability is intended or will be accepted from any third party whatsoever. The limits of liability are restricted to the contents of this report.

5.3 Further site investigation must be carried out prior to any detailed design.

5.4 We have not inspected woodwork or other parts of the structure, unless specifically detailed in the report, which are covered, unexposed or inaccessible, and we are therefore unable to report that any such part of the property is free from defect.

APPENDIX C - QU TATI NS

The following qutotation documents are supplied:

Quotation Comparison

Critall Quotation

Trent Valley Window & Door Co. Ltd. Quotation

QUOTATION COMPARISON

Ashmount School

School Glazing Replacement

	Kawneer					Crittall	
	m2	Glazing	Scaffold	Total	£	m2	£
Junior Block							
East Elevation	87	60,908	2,010	62,918			
North Elevation	472	278,811	10,917	289,728			
West Elevation	86	50,536	1,981	52,517			
South Elevation	466	274,730	10,768	285,499			
	1,111	664,986			690,662	1,117	526,890
Infants Block							
South Elevation	178	118,124	4,127	122,251			
North Elevation	208	129,068	4,807	133,875			
Western Terrace	63	48,470		48,470			
Eastern Terrace	63	48,470		48,470			
	512	344,131			353,066	519	244,810
Link							
East Elevation	35	25,731	817	26,548			
West Elevation	35	25,731	817	26,548			
East Elevation	56	36,517	1,306	37,823			
North Elevation	45	29,856	1,044	30,901			
West Elevation	34	24,882	975	25,857			
	205	142,718			147,677	209	98,590
Site Set Up							
Site Office		8,044		8,044			
SiteContainer		inc		inc			
Toilet		inc		inc			
Fence		2,125		2,125			
					10,169		
					1,201,574		870,290
Solar control glass				112,605			
Additional extruded caps				tbc		79,665	
						14,905	
Glass barrier loading				exc			
Auto swing doors				5,712			
Glass to glass corner joints				4,049			
					122,366		131,585
					1,323,939		1,001,875
Preliminaries					inc	12%	120,225
Main Contractor's ohp					inc	8%	89,768
					1,323,939		1,211,868

CRITTAL QUOTATION

Your ref. 002-231237-Not set-000006
Our ref. MCB/B700592
Date. 14 September 2007

CRITTALL™

CRITTALL WINDOWS LIMITED
Francis House
Freebournes Road
Witham Essex
CM8 3UN
Tel: +44 (0)1376 530800
Fax: +44 (0)1376 530801
Internet:
http://www.crittall-windows.com
E-Mail:
hq@crittall-windows.co.uk

Purcell Millar Tritton
The Clove Building
Maguire Street
LONDON SE1 2NQ

For the attention of Dr J Birnbaum

e-mail mike.best@crittall-windows.co.uk
Direct Dial +44(0)7774 296 732

Dear Sirs,

Ashmount School

Further to your enquiry dated 24 August 2007, we have pleasure in submitting our budget quotation for the supply of Corporate W20 windows and doors to the Ashmount School project.

Full quote information can be found in the accompanying documents. Should you require ay further information or assistance, please do not hesitate to contact the undersigned or our Estimator, Mike Fisher, on +44(0)1376 530 834.

Yours faithfully,
CRITTALL WINDOWS LTD

MIKE C BEST
COMMERCIAL DEPARTMENT

Visit. www.crittall-windows.com

PURCELL MILLER TRITTON
INCOMING CORRESPONDENCE
Date Received: 17/9/07
Job No: 231237
Original To: JUB
Filed Electronically: Y/N
Folder Ref: 25 / Crittall
Comments:

Estimate no. B700592
Project Name. Ashmount School
Prepared by. Mike Fisher
Date. 14 September 2007

Scope of Works

Our budget price to undertake the works detailed in this quotation is **£870,290.00** (eight hundred & seventy thousand, two hundred & ninety pounds)

The basic scope of works is summarised as follows:

- Undertake site survey to obtain structural opening dimensions and details
- Prepare working drawings
- Manufacture windows and, doors as detailed on the attached itemised schedule
- Remove existing windows and doors (skips and disposal by others)
- Install new Corporate™ W20 windows & doors.

Product Specification

Crittall Corporate™ W20 steel window and door system

Glazing

Site glazed with 16 mm insulating glass units comprising:

Clear Units

4 clear toughened outer / 8 Krypton cavity / 4 soft coat low E toughened inner

Obscure Units

4 Stippolyte toughened outer / 8 Krypton cavity / 4 soft coat low E toughened inner

Please note that 16 mm insulating units will be glazed using a 'wet glaze' system utilising silicone sealant, generally in accordance with BS6262:1982. Face clearance will be 2mm either side of the glass.

Please note that no allowance has been made for thermal stress calculations, manifestation or heat soak testing of toughened glass, unless expressly included elsewhere in this quotation.

Window / Door Operation

Fixed and outward opening horizontal & vertical pivot windows together with outward opening doors have been allowed for in our quotation.

ASHMOUNT SCHOOL
PURCELL MILLAR TRITTON

Window Ironmongery

Our quotation allows for windows to be equipped with the following ironmongery:

Outward Opening Vertical Pivot

Hung on friction pivots with 'Roto Toned' non-locking lever handle and concealed releasable restrictor

Outward Opening Horizontal Pivot

Hung on friction pivots with 'Roto Toned' spring catch at the head

Door Ironmomgery

Our quotation allows for non-projecting hinges, mortice cylinder lock, lever handles, Arone Door closer and 'Anti-Finger Trap' sections.

Basis of Quotation

Our quotation is based on the following information included within your enquiry dated 24 August 2007 together with the attached Crittall Windows price schedule:

Drawings

PMT Drawings 231237 S01, S02, S03, S04, S05

Specification

CWL NBS Specification (enclosed)

Crittall Windows Price Schedule

Page 1 (attached)

The price and specification schedule included with this quotation is based upon and limited to the architectural and contract information provided with your enquiry. Any changes to the design information that affects dimensions, type, specification or quantity may have cost and programme implications.

Please note that our quotation is based on the scope of works detailed above. We reserve the right to review rates should the scope of works be revised.

Colours

Our quotation allows for the windows and doors to be polyester powder coated in one of the Crittall standard matt colours, as detailed on the attached 'Crittall Windows Colour Selector' guide.

Please note, non-standard RAL, BS or NCS colours can be supplied but may be subject to a surcharge and extended delivery period.

Finishes

Our quotation allows for the windows and doors to be hot-dip galvanised post fabrication in accordance with BS EN 1461:1999 and finished with Crittall 'Duralife™' polyester powder coating applied using an advanced electrostatic process in our 'in house' finishing plant. Automatic equipment is supplemented by manual spray to achieve a consistent, even coating which is cured at a temperature of 200°c to achieve maximum adhesion. The Crittall 'Duralife™' coating is applied in accordance with BS6497:1984 to a thickness of at least 60 microns. Strict quality control inspections in accordance with our ISO9001 certification ensure that quality is maintained throughout the process.

Prices

All prices quoted are inclusive of 2.5% MCD exclusive of VAT which, if applicable, will be charged at the prevailing rate.

Deliveries

Our quotation is based on delivery to a UK mainland address, unless otherwise agreed and stated in this quotation. Windows & doors will be delivered on 40ft flat bed non-articulated vehicles.

Deliveries using smaller transit sized vehicles or vehicles equipped with a Hi-ab offloading capability can be arranged at additional cost.

Payment Terms & Credit Facility

Quotations for the supply and installation of our products are based on Crittall Windows Ltd Terms & Conditions. Should our quotation be of interest, we would be pleased to discuss alternative arrangements based on industry standard payment terms.

Quotations for the supply only of our products are based on payment being made strictly within 30 days from the date of invoice. Please note that interest on overdue accounts will be charged at 3% above the current National Westminster Bank base rate.

Orders are accepted subject to receipt of satisfactory credit references and agreement of payment terms.

Contract Terms

Please note that this quotation is based on our Terms and Conditions of Sale, a copy of which is attached to this quotation. If your enquiry requires the completion of formal contract documents or refers to sub-contract terms and conditions, it should be noted that in addition to the Conditions of Sale on the reverse of this quotation, it is our policy to accept standard industry forms of contract together with their published amendments.

We cannot agree to withdraw the terms of this quotation in total, but we would be pleased to discuss individual points of contention should our quotation be otherwise acceptable.

Additional Considerations

Please note the following additional items, specific to your enquiry:

Commercial

Installation price

Our quotation is based on installation works being undertaken during a 39 hour week, worked during normal working hours. In the event we are required to work outside these hours due to circumstances beyond our control, the installation rate will be uplifted to reflect the additional cost of working unsociable hours.

Copyright and Intellectual Property Rights

This quotation and any designs, drawings, proposals etc. issued in connection with this quotation remain the property of Crittall Windows Limited. The contents are confidential and must not be reproduced without written consent.

Technical

Restrictors – 'Leggott'

Where indicated on the attached itemised schedule, our quotation allows for releasable 'Leggott' restrictors that limit initial opening to 100mm. The restrictor is released using a 'female' square end key and is concealed when the window is closed.

Toughened/Laminated Glass

Irrespective of the glass types included in this quotation, we would highlight the fact that the Code of Practice BS.6262:1982 states that toughened or laminated safety glass must be used for most doors, sidelights, partitions and panes within 800mm from finished floor level.

Construction – Windloading (T7)

Our quotation allows for elements to be constructed to withstand a wind load of 1200 N/m², based upon a 3 second gust velocity that is not likely to be exceeded more than once in 50 years.

Pressed Metal Components

Our quotation allows for pressed metal components to be manufactured from polyester powder coated 2 mm thick galvanised steel sheet to BS EN 10327:2004

Building Regulation Part L1B / L2B 2006 - Work in Existing Buildings

Crittall steel windows glazed with insulating glass units having a maximum centre pane 'U' value of 1.2w/m²/k are compliant with L1B & L2B of the Building Regulation Approved Document Part L.

Barriers In and About Buildings

BS.6180:1999 sets out specific safety requirements for areas of full height glazing where there is a possibility of persons falling through the glass and the external floor to sill height is 600mm or greater. Our quotation assumes that the Architect/Designer has made provision within the building design to comply with the requirements of BS.6180:1999.

Window Renewal Schemes

Access for Site Measuring

Whilst our price includes for obtaining site dimensions/details, it excludes the provision of access equipment that may be necessary to achieve appropriate, safe access compliant with current Health & Safety Regulations.

Such access equipment will be deemed the responsibility of the client and be provided free of charge to Crittall Windows Limited, unless otherwise negotiated.

Making Good / Redecoration

Please note that our quotation makes no allowance for making good of the structure (internally or externally) or redecoration unless agreed by Crittall Windows and expressly stated in this quotation.

Harmful Substances / Asbestos

The presence of Asbestos and related materials and/or substances known to be hazardous or harmful to health, must be notified to Crittall Windows Limited in advance of any site survey and dealt with appropriately (and certified as being removed from site) before Crittall Windows commence any works.

Current legislation dictates that the removal and disposal of Asbestos materials must be undertaken by specialist, registered companies. Our quotation is exclusive of any costs associated with handling such materials, either by design or discovery during the progress of the works.

Existing Cables / Services / Furnishings

Our quotation makes no allowance for the removal or rerouting of electrical, telephone, aerial or satellite cabling in the vicinity of the windows / doors that may hamper the removal / installation works.

It is assumed that all cabling will be removed or rerouted prior to our attendance.

Our quotation makes no allowance for the removal of blinds / curtains, furniture or other fixtures and fittings in the vicinity of works and assumes that such items will be removed prior to our attendance

Structural Opening Dimensions

Our quotation allows for obtaining structural opening dimensions. Please note that we rationalise sizes as far as possible to reduce the number of slightly different sized windows. Experience has proven that this practice undoubtedly facilitates efficiency in both manufacture and installation.

Site Survey - Exploratory Works

Our quotation allows for obtaining structural opening dimensions. However, it may be necessary to remove typical examples of the existing windows to ensure that accurate opening dimensions and structural details are obtained. Our quotation assumes that access to undertake such exploratory works will be afforded by the Main Contractor / client as necessary and that sufficient windows will be removed by others to validate the survey.

If this is not possible then assumptions will be made based on the dimensions and details that can be obtained together with any original architectural details provided to us. Such assumptions will be agreed between the parties prior to manufacture.

External Sealing

Our quotation allows for the windows and/or doors to be sealed to the structure using a gun applied low modulus silicone sealant from the sealant manufacturer's standard colour range with a polyethylene backing rod to dimensions determined by Crittall Windows following an assessment of the structural opening survey and rationalisation of manufacturing dimensions.

Please note that our quotation excludes sealing the base of any pressed metal sills to the structure.

Installation

Fixing Lugs and Screws

Our quotation allows for standard 3 mm thick galvanised steel fixing lugs approximately 100 mm long x 25 mm wide attached with stainless steel screws. Additional costs may be incurred if non-standard fixings prove necessary.

Expanding Polyurethane Foam Infill

Our quotation excludes the supply and application of expanding polyurethane foam. Should you require us to provide foam filling, our rate would be £6.00 / linear metre for a maximum 50 mm x 50 mm joint.

Glass breakage

Please note that our liability for the glass ceases as soon as the glass is glazed. The cost of replacing panes broken after glazing will be charged to your account.

Breakages caused by Crittall Windows will be replaced at our expense.

Site Attendances – Main Contractor / Customer

Our quotation assumes that the following general attendances will be provided to Crittall Windows by the main contractor / customer free of charge:

1. Safe, secure storage of goods in a designated area(s)
2. Provision of offloading and vertical distribution facilities such as tower crane (inc. banksman), goods / passenger hoist (inc. operator) or Telehandler (inc. driver).
3. Provision of appropriate external scaffold / access equipment to facilitate the window installation works
4. Provision of appropriate internal scaffold / access equipment above a working platform height of 3.5m to facilitate installation works
5. Provision of skips for the disposal of redundant original windows and glass together with packaging from the new windows (if applicable).
6. Making good of the structure if damage and/or deterioration would prevent a sound fixing.
7. Provision of free electric power (110 volts 15 amp) within a distance not exceeding 15 metres from each working face.
8. Welfare facilities including First Aid
9. Cleaning down and protection of installed components
10. Main datum level and grid lines
11. First aid facilities
12. General & safety lighting

Site Attendances – Crittall Windows

Our quotation allows for the following general attendances to be provided by Crittall Windows Ltd:

1. Labour to supervise and facilitate the unloading and distribution of windows, glass and ancillary components.
2. Internal access to a working platform height of 3.5 m and below
3. Horizontal distribution of windows above ground level (ground level distribution by main contractor)
4. Task lighting
5. Setting out from main datum levels and grid lines provided by main contractor / customer

Miscellaneous

Aluminium Feature Capping

Our quotation allows for polyester powder coated extruded aluminium feature capping to be applied to vertical and horizontal coupling sections.

The profile and method of attaching the capping sections will be subject to design development with the objective of matching the existing sections as closely as possible.

The extra-over cost to provide feature capping section would be £131,585.00 (one hundred & thirty one thousand, five hundred & eighty five pounds)

ASHMOUNT SCHOOL - PRICE SCHEDULE

CRITTALL™

Item	Quantity	Description	Price Each		Total	
		Corporate™ W20 composite windows coupled with standard mullion and transom sections				
1		Junior Block (Approx. 1,117 m²) featuring: 74 no. vertical pivot windows 830 x 880 81 no. horizontal pivot windows 830 x 300 22 no. horizontal pivot windows 830 x 500 3 no. doors 1660 x 2200			526,890	00
2		Hall Block (Approx. 209 m² featuring: 14 no. vertical pivot windows 830 x 880 9 no. horizontal pivot windows 830 x 300 23 no. horizontal pivot windows 830 x 500 2 no. doors 1660 x 2200 1 no. door 2490 x 2200 (3 leaves)			98,590	00
3		Infants Block (Approx. 519 m²) featuring: 30 no. vertical pivot windows 830 x 880 61 no. horizontal pivot windows 830 x 300 7 no. horizontal pivot windows 830 x 500 10 no. doors 1660 x 2200 1 no. door 830 x 2200			244,810	00
		Scope of Works - Remove existing windows & place into skips provided by others - Survey existing openings to obtain structural opening dimensions & details - Prepare working drawings - Manufacture, install, glaze & perimeter point new Corporate™ W20 windows				
		Total			**870,290**	**00**
		Extra-over cost to provide polyester powder coated aluminium feature capping sections to vertical and horizontal coupling members, similar in design to those fitted to the original windows				
4		Junior Block			79,665	00
5		Hall Block			14,905	00
6		Infants Block			131,585	00
		Total			**131,585**	**00**

Crittall Windows Ltd©

MAF/B700592/14.09.07

CRITTALL WINDOWS NBS SPECIFICATION
CORPORATE™ W20 RANGE
ASHMOUNT SCHOOL

L10 - WINDOWS

316 STEEL WINDOWS AND DOORS:

- Manufacturer and reference: Crittall Windows Ltd, **Corporate™ W20 range**
- Generally manufactured in accordance with BS 6510, W20 section.
- Weathertightness: To BS 6375: Part 1
  Exposure category (Design wind pressure): 1200 (Pa) see Table AA
- For air permeability, water-tightness and wind resistance data see Table AA
- Operation and strength characteristics: To BS 6375: Part 2
- Construction: All frames have welded corners and are flat and square within normal manufacturing dimensional tolerances of +/- 1.5 mm. Intermediate bars are hot tenon riveted.
- Galvanising: All components including steel attachments, coupling members and ancillaries: hot-dipped after manufacture to BS EN ISO 1461:1999
- Glazing details: 16 mm insulating glass units comprising:

  Clear Units

  4 clear toughened outer / 8 Krypton cavity / 4 soft coat Low E toughened

  Obscure Units

  4 Stippolyte toughened outer / 8 Krypton cavity / 4 soft coat Low E toughened

  Glazing beads present no horizontal ledges on which dust and dirt can gather.
- Weatherstripping: Gaskets complying with BS 4255: Part 1 manufactured from EPDM secured into grooves of opening frame with adhesive.
- Ironmongery/accessories: See clause 328.
- Finish as delivered: Galvanised & Duralife™ polyester powder coated (see clause 331) in a range of colours.

325 STEEL WINDOWS AND DOORS:

- Generally all the foregoing.
- Manufacturing undertaken in the Crittall factory by directly employed personnel.
- Design testing, manufacture and installation carried out under Quality Management Systems certified to BS EN ISO.9001

Date: 14/09/07 Ashmount School
Crittall Windows Limited, Francis House, Freebournes Road, Witham, Essex,CM8 3UN. Tel: +44(0)1376 530 800
Fax: +44(0)1376 530 801. E-mail: hq@crittall-windows.co.uk. website: http://www.crittall-windows.com

CRITTALL WINDOWS NBS SPECIFICATION
CORPORATE™ W20 RANGE
ASHMOUNT SCHOOL

328 IRONMONGERY/ACCESSORIES:

- Horizontal Pivot Windows

  Friction pivots, single 'Roto Toned' non-locking lever handle and concealed restrictor

- Vertical Pivot Windows

  Friction pivots and a single 'Roto Toned' spring catch at head

- Doors

  Non-projecting weld-on hinges, mortice cylinder lock, lever handles, door closer and 'Anti-Finger' trap sections

331 FINISH COATING

- Type/reference: Epoxy free Duralife™ polyester powder coating using Interpon D36 powder to BS 6497
- Preparation: Following galvanising, windows are chemically cleaned and pre-treated to provide surface to which powder coating will adhere.
- Covering: Minimum 60 microns on all significant surfaces.
- Colours: Wide selection available. See Crittall Colour Selector.
- Process: Coating will be undertaken in the same manufacturing plant as the frame fabrication.

552 METAL GLAZED SCREENS:

- Screen/composite window assemblies are available utilising all Crittall ranges.
- A full design/advice service is available.
- Coupling details; consult Crittall.

Table AA

TYPE OF OPENING LIGHT	EXPOSURE CATEGORY (Pa)	AIR PERMEABILITY: Not More Than $16m^3/h/m$ JOINT, AT (Pa)	WATER TIGHTNESS: NO LEAKAGE, AT (Pa)	WIND RESISTANCE: NO DAMAGE & ONLY PERMISSABLE DEFLECTION, AT (Pa)
Corporate™ W20				
Vertical Pivot	1200	300	50	*1200
Horizontal Pivot	1200	300	100	*1200

* A higher wind resistance can be achieved.

Date: 14/09/07 Ashmount School
Crittall Windows Limited, Francis House, Freebournes Road, Witham, Essex,CM8 3UN. Tel: +44(0)1376 530 800
Fax: +44(0)1376 530 801. E-mail: hq@crittall-windows.co.uk. website: http://www.crittall-windows.com

LIFE EXPECTANCY

Corporate™ & Homelight™ Steel Windows & Doors

CRITTALL™

Crittall Windows Ltd, Francis House, Freebournes Road, Witham, Essex CM8 3UN
Tel. +44 (0)1376 530 800 Fax. +44 (0)1376 530 801
Web. http://www.crittall-windows.com E-mail. hq@crittall-windows.co.uk

Modern factory finished steel windows combine strength and durability with contemporary performance. Meticulous selection and thorough testing at design stage ensures that Crittall steel windows and doors are fabricated from the highest quality materials and components ensuring that with regular maintenance the anticipated life expectancy of Corporate™ and Homelight™ steel windows and doors exceeds the window industry norm.

Below, is a table of life expectancies for the product and component parts.

Galvanised Steel Windows & Doors	50 years +
Duralife™ Polyester Powder Coating (non-aggressive environment)	20 years +
Silicone Sealant	25 years +
Glazing Gaskets	15 years +
Weatherseals	15 years +
Insulating Glass Units (warranted for 5 years)	10 years +

Comprehensive operation and maintenance information for Crittall steel windows, doors and ancillary products is available on request from Crittall Windows Ltd

Life Expectancy Declaration

FENSA Registered Company
Crittall Windows Ltd® 03.2007

DURALIFE™

POLYESTER POWDER COATINGS

CRITTALL™

Crittall Windows Ltd, Francis House, Freebournes Road, Witham Essex CM8 3UN

Tel. +44 (0)1376 530 800 Fax. +44 (0)1376 530 801

Web. http://www.crittall-windows.com E-mail. hq@crittall-windows.co.uk

Crittall Duralife™ Polyester Powder Coatings are available in a standard range of 34 colours. Matt finish with a gloss level of 25% ± 5% is standard.

Other RAL, BS or NBS colours are available in Matt 25% ± 5%, Satin 70% ± 5% and Gloss 80 % ± 5% finish but may be subject to a surcharge.

Crittall Duralife™ Polyester Powder Coatings are applied to Galvanised steel and Aluminium substrates 'In House' under our ISO 9001 Quality Management System and are compliant with BS6496 & BS6497

RAL 1013 Oyster White	RAL 7021 Black Grey
RAL 1015 Light Ivory	RAL 7022 Umber Grey
RAL 1019 Grey Beige	RAL 7024 Graphite Grey
RAL 1023 Traffic Yellow	RAL 7030 Stone Grey
RAL 1032 Broom Yellow	RAL 7031 Blue Grey
RAL 2002 Vermilion	RAL 7032 Pebble Grey
RAL 3009 Oxide Red	RAL 7035 Light Grey
RAL 5009 Azura Blue	RAL 7036 Platinum Grey
RAL 5010 Gentian Blue	RAL 7037 Dusty Grey
RAL 5012 Light Blue	RAL 7038 Agate Grey
RAL 5013 Cobalt Blue	RAL 8014 Sepia Brown
RAL 5014 Pigeon Blue	RAL 8017 Chocolate Brown
RAL 6000 Patina Green	RAL 8019 Grey Brown
RAL 6005 Moss Green	RAL 9001 Cream
RAL 6009 Fir Green	RAL 9002 Grey White
RAL 6017 May Green	RAL 9010 Pure White
RAL 6019 Pastel Green	RAL 9016 Traffic White
RAL 9005 Jet Black	RAL 9911 Crittall White

Crittall Windows operate a policy of continuous product development. Therefore, the list of standard colours may be subject to change. Please contact Crittall Windows Ltd to ensure that your selected colour is available.

FENSA Registered Company

Duralife™ Colour Selector Chart

Crittall Windows Ltd® 04.2007

TRENT VALLEY WINDOW & DOOR CO. LTD QUOTATION

Trent Valley Window & Door Co. Ltd.

MANUFACTURERS AND INSTALLERS OF ALUMINIUM AND UPVC
WINDOWS, DOORS, CONSERVATORIES, CURTAIN WALLING, PATENT GLAZING

Glazing House, Glaisdale Drive East, Bilborough, Nottingham NG8 4JW. Tel: (0115) 942 3650 Fax: (0115) 942 5252

PURCELL MILLER TRITTON

INCOMING CORRESPONDENCE			
Date Received:	17/9/07	Filed Electronically:	Y/N
Job No:	231237	Folder Ref:	25 / Trent Valley etc.
Original To:	JOB	Comments:	

DL/140907/8429
Purcell Miller Tritton LLP
The Clove Building
Maguire Street
London
SE1 2NQ

14th September 2007

For the attention of Dr Jens Birnbaum

Please quote this reference on all correspondence **Budget 8429**

Dear Sirs,

Re:- Ashmount School – Junior and Infant School Glazing Replacement

We thank you for your valued enquiry and have pleasure in submitting below our budget quotation as follows:

Remove Existing, Supply, Install and Glaze Aluminium Curtain Wall & Entrance Doors

Please find budget costs below have been made under a number of assumptions and as such should be treated accordingly. We have based our costings on the basis that we will be operating as the main contractor on the project.

Ashmount School - Budget Costs

	m²	Cost	Scaffold
Junior Block			
East Elevation	87	£60,908.23	£2,010.12
North Elevation	472	£278,811.10	£10,917.07
West Elevation	86	£50,536.12	£1,980.78
South Elevation	466	£274,730.44	£10,768.12

constructionline

FM51654 003

FENSA Registration No. 12596

AUTHORISED DEALERS FOR KAWNEER SYSTEMS
V.A.T. No 596 2328 11 COMPANY REGISTRATION No 2555382

	m²	Cost	Scaffold
Infants Block			
South Elevation	178	£118,123.82	£4,126.96
North Elevation	208	£129,068.05	£4,807.39
Western Terrace	63	£48,469.76	
Eastern Terrace	63	£48,469.76	
Link			
East Elevation	35	£25,730.67	£817.44
Weat Elevation	35	£25,730.67	£817.44
East Elevation	56	£36,517.42	£1,305.57
North Elevation	45	£29,856.42	£1,044.46
West Elevation	34	£24,882.41	£974.59

Site Set Up	
Site Office	£8,043.75
Site Container	included
Toilet	included
Fence	£2,125.00
Total for foregoing:	***£1,201,573.56 excl vat***

Additional Costs	
Solar Control Glass	£112,604.80
Additional Extruded Caps	tbc
Glass - Barrier Loading	not included
Auto Swing Doors - including 2no. Safety barriers	£5,712.00
Glass to Glass Corner Joints	£4,048.80

Various items that will require costing have had to be omitted due to lack of information/site knowledge, please see omission table below.

Item	Example	Action
Glass – Barrier Loading	Where pupils can approach full height glass without any internal handrail/transom.	No allowance has been included at this time for the inclusion of this improved glass spec.
Electrics	Sockets, lighting, cables	No cost included to remove/re-fix any of these items from the window façade both internally and externally.
Alarms	Door contacts, cables, PIR's	No cost included to remove/re-fix any of these items from doors/window façade internally and externally.
Plumbing	Radiators, pipes, toilets	No cost included to remove/re-fix any of these items which may be fixed to window façade.
Furniture	Benches, kitchen equipment	No cost included to remove/re-fix any of these items which may be fixed to window façade.
Computer Cables	Network, fibre optics	No cost included to remove/re-fix any of these items which may be fixed to window façade.
Asbestos	Type 3 report would be required	No cost included to remove any of these items which may be fixed to window façade.
Internal finishing off	Perimeter trims, floor finishes, suspended ceilings.	No amount has been included at this time for internal finishes. This would be required to be assessed upon site visit.
Building Works	Alterations to window openings, curb upstands, fascias, soffits	No allowance has been made for the alteration to structural openings or replacement of existing non-glazing elements.

MATERIALS
All extruded aluminium shall be in accordance with British Standards 1474 H.E. 9 alloy. Screws and internal components shall be of zinc plated corrosion resistant materials. Dry glazing materials shall be resilient quality neoprene. Weatherstripping shall be siliconised wool pile.

FINISH
All exposed aluminium shall be polyester powder matt finish (single colour) to standard stock range.

WINDOWS
Constructed from 'Kawneer' GT70 series of insulated sections, espagnolette locking system, with key locking handles and standard fittings, including over rideable restrictors.

CURTAIN WALL
Constructed using 'Kawneer' AA100 series of thermal sections with standard fittings

DOORS
Constructed from 'Kawneer' 350 series of Aluminium sections.

HARDWARE
Doors shall be fitted with the following: -

- 'Adams Rite' hook-lock with standard non-suited cylinder.
- Concealed overhead closer and bottom pivots.
- Full height ZR handles.
- Anti-finger trap door styles

GLASS
6.4mm clear laminated low e inner, 12/16mm argon cavity, 6mm clear toughened outer pane. Giving 1.2w/m2k.
Please note we have not included low iron spec.

We have included standard stepped glass to glass corner joints where required.

Alternative Solar control glass
6.4mm laminated inner, 6mm toughened SKN174 Coolite outer pane

Notes
Please note that we have not included any Georgian wired glass and that the glazing framing system is not fire rated.
We have included our own on site storage container.
Auto doors would not include an access system
We have not included louvre panels.
We have not included any solar control glass.
Our price assumes a continuous programme. Staged completions/visits will incur additional costs.

Terms and Conditions

The foregoing prices do not include V.A.T., which will be added at the rate applicable at the date of invoice. All prices are nett.

Normal working hours only are allowed for.

Please note this quotation is for budgetary purposes only. We would be pleased to undertake a more detailed quotation on the basis of a more comprehensive specification/information and programme for the works.

Yours faithfully

David Leeming
Business Development Manager