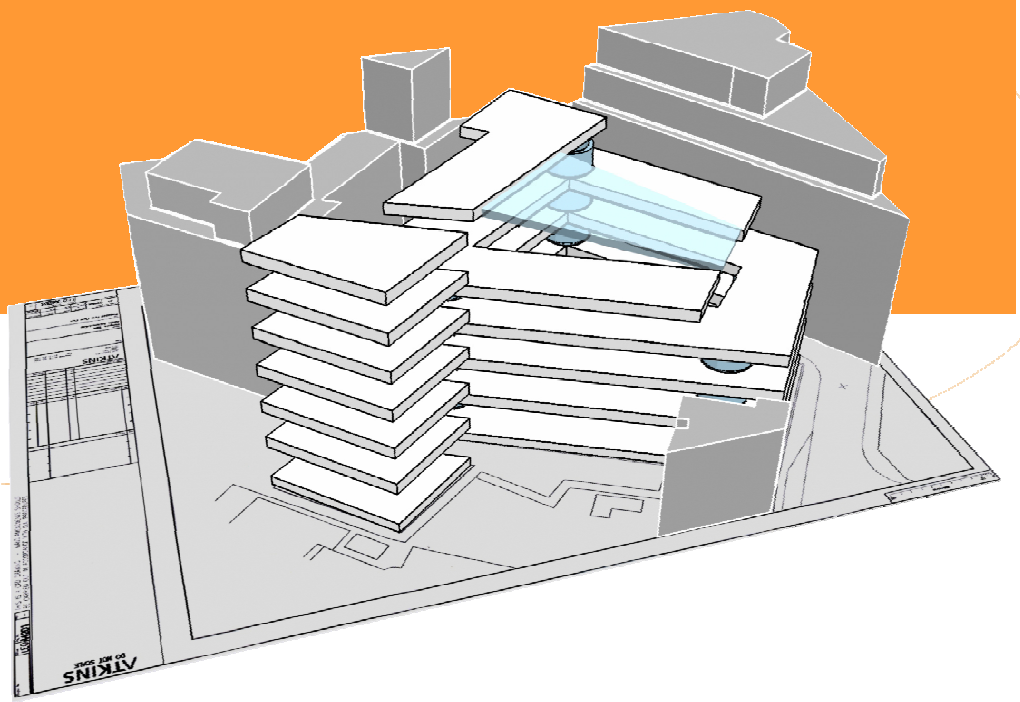
Version 1.1 - June 2005

City of York - Administrative Accommodation Review

Strategic Site Study

Hungate &
17-21 Piccadilly



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CITY OF YORK COUNCIL

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Public One Stop Centre

Atkins consultants have been commissioned to undertake a Strategic study to explore options for the relocation of administrative offices and the creation of a new 'one stop shop' facility for the City of York Council.

The council's current office accommodation is currently housed in a number of separate buildings both leasehold and freehold. This dispersed arrangement is perceived as inefficient, costly and promoting a culture of separation between departments. The Council's aim is to centralise as many departments as possible into a single purpose built facility which will create operating efficiencies and promote a new culture of co-operation within Council Services.

The One Stop Centre is a new facility for the City of York which will provide a single location for all the day to day interface functions and services provided to the public. Brining all these service provisions into one place will be a major benefit to the general public who use them, as well as efficiency savings to the Council.

Overview of Options & Summary Findings

A - Hungate Building with Admin Accommodation & One Stop Centre

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A - Hungate Building with Admin Accommodation & One Stop Centre

Meeting the Brief

The City of York have commissioned Donaldson's separately to carry out an accommodation review in order to establish in broad terms what the space requirements for new office accommodation will be. The results of this have produced net target figures of 10,000m² for the office accommodation and 3,000m² for the One Stop Centre. These figures are taken as the basis of a building brief onto which additional areas are required for cores, circulation, service rooms etc. For this purpose the design team have assumed an additional 20% to reach the projected gross area. For the purpose of this study, the overall gross target area for both elements is approximately 15,000m².

Location

The Hungate site is located off Stonebow, and forms part of a development masterplan proposal currently being considered for outline planning permission. The location is within easy walking distance along Stonebow from the main city centre shopping area, although Stonebow itself is not perceived as a highly trafficked pedestrian route. The mixed use nature of the Masterplan submission would help to address this making the area more of a destination.

Areas

The site identified in the masterplan is by itself insufficient to meet the full area requirement, but by taking in the site fronting onto Stonebow, currently occupied by a council owned hostel, a larger site is created. Working with the height and massing established by the Masterplan, it is possible to provide over 15,000m² of gross floorplate.

Design Factors

The design of the new building will not be explored in detail have, but in outline form this study examines a benchmark solution, which is in the form of a perimeter block, with a court space in the centre. This configuration allows for a number of different strategies to develop the design in subsequent stages.

Two basic versions of this model are explored: a base model, which is the simplest possible benchmark, easily comparable against other commercial developments and an enhanced model, which explores options to add value and performance.

Advantages

The advantage presented by this site is that, with all functions within a single building, maximum flexibility is achieved for future change as well as significant construction, capital and operating cost savings.

Problems to overcome

The single site solution will have to provide adequate separation of the One Stop centre and the main office accommodation. The site itself has a number of development challenges arising from the archaeological context and other environmental factors such as noise, vibration and flood risk.

Budget

The target budget, as outlined by Donaldson's separately, leads to a fairly simple exploration of projected costs for the development. No detailed brief regarding the contents and arrangement of the functions exists at this stage, so broad assumptions have been made to describe the base model. The enhanced model costs are similarly based on broad assumptions rather than detailed analysis of a specific design.

The total building budget for Administrative Accommodation co-located with the Public One Stop Centre at Hungate is:
base model, £23,758,000
enhanced model, £24,395,000

Refer to detailed sections below for base and enhanced model description and breakdown costs.

B - Hungate Building with Admin Accommodation, Piccadilly Site with One Stop Centre.

Meeting the Brief

This option retains the 15,000m² of accommodation at the Hungate site, but locates the One Stop Centre at a separate location on Piccadilly. The balance of space at Hungate becomes available for use by Council partner users, or even as a commercial sublet.

Location

The Piccadilly site is at a slightly closer distance to the central shopping area and has a more direct line of sight relationship.

Areas

The site is much smaller than that at Hungate but will allow the required net area of approximately 3,500m² to occupy a block of 3 stories on average.

Design Factors

The more constrained site at Piccadilly produces a more linear solution, which will nevertheless need to demonstrate an adequate ground floor space to house the main public interface. Adjoining properties are small scale and any design will have to respond to this. The building model for Piccadilly will achieve this through design gestures necessary to ensure the proposal is in context with the locality.

Advantages

The Piccadilly location is perceived as a better one for easy public access, while separation from the office accommodation is achieved in a direct physical way. The site may be available earlier than the Hungate one.

Problems to Overcome

A separate building will incur additional costs as compared with a unified solution. Design restraints on this site arising from Planning consideration may well be more onerous on the Piccadilly site.

Budget

As for the Hungate only proposal, costs are derived from a broad base of assumptions, with a base and enhanced version described.

Assuming that the Hungate site will be developed to its full extent the total building budget for Admin Accommodation only here will be as in 'A' above.

The total building budget for Public One Stop Shop at 17-21 Piccadilly is: £7,727,000

Refer to detailed sections below for base and enhanced model description and breakdown costs.

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Architecture

Hungate Detailed Appraisal

Architecture

Site location, potential & constraints
Space analysis,
  public/staff/vehicles
Planning
Building Levels
Base model
Enhanced model

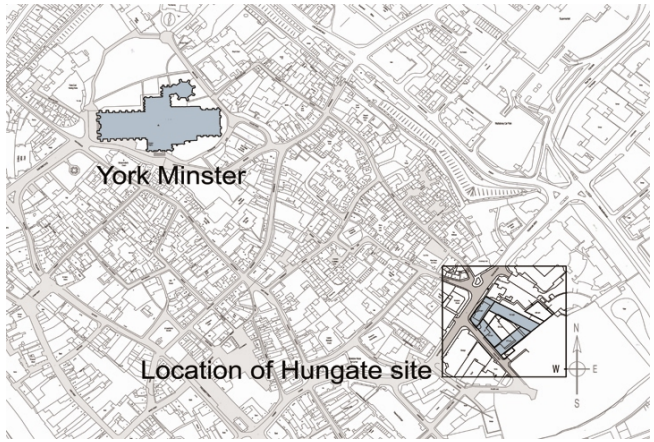
Site location, potential and constraints

As outlined above, the site is an area partly included within a development masterplan proposal and is bounded by the Stonebow to the northwest, Dundas Street to the southwest and a new street, Blackhorse Lane, to the Southeast. The North Eastern boundary is formed in part by a Grade II listed public house and its yard, and the Defra offices site.

These boundaries provide opportunities for multiple entrances to a new building, for example, the One Stop Shop Centre could be accessed directly from the Stonebow with its good public transport links and clear visibility on the pedestrian route to the town centre. The office accommodation could be accessed separately from Dundas Street or the proposed St Johns square.

Constraints on Development include environmental factors such as traffic noise, fumes and vibration from the Stonebow as well as potential flood risk. Archaeological information suggest that significant deposits are close to the surface, making basement or semi basement space for plant rooms, storage or car parking a very costly strategy.

The difference in levels between Stonebow and Black Horse Lane will present a challenge to level access solutions. Level access is possible from Stonebow,



but the ground level on Black Horse Lane is approximately one metre lower. Steps, ramps and / or platform lifts will be needed to overcome this..

In Planning terms, the adjoining public house will restrict overall heights to the Stonebow frontage, although the massing study included demonstrates that the target areas total is still achievable. More importantly, a key sightline has been established between the Stonebow and Black Horse Lane which must be included in any design proposal.

The base scheme presented here shows a trapezoidal perimeter block of 14m depth to allow natural light and ventilation to linear floor plates. The sightline is preserved, leaving an annex block to the East of the main building. It would be possible to bridge across between these two parts without compromising the sightline. Block heights vary in line with the storey heights agreed with York Planning as part of the masterplan application. For the base scheme, cladding materials are assumed to be masonry and aluminium framed windows, with a conventional standing seam or single membrane low pitched roof.

The enhanced model suggests that the central court space is roofed over with translucent material, for example ETFE. This could generate significant cost savings through not having to build an external wall to the court space.

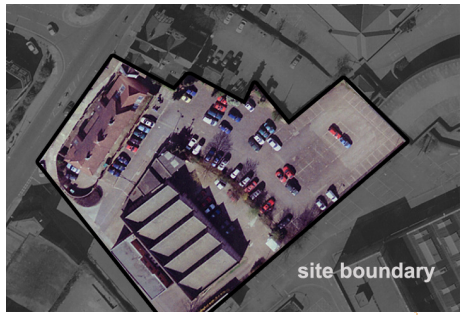
These savings could be used to enhance the perimeter elevational treatment.

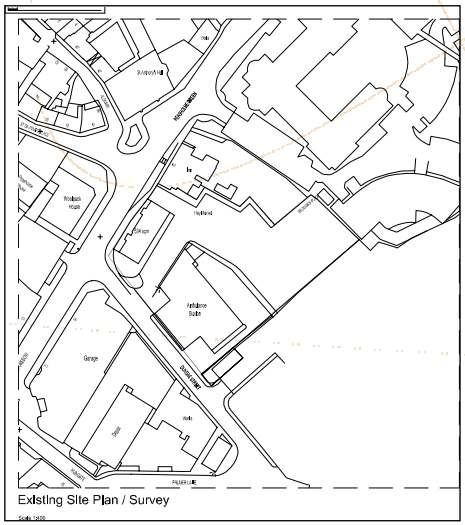
The central atrium space created would provide a dramatic amenity space, potentially additional floor space, as well as being part of a natural ventilation strategy.

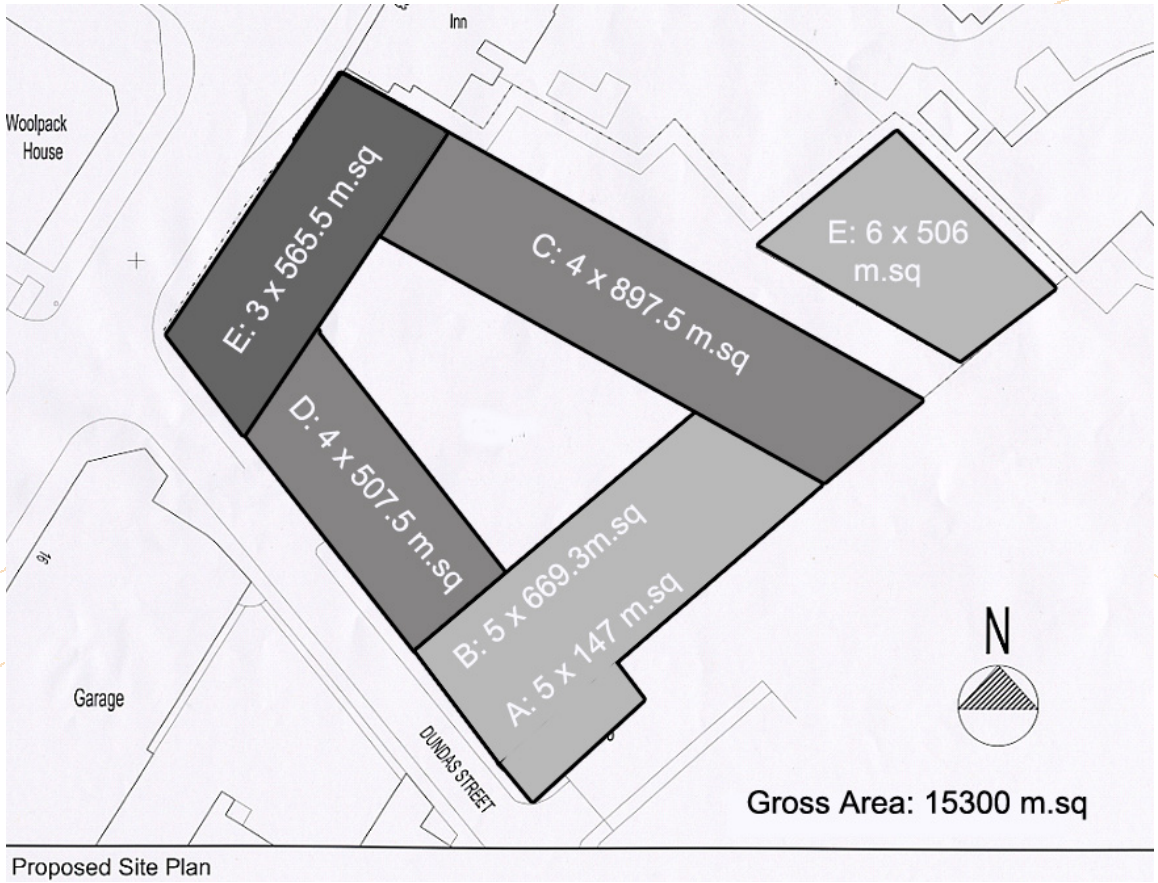
Servicing the building is proposed from Black Horse Lane. A service bay could be created within the building footprint with level access.

A limited number of parking spaces, up to say 30 could be accommodated within the building footprint, as well as cycle parking. These numbers have been generated from the City Council's stated aim of 'minimal' on site provision, and are broadly in line with the draft Planning brief formulated by the Planning Authority in December 2004. This calls for extensive use of travel plans, and advises against on site provision for commercial or office functions. The submitted Masterplan describes 500 parking spaces across the whole development, most of which will be reserved for the 700 residential units.

Site Plans – Existing & Proposed

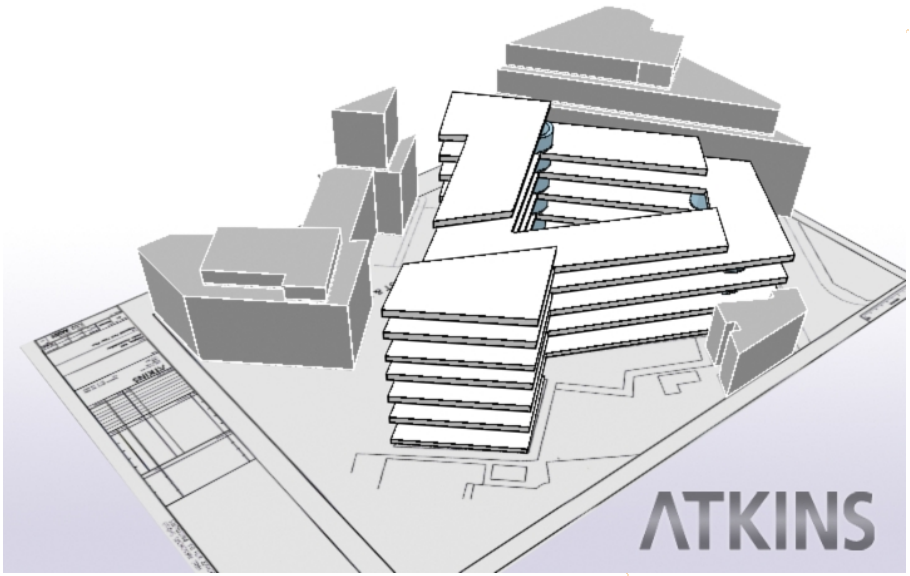




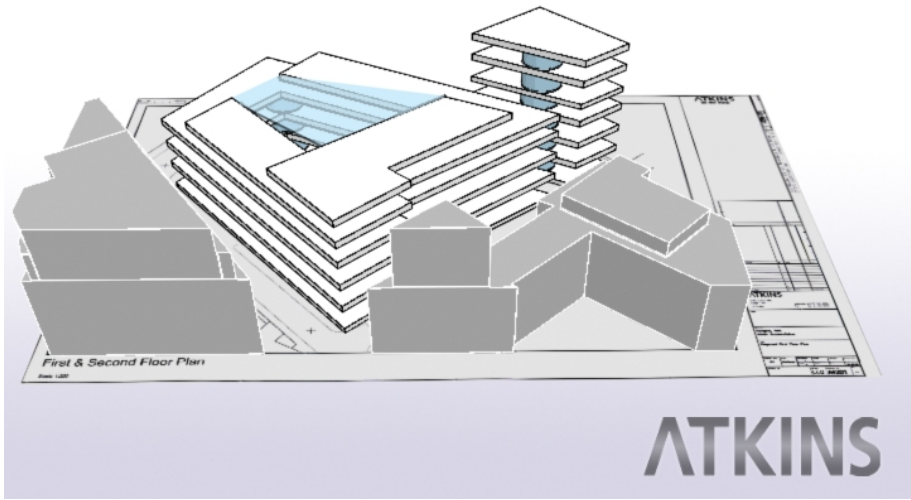


Proposed Site Plan

Floor	Block A	Block B	Block C	Block D	Block E	Block F	Courtyard	Totals
Ground	147	669.3	897.5	507.5	565.5	506	866	4158.8
First	147	669.3	897.5	507.5	565.5	506		3292.8
Second	147	669.3	897.5	507.5	565.5	506		3292.8
Third	147	669.3	897.5	507.5		506		2727.3
Fourth	147	669.3				506		1322.3
Fifth						506		506
Totals	735	3346.5	3590	2030	1696.5	3036	866	**15300**



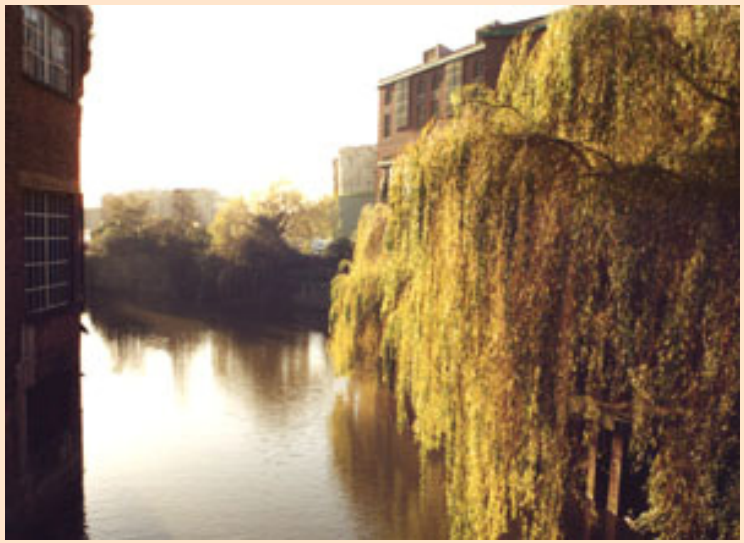
Hungate - Base Model



Hungate – Enhanced Model

Architecture

Piccadilly Detailed Appraisal



View from Foss Bridge, Piccadilly, York

Architecture

Site location, potential & constraints
Space analysis,
  public/staff/vehicles
Planning

Site location, Potential and Constraints

The Piccadilly location for the One Stop Centre offers the possibility for a distinct and clearly accessible public interface for Council service users and providers. As a separate building from the main offices, there is the opportunity to create a smaller scale, user friendly solution as compared to the much larger combined scheme. In addition, the site is available in a shorter timeframe than Hungate so that this essential service could be provided without having to wait fro the more complex site's issues to be resolved.

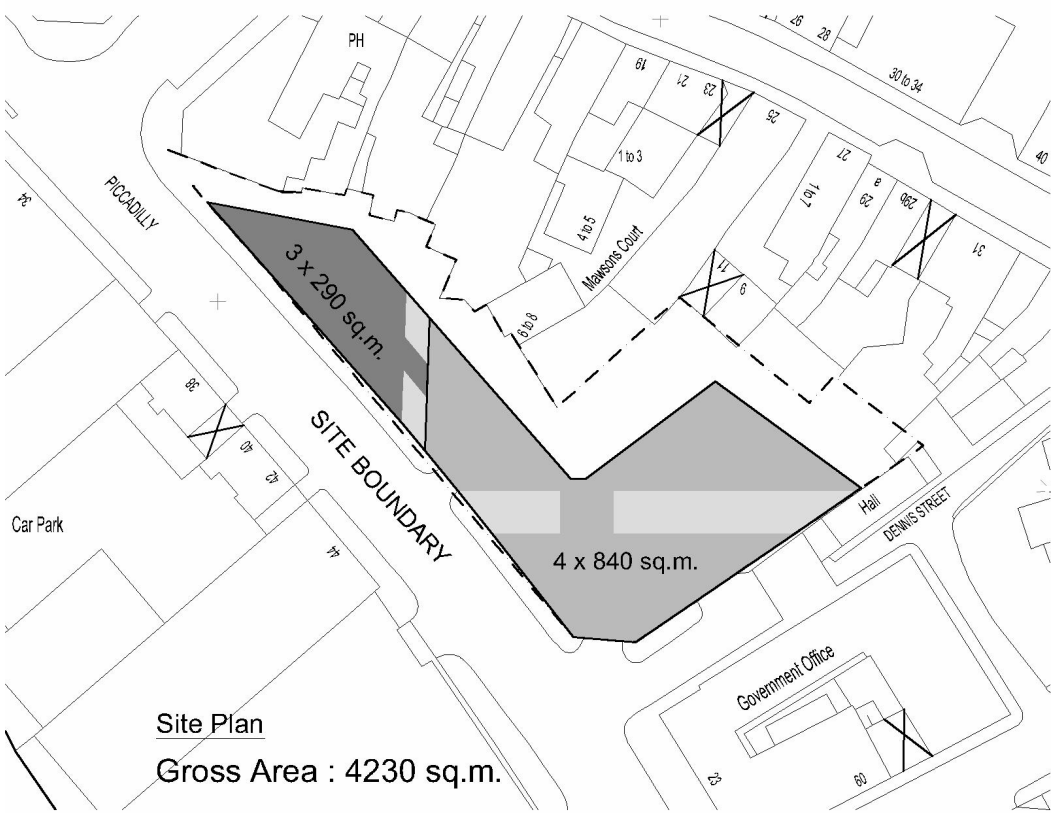
Constraints on the site's development include noise and fumes from Piccadilly which may intensify if a proposed bus terminal scheme is carried out. More fundamentally, the site's surroundings include a number of listed buildings which are small scale in nature and include residential uses. Scheme design will have to respond to these, while at the same time providing an adequate solution in terms of space provision, access and reasonable cost.

With this in mind, the scheme shows an L shaped floor plate, with height variations stepping down from a maximum of 4 storeys adjacent to the existing government offices at Dennis Street, to 3 storeys at the North Western end of the site next to the listed public house.

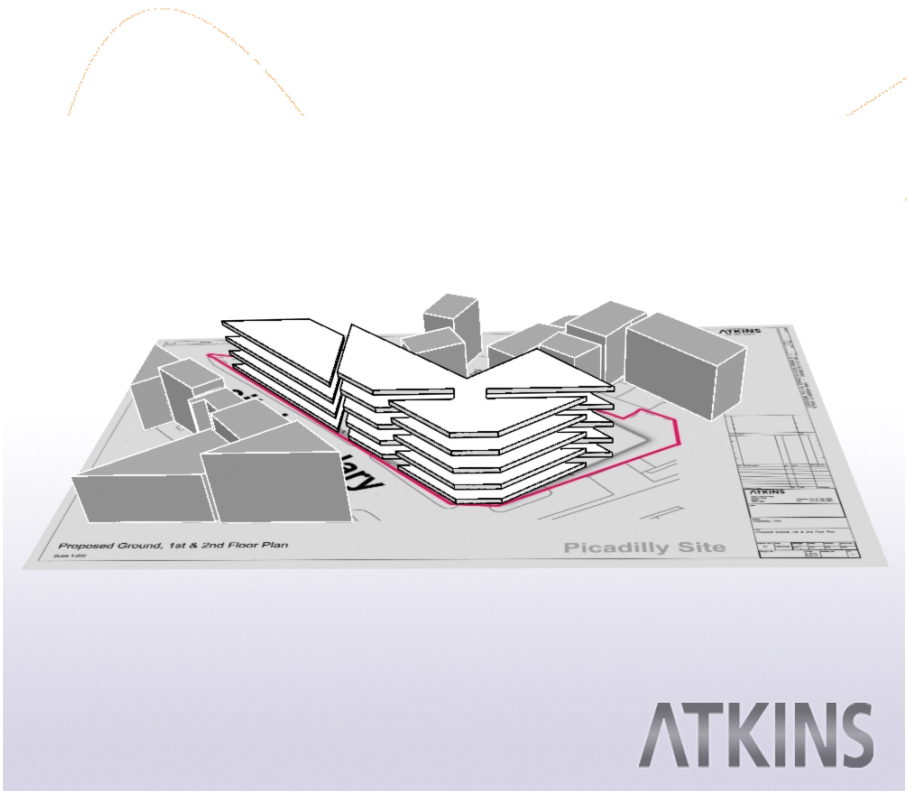
The scheme incorporates features which may well be required by the Planning Authority to set the building into its context. These include variation of external treatments to further break down massing and the possible formation of glazed elements to open up views into and through the building.

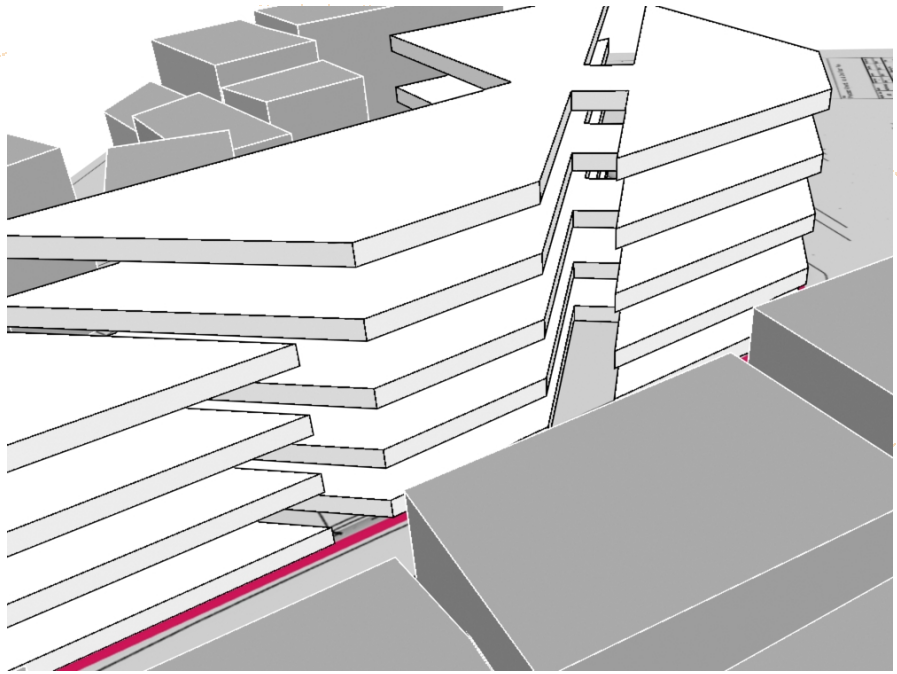
A limited amount of parking for visitors and the disabled will be achievable to the rear of the site, accessed from Dennis Street. As with the Hungate Site, this is in accordance with the City Council's aspiration for minimal on site parking as well as the known policy aims of the Planning Authority. Covered cycle parking for staff and visitors will be provided.

Site Plan



Floor	Block A	Block B	Totals
Ground	290	840	1130
First	290	840	1130
Second	290	840	1130
Third		840	840
Totals	870	3360	**4230**





Piccadilly. Images of massing and possible visual breaks

04

Archaeology

Hungate Site

This initial archaeological review of the development proposals has been divided into two sections to address the Hungate and Piccadilly sites individually as both sites have differing archaeological issues.

Hungate

General Background

This review is primarily based on the Environmental Statement Technical Appendix D Archaeological Assessment Vols. 1 and 2. This document accompanied an outline planning application for the wider Hungate site. A decision on this application is still awaited.

The larger Hungate site is situated within the City Walls and contains a significant archaeological resource. The Hungate site lies within a designated Area of Archaeological Importance (AAI) within which the City Council requires that any new developments disturb or destroy less than 5% of any archaeological deposits. This is therefore a significant constraint on the proposed development. As noted in Appendix D of the Environmental Statement, the wider Hungate development proposals do not currently meet the City Council's archaeological policy target.

Proposed Development Site – Archaeological Data

The proposed development is situated along the northern frontage of the Hungate site. The area of development broadly conforms, in terms of its extent, to the Hungate Masterplan sub-area – Office Block.

Within this sub-area a limited number of archaeological evaluations and assessments have been undertaken. From these the Hungate site archaeological consultants have generated a broad archaeological deposit model. This model indicates that the proposed development could impact on significant archaeological remains, in particular part of a possible Roman cemetery along the western part of the development footprint.

It should be noted that no archaeological work has been undertaken within the area now occupied by the hostel. Consequently, no archaeological data or deposit models are available for this area. Further archaeological work on this part of the site may be required by the City Council Archaeologist. In addition, the City Council Archaeologist may require further work across the site of the ambulance station to supplement the current limited data.

Proposed Development Site – Key Issues

The possible Roman cemetery is a key constraint for the development. The cemetery could lie close to the surface and it has been recommended in the Environmental Statement that this part of the site be subject to full archaeological excavation. This excavation would need to be phased with the excavation of the other areas of the cemetery to the west. This may result in delays to the construction programme. There would also be substantial costs involved in the excavation of the cemetery.

The proposed piled foundations for the remaining areas of the development footprint will require further discussion with the City Council Archaeologist, but should be broadly acceptable. According to the Environmental Statement these foundations will require archaeological mitigation in the form of core sampling.

As previously stated, this review draws on the recommendations of the Environmental Statement. These recommendations may or may not be acceptable to the City Council Archaeologist; this matter remains to be conformed as part of the outline planning application. The conclusions and finding of this review may therefore need to be reassessed once the application has been determined and in light of any relevant planning conditions that may be imposed on a successful application. Until the application has been determined a considerable degree of uncertainty regarding the archaeological issues associated with this development will remain.

Next Steps

Assuming that the Outline Planning Application is permitted it is critical that consultation with City Council Archaeologist commences at the earliest opportunity following determination. This consultation should address the following issues:

- Design of foundations
- Site layout
- Identification of possible areas where ground disturbance to certain depths may be acceptable e.g. to allow additional parking
- Specification and phasing of archaeological excavation and evaluation works

Following this the required archaeological works will need to be implemented and the building designs developed to reflect the issues that arise from the consultation and archaeological works. This may result in alterations to the

building layout, foundations and service / sewage arrangements. It may be possible through this process to enhance the design proposals to allow for the accommodation of further parking and / or usable floor space.

It is probable that further archaeological work will be required prior to the submission of a detailed planning application. The excavation of the possible Roman cemetery will probably occur after the detailed application has been determined.

Archaeology

Piccadilly Site

Piccadilly

General Background

This review is primarily based on the 1991 Archaeological Evaluation Report at 17-21 Piccadilly, York (York Archaeological Trust). The Piccadilly site lies within a designated Area of Archaeological Importance (AAI) within which the City Council's requires that developments disturb or destroy less than 5% of any archaeological deposits.

Proposed Development Site – Archaeological Data

The 1991 evaluation and borehole survey revealed that the site contains medieval deposits overlain by post-medieval and modern material. Within the excavated trenches and boreholes modern / post medieval material was found down to a depth of approximately 1.5m.

The evaluation trenches and boreholes were limited to one part of the overall site and we therefore do not have a clear picture of the archaeological deposits below the majority of the site.

Next Steps

The first stage involves early consultation with City Council Archaeologist to discuss and specify the nature of further archaeological works required to accompany any planning application and to assist with the detailed deign of the proposed structures.

Following the completion of the archaeological evaluation works it is important that further consultation with the City Council Archaeologist is undertaken to address the following issues:

- Design of foundations
- Site layout
- Identification of possible areas where ground disturbance to certain depths may be acceptable
- Specification and phasing of any archaeological excavation and evaluation works

Following this, the designs will need to be developed to reflect the issues that arise from the consultation and archaeological works. This may result in alterations to the building layout, foundations and service / sewage arrangements.

05

Civil & Structural Engineering

Hungate Detailed Appraisal

Civil & Structural Engineering

Introduction
Site information
Site preparation
Foundations
Ground Floor Slabs
Superstructure
External Walls
Design parameters
Drainage
Flood Risk
Hungate enhanced model

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Introduction

The Civil and Structural Engineering feasibility is spilt in two sections to cover the Hungate and Piccadilly sites respectively, as both sites and proposals require different civil and structural design solutions.

For an outline of the proposed buildings for both sites, refer to the architectural section.

The structural design study takes account of the following key issues:

- sustainable design
- flood risk
- archaeology
- innovation
- affordability
- buildability
- integration of structure and service route
- flexibility for future changes in use and layouts
- sympathetic choice of materials and structural form

Site investigation information

The following documents have been reviewed:

Environmental Statement Technical Appendix D - Archaeological Assessment Volume 1 & 2.
Envirocheck Report - Ref:10726631

The above archaeology report discusses many issues including the possible foundation solutions. The report states that less than 5% of the archaeological deposits should be disturbed or destroyed by any proposed development. In addition, a minimum level of 10.60m AOD is stated as the typical underside of foundations (excluding the piles themselves). We would recommend that this level is confirmed by the City Council Archaeologist as other levels are also noted within the report.

A typical build-up of pile cap and ground floor would be approximately 1.35m, which would give a floor level of approximately 11.95m AOD. There would be scope to look at reducing the above build-up once detailed design commenced, hence lowering the final ground floor level. We would propose a Ground Floor level of 10.60 AOD which corresponds to the 'front' of building ground level on The Stonebow/Peasholme Green: subject to archaeological findings and detailed flood analysis.

The initial flood risk report does assist in assessing an appropriate ground floor level. This is covered in the civil engineering section below.

The Envirocheck report highlights that there is a Radon risk to the site.

We would recommend that further geo/environmental review/site investigation is undertaken by a consultant to understand more fully the ground conditions of the site including review of the BGS borehole records available.

The proposed development is close to existing properties and may be subject to the Party Wall Act. A part wall surveyor should be consulted for future stages of the design to ensure compliance with the act.

Site preparation

Prior to any construction work there will need to be further archaeological site investigation following the demolition of the existing buildings on the site – see comments above with regard to further clarification.

In addition, the archaeological reports recommend probing at each proposed pile location prior to the actual piling operation. With regard to sustainability re-use of demolition materials should be considered for the proposed development, where appropriate.

Foundations

Due to the archaeological restrictions and also the relatively poor ground near to the surface of the site, the most likely solution is piled foundations.

The pile type needs to take account of the archaeology and the depth of the suitable strata for the piles to be founded in. The above archaeological report recommends CFA (continuous flight auger) piles. Consideration could also be given to the recently introduced CHD piling technique which reduces the need for the removal of spoil. However, this technique will cause localised compression of the strata and will need approval of the City Council Archaeologist. The Environment Agency will need to be consulted regarding any risks to local aquifers

The level of the foundations should generally be above 10.6m AOD as recommended in the above archaeological report. The level for flood risk also needs to be considered and may affect the final choice of foundation and ground floor level.
The piles will be connected to pile caps and ground beams, which in turn will support the frame, ground floor slab and external wall construction.

Ground Floor slabs

Due to the poor ground conditions near to the surface of the site and also the archaeology present, a suspended ground floor will be required.

The ground floor slab will span onto ground beams and pile caps. For flexibility the slab should be design for light weight partitions as for the floors at higher level - see the superstructure section below for the loading to the ground floor slab.

Superstructure

The following options have been considered:
- steel frame with downstand beams.
- flat slab insitu / flat slab insitu with post tensioned
- steel cellular beams – long and short spans
- pc concrete frame
- hybrid steel / precast concrete frame

The recommendation is to use a steel frame with cellular long span beams. The long spans give excellent flexibility for future changes to furniture layouts. For a 14m span the beam depth will be in the order of 740mm deep for a 6m grid. The final grid spacing will be subject to the architectural elevational treatments.

The floor beams will be designed compositely with the metal deck slabs which minimises steel weight and therefore cost. This form of construction also gives good performance when considering disproportionate collapse criteria. The composite metal deck will be in the order of 130mm.

The steel solution offers guaranteed quality due to the off-site manufacture and also speed of erection which reduces the overall programme. The steel solution is flexible with regard to any future changes to the building as it is relatively easy for modify.

The cellular beams allow for the integration of the services within the depth of the beam and hence minimise the overall height of the building.

Fire engineering should be considered as part of the final design there may be a considerable saving in cost due to the reduction in fire protection at no lost in safety.

Structural movement joints will need to be considered through the whole frame subject to the final plan shapes.

The roof should be light weight steel roof supported by cold rolled purlins. Any internal plant room areas will have a concrete floor as these can support the high plant loads and are also are effective at reducing vibration and noise transmission to the rooms below. External plant areas could be either supported on concrete floors or a steel grillage above the roof.

Long term stability of the frame will be provided by braced bays/shear walls.

Design loadings should be to institutional standards as follows:

Office areas:

Super imposed loads:
Live load = 5 kN/m2
Plus a partitions (light weight) allowance = 1.0 kN/m2

Dead loads:
As per actual material weights
Services = 0.25 kN/m2

Core Areas:
Super imposed loads:
As per British Standard but minimum as office areas above.
Allow for blockwork partitions to these areas.
Dead loads:
As per actual material weights
Services = 0.25 kN/m2

External Walls

Secondary steelwork wind posts and rails may be required within the thickness of the block walls to laterally support to the walls due to wind loading, subject to the final choice of wall systems. The walls would be tied to the main frame and secondary steelwork. Movement joints would be provided within the blockwork to suit the panels that are created by the secondary steelwork and main frame.

Pre fabricated wall panels could also be considered to guarantee quality and reduce construction programme. This type of external wall construction also reduces the need for scaffolding.

Design Codes/parameters

York City Council require an overall design life for the building of 60 years minimum and no element of the building shall have a design life shorter than 25 years except that it can be maintained and repaired or renewed without serious disruption to the council.

The designs will need to comply with the current building regulations.

The steelwork should be designed to BS 5950 and the concrete elements to BS 8110 and loadings will be to BS6399 Pt 1,2 & 3.

Vibration checks for the floors should comply with BS6472:1992.

The foundations should be designed to BS8110 and BS8004 and based on the loads applied.

Masonry should be designed to BS 5628.

Surface & Foul Water Drainage

The public sewers in the vicinity of the proposed development (as shown on Yorkshire Water's Sewer Records) are as follows:

The Stonebow/Peasholme Green: 225 diameter surface water sewer approximately 1.3m deep
Dundas Street: 225 diameter surface water sewer approximately 1.3m deep
Dundas Street: 300 diameter foul sewer possibly up to 3.4m deep (downstream depth given on sewer record drawings, but not upstream)

If the foul sewer is at this depth, there will be no problem with gradients for the private foul drainage from the site. The surface water connection should also pose no problem.

With regard to archaeology, it is likely that some digging within the archaeological zone will be necessary, however this should be minimised through careful design of the drainage within the site boundary. The private surface water and foul drains will need to be laid relatively shallow (but still maintaining minimum depths and gradients) to minimise digging through the archaeological zone and then to fall more steeply to the public sewers when close to the public highway. It may be possible to employ backdrop manholes at the connection points to the public sewer, but this would need to be agreed with Yorkshire Water. This is especially important for the foul drainage as the public sewer appears to be deep.

It is not known at this stage if there is an existing lack of capacity in the public sewers serving the proposed development, however it is unlikely that this would be an issue as the new development replaces existing buildings and therefore there should not be any significant increase in either foul or surface water flows provided that existing amounts of impermeable area within the site (e.g. roof, road and hard surfaced car parking) are not exceeded in the new development.

Flood Risk

1) Environment Agency Indicative Flood Risk Zones - We have reviewed the Agency's Indicative Flood Risk Zones (via their web page) and can confirm that the proposed re-development site is situated within the 1:100 year indicative flood plain; note that this zone is indicative only and does not take into account any existing flood defences.

2) Existing standard of protection against flooding afforded to the sites - Rachel Glossop (Agency - Development Control, York) has confirmed that the Foss Barrier and associated pumping stations currently provide approximately a 1:80 year standard of protection to the River Foss; note that a 1 in 100 year event could theoretically overtop this barrier.

3) Agency requirements for the floor level of the proposed new developments - Rachel Glossop has informally advised that the Agency's minimum requirement for floor level would be the modelled 1:100 year return period level (9.75m AOD) + an additional 600 mm = 10.35 m AOD for the River Foss in the vicinity of the proposed development. However, this would need to be confirmed by more detailed analysis. Rachel Glossop did also note that the modelled 1:100 year return period event, when coincident with the 1:100 year event for the River Ouse (which is downstream of the Foss), is 10.51 m AOD and that the Agency would ideally wish to see this level adopted for floor levels.

4) Recent historic flooding - Rachel Glossop confirmed that major flooding occurred in the River Foss Basin during 1982 (indicative estimate = 1:80 year return period event) which resulted in the Foss Barrier and pumping system being constructed. Limited flooding in the general area also occurred during the autumn 2000 event (indicative estimate = 1:80 return period event) due to a number of short term pump failures within the flood defence system.

In Summary the recommended ground floor level to avoid flooding problems can be accommodated without level access problems.

Hungate – Atrium Option

There is the potential at the Hungate site to provide an atrium rather than an open courtyard. From a structural perspective, this will be an opportunity to provide an elegant long span structural support system to the roof, such as tubular lattice girders or PTFE translucent roof membranes supported in a grid shell construction. If the previously external walls to the court yard are omitted in the atrium proposals, then there may be a saving in secondary steelwork to those internal elevations. There will be little other changes to the rest of the structure from the introduction of the atrium roof.

05

Civil & Structural Engineering

Piccadilly Detailed Appraisal

Civil & Structural Engineering

Introduction
Site preparation
Foundations
Ground Floor Slabs
Superstructure
Core areas
External walls
Design parameters
Drainage
Flood risk

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Introduction

The structural design study takes account of the following key issues:

- sustainable design
- flood risk
- archaeology
- innovation
- affordability
- buildability
- integration of structure and service route
- flexibility for future changes in use and layouts
- sympathetic choice of materials and structural form
- confined city centre site

Site investigation information

The following documents have been reviewed:

Report on Archaeological Evaluation at 17 – 21 Piccadilly. York Archaeological Trust 1991
Envirocheck Report - Ref: 10726341
Site investigation report Geotex Ltd Feb 1980
Site investigation report S.Jampel & Associates Sept 1968

The 1991 Archaeological Report does not specify a minimum level for the underside of the foundations construction. It simple states that "disturbance of anything more than the acceptable minimum of post medieval levels in the Northern part of the site and the earlier levels anywhere on the site should be preceded by archaeological excavation". We would recommend further clarification from the City Council Archaeologist over what this means in terms of time scales for the proposed development as it could be a critical factor in the development of the site.

We would also recommend confirmation from the City Council Archaeologist of the minimum level to the underside of any foundations (excluding the piles themselves) and the percentage of the archaeology that can be disturbed by any foundation solution. With the depth of fill that, from available records, appears to exist above medieval levels, ground floor level may be made to correspond the adjacent street level: subject to archaeological findings and detailed flood analysis.

The Envirocheck report for this site highlights that there is a risk of radon gas to the site and that radon protection measures are likely to be required. We would recommend that further geo/environmental review/site investigation is undertaken by a consultant to understand more fully the ground conditions of the site including review of the BGS borehole records available.

The proposed development is close to existing properties and may be subject to the Party Wall Act. A part wall surveyor should be consulted for future stages of the design to ensure compliance with the act.

Site preparation

Prior to any work there will need to be further archaeological site investigation either preceding or following the demolition of the existing buildings on the site – see comments above with regard to further clarification.

In addition, the archaeological reports recommend probing at each proposed pile location prior to the actual piling operation.
With regard to sustainability re-use of demolition materials should be considered for the proposed development, where appropriate.

Foundations

Due to the archaeological restrictions and also the relatively poor ground near to the surface of the site, the most likely solution is piled foundations.
The pile type needs to take account of the archaeology and the depth of the suitable strata for the piles to be founded in. CFA (continuous flight auger)

piles are the most likely option for the choice of pile. Consideration could also be given to the recently introduced CHD piling technique which reduces the need for the removal of spoil. However, this technique will cause localised compression of the strata and will need approval of the City Council Archaeologist. The Environment agency will need to be consulted regarding risks to any local aquifers.

The level of the foundations is to be confirmed following heritage consultants review of the current archaeological information and initial flood risk assessment.

The piles will be connected to pile caps and ground beams, which in turn will support the frame, ground floor slab and external wall construction.

Ground Floor slabs

Due to the poor ground conditions near to the surface of the site and also the archaeology present, a suspended ground floor will be required.

The ground floor slab will span onto ground beams and pile caps. For flexibility the slab should be design for light weight partitions as for the floors at higher level - see the superstructure section below for the loading to the ground floor slab.

Superstructure

The following options have been considered:

- steel frame with downstand beams.
- flat slab insitu / flat slab insitu post tensioned
- steel cellular beams – long and short spans
- pc concrete frame
- hybrid steel / precast concrete frame

This site is a little more restricted than the Hungate site and a subject to the final architectural form, it may be preferred to look at a load bearing masonry as an option for at least parts of the proposed development. However, due to the recently introduced revisions to the building regulations, disproportionate collapse will now apply to this building and therefore the increase tying now required may prove that the frame option should be used throughout.

The recommendation is to use a steel frame with cellular long span beams. The long spans give excellent flexibility for future changes to furniture layouts. For a 14m span the beam depth will be in the order of 740mm deep

for a 6m grid. The final grid spacing will be subject the architectural elevational treatments.

The floor beams will be designed compositely with the metal deck slabs which minimises steel weight and therefore cost. This form of construction also gives good performance when considering disproportionate collapse criteria. The composite metal deck will be in the order of 130mm.

The steel solution offers guaranteed quality due to the off-site manufacture and also speed of erection which reduces the overall programme. The steel solution is flexible with regard to any future changes to the building as it is relatively easy for modify. Due to the city centre site the off-site manufacture of the steel frame compares well with the insitu concrete frame when the number of deliveries to site are considered. The insitu concrete frame solution could require up to 5 times the number of deliveries than the steel solution.

The cellular beams allow for the integration of the services within the depth of the beam and hence minimise the overall height of the building.

Fire engineering should be considered as part of the final design there may be a considerable saving in cost due to the reduction in fire protection at no lost in safety.

Structural movement joints will need to be considered through the whole frame, but will probably not be required for this building size.

The roof should be light weight steel roof supported by cold rolled purlins. Any internal plant room areas will have a concrete floor as these can support the high plant loads and are also are effective at reducing vibration and noise transmission to the rooms below. External plant areas could be either supported on concrete floors or a steel grillage above the roof.

Long term stability of the frame will be provided by braced bays/shear walls.

Design loadings should be to institutional standards as follows:

Office areas:

Super imposed loads:
Live load = 5 kN/m2
Plus a partitions allowance = 1.0 kN/m2

Dead loads:
As per actual material weights
Services = 0.25 kN/m2

Core Areas:

Super imposed loads:
As per British Standard but minimum as office areas above.
Allow for blockwork partitions to these areas.
Dead loads:
As per actual material weights
Services = 0.25 kN/m2

External Walls

Secondary steelwork wind posts and rails may be required within the thickness of the block walls to laterally support to the walls due to wind loading, subject to the final choice of wall systems. The blockwork would be tied to the main frame and secondary steelwork using the frame cramps. Movement joints would be provided within the blockwork to suit the panels that are created by the secondary steelwork and main frame.

Pre fabricated wall panels could also be considered to guarantee quality and reduce construction programme. This type of external wall construction also reduces the need for scaffolding. This is particularly attractive for city centre sites as the number of deliveries to site will be reduced greatly when compared with insitu construction such as traditional masonry panels.

Design Codes/parameters

York City Council require an overall design life for the building of 60 years minimum and no element of the building shall have a design life shorter than 25 years except that it can be maintained and repaired or renewed without serious disruption to the council.

The designs will need to comply with the current building regulations.

The steelwork should be designed to BS 5950 and the concrete elements to BS 8110 and loadings will be to BS6399 Pt 1,2 & 3.

Vibration checks for the floors should comply with BS6472:1992.

The foundations should be designed to BS8110 and BS8004 and based on the loads applied.

Masonry should be designed to BS 5628.

Surface and Foul Water Drainage

The public sewers in the vicinity of the proposed development (as shown on Yorkshire Water's Sewer Records) are as follows:

Piccadilly: 450 diameter clay combined sewer approximately 7.0m deep.
Dennis Street: unmarked surface water sewer of unknown depth (position only shown on record drawings).
Walmgate: 550 diameter brick combined sewer possibly up to 6.0m deep (downstream depth given on sewer record drawings, but not upstream).

There appears that there will be no problem with gradients for the private foul and surface water drainage from the site. A surface water connection could be made into the sewer in Dennis Street, but its depth will need to be confirmed.

With regard to archaeology, as with the Hungate site, it is likely that some digging within the archaeological zone will be necessary, however this should be minimised through careful design of the drainage within the site boundary. The private surface water and foul drains will need to be laid relatively shallow (but still maintaining minimum depths and gradients) to minimise digging through the archaeological zone and then to fall more steeply to the public sewers when close to the public highway. It may be possible to employ backdrop manholes at the connection points to the public sewer, but this would need to be agreed with Yorkshire Water.

It is not known at this stage if there is an existing lack of capacity in the public sewers serving the proposed development, however it is unlikely that this would be an issue as the new development replaces existing buildings and therefore there should not be any significant increase in either foul or surface water flows provided that existing amounts of impermeable area within the site (e.g. roof, road and hard surfaced car parking) are not exceeded in the new development.

Flood Risk

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06

Mechanical & Electrical Engineering

Hungate / Piccadilly Detailed Appraisal

Mechanical & Electrical Engineering

ATKINS

Introduction

This Strategic Site Study into the provision of mechanical and electrical services for the new administration office accommodation has focused on the following key issues:

- An investigation into the existing site services for sites at Hungate and Piccadilly, York - This work is required to identify any existing buried facilities which may present risks to the future development of the two sites, and necessitate financial or programme allowances within the scheme proposals.

- A traffic noise study for the two sites - This has been undertaken in order to establish if any specific facade treatments are needed within the design development of the building proposals, in order to accommodate a natural ventilation strategy.

- A preliminary assessment of the order of costs for the provision of mechanical and electrical services within the two building options under investigation - In order to develop the cost model it has been necessary to generate a generic specification for the mechanical and electrical services, which provides the benchmark for the cost estimates.

- A consideration of the sustainability of the mechanical and electrical services, and building proposals – The consideration has included a preliminary assessment of the likely environmental impact of the building proposals, using the BREEAM assessment method, and a commentary on possible alternative energy strategies that may be incorporated into the scheme to reduce this impact, and achieve the standards that may be demanded by the future revision to the Building Regulations.

Many elements of the mechanical & electrical strategic site study are common to both the Hungate and Piccadilly options (the specification, the alternative energy strategy, and the BREEAM assessment) consequently the format of the M&E section of this report does not generally differential between the Hungate and Piccadilly sites. However where those elements of the study which are individual for each of the sites (the existing site services investigation, the traffic noise survey, and the cost model) have been discussed separately and form a separate sub-section of the M&E appraisal.

Mechanical building services

Utility Services

Consideration will be given to the use of 'alternative' energy and water sources during the design development stage of this project. These alterative energy and water sources, if incorporated into the final design solutions, will be used to supplement, (rather than replace), a conventional infrastructure of primary utility services, to ensure security of supply under all operational conditions.

A new mains water supply will be provided to feed the required drinking water facilities, domestic water storage and fire hydrants for the new accommodation building.

A new natural gas service will be provided from local existing mains to supply the primary heating installations and though no specific requirements have been identified in respect of catering, an allowance has been made to provide a gas supply to catering facilities.

The gas and water supply connections will include isolating valves, and metering facilities, and all pressure tests required to meet statutory requirements will be carried out to ensure the robustness of the connections.

All incoming utility services will be provided with primary and secondary metering facilities, which will be monitored by a central BEMS system.

Heating Systems

The new building will be heated by means of low temperature hot water (LTHW) heating systems. LTHW will be generated within a central boiler room facility.

The boiler room will incorporate a multiple, high efficiency, low NOx, gas-fired, boiler installation. Boilers will be capable of long life. Each boiler will be fully modulating to allow efficient operation at part load conditions. The boilers will be conventionally flued, using stainless steel, twin wall type flue installations.

A self-contained, packaged, pressurisation unit, will be provided to impose minimum head pressure and accommodate system expansion/contraction.

Boiler room ventilation will be incorporated to meet the requirements of BS 6644. The complete installation shall comply with the requirements of the Clean Air Act plus local Environmental Health Department requirements.

As a minimum, three boilers will be installed, each rated at 50% of the total maximum building heating load, to provide a duty/ duty/ standby configuration. As a minimum, the lead boiler will be of the condensing type.

The heating system will incorporate a primary distribution circuit and secondary circulation using twin head pump sets, to provide a duty and standby capability.

The secondary distribution systems will be dedicated to particular departments or discrete facilities within the building to allow for efficient operation during differing operational time schedules. The secondary heating circuits will also incorporate variable flow control, thereby allowing the inverter driven, high efficiency, secondary pump motors to operate at reduced capacity, under reduced load conditions, as an energy saving measure.

The main heating distribution pipe work will be located within accessible ceiling voids, and dedicated service risers, using mild steel pipework. Sub-circuits, to serve individual rooms or areas, will be installed complete with dedicated, independent, means of isolation. The isolation and commissioning facilities will be located, wherever possible, in common circulation areas, to avoid disruption to work within rooms.

Generally, wall mounted radiators will be used as the terminal heating devices in most areas. However, this system could be supplemented with under floor heating and/or warm air heating systems to suit particular applications if this is a most reliable and efficient option.

The heating circuits will be zones to suit occupancy patterns and building orientation. Radiator circuits will be compensated with respect to the outside air temperature and individual rooms will be provided with tamperproof, thermostatic control.

Any facilities required to operate outside of normal working hours will be heated either as a zone of the heating system, from a local independent system or via a dedicated secondary heating circuit; as the detailed design dictates.

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Ambient Noise Report

An ambient noise report has been undertaken. The findings of this report are summarised as follows:-

Hungate Site:
Measured external ambient noise levels, particularly on the Peasholme Green façade and to a lesser extent on Dundas Street, are such that acoustic treatment will need to be adopted into natural ventilation and other HVAC system design.

Piccadilly Site:
Measured external ambient noise levels, recorded on Piccadilly, are such that acoustic treatment will need to adopted into natural ventilation and other HVAC systems design. We also understand that future development may well result in increased external ambient noise at the Piccadilly site

Facades – both sites
Where external noise levels are not prevalent on particular facades, it may be possible to avoid/minimise acoustic treatment.

Ventilation

Natural ventilation will be used wherever possible to limit internal summer temperatures and to provide fresh air wherever the design temperature criteria can be achieved without compromising maximum indoor noise levels due to external sources. The compliance with the maximum temperature criteria will be demonstrated by means of computational techniques.

Due to the findings of the ambient noise report it is however, recognised that any natural ventilation strategy would require noise attenuation measures to be employed on air terminals communicated with certain building façades. Further design work will be required to develop a strategy to address these acoustical considerations which may result in a requirement to:

- Locate rooms which must be mechanically cooled/mechanically ventilated on "noisy" facades.
- Acoustic treatment to air inlet/outlets to attenuate external noise.
- Creation of natural vent airflow ducts/stacks.
- Mechanical ventilation and/or cooling to assist natural ventilation.

An allowance has been made within the cost plan for measures of this nature, however further design work would be required to more closely identify the impact of this issue. Notwithstanding this where natural ventilation is employed, the general principle of operation would be as follows:

Glazing design will incorporate both opening lights, and trickle ventilators. These facilities will be supplemented by the use of opening roof lights and extract fans (if necessary), to provide predictable performance under all weather conditions. The BEMS system will be utilised to provide the automatic control of the air exhaust systems, as dictated by the internal and external temperatures. Manual override facilities will also be provided, to allow the users to adjust their environment, in response to specific needs. As part of the automatic control regime wind and rain sensors shall be fitted to each control centre to inhibit vent opening on high wind speed and in rainy conditions.

In cold weather, room ventilation will be via the integral trickle vents in windows.
In temperate weather, the system will utilise motorised roof lights, wherever possible, to increase ventilation rates.
In summer/hot weather, extract fans will also be run to increase draw through of ventilation air if the detailed environmental analysis proves this to be necessary.

Kitchen Ventilation

Though no specific requirements have been identified in respect of catering, an allowance has been made in the cost plan for the kitchen to be ventilated utilising a main cooking area canopy to mechanically extract room air to discharge at high level. As the volume of make up air to the kitchen is extremely high, the kitchen canopy will comprise a double skin construction, to act like a heat exchanger, to temper make up air coming into the kitchen. The make up air fan will be located within the first floor plant room.

The kitchen canopy will be a purpose designed, aluminium or stainless steel, kitchen extract canopy incorporating removable, washable, grease filters and a fire suppression system. This system will incorporate its own detectors and be totally independent of the building-wide fire alarm and automatic sprinkler systems. Galvanised sheet steel ductwork will connect the grease filters to the air discharge point via the canopy exhaust fan.

An additional extract canopy of similar hygienic construction, but of single skin construction and without the fire suppression system, will be installed above dishwashers.

The main extract canopy will be insulated internally, to prevent condensation on the inner face due to entering cold air in winter.

Make up air will be introduced to the kitchen from a dedicated AHU (air handling unit) via galvanised sheet steel ductwork to diffusers set into the false ceiling. Diffusers will have a painted metal finish to allow normal and deep cleaning of the kitchen.

Heating for the kitchen, mainly to be used during non-cooking operations will be provided by the ventilation system, thereby not taking up valuable wall space with unhygienic radiators.

Local room mounted stop/start controls shall be provided to run the ventilation plant. This will also incorporate a low speed setting to save energy when cooking is not being undertaken.

Toilet Ventilation

All internal sanitary accommodation will be provided with mechanical ventilation using twin-fan extract units. The mechanical ventilation installations will be time-switch controlled at the BEMS.

Extract from each toilet and/or shower room will be via ceiling mounted extract grilles, connected to the air discharge point with galvanised sheet steel ductwork via the toilet exhaust fan.

Make-up air for each system shall be introduced via transfer grilles incorporated into the toilet doors.

Fire Alarm Interface

In the event of a fire condition, all gas supplies shall be automatically isolated and the ventilation systems de-energised. A manual override/ fireman's interface panel will be provided at the main reception to allow the ventilation system operation to be changed by the attending fire officers.

Comfort cooling

Comfort cooling, heat pump / reverse cycle, room split cooling units will be installed in IT clusters, their associated hub and server rooms and other spaces, where there is a high density of heat producing equipment.

The refrigerant shall be a zero ODP gas.

Connection between the indoor units and the outdoor unit shall comprise refrigerant piping and cabling. The refrigerant piping shall be insulated.

The outdoor units shall be robust and weather resistant.

Control shall be via a wall mounted controller, one per room. Where one room incorporates more than one cooling unit they shall be slaved to one master unit.

The extent and type of cooling systems to be employed will also be affected by the strategy which will be developed to ventilate the spaces to limit resultant maximum temperatures whilst respecting maximum internal noise levels.

BEMS

All major building services will be monitored, and controlled by means of a central Building Energy Management System, which will also provide a central facility, in the form of a desk top PC, for the adjustment of all control parameters.

The BEMS control systems shall be designed to suit the envisaged zoning requirements of the building to ensure energy efficient operation under all occupancy levels.

Individual room control shall be provided to all occupied areas for heating and ventilation services, linked to the BEMS, for monitoring purposes.

The BEMS will provide central control of the following central plant functions:

- Optimum plant start/stop regimes.
- Weather compensation control
- Frost protection
- Automatic duty rotation on standby plant
- Automatic plant changeover on duty failure

Controls intelligence shall be provided locally within dedicated outstations with remote override and monitoring from the centralised supervisory systems. These local outstations will be linked by data wiring to provide an integrated communications and control system.

Hot & Cold Water Services

Hot and cold water services shall comply throughout to the Water Supply (Water Fittings) Regulation 1999. All domestic hot and cold water shall be distributed in insulated copper pipe work.

Pumps required for operation with hot and cold domestic services shall be suitable for potable water and carry WRC approval.

Domestic Mains Cold Water Systems

The mains cold water will be taken from the incoming metered supply to serve the potable water storage tanks, drinking water fountains, kitchen, sinks and the heating system pressurisation units. Another un-metered connection shall supply cold water to the fire hydrants.

All connections shall incorporate a servicing valve.

Tank Cold Water Service

The cold water storage tanks will be potable water quality, pre-insulated, GRP and sectional, and will be located in a mechanical plant room. Each section shall be fitted with an incoming mains isolating valve, incoming mains ball valve, outflow connection, warning pipe, overflow, drain and inspection hatch/cover. The tanks will be WRC approved for potable water and constructed to comply with current water byelaws.

Tank water shall be run from this centralised facility to serve all wash hand basins, showers, WCs, sinks (other than in the kitchen), and other facilities. A dedicated water storage tank shall be provided to serve the kitchen.

Cold water and other services provided to the kitchen area shall have a separate meter to allow for accurate measurements of the usage, thus creating a standalone facility within the building.

Water booster sets will be included to provide water at all points around the building at a minimum pressure of 1.5 bar.

All connections, except for catering equipment, shall include a servicing valve.

The booster sets to be used shall be inverter controlled units suitable for operation with domestic (potable) water and shall be fully packaged units.

All wetted parts shall be WRC approved.

The units' control panels shall include suitable control circuit and power circuit fuses plus starters with overloads and minimum run timers. The circuit shall include automatic pump changeover to alternate the inverter drive between pumps.

Domestic Hot Water Service

The domestic hot water generation will be a centralised system, producing DHW to a temperature of 65°C, by means of two direct gas-fired DHW generators each rated at 50% of the total duty, located in the boiler room.

The systems will have accelerated secondary circulation and will distribute to feed all sinks, cleaners' sinks, showers and wash hand basins.

A dedicated gas fired DHW generator shall be provided to supply hot water to the kitchen.

Thermostatic mixer valves will be provided to all showers and wash hand basins to reduce outlet temperatures to 43°C. Flow regulators will be fitted to sanitary fitting terminals to reduce the level of water usage. PIR occupancy detection will be fitted on supplies to urinals, showers and basins to control water usage.

Natural Gas Services

The gas installation shall comprise one incoming, metered, supply and will be distributed through the building along primary, ventilated, distribution routes. The whole of the path of the gas main through the building shall be ventilated in accordance with the latest edition of the Gas Safety (Installation and Use) Regulations 1998. The gas installation shall be run in mild steel. The gas pipe shall be painted for identification throughout its whole length within the building.

The natural gas system will be distributed to serve boiler plant, domestic hot water generators, and catering equipment.

An electrically-operated, resettable, fire shut-off valve, linked to the fire alarm system, will be fitted on the incoming gas main. Manual emergency shut-off shall be provided at the boiler room door and as required in other locations.

The kitchen will be provided with a Firewatch and Gas Proving System (Firewatch Gas Supply Isolating and Pressure Drop Testing System). The wall mounted panel will incorporate an emergency stop button and a key operated switch for security. Interruption of the mains electrical supply, e.g. by fire alarm signal or integral emergency button, shall cause the solenoid valve in the gas pipe line to shut, thus isolating the gas supply, until the power is restored.

Fire Protection

We understand that automatic sprinklers are not part of clients requirements and are, therefore, not proposed.

Gaseous fire suppression

CFC and HCFC free, gaseous, fire suppression systems will be installed in all hub and server room(s). The installation will be designed and installed by a specialist installer, using an inert extinguishing agent from storage bottles within the protected room(s). The detection and alarm system will be totally independent of the building-wide fire alarm system.

The extinguishing agent will comply with BS ISO 14520/9/2 and LPC 1204.

Fire Hydrants

Fire hydrants will be installed on an underground ring main in proprietary valve chambers according to Building Control requirements. The hydrant system will be supplied with mains water from the new mains connection.

Car Parking

Though the extent and form of car parking provision has yet to be determined, it is currently assumed that ventilation will be via natural means.

Electrical Building Services

MV Supply/Public Utility Supply/LV Distribution

The mains distribution system shall include the provision of an MV/LV electrical connection from the Regional Electricity Company. The new MV connection shall be made from the existing REC distribution network external to the site boundary. A self contained electrical substation shall be provided at the site boundary to accommodate the new electrical transformer and associated switchgear.

From the electrical substation an LV supply shall be provided to the building which shall terminate into a main LV switch board (Form 4) located within a dedicated electrical switch room. The switch board shall be complete with incoming ACBs, outgoing MCCBs, power factor correction, electronic surge protection and metering to designated outgoing supplies.

From the main LV switch board sub-main cables shall be distributed along primary distribution routes to serve final circuit MCB distribution boards, mechanical control panels and large items of equipment. Distribution cables shall be XLPE/ SWA/ LSF, installed on galvanised steel ladder rack or cable tray.

All final circuit distribution boards shall have metal enclosures with lockable doors and be located, where practicable, in areas outside of the control of users. Outgoing circuits shall be protected with MCB/RCBOs. All cleaners sockets shall be RCBO protected.

Individual dedicated boards/LV supplies shall be provided to specialist rooms for example Kitchens, and IT rooms, all other areas shall be served from local boards sited to give economical coverage of the building.

The complete electrical installation within the building shall be designed in accordance with the requirements of BS7671, and Building Regulations - Part L.

General/ Emergency Lighting

The lighting system shall include for the provision of internal lighting, final circuit cabling, emergency luminaries and emergency lighting central test system.

The interior lighting system shall be designed to the requirements and recommendations of:
BS EN 12464-1:2002 Light and lighting – Lighting of work places – Part 1: Indoor work places.
CIBSE Lighting Guides
Building Regulations Part L
Local Building Control

Generally fluorescent lamps shall be used to provide artificial illumination within the building, with the exception of local task/display and decorative lighting. All fluorescent luminaires shall have high frequency control gear.

Within all office areas and other areas where there is VDU usage, luminaries shall be employed to achieve the requirements of the CIBSE Guide LG3.

Decorative functional luminaries shall be utilised within the atrium.
Track mounted spot lights shall be provided to illuminate display boards and presentation areas including reception/foyer areas, and conference areas.
Within general office spaces the control of the luminaries shall be via manual switching with PIR override off if movement is not detected within a specified time. The first row of luminaires adjacent the windows shall also be controlled via integral daylight sensors.
Lighting within toilets and stores shall be controlled via passive infra-red (PIR) movement detectors.

Lighting control equipment shall not be located within the circulation spaces, to prevent unauthorised usage.
The lighting installation shall generally be wired using single-core 600/1000-Volt grade low smoke and fumes (LSF) insulated cables installed within galvanised steel conduit and trunking.

Emergency Lighting

An emergency lighting system shall be provided to BS5266 to all occupied rooms, circulation spaces and other areas as required by the relevant British Standards, and local building control. The system shall consist of self contained luminaires and emergency conversion units to the general lighting. External emergency luminaires shall be provided adjacent all final exit doors. An emergency lighting central test facility shall be provided to enable automatic testing of the emergency luminaires.

External Lighting

The external lighting system, utilising building and column mounted luminaries, shall cover the car parking areas, pedestrian/vehicular routes, and building perimeters.
The selected external luminaires shall have no upward light component to embrace the campaign for dark skies and comply with local planning requirements.

Generally control of the external lighting shall be via a building-mounted photocell, time clock and override 'On/Off/Auto' control panel. The override control panel shall be located at the reception/FM office.

General LV Power

Final circuit wiring for socket outlets, fixed connection units etc. shall be single core 600/1000V grade LSF installed within galvanized steel conduit and trunking.
The general LV power system shall include the provision of small power final circuit cabling and small power outlets wired from local MCB distribution boards.
All socket outlets within office areas shall comply with the requirements of Section 607 of the IEE Regulations.
External and plant wiring shall be XLPE/ SWA/ LSF multi-core run on galvanised steel ladder rack or cable tray.
Fused connection units shall be provided local to all fixed electrical equipment as detailed elsewhere within this document.
Hand dryers shall be provided to the toilets and shall be of vandal resistant metal construction.

Fire Detection and Alarm

A fire detection and alarm system shall be provided which shall comply with BS 5839, the Fire Service/Building Control requirements, and Building Regulations.

The system shall be type P1 and shall indicate early warning of the presence of fire, by the use of automatic and manual fire detection devices. These shall signal back to a fully addressable fire alarm panel which shall provide accurate information regarding the location of the activated device.

In the event of an alarm condition the fire alarm system shall operate the fire alarm sounders/xenon beacons and initiate a shut-down procedure, via interface units, to the ventilation systems, air extract systems, lifts and other devices.
In addition the system shall also be connected, via BT 'Red Care', to an approved monitoring centre to ensure rapid attendance by the fire brigade during an alarm condition.

Data Transmission

A combined telephone/ data Cat 6 structured cabling system shall be installed, which will include the provision of incoming telephone, and fibre services.
The data transmission system shall include the provision of telephone/data containment, Cat 6E cabling, patch panels, wireless network receivers, and RJ45 outlets.
The data system backbone shall be provided by a OM3 laser grade fibre optic cable, multi-core copper cables shall be used for telephones.
The Cat 6 LSOH cabling to the RJ45 data outlets shall be contained on data basket to conform to the Cat 6 Standard and shall have a flat bottom static sheet.
To enable roaming of portable computer equipment within the building, wireless network receivers shall be provided.

Uninterruptible Power Supply (UPS).

A UPS system shall be provided with 30 minutes autonomy and shall serve the computer servers and switches in the event of a power failure.
To prevent interruption to the UPS output supplies, during removal/replacement of the UPS, an external by-pass shall be provided.

Closed Circuit Television (CCTV)

A CCTV system shall be provided which shall comply with the client's insurance company guidelines, and Data Protection/Human Rights Act.
The system shall be fully functional and shall be designed to achieve 'Secure by Design Accreditation.
The system shall be capable of monitoring, recording via digital media and playback of images from fixed and pan, tilt and zoom colour cameras which shall monitor the following areas:
External Entrances to the building

External Car Parks
Service Areas
Building Approaches
Reception
The recorded material shall be high quality to enable its use as evidence in the event of a prosecution.
The CCTV system shall also be integrated with the other security systems.
Out of hours monitoring of the system shall be provided via a remote monitoring station.

Access Control System

The access control system shall include controlled access to all entrance doors.
The system shall consist of access card proximity door access units, maglocks, door release buttons, green emergency break glass units, wiring, containment and power supplies.
The system shall be complete with an indication panel detailing the state of the access controlled doors.

Intercom Systems

The intercom system shall include for the provision of an audio/visual intercom system to the main entrance doors from the main reception. Remote unlocking of the main entrance doors shall be enabled from the reception desk..

Security Detection and Alarm

A security detection and alarm system shall be provided which shall comply with current ACPO alarm policy and the client's insurance company guidelines. The system shall be zoned to enable areas not in use out of hours to be protected.
The system shall comprise of an intruder alarm control panels situated in the reception area with a remote access keypad. Detection shall be provided by door contacts to all external doors and outbuildings and PIR detection to all internal areas.
The system alarm shall be via external bell boxes to front and rear elevations. The system shall also be remotely monitored.
The intruder alarm system shall be interfaced to the CCTV system to allow cameras to be automatically activated to pan areas in the event of an alarm.

Facilities for the Disabled

An alarm system shall be provided within each disabled toilet. The system shall consist of an alarm pull cord with re-assurance lamp, wall mounted reset unit and overdoor lamp and tone unit.
Each alarm system shall signal back to an indicator panel located at the reception desk.

Lifts

The lift installation shall fully comply with the relevant codes and British Standards.
The lifts shall be machine room-less, serve all floors and shall be sized to accommodate a motorised wheelchair and helper.
The internal finishes of the lift cars shall be vandal resistant brushed stainless steel. Each lift car shall contain an emergency alarm system with inductive coupler. This shall signal the reception during operating hours and externally at all other times.

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Lightning Protection

A lightning protection system shall be provided in accordance with BS6651.

Hungate/Piccadilly Detailed Appraisals

Many elements of the M&E strategic site study are common to both sites. In particular it is considered that the impact of external noise may result of variations in proposals for the different sites. At this stage of the project's life cycle it is, however, difficult to identify the specific nature of these variances, thus the M&E section of the report does not generally differentiate between the two sites, though the cost plan has been produced on a specific basis for both Hungate and Piccadilly.

Cost Plan:

The cost plan includes an estimate of the additional cost impact of the above mechanical and electrical engineering works.

Hungate - Enhanced Model

Please refer to architectural and civil & structural engineering sections of this report which describes in more detail the proposals for an enhanced building model at the Hungate site.

In summary the proposed "enhanced option" works are to enclose the central light-well to form an atrium. To accommodate this proposal it will be necessary to ventilate the atrium at roof level by means of temperature operated automatic glazed vents or a fan powered system. Means of air inlet will also need to be provided. Wind and rain sensors will inhibit vent openings if required. Manual override(s) will also be provided. Roof level vents will also act as smoke ventilators.

Artificial lighting shall be provided within the atrium, controlled via photocells, complete with over-ride switches located at reception.

Alternative Energy Strategies

We recognise the client's commitment to environmental sustainability, and we also consider that sustainable construction is one of the most important issues challenging designers today.

It is essential for clients, designers, construction specialists, and FM providers to demonstrate 'best' practice, in order to provide buildings which play their part in the protection of the environment.

A significant element within the design procedure is to examine the building proposals at each design stage, to ensure that sustainability and environmental issues have been fully considered.

This approach is becoming more common within the building industry, particularly for buildings such as the proposed administration accommodation, and although they are not necessarily prescriptive, the new Building Regulations (which are due to be implemented in January 2006) place particular emphasis on the use of alternative energy and 'on site' generation strategy as a significant measure in achieving compliance with the Regulations standards.

The use of alternative energy strategies, and 'on site' generation of energy has to be considered at the feasibility/ concept stage of a project, even though the development of the design is not necessarily sufficient to allow detailed financial, or technical analysis. This ensures that any alternative energy proposals are not precluded at a later design stage due to a lack of planning within the early development phase.

The 'base' scheme includes a cost allowance for the provision of solar thermal energy, ventilation heat recovery and rain water recycling. These have been specifically selected to form part of the base proposals, as historically, these solutions have proved to be amongst the most financially beneficial of the common renewable resource strategies. However, there are many potential solutions which may be adopted to supplement or replace these early proposals, should their overall benefits be proven at a later stage. The schedule that is provided below is not intended to be exhaustive, but to indicate a list of potential options, which we believe may be worthy of serious consideration as the building design is progressed.

Proposal	Comments	Status
Consider the use of Solar Thermal Energy to supplement conventional domestic hot water generation.	Considered potentially viable, technically and financially.	Included in base scheme, to be verified at a later design stage.
Consider the use of rainwater recycling for flushing of toilets and urinals, to reduce mains water demand.	Considered potentially viable, technically and financially.	Included in base scheme, to be verified at a later design stage.
Consider the use of CHP as a means of generating efficient heat and power.	Potentially in conflict with solar thermal energy, but may be considered as an alternative. Exporting heat off site to local community may be possible.	Viability study to be completed at next project stage.

Proposal	Comments	Status
Consider the use of Photo Voltaics to generate electricity.	Previous studies suggest that the use of photo voltaics is financially prohibitive.	Viability study to be completed at next project stage.
Consider the use of Wind Turbines to generate electricity.	New generation 'small scale' turbines may be financially viable. Planning difficulties are possible/ probable.	Viability study to be completed at next project stage.
Optimise the use of heat-recovery systems to recover usable energy from exhaust air.	Heat recovery is incorporated into general energy strategy	Incorporated into 'base' scheme where applicable.
Consider the use of grey water systems to reduce site water demand.	Site area is restrictive, may conflict with rain water recycling.	Viability study to be completed at next project stage.

Proposal	Comments	Status
Consider the use of ground source heat pumps as a means of efficiently generating heating and cooling.	Potentially in conflict with some of the other proposals. Site restrictions may prohibit use.	Viability study to be completed at next project stage.
In view of the impact of high external noise upon natural ventilation strategies and the need to minimise mechanical cooling, investigate feasibility of utilising Termodeck ventilation system.	Requires holistic Architectural/Structural/M&E solution. Exposed soffit. Complex zoning problematic. Heat gains must be limited. Utilises, building mass and possible night cooling to obviate the need for mechanical cooling.	Viability study to be completed at next project stage.

Preliminary BREEAM Assessment

We have carried out a preliminary assessment of the likely BREEAM rating, and Environmental Performance Index score (EPI) of the two building options, using the BRE's Design and Procurement Assessment Checklist.

This assessment allows the current building, site, and procurement proposals to be benchmarked, and provides a performance indicator against which the future design development of the project can be evaluated.

Whilst the prediction method used does not provide a completely accurate statement on the environmental rating of the building proposals, it does provide a clear indication of the ratings that the proposals are likely to achieve when a formal assessment is undertaken.

Where the design proposals have not been sufficiently developed to allow specific technical questions within the checklist to be definitively answered (C02 emissions, energy balance etc.), we have made assumptions based on the performance of similar projects.

The results of the assessment were as follows:

Site	EPI Score	EPI Rating	BREEAM Score	BREEAM Rating	Comments
Hungate	351	8/9	682	Very Good/ Excellent	
Piccadilly	351	8/9	682	Very Good/ Excellent	

The results for each site are identical, this is indicative of the level of detail within the current design proposals, and the relative similarity of the sites in environmental terms. As the proposals are developed in more detail it is probable that the two proposals will differentiate themselves in terms of their final ratings, but as the specifications and procurement methods for the two building options are likely to be very similar, we would not expect their environmental performance to vary significantly.

Recommendation

As the current proposals meet the client's aspirations, (which is to achieve a BREEAM rating of 'Very Good'), and in practice, may well achieve an 'Excellent' rating, we would suggest that the current proposals are appropriate to the design brief, and recommend that they be reviewed periodically as the design is developed.

07

Cost Planning Details

Architecture
Mechanical & Electrical Engineering
Civil & Structural Engineering

Contents of this section include:

Hungate
Base Building Model Costs
Enhanced Building Model costs

17-21 Piccadilly
Building Model Costs

The base and enhanced model figures allow for the form of office development at these sites as described in:
Section 3: Architecture
Section 5: Civil & Structural Eng.
Section 6: Mechanical & Electrical Eng.

One Stop Centre may be located at Hungate or Piccadilly within the figures allowed for these locations.

Client: City of York Council
Project: Hungate Base Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **15,300** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
1 Substructure	**1,560,600.00**	1,560,600.00	102.00	6.57%
2 Superstructure				
2A Frame	1,295,145.00		84.65	5.45%
2B Upper Floors	780,300.00		51.00	3.28%
2C Roof	835,380.00		54.60	3.52%
2D Stairs	485,010.00		31.70	2.04%
2E External Walls	1,168,155.00		76.35	4.92%
2F Windows and external doors	1,272,960.00		83.20	5.36%
2G Internal walls and partitions	642,600.00		42.00	2.70%
2H Internal doors	303,705.00		19.85	1.28%
Superstructure sub-total £	**£**	**6,783,255.00**	443.35	28.55%

Client: City of York Council
Project: Hungate Base Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **15,300** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
3 Internal finishes				
3A Wall finishes	481,950.00		31.50	2.03%
3B Floor finishes	918,000.00		60.00	3.86%
3C Ceiling finishes	382,500.00		25.00	1.61%
Internal finishes sub-total £	**£**	**1,782,450.00**	116.50	7.50%
4 Fittings and furnishings				
4A General Fittings	153,000.00		10.00	0.64%
Cabling / Furniture / Furnishings	1,300,000.00		84.97	5.47%
Fittings and Furnishing sub-total £	**£**	**1,453,000.00**	94.97	6.12%

Client: City of York Council
Project: Hungate Base Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **15,300** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
5 Services				
5A Sanitary appliances	incl elsewhere		0.00	
5B Services equipment	incl elsewhere		0.00	
5C Disposal installations	incl elsewhere		0.00	
5D Water installations	57,430.00		3.75	
5E Heat source	171,360.00		11.20	
5F Space heating and treatment	823,562.00		53.83	
5G Air Conditioning/Ventilation	758,235.00		49.56	

Client: City of York Council
Project: Hungate Base Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **15,300** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
5 Services (continued)				
5H Electrical installations	1,840,459.00		120.29	
5I Gas installations	15,000.00		0.98	
5J Lift and conveyor installations	335,000.00		21.90	
5K Protective installations	168,912.00		11.04	
5L Communication installations	435,400.00		28.46	
5M Special installations	518,193.00		33.87	
5N BWIC with services	244,800.00		16.00	
5O Builders profit and attendance on services	612,000.00		40.00	
Services sub-total £	**£**	**5,980,351.00**	390.87	25.17%

Client: City of York Council
Project: Hungate Base Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **15,300** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
Sub-total excluding External works, Preliminaries and Design Risk		**17,559,656.00**	1,147.69	73.91%
6 External works				
6A Site work	252,450.00		16.50	1.06%
6B Drainage	107,100.00		7.00	0.45%
6C External services - see Section 5 above	0.00		0.00	0.00%
6D Minor building works	0.00		0.00	0.00%
External works sub-total £	**£**	**359,550.00**	23.50	1.51%

Client: City of York Council
Project: Hungate Base Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **15,300** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
Sub-total excluding Preliminaries and Design Risk	**£**	**17,919,206.00**	1,171.19	75.42%
Preliminaries (including D & B Fees)	**£**	**3,519,000.00**	230.00	14.81%
Total (less Contingencies)	**£**	21,438,206.00	1,401.19	90.23%
Contingency / Dayworks		**2,320,000.00**	151.63	9.77%
Estimated Total Construction Cost £	**£**	**23,758,206.00**	1,552.82	100.00%

Client: City of York Council
Project: Hungate Enhanced Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **15,300** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
1 Substructure	**1,560,600.00**	1,560,600.00	102.00	6.40%
2 Superstructure				
2A Frame	1,421,370.00		92.90	5.83%
2B Upper Floors	780,300.00		51.00	3.20%
2C Roof	1,138,320.00		74.40	4.67%
2D Stairs	485,010.00		31.70	1.99%
2E External Walls	1,224,000.00		80.00	5.02%
2F Windows and external doors	1,086,300.00		71.00	4.45%
2G Internal walls and partitions	642,600.00		42.00	2.63%
2H Internal doors	303,705.00		19.85	1.24%
Superstructure sub-total £	**£**	**7,081,605.00**	462.85	29.03%

Client: City of York Council
Project: Hungate Enhanced Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **15,300** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
3 Internal finishes				
3A Wall finishes	481,950.00		31.50	1.98%
3B Floor finishes	918,000.00		60.00	3.76%
3C Ceiling finishes	382,500.00		25.00	1.57%
Internal finishes sub-total £	**£**	**1,782,450.00**	116.50	7.31%
4 Fittings and furnishings				
4A General Fittings	153,000.00		10.00	0.63%
Cabling / Furniture / Furnishings	1,300,000.00		84.97	5.33%
Fittings and Furnishing sub-total £	**£**	**1,453,000.00**	94.97	5.96%

Client: City of York Council
Project: Hungate Enhanced Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **15,300** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)	Cost per m² GFA (£)	Percentage
5 Services			
5A Sanitary appliances	incl elsewhere	0.00	
5B Services equipment	incl elsewhere	0.00	
5C Disposal installations	incl elsewhere	0.00	
5D Water installations	57,430.00	3.75	
5E Heat source	171,360.00	11.20	
5F Space heating and treatment	823,562.00	53.83	
5G Air Conditioning/Ventilation	934,950.00	61.11	

Client: City of York Council
Project: Hungate Enhanced Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **15,300** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
5 Services (continued)				
5H Electrical installations	1,840,459.00		120.29	
5I Gas installations	15,000.00		0.98	
5J Lift and conveyor installations	335,000.00		21.90	
5K Protective installations	168,912.00		11.04	
5L Communication installations	435,400.00		28.46	
5M Special installations	518,193.00		33.87	
5N BWIC with services	252,450.00		16.50	
5O Builders profit and attendance on services	629,595.00		41.15	
Services sub-total £	**£**	**6,182,311.00**	404.07	25.34%

Client: City of York Council
Project: Hungate Enhanced Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **15,300** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
Sub-total excluding External works, Preliminaries and Design Risk		**18,059,966.00**	1,180.39	74.03%
6 External works				
6A Site work	252,450.00		16.50	1.03%
6B Drainage	107,100.00		7.00	0.44%
6C External services - see Section 5 above	0.00		0.00	0.00%
6D Minor building works	0.00		0.00	0.00%
External works sub-total £	**£**	**359,550.00**	23.50	1.47%

Client: City of York Council
Project: Hungate Enhanced Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **15,300** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
Sub-total excluding Preliminaries and Design Risk	**£**	**18,419,516.00**	1,203.89	75.51%
Preliminaries (including D & B Fees)	**£**	**3,595,500.00**	235.00	14.74%
Total (less Contingencies)	**£**	22,015,016.00	1,438.89	90.24%
Contingency / Dayworks		**2,380,000.00**	155.56	9.76%
Estimated Total Construction Cost £	**£**	**24,395,016.00**	1,594.45	100.00%

Client: City of York Council
Project: Piccadilly Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **4,200** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
1 Substructure	**336,000.00**	**336,000.00**	80.00	4.35%
2 Superstructure				
2A Frame	298,200.00		71.00	3.86%
2B Upper Floors	214,200.00		51.00	2.77%
2C Roof	273,000.00		65.00	3.53%
2D Stairs	126,000.00		30.00	1.63%
2E External Walls	840,000.00		200.00	10.87%
2F Windows and external doors	180,600.00		43.00	2.34%
2G Internal walls and partitions	147,000.00		35.00	1.90%
2H Internal doors	52,500.00		12.50	0.68%
Superstructure sub-total £	**£**	**2,131,500.00**	507.50	27.59%

Client: City of York Council
Project: Piccadilly Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **4,200** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
3 Internal finishes				
3A Wall finishes	105,000.00		25.00	1.36%
3B Floor finishes	252,000.00		60.00	3.26%
3C Ceiling finishes	105,000.00		25.00	1.36%
Internal finishes sub-total £	**£**	**462,000.00**	110.00	5.98%
4 Fittings and furnishings				
4A General Fittings	42,000.00		10.00	0.54%
Cabling / Furniture / Furnishings	500,000.00		103.86	6.47%
Fittings and Furnishing sub-total £	**£**	**542,000.00**	113.86	7.01%

Client: City of York Council
Project: Piccadilly Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

Gross floor area : **4,200** **m²**

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
5 Services				
5A Sanitary appliances	incl elsewhere		0.00	
5B Services equipment	incl elsewhere		0.00	
5C Disposal installations	incl elsewhere		0.00	
5D Water installations	19,020.00		4.53	
5E Heat source	47,040.00		11.20	
5F Space heating and treatment	260,256.00		61.97	
5G Air Conditioning/Ventilation	215,080.00		51.21	

Client: City of York Council
Project: Piccadilly Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **4,200** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
5 Services (continued)				
5H Electrical installations	565,774.00		134.71	
5I Gas installations	8,000.00		1.90	
5J Lift and conveyor installations	201,000.00		47.86	
5K Protective installations	54,936.00		13.08	
5L Communication installations	125,800.00		29.95	
5M Special installations	424,795.00		101.14	
5N BWIC with services	90,300.00		21.50	
5O Builders profit and attendance on services	239,400.00		57.00	
Services sub-total £	**£**	**2,251,401.00**	536.05	29.14%

Client: City of York Council
Project: Piccadilly Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **4,200** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
Sub-total excluding External works, Preliminaries and Design Risk		**5,722,901.00**	1,362.60	74.07%
6 External works				
6A Site work	69,300.00		16.50	0.90%
6B Drainage	29,400.00		7.00	0.38%
6C External services - see Section 5 above	0.00		0.00	0.00%
6D Minor building works	0.00		0.00	0.00%
External works sub-total £	**£**	**98,700.00**	23.50	1.28%

Client: City of York Council
Project: Piccadilly Scheme - Office Accommodation Strategy
Cost Plan: Preliminary

4.0 ELEMENTAL SUMMARY

TPI 2Q 2005 = 228
TPI 2Q 2006 = 239
TPI 2Q 2007 = 250

Gross floor area : **4,200** **m²**

Element	COSTS BASED ON YORK (2Q05) Cost Plan (Excluding Preliminaries) (£)		Cost per m² GFA (£)	Percentage
Sub-total excluding Preliminaries and Design Risk	**£**	**5,821,601.00**	1,386.10	75.34%
Preliminaries (including D & B Fees)	**£**	**1,150,000.00**	273.81	14.88%
Total (less Contingencies)	**£**	6,971,601.00	1,659.91	90.23%
Contingency / Dayworks		**755,000.00**	179.76	9.77%
Estimated Total Construction Cost £	**£**	**7,726,601.00**	1,839.67	100.00%

Administrative Accommodation Review – Strategic Site Study

Atkins
3200 Century Way
Thorpe Park
Leeds
LS15 8ZB
Tel. 0113 306 6000
Fax. 0113 306 6002
www.atkinsglobal.com