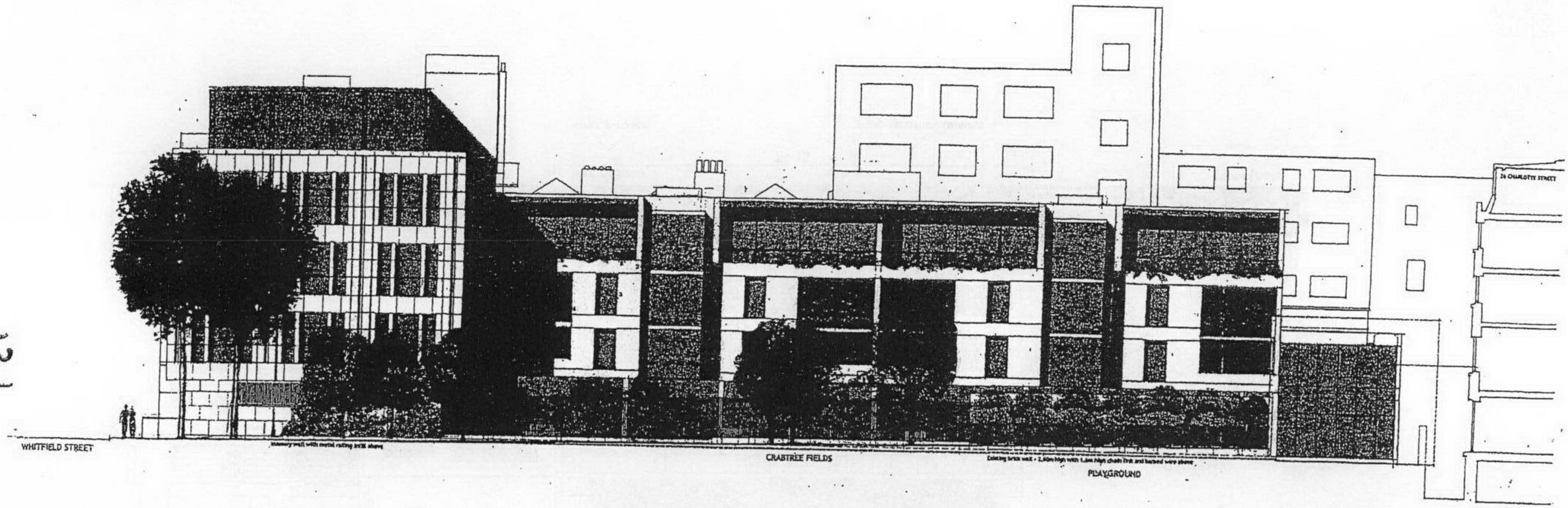


SCHEDULE OF MATERIALS

1. NATURAL PORTLAND STONE
2. OFF WHITE RENDER
3. BRONZE COLOURED ALUMINIUM WINDOW FRAMES
4. PALE GREY LOW EMISSIVITY GLAZING
5. TIMBER SLATTED BALUSTRADE

adz architects
ONE BONNY STREET
LONDON NW1 8PE
TEL: 020 7485 9029
FAX: 020 7424 0229

PROJECT
7 - 15 WHITFIELD STREET
LONDON W1

SCALE 1:100 @A1

DRN/CHK T

DRAWING
NORTH ELEVATION

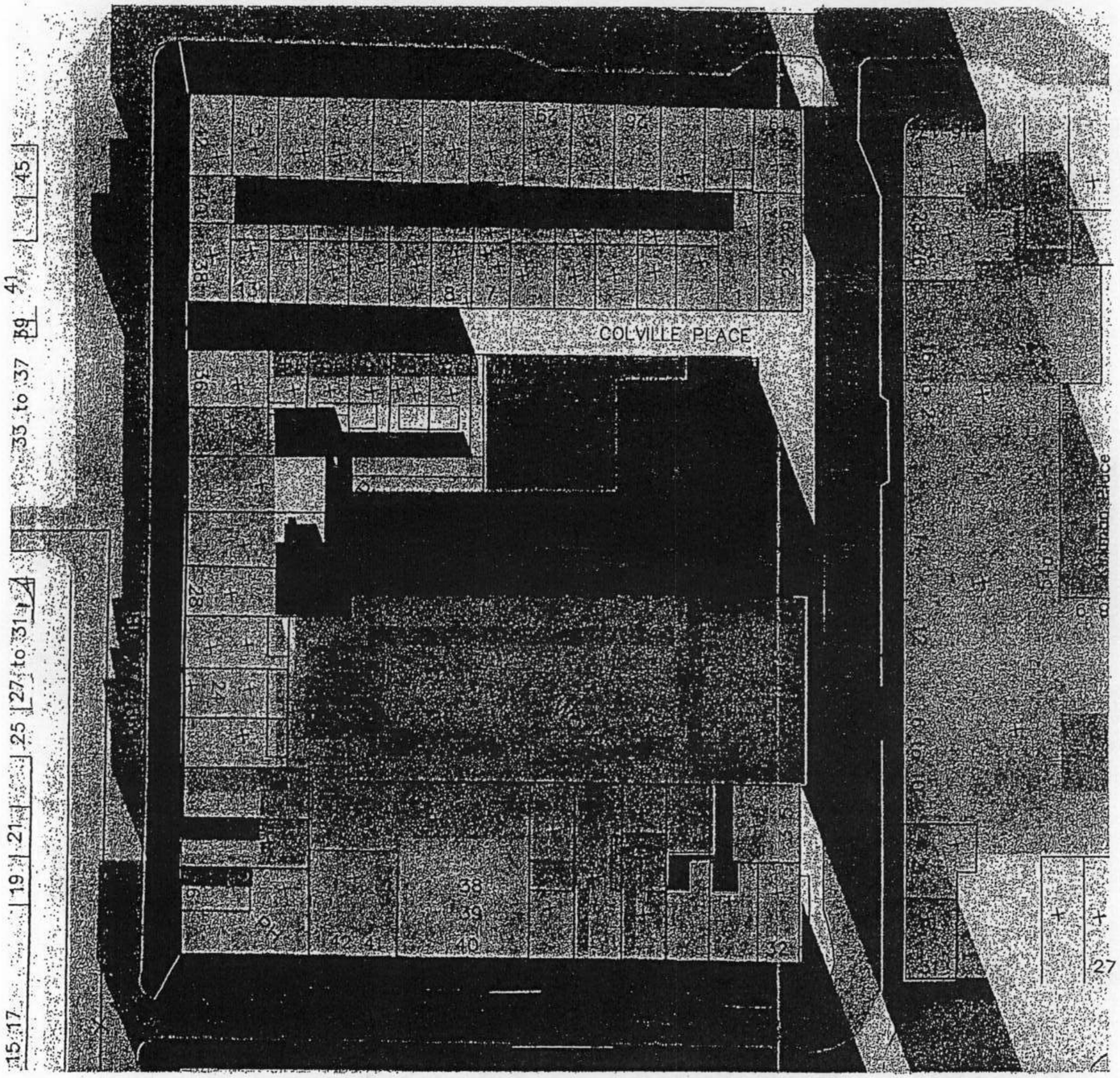
DRAWING NO. E1

REV A

DATE NOV.04

PROJECT NO. A04|15

Design Scale



PROPOSED SHADOW AT 10 AM ON 21st OF MARCH

SOURCES OF INFORMATION

SCHATUNOWSKI BROOKS
CHARTERED BUILDING SURVEYORS
RIGHTS OF LIGHT SUNLIGHT DAYLIGHT
PARTY WALL CONSULTANTS

17-21 EMERALD STREET
LONDON
WC1N 3QN
T 0207 2694740
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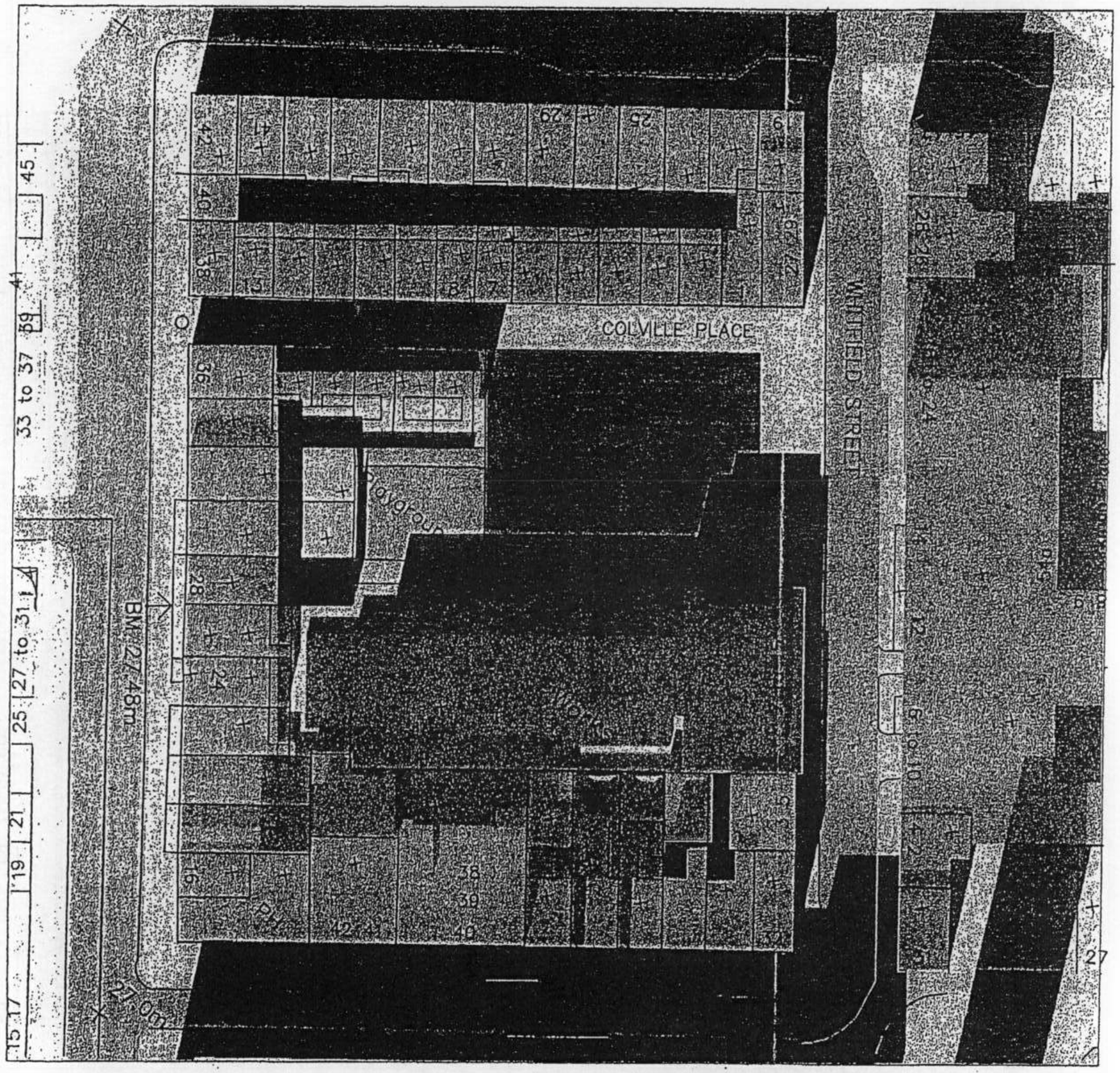
E adrian@schatunowski-brooks.co.uk

JOB	7 – 15 WHITFIELD STREET LONDON W1
TITLE	SHADOW DIAGRAM FOR THE PROPOSED ON 21 MARCH @10am
SCALE	1:600
DATE	JUNE 05
DRAWN	KASIM M
REVISION	
DRAWING NO	WH09/ROL/CAD75



PROPOSED SHADOW AT 12 NOON ON 21st OF MARCH

SOURCES OF INFORMATION

SCHATUNOWSKI BROOKS
CHARTERED BUILDING SURVEYORS
RIGHTS OF LIGHT SUNLIGHT DAYLIGHT
PARTY WALL CONSULTANTS

17–21 EMERALD STREET
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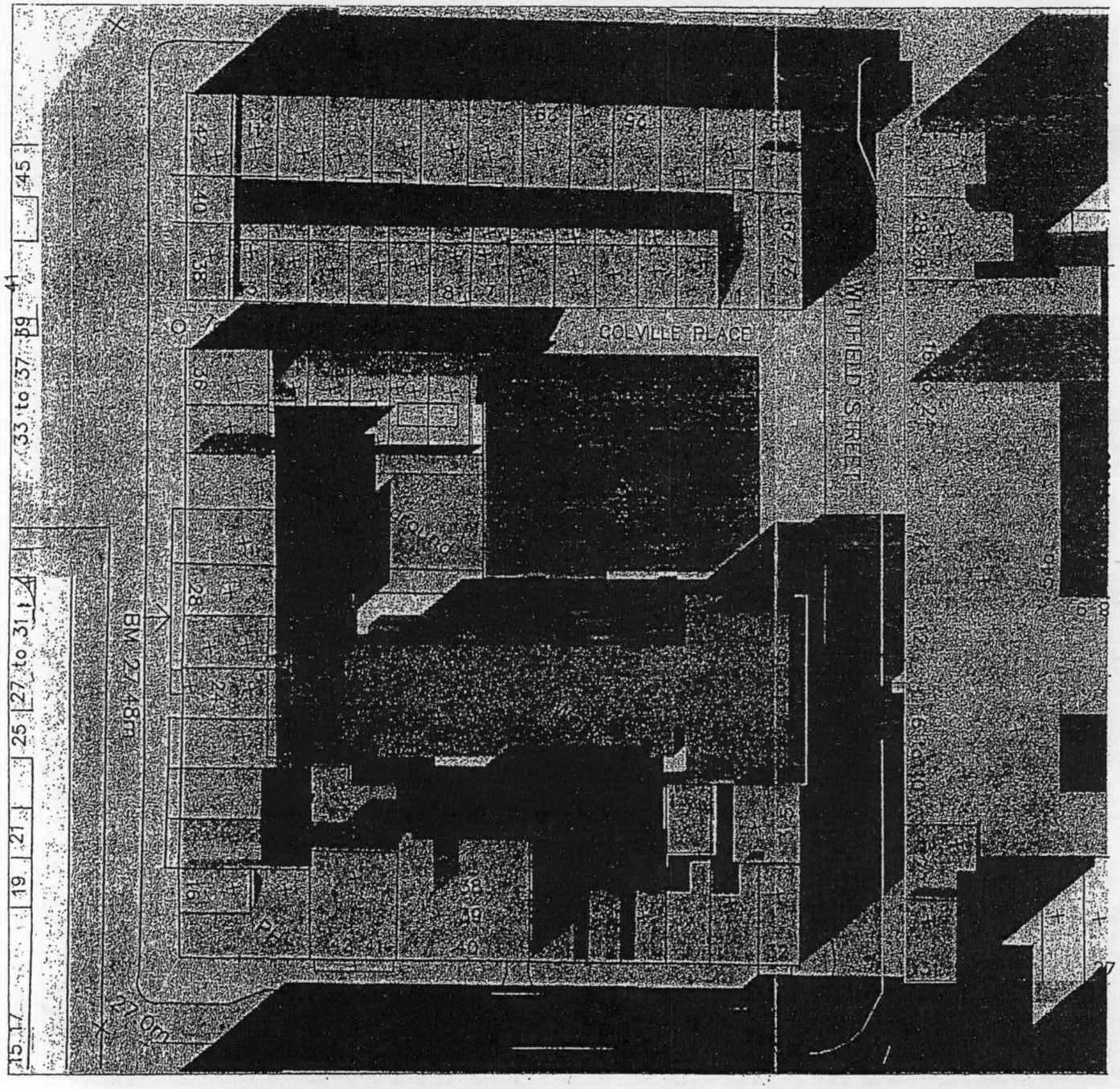
JOB	7 – 15 WHITFIELD STREET LONDON W1
TITLE	SHADOW DIAGRAM FOR THE PROPOSED ON 21 MARCH @12 Noon
SCALE 1:600	DATE JUNE 05
DRAWN KASIM M	REVISION
DRAWING NO	WH09/ROL/CAD76



PROPOSED SHADOW AT 2 PM ON 21st OF MARCH

SOURCES OF INFORMATION

SCHATUNOWSKI BROOKS
CHARTERED BUILDING SURVEYORS
RIGHTS OF LIGHT SUNLIGHT DAYLIGHT
PARTY WALL CONSULTANTS

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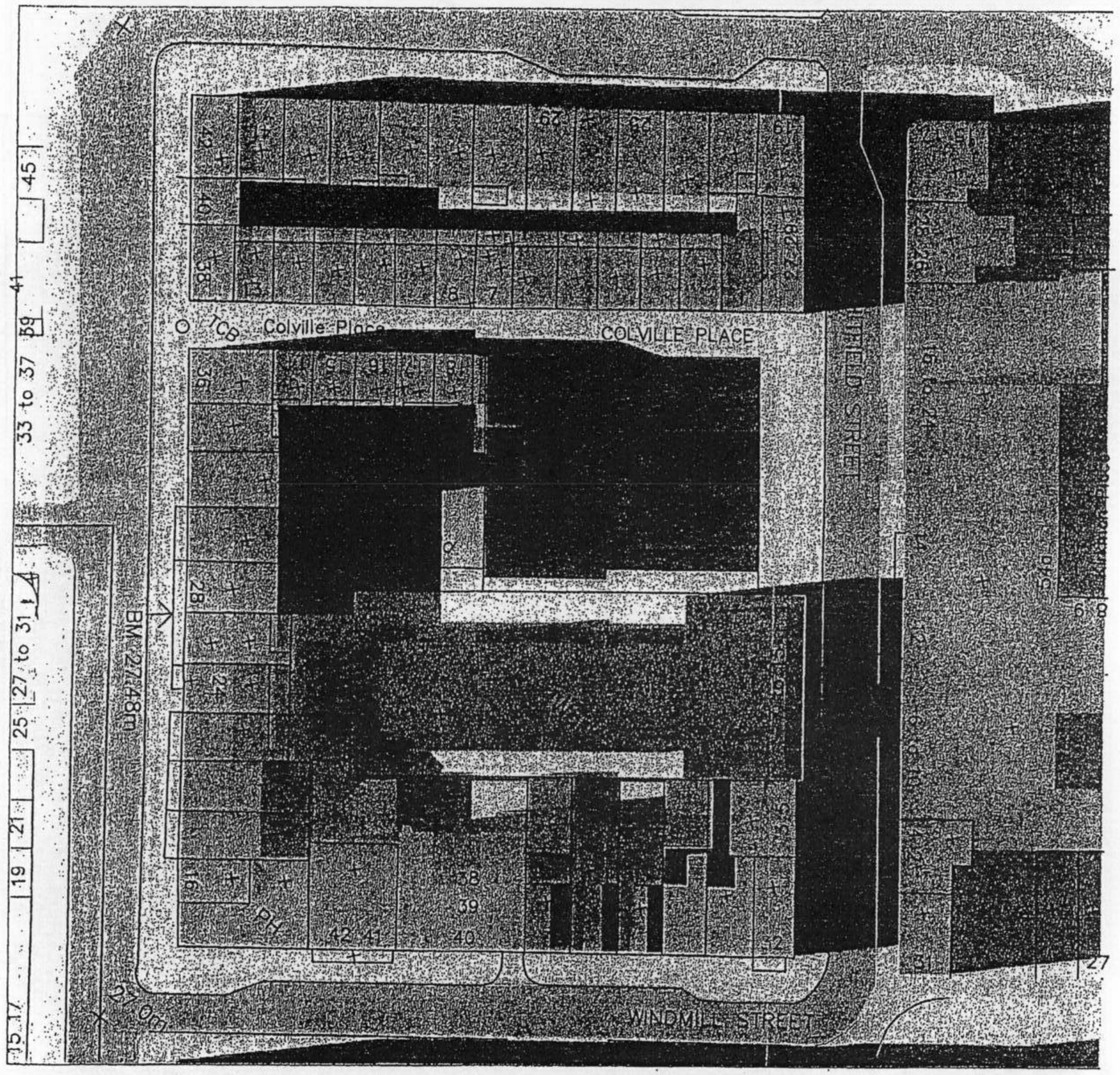
JOB	7 – 15 WHITFIELD STREET LONDON W1
TITLE	SHADOW DIAGRAM FOR THE PROPOSED ON 21 MARCH @2 PM
SCALE 1:600	DATE JUNE 05
DRAWN KASIM M	REVISION
DRAWING NO	WH09/ROL/CAD77



PROPOSED SHADOW AT 4 PM ON 21st OF MARCH

SOURCES OF INFORMATION

SCHATUNOWSKI BROOKS
CHARTERED BUILDING SURVEYORS
RIGHTS OF LIGHT SUNLIGHT DAYLIGHT
PARTY WALL CONSULTANTS

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JOB	7 – 15 WHITFIELD STREET LONDON W1
TITLE	SHADOW DIAGRAM FOR THE PROPOSED ON 21 MARCH @4 PM
SCALE 1:600	DATE JUNE 05
DRAWN KASIM M	REVISION
DRAWING NO	WH09/ROL/CAD78

Barton Willmore

7-15 Whitfield Street

Statement of Intent for Renewable Energy Provision

October 2007

Prepared for:

Barton Willmore on behalf of
Artesian Property Partnership

Barton Willmore
7-15 Whitfield Street

Scott Wilson

Revision Schedule

7-15 Whitfield Street – Statement of Intent for Renewable Energy Provision
October 2007

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	04/10/2007		**Ian Brenkley & Michael Pidgeon** Sustainability Consultants	**Karl Walker** Principal Sustainability consultant	**Martin Birt** Technical Director

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1 Introduction

Artesian Property Partnership is committed to meeting, with aspirations to exceed, the London Borough of Camden's planning requirement to offset a minimum of 10% of the site's energy demand through the provision of on-site renewable energy technologies, and has commissioned Scott Wilson to prepare a Renewable Energy Statement. This will comprise an assessment of the anticipated energy demand of the site, based on a detailed modelling exercise, and a strategy for the provision of renewable energy to offset a proportion of the site's energy demand.

This document has been prepared as a statement of intent in support of the detailed planning application for the proposed development at 7-15 Whitfield Street, and outlines the proposed renewable energy solution for the site, as a precursor to the Renewable Energy Statement which will be submitted at a later date.

1.1 The Proposed Development

It is proposed to redevelop the site of 7-15 Whitfield Street, London, W1 into a mixed-use speculative office and residential development. The speculative office space will occupy the basement and lower ground floors with the reception and entrance facing onto Whitfield Street. The residential element of the scheme will comprise 11 affordable rented and intermediate properties and 11 open market properties.

Table 1.1 summarises the floor areas of each type of accommodation in the proposed development:

Table 1.1 – Gross Internal Floor Areas

		Number of Units	Gross Internal Floor Area (m2)
Office		-	1,251
Residential	Open Market	11	1,683
	Social Rented	9	698
	Intermediate	2	119
	Total	**22**	**3,750**

2 Preliminary Energy Demand Assessment

At this stage, the site's energy demand has been estimated through the application of benchmark figures. For the office space, benchmarks were taken from the DETR Energy Efficiency Best Practice Programme Energy Consumption (ECON) Guide 19[1]. For the residential units, figures adapted from the London Renewables Toolkit[2], based on electricity and gas consumption for similar residential developments, were used.

The Renewable Energy Statement, to be submitted at a later date determined in consultation with the London Borough of Camden, will contain a significantly more accurate assessment of energy demand, derived from building physics modelling. The software used (IES) will provide an accurate understanding of the predicted energy demand of the site.

Table 2.1 summarises the benchmarks applied to determine the anticipated energy demand and carbon emissions for the site.

Table 2.1 – Energy Demand Benchmark Values

	Gas (kWh/m^2)	Electricity (kWh/m^2)
Office	97	128
Residential	67	48.6

Table 2.2 summarises the anticipated energy demand of the proposed development, which has been calculated through the application of the benchmarks set out above.

Table 2.2: Energy Demand and Carbon Emissions of the Proposed Development

		Gross Internal Floor Area (m^2)	Space and Water Heating (kWh/yr)	Electrical (kWh/yr)	Total (kWh/yr)	% of Total Energy Demand
Office		1,251	121,299	160,064	281,363	49.3%
Residential	Open Market	1,683	112,761	81,794	194,555	34.1%
	Social Rented	698	46,753	33,913	80,666	14.1%
	Intermediate	119	7,973	5,783	13,756	2.4%
	Total	**3,750**	**288,785**	**281,554**	**570,339**	

[1] DETR (2000) Energy Efficiency Best Practice Programme Energy Consumption Guide 19 – Energy Use in Offices
[2] Greater London Authority (2004), Integrated Renewable Energy into New Developments: Toolkit for Planners, Developers and Consultants

2.1 Total Energy Demand

The proposed development's total energy demand is expected to be approximately 570MWh per year. This figure includes the energy demand and carbon emissions from both the office and residential elements, and will be used throughout the remainder of this report when assessing the potential contribution of renewable technologies.

2.2 Renewables Target

Camden Planning Guidance (2006) requires the proposed development to generate 10% of its total energy demand from on-site renewable energy technologies. This is equivalent to approximately 57,000kWh per year, or 57MWh per year.

3 Renewables Feasibility Study

This section evaluates a range of renewable technologies for the proposed development, and identifies the site-specific viability of each technology.

3.1 Preliminary Technology Appraisal

A wide range of renewable energy technologies have been considered for the proposed development. Table 3.1 presents a summary of the suitability of each of these technologies.

Table 3.1 – Preliminary Appraisal of Technologies

Technology	Feasibility*			Comments
	H	M	L	
Wind (stand alone)			✔	Stand-alone turbines are not suitable for this development due to the limited available space on the site. The site is surrounded by other buildings which provide obstructions and cause turbulence.
Wind (roof mounted)			✔	Roof-mounted wind turbines, designed for turbulent urban environments, could be a feasible option if wind speeds are available to support this technology. However, the BWEA Wind Speed Database[3] suggests that wind speeds at the site would be 5.6m/s at 25m AGL[4] and hence, are deemed unfeasible.
Photovoltaics			✔	The flat roof of the town houses provide a good space for the installation of photovoltaic panels. However, due to the visual impact of the installations, they are unlikely to receive planning consent, based on discussions between the developer and the local authority
Solar Hot Water Systems			✔	As with photovoltaics, the orientation of the building and shape of the roof would accommodate solar hot water panels but as with photovoltaics, due to the visual impact of the installations, planning consent is unlikely to be granted.
Biomass Heating	✔			There is a good opportunity to incorporate a biomass boiler to provide space and water heating for the office space and potentially the residential accommodation. The boiler could feasibly be located adjacent to the existing EDF chamber which would allow access via the Mews entrance for fuel supply. The availability of supply of biomass fuel would need to be confirmed before detailed design is completed.
Biomass Combined Heat and Power			✔	Due to the variable nature of heating and electrical loads inherent with residential schemes it is unlikely that the proposed development, due to its size, will be able to provide the constant load requirements typically required to optimise CHP operation.
Ground-Sourced Heating			✔	There is insufficient space on the site for a horizontal heat exchanger system. Installation of a vertical system is not feasible as the existing concrete foundations preclude the necessary

[3] www.bwea.com/noabl
[4] Above Ground Level

Technology	Feasibility*			Comments
	H	M	L	
				ground access for drilling.
Ground-Sourced Cooling			✔	Ground-sourced cooling is not considered possible for the same reasons as mentioned above for ground-sourced heating.

*H – high feasibility; no obvious restrictions;
M – medium feasibility; very significant issues need to be addressed;
L – low feasibility; development site unlikely to support technology.

Based on this preliminary evaluation, biomass heating is considered to be the only feasible renewable technology for this development. Refer to Section 3.2 for further detail.

3.2 Biomass: Technology Overview

Biomass is the term used for all organic material, produced either directly from plants or indirectly from industrial, commercial, domestic or agricultural products. It is sometimes called 'bioenergy' or 'biofuel' and does not contain fossil fuels, which have taken hundreds of millions of years to create.

The use of biomass as a fuel has both environmental and economic advantages. It is a 'carbon neutral'[5] process as the carbon dioxide released when burned is balanced by that absorbed in its cultivation. It is most economical when a local fuel source is used or where an effective waste management system enables waste that would otherwise have been sent to land fill to provide the fuel for the biomass plant. In addition, local fuel sources reduce the necessary transport miles (and associated carbon dioxide emissions) and can provide investment and employment benefits for the local community.

Biomass can be separated into two categories, woody biomass and non-woody biomass. Woody biomass is most commonly used for residential/mixed use schemes and includes forest products and untreated wood products. It also includes energy crops and short rotation coppice, such as the quick growing willow. The type of wood-fuel used depends on the availability of supply, location, building type and its specific requirements. Generally the fuel is supplied as wood pellets or chips. Logs are only appropriate for small scale heating requirements. Biomass boilers are highly efficient and can convert over 60% of the fuel's potential into useable energy. The boiler transfers the heat of the combustion through a heat exchanger to a usable form such as hot water that can then be used for space heating.

Prior to the incorporation of a biomass boiler into the development, contracts must be developed with suitable fuel suppliers who can guarantee a secure supply of fuel stock, as required, throughout the duration of the buildings life cycle. Available supplies exist within the UK through various sources including sawdust waste, wood waste, wood chippings and other biomass materials such as coppiced wood and arable crops.

[5] Not accounting for non-organic agricultural processes, fuel processing or transport.

Figure 3.1: Biomass Boiler and Storage Delivery System

3.2.1 Site Opportunities & Constraints

A biomass boiler could potentially be used as a fuel source to provide space and water heating for the entire development. However, this is subject to space constraints on the site, costs of the fuel and identifying a secure supply.

The following constraints apply to the use of biomass, and must be taken into consideration when designing a system for the proposed development:

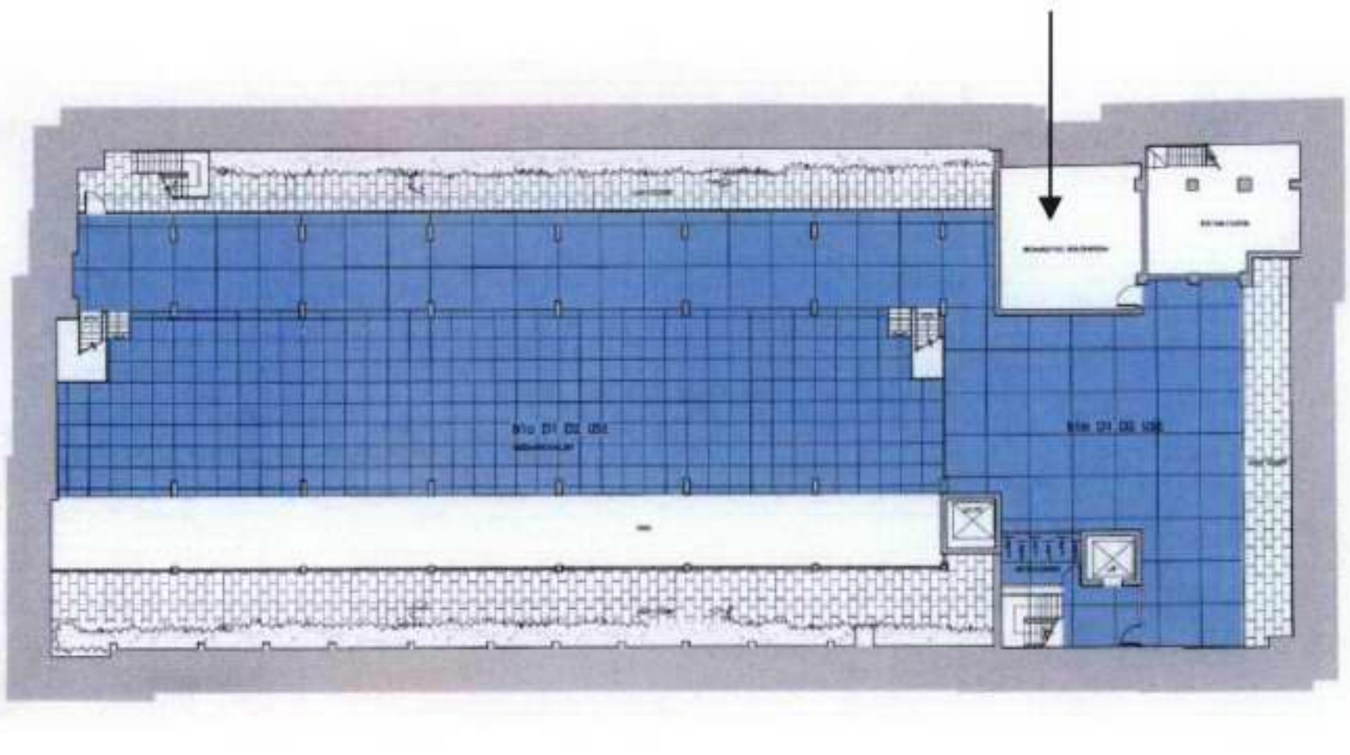
- Significant space would be required both for the installation of the plant itself and for the storage of biomass fuel;
- The plant must located such that access is available for the delivery of fuel;
- Confirmation would be required that a regular fuel supply could be guaranteed;
- A conventional gas heating system will be required to provide a backup in the event that the biomass plant fails or there is a shortage in fuel;
- Transmission losses would be incurred if a distribution system was used to supply heat across the entire site; and
- If a shared heating system is proposed, an Energy Services Company (ESCo) will need to be appointed to manage fuel delivery, operation of the plant, metering of energy use and utility bills

4 Biomass Strategy Options

The Renewable Energy Statement, to be provided at a later date, will set out a strategy for the provision of biomass heating. Plant location, system size and its distribution throughout the site have been considered, but further evaluation is required to determine the outcome of the energy strategy for 7-15 Whitfield Street.

4.1 Plant Location

The plant must be located in a position that allows sufficient access for a fuel delivery vehicle. Figure 4.1 shows the proposed plant location, accessible from the office space on the lower ground floor:



This location has been chosen as it will allow for the installation of a pneumatic delivery system, whereby a delivery vehicle can enter the access route as shown in Figure 4.1 and feed the biomass into the storage area, blown through ductwork. As the plant location is below ground level, a gravity-fed system can be used.

At present, an indicative area of 6.5m x 6.5m has been proposed, with a ceiling height of 2.6m. It is anticipated that this space should be adequate to house both the plant itself and an appropriately sized storage hopper, subject to further analysis of the predicted energy demand.

4.2 System Size and Distribution

Through initial discussions with suppliers and manufacturers of biomass plant, it is understood that a boiler of around 100-150kW boiler would be appropriate to serve a development with this level of heating demand, although the exact size will depend on the eventual proposed strategy, and is subject to the scale of distribution throughout the proposed development.

4.3 Further Considerations

Before a specific approach can be adopted for the site, the following issues need to be considered further:

- The greater the system size, the greater the storage area that would be required for both the plant and fuel. This would mean a reduction in the floor space available for speculative office use;
- Transmission losses would be incurred through the introduction of an extensive distribution system if this were to be proposed;
- As identified within Section 3.2.1, an ESCo would need to be engaged to manage fuel delivery and supply, operation of the plant, metering of energy use and utility bills;
- Ultimately, the efficiency of the system is a key consideration. The heating load of office spaces is typically high during the day, whereas residential loads are higher in the morning in evening. This may present a balance whereby the most efficient strategy is to service both the residential and office spaces.

5 Next Steps & Conclusion

The developer is committed to offsetting a minimum of 10% of the site's energy demand through the use of on-site renewables.

The findings of this report demonstrate that it would be feasible to install a biomass boiler within the office space on the lower ground floor of the proposed development. The initial energy demand assessment indicates that a biomass boiler sized from 100-150kW would be appropriate.

However, this assessment has been carried out using benchmark values for energy demand, for both the office and residential space within the development, and as such provides only an indication of the offset that could potentially be provided by the proposed biomass heating system.

The next stage is to carry out detailed energy modelling of the development, based on floor plans, material specifications and proposed electrical fittings.

Following this, a strategy will be developed to ensure that the optimum solution is reached, providing an economically viable strategy that meets Camden's planning requirements. Anticipated load profiles also will be assessed to determine the appropriate size of boiler plant.

As a minimum, a biomass boiler will be used to service the office space.

It is anticipated that the full Renewable Energy Statement will be prepared and submitted to the London Borough of Camden by Friday 9 November.