DAYLIGHT AND SUNLIGHT REPORT

CHICHESTER HOUSE

Prepared by: GIA

Reference: 3561

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EXECUTIVE SUMMARY

This report analyses the changes in daylight and sunlight levels to the surrounding properties due to a proposed redevelopment of Chichester House, High Holborn.

The proposed development seeks to redefine the eastern portion of the site whilst at the same time opening up the southern end of Great Turnstile.

The Building Research Establishment (BRE) guidelines *'Site Layout Planning for Daylight and Sunlight'* provides the criteria and methodology for calculation in connection with daylight and sunlight. This includes two significant techniques being the Vertical Sky Component and the Average Daylight Factor. The second principle to this is the British Standard BS 8206 Part II. The BRE guidelines should be interpreted flexibly as natural lighting is only one in many factors in site layout design.

Bearing in mind that the existing daylight and sunlight conditions are low, we consider the proposed scheme included in this report will have no significant impact to the surrounding properties. We therefore consider this scheme acceptable in relation to daylight and sunlight.

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APPENDICES
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1.0 INSTRUCTIONS

You have instructed this Practice to provide a report on the daylight and sunlight implications on the surrounding properties as a result of redeveloping the Chichester House site with the GMW Architects scheme proposal dated 17th May 2007.

2.0 INTRODUCTION

DAYLIGHT AND SUNLIGHT

In considering the development potential and the quality of amenity for the surrounding properties once the scheme has been implemented, there are two relevant factors which are used.

The first is the Building Research Establishment (BRE) guidelines ***'Site Layout Planning for Daylight and Sunlight'*** which provide the criteria and methodology for calculation in connection with daylight and sunlight. This handbook is the primary authority for this matter and therefore it is not only this Practice, but also the Local Authority, who will be considering your application by reference to these guidelines. The second factor is that only residential properties need be considered.

The BRE guidelines provide two main methods of calculation for daylight. The first is known as the Vertical Sky Component (VSC) method which considers the potential for daylight by calculating the angle of vertical sky at the centre of each of the windows serving the residential buildings which look towards the site. This is a more simplistic approach and it could be considered as a "rule of thumb" to highlight whether there are any potential concerns to the amenity serving a particular property.

The second method of calculation is the Average Daylight Factor (ADF). This is a more detailed and thus more accurate method which considers not only the amount of sky visibility on the vertical face of the window, but also the window size, room size and room use.

Where dimensions of the room to be assessed are available this is the best method of assessment, but even where they are not, it provides a very informative result. It gives guidance as to the qualative and quantitative change in daylight and is related to the British Standard BS 8206 Part II.

In relation to sunlight, the criteria given calculates the annual probable sunlight hours (APSH) which considers the amount of sun available in both the summer and winter for each given window which faces within 90° of due south. Summer is considered to be the six months between March 21st and September 21st and winter the remaining months

3.0 SOURCES OF INFORMATION

GMW ARCHITECTS

Proposed Scheme

3829_SK11-24 (Rev D) 070516.dwg

3829_TP01-17 070718 [Rev C].dwg

THE GORDON TOMALIN PARTNERSHIP

Site Survey

8434-01.dwg to 8434-07.dwg

MARY THUM ASSOCIATES

Plans and Elevations for 12 – 15 Great Turnstile

GIA

Site visit and site photographs

OS Survey

4.0 LONDON BOROUGH OF CAMDEN UNITARY DEVELOPMENT PLAN (UDP) ADOPTED JUNE 2006

Here are the relevant sections from the Camden UDP that relate to Daylight and Sunlight.

SECTION 1 – SUSTAINABLE DEVELOPMENT

AMENITY

SD6 – AMENITY FOR OCCUPIERS AND NEIGHBOURS

The Council will not grant planning permission for development that it considers causes harm to the amenity of occupiers and neighbours. The factors the Council will consider include:

5.0 CAMDEN PLANNING GUIDANCE 2006

Here are the relevant sections from the Camden Planning Guidance 2006 that relate to Daylight and Sunlight.

SECTION 14 DAYLIGHT AND SUNLIGHT

DAYLIGHT

14.7. In all planning applications the Council will seek to minimise the impact on the amenity of both existing and future occupiers in terms of the loss of daylight to levels that are reasonable in the context of overall planning and site considerations. Where it is found that a proposed development, of whatever type, has an unreasonable impact on amenity then it is the planning application may be refused. When assessing daylight issues, the Council will apply the guidelines and methods contained in "*Site layout planning for daylight and sunlight: A guide to good practice*".

14.8. There are two relatively quick methods that can be used to assess the impact of new developments on daylight. For the first check, project a 25 degree line starting 2m above ground level on the proposed development. If none of the surrounding buildings are taller than this line, then there is potential for good daylighting to be achieved in the interior of the new development. A similar check can be used to determine the impact on an existing development. A 25 degree line should be projected from the centre of the lowest window on the existing building. If the whole of the new development is lower than this line then it is unlikely to have a substantial effect on the daylight enjoyed by the existing building. If, for either check, the buildings are higher than the 25 degree line a more detailed check is needed to calculate the loss of daylight and the level of daylight achievable in a new development. For this more detailed check the two most commonly used measurements of daylight are the Vertical Sky Component (VSC) and the Average Daylight Factor (ADF).

14.9. The VSC can be defined as the amount of daylight falling on a vertical wall or window. It is expressed as a ratio and the maximum value achievable for a completely unobstructed vertical wall is almost 40%. If the VSC is greater than 27% then enough sunlight should be reaching the existing window. Any reduction below this level should be kept to minimum. Where rooms do not already achieve this figure under existing conditions it is possible to accept a reduction to

the existing level of daylight to no less than 0.8 times its former value. Any greater reduction than this is likely to have a noticeable affect on amenity.

14.10. The Average Daylight Factor can be used as a measure to determine whether a room will receive adequate daylight (expressed as a percentage). It takes into account the net glazed area of a window, the total area of the room surfaces (ceiling, floor, walls, windows) the average reflectance and the angle of visible sky. If a predominately daylit appearance is required, then the daylight factor should be 5% or more if there is no supplementary electric lighting, or 2% or more if supplementary electric lighting is provided. For dwellings the figures should be 2% for kitchens, 1.5% for living rooms and 1% for bedrooms.

14.11. The BRE document states that the figures for dwellings are minimum values of average daylight factor which should be attained even if a predominately daylit appearance is not required. For instance, when measuring the impact on existing dwellings, the simple preservation of minimum ADFs should not necessarily be seen as an indication of acceptability if the VSC demonstrates a significant worsening in daylight levels. However, as the BRE guidance suggests, the readings should be interpreted flexibly and the aim of them is to help rather than constrain – natural lighting is only one of the many factors in site layout design. Therefore in applying these standards in Camden it is reasonable to take account of other relevant factors.

14.12. The calculation of the VSC and the ADF is quite complex. For full details on how these calculations are carried out reference should be made to the most up to date version the BRE's "*Site layout planning for daylight and sunlight: A guide to good practice*". For more complex and larger developments it will be expected that a daylight study will be submitted with a planning application showing the windows that will be affected and include before development and post development figures for the VSC and the ADF.

14.13. Other methods can be used to measure daylight and these can be incorporated in daylight and sunlight reports where necessary, as a supplement to VSC and ADF measurements.

SUNLIGHT

14.14. The BRE's "*Site layout planning for daylight and sunlight: A guide to good practice*" offers guidance on site layout for new buildings, existing buildings, gardens and open spaces in terms of access to sunlight. Because of detailed design

requirements it is recommended that the "Sunlighting" section of that document is referred to for further guidance on layout design.

6.0 ASSUMPTIONS

1. Where survey information has been lacking we have used site photographs and OS information to estimate as closely as possible the position of buildings and windows within their elevations.

2. We have not sought or obtained access to any of the adjoining properties, however, we have been able to source as-built drawings of the residential building facing the site and thus the room dimensions and room uses behind the fenestration can be assessed more accurately.

3. We have made best estimates as to the uses which are carried out legally within the adjoining properties in terms of commercial and residential. We have estimated these from external observation and the uses are identified in the report below.

7.0 THE SITE

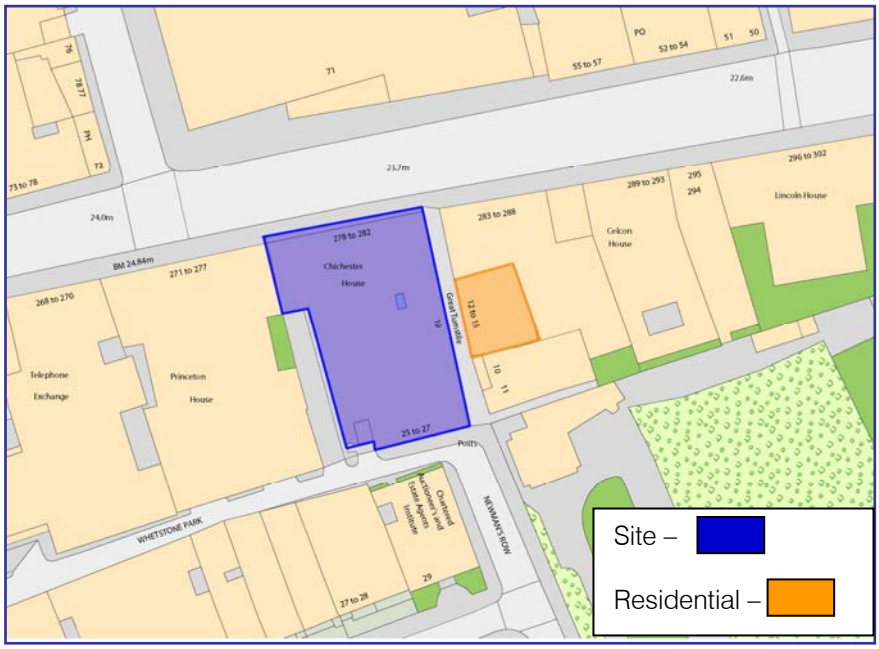


PLATE 01 – OS HIGHLIGHTING PROPOSED SITE AND SURROUNDING RESIDENTIAL BUILDING OF 12 – 15 GREAT TURNSTILE

8.0 THE PROPOSAL

The Chichester House scheme seeks to redefine the local area by partly redefining the eastern portion of the site, whilst at the same time opening the southern end of the Great Turnstile alleyway.

The proposed scheme drawings from GMW Architects both show agreement to the eastern boundary of the proposed development. Any differences to this façade are negligible in daylight and sunlight terms.

9.0 SURROUNDING PROPERTIES

All of the windows and rooms which face the site of the proposed development within the neighbouring properties have been included within this assessment and the tabulated results of this analysis are attached (see Appendix 2). The result of the assessment is discussed in detail below.

Internal layouts have been sourced and modelled for assessment, thus providing accurate results of retained light levels. This information will help determine the acceptability of rooms with respect the BRE Guidelines.

The BRE considers residential properties as being more important to receiving adequate levels of daylight and sunlight when compared to commercial buildings and thus we have concentrated on these alone.

The following residential property surrounding the site has been considered as part of this assessment where a full analysis has been undertaken considering the true existing light conditions against that which is proposed.

12 TO 15 GREAT TURNSTILE

DAYLIGHT

EXISTING

VSC

In the existing situation, not one of the fifteen windows within all of the residential properties from 12-15 Great Turnsile will receive BRE compliant levels of daylight by

reference to the VSC method. In fact in the current situation VSC levels range from 2.69% to 20.3% in the best case. This situation exists due to the narrow width of Great Turnstile and the heights of surrounding properties.

ADF

There are two first floor rooms, from units 1 and 3, which face the Chichester House site. The existing conditions provide an ADF level of 1.24% and 0.73% respectively. Both rooms serve as Living Rooms / Kitchen spaces and currently do not meet the BRE Guidelines.

There are two second floor rooms, from units 4 and 7, which face the Chichester House site. The existing conditions provide an ADF level of 1.96% and 1.40% respectively. Both rooms serve as Living Rooms / Kitchen spaces where one room currently does not meet the BRE Guidelines.

The other remaining residential units with rooms that face the Chichester House site currently have ADF values of 2.98%, 1.63%, 3.98%, 3.78% and 2.45% ADF. These levels are considered acceptable for habitable room use with respect to the BRE Guidelines.

In the existing situation, one room each from units 1, 3 and 7 that face Chichester House currently do not meet BS 8206 Standards For Lighting Part 2 Code of Practice for Daylighting. As such any development opposite will reduce this level further.

In the above described existing daylight situation, it can be seen that there are a number of residential rooms and windows that do not already meet the BRE Guidelines. Any such development adjoining to this property will further reduce levels of light.

PROPOSED

VSC

The results of the analysis indicate that most of the windows overlooking the site will experience losses of VSC beyond the suggested criteria. However, these losses whilst high in percentage change, resulting from the proposed development, represent a small decrease in VSC in real terms which would most likely be imperceptible to the human eye.

As the existing VSC values already do not meet the BRE criteria, the resultant levels will also not meet the criteria.

ADF

The existing ADF results indicate that three out of the nine rooms tested (33%) will not meet the minimum criteria suggested by the BRE for room use. .

The ADF method of analysis indicates that a number of rooms will receive BRE compliant levels of light given their room use. The rooms that do not meet the BRE Guidelines' minimum levels still retain levels of light which are marginally below the suggested standards. These rooms include one room from each of Unit 1, 3, 4, 7 and 10 with respect to the rooms that face Chichester House. Therefore of the 11 units that comprise this property, five rooms from five individual units do not meet the criteria.

The reality of the situation is that several of the rooms never received BRE compliant levels of daylight for their usage when accessing the existing situation. Whilst the development will reduce light levels, the losses are very small in absolute terms and will be indiscernible to the human eye. We therefore believe that the target criteria should be used flexibly.

INDICATIVE ENVELOPE

SUNLIGHT

In the existing situation two out of fifteen (13%) windows receive BRE compliant levels of sunlight.

The proposed development indicates that six windows will remain BRE compliant with losses not exceeding more than 20%.

In situations where the existing sunlight is low, it is more difficult to meet the BRE Guidelines which are expressed in relative percentage reduction terms. The absolute reduction in sunlight to these windows is small. However, they technically do not meet the BRE Guidelines due to percentage reductions beyond 20%. We would consider that since the absolute reductions are small and the existing sunlight levels were beneath the guidelines, that the retained level of sunlight is acceptable for these windows.

DAYLIGHT AND SUNLIGHT INTERNAL TO THE SCHEME

All the residential rooms proposed within the scheme will benefit from fully BRE compliant levels of daylight. The ADF values for these rooms range from 2.46% to 12.72%. These values significantly exceed the BRE Guidelines where Bedrooms and Living Rooms need values of 1% ADF and 1.5% ADF respectively.

b) sunlight and daylight levels;

c) artificial light levels;

g) microclimate

1.41 Harmful effects to the amenity of existing and future occupiers on a development site and to nearby properties should be avoided, especially in the case of residential buildings. The design of development should give consideration to overlooking and the potential effects on privacy, and allow sufficient daylight and sunlight into buildings and land.

1.42 Privacy and overlooking are very much a function of distance, vertical levels of onlooker and subject, as well as the horizontal angle of the view. Roof terraces and balconies should not result in unacceptable disturbance to the privacy of neighbouring habitable rooms and any garden space that is in separate occupation. Overlooking from the public highway and from neighbouring private gardens and parking areas will also be considered. On sunlight and daylight, the Council will apply the standards recommended in the Building Research Establishment's 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (1991). Policy SD7A deals further with light pollution, and noise and vibration are addressed in policy SD7B. Policies SD8A and SD8B address amenity disturbance due to the specific harm that can be caused by plant and machinery, and demolition and construction.

SECTION 3 – BUILT ENVIRONMENT

3.29 The design of a scheme should consider local climatic conditions, such as sunlight, daylight and wind. Climatic conditions can be a particularly important consideration in schemes including tall buildings. The careful sitting and orientation of buildings can be used to improve the energy efficiency of a development.

10.0 CONCLUSION

Having undertaken a full computer generated assessment on the surrounding properties in relation to the daylight/sunlight caused by this proposed development, we confirm that there will be no significant impact to the residential units within 12 -15 Great Turnstile.

Daylight and sunlight have been assessed by reference to the BRE Guidelines. These have been written with suburban environments in mind and any losses in relation to daylight and sunlight should be viewed in the context of the environment which they are in. The local area is quite dense with the current residential building at a distance of approximately 3 metres away from the existing Chichester House. This site and the surrounding buildings are greater than the suburban model used to generate the BRE. The target criteria should therefore, be used flexibly.

We are confident that if consent were granted so as to enable the proposed development to proceed, once built the local residents will continue to enjoy relatively the same levels of light than they are currently benefiting from.

In our professional opinion the situation that would exist once the total development is in place would not be at odds in any way with the intention and direction of the Building Research Establishment handbook ***'SITE LAYOUT PLANNING FOR DAYLIGHT AND SUNLIGHT'.***

We therefore consider this scheme acceptable in relation to daylight and sunlight.

APPENDIX 1

PRINCIPLES OF DAYLIGHT AND SUNLIGHT

PRINCIPLES OF DAYLIGHT AND SUNLIGHT

BACKGROUND

The quality of amenity for buildings and open spaces is increasingly becoming the subject of concern and attention for many interested parties.

Historically the Department of Environment provided guidance of these issues and, in this country, this role has now been taken on by the Building Research Establishment (BRE), the British Standards Institution (BSI) and the Chartered Institute of Building Services Engineers (CIBSE). Fortunately they have collaborated in many areas to provide as much unified advice as possible in these areas.

Further emphasis has been placed on these issues through the European directive that Environmental Impact Assessments (EIA's) are required for large projects. Part of these assessments include the consideration of the micro-climate around and within a proposal. The EIA requires a developer to advise upon, amongst other matters, the quality of and impact to daylight, sunlight, overshadowing, solar glare and light pollution.

It is also clear, particularly through either adopted or emerging Unitary Development Plans (UDP's), that local Authorities take this matter far more seriously than they previously did. There are many instances of planning applications being refused due to impact on daylight and sunlight to neighbouring properties and proportionately more of these refusals are appealed by applicants.

Where developers are seeking to maximise their development value, it is often in the area of daylight and sunlight issues that they may seek to 'push the boundaries'. Local Authorities vary in their attitude of how flexible they can be with worsening the impact on the amenity enjoyed by neighbouring owners. In city centres, where there is high density, it can be the subject of hot debate as to whether further loss of amenity is material or not. There are many factors that need to be taken into account and therefore each case has to be considered on its own merits. Clearly, though, there are governing principles which direct and inform on the approach that is taken.

These principles are effectively embodied within the UDP's and the guidance they expressly rely upon. For example, in central London, practically all of the Local Authorities expressly state they will not permit or encourage developments which create a material impact to neighbouring buildings or amenity areas. Often the basis on what is constituted as 'material' will be derived specifically from the BRE Guidelines. Their guidelines were produced in 1991, as a direct commission from the Department of the Environment, and entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice'.

These guidelines are normally the only official document used by local Authorities and consequently they are referred to extensively by designers, consultants and planners. Whilst they are expressly not mandatory and state that they should not be used as an instrument of planning policy, they are heavily relied upon as they advise on the approach, methodology evaluation of impact in daylight and sunlight matters.

THE BRE GUIDELINES

The BRE give criteria and methods for calculating daylight, and sunlight and to some degree overshadowing and through that approach define what they consider as a material impact. As these different methods of calculation vary in their depth of analysis, it is often arguable as to whether the BRE definition of 'material' is applicable in all locations and furthermore if it holds under the different methods of calculation.

As the majority of the controversial daylight and sunlight issues occur within city centres these explanatory notes focus on the relevant criteria and parts of the Handbook which are applicable in such locations.

In the Introduction of 'Site Layout Planning for Daylight and Sunlight' it states that:-

> *"The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of many factors in site layout design (see Section 5). In special circumstances the developer or Planning Authority may wish to use different target values. For example, in an historic city centre a higher degree of*
> *obstruction may be unavoidable if new developments are to match the height and proportions of existing buildings".*

Again, the second paragraph of Chapter 2.2 of the document states:-

The reason for including these statements in the Report is to appreciate that when quoting the criteria suggested by the BRE, they should not necessarily be considered as appropriate. However, rather than suggest alternative values, consultants in this field often remind local Authorities that this approach is supportable and thus flexibility applied.

MEASUREMENT AND CRITERIA FOR DAYLIGHT & SUNLIGHT

The BRE handbook provides two main methods of measurement of calculating daylight which we use for the assessment in our Reports. In addition, in conjunction with the BSI and CIBSE it provides a further method in Appendix C of the Handbook. In relation to sunlight only one method is offered for calculating sunlight availability for buildings. There is an overshadowing test offered in connection with open spaces.

DAYLIGHT

In the first instance, if a proposed development falls beneath a 25° angle taken from a point two metres above ground level, then the BRE say that no further analysis is required as there will be adequate skylight (i.e. sky visibility) availability.

The three methods for calculating daylight are as follows:

(a) Vertical Sky Component (VSC)

(b) No Sky Contours (NSC)

(c) Average Daylight Factor (ADF)

Each are briefly described below.

(a) Vertical Sky Component

Methodology

This is defined in the Handbook as:-

Ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE Standard Overcast Sky, to illuminate on a horizontal plane due to an unobstructed hemisphere of this sky.

"Note that numerical values given here are purely advisory. Different criteria may be used, based on the requirements for daylighting in an area viewed against other site layout constraints".

The ratio referred to in the above definition is the percentage of the total unobstructed view that is available, once obstructions, in the form of buildings (trees are excluded) are placed in front of the point of view. The view is always taken from the centre of the outward face of a window.

This statement means, in practice, that if one had a totally unobstructed view of the sky, looking in a single direction, then just under 40% of the complete hemisphere would be visible.

The measurement of this vertical sky component is undertaken using two indicators, namely a skylight indicator and a transparent direction finder. Alternatively a further method of measuring the vertical sky component, which is easier to understand both in concept and analysis, is often more precise and can deal with more complex instructions, is that of the Waldram diagram.

The point of reference is the same as for the skylight indicator. Effectively a snap shot is taken from that point of the sky in front of the window, together with all the relevant obstructions to it, i.e. the buildings.

An unobstructed sky from that point of reference would give a vertical sky component of 39.6%, corresponding to 50% of the hemisphere, and therefore the purpose of the diagram is to discover how much sky remains once obstructions exist in front of that point.

The diagram comes on an A4 sheet (landscape) and this sheet represents the unobstructed sky, which in one direction equates to a vertical sky component of 39.6%. The obstructions in front of a point of reference are then plotted onto the diagram and the resultant area remaining is proportional to the vertical sky component from that point.

<u>Criteria</u>

The BRE Handbook provides criteria for:

(a) New Development

(b) Existing Buildings

A summary of the criteria for each of these elements is given and these are repeated below:-

New Development

Summary

In general, a building will retain the potential for good interior diffuse daylighting provided that on all its main faces:-

(a) no obstruction, measured in a vertical section perpendicular to the main face, from a point 2m above ground level, subtends an angle of more than 25 degrees to the horizontal;

(b) If (a) is not satisfied, then all points on the main face on a line 2m above ground level are within 4m (measured sideways) of a point which has a vertical sky component of 27% or more.

Existing Buildings

Summary

If any part of a new building or extension measured in a vertical section perpendicular to a main window wall of an existing building, from the centre of the lowest window, subtends an angle of more than 25 degree to the horizontal, then the diffuse daylighting of the existing building may be adversely affected. This will be the case if either:

(a) the vertical sky component measured at the centre of an existing main window is less than 27%, and less than 0.8 times its former value;

or

(b) the area of the working plane in a room which can receive direct skylight is reduced to less than 0.8 times its former value.

The VSC calculation has, like the other two methods, both advantages and disadvantages. In fact they are tied together. It is a quick simple test which looks to give an early indication of the potential for light. However, it does not, in any fashion, indicate the quality of actual light within a space. It does not take into account the window size, the room size or room use. It helps by indicating that if there is an appreciable amount of sky visible from a given point there will be a reasonable potential for daylighting.

(b) No Sky Contours

This is the part (b) of the alternative method of analysis which is given under the Vertical Sky Component heading in this Appendix. It is similar to the VSC approach in that a reduction of 0.8 times in the area of sky visibility at the working plane may be deemed to adversely affect daylight. It is however, very dependent upon knowing the actual room layouts or having a reasonable understanding of the likely layouts. The contours are also known as daylight distribution contours. They assist in helping to understand the way the daylight is distributed within a room and the comparisons of existing and limitations of proposed circumstances within neighbouring properties. Like the VSC method, it relates to the amount of visible sky but does not consider the room use in its criteria, it is simply a test to assess the change in position of the No Sky Line, between the existing and proposed situation. It does take into account the number and size of windows to a room, but does not give any quantative or qualative assessment of the light in the rooms, only where sky can or cannot be seen.

(c) Average Daylight Factor

This is defined in Appendix H of the BRE Document as:

Ratio of total daylight flux incident on the working plane, expressed as a percentage of the outdoor illuminance on a horizontal plane due to an unobstructed CIE Standard Overcast Sky.

This factor considers interior daylighting to a room and therefore is a more accurate indication of available light in a given room, if details of the room size and use are available.

Criteria

The British Standard, BS8206 Part II gives the following recommendations for the average daylight factor (ADF) in dwellings.

The BRE Handbook provides the formula for calculating the average daylight factor. If the necessary information can be obtained to use the formula then this criteria would be more useful.

Room	Percentage
Kitchen	2%
Living Rooms	1.5%
Bedrooms	1%

It is sometimes questioned whether the use of the ADF is valid when assessing the impact on neighbouring buildings. Firstly, it is often the case that room layouts and uses may not have been established with certainty. Additionally this method is not cited in the main body of text in the BRE Guidelines but only in Appendix C of that document. It is however, the principal method used by both the British Standard and CIBSE in their detailed daylight publications with which the BRE guide recommends that it should be read.

The counter-argument to this view is that whilst room uses and layouts may be not definitely established, reasonable assumptions can easily be made to give sufficient understanding of the likely quality of light. Building types and layouts for certain buildings, particularly residential, are often similar. In these circumstances reasonable conclusions can be drawn as to whether a particular room will have sufficient light against the British Standards. In addition, the final result is less sensitive to changes in the room layout that the No Sky Contour method as it is an average and this element represents only one of the input factors. It is in cases where rooms sizes have been assumed a more reliable indicator than the No Sky Line method.

Clearly if a room which is being designed for a new development is deemed to have sufficient light against the British Standards, then it should equally follow for a room assessed in a neighbouring existing building.

The average daylight factor considers the light within the room behind the fenestration which serves it. The latter is therefore likely to be more accurate because it takes into account the following:-

a) All the windows serving the room in question.

b) The room use.

c) The size and layout of the room.

d) The finishes of the room surfaces.

Summary

The VSC (which forms part of the ADF formula) is helpful as an initial first guide, especially where access to the rooms in question is not available. Where the room layouts and uses are established or can be reasonably estimated we consider it appropriate to analyse the average daylight factor as well as the vertical sky component.

SUNLIGHT

(a) Annual Probable Sunlight Hours (APSH) method

Sunlight is measured in the Handbook in a similar manner to the first method given for measuring the VSC.

A separate indicator is used which contains 100 spots, each representing 1% of annual probable sunlight hours.

The BRE calculated that where no obstructions exist, the total annual probable sunlight hours would amount to 1486. Therefore, each dot on the indicator equates to 14.86 hours of the total annual probable sunlight. Again, to use this indicator the obstructions need to be scaled down and overlaid onto the sunlight indicator.

Those spots which remain uncovered by the scaled obstructions are counted and this gives the percentage of total annual probable sunlight hours for that particular reference point. Again, like the VSC, the reference point is taken to be the centre of the window.

Criteria

Again, the BRE Handbook gives criteria for:

(a) New Development

(b) Existing Buildings

A summary is given in the handbook on page 12 and this is as follows:-

New Development

Summary

In general, a dwelling or non-domestic building which has a particular requirement for sunlight, will appear reasonably sunlit provided that:

(a) at least one main window wall faces within 90 degrees of due south;

and

(b) on this window wall, all points on a line 2m above ground level are within 4m (measured sideways) of a point which receives at least a quarter of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months, between 21 September and 21 March.

Existing Buildings

Summary

If a living room of an existing dwelling has a main window facing within 90 degrees of due south, and any part of a new development subtends an angle of more than 25 degrees to the horizontal measured from the centre of the window in a vertical section perpendicular to the window, then the sunlighting of the existing dwelling may be adversely affected. This will be the case if a point at the centre of the window, in the plane of the inner window wall, receives in the year less than one quarter of annual probable sunlight hours including at least 5% of annual probable sunlight hours between 21 September and 21 March and less than 0.8 times its former sunlight hours during either period.

It will be noted that the BRE clearly separate summer from winter and indicate that a 20% reduction for either may be material. The Handbook also states that *"To find out whether an existing building still receives enough sunlight, the British Standard can be used. It is suggested that all main living rooms of dwellings and conservatories, should be checked if they have a window facing within 90° of due south. Kitchens and bedrooms are less important, although care should be taken not to block too much sun ……..... The British Standard recommends that a 'window reference point', at the centre of each window on the plane of the inside surface of the wall, should be used for the calculations"* and thus this practice gives greater consideration to the effect on the main window of a living room.

(b) Area of Permanent Shadow

The BRE Handbook, 'Site Layout Planning for Daylight and Sunlight' also provides criteria for open spaces.

In particular it gives guidance for calculating any areas of open space that may be in permanent shadow on 21 March. There is no criteria for the overshadowing of buildings.

In summary the BRE document states the following:-

"It is suggested that, for it to appear adequately sunlit throughout the year, no more than two-fifths and preferably no more than a quarter of any garden or amenity area should be prevented by buildings from receiving any sun at all on 21 March. If, as a result of new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable".

In relation to general overshadowing we often provide, where appropriate, an hourly record for existing and proposed situations, the effect of overshadowing on December 21st. March 21st and June 21st.

For open spaces the permanent shadow criteria is naturally adopted but this offers limited understanding of how a space will feel or appear generally.

CITY CENTRES

The introduction of the BRE document gives the example of *'historic city centres'* being a case where there is the need for flexibility and altering the target values for criteria when appropriate, to reflect other site and layout constraints.

To explain why it is appropriate to alter these values, one needs to go further into the BRE Handbook to examine how the criteria for the vertical sky component criteria was determined and the reason therefore for varying the criteria in City Centres.

Appendix G of the document is dedicated to the use of alternative values and, it also demonstrates the manner in which the criteria for skylight was determined for the Summary given above, i.e. the need for 27% vertical sky component for adequate daylighting.

This figure of 27% was achieved in the following manner:

A theoretical road was created with two storey terraced houses upon either side, approximately twelve metres apart. The houses have windows at ground and first floor level, and a pitched roof with a central ridge.

Thereafter, a reference point was taken at the centre of a ground floor window of one of the properties and a line was drawn from this point to the central ridge of the property on the other side of the road. The angle of this line equated to 25 degrees (the 25 degrees referred to in the summaries given with reference to the criteria for skylight).

This 25 degrees line obstructs 13% of the totally unobstructed sky available, leaving a resultant figure of 27% which is deemed to give adequate daylighting. This figure of 27% is the recommended criteria referred to earlier in this report. It will be readily appreciated that in a City Centre, this kind of urban form is unlikely and is impractical. It would therefore be inappropriate to consider values for two storey terraced housing in a City Centre.

It is therefore sometimes necessary to apply different target criteria or at least acknowledge that the recommendations in the BRE cannot be achieved.

In addition, it is often the case that residential buildings within city centres are served by balconies. Balconies restrict lighting levels even more and thus if they were to be rigidly taken into account, a neighbouring proposal would be artificially and inappropriately constrained. This view is supported by the BRE and is equally another reason for flexible and sensible interpretation of the guidelines.

APPENDIX 2

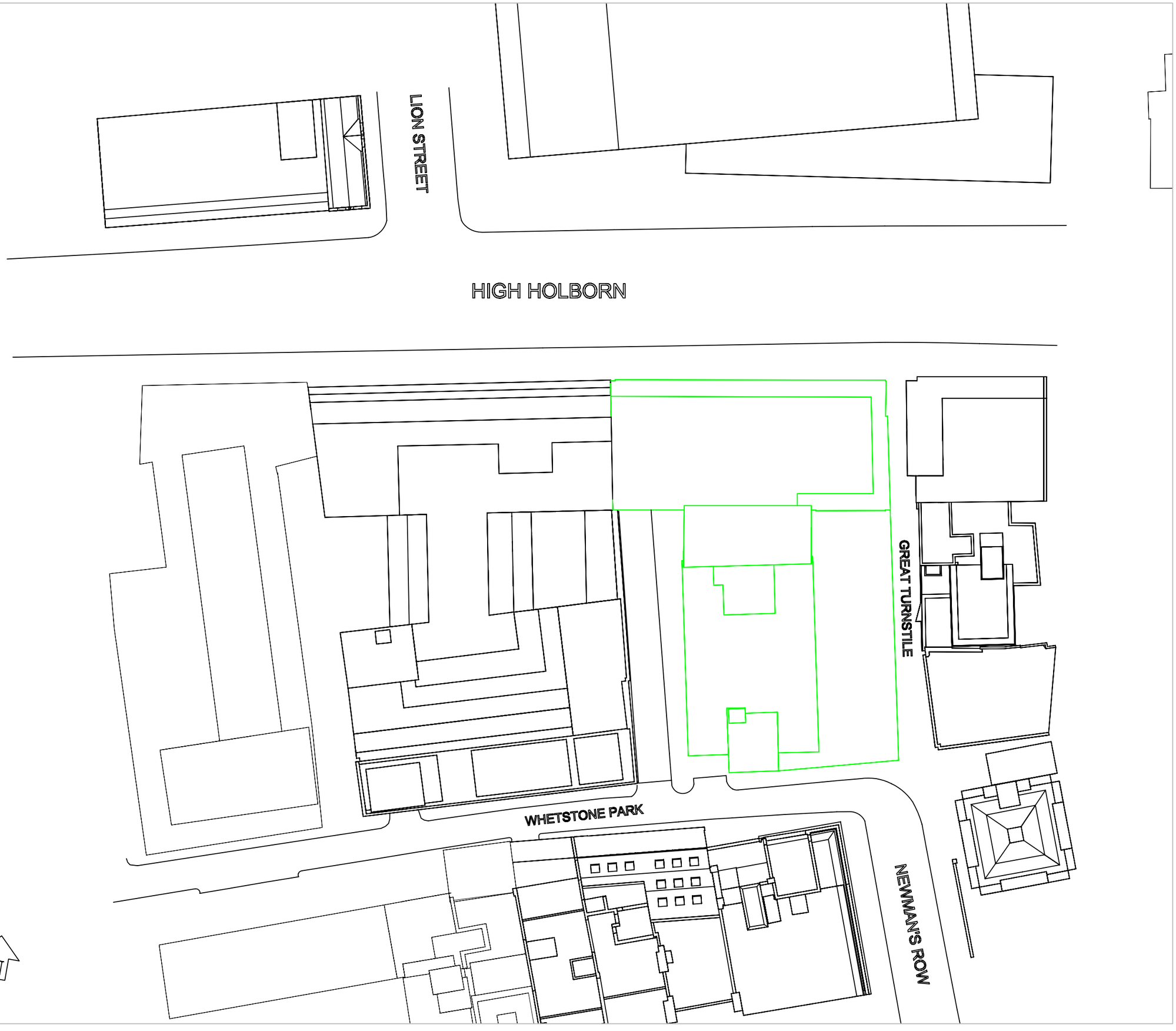
TABLES OF RESULTS

Vertical Sky Component						Average Daylight Factor							
								Existing		Proposed			
Room	Window	Existing	Proposed	Loss	%	Room	Window	ADF	Total	ADF	Total	Loss	%
12-15 Great Turnstile						**12-15 Great Turnstile**							
R1/111	**W1/111**	4.39	2.10	2.29	52.16	**R1/111**	**W1/111**	0.84		0.42			
R1/111	**W2/111**	2.69	1.56	1.13	42.01	**R1/111**	**W2/111**	0.39	1.24	0.30	0.72	0.52	41.70
R2/111	**W3/111**	4.50	2.93	1.57	34.89	**R2/111**	**W3/111**	0.73	0.73	0.49	0.49	0.24	32.37
R1/112	**W1/112**	5.45	2.59	2.86	52.48	**R1/112**	**W1/112**	1.35		0.73			
R1/112	**W2/112**	4.13	2.74	1.39	33.66	**R1/112**	**W2/112**	0.61	1.96	0.50	1.23	0.73	37.10
R2/112	**W3/112**	5.61	2.65	2.96	52.76	**R2/112**	**W3/112**	0.95		0.64			
R2/112	**W4/112**	8.02	4.98	3.04	37.91	**R2/112**	**W4/112**	0.45	1.40	0.31	0.96	0.44	31.64
R1/113	**W1/113**	7.24	3.45	3.79	52.35	**R1/113**	**W1/113**	2.06		1.26			
R1/113	**W2/113**	6.49	4.88	1.61	24.81	**R1/113**	**W2/113**	0.92	2.98	0.79	2.05	0.93	31.30
R2/113	**W3/113**	7.49	3.64	3.85	51.40	**R2/113**	**W3/113**	1.11		0.76			
R2/113	**W4/113**	10.49	6.73	3.76	35.84	**R2/113**	**W4/113**	0.53	1.63	0.38	1.14	0.50	30.43
R1/114	**W1/114**	9.79	4.74	5.05	51.58	**R1/114**	**W1/114**	2.29		1.44			
R1/114	**W2/114**	20.30	18.41	1.89	9.31	**R1/114**	**W2/114**	1.69	3.98	1.60	3.04	0.94	23.68
R2/114	**W3/114**	16.37	11.59	4.78	29.20	**R2/114**	**W3/114**	3.78	3.78	3.04	3.04	0.74	19.61
R1/115	**W1/115**	13.89	6.91	6.98	50.25	**R1/115**	**W1/115**	2.45	2.45	1.57	1.57	0.88	36.07

Room	Window	EXISTING Summer	EXISTING Winter	EXISTING Total	PROPOSED Summer	PROPOSED Winter	PROPOSED Total	LOSS Total	% LOSS
12-15 Great Turnstile									
R1/111	**W1/111**	3	3	6	1	3	4	2	33.3
R1/111	**W2/111**	1	2	3	1	2	3	0	0.0
R2/111	**W3/111**	3	4	7	2	2	4	3	42.9
R1/112	**W1/112**	7	4	11	4	3	7	4	36.4
R1/112	**W2/112**	6	3	9	3	2	5	4	44.4
R2/112	**W3/112**	5	2	7	5	2	7	0	0.0
R2/112	**W4/112**	7	2	9	6	0	6	3	33.3
R1/113	**W1/113**	9	4	13	6	4	10	3	23.1
R1/113	**W2/113**	10	3	13	5	3	8	5	38.5
R2/113	**W3/113**	8	3	11	5	3	8	3	27.3
R2/113	**W4/113**	7	2	9	7	2	9	0	0.0
R1/114	**W1/114**	13	6	19	6	6	12	7	36.8
R1/114	**W2/114**	23	15	38	15	14	29	9	23.7
R2/114	**W3/114**	18	8	26	13	8	21	5	19.2
R1/115	**W1/115**	17	7	24	6	5	11	13	54.2

APPENDIX 3

DRAWINGS



Sources of Information

SOURCES
GMW ARCHITECTS
Proposed Scheme
3829_SK11-24 (Rev D) 070516.dwg

THE GORDON TOMALIN PARTNERSHIP
Site Survey
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Plans & Elevations for 12-15 Great Turnstile

Key

Rev	Description	Date

Project
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Title
SITE PLAN
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Scale	Date
1:400	JUN 07
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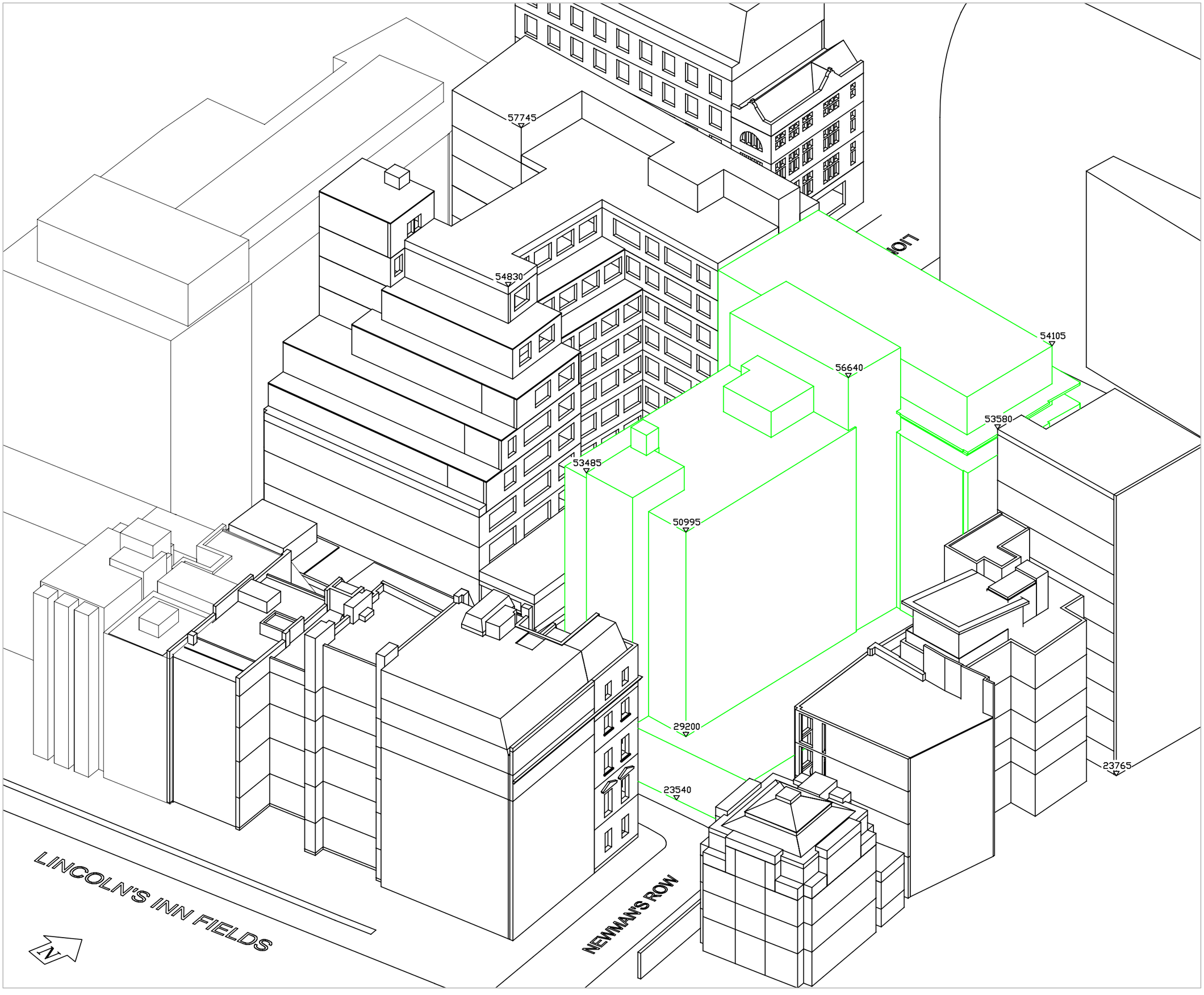

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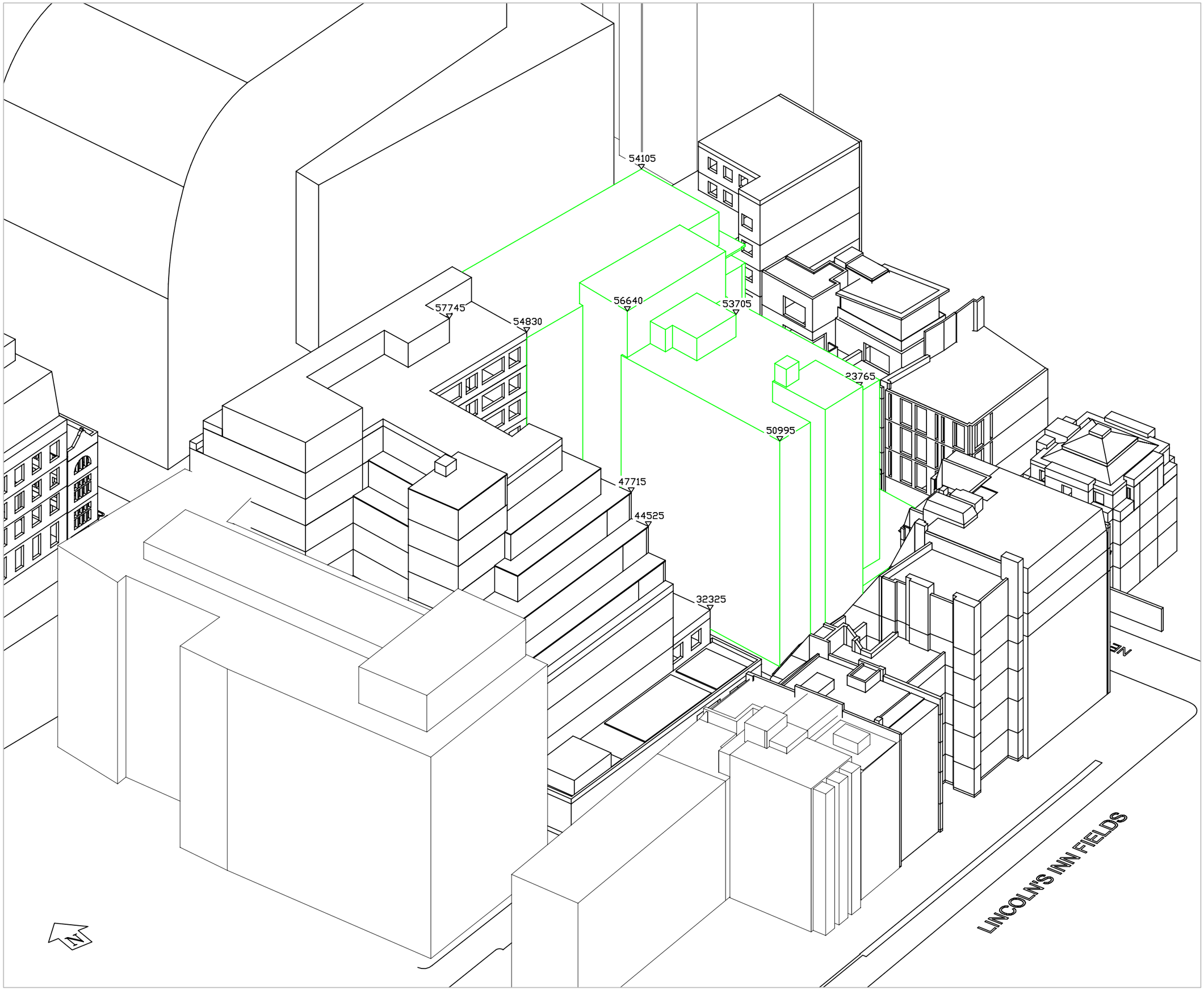

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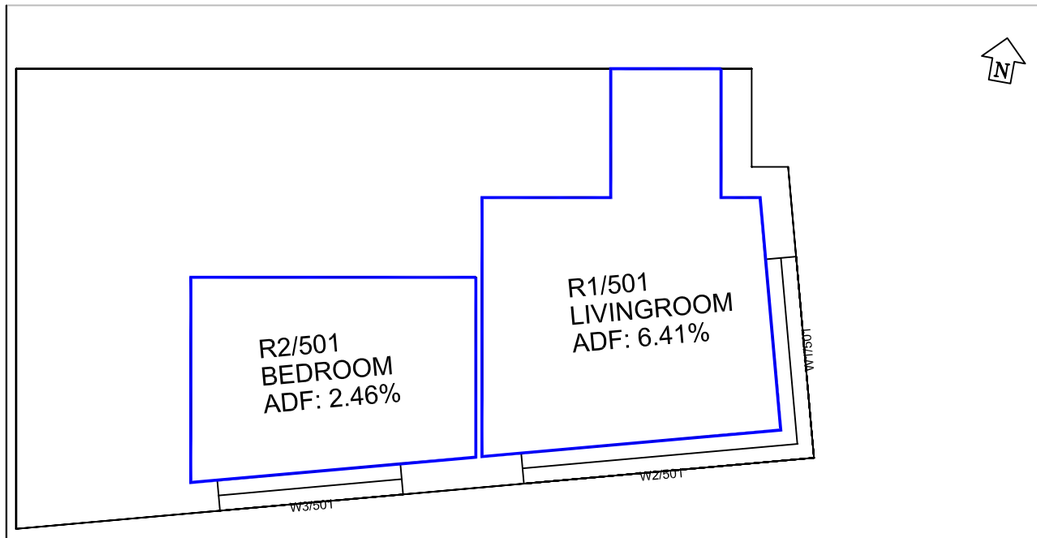

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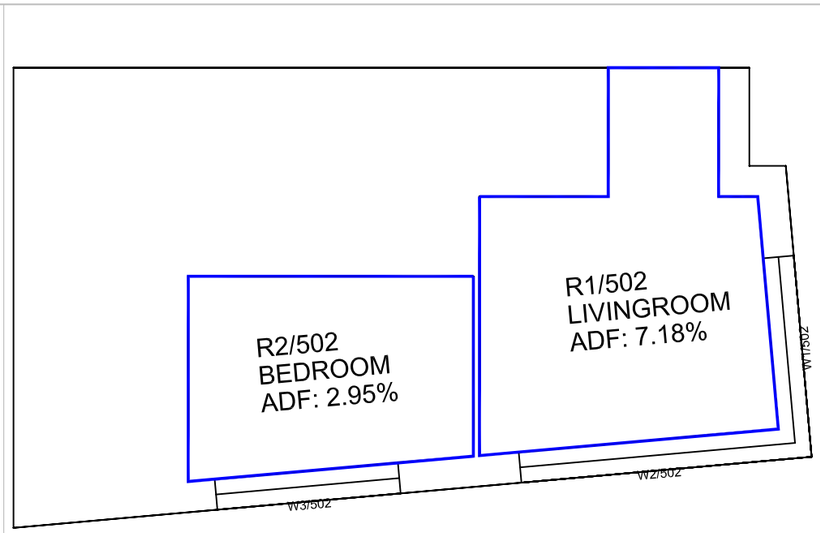

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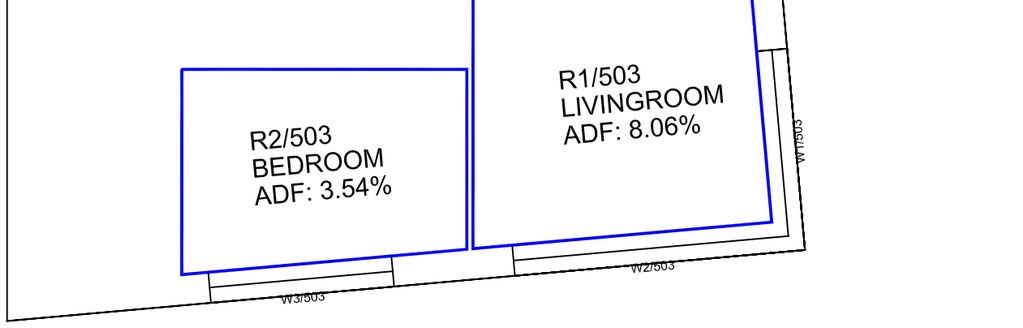

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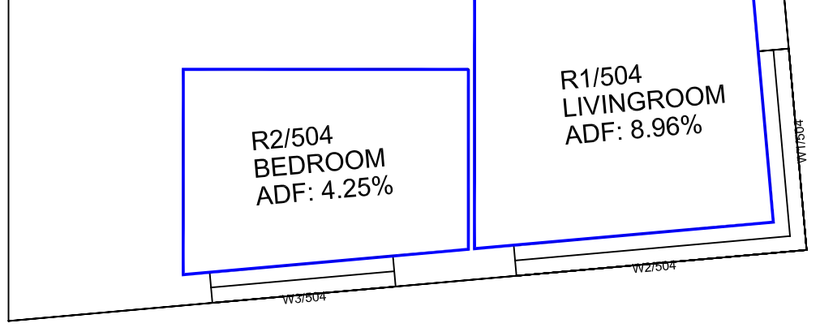

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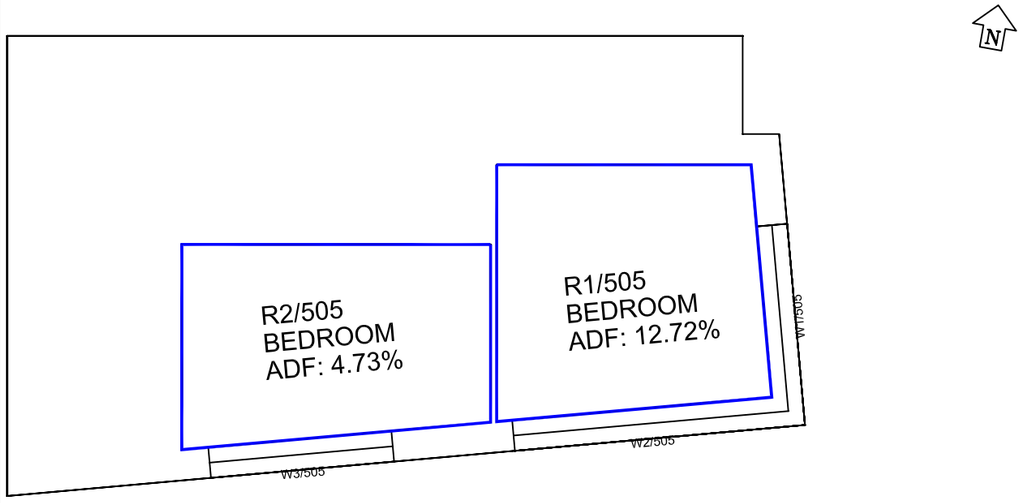

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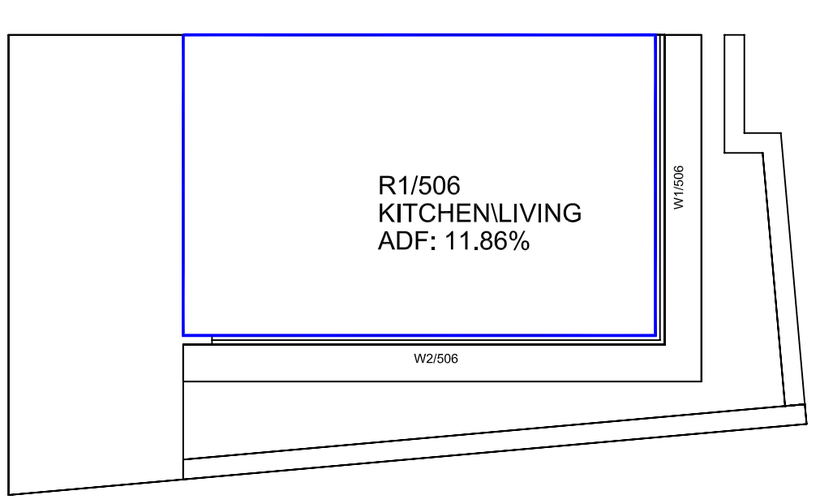

SIXTH FLOOR

Sources of Information

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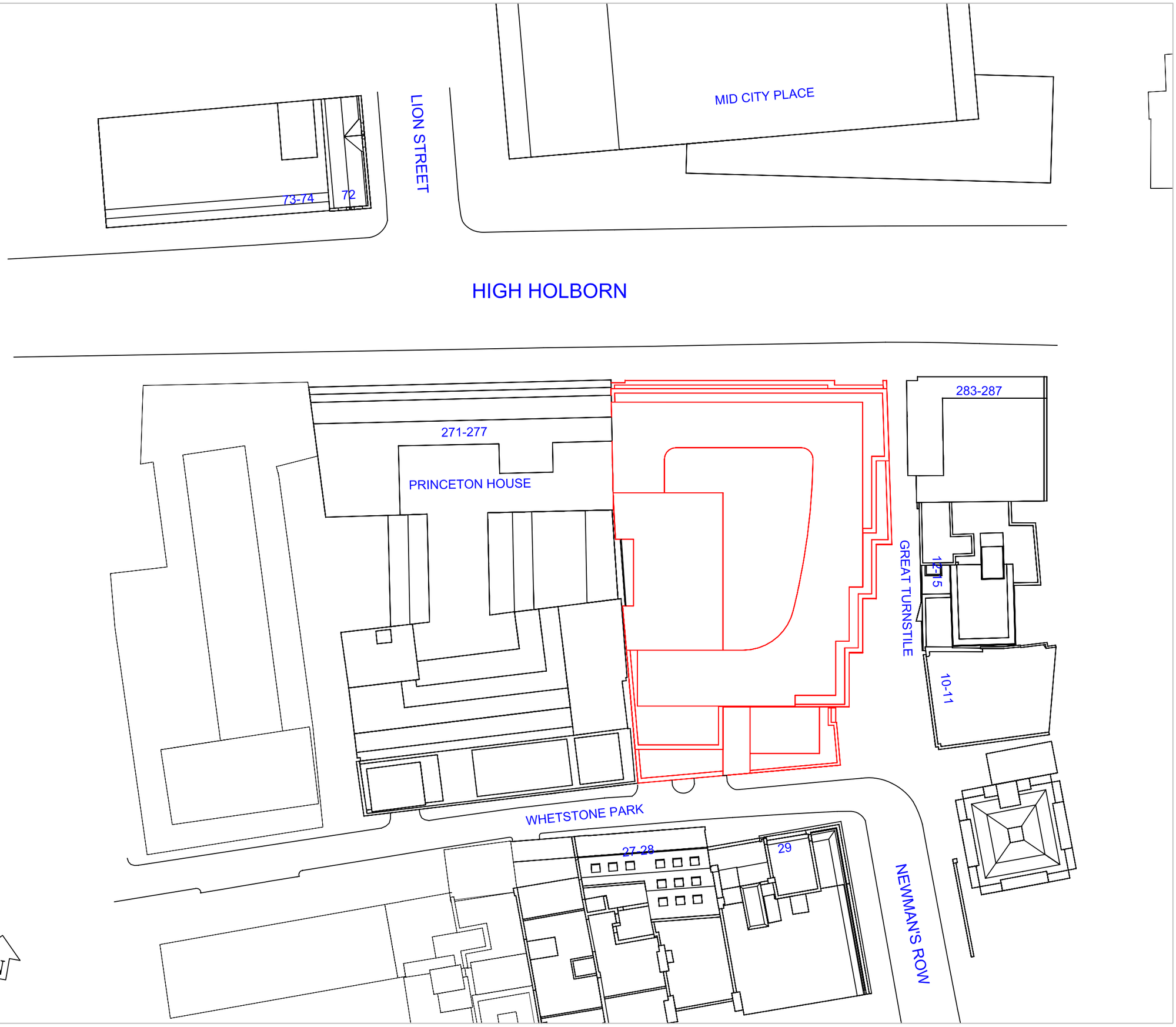

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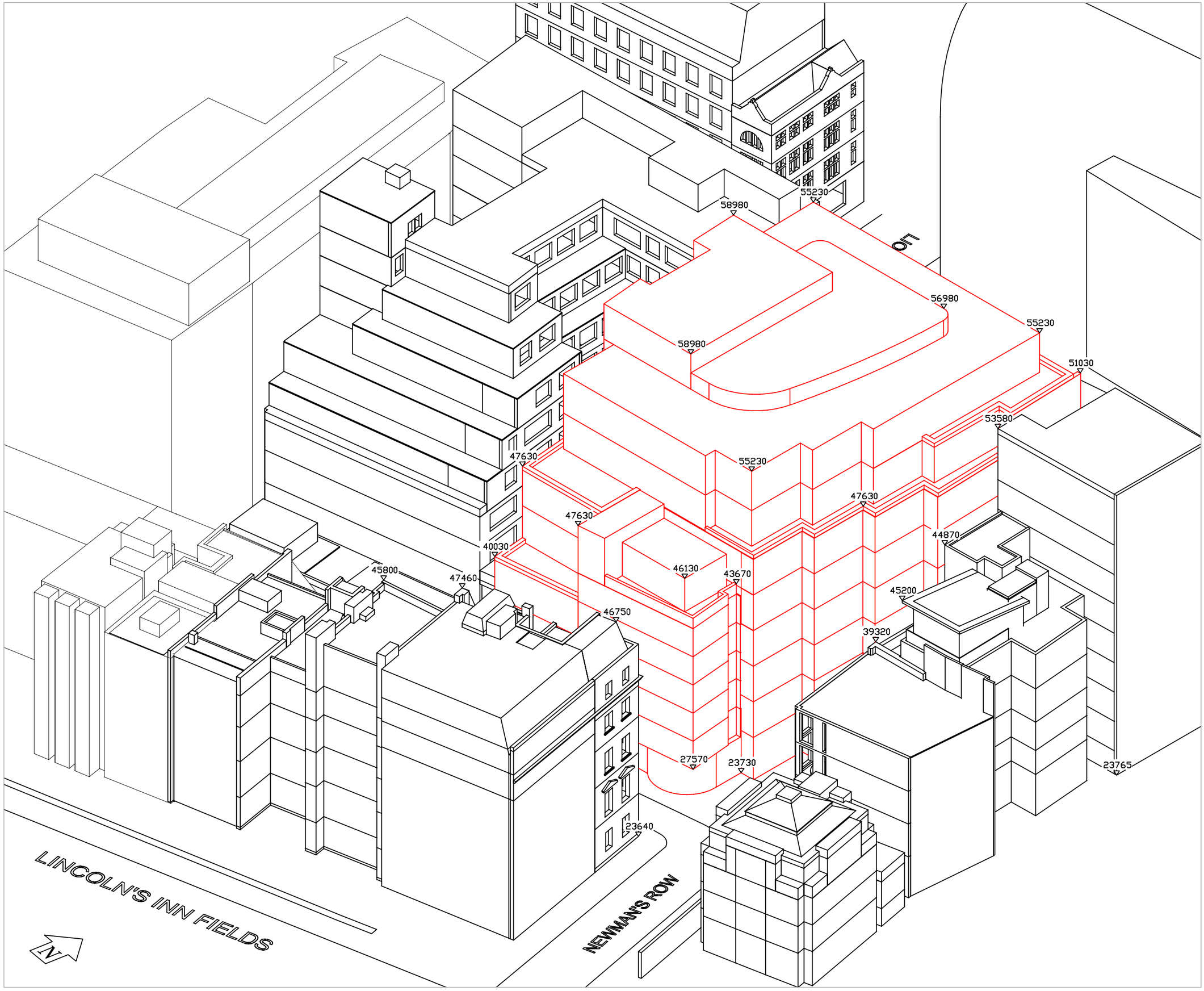

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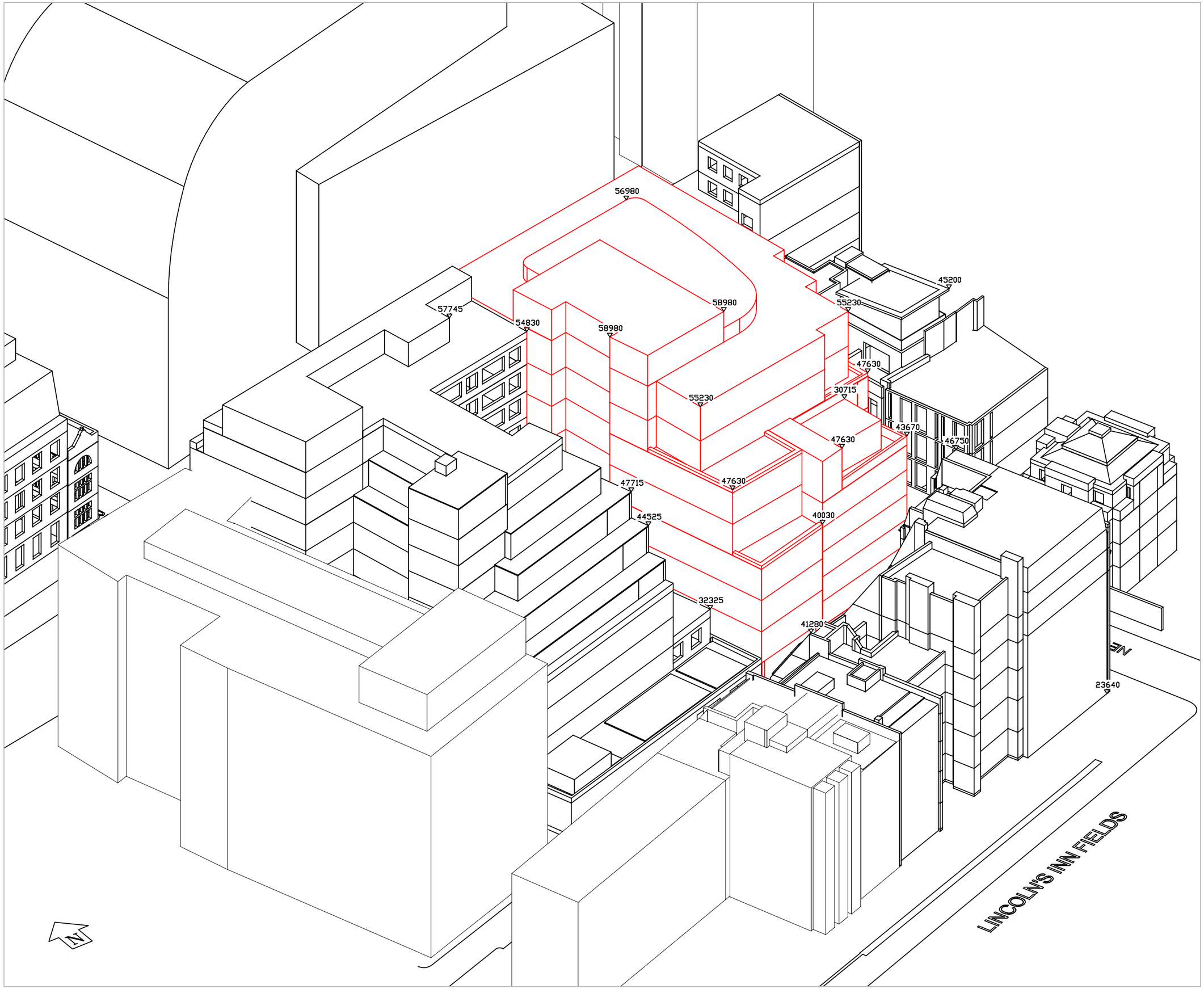

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