

**PROPOSED OFFICE LED MIXED USE DEVELOPMENT  
NEW COMMERCIAL QUARTER  
PALL MALL, LIVERPOOL**

**DAYLIGHT AND SUNLIGHT  
IMPACT ASSESSMENT  
IN RESPECT OF  
KEY RESIDENTIAL RECEPTORS**

**June 2019**

**REF. 18411**



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## 0.0 **EXECUTIVE SUMMARY**

### 0.1 Scope

This report relates to an office led mixed-use development on part of the site of the former Exchange Station and its potential effects on daylight and sunlight amenity to a number of surrounding residential properties.

The existing surrounding buildings which are either predominantly residential use or mixed use including residential and which are included within the scope of this impact assessment are:

- 40-44, Pall Mall
- 51-55, Highfield Street 47-64, Princes Gardens
- Hamilton House, 24-28, Pall Mall
- Silkhouse Court, Tithebarn Street
- Lombard Chambers, Ormond Street
- Berey's Buildings, Bixteth Street
- Orleans House, Edmund Street
- The X Building, 30-36, Bixteth Street

Two scenarios have been subject to assessment:

- The introduction of the Proposed Development into the existing townscape.
- The introduction of the Proposed Development into a townscape in which another development which currently benefits from planning permission has been built out, this being a proposed part 10 storey and part 22 storey development on the site of 30-36, Pall Mall.

30-36, Pall Mall has additionally been introduced as a sensitive receptor in the latter scenario.

### 0.2 Context

In daylight and sunlight terms there are a number of site specific characteristics which materially influence the ability to adhere to BRE Guidance concerning the scale of changes in daylight and sunlight which a development of the nature contemplated would bring about.

Principally these are:

- That the site of the Proposed Development and much of the surrounding land plots have been cleared land utilised for surface car parking for a considerable period.
- That the adopted Commercial Quarter SPD states that 'this area is envisaged as the prime location for the larger floorplate, flexible office accommodation required for a competitive Commercial Quarter'.
- In the emerging draft Local Plan the LPA envisage 40,000m<sup>2</sup> of new office space within 'Zone A', which is more or less contiguous with the application site.
- That it has been clear that there has been an expectation for several years that the site will be developed in this fashion which necessitates the provision of new buildings that are of an entirely different scale, form and use to those which recently and historically stood on relevant land plots.
- If the Proposed Development is to fit in with that designation and to match the height and proportions of other developments in the area constructed over recent years or which benefit from planning permission, then it is inevitable that shifts in daylight and sunlight will be of a greater scale than would be the case were the site designated for low-medium rise buildings
- Emerging developments in the area are characterised by high development densities e.g. 30-36, Pall Mall to the east [ part 10 storey, part 22 storey ] and Infinity, Lanyork Road to the north [ part 38 storey, part 32 storey, part 26, storey ].



### 0.3 Overview of Daylight and Sunlight impacts

Detailed quantitative assessments have been undertaken. Implementation of the Proposed Development would substantially succeed in complying with BRE criteria but would give rise to some reductions in daylight and sunlight levels and reductions in sunlight to private balconies which would leave residual levels below BRE numerical targets.

The overall effect of the Proposed Development on daylight and sunlight to neighbouring residential properties surrounding the site would be broadly comparable with other similar scale urban regeneration developments. Residual levels of daylight and sunlight would be commensurate with levels which might be expected for areas designated for high density development.

Many of the surrounding residential buildings [ including those which stem from the conversion of former office buildings ] are from a different era and have not themselves taken shape with the possibility of future high density development on neighbouring sites informing the design brief for those buildings.

Typically the principal elevations of existing residential buildings are positioned at or close to the boundaries of the land on which they stand [ rather than being set back from such boundaries ] in consequence of which if levels of daylight and sunlight amenity to such buildings were to be fully protected this could only be achieved through the disproportionate constraint of development on neighbouring land plots [ be this through setting back those developments a greater distance from the boundaries of the relevant land plots on which they stand or unreciprocated restrictions on development density for those other sites or a combination of both ].

Mirror development studies undertaken as part of this Report establish that the introduction of buildings of identical massing to some of the buildings under analysis on the opposite side of the street or boundary at an equivalent distance of set off would bring about adverse impacts on daylight and sunlight amenity and that the significance of those impacts would exceed the significance of the forecast impacts of the Proposed Development.

This establishes that a number of the existing buildings are abnormally light and / or sunlight 'hungry' in their design and also illustrates a dichotomy frequently presented by the enlargement of a city centre core into an area over past decades characterized by mixed used and parcels of underutilized land.

Summarizing and, on an exceptions basis, focussing on the more significant of the daylight and sunlight impacts identified through this study:

- In the without 30-36, Pall Mall scheme having been built out in advance of the Proposed Development scenario the introduction of Phase 1 in isolation brings about no substantial impacts on daylight and sunlight amenity to surrounding residential property.
- For the same scenario the build out of Phase 1 + Outline would bring about substantial adverse impacts to daylight and sunlight amenity to certain apartments at Hamilton House, 24-28, Pall Mall and the X Building, 30-36, Bixteth Street
- For the 'with' 30-36, Pall Mall scheme having been built out in advance of the build out of the Proposed Development scenario , the impacts of the introduction of Phase 1 in isolation would not materially change the classification of impacts on daylight and sunlight amenity to buildings subject to analysis beyond those in the 'without' 30-36, Pall Mall scenario
- In the 'with' 30-36, Pall Mall having been completed in advance of the Proposed Development scenario the cumulative impacts of the introduction of Phase 1 + Outline would be a further material reduction in daylight to Hamilton House, 24-24-28, Pall Mall.



## 1.0 **INTRODUCTION**

1.1 This Report assesses the likely significant effects of the proposed development with respect to daylight and sunlight to specified existing surrounding buildings in residential or part residential use. The Report addresses

- legislative and policy context
- the methods used to assess the effects
- the baseline condition currently existing at the site and surrounding area
- the impacts brought about by the Proposed Development built out in isolation
- the cumulative impacts also of another committed scheme on the specified buildings and the likely residual effects.

1.2 The subject application is a hybrid application comprising:

*'The demolition of disused building adjacent to Pall Mall. Full permission for the erection of an eight-storey building (Use Class B1(a) floors 1 to 7, flexible uses within Use Class A1, A2, A3, A4 and/or B1(a) at ground floor) with basement including parking, cycle storage, plant, showers and changing facilities; full permission for open space including hard and soft landscaping and associated vehicular and pedestrian accesses including alterations to Edmund Street and extension of highway, and associated engineering and infrastructure. Outline permission (including means of access) for new hotel (Use Class C1), for two new buildings (Use Class B1(a) on upper floors, flexible uses within Use Class A1, A2, A3, A4 and/or B1(a) at ground floor, basement parking, for pavilion building (flexible uses within Use Classes A1, A3 and/or A4) and associated hard and soft landscaping and associated engineering and infrastructure'.*

Building references adopted within this Report are as follows:

Reference	Description
Building A	Office building [ detailed element of hybrid application ]
Building B	Hotel building [ outline element of hybrid application ]
Building C	Office building positioned in the north eastern corner of the site [ outline element of hybrid application ]
Building D	Office building positioned in the north western corner of the site [ outline element of hybrid application ]
Building E	Pavilion building

## 2.0 **LEGISLATIVE AND POLICY CONTEXT**

Legislative and policy considerations are summarised below.

The site of the Proposed Development falls within the designated Main Office Area in the City Centre.

### 2.1 **National Planning Policy Framework 2019**

There are no applicable National Planning Policy guidelines that directly govern daylight and sunlight amenity.



## 2.2 Regional and Local Policy, and related considerations

The Liverpool Unitary Development Plan [ UDP ] adopted in 2002 represents the development plan policy.

A Draft Local Plan has been prepared but has not been examined and as such does not presently supersede the Unitary Development Plan.

The UDP at Policy HD18 – General Design Considerations sets out requirements applicable to development. HD18 is silent on specific daylight or sunlight consideration, apart from a general criterion that there should be “no severe loss of amenity or privacy to adjacent residents.”

The UDP at Policy E2 – Office Developments sets out a policy of presumption in favour of use classes A2 [ professional services ] B1 [ business ] and complementary service uses [ such as Classes A1 [ shops and retail outlets ] and A3 [ food and drink ] within the Main Office Area in the City Centre.

The implications are that residential amenity is a lesser consideration within the Main Office Area in the City Centres.

Regard has therefore been had to the recommendations contained within national guidelines concerning site layout planning for daylight and sunlight.

## 2.3 BRE Guide to Good Practice BR209 – ‘Site Layout Planning for Daylight and Sunlight’ Second Edition 2011

The BRE Guide covers amenity requirements for sunlight and daylight to residential buildings.

The introduction reads:

“The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and the guide 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 since 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 a historic city centre, or in an area with modern high rise buildings, a higher degree of obstruction may be unavoidable if new development are to match the height and proportions of existing buildings.”

The BRE Guide does not identify differential target values for low, medium or high density developments. It simply states (as noted above) that the “numerical guidelines should be interpreted flexibly because natural lighting is only one of many factors in site layout design”.

Whilst providing advisory numerical target values the BRE Guide therefore recognises that different targets may be appropriate depending on factors such as location.

With reference to the initial assessment of the impact of new development on existing buildings the Guide advises that in the event of the height of the new development not encroaching beyond a plane which is at an angle of 25° to the horizontal and projected from the centre point of the window of a neighbouring property under consideration then that proposed development is unlikely to have a substantial effect on the diffuse skylight enjoyed by that existing building. [ An angle of 25° corresponds to a vertical sky component of 27% ]. Within this report, this basic geometric test is referred to as the ‘25° rule of thumb’.



An obstruction angle of 25° can however be wholly unrealistic in the context of mid - high density city centre developments. An obstruction angle of 25° corresponds to buildings being separated by a distance of twice building heights, a ratio of 0.5.

Within city centre locations the corresponding ratio for building heights relative to distances of separation is frequently greater than 1, and may exceed 2+ on high density schemes.

The BRE Guide at Appendix C sets out VSC values for differing obstruction angles.

An obstruction angle of 45° [ corresponding to a distance of separation equivalent to building heights ] equates to a VSC level of 15%.

The VSC level diminishes rapidly as building heights increase relative to distance of separation. By way of example the VSC reduces to 10% for an obstruction angle of 55° [ not uncommon in a city centre context ] .

The results should be interpreted in the context that 27% is an aspirational [ as opposed to deliverable ] VSC level for high density city centre development. A VSC level of 15% or less may be a more representative and appropriate alternative threshold.

The VSC calculation only measures light reaching the outside plane of the window under consideration, so this is measure potential light rather than actual light internally within a space. Depending upon factors such as the room configuration and window size, the room may still be adequately lit with a lesser VSC value than the target values.

To facilitate the adoption of VSC values appropriate to location, the BRE recognises an approach whereby target VSC values are derived on the basis of a 'mirror image' building of the same height and size positioned on the site of the proposed development at an equal distance from the boundaries to the setting out of the building subject to analysis relative to its boundary, facing the development.

It will be noted that a 'mirror image' development has been adopted in each instance as part of the study in order to derive baseline levels of daylight and sunlight given that current outlook over a predominantly cleared site used for surface car parking is both transient and unrepresentative of a city centre location.

The BRE Guide also sets out various more detailed tests that assess the interior daylight conditions of rooms.

One basis for assessment is to consider daylight distribution within a room by plotting the no-sky line contour in each space. This contour divides points within the room at a working plane of 0.85m above finished floor level [ tabletop height ] from which one can and cannot see the sky. This form of assessment requires a reasonable level of confidence surrounding variables such as room layouts and depths in order for the results to be meaningful but is a useful analytical tool which can be used when those criteria are satisfied, particularly as it is not dependent on wider factors [ which may be more imponderable ] such as internal finishes and colours within a room.

The BRE Guide states that in circumstances where a development would result in the movement of the no-sky line so that the area of an existing room which received direct skylight is reduced to less than 0.8 x its former value then this will be noticeable to the occupants.

The BRE Guide also advises that supplementary electric lighting will be needed if a significant part of the working plane lies beyond the no-sky line.

A further basis for assessment is calculation of the Average Daylight Factor [ ADF ]. The ADF value is a measure of the level of interior illumination that can be compared with the British Standard, BS 8206: Part 2.





The BRE Guide does, however, caution against the universal use of ADF analysis in respect of existing buildings in consequence of the possibility of results being distorted by the adoption of assumptions concerning such variances as room dimensions, the accuracy of which may not have been verified.

ADF analysis forms part of the assessment methodology adopted for this report only in circumstances where it has been possible to source reasonably reliable information concerning the internal layout of buildings under assessment.

*[ Whilst daylight distribution and ADF data appears within the Appendices in respect of certain other buildings this is a function of the analysis software adopted and the data will not necessarily be factored into assessments. The daylight distribution and ADF data only feature in the assessment of impacts on buildings where reasonably reliable information concerning the internal layout of each such building has been identified. The daylight distribution and ADF data has otherwise been disregarded and does not form part of the assessment methodology for buildings or parts of buildings in respect of which considerable uncertainty surrounds internal layouts ].*

The BRE recommended minimum ADF values linked to room use, are as follows:

Room Use [ habitable ]	Minimum recommended ADF Values
Kitchen	2.0%
Living Room	1.5%
Bedroom	1.0%

For combined Living / Kitchen / Dining space the minimum ADF value adopted for this assessment is 1.5%. This is on the basis that contemporary design for combined L / K / D space frequently positions meal preparation areas towards the rear of such rooms and the predominant use [ arranged closest to external walls ] tends to be as Living space. If Kitchen use were considered to be predominant then the expectation would be that meal preparation areas were positioned in areas enjoying the highest levels of daylight distribution and not, as is almost invariably the case in contemporary designs, at the rear of rooms with those involved in meal preparation standing facing away from natural light.

For sunlight impact assessment the BRE Guide sets the following criteria:

- Whether sunlight is enjoyed for at least 25% of the annual probable sunlight hours for the location in question throughout the year.
- Whether 5% of the annual probable sunlight hours would be received during the winter months [ 21<sup>st</sup> September – 21<sup>st</sup> March ].

For sunlight or overshadowing assessments in respect of amenity areas:

- Private balconies or sitting out areas

the BRE guide recommends that at least half of the areas in question should receive two hours of sunlight on 21<sup>st</sup> March.

### 3.0 **ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA**

#### 3.1 **Methodology Approach**





BRE guidance advises that daylight levels should be assessed for the main habitable rooms of neighbouring residential properties. Habitable rooms in residential properties are defined as kitchens, living rooms, and dining rooms. Bedrooms are considered less important as they are mainly occupied at night, but are included in the analysis.

The methodology adopted for Daylight Impact Assessment is sequential commencing with simple geometric checks and concluding, where warranted, and where necessary data is available, with the detailed modelling of daylight distribution within spaces.

The approach is summarised below:

Analysis	Brief Description
<b>Stage 1</b>	Spaces served by window openings within neighbouring property which do not overlook the site of the Proposed Development are excluded from assessment on the basis that the Proposed Development would not bring about changes.
<b>Stage 2</b>	Spaces served by window openings within neighbouring property which do overlook the site of the Proposed Development but where the Proposed Development does not extend in height above a plane which is at an angle of 25° to the horizontal projected from the centre point of the window of a neighbouring property are excluded from further assessment on the basis that the Proposed Development is unlikely to substantially affect diffuse skylight enjoyed within the room served by that window. [ The 25° Rule of Thumb ].
<b>Stage 3</b>	Windows not eliminated on the basis of 1 or 2 above are subject to Vertical Sky Component analysis. This is a general test of the potential for good daylight to the relevant window [ how much light is received externally at the window ].  Window openings at and above storey levels where all windows attain a pass on initial VSC analysis may not be subject to separate analysis as , by implication, daylight criteria will be satisfied for upper storeys if satisfied for lower levels on the facade.
<b>Stage 4</b>	Spaces identified as falling below VSC target levels are subject to further analysis to identify daylight distribution within rooms. This is based on detailed modelling to establish the no-sky contour within a space. [ The depths within a room at which visibility of the sky is lost when viewed at table top height ].
<b>Stage 5</b>	Spaces identified as falling below VSC target levels may be subject to Average Daylight Factor [ ADF ] analysis.  This identifies the average indoor illuminance for a given space on a reference plane as a percentage of the simultaneous outdoor illuminance from an unobstructed sky.  An ADF of 2% would therefore equate to the internal reference plane receiving one fiftieth of the daylight it would were it positioned externally under an unobstructed sky.

The methodology adopted for Sunlight Impact Assessment is as follows:

- Sunlight assessment is in respect of window openings in apartments in neighbouring properties which face within 90° of due south
- In circumstances where rooms have a dual aspect analysis has been undertaken if the wall containing the main window serving that room is orientated within 90° of due south.
- The methodology adopted for shadowing assessments in respect of open spaces and private balcony / terrace areas has been to assess the proportion of the total area under consideration which would benefit from 2 or more hours direct sunlight



on 21<sup>st</sup> March. The BRE threshold is 50% of the total area in order to achieve a sunlight appearance.

### 3.2 Receptor sensitivity

The sensitivity of a space served by a window subject to assessment for daylight and sunlight is based on the use of that space.

Room Use	Daylight sensitivity	Sunlight sensitivity
Living room	High	High

Room Use	Daylight sensitivity	Sunlight sensitivity
Combined L/K/D	Medium - high	Medium
Kitchen	Medium - high	Low - medium
Dining	Medium	Low
Communal kitchens	Low	Low
Study bedroom	Low	Low
Bathrooms & utility rooms	Nil	Nil
Circulation spaces	Nil	Nil

Spaces utilised for general commercial uses such as retail, leisure, offices, has not been treated as sensitive receptors.

### 3.3 Significance criteria

The significance criteria are derived adopting the principles set out in Appendix I – Environmental Impact Assessment of BRE Guide to Good Practice – BR209.

The proposed approach is based upon:

- assessment of receptor sensitivity
- assessment of the magnitude of measurable change in amenity

with the findings collated in a significance matrix.

The BRE Guide identifies that assessment of impacts will depend on a combination of factors, and that a single rigid rule of thumb cannot be applied.

In general within this Report the magnitude of measurable change has been allocated the following weightings:

Measurable reduction in amenity	Term
1. Changes fall within BRE Guidelines	Negligible
2. Changes are only just within BRE Guidelines or marginally outside the BRE Guidelines	Slight adverse

3. Changes fall outside the BRE Guidelines but do not impact a large proportion of windows or spaces under consideration	Moderate adverse
4. Changes fall substantially outside the guidelines and / or impact on a large proportion of windows or spaces under consideration.	Substantial adverse

The number of receptors affected, along with other factors, will also influence categorisation.

By way of example a greater emphasis would be placed upon impacts which resulted in total sunlight hours falling below the BRE threshold than would be impacts which maintained total annual sunlight hours above the threshold but reduced the contribution made by winter sun below the winter sun threshold.

The following table summarises how judgments about receptor sensitivity and magnitude of change are combined to establish the significance of the potential impacts.

SENSITIVITY	SIGNIFICANCE CRITERIA					
	MAGNITUDE OF CHANGE (ADVERSE)					
	Betterment (non adverse)	Neutral	Very Low to Low	Moderate	High	Substantial
Not sensitive	No effect	No effect	No effect	No effect	No effect	No effect
Low	Negligible beneficial	No effect	Negligible	Negligible – slight adverse	Slight – moderate adverse	Moderate adverse
Medium	Minor beneficial	No effect	Negligible	Slight adverse	Moderate adverse	Moderate – substantial adverse
High	Modest beneficial	No effect	Negligible	Moderate adverse	Moderate – substantial adverse	Substantial adverse

By way of example a large adverse change on a space of medium daylight sensitivity [ such as a Dining Room ] would be allocated an overall allocation of 'moderate adverse'.

### 3.4 Assumptions and Limitations

Information	Description
1. General	<ul style="list-style-type: none"> <li>Accurate digital measured survey information for the site of the Proposed Development and the immediate surroundings.</li> <li>Ordnance Survey information.</li> <li>Urban 3D model for the wider area [ Zmapping ] derived from aerial photography</li> </ul>
2. Developments proposed on neighbouring land plots which have the benefit of full planning permission	<ul style="list-style-type: none"> <li>Record information obtained from the planning portal of Liverpool City Council</li> </ul>
3. Scheme proposals	<ul style="list-style-type: none"> <li>Information in digital format obtained from the Project Architects. [ setting out / plans / sections / elevations ].</li> </ul>



Access to the neighbouring properties has not been gained for the purposes of this report. An external survey has been undertaken of the neighbouring properties likely to be affected by the scheme proposals, and the usage of these rooms has been assumed based a combination of site observation and desk top research. In circumstances where it has not been possible to verify room use with reasonable confidence, room use is recorded as 'unknown'.

Data necessary for the completion of Daylight Distribution [ no-sky contour ] analysis in respect of relevant rooms within neighbouring property has been compiled on the basis of record drawings available from public sources such as:

- the planning portal of the Local Authority
- copy leases held at Land Registry
- marketing and sales particulars
- lettings particulars

There can be exceptions – instances where record information is available for some parts of a building or some floor levels of a building and not for others. In such circumstances layouts may be derived by interpolation.

In circumstances where verified data is not available concerning factors which feature within ADF calculations, such as the transmittance of glazing and cleaning frequencies, industry standard representative values have been adopted.

#### 4.0 **BASELINE CONDITIONS**

Consideration has been given to possible baseline conditions against which to assess impacts. The existing site condition is cleared land. Date authenticated aerial photography records this to have been the condition since pre-1989, possibly earlier [ the former Liverpool Exchange railway station, of which the site of the proposed development forms a part, was closed and de-commissioned in 1977 ].

The following records some of the changes over the past two decades:

Location	Description	Date of demolition / clearance
1. 1, 3, 4 5 & 6, St Pauls Square	Office led mixed use development with elements of residential and car parking.	Constructed over the period 2004 – 2010
2. X Building 30-36, Bixteth Street	Multi storey residential building	Constructed during the period 2001 – 2003
3. 30-36, Pall Mall	Range of buildings including local authority depot, church, Parish Hall + priory.	Site partially cleared circa 2002. Demolition of the balance occurred 2017.

A consequence of development in city centre locations on land which has over recent years been relatively free of buildings and structures of any scale will be that results will tend to show far more significant shifts in sky visibility and sunpath visibility (and hence impacts) than would be the case had the land previously been occupied by buildings or structures more typical of those customarily making up the townscape in such locations.

It should be borne in mind that the impacts of the Proposed Development would accordingly be less had the site of the Proposed Development been occupied by a density of development more typical of a city centre location than open ground.



The reader is referred to the 'mirror image' scenario drawings included at Appendix 9.

## 5.0 **PROPOSED DEVELOPMENT**

The Proposed Development forms part of a wider masterplan scheme for the transformation of the Main Office Area.

A description appears at para. 1.2

The reader is referred to the post development scenario plans and 3D renditions included at Appendix 2.

## 6.0 **CUMULATIVE ASSESSMENTS – COMMITTED DEVELOPMENTS**

### 6.1 **Identification of committed developments**

Sections 10 and 11 of this assessment factor in the cumulative impacts of the prior build out of a given Committed Development on the receptors subject to analysis. This approach arrives at baseline conditions against which the impact of the Proposed Development can be assessed assuming the prior implementation of other Committed Developments.

The studies at Sections 11 and 12 additionally consider the impact of the Proposed Development on Committed Developments in the event of those Committed Developments being for residential or other potentially sensitive uses.

The term Cumulative Developments has been adopted to describe prospective developments in the area which benefit from planning permission but are not under construction.

These scheme is identified in tabular format for ease of reference:

Committed Scheme (Short Name)	Address	Outline description
Pall Mall apartment complex	30-36, Pall Mall Liverpool	Demolition of existing buildings and structures and the erection of a part 10 storey, part 22 storey residential development comprising 336 apartments and associated communal facilities, two ground floor commercial units and associated access, servicing, parking and landscaping.  LCC Planning ref. 16F/2634

## 7.0 **IDENTIFICATION OF KEY RECEPTORS**

### 7.1 **Daylight and Sunlight**

Initial screening the neighbouring residential property has identified those potentially affected by the development proposals as being those noted below.

#### **Property specific considerations**



Property (receptor)	Characteristics
40-44, Pall Mall	This is an apartment development dating from circa 2002 which involved also the conversion of a historic warehouse building [ Jacksons Warehouse ] at 40 Pall Mall. The development is generally of 7 storeys with commercial and other uses on the ground Floor but with the addition of dual height penthouse apartments at the north western end of the building overlooking Leeds Street

Property (receptor)	Characteristics
51-55, Highfield Street	This is a three storey building [ + attic storey ] understood to have been subject to conversion to residential use circa 2014.
47-64, Princes Gardens	These are three storey purpose built flats dating from circa 1995.
Hamilton House, 24-28, Pall Mall	Originally a four storey office building constructed in the early 1970's since subject to a roof top extension and conversion to residential.
Lyndon House, 22, Pall Mall	This is a four storey building in mixed use with residential on the upper floors, commercial on the lower floors.
Silkhouse Court 7-17, Tithebarn Street	Fourteen storey former office building understood to be under conversion to residential use. Programme for conversion seemingly uncertain. Conversion scheme involves partial over-cladding.
Bereys Building Bixteth Street [ postal address 33, George Street ]	Former offices and warehouse building dating from circa 1870. Six storeys [ including lower ground floor ]. Upper floors converted to residential use.
Lombard Chambers 12, Ormond Street	Six storey building dating from circa 1860, primarily commercial uses but with residential on the upper floor.
Orleans House 19, Edmund Street	Six storey former office building dating from circa 1907. Recent conversion to residential uses.
X Building 30-36 Bixteth Street	Seven storey residential block with retail and ancillary uses on the ground floor dating from the early 2000's.

Turning to additional receptors in the scenario where the one neighbouring Committed Development is introduced within the scope of the study, we have:

Property (receptor)	Characteristics
30-36 Pall Mall	Proposed part 10 storey, part 22 storey residential development comprising 336 apartments with associated commercial facilities, two ground floor commercial units and associated access, servicing and parking.

## 7.2 Overshadowing



Initial screening has identified external private amenity areas as potentially affected by the proposals as:

- private balconies to sections of 40-44, Pall Mall
- private balconies to sections of Hamilton House, 24-28, Pall Mall
- private balconies to sections of the X Building, 30-36, Bixteth Street

## 8.0 **ALTERNATIVE TARGET VALUES FOR DAYLIGHT AND SUNLIGHT ACCESS**

The BRE Guide to Good Practice recognises [ in circumstances where existing buildings have windows in elevations positioned unusually close to a site boundary ] and approach whereby target values for daylight and annual probable sunlight hours are derived on the basis of levels associated with a 'mirror development'. The concept is one whereby target daylight and sunlight levels are benchmarked to the levels of daylight and sunlight which would be available were a 'mirror image' building of the same height and size as that under analysis to be introduced an equal distance away on the other side of the boundary.

The buildings in respect of which 'mirror development' target levels have been derived for the purposes of this study are identified below, together with a brief note on the basis of setting out of the 'mirror image' development.

Property	Observations
1. 30-36, Bixteth Street	'Mirror image' development positioned at an equivalent distance from the mutual boundary where appropriate otherwise positioned along the back of the pavement line on the opposite side of the road.
2. Bereys Building	'Mirror image' development positioned along the back of pavement line on the opposite side of the road.
3. Hamilton House, 24-28, Pall Mall	'Mirror image' development positioned along the back of pavement line on the opposite side of the road.
4. Lombard Chambers	'Mirror image' development positioned along the back of pavement line on the opposite side of the road.
5. 30-36, Pall Mall	'Mirror image' development positioned along the back of pavement line on the opposite side of the road.
6. Orleans House, Edmund Street	'Mirror image' development positioned along the back of pavement line on the opposite side of the road.

Plan and 3D views for each of the mirror massing studies are included at Appendix 9 together with analysis spreadsheets for each scenario identifying property specific alternative target levels.

## 9.0 **POST DEVELOPMENT ASSESSMENT – DAYLIGHT** **[ WITHOUT OTHER COMMITTED DEVELOPMENT ]**

Drawings which identify window locations as referenced within this Report are included at Appendix 6.

### 9.1 Preliminary screening adopting 25° Rule of Thumb test on obstruction angle.





To re-cap the BRE Guide advises that in the event of the height of a new development not encroaching beyond a plane which is at an angle of 25° to the horizon and is projected from the centre point of the window of a neighbouring property under consideration then the Proposed Development is unlikely to have a substantial effect on the diffuse light from the sky enjoyed by that building. [ It should be noted that the preliminary screening is based on the full development proposals [ Phase 1 + Outline ] and as such extends beyond that strictly associated with implementation of the Phase 1 development in isolation ].

The reader is referred to the 3D rendition which is included at Appendix 5 to this Report. In essence, buildings (or parts of buildings) located beyond or above a 25° 'skirt' projected from the roof of the Proposed Development are excluded from the more detailed consideration and analysis on the grounds that the Proposed Development is unlikely to adversely impact on diffuse sky light.

Conversely, where the height of the Proposed Development relative to its distance of separation from surrounding buildings is such that there would be the potential for those windows retaining a line of sight towards the Proposed Development to experience adverse daylight impacts, these are taken forward for more detailed analysis.

Existing surrounding buildings or parts of buildings in residential use or believed to be in the process of conversion from office use to residential use which have not been eliminated on the basis of this preliminary screening are:

- 40-44, Pall Mall
- 51-55, Highfield Street
- 47-64, Princes Gardens
- Hamilton House, 24-28, Pall Mall
- Lynden House, 22, Pall Mall
- Silkhouse Court, Tithebarn Street
- Bereys Building
- Lombard Chambers
- Orleans House, Edmund Street
- X Building, 30-36, Bixteth Street

Each is considered below in turn.

The commentary in respect of each is in two parts:

- impacts of the implementation of the Phase 1 development in isolation
- impacts of the implementation of the Phase 1 development + outline

## 9.2 **40-44, Pall Mall**

### 9.2.1 Impacts of the implementation of the Phase 1 development in isolation

#### 9.2.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the south-west and south-east elevations of 40-44 Pall Mall.

#### 9.2.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

#### 9.2.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for 40-44 Pall Male are presented at Appendix 8 in tabular form for ease of reference.



It can be seen that with limited exceptions daylight impinging on window openings following implementation of the proposed Phase 1 development would exceed the target levels of daylight derived from mirror development analysis.

In instances where reductions are identified, the scale of change is small.

9.2.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of Daylight Distribution Analysis in respect of rooms served by specific window openings identified above are that daylight distribution following implementation of the proposed Phase 1 development would generally be equivalent to or exceed the target levels of daylight distribution derived from mirror development analysis.

9.2.1.5 Detailed ADF Analysis

As for daylight distribution, the results identify that ADF values post development would generally exceed the target levels derived from mirror development analysis and that such limited reductions as are identified would be small and in all probability near imperceptible,

9.2.1.6 Interpretation of Results

Minor beneficial impacts.

9.2.2 Impacts of the implementation of the Phase 1 development + outline

9.2.2.1 Receptor Windows

As 9.2.1.1

9.2.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

9.2.2.3 Detailed VSC Analysis

It can be seen that of the 162 nr windows subject to analysis, 155 nr windows would experience increased sky visibility or no change or shifts in VSC levels which satisfied the BRE Guidelines relative to target levels derived from mirror development analysis. The remaining 7 nr windows would not pass an initial VSC assessment and accordingly been subject to more detailed scrutiny.

9.2.2.4 Daylight Distribution Analysis [ No sky contours ]

The 7 nr windows identified for more detailed analysis on the basis of VSC screening serve a total of 7 nr rooms.

Daylight Distribution Analysis identifies that all 7 nr rooms would retain levels of daylight in excess of the 80% threshold and would still either achieve higher levels of daylight distribution than the values derived from a mirror development scheme or be subject to no change or suffer reductions which maintain levels of daylight distribution which were not less than 80% of the values associated with a mirror development [ and therefore not necessarily noticeable to occupants ].

Whilst not directly related to window openings identified from VSC assessment as warranting more detailed analysis, the daylight distribution checks undertaken



have served, additionally, to identify negative shifts in light distribution within other rooms which warrant closer scrutiny.

On an exceptions basis, these are summarised below:-

Location	Reference	Use	Daylight distribution level pre-development [%]	Daylight distribution level post-development [%]	% difference
Fifth floor	Fifth W2.3	Bed	86.64%	76.80	-20.53%
Fifth floor	Fifth W24	Bed	96.19%	75.59%	-21.41%
Sixth floor	Sixth W23	Bed	95.78%	75.72%	-20.95%
Sixth floor	Sixth W24	Bed	96.04%	75.06%	-21.84%

In each of the above instances, the scale of reduction in daylight distributions levels is only marginally in excess of 20% and residual levels of daylight distribution in the mid 70s%. The above analysis therefore identifies 4 nr rooms which warrant more detailed ADF analysis.

#### 9.2.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development for 1 nr out of the 4 nr rooms would match or exceed the BRE threshold levels.

The balance of this section relates to the residue of rooms identified as not achieving this criteria.

The position is summarised below in tabular form for these exceptions.

Floor level	Room Use	Room Number	ADF Values
Fifth floor	Bedroom	1 nr	0.96%
Sixth floor	Bedroom	2 nr	0.8% - 0.86%

#### 9.2.2.6 Interpretation of Results

Negligible – slight adverse impacts.

### 9.3 51-55, Highfield Street

#### 9.3.1 Impacts of the implementation of the Phase 1 development in isolation

##### 9.3.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving spaces along the south-east, south-west and north-west elevations of 51-55 Highfield Street.

##### 9.3.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

##### 9.3.1.3 Detailed VSC Analysis



The full results of the VSC daylight analysis for 51-55 Highfield Street are presented at Appendix 8 in tabular form for ease of reference.

It can be seen that with limited exceptions, daylight impinging on window openings in 51-55 Highfield Street following implementation of the proposed Phase 1 development would exceed BRE criteria in respect of daylight.

#### 9.3.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of the Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would be unchanged.

#### 9.3.1.5 Detailed ADF Analysis

As for daylight distribution, the results identify that ADF values post development would remain close to the pre-development values and that such reductions as identified would be small and in all probability near imperceptible.

#### 9.3.1.6 Interpretation of Results

Negligible.

### 9.3.2 Impacts of the implementation of the Phase 1 development + outline

#### 9.3.2.1 Receptor Windows

As 9.3.1.1.

#### 9.3.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

#### 9.3.2.3 Detailed VSC Analysis

It can be seen that 42 nr windows subject to analysis 5 nr windows would not pass an initial VSC assessment and accordingly been subject to more detailed scrutiny.

#### 9.3.2.4 Daylight Distribution Analysis [ No sky contours ]

The 5 nr windows identified for more detailed analysis on the basis of VSC screening serve a total of 3 nr rooms [some rooms benefit from light received from more than one window opening.]

Daylight Distribution Analysis identifies that all 3 nr room would retain levels of daylight in excess of the 80% threshold,.

Whilst not directly related to window openings identified from VSC assessment as warranting more detailed analysis, the daylight distribution checks undertaken have served, additionally, to identify negative shifts in light distribution within other rooms which warrant closer scrutiny.

On an exceptions basis, these are summarised below:-

Location	Reference	Use	Daylight distribution level pre-development [%]	Daylight distribution level post- development [%]	% difference
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Ground floor	Ground W10/W11	LKD	93.3%	73.42%	-21.3%
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The scale of reduction in daylight distribution levels is marginally in excess of the 20% threshold and residual levels of daylight distribution in the mid 70's%. The above analysis therefore identifies 1 nr room out of 19 nr rooms which warrants more detailed ADF analysis.

#### 9.3.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would match or exceed the BRE threshold levels in respect of the 1 nr room identified above

The analysis has however identified 1 nr further room as not achieving these criteria.

Floor level	Room Use	Room Number	ADF Values
First floor	Kitchen	1 nr	0.69%

#### 9.3.2.6 Interpretation of Results

Negligible – slight adverse.

### 9.4 **47-64, Princes Gardens**

#### 9.4.1 Impacts of the implementation of the Phase 1 development in isolation

##### 9.4.1.1 Receptor Windows

Owing to the relative distance of separative, a section of the Princes Gardens development has been selected for analysis to obtain indicative results.

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving spaces along the south-west and south-east elevations of 47-64 Princes Gardens.

##### 9.4.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

##### 9.4.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for selected parts of Princes Gardens are presented at Appendix 8 in tabular form for ease of reference.

It can be seen that without exception, daylight impinging on window openings at Princes Gardens following implementation of the proposed Phase 1 development would exceed BRE criteria in respect of daylight.

##### 9.4.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of the Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would be unchanged.

##### 9.4.1.5 Detailed ADF Analysis



As for daylight distribution, the results identify that ADF values post development would remain close to the pre-development values and that such reductions as are identified would be small and in all probability near imperceptible.

9.4.1.6 Interpretation of Results

Negligible impacts.

9.4.2 Impacts of the implementation of the Phase 1 development + outline

9.4.2.1 Receptor Windows

As 9.4.1.1.

9.4.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

9.4.2.3 Detailed VSC Analysis

It can be seen that all of the 48 nr windows subject to analysis would experience shifts in VSC levels which satisfied the BRE Guidelines.

9.4.2.4 Daylight Distribution Analysis [ No sky contours ]

The 46 nr windows identified above serve a total of 46 nr rooms.

Daylight Distribution Analysis identifies that 34 nr rooms out of the 46 nr rooms would retain levels of daylight distribution in excess of the 80% threshold and that of the remainder of rooms with daylight distribution below the 80% threshold, a total of 9 nr rooms would be subject to no change or suffer reductions which maintain levels of daylight distribution which were not less than 80% of the pre-development values [and therefore not noticeable to occupants].

Of the 46 nr rooms identified above therefore, 5 nr warrant more detailed ADF analysis.

9.4.2.5 Detailed ADF analysis

It can be seen that ADF analysis identifies that levels post-development would be lower than those pre-development with the scale of change falling within the band -2.99% to -14.34%.

Owing to uncertainty surrounding room uses, the significance of these changes is uncertain.

We have based the following Interpretation of Results on the basis that ADF values for bedroom uses will tend to be satisfied but those relating to kitchen use would likely fall below BRE threshold levels.

9.4.2.6 Interpretation of Results

Moderate adverse impacts.

9.5 **Hamilton House, 24-28, Pall Mall**

9.5.1 Impacts of the implementation of the Phase 1 development in isolation

9.5.1.1 Receptor Windows



The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the south west and north west elevations of Hamilton House.

9.5.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1.

9.5.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for Hamilton House are presented at Appendix 8 in tabular format for ease of reference.

It can be seen that with limited exceptions daylight impinging on window openings in Hamilton House following implementation of the proposed Phase 1 development would match or exceed the target levels of daylight derived from mirror development analysis.

In instances where reductions are identified the scale of change is small.

9.5.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would generally exceed the target levels of daylight distribution derived from mirror development analysis. Such limited reductions as are identified would be small and in all probability near imperceptible.

9.5.1.5 Detailed ADF Analysis

As for daylight distribution, the results identify that ADF values post development would generally exceed the target levels derived from mirror development analysis and that such limited reductions as identified would be small and in all probability near imperceptible.

9.5.1.6 Interpretation of Results

Minor beneficial impacts.

9.5.2 Impacts of the implementation of the Phase 1 development + outline

9.5.2.1 Receptor Windows

As 9.5.1.1.

9.5.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

9.5.2.3 Detailed VSC Analysis

It can be seen that of the 160 nr windows subject to analysis 82 nr windows would experience increased sky visibility or no change or shifts in VSC levels which satisfy the BRE Guidelines relative to target levels derived from mirror development analysis. The remaining 77 nr windows would not pass an initial VSC assessment and accordingly have been subject to more detailed scrutiny.

9.5.2.4 Daylight Distribution Analysis [ No sky contours ]





The 77 nr windows identified for more detailed analysis on the basis of VSC screening serve a total of 68 nr rooms [ some rooms benefit from light received from more than one window opening ].

Daylight Distribution Analysis identifies that 26 nr rooms out of the 68 nr rooms would retain levels of daylight in excess of the 80% threshold and that of the remainder of rooms with daylight distribution below the 80% threshold a total of 10 nr rooms would still either achieve higher levels of daylight distribution above the values derived from a mirror development scheme or be subject to no change or suffer reductions which maintain levels of daylight distribution which were not less than 80% of the values associated with a mirror development [ and therefore not necessarily noticeable to occupants ].

All rooms have been selected for ADF analysis on a precautionary basis.

#### 9.5.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that BRE criteria are satisfied in respect of 78 nr rooms and that whilst ADF values would fall below the threshold values in respect of a further 4 nr rooms, the post-development values for these rooms exceed the levels which would be brought about through the implementation of a minor development. That leaves a total of 37 nr rooms where reductions in ADF values are identified which result in the BRE criteria not being satisfied relative to target values derived from a mirror development.

That leaves a total of 37 nr rooms where reductions in ADF values are identified which result in the BRE criteria not being satisfied relative to target values derived from a mirror development.

Many of the existing rooms are noted to have ADF values below the BRE thresholds in the mirror development scenario. The reasons for this become apparent in analysing the designs for Hamilton House in that the rooms in question are typically served by a single window opening of small size relative to the dimensions of the room. Another factor is the presence of balcony or other projections which have the effect of reducing sky visibility from window openings serving the storey level below such projections. The inherent design of Hamilton House is a significant factor governing daylight distribution internally.

The balance of this section relates to the rooms identified as not achieving this criteria.

The position is summarised below in tabular format for these exceptions.

Floor Level	Room Use	Room number	Range of ADF values
Ground Floor	L/K/D	2 nr	0.66% - 0.92%
Ground Floor	Bedrooms	4 nr	0.19% - 0.53%
First Floor	Bedrooms	6 nr	0.19% - 0.81%
Second Floor	Bedrooms	6 nr	0.20% - 0.87%
Third Floor	Bedrooms	6 nr	0.21% - 0.91%
Fourth Floor	Bedrooms	6 nr	0.22% - 0.92%
Fifth Floor	Bedrooms	5 nr	0.23% - 0.95%
Sixth Floor	L/K/D	2 nr	1.06% - 1.37%



It can be seen for First – Fifth Floors that the spaces in question are exclusively bedrooms served by window openings stacked vertically. Window opening sizes and room dimensions are constant. The scale of impacts progressively diminishes with storey height.

#### 9.5.2.6 Interpretation of Results

Moderate – substantial adverse impacts.

### 9.6 **Lynden House, 22, Pall Mall**

#### 9.6.1 Impacts of the implementation of the Phase 1 development in isolation

##### 9.6.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the south west elevation of Lynden House.

##### 9.6.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1.

##### 9.6.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for Lynden House are presented at Appendix 8 in tabular format for ease of reference.

It can be seen that daylight impinging on all window openings in Lynden House following implementation of the proposed Phase 1 development would satisfy BRE criteria.

##### 9.6.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would be unchanged.

##### 9.6.1.5 Detailed ADF Analysis

The results identify that ADF values post development would remain close to pre-development values and that such limited reductions as identified would be small and in all probability near imperceptible.

##### 9.6.1.6 Interpretation of Results

Negligible.

#### 9.6.2 Impacts of the implementation of the Phase 1 development + outline

##### 9.6.2.1 Receptor Windows

As 9.6.1.1.

##### 9.6.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

##### 9.6.2.3 Detailed VSC Analysis



It can be seen that of the 17 nr windows subject to analysis 16 nr windows would not pass an initial VSC assessment and accordingly been subject to more detailed scrutiny.

9.6.2.4 Daylight Distribution Analysis [ No sky contours ]

The 16 nr windows identified for more detailed analysis on the basis of VSC screening serve one combined L/K/D space at each floor level. Daylight Distribution Analysis identifies that all 3 nr rooms would retain levels of daylight in excess of the 80% threshold.

Notwithstanding, each of the 3 nr rooms identified above have additionally been subject to more detailed ADF analysis.

9.6.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would exceed the BRE threshold levels in respect of all 3 nr rooms.

9.6.2.6 Interpretation of Results

Negligible impacts.

9.7 **Silkhouse Court, Tithebarn Street**

9.7.1 Impacts of the implementation of the Phase 1 development in isolation

9.7.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving prospective apartments in the north-west & north-east elevations of Silkhouse Court.

To re-cap, Silkhouse Court is a 15 storey former office building which is publicised as undergoing conversion to residential use under permitted development but in respect of which, there is seemingly scant information concerning the proposed programme to completion, apartment mix and layouts.

For the purposes of impact assessment, Silkhouse Court is treated as a potential sensitive receptor from the daylighting and sunlighting perspective.

The elevations contain ribbons of glass at each floor level and a number of the spaces created as part of any scheme of conversion and which will have an outlook towards the proposed development are likely to benefit from a dual aspect if positioned at the corner of the building.

These characteristics have been taken into consideration in interpreting the impact of the findings of the VSC analysis referred to below.

9.7.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1.

9.7.1.3 Detailed VSC Analysis

The results of the VSC daylight analysis for Silkhouse Court are presented graphically at Appendix 7.



In this instance, analysis has been undertaken on the basis of a façade study. This involves mapping out of VSC values across an elevation or elevations based on a 1m x 1m grid.

Areas on the façade coloured green on the analysis sheets satisfy BRE thresholds. Areas on the façade coloured red fall below the BRE thresholds.

It can be seen that daylight impinging on all window openings in Silkhouse Court following implementation of the proposed Phase 1 development would satisfy BRE criteria.

In the circumstances,<sup>6</sup> [ given uncertainty as to room uses and internal configuration ] no additional detailed analysis of daylight conditions internally has been undertaken.

9.7.1.4 Interpretation of Results

Negligible – slight adverse impacts.

9.7.2 Impacts of the implementation of the Phase 1 development + outline

9.7.2.1 Receptor Windows

Implementation of the Phase 1 development would have the effect of obscuring visibility of the buildings which are the subject of outline application from relevant window openings in Silkhouse Court. No separate impact assessment has accordingly been made in respect of the Phase 1 development and outline.

9.7.2.2 Interpretation of Results

Negligible – slight adverse impacts.

9.8 **Berey's Building**

9.8.1 Impacts of the implementation of the Phase 1 development in isolation

9.8.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in arranged along the south-east and north-east elevations of Berey's Building.

9.8.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1.

9.8.1.3 Detailed VSC Analysis

The results of the VSC daylight analysis for Berey's Building are presented at Appendix 8 in tabular format for ease of reference.

It can be seen that with limited exceptions, daylight impinging on the 93 nr window openings in Berey's Building following implementation of the proposed Phase 1 development would fall within 80% of the target levels of daylight derived from mirror development analysis,

In instances where reductions beyond 20% of target values are identified, the scale of change beyond the 20% is identified as modest.



The 93 nr window openings referred to above serve a total of 24 nr rooms.

Once the results of impacts on individual windows are aggregated (on the basis that some rooms receive light from as many as 10 nr windows) then it can be seen that there are 2 nr rooms out of a total of 24 nr which require more detailed analysis.

9.8.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of Daylight Distribution Analysis in respect of rooms identified above are that daylight distribution following implementation of the proposed Phase 1 development would in some instances exceed the target levels of daylight distribution derived from mirror development analysis and in the other instance, the room would continue to retain levels of daylight in excess of the 80% threshold.

9.8.1.5 Detailed ADF Analysis

The results identify that ADF values post development would in general be subject to reductions but that the BRE criteria would be satisfied in all but 2 nr out of the 24 nr rooms. In both those instances, ADF values pre-development fall below the BRE recommended thresholds and the spaces in question are therefore sensitive to any reduction.

9.8.1.6 Interpretation of Results

Slight adverse impacts.

9.8.2 Impacts of the implementation of the Phase 1 development + outline

9.8.2.1 Receptor Windows

As 9.8.1.1.

9.8.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

9.8.2.3 Detailed VSC Analysis

It can be seen that of the 103 nr windows subject to analysis, 88 nr windows would experience increased sky visibility or no change or shifts in VSC levels which satisfied the BRE Guidelines relative to target levels derived from mirror development analysis. However, a number of rooms benefit from light received from more than one window and once impacts are aggregated, the number of rooms identifies as warranting more detailed analysis is 5 nr

9.8.2.4 Daylight Distribution Analysis [ No sky contours ]

Daylight Distribution Analysis identifies that all 5 nr rooms would retain levels of daylight in excess of the 80% threshold or that rooms with daylight distribution below the 80% threshold would still either achieve higher levels of daylight distribution than the values derived from a mirror development scheme or suffer reductions which maintain levels of daylight distribution which were not less than 80% of the values associated with a mirror development [ and therefore not necessarily noticeable to occupants ].

Notwithstanding, the positive outcome to daylight distribution analysis, the rooms in question have also been checked for ADF.



#### 9.8.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would match or exceed the BRE threshold levels in respect of 21 nr of the 24 nr rooms identified above.

The balance of this section relates to the residue of rooms identified as not achieving this criteria.

The position is summarised below in tabular format for these exceptions.

Floor Level	Room Use	Room number	Range of ADF values
Upper Ground Floor	Kitchen	1 nr	1.31%
First Floor	Living room	1 nr	1.9%
Third Floor	L/K/D	1 nr	1.27%

#### 9.8.2.6 Interpretation of Results

Slight adverse impacts.

### 9.9 Lombard Chambers

#### 9.9.1 Impacts of the implementation of the Phase 1 development in isolation

##### 9.9.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the north-west and north east elevations of Lombard Chambers.

There is uncertainty surrounding the internal layouts of apartments within Lombard Chambers and in the circumstances, analysis has been approached on the assumption that accommodation is generally open plan studio type and that windows subject to analysis serve 3 nr open plan studios.

##### 9.9.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1.

##### 9.9.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for Lombard Chambers are presented at Appendix 7 in tabular format for ease of reference.

It can be seen that daylight impinging on window openings in Lombard Chambers following implementation of the proposed Phase 1 development would be lower than the target levels of daylight derived from mirror development analysis.

The scale of reductions in VSC values to one of the notional studios exceeds BRE guidelines and would automatically warrant more detailed analysis, but given uncertainty over the layouts of the apartments, this is not possible. In the circumstances, a subjective judgment has been made in respect of the significance of impacts.



9.9.1.4 Interpretation of Results

Slight adverse impacts.

9.9.2 Impacts of the implementation of the Phase 1 development + outline

9.9.2.1 Receptor Windows

As 9.9.1.1.

9.9.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

9.9.2.3 Detailed VSC Analysis

With the introduction of the Phase 1 and outline developments, the scale of reductions in VSC values to 2 nr out of the 3 nr residential studios exceed BRE guidelines but residual VSC values remain relatively high for a city centre location. As before, more detailed daylight distribution or ADF analysis is not possible given uncertainty surrounding internal layouts.

9.9.2.4 Interpretation of Results

Slight – moderate adverse impacts.

9.10 **Orleans House, Edmund Street**

9.10.1 Impacts of the implementation of the Phase 1 development in isolation

9.10.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the south east and north east and north west elevations of Orleans House.

9.10.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1.

9.10.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for Orleans House are presented at Appendix 8 in tabular format for ease of reference.

It can be seen that with no exceptions daylight impinging on window openings in Orleans House following implementation of the proposed Phase 1 development would satisfy the BRE guidelines based on the target levels of daylight derived from mirror development analysis.

9.10.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would satisfy the BRE criteria in respect of 82 nr out of the 90 nr rooms subject to analysis. Of the 8 nr rooms identified as falling below the BRE criteria, all have internally low levels of daylight distribution pre-development and are therefore sensitive to shifts in daylight contours. The interest therefore is in ADF values for these 8 nr rooms.





#### 9.10.1.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would match or exceed the BRE threshold levels in respect of 5 nr of the 8 nr rooms identified above.

The balance of this section relates to the residue of rooms identified as not achieving this criteria.

The position is summarised below in tabular format for these exceptions.

Floor Level	Room Use	Room number	Range of ADF values
First Floor	LKD	2 nr	0.88% - 1.01%
Second Floor	LKD	1 nr	1.18%

#### 9.10.1.6 Interpretation of Results

Slight adverse impacts.

#### 9.10.2 Impacts of the implementation of the Phase 1 development + outline

##### 9.10.2.1 Receptor Windows

As 9.10.1.1.

##### 9.10.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

##### 9.10.2.3 Detailed VSC Analysis

It can be seen that of the 147 nr windows subject to analysis 146 nr windows would experience either no change or shifts in VSC levels which satisfied the BRE Guidelines relative to target levels derived from mirror development analysis.

##### 9.10.2.4 Daylight Distribution Analysis [ No sky contours ]

Daylight Distribution Analysis identifies that 35 nr rooms out of the 90 nr rooms would retain levels of daylight in excess of the 80% threshold and that of the remainder 47 nr rooms would be subject to no change or suffer reductions which maintain levels of daylight distribution which were not less than 80% of the values associated with a mirror development [ and therefore not necessarily noticeable to occupants ].

Of the 90 nr rooms identified above therefore 8 nr warrant more detailed ADF analysis.

##### 9.10.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would match or exceed the BRE threshold levels in respect of 85 nr of the 90 nr rooms subject to assessment.



The balance of this section relates to the residue of rooms identified as not achieving this criteria.

The position is summarised below in tabular format for these exceptions.

9.10.2.5	Floor Level	Room Use	Room number	Range of ADF values
	First Floor	LKD	2 nr	0.88% - 1.01%
	Second Floor	LKD	2 nr	1.04% - 1.08%
	Fifth Floor	LKD	1 nr	1.08%

#### 9.10.2.6 Interpretation of Results

Slight – moderate adverse impacts.

### 9.11 X Building, 30-36, Bixteth Street

#### 9.11.1 Impacts of the implementation of the Phase 1 development in isolation

##### 9.11.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the north west, north east and south east elevations of 30-36, Bixteth Street.

##### 9.11.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

##### 9.11.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for X Building, 30-36, Bixteth Street are presented at Appendix 8 in tabular format for ease of reference.

It can be seen that following implementation of the proposed Phase 1 development, 235 nr out of the 319 nr windows subject to analysis would experience either enhanced levels of daylight or no change in VSC levels relative to target levels derived from mirror development analysis. Of the remaining 84 nr windows, 24 nr would experience shifts in VSC levels which satisfied the BRE Guidelines. 59 nr windows would experience shifts in VSC levels which fell outside the BRE Guidelines and warranted more detailed analysis.

##### 9.11.1.4 Daylight Distribution Analysis [ No sky contours ]

The 59 nr windows referred to above serve a total of 25 nr rooms and a number of those rooms also benefit from light received via other window openings.

Daylight Distribution Analysis identifies that 3 nr rooms out of those 25 nr rooms would benefit from increased daylight distribution post development compared to target levels derived from mirror development analysis and that 7 nr of the remainder would retain levels of daylight distribution in excess of the 80° BRE threshold.

Of the 25 nr rooms identified above therefore 15 nr warrant more detailed ADF analysis.

##### 9.11.1.5 Detailed ADF Analysis



ADF analysis identifies that ADF values post development would fall below the BRE threshold in respect of 8 nr out of the 15 nr rooms referred to above.

There are numerous rooms where ADF values are identified as higher post development than target values derived from mirror development analysis, but these gains do not offset any losses.

9.11.1.6 Interpretation of Results

Moderate adverse impacts.

9.11.2 Impacts of the implementation of the Phase 1 development + outline

9.11.2.1 Receptor Windows

As 9.11.1.1

9.11.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

9.11.2.3 Detailed VSC Analysis

151 nr out of the 319 nr windows subject to analysis would experience either enhanced levels of daylight or no change in VSC levels post development relative to target levels derived from mirror development analysis.

Of the remaining 168 nr windows, 55 nr would experience shifts in VSC which satisfied the BRE Guidelines, and 113 nr would experience shifts in VSC levels which exceeded the BRE Guidelines and warrant more detailed analysis.

9.11.2.4 Daylight Distribution Analysis [ No sky contours ]

The 113 nr windows identified for more detailed analysis as the basis of VSC screening serve a total of 73 nr rooms [ some rooms benefit from light received from more than one window opening ].

Daylight Distribution Analysis identifies that 25 nr rooms of those 73 nr rooms would benefit from increased daylight distribution post development compared to target values derived from mirror development analysis and that 5 nr of the remainder would retain levels of daylight distribution in excess of the 80° BRE threshold.

Of the 73 nr rooms referred to above therefore 43 nr warrant more detailed ADF analysis.

9.11.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would match or exceed the BRE threshold levels in respect of 5 nr of the 43 nr rooms identified above.

The balance of this section relates to the residue of rooms identified as not achieving this criteria.

The position is summarised below in tabular format for these exceptions.



Floor Level	Room Use	Room number	Range of ADF values
First Floor	LKD Bedrooms	2 nr 1 nr	0.78% - 1.19% 0.78%
Second Floor	LKD Bedrooms	1 nr 1 nr	0.86% 0.47%
Third Floor	LKD Bedrooms	1 nr 1 nr	0.94% 0.54%
Fourth Floor	LKD Bedrooms	3 nr 2 nr	0.72% - 1.05% 0.63% - 0.73%
Fifth Floor	LKD Bedrooms	6 nr 8 nr	0.98% - 1.49% 0.61% - 0.84%
Sixth Floor	LKD Bedrooms	4 nr 8 nr	0.54% - 1.27% 0.50% - 0.96%

#### 9.11.2.6 Interpretation of Results

Moderate – substantial adverse impacts.

### 10.0 **POST DEVELOPMENT ASSESSMENT – SUNLIGHT [ WITHOUT OTHER COMMITTED DEVELOPMENT ]**

- 10.1 The results of Sunlight Analysis are presented in Appendix 8 in tabular format for ease of reference.

Not all window openings subject to assessment in respect of daylight impacts are also subject to assessment in respect of sunlight as the orientation of the wall in which a window opening has been formed has a bearing on the matter.

The reader is referred to Appendix 6 to this Report. The referencing to window openings in each property which are the subject of both daylight and sunlight assessment appears in orange text, in contrast to the referencing of window openings subject to daylight assessment only, which appears in black text.

As it has not been possible to fully identify all room uses it has not been possible to narrow the scope of the study to windows solely serving the main habitable space within apartments [ ordinarily the living room ]. For that reason it should be recognised that the scope of the study may take in some non-habitable spaces and room uses which may not be key sunlight receptors.

### 10.2 **40–46, Pall Mall**

#### 10.2.1 Impacts of the implementation of the Phase 1 development in isolation

##### 10.2.1.1 Receptor Windows

The south east and south west elevations of 44-46, Pall Mall are orientated within 90° due south. Window openings in these elevations have accordingly been assessed for sunlight impacts.

##### 10.2.1.2 Sunlight Analysis

To re-cap, sunlight assessments in respect of 40-44, Pall Mall have been undertaken with reference to target levels derived from a mirror massing development positioned on the opposite side of Pall Mall.



The results of analysis are that sunlight amenity levels arising from the implementation of the Phase 1 development in isolation would exceed levels associated with the implementation of a mirror development on the south west side of Pall Mall.

10.2.1.3 Interpretation of Results

Minor beneficial impacts.

10.2.2 Impacts of the implementation of Phase 1 and Outline  
10.2.2.1 Receptor Windows

The south east and south west elevations of 44-46, Pall Mall are orientated within 90° due south. Window openings in these elevations have accordingly been assessed for sunlight impacts.

10.2.2.2 Sunlight analysis

The results of analyses are, with the exception of 3No. windows out of the 162No. subject to checks in respect of sunlight, that sunlight amenity levels arising from the implementation of the Phase 1 and Outline development would either exceed target levels derived from a minor assessing study or would remain (notwithstanding reductions) at or above the BRE threshold levels.

The 3No. windows referred to above would retain satisfactory levels of total sunlight hours but would fall below the threshold for the proportion of total sunlight hours during the winter months.

10.2.2.3 Interpretation of Results

Slight adverse impacts.

**10.3 51-55, Highfield Street**

10.3.1 Impacts of the implementation of the Phase 1 development in isolation

10.3.1.1 Receptor Windows

A review of drawings held by the Local Planning Authority indicates that it is only one of the spaces which are served by window openings in the south west and south east elevations of 51-55, Highfield Street which is used as a living room.

10.3.1.2 Sunlight Analysis

The results of analysis are that sunlight amenity levels to living accommodation in 51-55, Highfield Street would be unchanged by implementation of the Phase 1 development in isolation.

10.3.1.3 Interpretation of Results

No effect.

10.3.2 Impacts of the implementation of Phase 1 and Outline  
10.3.2.1 Receptor Windows

A review of drawings held by the Local Planning Authority indicates that it is only one of the spaces which are served by window openings in the south west and south east elevations of 51-55, Highfield Street which is used as a living room.

10.3.2.2 Sunlight analysis



The results of analysis are their sunlight amenity levels to living accommodation in 51-55 Highfield Street would be reduced in consequence of the implementation of Phase 1 and Outline, but that residual levels of total probably sunlight hours and of winter sun would remain comfortably in excess of BRE threshold levels.

10.3.2.3 Interpretation of results

Negligible impacts.

**10.4 47-64, Princes Gardens**

10.4.1 Impacts of the implementation of the Phase 1 development in isolation

10.4.1.1 Receptor Windows

The south and south west facing elevations of 47-64, Princes Gardens have been assessed for sunlight impacts. Given understanding over room uses, the study has been extended to all windows.

10.4.1.2 Sunlight Analysis

The results of analysis are that sunlight amenity levels arising from the implementation of the Phase 1 development in isolation would be unchanged..

10.4.1.3 Interpretation of Results

No effect.

10.4.2 Impacts of the implementation of Phase 1 and Outline

10.4.2.1 Receptor Windows

The south and south west facing elevations of 47-64, Princes Gardens have been assessed for sunlight impacts. Given understanding over room uses, the study has been extended to all windows.

10.4.2.2 Sunlight analysis

The results of analysis are that sunlight amenity levels arising from the implementation of Phase 1 and outline would be reduced but that residual levels of total probable sunlight hours and of winter sun would remain comfortably in excess of BRE threshold levels.

10.4.2.3 Interpretation of results

Negligible impact.

**10.5 Hamilton House, 24-28, Pall Mall**

10.5.1 Impacts of the implementation of the Phase 1 development in isolation

10.5.1.1 Receptor Windows

The south west elevation of Hamilton House is orientated within 90° of due south. Window openings in the elevations which serve the main habitable rooms in apartments have accordingly been subject to developer assessment.



10.5.1.2 Sunlight Analysis

The results of analysis are that sunlight amenity levels arising from the implementation of the Phase 1 development in isolation would exceed levels associated with the implementation of a mirror development on the south west side of Pall Mall.

10.5.1.3 Interpretation of Results

Minor beneficial.

10.5.2 Impacts of the implementation of Phase 1 and outline

10.5.2.1 Receptor Windows

The south west elevation of Hamilton House is orientated within 90° of due south. Window openings in the elevations which serve the main habitable rooms in apartments have accordingly been subject to developer assessment.

10.5.2.2 The results of analysis are that sunlight amenity levels arising from the implementation of Phase 1 and Outline would in general be lower than target levels derived from a minor development but save for the exceptions noted below total probable annual sunlight hours and winter sunlight would remain in excess of BRE threshold levels. The exceptions are a column of windows positioned on the Pall Mall frontage at the corner with Cockspur Street West. The position in respect of these windows at First-Fifth floors inclusive is that the criteria for winter sunlight continues to be met but total probable sunlight hours across the year would fall below the BRE threshold. The position is the same in respect of 1No. further window serving L/K/D space at sixth floor level.

10.5.2.3 Interpretation of results

Moderate adverse impacts.

**10.6 Lynden House, 22 Pall Mall**

10.6.1 Impacts of the implementation of the Phase 1 development in isolation

10.6.1.1 Receptor Windows

The Pall Mall elevation of Lyndon House is orientated with 90° due south. Window openings in this elevation have accordingly been assessed for sunlight impacts.

10.6.1.2 Sunlight Analysis

The results of analysis are that implementation of the Phase 1 development in isolation would result in a small reduction in sunlight reaching Lynden House, but that residual levels of sunlight would remain comfortably above the BRE thresholds.

10.6.1.3 Interpretation of Results

Negligible

10.6.2 Impacts of the implementation of Phase 1 and Outline

10.6.2.1 Receptor Windows

The Pall Mall elevation of Lyndon House is orientated with 90° due south. Window openings in this elevation have accordingly been assessed for sunlight impacts.





10.6.2.2 Sunlight analysis

The results of analysis are that implementation of the Phase 1 and Outline development would result in a small reduction in sunlight reaching Lyndon House, but that residual levels of sunlight would remain comfortably above the BRE thresholds.

10.6.2.3 Implementation of Results

Negligible.

**10.7 Silkhouse Court, Tithebarn Street**

10.7.1 Impacts of the implementation of the Phase 1 development in isolation

10.7.1.1 Receptor Windows

The massing of the Phase 1 development in isolation does not present an obstruction to the sunpath on the Spring equinox relative to window openings in Silkhouse Court.

10.7.1.2 Sunlight Analysis

Not required given position relative to that of proposed development.

10.7.1.3 Interpretation of Results

Not applicable

10.7.2 Impacts of the Implementation of Phase 1 and Outline

10.7.2.1 Receptor Windows

The massing of the Phase 1 development in isolation does not present an obstruction to the sunpath on the Spring equinox relative to window openings in Silkhouse Court.

10.7.2.2 Sunlight analysis

Not required given position relative to that of proposed development.

10.7.2.3 Interpretation of results

Not applicable.

**10.8 Berey's Buildings**

10.8.1 Impacts of the implementation of the Phase 1 development in isolation

10.8.1.1 Receptor Windows

The massing of the Phase 1 development in isolation does not present an obstruction to the sunpath on the Spring equinox relative to window openings in Berey's Buildings.



10.8.1.2 Sunlight Analysis

Not required given position relative to that of proposed development.

10.8.1.3 Interpretation of Results

Not applicable

10.8.2 Impacts of the Implementation of Phase 1 and Outline

10.8.2.1 Receptor Windows

The massing of the Phase 1 development in isolation does not present an obstruction to the sunpath on the Spring equinox relative to window openings in Berey's Buildings.

10.8.2.2 Sunlight analysis

Not required given position relative to that of proposed development.

10.8.2.3 Interpretation of results

Not applicable.

**10.9 Lombard Chambers**

10.9.1 Impacts of the implementation of the Phase 1 development in isolation

10.9.1.1 Receptor Windows

Neither the Bixteth Street or Edmund Street elevations of Lombard Chambers are orientated within 90° of due south and relevant window openings, therefore fall outside the scope of development assessment.

10.9.1.2 Sunlight Analysis

Not required given the orientation of the elevations which contain relevant window openings.

10.9.1.3 Interpretation of Results

Sunlight assessment not applicable.

10.9.2 Impacts of the implementation of Phase 1 and Outline

10.9.2.1 Receptor Windows

Neither the Bixteth Street or Edmund Street elevations of Lombard Chambers are orientated within 90° of due south and relevant window openings, therefore fall outside the scope of sunlight assessment.

10.9.2.2 Sunlight analysis

Not required given the orientation of the elevations which contain relevant window openings.

10.9.2.3 Interpretation of results



Sunlight assessment not applicable.

**10.10 Orleans House, Edmund Street**

10.10.1 Impacts of the implementation of the Phase 1 development in isolation

10.10.1.1 Receptor windows

The Edmund Street and a courtyard elevation of Orleans House are orientated within 90° of due south. Window openings in these elevations have accordingly been assessed for sunlight impacts.

10.10.1.2 Sunlight Analysis

The results of analysis are that sunlight amenity levels to the main habitable spaces to apartments within Orleans House arising from implementation of the Phase 1 development in isolation would either match or exceed target levels derived on the basis of a mirror development study.

10.10.1.3 Interpretation of Results

Negligible impacts

10.10.2 Impacts of the implementation of Phase 1 and Outline

10.10.2.1 Receptor Windows

The Edmund Street and a courtyard elevation of Orleans House are orientated within 90° of due south. Window openings in these elevations have accordingly been assessed for sunlight impacts.

10.10.2.2 Sunlight analysis

The results of sunlight analysis in respect of all windows is that total annual probable sunlight hours arising from the build out of Phase 1 and Outline would be reduced but remain above the BRE threshold levels whilst winter sunshine would either remain unchanged or be subject to a small reduction. In one instance out of the 147No. windows subject to assessment and subject to change the reduction would take winter sunlight below the BRE threshold.

10.10.2.3 Interpretation of results

Slight adverse impacts.

**10.11 X Building, 30-36, Bixteth Street**

10.11.1 Impacts of the implementation of the Phase 1 development in isolation

10.11.1.1 Receptor Windows

The Edmund Street [ south west ] elevation of the X Building is orientated within 90° of due south. Window openings in this elevation and serving main habitable rooms have accordingly been assessed for sunlight impacts.

10.11.1.2 Sunlight Analysis



To re-cap, sunlight assessments in respect of X Building have been undertaken with reference to target levels derived from a mirror massing development positioned an equivalent distance from the boundaries of the respective sites.

34 nr window openings fall within the scope of the study. These serve 17 nr rooms identified as the main habitable spaces within apartments.

Focussing initially on total annual probable sunlight hours, the results of analysis are:

- 8 nr window openings would experience a greater number of probable sunlight hours than target levels derived from a mirror development.
- 1 nr window openings would experience no change.
- 16 nr window openings would receive fewer annual probable sunlight hours than the target levels derived from a mirror development but would still retain levels of sunlight which satisfied the BRE criteria.
- 9 nr window openings would receive fewer annual probable sunlight hours than the target levels derived from a mirror development and residual levels would then be below the BRE threshold levels. [ The opening position in respect of 2 nr of these window openings falls below the BRE threshold levels and the windows in question are therefore sensitive to reductions ].

The 9 nr windows subject to reductions which would reduce annual probable sunlight hours below the BRE threshold levels serve a total of 8 nr rooms of which 2 nr rooms benefit from good levels of sunlight to other window openings serving the same spaces.

Distilling this, in the terms of total annual probable sunlight hours, implementation of the Phase 1 development in isolation would result in 6 nr out of 17 nr rooms receiving lower levels of annual probable sunlight hours than the target levels derived from mirror development and in respect of which the totals fell below the BRE threshold.

Turning to winter sunlight, the results of analysis are:

- 14 nr window openings would experience a greater number of winter sunlight hours than target levels derived from a mirror development.
- 5 nr window openings would experience no change.
- 12 nr window openings would receive fewer winter sunlight hours than the target levels derived from a mirror development but would still retain levels of winter sunlight hours which satisfied the BRE criteria.
- 2 nr window openings would receive fewer winter sunlight hours than the target levels derived from a mirror development where residual levels would then be below the BRE threshold levels.

The 2 nr windows subject to reductions which would take residual levels below the BRE threshold levels serve 2 nr rooms. Both these rooms benefit from sunlight received via other window openings which do satisfy the BRE criteria. The aggregate impact has not been assessed but it may be that the rooms in question would fall marginally above or below the relevant BRE threshold.

#### 10.11.1.3 Interpretation of Results

Moderate – substantial adverse impact.

#### 10.11.2 Impacts of the Implementation of Phase 1 and Outline

##### 10.11.2.1 Receptor Windows



The Edmund Street [ south west ] elevation of the X Building is orientated within 90° of due south. Window openings in this elevation and serving main habitable rooms have accordingly been assessed for sunlight impacts.

#### 10.11.2.2 Sunlight analysis

The results of analysis based on the implementation of Phase 1 and Outline are not consistent across all floor levels within the building but in general implementation of the Phase 1 and Outline development would see improved winter sunlight compared to target levels derived from a mirror development scheme.

Total probable annual sunlight hours would however be lower than the target levels derived from a minor development and 17 No. windows would see either the totals reduced below the BRE threshold or experience losses where total annual probable sunlight hours already fell below the BRE threshold. These 17No. windows serve a total of 12 No. rooms.

#### 10.11.2.3 Interpretation of results

Substantial adverse impacts.

### 11.0 **POST DEVELOPMENT ASSESSMENT – DAYLIGHT** **[ WITH OTHER COMMITTED DEVELOPMENT ]**

Drawings which identify window locations as referenced are included at Appendix 6.

In the 'with other' committed developments scenario, the proposed new residential development at 30-36, Pall Mall is introduced as a sensitive receptor.

Given the availability from the LCC Planning Portal of scale drawings of the proposed elevations and internal layouts, analysis in respect of apartments identified from initial 25° screening as warranting closer scrutiny has been undertaken adopting Average Daylight Factor [ ADF ] methodology [ i.e not subject to intermediate stage analysis ].

The development which benefits from planning permission in respect of 30-36, Pall Mall is considered below, along with the relative scale of impacts on other receptors in a scenario whereby the Proposed Development is introduced into townscape where Committed Development had already been built out.

In the interests of conciseness, the text relating to existing receptors avoids repetition of factors already introduced in the corresponding sections of the Report which addresses the 'without other Committed Developments' scenario.

The full results of analysis in each instance are presented at Appendix 9 in tabular format for ease of reference.

#### 11.1 Preliminary screening adopting 25° Rule of Thumb test on obstruction angle

Reference is made to the 3D renditions which are included at Appendix 4 to this Report and to the results of preliminary 25° screening included at Appendix 5.

The following properties are not included within the scope of the 'with other Committed Development' studies for the reasons cited below.

Property	Reason for non-inclusion
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1. 40-44, Pall Mall	Window openings in the principal [ Pall Mall ] elevation of the building do not overlook the site of the proposed development on 30-36, Pall Mall. Implementation of development on the site of 30-36, Pall Mall would not therefore materially alter the results of the impact assessment undertaken on the 'without other committed development' basis.
2. Lynden House 22, Pall Mall	As for 40-44, Pall Mall.
3. Silkhouse Court, Tithebarn Street	The proposed development at 30-36, Pall Mall would not be visible from window openings subject to analysis at Silkhouse Court due to the massing of the Exchange Station building and the Proposed Development and the build out of 30-36, pall Mall would not therefore materially alter the results of the impact assessment undertaken on the 'without committed development' basis.
4. Lombard Chambers	The proposed development at 30-36, Pall Mall would not be visible from window openings subject to analysis at Lombard Chambers due to the massing of the Proposed Development and build out on the site of 30-36, Pall Mall would not therefore bring about cumulative daylight impacts in respect of Lombard Chambers.

On the basis of the foregoing, the surrounding buildings or parts of buildings in residential use which have not been eliminated on the basis of this initial screening are:

- 51-55, Highfield Street
- 47-64, Princes Gardens
- 30-36, Pall Mall
- Hamilton House, 24-28, Pall Mall
- Orleans House, Edmund Street
- X Building, 30-36, Bixteth Street

Each is considered below in turn.

The commentary in respect of each is in two parts:

- impacts of the implementation of the Phase 1 development in isolation
- impacts of the implementation of the Phase 1 development + Outline

## 11.2 **51-55, Highfield Street**

### 11.2.1 Impacts of the implementation of the Phase 1 development in isolation

#### 11.2.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving spaces along the south east, south west and north west elevations of 51-55, Highfield Street.

#### 11.2.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 11.1

#### 11.2.1.3 Detailed VSC Analysis



The full results of the VSC daylight analysis for 51-55, Highfield Street presented at Appendix 9 in tabular form for ease of reference.

It can be seen that with limited exceptions, daylight impinging on window openings in 51-55, Highfield Street were the Phase 1 development to be implemented following the build out of 30-36, Pall Mall would not materially differ and that such changes as are identified are very small.

11.2.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of the Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would be unchanged.

11.2.1.5 Detailed ADF Analysis

As for daylight distribution, the results identify that ADF values post development would remain close to the pre-development values and that such reductions as identified would be small and in all probability near imperceptible.

11.2.1.6 Interpretation of Results

Negligible.

11.2.2 Impacts of the implementation of the Phase 1 development + Outline

11.2.2.1 Receptor Windows

As 11.2.1.1

11.2.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 11.1

11.2.2.3 Detailed VSC Analysis

It can be seen that of 42 nr windows subject to analysis, 4 nr windows would not pass an initial VSC assessment and have accordingly been subject to more detailed scrutiny.

11.2.2.4 Daylight Distribution Analysis [ No sky contours ]

The 5 nr windows identified for more detailed analysis on the basis of VSC screening serve a total of 2 nr rooms [some rooms benefit from light received from more than one window opening ].

Daylight Distribution Analysis identifies that both rooms would retain levels of daylight in excess of the 80% threshold.

Whilst not directly related to window openings identified from VSC assessment as warranting more detailed analysis, the daylight distribution checks undertaken have served, additionally, to identify negative shifts in light distribution within other rooms. The scale of those shifts is typically less than 1% and as such would be imperceptible.

11.2.2.5 Detailed ADF Analysis

It can be seen that pre-development ADF values are lower than the BRE threshold in 3 nr rooms which would suffer marginal reduction in consequence of the build



out of the Phase 1 development in isolation. The scale of such shifts would be imperceptible in 2 nr of the 3 nr rooms.

11.2.2.6 Interpretation of Results

Negligible impacts.

**11.3 47-54, Princes Gardens**

11.3.1 Impacts of the implementation of the Phase 1 development in isolation

11.3.1.1 Receptor Windows

As 9.4.1.1

11.3.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

11.3.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for selected parts of Princes Gardens are presented at Appendix 9 in tabular form for ease of reference.

It can be seen that without exception, daylight impinging on window openings at Princes Gardens following implementation of the proposed Phase 1 development would exceed BRE criteria in respect of daylight.

11.3.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of the Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would be unchanged.

11.3.1.5 Detailed ADF Analysis

As for daylight distribution, the results identify that ADF values post development would remain close to the pre-development values and that such reductions as are identified would be small and in all probability near imperceptible.

11.3.1.6 Interpretation of Results

Negligible impacts.

11.3.2 Impacts of the implementation of the Phase 1 development + Outline

11.3.2.1 Receptor Windows

As 9.4.1.1

11.3.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

11.3.2.3 Detailed VSC Analysis

The full results of VSC analysis for selected parts of Princes Gardens are presented at Appendix 9 in tabular form for ease of reference.





It can be seen that all of the 48 nr windows subject to analysis would experience shifts in VSC levels which satisfied the BRE Guidelines.

11.3.2.4 Daylight Distribution Analysis [ No sky contours ]

The 48 nr windows referred to above serve 46 nr rooms.

Daylight Distribution Analysis identifies that 18 nr rooms out of the 46 nr rooms would retain levels of daylight distribution in excess of the 80% threshold and that of the remainder of rooms with daylight distribution below the 80% threshold, a total of 27 nr rooms would be subject to no change or suffer reductions which maintained levels of daylight distribution which have not less than 80% of the pre-development values [ and therefore not noticeable to occupants ]. Of the 46 nr rooms therefore 1 nr warrants more detailed ADF analysis.

11.3.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would be lower than those pre-development with the scale of change falling within the band 0% – 7.85%.

Owing to uncertainty surrounding room uses, the significance of these changes is uncertain.

We have based the following Interpretation of Results on the basis that ADF values for bedroom uses will tend to be satisfied but those relating to kitchen use would likely fall below BRE threshold levels.

11.3.2.6 Interpretation of Results

Moderate adverse impacts.

**11.4 30-36, Pall Mall**

11.4.1 Impacts of the implementation of the Phase 1 development in isolation

11.4.1.1 Receptor Windows

In addition to the principal [ Pall Mall ] elevation, there are window openings in the courtyard elevations which would have line of sight towards the proposed development. To recap, target values in respect of daylight and sunlight indications have been derived on the basis of a hypothetical mirror development.

11.4.1.2 Inherent design of 30-36, Pall Mall

The design concept for 30-36, Pall Mall is not untypical of modern high rise residential buildings but in common with others of the genre involve compromise in respect of competing factors governing apartment footprint and layout.

In many instances a single window in one wall is relied upon to serve a combined living / dining / kitchen space which is relatively deep, combined with the rear portion of that room being of greater width than that part of the room positioned near the window opening.

Whilst stressing that this is not untypical of designs adopted for modern high rise residential buildings it is possible that the proportions of these rooms may not satisfy the BRE recommendations for limits on the depth and proportions of rooms lit by a window or windows in one wall only.



The BRE Guide highlights that the rear half of such rooms will tend to look gloomy and supplementary electric lighting will be required.

It is this inherent feature of the design of the scheme which benefits from planning permission at 30-36, Pall Mall which accounts in part for low ADF levels for combined L/D/K spaces in the mirror development scenario adopted to arrive at target ADF values.

#### 11.4.1.3 Detailed ADF Analysis

The results of ADF analysis are included at Appendix 9.

The mirror massing study established that the current design proposals for 30-36, Pall Mall would not accommodate a mirror development on the opposite side of Pall Mall without bringing about ADF values within the proposed development at 30-36, Pall Mall which fell below the BRE Guidelines across numerous rooms and at all levels within 36-38, Pall Mall.

Analysis identifies, in contrast, that the implementation of the Phase 1 development in isolation would bring about fewer reductions in ADF values which fall below the BRE Guideline levels and the scale of 'deficits' where they arose, would be less than the scale of deficits associated with the implementation of a mirror development on the opposite side of Pall Mall to 30-36, Pall Mall.

The following assessment of the overall impacts of the implementation of the Phase 1 development in isolation on 30-36, Pall Mall takes into consideration:

- The inherent internal design of some rooms within 30-36, Pall Mall which render them marginally lit in the pre-development scenario.

#### 11.4.1.4 Interpretation of Results

Moderate adverse.

[Compare with mirror development which would bring about substantial adverse].

#### 11.4.2 Impacts of the implementation of the Phase 1 development + Outline

##### 11.4.2.1 Receptor Windows

As 11.4.1.1

##### 11.4.2.2 Inherent development of 30-36, Pall Mall

Refer to 11.4.1.2

##### 11.4.2.3 Detailed ADF Analysis

The results of ADF analysis are included at Appendix 9.

The mirror massing study established that the current design proposals for 30-36, Pall Mall would not accommodate a mirror development on the opposite side of Pall Mall without bringing about ADF values within the proposed development at 30-36, Pall Mall which fell below the BRE Guidelines across numerous rooms and at all levels within 36-38, Pall Mall.

Analysis identifies, in contrast, that the implementation of the Phase 1 development + Outline would in the round bring about fewer reductions in ADF values which fall below the BRE Guideline levels and the scale of 'deficits' where



they arose, would be less than the scale of deficits associated with the implementation of a mirror development on the opposite side of Pall Mall to 30-36, Pall Mall.

The following assessment of the overall impacts of the implementation of the Phase 1 development in isolation on 30-36, Pall Mall again takes into consideration:

- The inherent internal design of some rooms within 30-36, Pall Mall which render them marginally lit in the pre-development scenario.

#### 11.4.2.4 Interpretation of Results

Moderate adverse.

[Compare with mirror development which would bring about substantial adverse].

### 11.5 **Hamilton House, 24-28, Pall Mall**

#### 11.5.1 Impacts of the implementation of the Phase 1 development in isolation

##### 11.5.1.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the south west and north west elevations of Hamilton House.

##### 11.5.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 11.1

##### 11.5.1.3 Detailed VSC Analysis

Analysis identifies that build out of the Phase 1 development would result in some increase in VSC levels relative to the target levels derived from a mirror development, in addition to some losses. Where reductions are identified, the scale is modest and none exceed BRE Guidelines.

##### 11.5.1.4 Daylight Distribution Analysis [ No sky contours ]

The results of Daylight Distribution Analysis are that daylight distribution following implementation of the proposed Phase 1 development would generally exceed the target levels of daylight distribution derived from mirror development analysis. Such limited reductions as are identified would be small and in all probability near imperceptible.

##### 11.5.1.5 Detailed ADF Analysis

As for daylight distribution, the results identify that ADF values post development would generally exceed the target levels derived from mirror development analysis and that such limited reductions as identified would be small and in all probability near imperceptible.

##### 11.5.1.6 Interpretation of Results

Negligible.

#### 11.5.2 Impacts of the implementation of the Phase 1 development + Outline



11.5.2.1 Receptor Windows

Refer to 11.3.1.1

11.5.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 11.1

11.5.2.3 Detailed VSC Analysis

It can be seen that of the 160 nr windows subject to analysis 70 nr windows would experience increased sky visibility or no change or shifts in VSC levels which satisfy the BRE Guidelines relative to target levels derived from mirror development analysis. The remaining 90 nr windows would not pass an initial VSC assessment and accordingly have been subject to more detailed scrutiny.

11.5.2.4 Daylight Distribution Analysis [ No sky contours]

The 90 nr windows identified for more detailed analysis on the basis of VSC screening serve a total of 77 nr rooms [ some rooms benefit from light received from more than one window opening ].

Daylight Distribution Analysis identifies that 9 nr rooms out of the 77 nr rooms would retain levels of daylight in excess of the 80% threshold and that of the remainder of rooms with daylight distribution below the 80% threshold, a total of 13 nr rooms would still either achieve higher levels of daylight distribution above the values derived from a mirror development scheme or be subject to no change.

All rooms have been selected for ADF analysis on a precautionary basis.

11.5.2.5 Detailed ADF Analysis

It can be seen that ADF analysis identifies that BRE criteria are satisfied in respect of 33 nr rooms and that whilst ADF values would fall below the threshold values in respect of a further 9 nr rooms, the post development values for these rooms exceed the levels which would be brought about through the implementation of a mirror development. That leaves a total of 76 nr rooms where reductions in ADF values are identified which result in the BRE criteria not being satisfied relative to target values derived from a mirror development.

11.5.2.6 Interpretation of results

Substantial adverse.

11.6 **Berey's Building.**

11.6.1 Impacts of the implementation of the Phase 1 development in isolation.

11.6.1.1 Receptor Windows.

Refer to 9.8.1

11.6.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

11.6.1.3 Detailed VSC Analysis.

Analysis has been undertaken in respect of 103 nr windows. The results are that 28 nr would retain VSC levels equivalent to or above the target values derived from the mirror development study, 18 nr windows would experience no change and a further 68 nr would experience reductions in VSC values which fell within the BRE criteria. The remaining 7 nr windows would experience reductions in VSC levels which exceeded the BRE criteria.

11.6.1.4 Daylight Distribution Analysis [ No sky contours ]

The 103 nr windows identified above serve a total of 24 nr rooms.



Analysis identifies that 15 nr of those rooms would retain levels of daylight distribution in excess of the BRE threshold level and that a further 6 nr rooms would be either subject to no change or subject to reductions which fell within the BRE criteria.

Of the 24 nr rooms initially identified above, 3 nr therefore warrant more detailed ADF analysis.

11.6.1.5 Detailed ADF analysis.

The results identify that with the exception of 2nr rooms ADF levels would satisfy BRE Guidelines

11.6.1.6 Interpretation of results.

Slight adverse impacts

11.6.2 Impacts of the implementation of Phase 1 + outline.

11.6.2.1 Receptor Windows.

Refer to 9.8.1

11.6.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

11.6.2.3 Detailed VSC Analysis.

The results of analysis are that 28 nr windows would retain VSC levels equivalent to or greater than target values derived from a mirror development study, 18 nr windows would experience no change and further 65 nr would experience reductions in VSC values which fell within the BRE criteria.

The remaining 10 nr windows would experience reductions on VSC values which exceeded the BRE criteria.

11.6.2.4 Daylight Distribution Analysis [ No sky contours ]

Analysis identifies that 15 nr out of the 24 nr rooms served by the relevant window openings would retain levels of daylight distribution in excess of the BRE threshold level and that a further 7 nr rooms would either be subject to no change or subject to reductions which fell within the BRE criteria.

Of the 24 nr rooms identified above therefore 2 nr warrant more detailed ADF analysis.

11.6.2.5 Detailed ADF analysis.

The results identify that with the exception of 2 nr rooms ADF values would satisfy BRE Guidelines.

11.6.2.6 Interpretation of Results

Slight adverse impacts.

11.7 **Orleans House**

11.7.1 Impacts of the implementation of the Phase 1 development in isolation

11.7.1.1 Receptor Windows

The site of 30-36, Pall Mall would be obscured from view from window openings in Orleans House in the pre- and post development scenario save for window openings in the upper storeys of Orleans House which had an outlook east over the roofline of the X Building, 30-36, Bixteth Street. The interest in respect of cumulative impacts is accordingly in relation to window openings in the upper floors of Orleans House which are served by windows which enjoy an outlook to the north east.

11.7.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

11.7.1.3 Detailed VSC Analysis

It can be seen that the results of detailed VSC analysis are near identical for the lower floors of Orleans House for the 'without' and the 'with' other committed



development scenario, and differences [ albeit very small ] are only identified once Fifth Floor level is reached.

11.7.1.4 Daylight Distribution Analysis [ no sky contours ]

As for VSC, the results for all floors show no material difference for the 'without' and 'with' 30-36, Pall Mall scenarios.

11.7.1.5 Detailed ADF Analysis

The results show that ADF within certain rooms at Fourth and Fifth Floor levels would arithmetically be slightly lower in the 'with' 30-36, Pall Mall scenario compared to the 'without' 30-36, Pall Mall scenario, but the scale of such differences is such that they would be imperceptible to the occupants.

11.7.1.6 Interpretation of Results

Slight adverse impacts

11.7.2 Impacts of the implementation of the Phase 1 development + Outline

11.7.2.1 Receptor Windows

As 13.4.4.1 save that the outlook towards the site of 30-36, Pall Mall would be substantially obstructed by the build out of Building D [ outline element of the hybrid application ].

11.7.2.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

11.7.2.3 Detailed VSC Analysis

Again the results of detailed VSC analysis are near identical for the lower floors of Orleans House for the 'without' and the 'with' 30-36, Pall Mall scenario. Some differences [ albeit small ] are identified once the Fourth and Fifth Floors are reached.

11.7.2.4 Daylight Distribution Analysis [ No sky contours ]

The results for all floor levels show no material differences for the 'without' and the 'with' 30-36, Pall Mall scenario.

11.7.2.5 Detailed ADF Analysis

The results for all floor levels show no material differences in the 'without' and the 'with' 30-36, Pall Mall scenario.

11.7.2.6 Interpretation of Results

Negligible impacts.

**11.8 X Building, 30-36, Bixteth Street**

11.8.1 Impacts of the implementation of the Phase 1 development in isolation

11.8.1.1 Receptor Windows



Window openings serving apartments arranged along the north east elevation of the X Building have an outlook towards the site of 30-36, Pall Mall and would experience some changes in sky visibility pre-development were build out of the Proposed Development to be preceded by the build out of 30-36, Pall Mall.

#### 11.8.1.2 Vertical Sky Component [ VSC ] – Preliminary Checks

Refer to 9.1

#### 11.8.1.3 Detailed VSC Analysis

The full results of the VSC daylight analysis for X Building, 30-36 Bixtet Street are presented at Appendix 9 in tabular format for ease of reference.

Following implementation of the Phase 1 and Outline, 234 nr. out of the 319 nr. windows subject to analysis would experience either enhanced levels of daylight or no change in VSC levels relative to target levels derived from mirror development analysis. Of the remaining 85No. windows. 25nr. would experience shifts in VSC levels which satisfied the BRE Guidelines, 59nr. windows would experience shifts in VSC levels which fall outside the BRE guidelines and warrant more detailed analysis.

#### 11.8.1.4 Daylight Distribution Analysis [ No sky contours ]

The 59 nr. windows referred to above save a total of 24nr rooms and a number of those rooms also benefit from light received to other window openings.

Daylight distribution analysis identifies that 7nr. out of those 24nr. rooms would benefit from increased daylight distribution post development compared to target levels derived from minor development analysis and that 3nr of the remainder would retain levels of daylight distribution in excess of the 80% BRE threshold. Of the 24nr. rooms identified above therefore 14nr. warrant more detailed ADF analysis.

#### 11.8.1.5 Detailed ADF Analysis

ADF analysis identifies that ADF value post development would fall below the BRE threshold in respect of 6nr. out of the 14nr. rooms referred to above. There are numerous rooms where ADF values are identified as higher post development than target values derived from mirror development analysis, but these gains do not offset any losses.

#### 11.8.1.6 Interpretation of Results

Moderate adverse.

### 11.8.2 Impacts of the implementation of Phase 1 and Outline

#### 11.8.2.1 Receptor Windows

The proposed development is identified as potentially bringing about change in sky visibility from window openings serving apartments in the north west, north east and south east elevations of 30-36, Bixteth Street.

#### 11.8.2.2 Vertical sky component [use] – Preliminary checks

Refer to 9.1.

#### 11.8.2.3 Detailed VSC Analysis



151 nr out of the 319 nr windows subject to analysis would experience either enhanced levels of daylight or no change in VSC levels post development relative to target levels derived from mirror development analysis.

Of the remaining 168 nr windows, 56 nr would experience shifts in VSC which satisfied the BRE Guidelines, and 111 nr would experience shifts in VSC levels which exceeded the BRE Guidelines and warrant more detailed analysis.

#### Daylight Distribution Analysis [No sky contours]

The 111 nr windows identified for more detailed analysis as the basis of VSC screening serve a total of 56 nr rooms [ some rooms benefit from light received from more than one window opening ].

Daylight Distribution Analysis identifies that 8 nr rooms of those 56 nr rooms would benefit from increased daylight distribution post development compared to target values derived from mirror development analysis and that 5 nr of the remainder would retain levels of daylight distribution in excess of the 80° BRE threshold.

Of the 56 nr rooms referred to above therefore 43 nr warrant more detailed ADF analysis.

#### 11.8.2.4 Detailed ADF Analysis

It can be seen that ADF analysis identifies that levels post development would match or exceed the BRE threshold levels in respect of 12 nr of the 43 nr rooms identified above.

The balance of this section relates to the residue of rooms identified as not achieving this criteria.

The position is summarised below in tabular format for these exceptions.

Floor Level	Room Use	Room number	Range of ADF values
Second Floor	Bedrooms	1 nr	0.47%
Third Floor	Bedrooms	1 nr	0.54%
Fourth Floor	LKD Bedrooms	2 nr 2 nr	1.05% - 1.33% 0.63% - 0.73%
Fifth Floor	LKD Bedrooms	6 nr 8 nr	0.83% - 1.49% 0.61% - 0.84%
Sixth Floor	LKD Bedrooms	4 nr 8 nr	0.54% - 1.01% 0.50% - 0.96%

#### 11.8.2.4 Interpretation of results

Moderate - substantial adverse impacts

## 12.0 **POST DEVELOPMENT ASSESSMENT – SUNLIGHT** **[ WITH OTHER COMMITTED DEVELOPMENT ]**

- 12.1 The results of surveyor analysis based on development of 30-36 Pall Mall having preceded the build out of the Proposed Development are presented in Appendix 9 in tabular format for ease of reference.



The reader is referred to paragraph 10.1 of this report concerning windows included within the scope of the analysis and to Appendix 6 which identifies [through the use of orange text] the windows in question. In the interests of brevity observations made at paragraph 10 of this report concerning receptor windows are not repeated at paragraph 11.

Ditto observations relating to the adoption of target levels for sunlight derived from mirror massing studies.

## 12.2 Preliminary Screening

The following properties are not included within the scope of the 'with other Committed Development' studies on the grounds that the positioning of the development proposed at 30-36 Pall Mall relative to the orientation of relevant window openings in the buildings in question would not bring about a material change to the results of analysis for the 'without committee development' scenario.

The buildings are:

- 40-44 Pall Mall
- Lyndon House, 22 Pall Mall
- Silkhouse Court, Tithebarn Street
- Berey's Building
- Lombard Chambers

On the basis of the foregoing the surrounding buildings or parts of buildings in residential use which have not been eliminated on the basis of this initial screening are:-

- 51-55 Highfield Street
- 47-64 Princes Gardens
- 30-36 Pall Mall
- Hamilton House, 24-28 Pall Mall
- Orleans House, Edmund Street
- X Building, 30-36 Bixteth Street

Each is considered below in turn. The commentary is in two parts:

- Impacts of the implementation of Phase 1 development in isolation.
- Impacts of the implementation of Phase 1 and Outline

## 12.3 51-55 Highfield Street

### 12.3.1 Impacts of the implementation of the Phase 1 development in isolation.

#### 12.3.1.1 Sunlight analysis

The results of analysis are that sunlight amenity levels to living accommodation in 51-55 Highfield Street would be unchanged by the implementation of the Phase 1 development in isolation.

#### 12.3.1.2 Interpretation of results

No effect.

### 12.3.2 Impacts of the implementation of Phase 1 development and Outline

#### 12.3.2.1 Sunlight analysis

The results of analysis are that sunlight amenity levels to living accommodation in 51-55 Highfield Street would be unchanged by the implementation of the Phase 1 development and Outline with 30-36 Pall Mall already built out.

#### 12.3.2.2 Interpretation of results



- No effect.
- 12.4** 47-64 Princes Gardens
- 12.4.1 Impacts of the implementation of the Phase 1 development in isolation.
- 12.4.1.1 Sunlight analysis
- The results of analysis are that sunlight amenity levels arising from the implementation of the Phase 1 development in isolation would be **unchanged**.
- 12.4.1.2 Interpretation of results
- No effect.
- 12.4.2 Impacts of the implementation of the Phase 1 development and Outline
- 12.4.2.1 Sunlight analysis
- The results of analysis are that implementation of the Phase 1 and Outline scheme would result in a reduction in total probable sunlight hours to a number of windows but that residual levels for all windows would remain above the BRE thresholds.
- With reference to winter sunlight total probable hours of winter sun would remain the same or, if subject to reduction, above the BRE threshold levels for 39 nr out of the 48 nr windows subject to analysis. The remaining 9 nr windows would be subject to reductions in winter sun which took residual levels below the BRE threshold.
- 12.4.2.2 Interpretation of results
- 12.5** Moderate adverse impacts.
- Hamilton House, 24-28 Pall Mall
- 12.5.1 Impacts of the implementation of the Phase 1 development in isolation.
- 12.5.1.1 Sunlight analysis
- The results of analysis are that sunlight amenity levels arising from the implementation of this Phase 1 development in isolation would exceed levels associated with the implementation of a mirror development on the south west side of Pall Mall.
- 12.5.1.2 Interpretation of results
- Minor beneficial.
- 12.5.2 Impacts of the implementation of the Phase 1 development and Outline
- 12.5.2.1 Sunlight analysis
- The results of analysis are that sunlight amenity levels arising from the implementation of Phase 1 and Outline would in general be lower than target levels derived from a mirror development but save to the exceptions noted below total probable annual sunlight hours and winter sunlight would remain above the BRE threshold levels. The exceptions in respect of total probable annual sunlight [where change in consequence of the proposed development is identified] are a column of windows positioned on the Pall Mall frontage at the corner with Cockspur Street West. The position in respect of these windows at First-Fifth floors inclusive is that the criteria for winter sunlight continue to be met but total probable sunlight hours across the year would fall below the BRE threshold. The position is the same in respect of 1 nr further window serving L/K/D space at sixth floor level.
- 12.5.2.2 Interpretation of results



- 12.6 Moderate adverse impacts.  
Orleans House, Edmund Street  
 12.6.1 Impacts of the implementation of the Phase 1 development in isolation.  
 12.6.1.1 Sunlight analysis

With the exception of 1nr window out of the 12 nr windows identified as serving the principal habitable spaces within apartments and being orientated with 90° of due south, all would be subject to reduction in the total probable annual sunlight hours compared to target levels derived from a minor development but would retain levels which have in excess of the BRE threshold. The exception is one nr opening at Third Floor level identified as already below the BRE threshold level in the pre-development scenario, which would be subject to a further 1% reduction in annual probable sunlight hours.

With reference to winter sunlight, all windows analysed either experience no change in winter sun or maintain residual levels which are in excess of the BRE threshold.

- 12.6.1.2 Interpretation of results

Slight adverse impacts.

- 12.6.2 Impacts of the implementation of the Phase 1 development + outline.  
 12.6.2.1 Sunlight analysis.

The results of analysis are that sunlight amenity levels to living accommodation in Orleans House would not be subject to material change in consequence of the implementation of Phase 1 + outline whether or not build out of 30-36, Pall Mall preceded the build out of the Proposed Development

- 12.6.2.2 Interpretation of results  
 Slight adverse impacts.

- 12.7 X Building, 30-36 Bixteth Street  
 12.7.1 Impacts of the implementation of the Phase 1 development in isolation.  
 12.7.1.1 Sunlight analysis

Focussing initially on total annual probable sunlight hours, the results of analysis are:

- 7 nr window openings would experience a greater number of probable sunlight hours than target levels derived from a mirror development.
- 2 nr window openings would experience no change.
- 16 nr window openings would receive fewer total annual probable sunlight hours than the target levels derived from a mirror development but would still retain levels of sunlight which satisfied the BRE criteria.
- 9 nr window openings would receive fewer annual probable sunlight hours than the target levels derived from a mirror development and residual levels would then be below the BRE threshold levels. [ The opening position in respect of 2 nr of these window openings falls below the BRE threshold levels and the windows in question are therefore sensitive to reductions ].

The 9 nr windows subject to reductions which would reduce annual probable sunlight hours below the BRE threshold levels serve a total of 8 nr rooms of which 3 nr rooms benefit from good levels of sunlight owing to other window openings serving the same spaces.

Distilling this, in the terms of total annual probable sunlight hours, implementation of the Phase 1 development in isolation would result in 6 nr out of 17 nr rooms receiving lower levels of annual probable sunlight hours than the target levels



derived from mirror development and in respect of which these totals fell below the BRE threshold.

Turning to winter sunlight, the results of analysis are:

- 13 nr window openings would experience a greater number of winter sunlight hours than target levels derived from a mirror development.
- 5 nr window openings would experience no change.
- 14 nr window openings would receive fewer winter sunlight hours than the target levels derived from a mirror development but would still retain levels of winter sunlight hours which satisfied the BRE criteria.
- 2 nr window openings would receive fewer winter sunlight hours than the target levels derived from a mirror development where residual levels would then be below the BRE threshold levels.

The 2 nr windows subject to reductions which would take residual levels below the BRE threshold levels serve 2 nr rooms. Both these rooms benefit from sunlight received via other window openings which do satisfy the BRE criteria. The aggregate impact has not been assessed but it may be that the rooms in question would fall marginally above or below the relevant BRE threshold.

#### 12.7.1.2 Interpretation of results

Moderate – substantial adverse impacts.

#### 12.7.2 Impacts of the implementation of Phase 1 and Outline

##### 12.7.2.1 Sunlight analysis

The results of analysis based on the implementation of Phase 1 and Outline on the assumption that 30-36 Pall Mall has been built out in advance are identical to the results for analysis in respect of the 'without' 30-36 Pall Mall scenario for all floor levels up to the fifth floor. With reference to the sixth floor, total predicted probable annual sunlight hours are fractionally lower whilst total winter sunlight is identified as the same for both scenarios.

##### 12.7.2.2 Interpretation of results

Substantial adverse impacts.

### 13.0 **POST DEVELOPMENT SHADOW ASSESSMENTS**

The results of transient shadow studies are included at Appendices 11 and 12.

#### 13.1 Impacts of the implementation of the Phase 1 development in isolation

##### 13.1.1 X Building, 30-36, Bixteth Street

##### 13.1.1.1 Relevant areas

Assessment has been undertaken of the potential overshadowing aspects of the implementation of Phase 1 in isolation on external balconies to the X Building.

External balconies occur in the following locations:

##### North east elevation

First Floor level – open areas

Sixth Floor level – open areas

##### South east elevation



Sixth Floor level – open areas

13.1.1.2 Shadow analysis

In the existing [ pre-development ] scenario, the external balcony areas referred to above partly overlook cleared land and thereby enjoy high levels of exposure to the sunpath at the Spring equinox.

Post development levels are shown on a series of sunpath diagrams for 21<sup>st</sup> March at Appendix 11.

The analysis identifies that for the development of Phase 1 in isolation, sunlight amenity to external balconies arranged along the north east elevation of the X Building would fall below the BRE threshold for approx. 50% of the balcony areas at First Floor level and approx. 30% of the balcony areas at Sixth Floor level. For balcony areas located at Sixth Floor level along the Edmund Street elevation, sunlight amenity would be retained above the BRE threshold level.

13.1.1.3 Interpretation of Results

Moderate adverse.

13.2 Impacts of the development of Phase 1 + Outline

13.2.1 X Building, 30-36, Bixteth Street

13.2.1.1 Relevant areas

As 13.1.1.1

13.2.1.2 Shadow analysis

Post development shadow analyses are shown on a series of sunpath diagrams for 21<sup>st</sup> March at Appendix 12.

The analysis identifies that for the development of Phase 1 + Outline, sunlight amenity to external balconies along the north east elevation of the X Building would fall below the BRE threshold. For balcony areas located at Sixth Floor level along the Edmund Street elevation, sunlight amenity would be retained above the BRE threshold level.

13.2.1.3 Interpretation of Results

Substantial adverse.

13.2.2 Hamilton House, 24-28, Pall Mall

13.2.2.1 Relevant areas

Assessment has been undertaken of the potential overshadowing impacts of the implementation of Phase 1 + Outline on external balconies to Hamilton House. The scenario subject to modelling is that involving the cumulative impacts of development on the site of 30-36, Pall Mall, though this is of limited significance to the outcomes for morning sunlight in that the north west elevation of Hamilton House [ which faces 30-36, Pall Mall ] is orientated in a manner which would not involve its receiving direct morning sunlight on 21<sup>st</sup> March.

External balconies occur in the following locations:



- at each upper floor level along the Cockspur Street [ north west ] elevation.

#### 13.2.2.2 Shadow analysis

In the existing [ pre-development ] scenario, the external balcony areas referred to above partly overlook cleared land and thereby enjoy exposure to the sunpath mid afternoon onwards at the Spring equinox.

Post development levels are shown on a series of sunpath diagrams for 21<sup>st</sup> March at Appendix 12.

The analysis identifies that in the 'with committed development' scenario, the pre-development condition is one whereby half of the balconies on the Cockspur Street elevation would retain levels of sunlight amenity which satisfied the BRE criteria and half would not.

Analysis identifies that with the build out of Phase 1 + Outline, the remaining half of the balconies to the Cockspur Street elevation which would have enjoyed levels of sunlight amenity in excess of the BRE threshold would no longer receive direct sunlight.

#### 13.2.2.3 Interpretation of Results

Substantial adverse.

#### 13.2.3 40-44, Pall Mall

##### 13.2.3.1 Relevant areas

Assessment has been undertaken of the potential overshadowing impacts of the implementation of Phase 1 + Outline on external balconies to 40-44, Pall Mall.

External balconies occur in the following locations:

##### Pall Mall [ south east ] elevation

First Floor levels – across the width of the elevation excluding 40, Pall Mall.

Fifth + Sixth Floor levels – across the full width of the elevation.

##### 13.2.3.2 Shadow analysis

In the existing [ pre-development ] scenario, the external balconies referred to above partly overlook cleared land and thereby enjoy high levels of exposure to the sunpath from late morning onwards at the Spring equinox.

Post development, the analysis identifies that the development of Phase 1 + Outline would retain levels of exposure to direct sunlight from 14.00 hrs onwards, which would comfortably satisfy the BRE Guidelines.

##### 13.2.3.3 Interpretation of Results

Negligible.

## 14.0 TRANSIENT IMPACTS DURING DEVELOPMENT WORKS

During the build out of the Proposed Development, effects in relation to daylight, sunlight and overshadowing will vary according to the phase of construction. These effects perceptible during construction would be transient and not materially more adverse than those of the Proposed Development once completed.



## 15.0 **RESIDUAL EFFECTS**

### 15.1 **Post development [ without another Committed Development ]**

Impacts of the implementation of Phase 1 in isolation.

<b>Amenity</b>	<b>Receptors</b>	<b>Commentary</b>	<b>Residual Effect</b>
Daylight amenity	1. 40-44 Pall Mall		Minor beneficial impacts
	2. 51-55 Highfield Street		Negligible impacts
	3. 47-64 Princes Gardens		Negligible impacts
	4. Hamilton House, 24-28 Pall Mall		Minor beneficial impacts
	5. Lynden House, 22 Pall Mall		Negligible impacts
	6. Silkhouse Court, Tithebarn Street		Negligible – slight adverse impacts
	7. Berey's Buildings		Slight adverse impacts
	8. Lombard Chambers		Slight – moderate impacts
	9. Orleans House, Edmund Street		Slight adverse impacts
	10. X Building, Bixteth Street		Moderate adverse impacts
Sunlight amenity	1. 40-44 Pall Mall		Minor beneficial impacts
	2. 51-55 Highfield Street		No effect
	3. 47-64 Princes Gardens		No effect
	4. Hamilton House, 24-28 Pall Mall		Minor beneficial impacts
	5. Lynden House, 22 Pall Mall		Negligible impacts
	6. Silkhouse Court, Tithebarn Street		Not applicable
	7. Berey's Buildings		Not applicable
	8. Lombard Chambers		Not applicable
	9. Orleans House, Edmund Street		Negligible impacts
	10. X Building, Bixteth Street		Moderate adverse impacts



Private balconies –  
sunlight amenity

1. X Building, 30-36  
Bixteth Street.

Moderate adverse  
impacts

## 15.2 Post development [ without other Committed Development ]

Impacts of the implementation of Phase 1 + Outline.

Amenity	Receptors	Commentary	Residual Effect
Daylight amenity	1. 40-44 Pall Mall		Negligible – slight adverse impacts
	2. 51-55 Highfield Street		Negligible – slight adverse impacts
	3. 47-64 Princes Gardens		Moderate adverse impacts
	4. Hamilton House, 24-28 Pall Mall		Moderate – substantial adverse impacts
	5. Lynden House, 22 Pall Mall		Negligible impacts
	6. Silkhouse Court, Tithebarn Street		Negligible – slight adverse impacts
	7. Berey's Buildings		Slight adverse impacts
	8. Lombard Chambers		Slight – moderate adverse impacts
	9. Orleans House, Edmund Street		Slight – moderate adverse impacts
	10. X Building, Bixteth Street		Moderate – substantial adverse impacts
Sunlight amenity	1. 40-44 Pall Mall		Slight adverse impacts
	2. 51-55 Highfield Street		Negligible impacts
	3. 47-64 Princes Gardens		Negligible impacts
	4. Hamilton House, 24-28 Pall Mall		Moderate adverse impacts
	5. Lynden House, 22 Pall Mall		Negligible impacts
	6. Silkhouse Court, Tithebarn Street		Not applicable
	7. Berey's Buildings		Not applicable
	8. Lombard Chambers		Not applicable
	9. Orleans House, Edmund Street		Slight adverse impacts





10. X Building, Bixteth Street

Substantial adverse impacts

### 15.3 Post development [ with other Committed Development ]

Impacts of the implementation of Phase 1 in isolation.

Amenity	Receptors	Commentary	Residual Effect
Daylight amenity	1. 51-55 Highfield Street		Negligible impacts
	2. 47-64 Princes Gardens		Negligible impacts
	3. 30-36 Pall Mall		Moderate adverse impacts
	4. Hamilton House, 24-28 Pall Mall		Negligible impacts
	5. Berey's Building		Slight adverse impacts
	6. Orleans House, Edmund Street		Slight adverse impacts
	7. X Building, Bixteth Street		Moderate adverse impacts
Sunlight amenity	1. 51-55 Highfield Street		No effect
	2. 47-64 Princes Gardens		No effect
	3. Hamilton House, 24-28 Pall Mall		Minor beneficial impacts
	4. Orleans House		Slight adverse impacts
	5. X Building, Bixteth Street		Moderate – substantial adverse impacts
Private balconies – sunlight amenity	1. 40-44 Pall Mall		Negligible impacts
	2. X Building, 30-36 Bixteth Street.		Moderate adverse

### 15.4 Post development [ with other Committed Development ]

Impacts of the implementation of Phase 1 + Outline.

Amenity	Receptors	Commentary	Residual Effect
Daylight amenity	1. 51-55 Highfield Street		Negligible impacts
	2. 47-64 Princes Gardens		Moderate adverse impacts
	3. 30-36, Pall Mall		Moderate adverse impacts
	4. Hamilton House, 24-28 Pall Mall		Substantial adverse impacts



	5. Berey's Buildings	Slight adverse impacts
	6. Orleans House, Edmund Street	Slight – moderate adverse impacts
	7. X Building, Bixteth Street	Moderate – substantial adverse impacts
Sunlight amenity	1. 51-55 Highfield Street	No effect
	2. 47-64 Princes Gardens	Moderate adverse impacts
	3. Hamilton House, 24-28 Pall Mall	Moderate adverse impacts
	4. Orleans House, Edmund Street	Slight adverse impacts
	5. X Building, Bixteth Street	Substantial adverse impacts
Private balconies – sunlight amenity	1. Hamilton House, 24-28 Pall Mall	Substantial adverse impacts
	2. X Building, 30-36 Bixteth Street	Substantial adverse impacts

