AA PROJECTS
DELIVERING EXCELLENCE WITH DREES & SOMMER

Glare Report

Great Northern Warehouse Developments Limited
November 2022

Leisurebox

Great Northern

Manchester

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Executive Summary

The brief for this commission is the preparation of a Glare Assessment to examine the impact of the proposed development on any solar glare that may be experienced by drivers of cars at road junctions / traffic lights and train drivers at train rail signals.

This report has been updated to take account of the revised development scheme as set out in the model listed below, received in October 2022:

CAD Model - 10422-SHP-4Z-A-G000-XX-003_Building

The glare review in this report has been based on the methodologies set out in the Building Research Establishment (BRE) report 'Site layout planning for daylight and sunlight - A guide to good practice 2022' by P. J. Littlefair and the BRE Information Paper IP 3/87, a methodology for the measurement of the occurrence and duration of Reflected Disability Glare, which might be caused by proposed buildings. The BRE guide states:

Glare or dazzle can occur when sunlight is reflected from a glazed façade or area of metal cladding. There are two types of reflected glare problem that can occur. Discomfort glare causes visual discomfort without necessarily affecting the ability to see. Disability glare happens when a bright source of light (such as the reflected sun) impairs the vision of other objects. The bright light is scattered in the eye, making it harder to see everything else. Outdoors, disability glare is easily the more serious problem, as it can affect motorists' and train drivers' ability to drive safely.

It is likely that a building may cause solar dazzle the exact scale of the problem should be evaluated. This is done by identifying key locations such as road junctions and windows of nearby buildings and working out the number of hours of the year that sunlight can be reflected to these points. BRE information Paper 3/87 gives details.

This report focuses on the nearest sensitive view point areas, which are road traffic / train line signals which drivers would need to see clearly whilst driving / operating the train. To assist, we have obtained from Metrolink a guide to the positions of all train line signals, which is attached at Appendix C.

The main viewpoint areas identified and assessed are therefore:

- C1 – Traffic lights, Liverpool Road, facing development
- C2 – T-Junction, Tonman St, facing development
- C3 – Round-about Junction, Watson St, facing development
- C4 - Eastbound track, approaching signal
- C5 - Eastbound track, approaching signal
- C6 - Traffic lights, Whitworth St, facing development
- C7 – T-Junction, Camp St, facing development
- C8 - Traffic lights, Junction of Deansgate and Quay St, facing development
- C9 - Traffic lights, Great Bridgewater St, facing development
- C10 - Traffic lights, Junction Deansgate and Whitworth St, facing development

A 3D computer model of the existing local area, roads, train track, train station and signals has been created and then run through proprietary software to calculate the proposed glare levels at each sensitive view point area. Two images are produced for each selected view point, one showing a 90 degree field of view which provides contextual information and the other showing a 30 degree field of view to identify any significant areas of glare. Both images show the area that sees the reflection of the sun path at any point during a year.

Whilst we have provided general guidance on the location and duration of glare that will be experienced at each view point in this report, it does not provide detailed advice on how to determine the severity of a potential instance of glare based on its duration. It will be the Planning Authorities responsibility to deduce the level of risk related to the particular instance assessed.

The analysis and results show an instance of potential solar glare associated with the proposed development at viewpoint C9 and minor instances at viewpoints C5 & C2.

The points of interest (signals etc) associated with viewpoint C9 has been investigated in detail and the main conclusions were:

- The Manchester Central (previously known as GMEX) building blocks a substantial amount of potential glare at road / street level
- The sun visor of a car would shield any high level glare above the Manchester Central building
- The traffic light across the junction is generally outside of the field of glare and any high-level glare at the top of the field of vision is easily shielded by a sun visor for users of both
- In addition, road users in the left-hand lane can see the left hand set of lights at 23m, 10m and 5m without any significant glare in the 30 degree field of view. The right-hand side lights are also visible with minimal glare impact at all distances and any high-level glare (over the top of Manchester Central) can be shieled by a sun visor
- Road users in the right-hand lane can see the left hand set of lights at 23m, 10m and 5m without any significant glare in the 30 degree field of view. The right-hand side lights also visible with minimal glare impact at 23m and 10m and any high level glare (over the top of Manchester Central) can be shieled by a sun visor

In summary, there are no significant glare issues at viewpoint C9 due to the number of traffic lights available without any significant glare impact and where there is minor glare, it is to the top of the field of vision and can be shielded by a sun visor.

1.0 Introduction & Methodology

1.1 Instructions

The brief for this commission is the preparation of a Glare Assessment to examine the impact of the proposed development on any solar glare that may be experienced by drivers of cars or trains adjacent to the proposed development site.

For the purposes of this assessment, the glazed facade of the proposed development is assumed to have the same properties of a mirror i.e. it is fully reflective and all of its reflected component is specular. However, in reality the glazing chosen may be clear, absorbing textured or diffusing glass (to be confirmed) and the glare results would be less noticeable that reported below (although sometimes even clear glass may cause reflected glare if, e.g., a motorist has the reflected sun close to the centre of their line of sight).

1.2 Guidelines

The glare review in this report has been based on the methodologies set out in the Building Research Establishment (BRE) report 'Site layout planning for daylight and sunlight - A guide to good practice 2022' by P. J. Littlefair and the BRE Information Paper IP 3/87, a methodology for the measurement of the occurrence and duration of Reflected Disability Glare, which might be caused by proposed buildings.

The BRE guide states:
Glare or dazzle can occur when sunlight is reflected from a glazed façade or area of metal cladding. There are two types of reflected glare problem that can occur. Discomfort glare causes visual discomfort without necessarily affecting the ability to see. Disability glare happens when a bright source of light (such as the reflected sun) impairs the vision of other objects. The bright light is scattered in the eye, making it harder to see everything else. Outdoors, disability glare is easily the more serious problem, as it can affect motorists' and train drivers' ability to drive safely.

If it is likely that a building may cause solar dazzle the exact scale of the problem should be evaluated. This is done by identifying key locations such as road junctions and windows of nearby buildings and working out the number of hours of the year that sunlight can be reflected to these points. BRE information Paper 3/87 gives details.

Where solar reflection can happen, the next step is to calculate the angle between the driver's line of view and the reflected sun. For vertically mounted clear double glazing facing a driver on a level road, solar dazzle could be a significant issue if this angle is less than 10°.

IP 3/87 states:
"Glare or dazzle can occur when sunlight is reflected from a glazed facade. For vertical facades this problem usually occurs only when the sun is low in the sky; but some types of modern design incorporate sloping glazed facades which can, under certain circumstances, reflect unwanted high altitude sunlight into the eyes of motorists, pedestrians and people in nearby buildings."

Guidance on how to assess glare is also set out in the CIE 146:2002 Collection, which states:

"Disability glare is glare that impairs vision (CIE, 1987). It is caused by scattering of light inside the eye [...]. The veiling luminance of scattered light will have a significant effect on visibility when intense light sources are present in the peripheral visual field and the contrast of objects to be seen is low."

"Disability glare is most often of importance at night when contrast sensitivity is low and there may well be one or more bright light sources near to the line of sight, such as car headlights, streetlights or floodlights. But even in daylight conditions disability glare may be of practical significance: think of traffic lights when the sun is close to them, or the difficulty viewing paintings hanging next to windows."

"The magnitude of the veiling luminance depends on the intensity and distance of the glare source which together determine the relevant parameter Eglare, the illuminance at the eye caused by the glare source, and the angle between the glare source and the line of sight Q."

"Many investigators (see Vos, 1984) have determined Lveil/Eglare as a function of Q in various parts of the angular domain, using photometric techniques."

Q in the above CIE description is the angle of view point and is split into three categories:

- Q3 for angles between 0.1 and 1.0 degrees
- Q2 for angles between 1 and 30 degrees

- Q for angles beyond 30 degrees

The CIE 146:2002 concludes from this that glare at angles beyond 30 degrees would not be significant, unless there were exceptional circumstances.

1.3 Methodology

To ensure absolute accuracy, a 3D laser scan was carried to form the basis of our 3D computer model, which includes the existing local area, roads, train track and signals. This was then run through proprietary software to calculate the proposed glare levels at each sensitive view point area chosen.

Two images are produced for each selected view point, one showing a 90 degree field of view which provides contextual information and the other showing a 30 degree field of view to identify any significant areas of glare. Both images show the area that sees the reflection of the sun path at any point during a year.

A diagram portraying a standardised extent of human vision is overlaid onto the image, which highlights the degrees of vision corresponding to the foveal view. A 3 degree of angle circle identifies the area most sensitive to reflected solar glare and a 30 degrees circle indicates our typical field of view (which is a secondary area of sensitivity to potential reflected glare).

As stated in the CIE 146:2002 occurrences at angles beyond 30 degrees would be of little significance in most situations because when seated in a driving seat of a typical car the limits of the windscreen would obstruct the driver's view at angles beyond 30 degrees from the line of sight.

2.0 Site and Surrounding Properties

The proposed development site is rectangular in plan and sits on the Eastern side of Deansgate within Manchester City centre. The site is bounded by Deansgate to the West, Watson Street to the East and Great Bridgewater Street to the South.

The site can be broadly divided into four components comprising:

- Great Northern Square – located to the north of the application boundary, the square is an area of public realm with a mix of soft and hard landscaping with an amphitheatre-style seating arrangement in its centre, which currently acts as barrier to movement across the space
- Great Northern Warehouse and the modern atrium – a Graded II* Listed former railway goods warehouse built between 1896 and 1899, which was refurbished in 1999 to provide retail, commercial and car parking spaces (519 spaces)
- Leisure Box – a modern addition to the Warehouse following the 1999 refurbishments. The Leisure Box contains an Odeon cinema, the Gym and car parking (721 spaces)
- Deansgate Terrace –covers the length of Deansgate from Peter Street to Great Bridgewater Street. The 3 to 4 storey length of terraces is Grade II Listed and currently comprises a mix of retail, food & drink and commercial

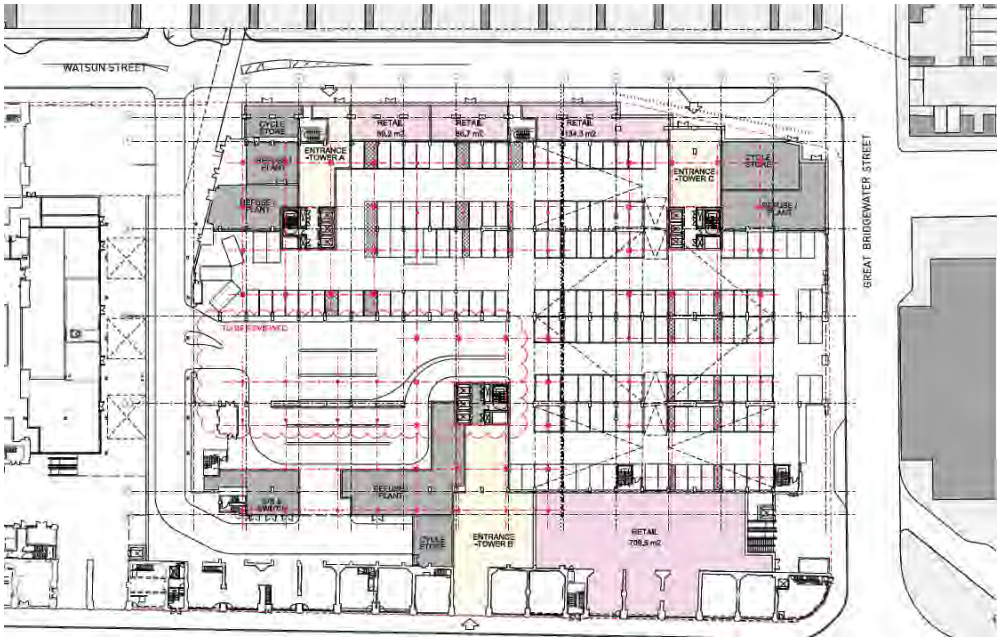
There is currently a six / seven storey commercial property on the site, which appears to utilise the full extents of the site.

An aerial photograph, site and building identification plan of the development site is included below for information.

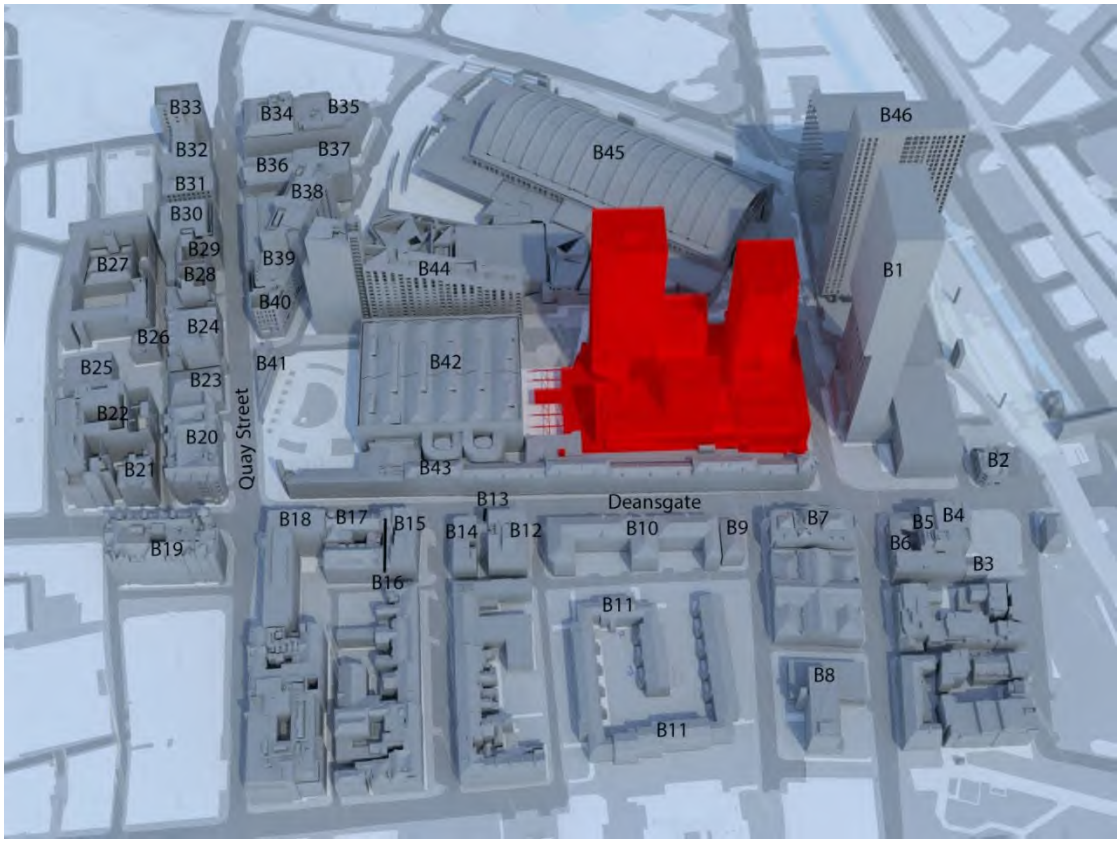
Aerial Photograph



Site Plan



Building Identification Plan



3.0 Proposed Scheme

Demolition of the existing cinema and surrounding elements and structures prior to conversion, reconfiguration and extension of existing car parking facility to provide 929 parking spaces, 753 cycle parking spaces and associated plant, followed by construction of three residential buildings to provide 746 no. apartments (Use Class C3) above the retained car park comprising 16, 27 and 34 storeys.

The proposed development has been built up using the Simpson Haugh drawings / 3D model released in October 2022. Extract drawings from the above are included in Appendix A.

4.0 View Point Locations / Heights

This report focuses on the nearest sensitive view point areas, which are road junctions / traffic lights and train signals which a train driver will need to see clearly whilst operating the train. To assist, we have obtained from Metrolink a guide to the positions of all train line signals, which is attached at Appendix C.

These viewpoints represent locations where reflected solar glare may cause adverse impacts to those travelling towards the development, such as road users or train drivers. The viewpoints on roads are generally located 23m back from signals (typical stopping distance of a car at 30mph).

It is considered that trains approaching the proposed development would be travelling at a range of speeds, trains stopping / leaving the nearby train station for example are likely to be traveling at a significantly lower speed than those that do not stop at the station. It is therefore not appropriate to provide view point locations based upon stopping distances.

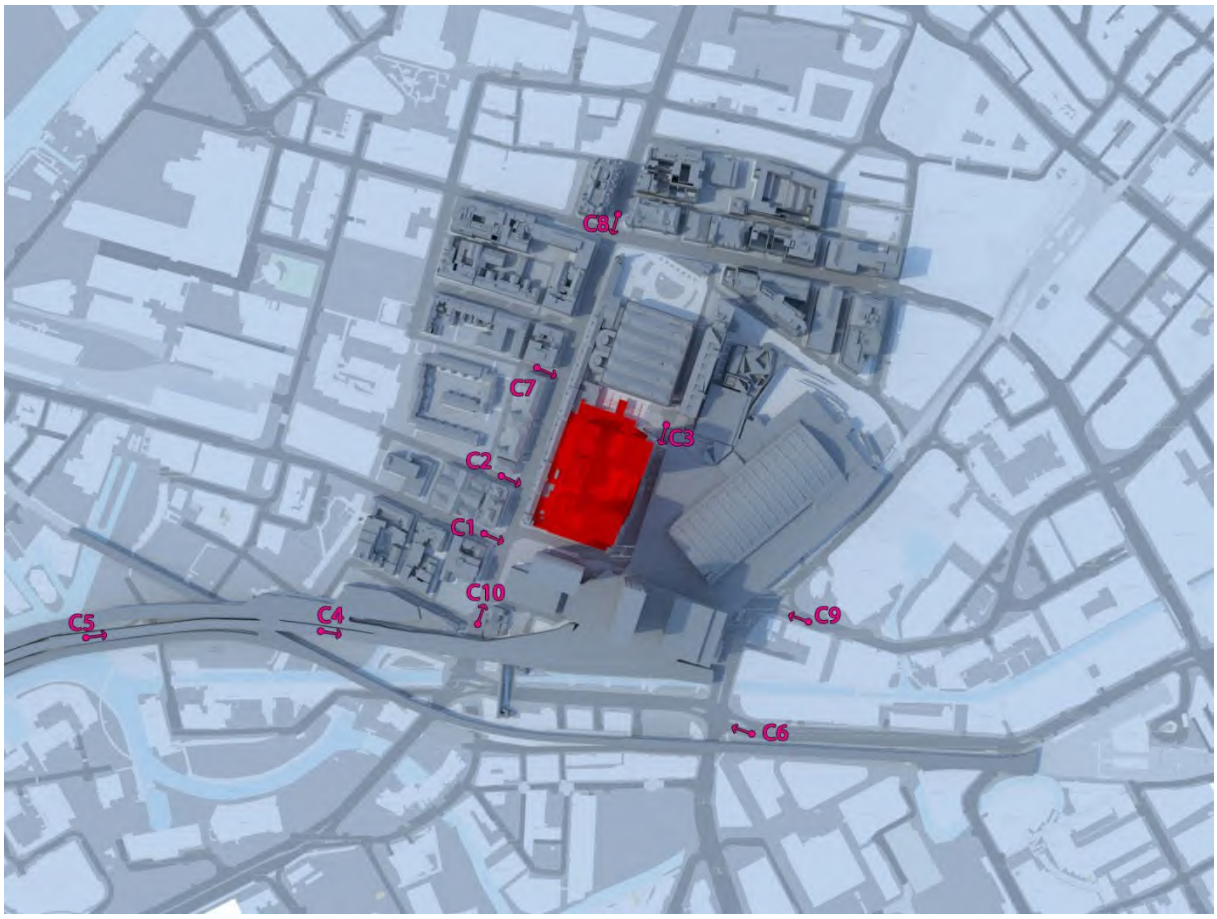
Viewpoints are located at 2.5m above the train rails and at 1.25m above road level for drivers at junctions or traffic lights.

The main view point areas identified and assessed are therefore:

- C1 – Traffic lights, Liverpool Road, facing development
- C2 – T-Junction, Tonman St, facing development
- C3 – Round-about Junction, Watson St, facing development
- C4 - Eastbound track, approaching signal
- C5 - Eastbound track, approaching signal
- C6 - Traffic lights, Whitworth St, facing development
- C7 – T-Junction, Camp St, facing development
- C8 - Traffic lights, Junction of Deansgate and Quay St, facing development
- C9 - Traffic lights, Great Bridgewater St, facing development
- C10 - Traffic lights, Junction Deansgate and Whitworth St, facing development

Alternative view point heights and distances can be selected and assessed should it be deemed necessary after consideration of the findings of this report.

A plan showing the site, surrounding area, train track, signals, road Junctions and selected viewpoints locations is included below.



5.0 Limitations

When undertaking the site survey to construct the 3D model, it is not always possible to access all areas to get a full understanding of all the potentially sensitive locations, particularly where railway lines are involved. During this assessment we were unable to fully access the railway tracks.

In this instance, we have viewed aerial images and photographs to check for sensitive viewpoint locations but these were not fully clear and we have had to make some approximations. It is therefore possible that not all sensitive positions have been included and the results should be treated as approximate until full access is available.

This assessment is limited to the adjacent road junctions and railway line. Other more distant areas and roads have not been included.

Whilst we have provided general guidance on the location and duration of glare that will be experienced at each view point in this report, it does not provide detailed advice on how to determine the severity of a potential instance of glare based on its duration. It will be the Planning Authority responsibility to consider the level of risk related to the particular instance assessed.

Normal direct sunlight and glare associated with other existing properties that would be experienced by the adjacent road and railway line users have been excluded from this assessment.

The methodology noted and used is not suitable to quantify the intensity of reflected solar glare. Wherever the potential for reflected solar glare is identified it should be assumed that its intensity is sufficient to cause nuisance and thus mitigating measures should be investigated.

Although care has been taken in identifying typical viewpoints, this does not guarantee that there are no further sensitive locations where reflected solar glare could present a particular risk.

This assessment is based on the assumption that in an urban environment moving traffic represents the biggest risk factor and so viewpoints and focus points are selected accordingly.

The area of the assessment is limited to the vicinity of a new development. Due to the size of the development, solar glare could potentially occur at greater distances from the development but these are excluded at present.

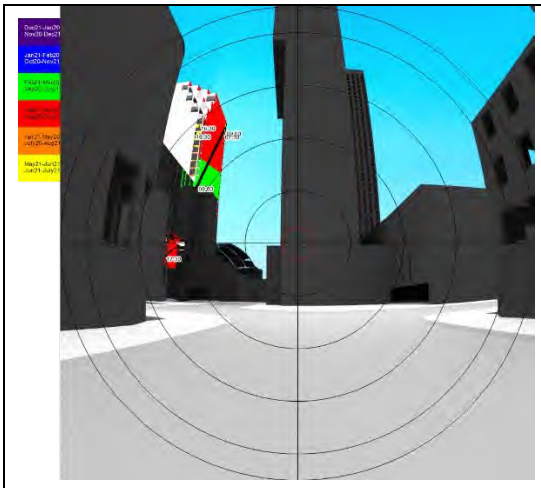
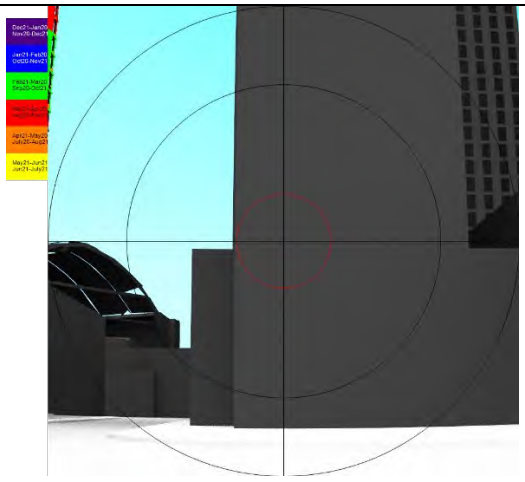
The hours shown in the diagrams and described below do not take Daylight Saving Hours into account.

6.0 Results and Discussion

The images below show the proposed development in magenta and areas of particular interest in yellow. The images are also provided at a larger size in Appendix B.

Only glazed areas of the proposed development have been assessed. It is noted that there are areas of cladding included on the elevations of the proposed development but it is understood that these will have a matt, largely non reflective finish.

6.1 View C1 - Traffic lights, Liverpool Road, facing development

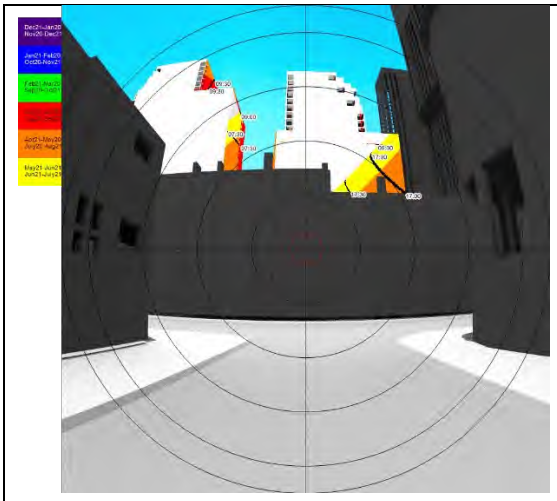
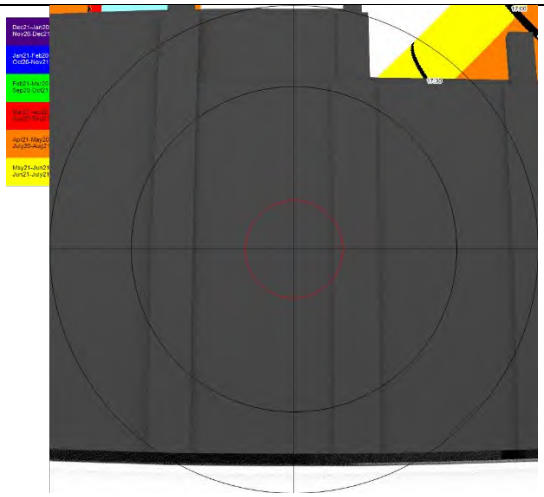
	
90° field of view from Viewpoint C1	30° field of view from Viewpoint C1

This viewpoint shows the traffic lights at the T-junction of Liverpool Road and Deansgate, the proposed development is in the left field of view.

Some large areas of glare are indicated by the 90 degree field of view image at this position from 6am to 9am between March to April and August to October and also between 5pm and 6pm in March and September. Importantly, no glare is indicated by the 30 degree field of view image.

As there is no glare in the 30 degree field of view, there are no significant areas of glare associated with the proposed development indicated at this position.

6.2 View C2 - T-Junction, Tonman St, facing development

	
90° field of view from Viewpoint C2	30° field of view from Viewpoint C2

This viewpoint shows perspective view at the T-junction of Tonman St and Deansgate. The proposed development is in the mid-field of view, see image below.

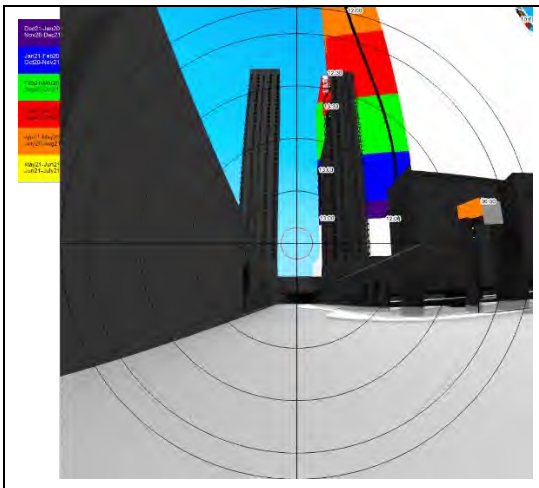
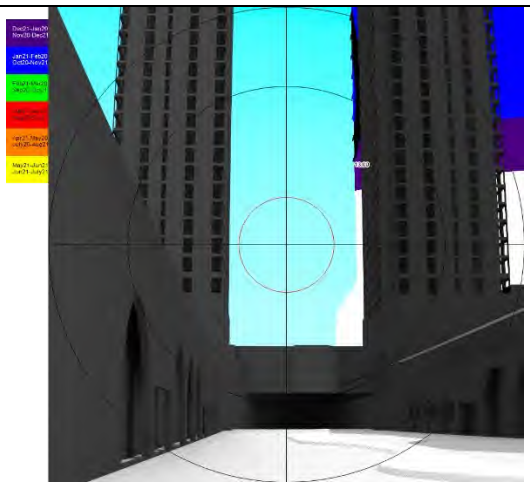


Some glare is indicated by the 90 degree field of view image at this position from 7am to 9am between April to September. Also, between 3pm to 5pm April to August.

Some small areas of glare are also indicated by the 30 degree field of view image from 7am to 9am March through to May, and August to September, also at 4pm to 5pm May through to August.

Overall, due to the position of the potential reflection (remote from the point of interest) and on the periphery of the 30 degree field of view the effect of solar glare at this position is not considered to be significant.

6.3 View C3 - Round-about Junction, Watson St, facing development

	
90° field of view from Viewpoint C3	30° field of view from Viewpoint C3

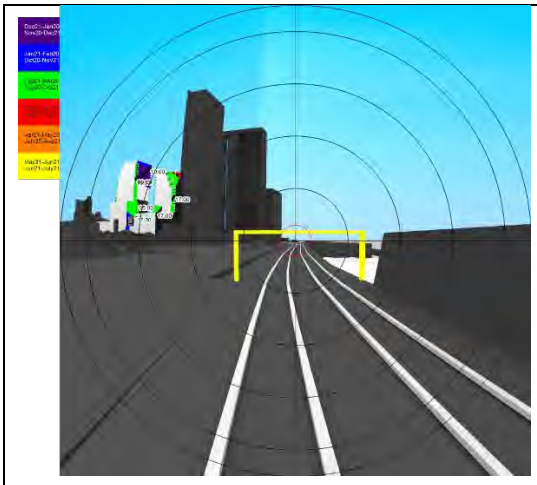
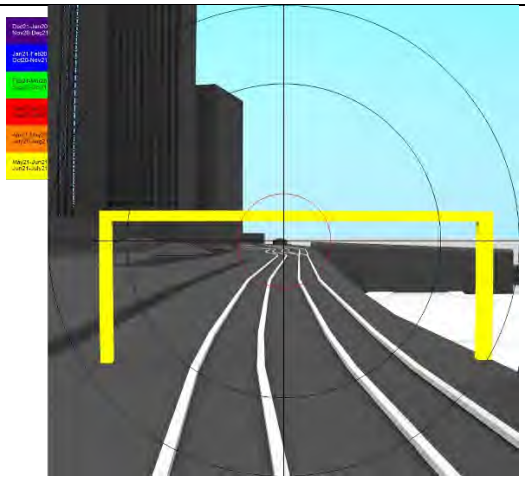
This viewpoint shows perspective view at the round-about junction of Watson St, the proposed development is in the right-field of view.

Some glare is indicated by the 90 degree field of view image at this position from 6am to 1pm throughout most of the year (except June).

Some small areas of glare are also indicated by the 30 degree field of view image at this position from 12noon to 2pm between January to February and October to December.

Overall, due to the position of the potential reflection (remote from the point of interest) and on the periphery of the 30 degree field of view the effect of solar glare at this position is not considered to be significant.

6.4 View C4 - Eastbound track, approaching signal, facing development

	
90° field of view from Viewpoint C4	30° field of view from Viewpoint C4

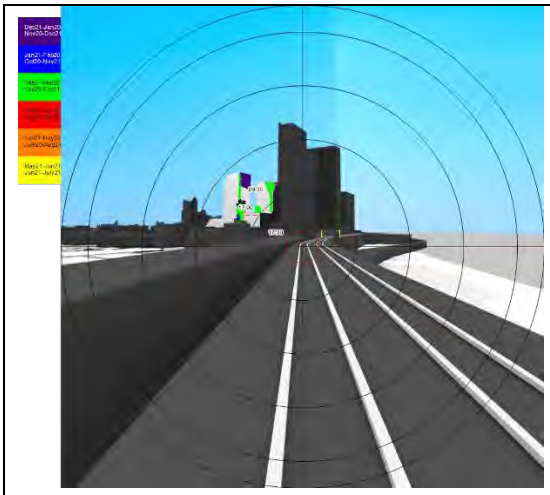
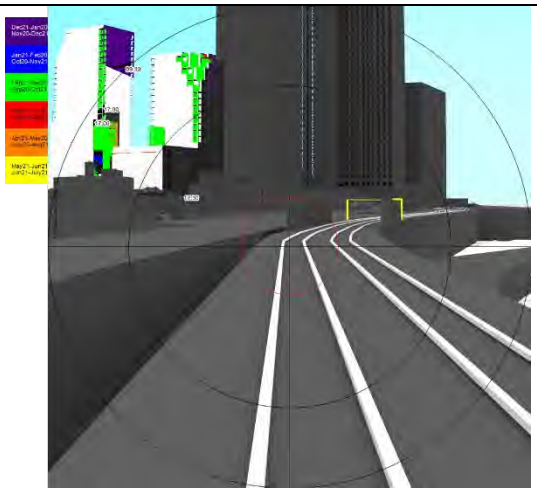
This position shows the view when passing the proposed development and approaching signal positions.

The proposed development is shown in the background to the left of the image and signal positions (yellow) are shown to the centre of the image.

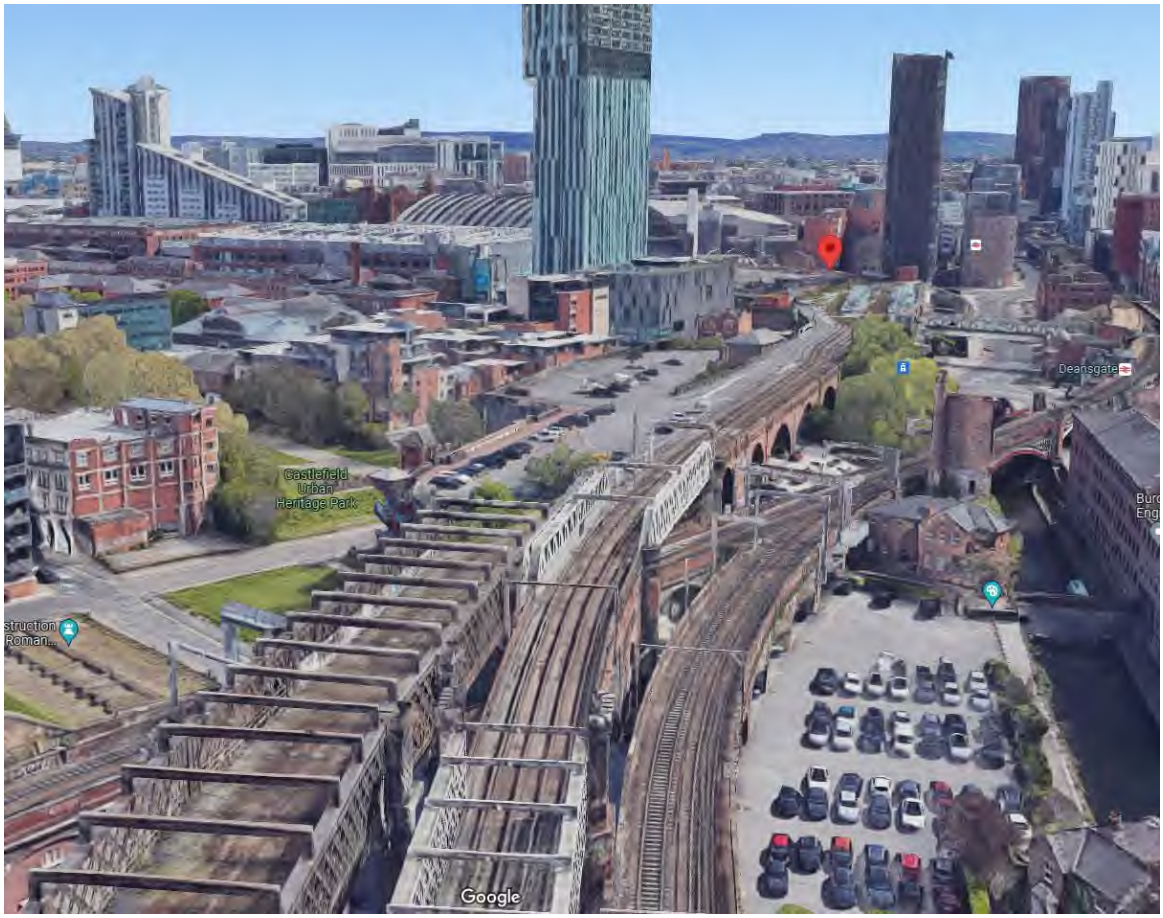
Some glare is indicated by the 90 degree field of view image at this position at 4am to 6am in May to August, then at 9am to 11am in January, November and December, and at 3pm to 6pm between January to March and September to November. No glare is indicated by the 30 degree field of view image.

There are therefore no significant areas of glare associated with the proposed development indicated at this position.

6.5 View C5 - Eastbound track, approaching signal, facing development

	
90° field of view from Viewpoint C5	30° field of view from Viewpoint C5

This position shows the view when passing the proposed development while approaching rail signal positions – see image below.



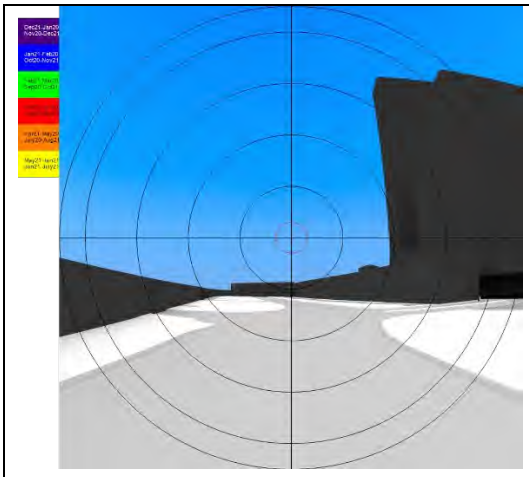
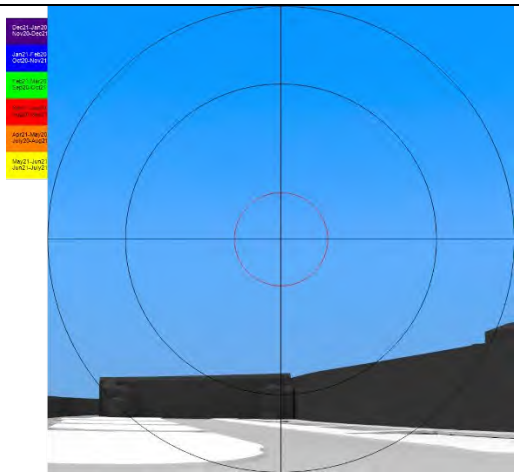
The proposed development is shown in the background to the left of centre in the image and signal positions (yellow) are shown to the centre of the image.

Some glare is indicated by the 90 degree field of view image at this position at 5am between April and September, 9am in January, November and December and at 4pm to 6pm between January to March and September to November.

Small areas of glare are indicated by the 30 degree field of view image at the same times and months.

Overall, due to the position of the potential reflection (remote from the point of interest) and on the periphery of the 30 degree field of view, the effect of solar glare at this position is not considered to be significant.

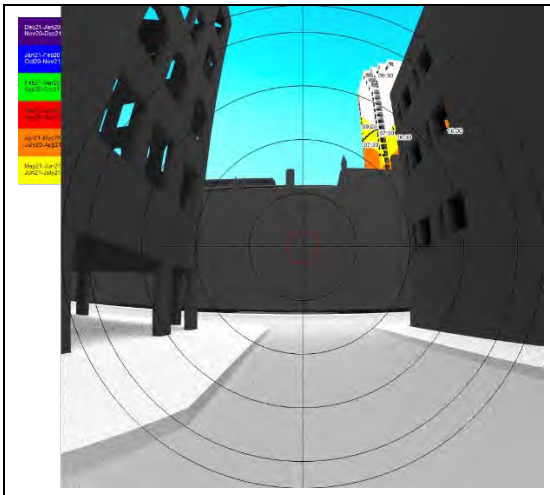
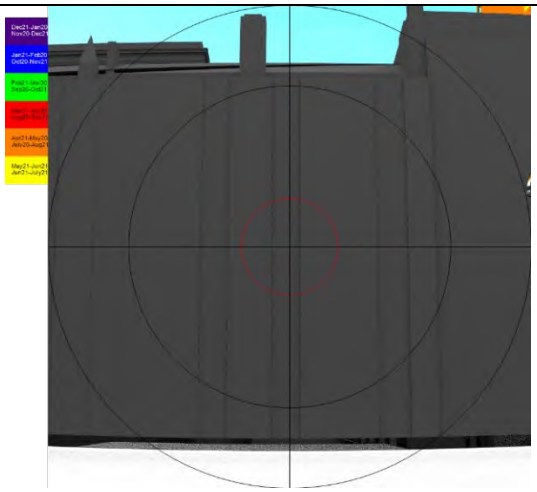
6.6 View C6 - Traffic lights, Whitworth St, facing development

	
90° field of view from Viewpoint C6	30° field of view from Viewpoint C6

This viewpoint shows the traffic lights at the junction of Whitworth, the proposed development is not in the field of view.

There are therefore no significant areas of glare associated with the proposed development indicated at this position.

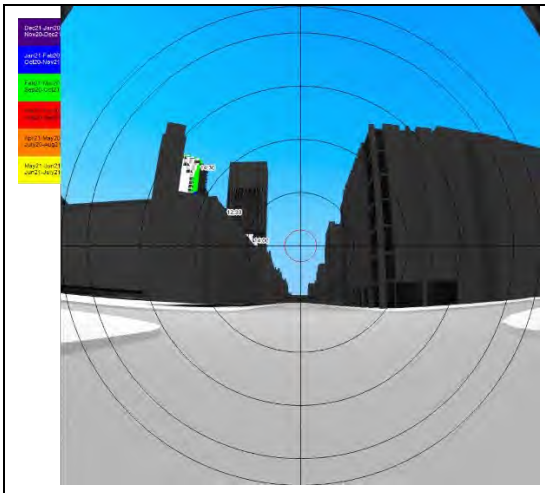
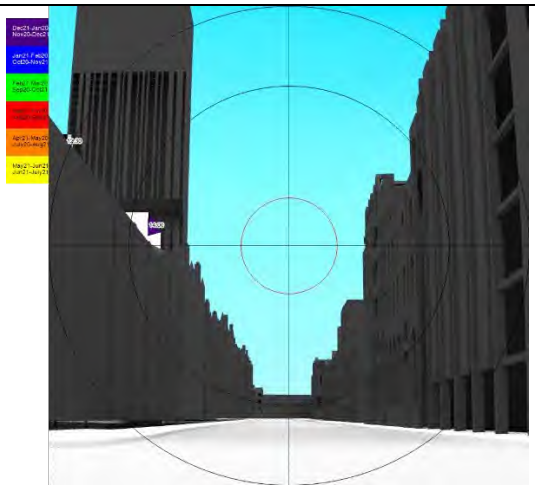
6.7 View C7 - T-Junction, Camp St, facing development

	
90° field of view from Viewpoint C7	30° field of view from Viewpoint C7

This viewpoint shows the traffic lights at the T-junction of Camp St and Deansgate, the proposed development is in the right field of view.

AS no glare is indicated by the 30 degree field of view image, there are no significant areas of glare associated with the proposed development indicated at this position.

6.8 View C8 - Traffic lights, Junction of Deansgate and Quay St, facing development

	
90° field of view from Viewpoint C8	30° field of view from Viewpoint C8

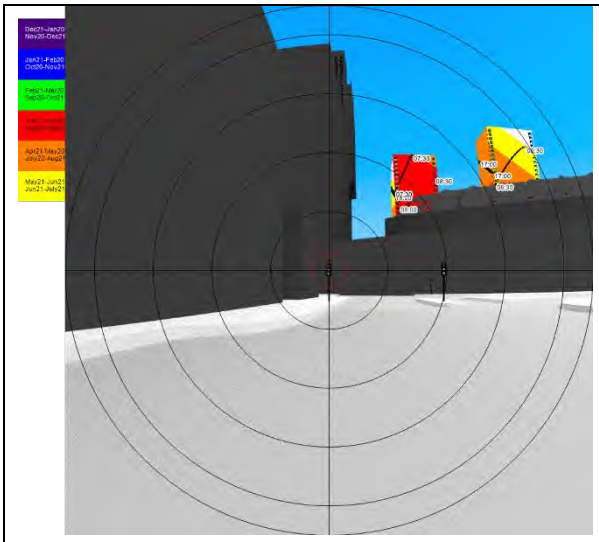
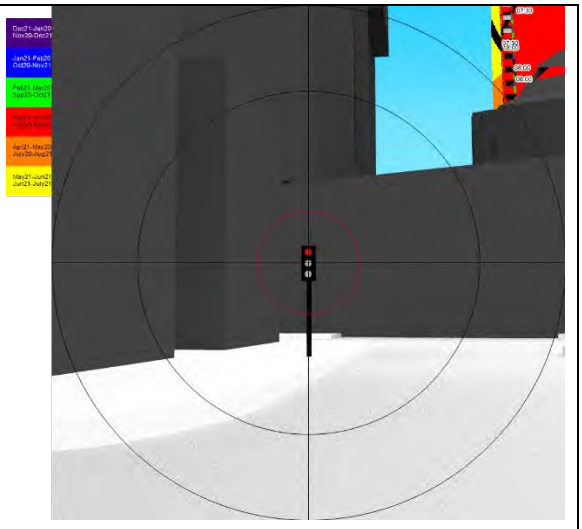
This viewpoint shows the traffic lights at the traffic light-junction of Quay St and Deansgate, the proposed development is in the left field of view.

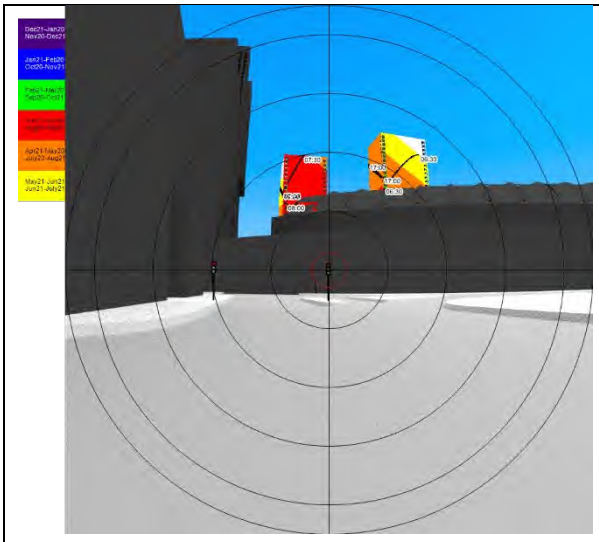
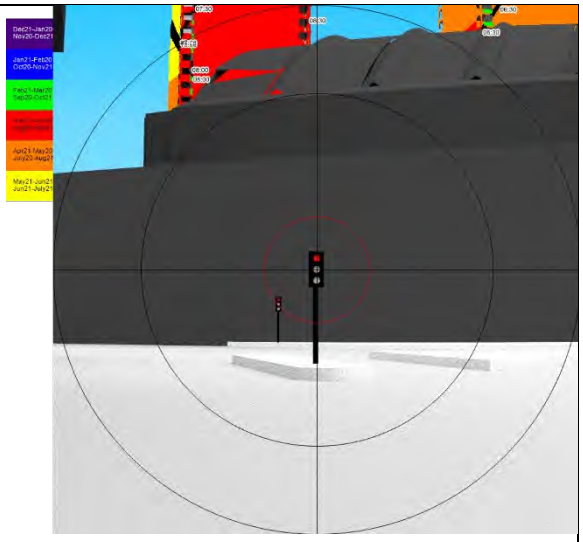
Some glare is indicated by the 90 degree field of view image at this position at 12pm to 3pm between January to March and October to December.

There is also a small area of glare indicated by the 30o field of view image between 12 noon and 3pm in November, December and January.

Overall, due to the position of the potential reflection (remote from the point of interest) and on the periphery of the 30 degree field of view, the effect of solar glare at this position is not considered to be significant.

6.9 View C9 - Traffic lights, Great Bridgewater St, facing development

	
90° field of view from Viewpoint C9 @ 23m left lane	30° field of view from Viewpoint C9 @ 23m left lane

	
90° field of view from Viewpoint C9 @ 23m right lane	30° field of view from Viewpoint C9 @ 23m right lane

This position shows traffic lights at the traffic light-junction of Great Bridgewater St and Lower Mosley Street just the before the bridge / arches. The proposed development is in the right hand side field of view. See image below.



Some glare is indicated by the 90 degree field of view image at this position from 6am to 10am between February and October and 4pm to 7pm between April through August. The 30 degree field of view does also indicate glare between 7am and 9am in March to April and August to October and at very small angular amount at 6pm May to July.

Due to the position of the potential reflection and its position in the 30 degree field of view behind one of the traffic lights, the solar glare at this position could be significant. However, there are alternative traffic lights to the left-hand side lane and across the junction outside of the main glare position.

We have therefore performed a glare check at 23m, 10m and 5m distances in both lanes as looking at all three sets of traffic lights to assess the overall glare position. The view points are noted in the diagram below:

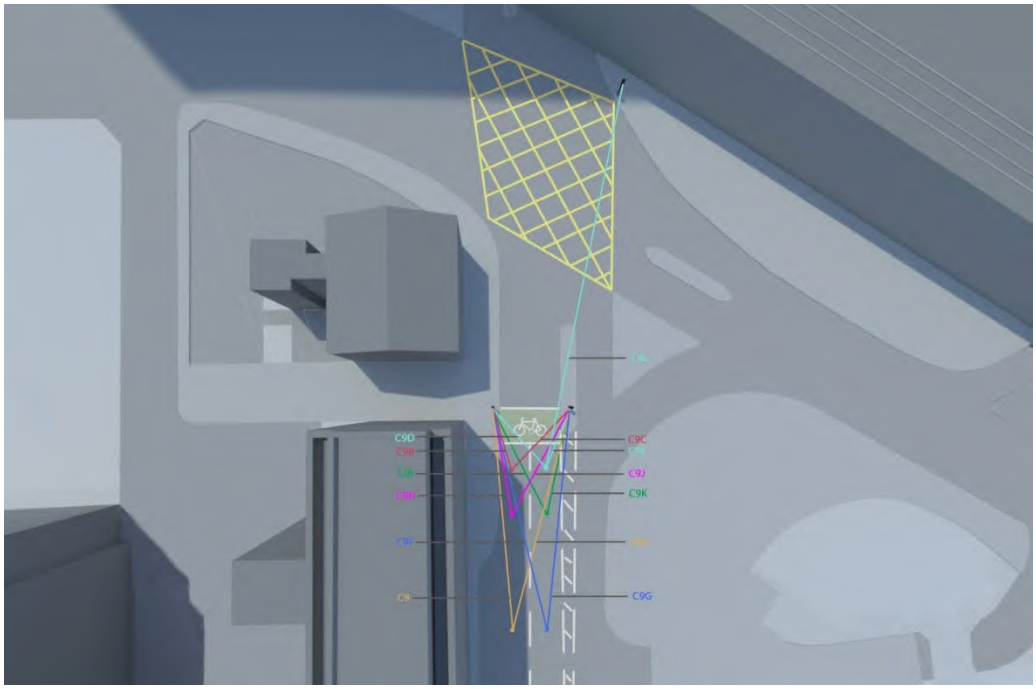


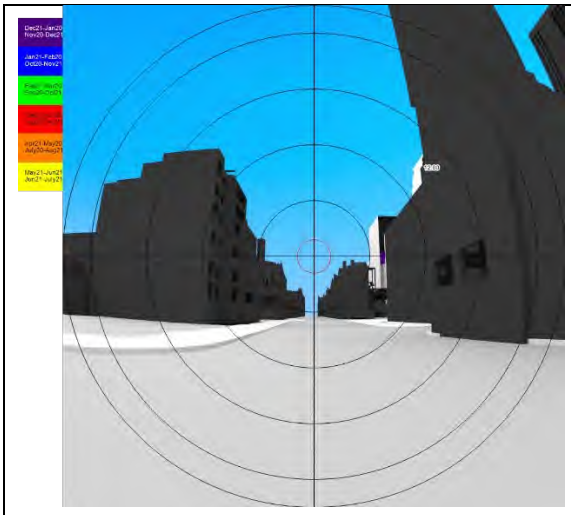
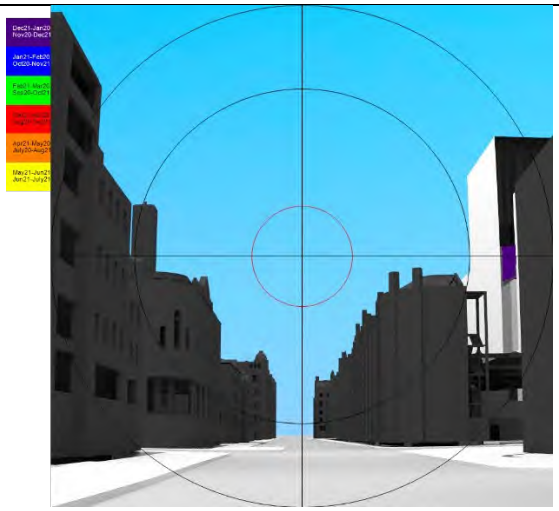
Image of viewpoints checked at C9 (also in appendix B)

These test results and images from the above additional view points are all included in appendix B. The main points to note are:

- The Manchester Central (previously known as GMEX) building blocks a substantial amount of potential glare at road / street level
- The sun visor of a car would shield any high level glare above the Manchester Central building
- The traffic light across the junction is generally outside of the field of glare and any high-level glare at the top of the field of vision is easily shielded by a sun visor for users of both
- In addition, road users in the left-hand lane can see the left hand set of lights at 23m, 10m and 5m without any significant glare in the 30 degree field of view. The right-hand side lights are also visible with minimal glare impact at all distances and any high-level glare (over the top of Manchester Central) can be shieled by a sun visor
- Road users in the right-hand lane can see the left hand set of lights at 23m, 10m and 5m without any significant glare in the 30 degree field of view. The right-hand side lights also visible with minimal glare impact at 23m and 10m and any high level glare (over the top of Manchester Central) can be shieled by a sun visor

In summary, there are no significant glare issues at viewpoint 9 due to the number of traffic lights available without any significant glare impact and where there is minor glare, it is to the top of the field of vision and can be shielded by a sun visor.

6.10 View C10 - Traffic lights, Junction Deansgate and Whitworth St, facing development

	
90° field of view from Viewpoint C10	30° field of view from Viewpoint C10

This viewpoint shows the traffic lights at the T-junction of Whitworth and Deansgate, the proposed development is in the right field of view.

Some glare is indicated by the 90 degree field of view image at this position between 12am and 3pm January to February and October to December.

No glare is indicated by the 30 degree field of view image.

There are therefore no significant areas of glare associated with the proposed development indicated at this position.

7.0 Summary & Conclusions

This assessment has analysed ten viewpoints. Each of the viewpoints has been selected to evaluate the significant areas of glare which are likely to be produced by the proposed development. Where significant areas of glare are likely, the analysis has identified if the glare is likely to inhibit the view of critical points i.e. signals / traffic junctions.

The analysis and results show minor instances of glare at viewpoints C2 & C5 that are not directly behind the points of interest (junction / train signals) and in respect of the road junction can be shielded by a sun visor.

Also, following detailed analysis, there are no significant glare issues at viewpoint C9 either due to the number of traffic lights available without any significant glare impact and where there is minor glare, it is to the top of the field of vision and can be shielded by a sun visor.

We trust this report is of assistance and look forward to receiving your further instructions. In the meantime, if you have any comments or queries, please do not hesitate to contact me.

8.0 Conditions of Use of This Report

This report is to be regarded as confidential to and for the sole use of the recipient. Consequently, no responsibility is accepted to any third party in respect of its contents in whole or in part.

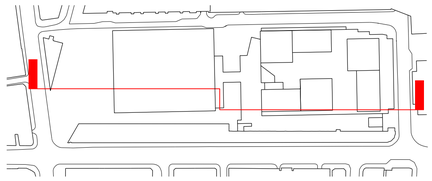
Appendix A

Drawings

KEY:

- Office
- Existing Terrace Tenants
- Casino
- Retail
- BOH circulation/ parking/ plant/ refuse/ storage
- Two bed apartment
- Landscaping
- Circulation
- Bowling Alley
- Gym
- Food and beverage
- One bed apartment
- Three bed apartment
- Residential Amenity

KEY PLAN:





This drawing is copyright Do not scale off dimensions. All dimensions to be checked on site by contractor. Contractor to report any dimensional discrepancies, errors or omissions prior to commencing on site.	NOTE: This drawing has been created using the information stated below: Highline: SEP survey received: 2017-07-06, Drawing name: S13920-HLA.DWG GNW: SEP survey received: 2017-07-26, Drawing name: S13920-WH_GF_REV B.dwg Deansgate Terraces: SEP survey received: 2017-07-26, Drawing name: S13920-DG_Level 1_REV B.dwg Topographical: SEP survey received: 2017-07-21, Drawing name: S13920-T_Rev A.dwg	NORTH	Rev	Date	Description	Project Title: Great Northern	Drawing Title: Proposed Site Section - Section A-A	Job No: 10422	Scale: 1:500 @ A1	
			P01	24-02-2022	First Issue					
			P02	09-03-2022	Baseline Scheme Update					
			P03	10-03-2022	Level Annotation Update	Status: Preliminary	Drawing No: 10422-SHP-Z0-A-G100-SE-AA-001			Revision: P03

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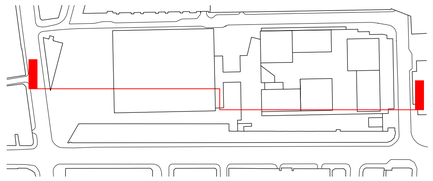
LONDON
5-8 Roberts Place
London EC1R 0BB
+44 (0)20 7549 4000
mail@simpsonhaugh.com

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KEY:

- Office
- Existing Terrace Tenants
- Casino
- Retail
- BOH circulation/ parking/ plant/ refuse/ storage
- Two bed apartment
- Landscaping
- Circulation
- Bowling Alley
- Gym
- Food and beverage
- One bed apartment
- Three bed apartment
- Residential Amenity

KEY PLAN:





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NOTE:
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Highline: SEP survey received: 2017-07-06, Drawing name: S13920-HLA.DWG

GNW: SEP survey received: 2017-07-26, Drawing name: S13920-WH_GF_REV B.dwg

Deansgate Terraces: SEP survey received: 2017-07-26, Drawing name: S13920-DG_Level 1_REV B.dwg

Topographical: SEP survey received: 2017-07-21, Drawing name: S13920-T_Rev A.dwg

NORTH

Rev	Date	Description
P01	09-03-2022	First Issue
P02	11-03-2022	Level Annotation Update

Project Title
Great Northern

Drawing Title
General Arrangement-
Proposed Warehouse Section A-A

Job No
10422

Scale
1:200 @ A1

Status
Preliminary

Drawing No
10422-SHP-Z2-A-G200-SE-AA-001

Revision
P02

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KEY:

Residential (Use Class C3)

- Residential Entrance/ Shared Amenity
- Residential circulation/ Private Amenity
- One Bed Apartment
- Two Bed Apartment
- Three bed apartment

Office (Use Class E(c))

- Office
- Office Entrances
- Office Circulation/ Balconies & Terraces

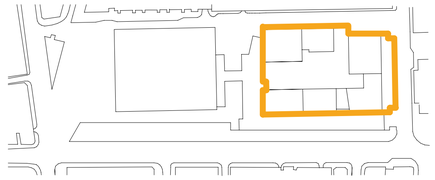
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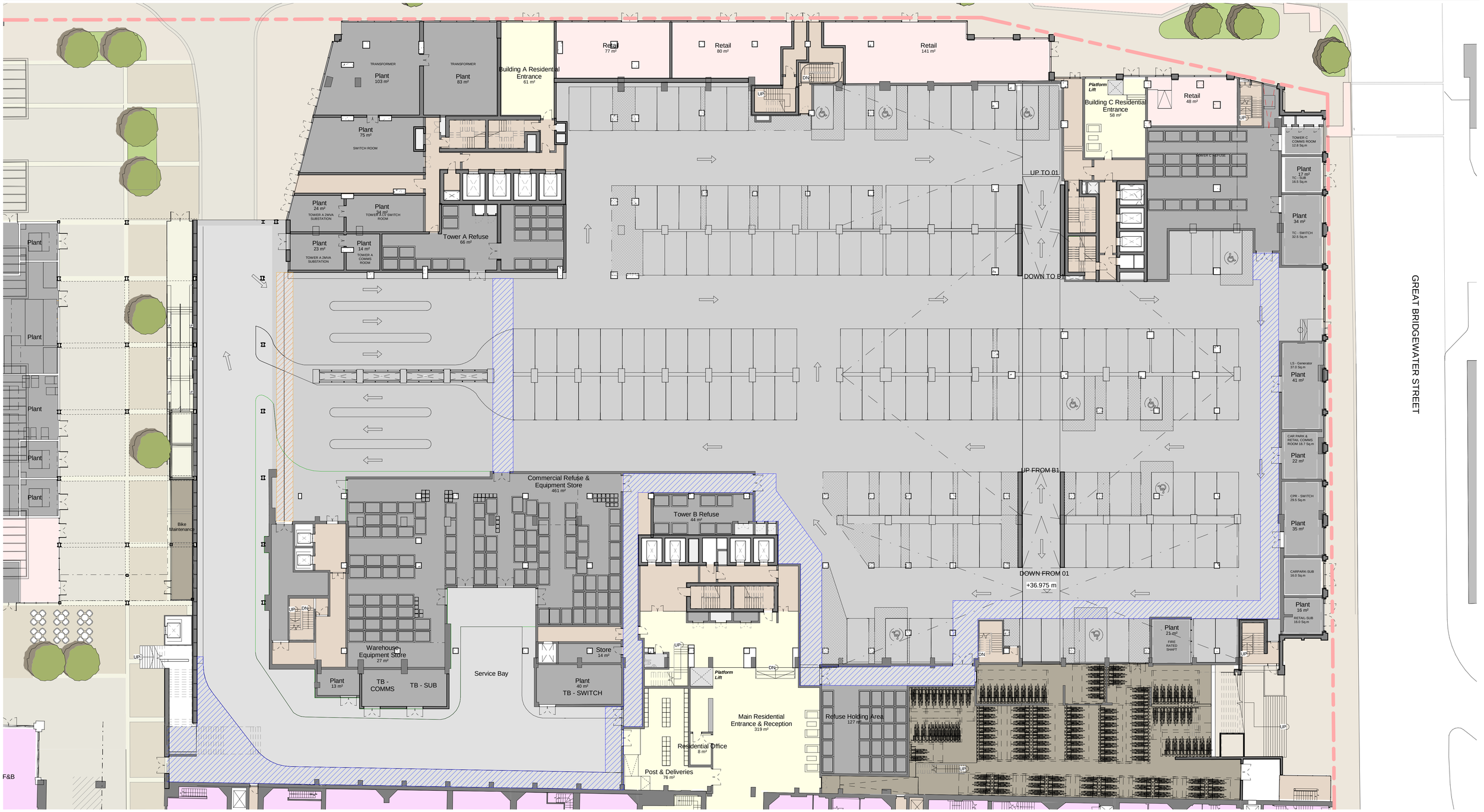
- Use Class E
- Use Class E or Sui Generis (Entertainment Venue)
- Use Class E or Sui Generis (Drinking Establishments or Hot Food Takeaway or Entertainment Venue)
- Use Class E or F2 (b)
- Entrances & Circulation

Other (Use Class Varies)

- Car Park (Sui Generis)
- Ancillary (Plant, Refuse Stores, Back of House, etc)
- Ancillary (Cycle Stores)

KEY Plan:





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NORTH

Rev	Date	Description
P01	09-03-2022	First Issue
P02	10-06-2022	Interim Issue
P03	25-07-2022	Scheme Update
P04	12-08-2022	Developed Scheme Issue
P05	02-09-2022	Stage 2 Issue
P06	10-10-2022	Planning Design Freeze

Project Title
Great Northern
Manchester

Status
FOR INFORMATION

Drawing Title
General Arrangement
Leisure Box - Proposed Ground Floor Plan

Project No
10422

Scale
1 : 200@ A1

PROJ - ORG - ZONE - HOLE - CLAS - TYPE - LOC - SEQ
10422-SHP-Z4-A-G200-PL-00-001

Revision
P06

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KEY:

Residential (Use Class C3)

- Residential Entrance/ Shared Amenity
- Residential circulation/ Private Amenity
- One Bed Apartment
- Three bed apartment
- Two Bed Apartment

Office (Use Class E(c))

- Office
- Office Entrances
- Office Circulation/ Balconies & Terraces

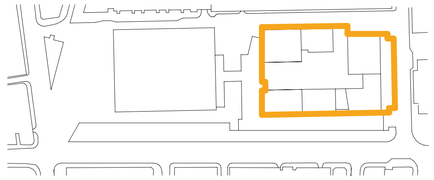
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- Use Class E
- Use Class E or Sui Generis (Entertainment Venue)
- Use Class E or Sui Generis (Drinking Establishments or Hot Food Takeaway or Entertainment Venue)
- Use Class E or F2 (b)
- Entrances & Circulation

Other (Use Class Varies)

- Car Park (Sui Generis)
- Ancillary (Plant, Refuse Stores, Back of House, etc)
- Ancillary (Cycle Stores)

KEY Plan:





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NORTH

Rev	Date	Description
P01	22-08-2022	First Issue
P02	02-09-2022	Stage 2 Issue
P03	30-09-2022	Issued for Coordination
P04	10-10-2022	Planning Design Freeze

Project Title
Great Northern
Manchester

Drawing Title
General Arrangement
Leisure Box
Proposed Level 07

Project No
10422

Scale
1 : 200@ A1

Status
FOR INFORMATION

PROJ - ORG - ZONE - AGLE - CLAS - TYPE - DSC - SEQ
10422-SHP-Z4-A-G200-PL-07-001

Revision
P04

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KEY:

Residential (Use Class C3)

- Residential Entrance/ Shared Amenity
- Residential circulation/ Private Amenity
- One Bed Apartment
- Two Bed Apartment
- Three bed apartment

Office (Use Class E(c))

- Office
- Office Entrances
- Office Circulation/ Balconies & Terraces

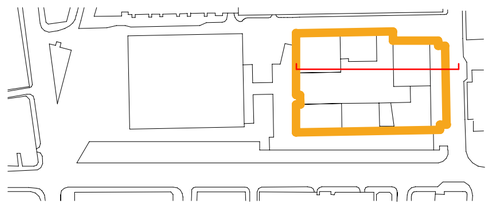
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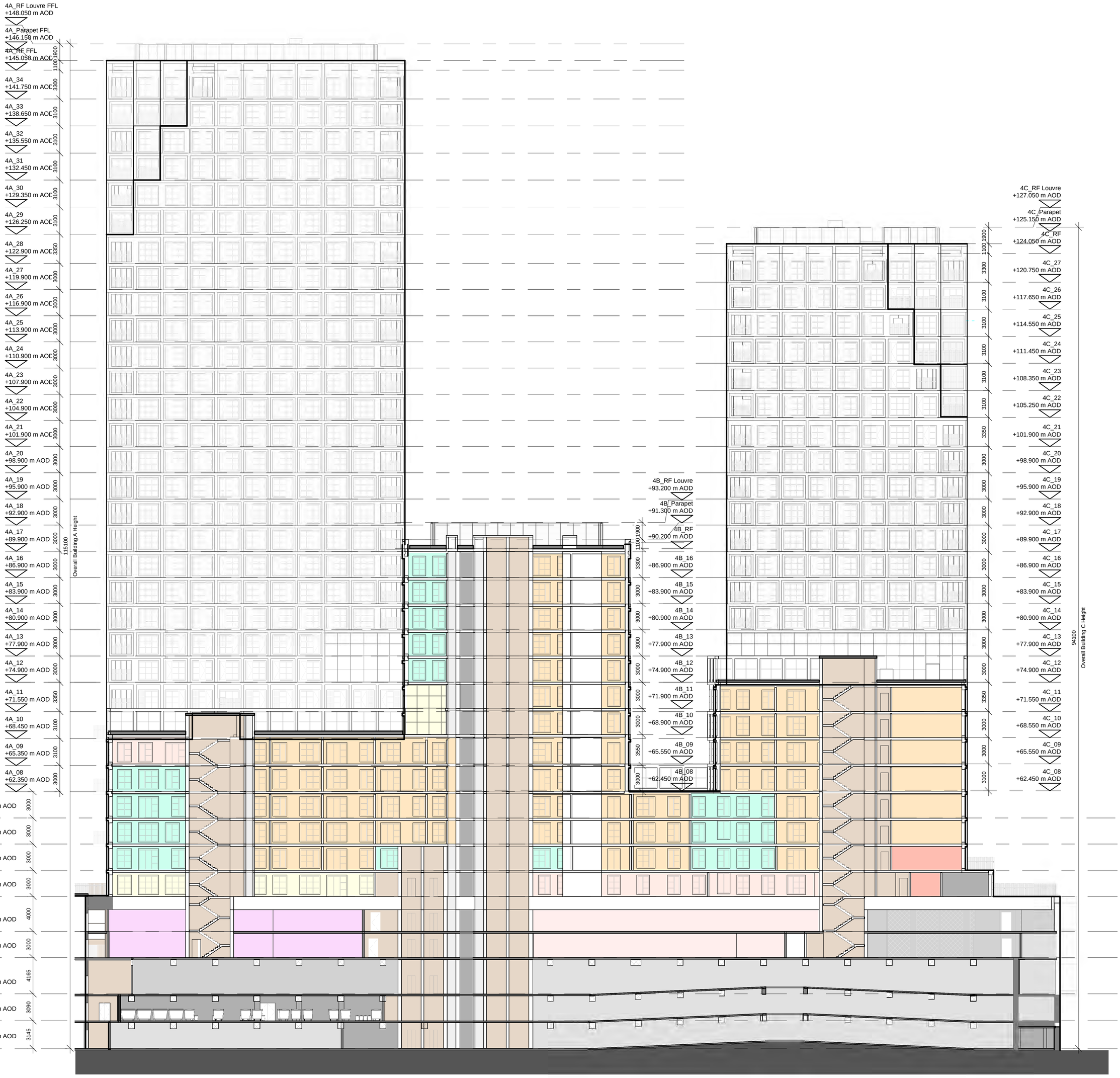
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- Use Class E or Sui Generis (Entertainment Venue)
- Use Class E or Sui Generis (Drinking Establishments or Hot Food Takeaway or Entertainment Venue)
- Use Class E or F2 (b)
- Entrances & Circulation

Other (Use Class Varies)

- Car Park (Sui Generis)
- Ancillary (Plant, Refuse Stores, Back of House, etc)
- Ancillary (Cycle Stores)

KEY Plan:





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Rev	Date	Description
P01	09-03-2022	First Issue
P02	11-03-2022	Level Annotation Update
P03	14-04-2022	Tower massing updated
P04	10-06-2022	Interim Issue
P05	26-07-2022	Issued for Information (issued as P03 in error)
P06	12-08-2022	Developed Scheme Issue
P07	02-09-2022	Stage 2 Issue
P08	10-10-2022	Planning Design Freeze

Project Title
Great Northern
Manchester

Drawing Title
General Arrangement
Leisure Box
Section A-A

Project No
10422

Scale
1 : 250@ A1

Status
FOR INFORMATION

PROJ - ORG - ZONE - ROLE - CLAS - TYPE - LOC -SEQ
10422-SHP-Z4-A-G200-SE-AA-001

Revision
P08

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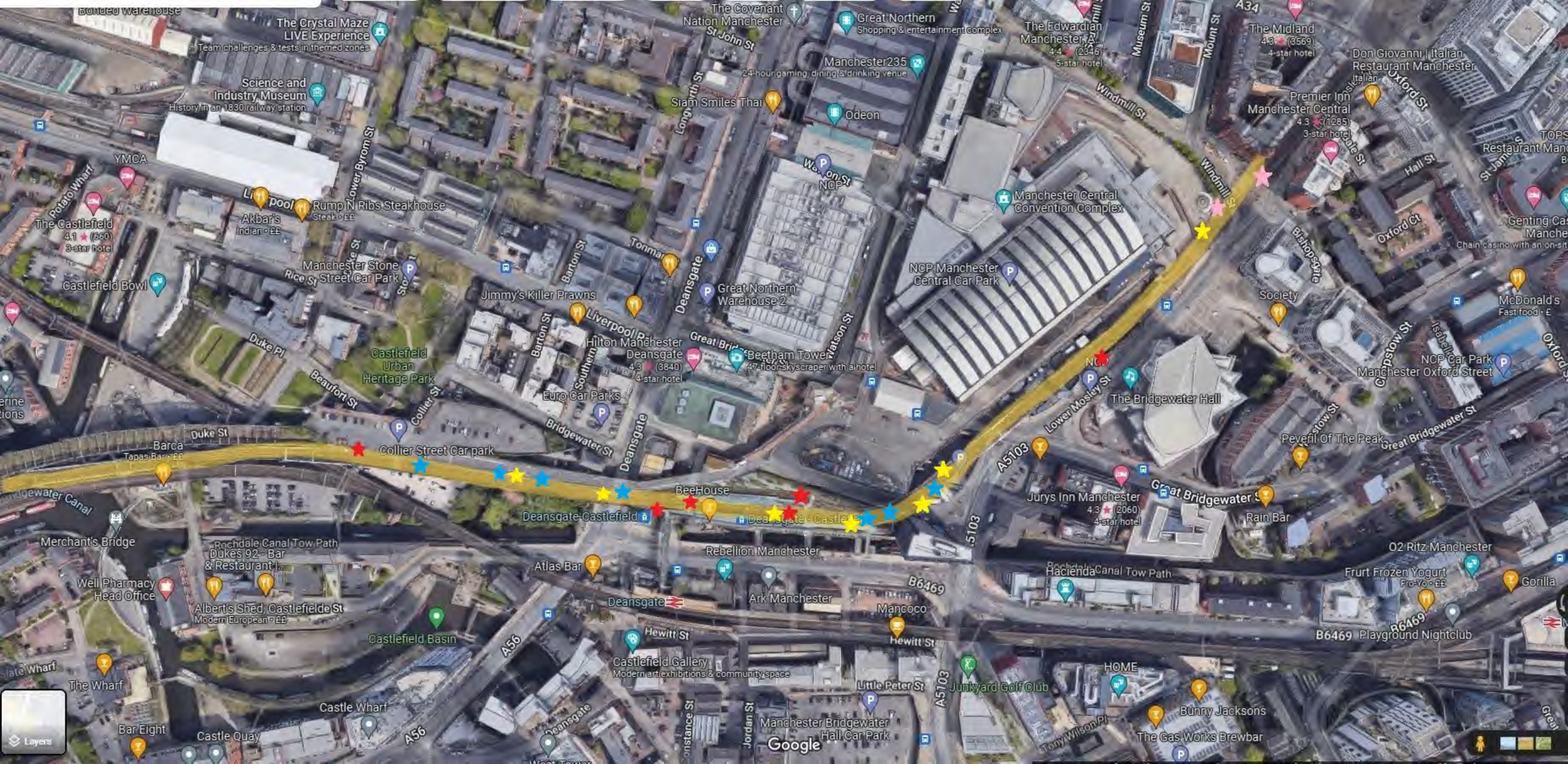
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Appendix B

Large Solar Glare Field of View Images (provided within separate link)

Appendix C

Train Signal Positions


The Crystal Maze LIVE Experience
Team challenges & tests in themed zones
Science and Industry Museum
History in an 1830 railway station
The Covenant Nation Manchester
Great Northern
Shopping & entertainment complex
Manchester235
24-hour gaming, dining & drinking venue
Siam Smiles Thai
Odeon
The Edwardian Manchester, A...
4.4 (2346)
5-star hotel
The Midland
4.3 (3569)
4-star hotel
Don Giovanni | Italian Restaurant Manchester
Italian
Premier Inn Manchester Central
4.3 (1285)
3-star hotel
YMCA
Potato Wharf
The Castlefield
4.1 (660)
3-star hotel
Liverpool
Rump N Ribs Steakhouse
Steak · ££
Akbar's
Indian · ££
Lower Byrom St
Manchester Central Convention Complex
NCP Manchester Central Car Park
Castlefield Bowl
Manchester Stone Street Car Park
Rice St
Barton St
Tonman
Deansgate
Great Northern Warehouse 2
Jimmy's Killer Prawns
Liverpool
Hilton Manchester Deansgate
4.3 (3840)
4-star hotel
Beetham Tower
47-floor skyscraper with a hotel
Great Bridgewater St
Watson St
Society
Bishopsgate
Oxford Ct
Hall St
Windmill St
Oxford St
Genting Casino Manchester
Chain casino with an on-site
McDonald's
Fast food · £
Duke Pl
Castlefield Urban Heritage Park
Beaufort St
Collier St
Euro Car Parks
Southern
Barton St
Bridgewater St
Deansgate
Collier Street Car park
Duke St
Barca
Tapas Bar · ££
Lower Mosley St
The Bridgewater Hall
NCP Car Park Manchester Oxford Street
Clapgate St
Isabella St
Peveril Of The Peak
Great Bridgewater St
A5103
Jurys Inn Manchester
4.3 (2060)
4-star hotel
Rain Bar
BeeHouse
Deansgate-Castlefield
Merchant's Bridge
Rochdale Canal Tow Path
Dukes 92 - Bar & Restaurant
Well Pharmacy Head Office
Albert's Shed, Castlefield
Modern European · ££
Atlas Bar
Rebellion Manchester
Ark Manchester
Deansgate
Castlefield Basin
A56
Hewitt St
Castlefield Gallery
Modern art exhibitions & community space
Mancoco
B6469
Hacienda
Canal Tow Path
O2 Ritz Manchester
Frurt Frozen Yogurt
Fro-Yo · ££
Gorilla
B6469 Playground Nightclub
The Wharf
Castle Wharf
Castle Quay
Bar Eight
Little Peter St
Junkyard Golf Club
HOME
Bunny Jacksons
The Gas Works Brewbar
Tony Wilson Pl
Manchester Bridgewater Hall Car Park
Google
Layers