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Executive Summary

The Madison Square Garden Sphere London (MSG Sphere) will be a state of the art live music and entertainment venue in Stratford, London. It will revolutionise the audience experience bringing unforgettable nights out for music and entertainment fans. This Design and Access Statement describes the architectural proposals that will deliver the experience.

The spherical shape is the venue concept, in the same way that the Ferris Wheel was the concept behind the London Eye. To architecturally link all MSG Sphere’s around the world the spherical form will be physically expressed as the building. The main auditorium space is housed within the sphere.

Our architectural challenge has been to contextualise the sphere, integrate it into its immediate surroundings and consider how visitors arrive into and leave from the sphere.

The site of MSG Sphere is currently a disused surface coach park. It is a brownfield site and was most recently used as a coach park for the London 2012 Olympics. The site is essentially a flat triangle bounded on all sides by railway lines. This Design and Access Statement explains how we have overcome this constraint by proposing three new pedestrian bridges that connect the site to the surrounding area. These new bridges provide access to and egress from the new venue and also significantly improve the connectivity of the site. The bridges connect the adjacent amenities of Westfield Stratford City Shopping Centre and the Queen Elizabeth Olympic Park (QEOP) to the historical centre of Stratford. A fourth bridge is proposed over Olympic Park (QEOP) to the historical centre. The bridges connect the site to the adjacent areas of Westfield Stratford City Shopping Centre, the Queen Elizabeth Olympic Park (QEOP) to the historical centre of Stratford. A fourth bridge is proposed over Olympic Park (QEOP) to the historical centre. The bridges connect the site to the adjacent areas of Westfield Stratford City Shopping Centre, the Queen Elizabeth Olympic Park (QEOP) to the historical centre of Stratford. A fourth bridge is proposed over Olympic Park (QEOP) to the historical centre.

The proposed MSG Sphere site is ideally located for access to London’s public transport system. The venue will make use of the following key pieces of transport infrastructure, Stratford Underground Station, Stratford International Station, Stratford Overground Station, Maryland Overground Station, Stratford Bus Station and Stratford City Bus Station. Stratford Underground Station connects to the Central and Jubilee lines and in the future the Elizabeth Line. The proposals have been designed taking into account all forms of travel to the venue. MSG Sphere is the latest development in an exciting ongoing regeneration of the Stratford area. The entertainment and leisure uses of MSG Sphere compliment the sport, commercial and university facilities established on the QEOP and the retail and leisure facilities at Westfield’s Stratford City Shopping Centre. These amenities are attracting residents to the new and established residential developments such as Manhattan Loft Gardens, Chobham Manor, Chobham North and East Village.

This report sets out our architectural proposals for creating a unique event experience. This event experience begins as soon as the visitor sees MSG Sphere for the first time. To create a dramatic and dynamic spectacle, the sphere facade is covered with LEDs. This will allow the surface to be illuminated with content that is topical, show related, exhibition, media and advertising. The imagery could be fixed or moving. The illuminated sphere facade will have a constantly changing appearance, which will instantly establish the venue as a new London landmark. It will give Stratford an icon that will form part of its identity. MSG Sphere will become an international destination and a place to visit for Londoners and tourists.

Illuminance levels of the sphere facade can be controlled in consideration of the neighbouring properties surrounding the site. The sphere facade illumination will also be switched off at certain times. With this in mind careful design consideration has been given to the facade in which the LED lighting is contained.

In order to maintain MSG Sphere’s appearance careful consideration has been given as to how the sphere facade will be cleaned, how the surface is drained, how the LED lights can be replaced when they reach the end of their lifespan and how mechanical engineering requirements can be integrated into the sphere facade. These solutions are described in this report.

To traverse the railway lines the majority of staff and visitors will arrive on the site via the new pedestrian bridges that form part of the development. Two bridges are proposed along the Montfichet Road to the west of the site. From the south a new bridge links to the existing ‘town centre link bridge’. The town centre link bridge is a bridge that connects Stratford Underground Station with Westfield’s Stratford City Shopping Centre. A further connection is proposed directly from Angel Lane to the north east of the site. Wide steps and a ramp are provided at this access point.

The initial arrival point on the site is at podium level 02. This is a large extensively landscaped space that provides 360 degree circulation around the sphere. The podium has community facilities and places to gather, sit and rest. These features are described fully in this report. From the podium there are entrances directly into the venue and routes up and down. Up leads to terraces on the north and south of the sphere. These terrace spaces will be quieter in character than the main podium and also benefit from extensive landscaping. Down leads to a large plaza at level 01 off of which can be found entrances to the venue, retail units and a separate music club venue.

The open space on the podium and terrace levels is extensively landscaped to provide safe enjoyable spaces to walk through and inhabit. The landscape has integrated wayfinding, lighting and commercial activation. The landscape has been designed to be flexible in the ways that it can be inhabited with a power, data and drainage network that can supply ‘pop up’ units that support activity within the space. To encourage a sense of community the open spaces will be supplied with free wi-fi that delivers content to users whilst in the space. This concept of a digitally connected space is explained in more detail in this report.

The venue is serviced via a service road leading to the A12 Leyton road, which is connected to the venue via a new bridge built over the HS1 rail box. The service road is at a level below the event floor. The event floor level is directly connected to Angel Lane taking advantage of the fact that the road rises up to bridge the railway line. Access and servicing is described in more detail in section 7 of this report.

Once inside the venue visitors will be entertained by an event that could include one or all of the following; stage activity, immersive surface imagery and augmented reality. The immersive surface is the interior surface of the sphere. Similar to the external surface of the sphere the immersive surface is a high definition curved LED screen. An event may also be supplemented with other sensory stimulation.

The venue has been designed so that it can be reduced in capacity for smaller events. MSG Sphere is capable of hosting a variety of events ranging in size from a full capacity standing stage concert of 21,500 to an intimate 3,000 seat experience. The venue can host concerts, theatre shows, immersive cinema, award shows, conferences, corporate events, ring sports and e-sports events. A range of ancillary commercial spaces form part of MSG Sphere to complement the main venue. These include:

- A smaller music club at levels 00 and 01.
- This will hold up to 1,500 patrons and will help support grassroots and emerging music acts. This will benefit the local music scene.
- A Restaurant / bar at level 01
- Retail space at level 01
- Cafe space at level 02. Additionally, the podium on level 02 has services provision built into the ground to support mobile pop-up cafe units.
- A Restaurant / Members Lounge / Night Club at levels 03, 04, 06 and 07. The 450 seat facility will be located over 4 floors of the sphere. The facility will be entered via the South Terrace

MSG Sphere will be accessible to all, will suit varying demographics and contain hospitality offers that suit a range of tastes.

The MSG Sphere development is a high profile new addition to London. It will be ground breaking in terms of its technological development. MSG Sphere will be of the highest architectural quality. This report sets out how the outstanding design has been realised.
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1.0 Introduction

This Design and Access Statement describes the design principles and concepts that have been applied to the development of MSG Sphere—a multi-use entertainment and leisure building comprising sphere, terraces, podium, plaza, ground and basement levels with an illuminated external display (su generis use including flexible entertainment, assembly and leisure venue with an illuminated internal display, music venue, restaurant / members lounge / nightclub, restaurants, bars, and restaurants and cafes, retail and merchandising, hospitality and catering facilities, box office, security facilities, rehearsal spaces, back of house event facilities, offices, storage, vehicle parking, servicing and loading, external terraces with landscaping and café, bar, retail and open air entertainment facilities, and all supporting and complimentary facilities for such uses) and the construction of new pedestrian and vehicular bridges, highway and access works, servicing, open space, hard and soft landscaping, demolition of existing structures, associated infrastructure, plant, utilities and other works incidental to such development.

This Design and Access Statement also explains how issues relating to access to the development have been dealt with.

Key Figures
Application Boundary Area - 2.98 Hectares
Total GIA - 80,744 m²
Venue GIA - 74,654 m²
Open Space (Podium and Terraces) - 13,542m²
Sphere Diameter - 120m
Sphere Height - 90m
Site capacity - 25,000
Venue capacity - 3,000 - 21,500
Music Club capacity - 1,500
Music Club GIA - 2,200m²
Restaurant / Members Lounge / Night Club GIA - 2,406m²
Retail GIA - 505 m²
Restaurant / Bar GIA - 594 m²
Cafe GIA - 385 m²
Total Commercial and Retail GIA - 6,090m²
Bridge 1 - 6.800m wide
Bridge 2 - 9.600m wide
Bridge 3 - 8.975m wide
Bridge 4 - 14.900m wide

Complete List of Planning Application and Advertising Consent deliverables
Application Form, Ownership Certificate and Notices
CIL Additional Information Form
Site Location Plan (1:1250)
Existing Site Plan
Proposed Elevations, Sections and Floor Plans
Proposed Landscaping Plans
Proposed bridge drawings
Details of proposed advertisement
Planning Statement
Employment and Skills Strategy
Statement of Convergence
Statement of Community Involvement
Traffic and Transport, including:
  • Transport Assessment
  • Visitor Travel Plan
  • Staff Travel Plan
  • Draft Construction Logistics Plan
  • Draft Delivery and Servicing Plan
Concept of Operations document (including Access and Inclusion Management Statement)
Flood Risk Assessment (including Surface Water and Foul Sewage Drainage Strategy)
Utilities Assessment
Site Waste Management Strategy
Operational Waste Management Plan
Security Strategy
Energy Assessment
Sustainability Assessment
BREEAM Pre-Assessment
Ventilation/Extraction Assessment

ES Volume 1: Main ES: comprising several non-technical and technical chapters:
  • Chapter 1: Introduction and EiA Methodology
  • Chapter 2: Alternatives & Design Evolution;
  • Chapter 3: The Proposed Development;
  • Chapter 4: Construction and Enabling;
  • Chapter 5: Socio-Economics and Health;
  • Chapter 6: Highways, Transport and Movement;
  • Chapter 7: Noise and Vibration
  • Chapter 8: Air Quality
  • Chapter 9: Wind Microclimate;
  • Chapter 10: Daylight, Sunlight and Overshadowing
  • Chapter 11: Light Pollution;
  • Chapter 12: Solar Glare;
  • Chapter 13: Geo-environmental
  • Chapter 14: Archaeology
  • Chapter 15: Effect Interactions;
  • Chapter 16: Mitigation and Monitoring Schedule;
  • Chapter 17: Likely Significant Effects and Conclusions; and
  • Chapter 18: Glossary and Abbreviations.

ES Volume 2:
Built Heritage, Townscape and Visual Impact Assessment

ES Volume 3:
Appendices
  • Appendix EiA Methodology
  • Schedule 4 Info and ES Wayfinding
  • IEEMA CVs
  • Scoping Report
  • Scoping Opinion
  • Surrounding Development Scenarios 2022 and 2031
  • Climate Change Projections
  • Appendix Socio Economics
  • Rapid Health Assessment / HUDU Checklist
  • Appendix Noise and Vibration
  • Noise and Vibration Technical Data Report
  • Appendix Air Quality
  • Air Quality Technical Data Report
  • Air Quality Neutral Assessment
  • Appendix Wind Microclimate
  • Wind Microclimate Technical Report
  • Appendix Daylight, Sunlight and Overshadowing
  • Technical Report & Appendices
  • Appendix Light Pollution
  • Technical Report & Appendices
  • Appendix Solar Glare
  • Technical Report & Appendices
  • Appendix Ecology
  • Preliminary Ecological Appraisal
  • Red Start Survey Report
  • Bat Activity Survey Report
  • Visitor Travel Plan
  • Rapid Health Assessment / HUDU Checklist
  • Appendix Archaeology
  • Historic Environmental Assessment
  • Draft Written Scheme of Investigation
  • Appendix Enabling and Construction
  • Outline Construction Environmental Management Plan
  • Appendix Aviation
  • Safeguarding Assessment
  • Aviation Assessment

ES Non-Technical Summary (NTS)
1.0 INTRODUCTION

1.1 The Team

This report has been prepared by Populous on behalf of MSG. MSG have assembled a comprehensive team of the world's leading entertainment venue design specialists who have assisted Populous in the design of MSG Sphere and have contributed to this report.

Populous is the lead consultant and the project architects. Populous is also delivering the interiors, brand and commercial activation, wayfinding design and landscape services.
Examples of previous projects delivered by the MSG Sphere team:

4. Olympic Stadium, Queen Elizabeth Olympic Park - Populous, Buro Happold.
5. Bristol Arena, Bristol - Populous, Buro Happold, Satore.
1.2 Project Brief

Our brief from MSG was delivered in the form of an inspirational video that captures both the ethos of the project and the requirements of the client.

On this page are images from the video that capture the key requirements of the venue and the project.

These images capture the futurist vision of the client to deliver a new generation of entertainment venue.

These images imagine our near future and the designs described in this report delivers that vision.
MSG Sphere will be located in Stratford, London.

London is an established hub for acts on a world or European tour.

Currently London has two large capacity arenas, The O2 (20,000) and SSE Arena Wembley (12,500), which are capable of hosting the major acts that commission world and European tours.

London has a population 8.78 million people.

In comparison New York has seven large capacity arenas: Madison Square Garden (19,420), Barclays Center (19,000), PNC Bank Arts Center Amphitheater (17,500), Prudential Center (17,500), NYCB Nassau Coliseum (17,000), Northwell Health at Jones Beach Theater (14,400), and Forest Hills Stadium (13,500).

New York has a population of 8.5 million people, this is similar to London, but over three times the number of arenas capable of hosting world tours.

These comparison figures demonstrate that with London’s thriving music and entertainment market it could support more venues.

A similar comparison of Berlin, Paris and Madrid shows that all of these large European cities currently have more large venues per person than London. (1)

MSG has chosen to locate MSG Sphere in Stratford for a number of reasons. Firstly Stratford has a young, dynamic and fast growing population. It has a capacity in its labour market for the type of staff required in an entertainment venue. The site is ideally located alongside significant pieces of transport infrastructure. The site is big enough to contain a sphere of the size required and the railway line provides ideal natural separation between the venue and its neighbours.

The London Plan has strategic focus for growth in the east and growth of Stratford to an International centre.

MSG Sphere will be capable of hosting events ranging from 3,000 to 21,500 capacity. The upper figure is the full seated capacity of the venue with people standing on the auditorium floor for a concert event. Fully seated the venue holds 17,566 people in a concert event. The venue must accommodate this number of people in order to make it financially viable for promoters to include it on the major tour circuit. Large acts sell out venues of this size consistently over a number of nights.

Footnote.
(1) Data taken from London’s Venue Market an international benchmarking study. Sound Diplomacy 2017. Commissioned by MSG.
1.0 INTRODUCTION

1.4 Consultation

In developing this proposal extensive consultations have been held with both the general public and with the following bodies and companies:

- LLDC
- London Borough of Newham
- Greater London Authority
- Transport for London
- Network Rail
- London Underground Limited
- HS1
- Westfield Stratford City Shopping Centre
- UR Westfield
- Engie (UK)
- UK Power Networks
- Fulcrum Pipelines Limited
- Metropolitan Police Counter Terrorism Team
- Secure by Design Team

Consultation with LLDC first started in March 2018 with a presentation of the scheme concept, the emerging designs for the sphere façade and the landscape proposals for the open spaces. This presentation was given to the LLDC planning committee and the LLDC quality review panel. This was followed up with a second presentation of the application proposals to the same groups just prior to the submission of the application. Similar design presentations have been given to London Borough of Newham and the Greater London Authority. Technical presentations have taken place with Transport for London, HS1, London Underground Limited, UR Westfield and Engie regarding the relationship that the design will have with their assets. Finally there have been presentations and discussions with neighbours of the development including The Railway Tavern, Moxy Hotel, Unite Student Housing and Telford Homes.

The first public consultation took place on a mobile exhibition truck between Saturday, 7 July, and Saturday, 14 July, at six different locations. MSG delivered a promotional flyer advertising the exhibition roadshow to over 50,000 addresses. Adverts were placed in five local newspapers, one council magazine and the Olympic Park newsletter, as well as on all MSG London social media platforms.

Over eight days, including five days in Newham, almost 1,500 people attended the exhibition.

The feedback received following the presentations and public exhibitions has been supportive of both the proposal and the design. During the first consultation, MSG received over 600 responses to the public consultation, with 84% supporting a new entertainment and music venue in Stratford.

The second consultations took place over seven days between Saturday 29 September and Saturday 6 October (excluding Sunday 30 September) in a specially adapted unit at Westfield Stratford City Shopping Centre, in Stratford.

In total, over 700 people attended the exhibition.

Again, the feedback was overwhelmingly positive, with 248 responses to the consultation, of which 90% said they were supportive of a new music and entertainment venue coming to Stratford.
1.0 INTRODUCTION

1.5 Physical Model Photos

To help explain the design during the public consultation phase of the design process MSG commissioned a physical 1:500 scale model.

The model has been designed so that the top of the sphere can be removed to reveal the interior of the seating bowl.

The model represents how the MSG Sphere development will sit within its urban context.
2.0 SITE CONTEXT

2.1 Site Location

The site of MSG Sphere is in the London Borough of Newham and falls within the planning authority area of the London Legacy Development Corporation (LLDC).

The site includes development over the UKPN substation, air rights development over the HS1 access road, the new bridges and works to the north of the HS1 rail box. It is 2.93 hectares.

The site is bounded by railway lines to the east and west and by the subterranean HS1 rail box to the north. The only road connection is onto Angel Lane to the north east.

The site level is at +6.5m A.O.D. Railway tracks to the east and the west of the site are at the same level. Platforms are circa 900mm higher at +7.4m.

Circulation in this area currently relies on the town centre link bridge and the bridge on Penny Brookes Street to cross the railway line.
The site is in Stratford and is located in the Lee Valley. The character of Stratford has changed immensely over the last 300 hundred years, with a rapid acceleration in its growth over the last 20 years.

In the 1700’s Stratford was an agricultural community noted for potato growing. The site was undefined and was part of a large area used as farmland.

In the early Victorian era Stratford’s growth accelerated rapidly due to industrialisation. The arrival of the railway line and the nearby Royal docks fuelled the area’s growth. Stratford became Britain’s main production centre for pharmaceuticals, chemicals and processed food.

In 1839 Stratford became a transport hub with key links from the east into the City of London. Stratford Station was opened in 1839. This created jobs for railway workers who settled in the area creating what is now known as Stratford New Town.

Like many parts of East London, Stratford suffered greatly from de-industrialisation. This decline was compounded in the 1960’s by the closing of the London docks. In an attempt to boost the local economy, the Stratford Shopping Centre was built. This was an effort to change the area from a working class transport hub to a retail and leisure destination. The economic decline continued up until towards the end of the millennium. In the late 1990’s economic growth in London saw the house price boom spread East causing gentrification of areas of east London including Stratford.

The turning point in Stratford’s fortunes was the construction of the Westfield Stratford City Shopping Centre, the announcement that East London would host the Summer Olympics in 2012 and significant investment in transport infrastructure in the region. Housing developers are continuing to build out residential masterplans that benefit from this new infrastructure.

Stratford is now an international tourist destination and a major London cultural hub.
2.0 SITE CONTEXT

2.3 Site History

The adjacent photographs show the development of the site over time.

In 1945 the site was mostly farmland. The overground train lines on the east and west of the site existed. There was industrial development to the north east of the site.

In 1999 the site was being used as a construction site for HS1. HS1 is the railway link from London St. Pancras Station to the Channel Tunnel. It runs mostly underground through London but rises up to grade for Stratford International Station, a stop on the line, which was still being built at that time.

By 2005 the HS1 box was nearing completion. Stratford International Station had commenced construction. The existing electricity substation on the site had been built. The site itself had been completely cleared and levelled ready for future development.

In 2008 new lightweight industrial buildings were built on the site. The site appears to have been used as a distribution or storage facility. Work had commenced on Westfield’s Stratford City Shopping Centre.

By 2010 Stratford International Station had opened. Westfield’s Stratford City Shopping Centre was nearly complete. Angel Lane was being rebuilt with additional capacity over the railway line. The town centre link bridge had been built. The site’s industrial uses had been intensified. Work had commenced on what is now the Engie combined heat and power plant.

In 2012, the year of the Summer Olympics, the site had been cleared again and turned into a surface coach park for the duration of the Olympic event. A temporary ramp had been built to connect the site to the Angel Lane hammerhead. Montfichet Road had been completed and opened.
2.0 SITE CONTEXT

2.4 Public Transport

The site has excellent connections to local public transport. The site has a Public Transport Accessibility Level (PTAL) of 6b which is the highest level of connectivity. A site with a high PTAL provides the opportunity for high density sustainable development that reduces the need for visitors to the site to travel by car. All of the key transport connections being utilised by MSG Sphere are within easy walking distance of the venue.

Stratford Station is the principle public transport facility serving the site. Stratford Station is served by the Jubilee and Central London Underground lines. In the future the Elizabeth line will also stop at Stratford Station. Overground trains stop at Stratford Station. The platforms adjoin the proposed site. The design of MSG Sphere addresses this by proposing a new façade at the boundary with the platforms that will provide a secure, safe, maintainable and attractive backdrop. The Docklands Light Railway (DLR) stops at Stratford Station. Close to Stratford Station is Stratford Bus Station.

Stratford International Station is also a transport facility serving the site. Stratford International Station is served by domestic Southeastern trains on the High Speed 1 (HS1) route. Alongside Stratford International Station is Stratford International DLR.

Other relevant public transport facilities include, Stratford City Bus Station on Montfichet Road which serves the Westfield Stratford City Shopping Centre and is opposite the proposed site. Maryland Station which is on the Great Eastern Mainline and is part of the Shenfield to Liverpool Street stopping service is also in close proximity to the development. In the future Maryland Station will be served by the Elizabeth Line requiring the station to be upgraded. Local bus services serving the site stop on Montfichet Road to the west and Angel Lane to the north east.

Extensive work has been carried out by the applicant to ensure that the development does not impact on London Underground’s infrastructure assets that pass close to the proposed site.

This subject is discussed in more detail within the Transport Assessment and in the Transport chapter of the Environmental Statement submitted in support of the application.
MSG Sphere will compliment the existing wide-ranging amenity offer in Stratford. The London 2012 Olympics has left Stratford with a legacy of excellent sporting facilities, London Stadium, Copper Box and London Aquatics Centre are set within a magnificent park landscape. These facilities are used locally to both watch and play sport. MSG Sphere seeks to build on the success of these venues with a proposal that also sets the venue within an extensively landscaped space and also allows local people to watch and in some instance participate in events.

The site is located between the relatively new Westfield Stratford City Shopping Centre and the traditional Stratford High Street. The additional connectivity to the local area created by the development of MSG Sphere will help connect the High Street to Westfield’s Stratford City Shopping Centre.

MSG Sphere will benefit local hotel operators as some visitors to the Sphere will choose to stay overnight in the local area. It will also benefit local pubs and restaurants as some visitors will choose to use these facilities in conjunction with visiting MSG Sphere.

MSG Sphere brings entertainment to an area well served by other uses such as sport, leisure, retail and restaurants. The entertainment use compliments these other uses. MSG Sphere will further enhance Stratford as a world class visitor destination.
The nearest heritage asset in the area is the Stratford Saint John’s Conservation Area. This area has been a conservation area since 1984. At the heart of it is the attractive Saint John’s Church built in 1834 which is a grade II listed building.

The site is separated from the conservation area by the Stratford Centre.

Between the Stratford Centre and the railway line to the south east of the site are three new tall towers, the Stratford Eye residential tower, the Unite Student residential apartments and the Telford Homes residential tower Stratford Central. These three buildings along with MSG Sphere will form the backdrop behind the Stratford Centre of long distance views from the Saint John’s Church.

There is one heritage asset within the site that will be removed to make way for a new vehicular access from the A112 Leyton Road. An existing Victorian brickwork wall that separates the site from the A112 Leyton Road will be removed. Hidden from public view on the rear of that wall are urinals. The Victorian brickwork wall is one of the few remaining features of the old railway works that once stood on the site. The wall will be demolished and the bricks recycled. The urinals will be removed intact and salvaged. The wall has to be removed to improve visibility for vehicles exiting the new vehicle entrance onto the A122 Leyton Road.

For more details on heritage assets refer to volume 2 of the Environmental Statement, Built Heritage, Townscape and Visual Impact Assessment.
2.0 SITE CONTEXT

2.7 Listed Buildings and Key Unlisted Buildings

All listed buildings in the Saint John’s conservation area are grade II listed.

• Church of Saint John the Evangelist
• Railings to Church of Saint John the Evangelist
• The Martyrs Memorial
• The Gurney Memorial
• Stratford Town Hall complex
• Three K6 Telephone kiosks
• West Ham Court House (former police and coroners court )
• No 2 Romford Road (St Johns house)
• No 30 Romford Road (The old dispensary)
• 49 Broadway
• King Edward VII public house, 47 Broadway

Key Unlisted Buildings in the Saint John’s conservation area.

• Church of Saint Assisi, Grove Crescent Road
• Old Fire Station, Broadway
• Ye Olde Black Bull, Broadway
• 415 High Street
• 63 Broadway
• 361-383 High Street
• The Rex (former Borough Theatre)
• 56-62 Broadway
• Queens Head Public House
• Stratford Market Station

For more details on listed and key unlisted buildings refer to volume 2 of the Environmental Statement, Built Heritage, Townscape and Visual Impact Assessment.
2.0 SITE CONTEXT

2.8 Green Open Space

The site is close to the Queen Elizabeth Olympic Park (QEOP), which overlaps with the Lee Valley Regional Park area forming a wildlife corridor that extends from Hertfordshire in the north to the River Thames.

The London 2012 Olympic masterplan maximized green infrastructure by integrating new developments with waterways and green spaces and by protecting, extending and enhancing green infrastructure networks, local wildlife corridors and the East London Green Grid. The outcome of this, the QEOP, is a fantastic regional and national asset. MSG Sphere aims to build on the legacy of the green spaces created by the London 2012 Olympics by extending the green boundary east to breakdown the east to west disconnect of green infrastructure, play spaces and accessibility within the urban fabric.

The open space at MSG Sphere will be used for gathering people together before they enter the venue. The proposed design features large areas of hard landscaping to accommodate these people. Within our design we have considered play opportunities and other community amenities. We have also considered how MSG Sphere fits into the wider ecological and green infrastructure within the area. To encourage a sense of community on our site we have developed the concept of a digitally connected open space.
2.0 SITE CONTEXT

2.8 Green Open Space Context Site Photos

Queen Elizabeth Olympic Park

London Olympic Stadium

Victory Park

Mature trees are scattered amongst Stratford’s Streets.

Tumbling Bay Playground
2.0 SITE CONTEXT

2.8 Green Open Space Context Site Photos (Continued)

Saint John’s Church, public lawn and garden

Angel Lane Open Space a typical example of road side planting in Stratford.

Stratford Park

Stratford Park Playground is 20 minutes walk from the site.

Alma Street Community Play Area is in very poor condition.

Saint John’s Church, public lawn and garden

Pockets of planting run through Westfield’s streets.
2.0 SITE CONTEXT
2.9 Public Spaces and Squares

The late 20th century was a period of severe economic decline for Stratford as industrial jobs left the area. This trend was eventually reversed by regeneration associated with the 2012 Summer Olympics. However, the urban decline of the past is still evident in the groupings of urban and green spaces.

By assessing the groupings and structure of public spaces and squares, it is clear that Stratford is divided by the railway, with regeneration to the west of the railway lines and less investment to the east. This leaves the east with little public community infrastructure.

The western edge of Stratford has numerous public spaces that are well linked via pedestrian promenades, walks and plazas. This evolved public realm needs to stretch across the east west railway divide to help the local community grow and develop.

The site is part of a large urban island which currently reinforces this disconnect of east and west. This diagram shows that there is a clear positive impact to be gained by creating a connection through the site and establishing a high quality, central open space which services the whole community.

What is striking is that connectivity north of the HS1 rail box is vastly better than to the south where currently all development relies on the town centre link bridge.

KEY:
- Main squares/plazas/points of interest
- Main pedestrian routes/promenades
- Local squares/plazas
- Future plazas/urban space of activations
- Waterways

The letters on the diagram refer to the photographs on the following page.
2.0 SITE CONTEXT

2.9 Public Spaces and Squares (Continued)
2.0 SITE CONTEXT

2.10 Site Context
2.0 SITE CONTEXT

2.10 Site Context (continued)
2.11 Existing Photos of the Site
2.0 SITE CONTEXT

2.11 Existing Photos of the Site (Continued)
The site connects to the public highway on Angel Lane. The bridge along Angel Lane, adjacent to the site, was realigned and rebuilt in 2009. North of the HS1 rail box there is an at grade connection to the public highway that is currently used to maintain the HS1 infrastructure and provide access to the UKPN electricity substation. There is a second, currently unused, road connection at the level of the bridge. This junction previously had a ramp connecting the road to the site which was removed in 2012 after the Olympics.

Within the site there is a shaft leading to a tunnel that connects with the Central Line. Access to this shaft is from the adjacent Network Rail platform. MSG Sphere proposal protects this arrangement and integrates the infrastructure into our scheme. Access will also be maintained to the existing electricity substation within the site.

The new pedestrian bridges proposed on Montfichet Road have been designed so as to maintain the existing pedestrian and vehicle access requirements of Engie and Network Rail.
The solar access enjoyed by the site during the summer months is a strong asset that the proposed development seeks to exploit.

The adjacent railway lines force the surrounding buildings to be setback.

The site enjoys all day sun exposure with the north east corner getting morning sun, the southern podium receiving early morning to late evening sun, and the north west corner even getting the last of the sun in the evening.

The high levels of summer sun and the desire to create pedestrian routes linking east Stratford to west Stratford during operational hours have driven the design of a shaded but open space on the podium which will also double as the main arrival square on event days.

The site has good solar access on the front podium spaces during the winter. Although the site has shortened days during the winter and the outdoor spaces will be less desirable.

MSG Sphere features large covered spaces under the upper terrace. This will create a seasonal use of space encouraging activity on the site throughout the year.

The following diagrams show shadows cast across the site on key dates throughout the year.
2.0 SITE CONTEXT

2.14 Environmental Site Analysis - Wind Exposure

The site sits within a corridor created by tall buildings lining the rail lines. This corridor channels wind towards the application site.

The open space design on the podium seeks to create comfortable human scale spaces.

One of the most important factors affecting human comfort is the effect of wind. Wind can render a space unsuitable for short term occupation preventing the use of outdoor spaces.

The prevailing wind approaches the site from the south west and aligns with the railway corridor, which acts as a wind tunnel due to the buildings that line the route.

The diagram to the right shows how the prevailing wind travels through the urban context and towards the site.

On page 173 of this report we have demonstrated that, by wind testing the design proposals, we have identified mitigation measures that have been implemented in the design, to minimise the impact of the wind on the development.
2.0 SITE CONTEXT

2.15 Planning Context

The site is located within the London Borough of Newham but falls within the planning authority area of the London Legacy Development Corporation (LLDC), a Mayoral Development Corporation established in 2012. In essence, the LLDC has taken on the planning functions of the Olympic Delivery Authority (ODA), the London Thames Gateway Development Corporation and the London Boroughs of Newham, Hackney, Tower Hamlets and Waltham Forest for the land within its area.

The Development Plan for the application site comprises The London Plan (March 2016) and the LLDC Local Plan (July 2015).

The Mayor published the draft London Plan in December 2017, which was consulted on until March 2018.

LLDC is in the process of reviewing their Local Plan. A draft version of the local plan was consulted on between November 2017 and June 2018. The draft revised Local Plan is expected to be published for consultation in Autumn 2019 prior to submission for inspection.

The revised National Planning Policy Framework (NPPF), which was published on 24 July 2018, is also a material consideration when making a determination under the Planning Acts.

At the heart of the NPPF is a presumption in favour of sustainable development. For decision making this means approving development proposals that accord with the development plan without delay.

The Greater London Authority (GLA) has published a number of Supplementary Planning Guidance documents (SPGs), which are a material consideration. A detailed review of relevant policies and assessment of the proposed development is included within the supporting planning statement produced by DP9.

Site policy designations

The site is designated as a Metropolitan Centre in the LLDC local plan. The exact description for the site is “Eastern parcel should provide a large scale town centre use with supporting elements and reflect the constrained access including access to town centre by Link Bridge. The site will form an extension to the Town Centre Boundary of Stratford.” The proposal described in this report goes beyond the requirements set out in the Local Plan.

Diagram from LLDC local plan
SECTION 3

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3.0 DESIGN - CONCEPT AND EVOLUTION

3.0 Introduction

This chapter of the Design and Access Statement describes the design evolution of MSG Sphere. The design has been driven by a number of important factors.

The ambition of the client and the design team.

An extensive team of the world’s leading entertainment venue designers has been brought together to deliver a world class proposal. MSG Sphere aims to be best in class across all areas of design. The proposal brings together disciplines such as event, commercial activation, wayfinding, lighting, landscape, audio design, accessibility, and structural and services design into a scheme that will deliver a unique experience for visitors to the venue. MSG Sphere will be of the highest architectural quality and will become a new London landmark.

The requirements of the brand.

MSG Sphere contains an internal spherical immersive surface. The immersive surface creates part of the event experience, it is physically represented by the spherical form of the auditorium.

The constraints associated with accessing the site.

MSG Sphere requires large volumes of pedestrian access and vehicle service access. Event production trucks need to be able to quickly leave the venue after an event. The need to bridge the surrounding railway lines, provide space for people before they enter the venue and provide safe egress from the venue in the event of an emergency drives the design of the bridges, podium and the orientation of the venue seating bowl. The existing infrastructure and existing neighbours, in conjunction with crowd modelling, has determined the location and width required for the bridges that cross the railway line. Below ground services infrastructure that cannot be physically re-routed has also influenced the detailed design of these structures. The single location for a connection onto the public highway has determined the position of the auditorium stage and the associated stage servicing areas. This is to allow trucks to quickly load and unload the venue.

The desire to extend the green corridors established in the area as part of the Olympic legacy and improve the connectivity of the site.

The design team has seized the opportunity to transform a hard surfaced brownfield site bounded by impenetrable railway lines into an extensively landscaped open space that contains pedestrian routes connecting Montfichet Road, Angel Lane and the town centre link bridge. The existing locked site will become a usable piece of Stratford and help connect the traditional centre of Stratford with the newly regenerated parts of the locality. The routes created will be lined with pleasant places to stop and rest, inhabit and play. New amenities will be incorporated into the design that will increase activity within the open spaces and will be a benefit to the community.

MSG’s desire to create an innovative experience.

The architectural solution is driven by the event experience that visitors will enjoy when they attend a show. This experience begins when you arrive at the site. Our architectural response has been to curate the arrival sequence, to consider the approach views, the selfie shots and the big reveal. The external façade of the sphere has integrated LED lights to create drama on arrival. The event experience relies on smooth access to and egress from the venue. To this end the team has undertaken extensive crowd modelling studies to ensure that people flow easily into and out of the venue.

Commercial requirements.

Buildings of this type are required to be of a certain size to be viable in terms of the acts that they must attract. MSG Sphere will be one of London’s top entertainment destinations. The venue capacity determines the size of concourses and hospitality spaces. These spaces in turn drive the requirements for plant, catering and staff spaces.

The local site context.

Early design options expressed the full volume of a sphere above ground. This resulted in a building that would be taller than any others around it. In order to fit a sphere into the context of the site, 23% of the shape of the sphere is positioned ‘below ground’. This design move reduces the height of the building to ensure it fits comfortably within the local context. Sensitive local receptors have been identified such as the adjacent residential neighbours and the railway lines. With these in mind the LED surface of the sphere has been designed so that the brightness of the facade can be controlled. Additionally, MSG Sphere features high levels of soundproofing to ensure best practice levels of noise control.

Ancillary spaces.

To compliment the venue MSG require ancillary spaces which support the main auditorium. These include:

- A smaller music club at levels 00 and 01. This will hold up to 1,500 patrons and will help support grassroots and emerging music acts. This will benefit the local music scene.
- A restaurant / bar at level 01 adjacent to the main venue entrance at level 01.
- Retail space at level 01 adjacent to the main venue entrance at level 01.
- Cafe space at level 02. Additionally, the podium on level 02 has services provision built into the ground to support mobile pop-up café units.
- A Restaurant / Members Lounge / Nightclub at levels 03, 04, 06 and 07. The 450 seat facility will be located over 4 floors of the sphere. The facility will be entered via the South Terrace.
**MSG Sphere** will be a global brand. MSG intends that the MSG Sphere portfolio will be instantly recognisable due to its iconic design. MSG is currently also developing a Las Vegas Sphere. The challenge for the designers of each venue is to take the venue concept and integrate it into the local site and to respond to the particular constraints of the chosen site.

MSG Sphere London is sat on an extensively landscaped podium. The podium is the design device that connects the sphere to its site and the locality. The podium fills the site.

The podium is set at the same level as the town centre link bridge. This provides level access from the town centre link bridge and provides adequate clearance over the railway lines. The podium is a device for gathering people onto the site before they enter the building. The proposal also includes two terraces located 6m above podium level and a plaza located 4.5m below podium level which help to organise people onto the correct floor level before they enter MSG Sphere.

The podium is connected to the surrounding public highway by three new bridges. These bridges bring people onto the site. Additionally, the bridges create connectivity across the site that can be used by the public when the site is open. The bridges are as wide as required to accommodate crowd movement. The location of the bridges are determined by the availability of landing areas adjacent to our site between existing structures.

The podium is 2.9m higher than Angel Lane. The podium connects to Angel lane across the whole of the available width. To deal with the level changes wide steps and an accessible ramp are provided.

The sphere sits on the podium. The venue is limited in size by the need for people to be able to comfortably circulate around the site without the narrow parts of the podium creating an obstruction to crowd flows. The narrow parts of the podium are also sized so that people feel comfortable walking past MSG Sphere at night.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.2 Design Concept

The adjacent diagram shows the key components of the design described in section 3.1.

The **sphere** is a pure geometric form housing the main venue.

The roof of the **stage box** and the stage box facade hides the stage volume as it projects out from the back of the sphere volume. The roof is bigger than the stage box so that it looks like another level of the podium. The stage box roof is inaccessible. We have taken advantage of this to specify the roof as a green landscape. It will be a habitat that forms part of the landscape strategy.

The **north terrace** and **south terrace** have differing qualities. The north will be quieter and does not lead to a venue entrance. It is used as a normal and emergency egress route serving an auditorium event and is an open space at all other times. The south terrace is a route to enter the venue and the independent Restaurant / Members Lounge / Night Club.

**Bridge 1** connects the podium to Montfichet Road and leads to Stratford International Station.

**Bridge 2** connects the podium to Montfichet Road and leads to the entrance of Stratford Underground Station.

**Bridge 3** connects to the town centre link bridge which in turn leads to Westfield Stratford City Shopping Centre and Stratford Underground Station.

**Bridge 4** is used by vehicles to gain access to the service road over the subterranean HS1 railway line.

The podium has ramps and stairs that form the **Angel Lane connection**.

The podium contains commercial space, the internal level 01 plaza, the music club, event floor level and the servicing levels arranged over two floors. The podium is the engine room of MSG Sphere venue.
3.3 The Sphere - Evolution of Design

The size, position (both in plan and section) and orientation (internal contents) of the sphere are critical to the successful operation of the venue and the integration of the sphere into the local context.

Numerous different sphere configurations were studied at the feasibility stage. Twelve were developed as options. Factors that were analysed to determine the best solution included (not in order of relevance) venue capacity, sphere size, overall height of the building, stage floor level and vertical transportation requirements and sphere geometry.

The options can be grouped into conceptual types which are described below.

Initial Concept - Sphere Elevated (121m diameter)

In this scheme the event floor and the service yard were raised 50m above site level. All patrons circulated vertically to reach their seats. The seated capacity was 16,650. MSG Sphere would have been a complete spherical form hovering above the podium. The podium would have benefitted from being free of the sphere maximising the space available for circulation below the sphere.

Pros
Spherical as required by the brand concept.
A visually stunning solution.

Cons
The auditorium had a low capacity.
The event floor was raised in the air making event set up slow, expensive and complicated.
The scheme required a vast number of very large lifts.
The circulation of visitors was constrained at the base.
The scheme would have been expensive to build. It was structurally inefficient.

Second Concept - Slightly smaller grounded Sphere (120m diameter)

A spherical form auditorium solution that sits on the podium. The path around the sphere was reduced at the narrow parts of the podium boundary. Crowd modelling proved that the path widths at the narrow parts of the podium were insufficient and this concept was adapted further to include terraces to solve the congestion problem. The seated capacity was 16,750.

Pros
Spherical as required by the brand concept although partly concealed.

Cons
There was insufficient width at the narrow parts of the podium around the sphere for external circulation requiring terraces to be added.

Third Concept - Slightly smaller grounded Sphere (120m) with a stage box and terraces.

To increase the seated capacity to 18,500 an additional volume was added onto the back of the sphere to house the stage box, plant and office space. An additional circulation terrace was added 6m above podium level to improve external circulation.

Pros
Spherical as required by the brand although partly concealed.
The auditorium had a good capacity

Cons
The ancillary building compromised the sphere concept.
These concepts were developed further and led to the scheme that forms the application.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.4 Size of the Sphere

The spherical form of the venue fits comfortably in the centre of the triangular site. With the site being bounded by railway lines this means that the site is an urban island and the form of the proposed building on the site is unconstrained by adjoining buildings.

The spherical form is iconic and will be a strong counterpoint to the boxy form of the Engie centre and the surrounding residential buildings. The form of the building responds to the location of the bridges that connect to the site in terms of where building entrances are located. The railway lines provide a natural separation from surrounding buildings allowing MSG Sphere to fill the site without encroaching on neighbouring buildings.

In order to determine the size of the venue we followed the design process explained in the following diagrams.

- The area on the podium has been maximised by cantilevering out over the HS1 service road and spanning over the UKPN electricity substation below.
- We identified the position of the boundary with the surrounding rail platforms.

- To avoid oversailing the surrounding rail platforms we have allowed for a 3m zone for construction activities and for future maintenance of the sphere façade.
- This offset allows us to generate a sphere with an external diameter of 120m.
Sphere Thickness

• The sphere is 4m thick. This wall width is required to contain the various construction and acoustic separation layers.
• Starting from the outside these layers summarise as, external LED panel surface, support structure to LED panels, waterproof layer, exoskeleton structure, acoustic layer, service void and internal immersive surface (this is explained in greater detail later in this report).

Orientation

• We have orientated the sphere service yard for operational purposes.

Immersive Surface

• The immersive surface sits on the inside of the sphere.
• The immersive surface is 59m diameter.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.5 Sphere Section

The outcome of our sphere design development is a 120m diameter sphere with three levels of external circulation (Plaza level 01, Podium level 02 and Terrace level 03) and an external stage box with a green roof and stage box timber facade concealing the form.

The venue has a seated capacity of 17,566 and a 21,500 capacity with people standing on the event floor.

To maximise the visibility of MSG Sphere and to control the amount of covered podium the size of the terraces have been carefully considered.

The event floor is one level below the podium level, in an optimum vertical position within the venue such that it maximises the volume of the auditorium.

The stage servicing is one level higher than the general servicing of the building. This means that the stage servicing is never interrupted by the general servicing of the building.

The immersive surface location has been optimised within the sphere. The immersive surface is part of a 59m diameter sphere. The space between the immersive surface and the external sphere is used for servicing the building. This space also contains equipment related to the event show.

The seating bowl has been designed to fit within the sphere and provide guests with views of the stage and the immersive surface. This is described in more detail in the later stages of this report.

Please refer to proposed section drawings MSG-POP-00-ZZ-DR-A-0200 and 0201 for details of the heights and levels of each floor in the building.
The site is triangular. There is an optimum location for the sphere within the site.

If the sphere intersected with the podium at its equator, where it is widest, it would form the largest circular plan possible.

The plan size of the sphere reduces the more it is raised above the podium from its equator. The smaller the plan size the more circulation space is available on the podium. However, the higher the sphere is raised above the site the more impact it has on views to and from the site, with an increased reliance on vertical transportation.

We have determined the optimum relationship between plan size of the sphere at podium level and its vertical massing. At the equator of the sphere the distance to the site boundary is 3m which gives us adequate space for the construction plant and access equipment required to construct the sphere without oversailing the adjacent railway platforms. This 4m zone also allows for maintenance of the sphere in the future. The equator has been positioned at Level 06.

The sphere creates narrow parts of the podium. The width of these parts has been tested using crowd modelling to ensure that they are wide enough. To ensure the podium feels comfortable at these points the lighting design has been carefully considered. Additionally the podium balustrades are glazed in these locations to increase the feeling of openness.

The sphere location on the podium creates two large distinct spaces around it. These spaces are called The Square and The North Hub. The form of the sphere does not have an obvious entrance so the design of The Square signifies that this is the entrance to MSG Sphere. The North Hub is a quieter space at the rear of the building and its landscape design contains amenities for use by the local community. These spaces are explored in more detail later in this report.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.7 The Sphere in its Site Context

The site benefits from having railway lines alongside it in respect that surrounding buildings are set back. Allowing the sphere to fill the site as explained in section 3.4. MSG Sphere sits comfortably within the locality surrounded by the tall buildings that overlook the railway line. MSG Sphere is not the tallest building in the area as it sits below the Telford Homes tower which is approximately 27m taller. MSG Sphere is not the biggest mass in the area either. The Westfield City Shopping Centre has a larger footprint.

The podium height is driven by the requirement to create a level connection with the town centre link bridge. The podium height is 9.9m above ground and sets a visual datum that is in context with the surrounding streetscapes.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.8 The Sphere in a Wider Site Context

MSG Sphere will become another landmark within Stratford. The diagram below shows its scale in comparison with other important local Stratford landmarks.

In terms of its height MSG Sphere will be lower than the Arcelor Mittal Orbit by 24m. In massing terms only the Populous designed London Stadium is comparable. However the stadium is lower by 27m but occupies a much larger footprint.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.8 The Sphere in a Wider Site Context (Continued)

MSG Sphere is classified as a ‘tall building’ in planning terms but compared to London’s landmark tall buildings it is not substantial in height.

In terms of mass and scale MSG Sphere is very similar to St. Paul’s Cathedral. As a recognisable form and a pure shape MSG Sphere is most similar to the London Eye.
3.0 DESIGN - CONCEPT AND EVOLUTION

3.9 Podium Design Evolution

The design strategy to fill the site with a multi level podium in order to maximise the space available for people to gather and to form landscaping has been a key principle throughout the design development process. The podium will be accessible to the public during operational hours and therefore significantly increases the connectivity of the area (see Diagram 1).

To connect both sides of Stratford and to allow patrons to use the town centre link bridge to connect to the site during operational hours, we raised the podium level up 9.9m above grade. This allows the town centre link bridge to connect into the site via a new bridge without changing level. An additional two bridges are proposed from Montfichet Road. Each of these bridges are fully accessible and are described in more detail later in this report (see Diagram 2 and 3).

The size and shape of the terraces has evolved as the design has developed. The key evolution being the decision to split them into two terraces (north and south). This decision was taken to maximise the visibility of the sphere and to create two spaces with different characteristics. The terraces will also help organise visitors to enter the venue at the correct level. This will reduce strain on the internal vertical circulation system within the venue (see Diagram 4).

The developing design was tested in a wind tunnel to help determine the optimum shape for the upper podium levels and to determine which type of planting should be placed where. The shape of the landscaped spaces has been modified as a result of the wind tunnel testing to ensure that places where people are sat are sheltered and safe (see Diagram 5).

During the pre-application process it was highlighted that the size of the terraces, particularly in the south, might have a negative impact on how light and airy the podium space below might feel. We have responded to this by pulling in the sides of the south terrace by 1.2m and significantly reducing the extent of the terrace to the south. This design change in response to pre-application advice will ensure that the podium space is a pleasant well lit naturally ventilated space (see Diagram 6).

Diagrams showing the design development of the podium.
The podium fills the site and is extruded upwards from grade to Level 02 (16.400m AOD) so that it is coincident with the town centre link bridge.

The podium forms the site boundary to the surrounding railway platform replacing the existing brick wall. The podium facade will provide a robust maintenance free boundary to the public railway platforms.

The podium forms a base for the sphere to sit on. The podium form provides a strong visual contrast to the sphere, the surface of which is high-tech and illuminated, in contrast the podium will be industrial and rough in character.

The podium form will be visible from Montfichet Road, Meridan Square, the town centre link bridge and the lower levels of the buildings that surround our site. The podium form sits behind the Engie building.

The podium spans over an existing electricity substation located on the site. The substation was built as part of the HS1 development. The proposed podium facade extends past the unattractive substation so that it is no longer visible from the railway platform or from Montfichet Road.

The parapets around the podium are 1.5m high on the east, west and south. On the north they are 1.8m high due to the proximity of the podium to the subterranean HS1 rail line. Where raised landscaped surfaces exist on the podium and structures abut the podium balustrades, these parapet wall heights are maintained so the overall height of the podium parapet varies.
All visitors arrive onto the site at podium level L02. From podium level visitors are distributed to other parts of the venue. The key circulation routes from the L02 podium (16.400m AOD) are up to the L03 terraces (20.900m AOD) and down to the L01 plaza and onto the auditorium floor (11.900m AOD). Stairs, lifts and escalators are provided to ensure all routes are accessible.

From the L03 South Terrace visitors can enter the venue and the Restaurant / Members Lounge / Night Club.

From the L02 podium visitors can enter the venue and the music club.

From the L01 plaza visitors can enter the venue, the Restaurant / Bar and the retail unit.

The design of L01 and L03 are described in more detail later in this report.

The podium acts as a reservoir controlling the flow of people onto the bridges after an event or in the event of an emergency.
3.12 The Podium - Routes and Spaces

3 East-west link. Low numbers on non-event day.
4 Very low foot traffic.
5 Primary link connecting west Stratford to east Stratford.
6 Secondary link connecting west Stratford from Montfichet Road to east Stratford.
7 Entrances to sphere and terraces from podium.

8 Transitional space: This space links the premium occupiable spaces. It is a point of arrival from Bridge 1.
9 Garden / Quiet space: This space is linked to the community space. It supplies a small area of garden space on the podium.
10 Community space: This space links the site into the wider Stratford area providing a space for the nearby community.
11 Hospitality / Event / Main Entrance / Welcome space: This space is a welcoming arrival square for the public and for visitors to MSG Sphere.
This section of the Design and Access Statement describes the different uses within the MSG Sphere development and explains how those spaces are used.

The primary event space is the main auditorium which contains the immersive surface and the stage. Within the venue, on Levels 00 to 10 there are a mixture of concourse and VIP spaces that serve the auditorium.

Embedded within the form of the sphere is a four storey Restaurant / Members Lounge / Night Club arranged over floors 3, 4, 6 and 7.

The open spaces around the sphere are supported by a number of uses. The North Hub on the podium is serviced by a café embedded within the stage box facade. In the south the external spaces on the South Terrace and the podium will be supported by semi permanent 'pop up' facilities, these will be electric carts or vehicles from which goods can be vended.

Below the podium the Level 01 plaza contains retail space and a Restaurant / Bar. The music club is arranged over Levels 01 and 00. This is a standalone venue that operates in conjunction with the main venue.

The overall site capacity is 25,000 people, which includes the maximum capacity of the main venue 21,500 (standing), 17,566 (seated). Approximately 1,000 members of staff will be required for full capacity events.

When the main venue is operating at full capacity, the capacity of the ancillary commercial spaces will be limited to 2,500 people. This includes staff and members of public. Only in rare circumstances will the site be at capacity. Notwithstanding this, the ancillary commercial spaces have been designed to accommodate the following capacities:

- Music Club – 1,500
- Restaurant / Members Lounge / Night Club 450 (seated layout) 1,000 (standing layout)
- Restaurant / Bar – 400

The breakdown of the development’s floorspace is as follows:

- 74,654m² Main Venue
- 2,406m² Restaurant / Members Lounge / Night Club
- 2,200m² Music Club
- 1,099m² Plaza Commercial
- 1,234m² Back of House (part of main venue)
- 385m² Cafés (including pop-ups)

NB: All figures GIA. Total GIA is 80,744m²
4.0 USE - SPHERE

4.2 Auditorium Introduction

The auditorium’s design delivers MSG’s vision of a completely new concept in entertainment. Mixing traditional small and large scale music venue design with the aesthetic of theatres and vineyard style concert halls. The design has evolved in response to the physical constraints of the site, the required flexibility of content and also the need to provide excellent viewing conditions. The viewing focus is towards the stage for traditional concerts and to the media plane for immersive experiences.

A layered and raked stalls area offers excellent viewing characteristics across a number of levels and can also be used without seating to give a standing capacity in excess of 10,000 and a total maximum capacity of approximately 24,500. In seated concert mode the maximum capacity is approximately 17,566.

The tiered seating follows a more traditional design with the sightlines dictated by the extent of the flat event floor but with wing seating angled further towards the stage in order to bring these patrons closer to the performance.

A ‘cake slice’ of hospitality seating occupies the centre providing exquisite views.
4.0 USE - SPHERE

4.3 Auditorium Capacities

MSG Sphere has flexibility within its design to hold a varying array of different events. The table below shows the expected maximum saleable capacity for a seated concert with a theatrical stage and for a maximum capacity standing concert.

<table>
<thead>
<tr>
<th>Seating Area</th>
<th>Seated Gross Capacity</th>
<th>Standing Gross Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stalls</td>
<td>6,134</td>
<td>10,068</td>
</tr>
<tr>
<td>Wings &amp; Hospitality</td>
<td>5,255</td>
<td>5,255</td>
</tr>
<tr>
<td>Circle</td>
<td>2,515</td>
<td>2,515</td>
</tr>
<tr>
<td>Balcony</td>
<td>3,662</td>
<td>3,662</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>17,566</strong></td>
<td><strong>21,500</strong></td>
</tr>
</tbody>
</table>

Stalls  
Wings and hospitality  
Circle  
Balcony
4.0 USE - SPHERE

4.4 Viewing Criteria

MSG Sphere has been designed as a flexible venue. The viewing criteria has been determined to allow for a large number of different event types. Computational modelling has been used to assess the viewing quality of each seat in the venue.

The sightline focal point for the design of the tiers has been placed at the extent of the flat event floor. This allows for stage sets that have extended stages that project out into the audience. The majority of concerts will use a stage further back on the event floor. The further back from the focal point the stage is the better the sightlines will be.

Additionally, the view quality has been assessed on a number of other factors using computational modelling. An iterative design process has been used to maximise the overall view quality, by optimising the auditorium bowl geometry and developing the ideal immersive surface geometry. The view quality analysis is broken down into two separate equations:

• Immersive. This assesses the view quality of each seat towards the content shown on the immersive media surface.
• Proximity. This assesses the view quality towards a more traditional stage based show.
MSG Sphere has been designed as a flexible venue and can cater for a number of different event types. These are explained below.

1. Concert Seated
The maximum capacity seated mode has a touring concert stage positioned within the stage box offering an excellent viewing experience for all patrons both to the stage and to the media plane. Flexibility within the design and the viewing criteria allows for stages to be pushed further into the audience seating. This mode offers a total additional seating capacity of approximately 17,566 seats.

2. Concert Standing
The theoretical maximum venue capacity is based around a touring concert stage positioned within the stage box and with the stalls floor converted to standing. This mode allows for a standing capacity of just over 10,000 offering a festival like atmosphere. Added to the tiered auditorium seating within the tiers the total overall capacity is approximately 21,500.

3. Awards Show
The stalls floor seating can be removed and converted to tiered decking to allow for large scale awards shows to be held within the venue. With up to 3,000 people seated at dining tables, 11,500 in the tiered auditorium seating, the immersive media plane as a back drop and world class house audio this will make the venue one of the premier venues for award shows in the world.

4. E-gaming
E-gaming is becoming ever more popular as a spectator sport bringing a whole new generation of patrons to major venues. The technologies built into the venue and the immersive media plane will make for a truly spectacular viewing experience allowing for upwards of 17,000 people to watch their favourite E-gamers.
4.0 USE - SPHERE

4.5 Auditorium Event Types (Continued)

5. Circus Spectacular
Using the unique design of the auditorium combined with the immersive media plane as a backdrop the venue lends itself to holding circus and acrobatic spectacles. The images above show a raised event floor providing a huge event space that is larger than any other venue of its type in Europe. This will allow designers and artists to push the boundaries of show design far beyond what is currently possible.

6. Ring Sports
While the venue is primarily designed as a music and entertainment venue that has not had to have the viewing experience compromised to incorporate rink or court sports the nature of the auditorium design lends itself to certain sports, including sporting events such as boxing, mixed martial arts and darts. Utilising the immersive media plane for these sports will add greatly to the viewing experience.

7. Conference
The scaleable and flexible nature of the auditorium allows for various reduced capacity non-music events to be held such as technology product launches and political or trade union conferences. The extensive front of house concourse space and back of house areas allow for easy overlay and product display. Capacities can range between 3,000 and 17,566.

8. Cinematic
The cinematic mode utilises the entire spherical media plane to create a mass immersive experience with next generation steerable surround sound audio for a truly immersive experience. A capacity of 10,000 ensures that all patrons are positioned ideally within the auditorium to view the media plane and have the optimum viewing experience of the specially curated content.
MSG Sphere includes an integrated Restaurant / Members Lounge / Night Club facility distributed over four floors. The unit will be independent and will operate outside of events in the main venue.

It is expected that the venue will be run by the TAO Group, an affiliate of MSG.

Level 03 will be the entrance to and the first floor of the venue. The venue is unlikely to experience queues for entry due to its relatively small capacity. However if any queues were to form they would be managed on the Level 03 terrace by the venue operator.

During warm summer nights the hydraulic winged doors within the sphere facade will be open to the terrace.
MSG Sphere features a large atrium that is the focus for circulation around the building. Visitors enter at levels 02 and 03 and ascend to levels 04, 05 and 06.

On Level 01 of the atrium, a stage has been provided where warm up acts will perform before the main event. This will encourage visitors to arrive early, watching proceedings from balconies around the atrium.

The atrium is 20m wide (at its widest point) and 26m high. The space is flexible and subject to conforming to fire sterility requirements can be taken over and dressed for specific events within MSG Sphere.
4.0 USE - SPHERE

4.8 Sphere Plant Rooms

MSG Sphere requires a significant floor area of plant to service the auditorium and the various other facilities in the building. The design makes use of the space between the inner concrete shell and the exterior of the sphere to house plantrooms. Great care has been taken to ensure the service requirements of these spaces do not impact on the appearance of the sphere facade.

The design of the plantrooms that serve the venue is a result of an iterative process. The servicing strategy divides the building into three distinct zones, the podium, the auditorium and the hospitality areas. Bulkier services and non-air-breathing plant are located in the basement and at Level 01. All three building zones need fresh air and cooling. The podium draws fresh air in via openings in the Level 01 plaza facade. The hospitality accommodation draws air in through the façade of the sphere. As the air volumes are not large, the air is drawn in via the open joints between the LED panels in the sphere façade. The volumes of air required for the auditorium are large and are drawn into the main air handling units via LED louvres on the north façade of the sphere. Additionally within the auditorium on three levels, air handling plant supplies cooling via a plenum to outlets positioned under each seat.

At the apex of the sphere there is a large external plant area below the surface of the sphere. This houses chiller units which have been specified to meet the strict acoustic requirement for noise breakout. The chiller units work in combination with an ice storage centre located in the basement to provide cooling to the auditorium. The ice storage centre uses night time electricity to create ice, which is then used to assist in cooling the building during performances.

Plant areas in the sphere sit within the void space between the inner concrete shell and the external envelope, supported by the steel exoskeleton that forms the sphere. The plant levels are served by access stairs and a mechanical hoist for lifting materials. The hoist travels between the apex of the sphere down to Level 08, at which level goods can be moved by trolley to one of two goods lifts that serve Levels 00 to 08.

To facilitate plant replacement, lifts are provided within the plant areas. Smaller items of plant will be broken down and carried via the hoist and goods lift to the service road. Larger items will be lowered by winch to the Level 01 floor, through a dedicated hatch above the smoke extracts from the plant pit at the apex of the sphere. Once every 20 to 25 years, the chillers at the apex of the sphere will need to be replaced. This will require temporary erection of a crane to carry out this operation.
4.0 USE - SPHERE

4.9 Sphere Concourses

MSG Sphere concourses and lounges provide all of the amenities that guests will require during their stay in the venue. Throughout the venue the space standards for sanitary fittings are based on British Standard (BS) 6465 Part 2. The provision of WCs will be agreed with Local Authority Building Control as part of the Building Regulation approval process.

Bars and concessions on the concourses will serve drinks and food. To ensure that an adequate number of points of sale have been provided in each space provision has been made for one point of sale for every 100 people in the space. A point of sale is 1.2m wide.

Lounges and concourses have been adequately sized. The only departure from the generous space standards we hoped to achieve is at general admission concourse Levels 09 and 10 where, due to the shape of the sphere, the concourse is smaller than the 0.5m² per person target. However, the concourse provided is still larger than the regulatory minimum of 0.25m² per person.
# SECTION 5

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5.0 USE - PODIUM

5.1 The Podium - Level 00

Level 00 is the venue service level it contains back of house spaces needed to service the venue. These spaces are arranged around a service road which roughly follows the outline of the sphere above.

The service road is one way and is designed to allow heavy goods vehicles (HGV’s) to use it. Access to the service road is from the existing service road that connects to Angel Lane and a new bridge (Bridge 4) that spans across the subterranean HS1 rail box. The existing service road is secured with new fences and a new manned security hut. A small number of parking spaces at this level are used by venue personnel. High levels of security will be in place on this level with no public access. Only accredited staff will have access. The main venue catering operation is located at this level alongside the waste management facilities. Under the event floor there is storage space for event floor equipment such as furniture. Across the service road from the sphere is the music club, audio visual facilities for designing sphere content, venue staff offices and the cellar for the Restaurant / Bar above.

There is an existing UKPN electricity substation at this level. Access to the substation is maintained. A new secure fence will be built around it and space allocated for maintenance vehicles. There is an existing pump house that sits above an London Underground Limited (LUL) tunnel entrance. This infrastructure is being integrated into the venue with secure access arrangements agreed with LUL.
5.0 USE - PODIUM

5.2 The Podium - Level 01

Level 01 is the event floor level. The auditorium stage is located at this level. Behind the auditorium stage is a secure, acoustically sealed service yard. The yard is acoustically sealed so that loading and unloading of trucks can take place whilst a show is in progress. The yard is effectively a large air lock and relies on the fact that the inner and outer doors are never opened at the same time. The service yard connects to Angel Lane via a ramp. The size of the service yard has been determined by the need to hold trucks in the area while they are loaded and unloaded. The speed of that operation is critical to the operation of the venue.

The event floor is ramped to help people standing on the floor see the stage. For shows requiring a level floor a temporary level deck will be added. Behind the event floor is a large concourse. On the concourse at the base of a tall atrium is a stage that can host entertainment pre and post event. Close by are hospitality pods that create a premium experience for a small number of guests with event floor tickets. The concourse serving the event floor is large and contains all of the concession, toilet and merchandise facilities that event floor guests will need.

Access to the main venue event floor and concourse is via the Plaza. The Plaza is connected to the podium above via stair, lift and escalator cores. The Plaza is a large covered naturally ventilated space that acts as a foyer to the main venue. A retail unit and a Restaurant / Bar can be accessed off of the Plaza. Any queuing to access the main venue will be managed within the Plaza. The Plaza design is explained in more detail on the following pages.
5.3 The Podium - Level 01 - Plaza

Within the podium at Level 01 is the Plaza. The plaza contains the entrances to the Restaurant / Bar, retail store, box office, venue staff offices and the top floor of the Music Club. Access to the plaza from the podium above is via three large stair and escalator cores. The Plaza is a 2,239m², internal, covered, naturally ventilated space. The Plaza is the foyer to the main venue. Guests entering the venue with event floor tickets will arrive via the Plaza.

The Plaza will be serviced with toilets, accessible toilets and baby change facilities that also serve Level 02 podium above.

The Music Club has frontage onto the plaza and has the ability to service the space. The public entrance to the Music Club is not at this level. The Music Club entrance is at Podium level 02 above.

The internal environment of the plaza will be controlled by louvres on the inside of the facade. The louvres will allow maximum amounts of ventilation in the summer but prevent strong winds and rain entering in the winter.
5.4 The Podium - Level 01 - Plaza Commercial

The Restaurant / Bar is 594m². The Restaurant / Bar will have a glazed frontage to the Plaza and will contribute to servicing it. The Restaurant / Bar will have the ability to spill out into the Plaza.

The retail unit at this level is 505m². The retail offer is expected to be complimentary to the venue offering. The retail store will have a glazed frontage to the Plaza. The unit is serviced via the Plaza using the Plaza lifts to connect the unit to the service road below at Level 00.
The Music Club is a small venue that will cater for acts that would not be able to sell out the main venue, and will support local community music acts. It will hold 1,500 people. The Music Club is arranged over three levels. Entry is via a discreet lift and stair core on the west side of the Level 02 south podium. Ticket check is expected to be performed at this level. Any queuing will take place under the Level 03 South Terrace. The lift and stair core takes guests down to Level 00.

At Level 00 the Music Club is 1,100m² (GIA). The main dance floor will be at this level focussed on the stage. Guests will find a large bar, coat storage and toilets here. A feature stair connects this level to Level 01.

At Level 01 the Music Club is also 1,100m² (GIA). The Music Club at this level has a large void over the stage. The void visually connects the two floors of the club together. Guests will find VIP facilities on this level along with a large bar and toilets. During the day when the Music Club is not operating the front portion of the venue has the ability to operate as a concession servicing the plaza.

The venue servicing takes place at Level 00 with beer deliveries from the service road loaded into the main cellar at Level 00.
### SECTION 6

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6.0 APPEARANCE

6.1 Facades

MSG Sphere is an architectural composition that seeks to integrate the sphere aspect of the design into the context of the site. This report has already explained the reasons why the spherical form of the venue is the critical element of the design and how the sphere form responds to the desire to create an event experience, a destination and a new landmark for London.

In this section of the report we will explore in more detail how the concept of an LED covered sphere is delivered and how the practical aspects of façade design are dealt with in a way that does not detract from the even distribution of the LED surface. We look at the panelisation, the façade buildup and the LED system. The venue has entrances and areas of louvre that are created within the geometry of the LED panels. The sphere is punctured by the stage box. We have designed a curved undulating surface to cover the rectangular form of the stage box. This is required to avoid an uncomfortable juxtaposition between two primary shapes, a cube and a sphere. This curved surface is known as the ‘stage box facade’. To further conceal the stage box its roof extends around the sphere to appear as a podium surface. The stage box roof is inaccessible, we have taken advantage of this to make the roof ‘green’ and plant it extensively.

The sphere sits on the podium plinth. The interface between the plinth and the sphere has been detailed to give the impression that the sphere continues into the plinth. The plinth grounds the sphere and deals with the various entrances and boundaries around the perimeter of the site.

The stage box cladding contains the glazed facade of a cafe. The facade is glazed to maximise the visibility of the activities happening inside the cafe.

Combined together these facades create the external appearance of MSG Sphere.
6.0 APPEARANCE

6.2 Facade - Materiality

Podium Facade - Black Brickwork
Bridge Facade - Corten Mesh
Stage Box Facade - Timber Battens
Sphere Facade - Black Stainless Steel
MSG Sphere is formed by a steel exoskeleton structure with straight lengths forming a triangular framework. The triangles are flat creating a sphere structure with flat facets. The faceting is reduced to such an extent that the sphere appears smooth by adding further smaller panels to the surface of the exoskeleton structure. This structural solution has been chosen for the following reasons.

- Triangulation is an efficient structural solution.
- The frame can be safely and sustainably constructed in steel.
- The frame can be tied to the floor slabs for stability.

The relationship between the external sphere and the internal event space is further expressed through the exoskeleton patternation. Floor slab levels are derived from the optimum seating bowl geometry. In order to provide an integrated structural solution, the sphere structure is horizontally aligned with the floor slab levels at approximately 9m intervals vertically. This approach allows for partially supporting the floor slabs on the exoskeleton of the sphere. This reduces the number of columns needed to support the floor slabs and provides lateral bracing to the sphere exoskeleton.

A custom patternation has been developed for the top area of the sphere, where the conventional diagrid configuration transforms into a radially morphed diagrid. The arrangement generates triangles of similar sizes and allows for uniform distribution of primary steel members. The resulting mega-triangles’ edge length varies from 6.5m to 10m.
6.0 APPEARANCE

6.4 Sphere Panelisation - Design Development

If the envelope surface panels were to follow the geometry of a perfect sphere, every sub-panel would be doubly curved, which would lead to incredibly complex fabrication. This could lead to increased waste and cost (see diagram 1).

Our proposal creates the visual effect of a smooth sphere while maintaining panel planarity for ease of fabrication purposes. Panels are planar, however not parallel to the primary grid. They are pulled further out, following the geometry of an ideal sphere, and generating a refined faceting for the outer facade surface. This is the optimum solution for panelising the sphere (see diagram 2).

A more basic solution could be arrived at by simply dividing the primary structure. When a primary grid triangle (mega-panel) is further subdivided into smaller triangles, the outcome is a set of panels with a maximum size of approximately 3.2m by 3.2m. If the panels are in plane or parallel to the primary grid triangle, the resulting surface is limited to the faceting resolution of the primary structural grid (see diagram 3).
The primary grid triangles are expressed on the facade by the introduction of a 120mm shadow gap between mega-panels. In addition to the aesthetic rationale of expressing the structural grid on the facade, the shadow gaps serve a drainage and ventilation purpose. After a mega-panel is subdivided into 9 components, with the panel orientation following a perfect spherical geometry, the panels are then further optimised in order to minimise the number of different panel types across the building envelope.

The optimisation is achieved by introducing a 50–60mm tolerance between panels. This allows for the same panel type within a mega-panel, with the geometrical difference between the panels being hidden within the gap between panels.

Each panel is then further subdivided into 4 sub-panels (see Label 3) in order to reduce the size of the components and ease installation, access and maintenance. Contrary to the mega-panel subdivision logic, sub-panels lay within the same plane as the panel.

While the panelisation hierarchy follows fabrication and installation logic, it also contributes to the architectural aesthetic by breaking down the sphere and relating the facade more closely to the human scale.
6.0 APPEARANCE

6.6 Sphere Panel Types

For the majority of the sphere, the building envelope consists of solid black stainless steel panels with embedded LED pixels. The panels are laser cut from black stainless steel sheets. To address glare the light reflectance value (LRV) of the panel will be limited to a maximum of 1.5% measured at 20 degrees, 5.7% measured at 60 degrees and 38% measured at 85 degrees.

A louvred panel type is required to provide open area requirements for air intake and exhaust. The louvred panel zones are located in the highest two horizontal bands of mega-panels, and in a section of the north elevation.

The louvre components are embedded with LED pixels and the LED pitch is consistent across the entire facade. When the media facade is switched on, the illumination from the sphere will be completely uniform across all panel types.
6.0 APPEARANCE

6.7 Sphere Standard Panel

Due to the access and maintenance requirements specific to the integrated LED system, the panels must be subdivided into units that can be managed by up to two individuals working at height within the confines of a building maintenance unit (BMU) basket. This requires all subpanel sizes to be under 1.8m. The facade will consist of lightweight LED embedded panels fixed in a frame for access to the LED component mounting.

The black stainless sheet perforation allows for front access to the LED module system. A black stainless steel cover plate covers the LED module opening. Perforations in the cover with an approximate size of 4x4mm reveal the individual LED diodes in the module. Refer to section 6.10 of this report for more details.
6.0 APPEARANCE

6.8 Sphere Louvre Panel

The louvre components have been designed taking into account three primary criteria - the integrity of the architectural appearance of the sphere, the ventilation requirements of the venue and the LED system requirements.

The louvres are designed so that, as much as possible, they look exactly like the regular stainless steel panels. The louvre spacing delivers the free air requirements of the air handling plant located in the rooms behind the louvres. The LED spacing on the louvre panels is the same as the LED spacing on the normal panels so that the image created by the LEDs is seamless across normal and louvred panels.

The louvres are composed of a coated aluminium extrusion with an open side facing the exterior. A black stainless steel sheet covers the louvre opening, creating a continuation of the appearance of the sphere. The louvre sectional geometry is optimised for clear air movement. LED pixels are embedded within the black stainless steel sheet that covers the louvres and the cavity within the louvre contains wiring to the LED fittings.

![Diagram of Sphere Louvre Panel](image)

- **Holes in louvre panel for LED Pixels**
- **Louvre**
- **Gap between the louvres**
- **LED Pixels**
- **Folded stainless steel sheet forming the louvre**
6.0 APPEARANCE

6.9 Sphere LED Resolution

Based on the analysis of the key approach views and visibility distances towards the sphere, we have concluded that a 150mm pixel resolution is sufficient for media content to be visually resolved and give viewers good image clarity.

There is a 3 minute walking window of viewing conditions towards the sphere at perfect resolution. This corresponds to being between 150m and 25m away from the sphere. Further than 150m from the sphere facade the resolution is good. Closer to the sphere facade you see the individual LED pixels rather than the image.
6.0 APPEARANCE

6.10 Sphere LED Pixel

Due to the spherical geometry of the venue, the envelope consists of approximately 30 different size panel types. In order to provide a cost-efficient illumination solution, the design proposal utilises a component based system for individual LED module installation that can be installed within each of the different panel types in the same way.

There will be more than a million pixels distributed across the sphere facade that will need to be cleaned and maintained. The design allows individual LED modules to be replaced without needing to completely replace the entire panel. The LED modules will be removable from the front as individually serviceable components. Panels will only be removed in the unlikely scenario of power supply failure.

During the day the module will be fully illuminated. At night only four diodes per LED module are required for illumination, allowing for the rest of the diodes to be switched off.

The black perforated cover plates create a smooth sphere surface. Only the LED pixels are visible behind the perforations.
6.0 APPEARANCE

6.11 Sphere Content

The media facade will be capable of displaying both still and moving imagery. The exact content cannot be described in this report because it can vary so greatly but the expected types of content are as follows:

**Event Imagery**

Event content might include video of an artist at a previous performance or a promotional piece in advance of a show.

**Media art**

The facade will be a large-scale canvas for dynamic media art content.

**Topical Events**

Similar to the Eiffel Tower in Paris, Burj Khalifa in Dubai, The Coca-Cola London Eye, and the Wembley arch, MSG Sphere will be occasionally lit in colours specific to a topical event.

**Advertising**

Advertising and naming rights are part of the MSG business model and will contribute to the successful operation of the venue.

For details of the advertising consent being sought for the sphere refer to the separate advertising consent document.
6.0 APPEARANCE

6.12 Sphere Envelope Detail

The envelope build up can be divided into three layers - structural, acoustic and envelope. As indicated in the diagram below, the structural layer includes primary and secondary steel members. The acoustic layer consists of steel deck and insulation. Finally, the envelope layer consists of standing seam, panel support rail and LED panel.

The visible facade and the outer standing seam layers are stainless steel due to the risk of railway pollution causing corrosion.

Rainwater gutters are located at every horizontal mega-panel shadow gap level. The edge of the LED panels is designed to direct the rainwater flow towards the gutters.

In the gap between the LED panels and the standing seam layer sits the gutter profile, drainage downpipes, building maintenance unit (BMU) cradle tracks, LED panel framing and the wiring of the LED lighting components.
6.0 APPEARANCE

6.13 Sphere Entrances

One of the primary aims behind the design of MSG Sphere is to manifest the vision of a sphere as a recognisable brand. It is therefore necessary to express the form not only from aerial and approach views but throughout all levels of the visitor circulation. At terrace Level 03 the interface between external paving finish and the sphere is detailed as a glass floor around the sphere periphery. This detail reinforces the continuation of the sphere form as the sphere facade visibly extends down into the level below. The glass floor also serves as a visual link between the podium and the upper terrace circulation.

The entrances at terrace level act as natural wayfinding points while being integrated within the overall envelope design intent. They appear as portions of the facade that have been removed. Visitors reach the entry points over bridges between the glass floor ring, with views of the sphere facade from both above and below the terrace level. Following the geometry of sphere patterination, the entry points present an opening inset within the exoskeleton grid. From the aerial view, however, they have minimum impact on the overall perception of the spherical form.

Primary Entrance

To create a large unimpeded entrance of off the podium level 32 LED triangular panels are removed to create the primary sphere entrance. The opening is larger than the exoskeleton that supports the façade and so the steel exoskeleton is exposed. When the entrance is in use it is completely open to increase the speed with which people pass through.

Hydraulic Doors

The terrace level Restaurant / Members Lounge / Night Club frontage (Level 03) will have a section of façade that can be hydraulically opened to a vertical position. When the façade panel is open it forms a canopy over the opening. This will be primarily used in good weather so that the facility can spill out onto the Level 03 upper terrace.

Wayfinding signage and lighting is integrated into all of these entrance types. Doors within these openings will be accessible to all users. The entrances are level between the plaza, podium and terrace and the floors which they serve.
6.0 APPEARANCE

6.14 Sphere Entrance Detail

To create a regular entrance within the sphere surface five LED triangular panels are ‘removed’. The entrance or exit is recessed into the façade and the doors are located on the internal face of the sphere façade. The façade has a considerable thickness due to the required structural and acoustic layers. This allows for deep recesses clad in matt black stainless steel. The entrance doors are fabricated from the same material as the LED panels. Legibility is provided by lighting and wayfinding signage. Rails and push plates will be provided in a contrasting material.

There are two sub-types of the typical entrance and exit. The difference is derived from the geometry of the envelope panelisation. Entrances at Level 02 are located at the mega-triangles base and the side walls are inclined towards the entrance. Entrances at Level 03 are located along the top band of panels within a mega-panel and the side walls are inclined away from the entrance.
6.0 APPEARANCE

6.15 Sphere Cleaning, Maintenance and Access Strategy

To maintain the appearance of MSG Sphere the facade will need to be cleaned and maintained. Over time the LEDs will fail and will need replacing. Plant housed in the top of the sphere will need parts replacing. To deal with the cleaning of the facade panels and replacement of the LED's the building will be fitted with a building maintenance unit (BMU).

The BMU consists of a cradle that is stored within the building and then deployed when needed. The framework of the BMU traverses around the top of the sphere on a rail. The rails that the unit runs on are integrated into the gaps between the facade panels so that they are not visible. The BMU is deployed by hydraulically opening some of the LED panels. Above the horizontal track of the BMU the sphere is louvred. The LEDs within these louvres are cleaned and replaced from gantries within the plant space below the louvres. The top levels of the sphere contain air handling units and other equipment that serve the auditorium.

The BMU system will be used to access the majority of the facade, alternative methods for access and maintenance will be implemented in certain areas. At low level the envelope zones that are closest to venue visitors will be cleaned more regularly from the podium spaces that surround the sphere. The louvred zones at the top of the sphere will be accessed and maintained from the interior of the building.
6.0 APPEARANCE

6.16 Stage Box Facade

The stage box projects from the rear of the sphere. Its rectangular geometry is concealed by a curved stage box wall with an undulating timber surface. This surface also contains the glazed façade of the North Hub café.

The timber panels relate to the landscape treatment and contrast with the hi-tech LED façade of the sphere. The timber is the same species as the timber decking used within the landscape. The facade form is folding and undulating to soften its visual impact and create a more natural looking surface to differentiate the facade from the sphere, providing a backdrop for the surrounding planting. The undulating form contains a row of seating at the terrace level and a clerestory window which allows light down into the café space below.

Doorways within the timber surface are identified with Corten reveals. The use of Corten further ties the facade to the landscape design, which contains feature panels of Corten.
6.0 APPEARANCE

6.17 Stage Box Facade Details

The timber stage box facade will be made from regular sized timber battens fixed to an undulating timber surface behind. This timber surface will be mounted on a lightweight steel frame which creates its form. The timber battens are approximately 50mm wide, installed vertically, with 25mm gaps between them.

To conceal the substrate behind the timber battens the concrete is covered in a black damp proof membrane. The timber is stained and weather sealed to preserve its colour. The timber will be obtained from a sustainable source. The timber will be raised 150mm from the surface of the podium to prevent staining from rain bouncing up and to facilitate easier cleaning. The timber will require re-staining every 10-20 years. This will be carried out from a mobile working platform.

The timber battens continue past the glazed curtain walling frontage of the café to become the ceiling of the unit and create a feature rear wall to the facility. Branding and naming will be designed into the surface of the timber wall refer to the separate advertising consent document for details.
6.0 APPEARANCE

6.18 Stage Box roof

The roof of the stage box and the roof of the cycle storage areas will be extensively planted to create a diverse natural habitat. This will extend the green corridors within Stratford onto the MSG Sphere site. The addition of a green roof helps the scheme meet its sustainability goals.

The green roof will be covered with a very simple, low-maintenance wildflower blanket, consisting of low profile blankets of pre-grown, mature mats of wildflower plants. For MSG Sphere, species will be selected to be wind tolerant but also to provide a rich range of beautiful seasonal colours throughout the year, which will be visible from the surrounding buildings.

These roof areas are inaccessible and will be maintenance free. Cleaning will be carried out from mobile working platforms.
6.0 APPEARANCE

6.19 Podium Facade

The podium provides a brick base to MSG Sphere. Brick has been chosen because it is a solid, robust, maintenance free material that will provide a secure perimeter to the public railway platforms that surround the building on two of its three sides. Brick also references the architectural heritage from the area such as the West Ham Court House.

The podium facade is a composition of large areas of brickwork, ventilation fins (to Level 01 plaza and Level 00 service road), louvres and commercial display. The commercial display aspects of the application are described in more detail in a separate advertising consent document. The different parts of the facade have been carefully shaped to create an ordered, neat facade. To maintain cohesiveness all of the systems are black. The brick facade extends above the Level 02 podium to act as a balustrade. The podium balustrade becomes glass at the narrow parts of the podium adjacent to the sphere to help promote a sense of openness at these points.

The podium facade will screen the unattractive UK Power Networks substation located on the northwest corner of the site. A porous facade ensures that the substation receives enough airflow. On the eastern facade of the building the existing access to The London Underground Limited (LUL) Central line access tunnel is maintained. This is a brickwork enclosure that is incorporated into our larger facade.

The louvres are black steel recessed into the brick facade. Louvres are required for air intake and exhaust.

The facade has a black stainless steel skirting that conceals a services tray for the use of Network Rail. This tray contains cabling that currently runs on the rear wall of the existing brickwork wall that forms the boundary of our application site. The existing brickwork wall will be removed and recycled. The station signage and fittings will be integrated into our new facade on special flat panels built into the brickwork.
6.0 APPEARANCE

6.20 Podium Facade Detail

The brick surface of the podium facade will be constructed from black brick slips bonded to a precast concrete panel and craned onto the concrete frame of the building. This is a fast and efficient way of creating a façade and is less labour intensive than traditional brick laying. Fast construction is required to limit disruption to the adjacent rail platform during construction. This method of construction will also reduce the amount of site waste and eliminate the risk of the weather disrupting the build process.

The chosen brick is textured black. The mortar will be light grey with recessed pointing. Clever detailing of the joints between the panels will ensure that the wall reads as a continuous surface. Where required the brick panel will be insulated and lined internally.

Brickwork requires little maintenance or cleaning. The lower parts will be treated with an anti-graffiti coating and if any vandalism occurs or maintenance is required it will be carried out, from the rail platforms. This will be subject to Network Rail’s permission.

The podium brickwork is punctuated by black aluminium louvres that are required for supply and extract air ventilation.

The podium contains a naturally ventilated service road at Level 00 and a naturally ventilated plaza at Level 01. Both spaces are ventilated through the façade using black stainless steel fins spaced 100mm apart. The fins are robust, providing a secure vandal resistant facade to the podium and the rail platform. The fins are deep preventing views into MSG Sphere service yard from the rail platforms.

1. Corten flashing
2. Corten reveals
3. LED screen (subject to separate advertising consent application)
4. Station signage integrated into brick facade
5. Black stainless steel skirting concealing platform power and data
6. Black steel fins. Naturally ventilating the plaza
7. Textured black brick facade
**6.0 Appearance**

**6.21 Podium Parapet**

The podium parapet wall is an important device for tying various elements of the design together. The height of the wall and its condition varies depending on what is happening on the podium. The balustrade is always at least 1.5m higher than the internal surface of the podium on the south, east and west sides. On the north it is 1.8m higher because of the proximity to the HS1 rail box. The normal condition of the parapet is brick on the outside with opaque glazing on the inside and a Corten capping.

The height of the wall is not constant. The parapet wall rises up 300mm to meet bridges 1 and 2, the sides of which are 1.8m high because they cross over railway lines. The internal glass surface of the podium parapet runs seamlessly into the internal glass surface of the bridges. The Corten capping on the parapet wall turns into the Corten capping of the bridges. The wall raises up to 3m high to conceal the bike storage units and boiler flue on the west and north boundaries. The wall also raises up to respond to areas of elevated landscape on the podium.

Where the parapet wall is closest to the sphere the external brick surface drops away to podium level with just the internal glass surface remaining. This opens the podium up to views over the railway lines and prevents the narrow parts of the podium from feeling enclosed. Where steel fins are located at Level 01 for ventilation purposes they extend up to become the parapet. This helps to visually connect the podium to the Level 01 plaza below.

The podium parapet wall has lighting integrated into it to illuminate the podium. The skirting contains a power and data runway to provide easy connections to the service boxes that supply the 'pop up' food and beverage facilities that will support the podium spaces. The parapet services runway will also supply power and data to the digital landscaping features.
6.0 APPEARANCE

6.22 Podium Parapet - Glazing

The design of the internal glass lining to the bridge and podium parapets has been conceived to enhance the sense of excitement as patrons approach MSG Sphere.

On the bridges clear glass slowly turns more opaque as you cross the bridge towards the venue. By the time you reach the podium the glass is black. This design strategy focuses views towards MSG Sphere.

The internal glass parapets of the podium are also black when they meet the bridge. They become clear glass again when the podium parapet is closest to the sphere. Transitioning from opaque black through to opaque white before further transitioning from opaque to clear. The opaque to clear transition is achieved using a ceramic coating that is baked onto the surface of the glass. The coating starts solid then becomes perforated with the holes becoming larger, the holes give way to dots and then the dots become progressively smaller and further apart until the glass becomes completely transparent.

Example of an opaque to clear frit pattern on glazing.
6.0 APPEARANCE

6.23 Advertising Consent Application

Commercial branding and digital signage are an essential part of MSG Sphere. These aspects of the proposal are described in a separate application for advertising consent. The content of that application seeks approval for the advertising to be shown on the surface of the sphere, LED screens integrated into the podium façade, LED tickertape banners located on the edges of the North and South Terraces, LED screens wrapping around the structure of bridge 3, content on the site security gates, and content on the lift shafts to bridges. Please refer to the separate advertising consent for details of these items.
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7.0 ACCESS

7.1 Access - Introduction

This section describes access to MSG Sphere. It describes the works to the surrounding Public Highway and the new bridge infrastructure that forms part of the proposals and also how policies relating to access have been taken into account.

4 new bridges are being delivered as part of the development to make the site accessible, to the public, visitors to MSG Sphere and to improve vehicle accessibility.

The design of each bridge and the highway works are explained in this section.
7.0 ACCESS

7.2 Access - Montfichet Road

Visitors to MSG Sphere arriving from Montfichet Road will access the site via two new pedestrian bridges. To accommodate the new bridge landings it is proposed to redesign Montfichet Road. Both bridges have accessible lifts and stair flights with generous widths. Bridge 1 is located to the north of the Engie building and Bridge 2 is located to the south.

Bridge 1 lands in a position set back from the footpath. The impact of people leaving this bridge requires the footpath and the road to be modified. The position of the lift and stair landings is determined by the Engie services pipework buried below ground. Some of the Engie pipework is above ground. This pipework is screened from view by Corten screens that provide an attractive foreground to the streetscape.

Bridge 2 lands directly on the footpath and requires the existing footpath to be widened to allow pedestrians and cyclists to pass the bridge. To create more space for pedestrians and cyclists the number of vehicle lanes in Montfichet Road has been reduced. The new urban realm design is enhanced by additional landscaping within the streetscape and public cycle parking under the bridge 2 structure.

The bridge 2 structure has been coordinated with the Engie service yard to allow vehicles to continue to turn in and out of the yard. Listening to pre-application advice we have developed a scheme that has two pedestrian/cyclist crossover locations. Pedestrian crossings across Montfichet Road have been positioned based on where people will want to cross the road to reach Stratford Underground Station, Stratford Bus Station and the car park in Westfield's Stratford City Shopping Centre.

The landscape design creates pockets of high quality landscape along the footway and the cycleway. The footway is a minimum of 2 meters wide. The cycle lane is 3m wide. The cycle lane runs the length of Montfichet Road becoming a shared zone where the footway and cycleway cross. Planting on Montfichet Road will consist of robust sedges and shrubs that can cope with predicted footfall and provide year-round ground cover. Flowering perennials will provide colour and seasonal change. Where possible the proposed scheme retains existing trees. New trees have been located to avoid existing buried services to ensure tree health and continued access to the below ground services. The proposed hardscape materiality is a mixture of standard Local Authority materials and materiality found in the podium landscape. New seating will be positioned at a maximum of 50 metre intervals. The seating will be timber benches and concrete blocks with timber tops. The concrete blocks are combined with bollards to address the need for pedestrian protection against hostile vehicles.
7.0 ACCESS

7.2 Access - Montfichet Road (continued)
7.0 ACCESS

7.3 Access - Angel Lane

Visitors to MSG Sphere arriving from Angel Lane will access the site via wide, sculptural stairs and a landscaped accessible ramp. The entrance from Angel Lane has been made as wide as possible. Angel Lane is currently a junction controlled by traffic lights designed in anticipation of vehicles driving into the site from the elevated hammerhead that has been constructed. Our design cannot make use of the hammerhead entrance and to maximise the available space within the site for stage servicing and the service road the part of the hammerhead within our site that cannot be utilised will be demolished. The existing T-junction will be removed and will become a ninety degree bend in the road.

The parapet walls of the proposed podium will flow seamlessly into the parapet walls of the existing Angel Lane bridge. To achieve a wide opening onto Angel Lane part of the existing bridge parapet will be removed.

A new service road connection will be made to Angel Lane. This will require the removal of the brickwork boundary wall that was part of the former railway works. Hidden from public view are old urinals which will be salvaged.

The entrance from Angel Lane will attract around 10% of the peak egress and ingress capacity on event day. To help reduce traffic speeds on Angel Lane and to protect pedestrians a raised table will be introduced as a traffic calming measure. This will lift the height of the existing carriageway. A 60mm kerb at the footway edge will remain to alert visually impaired pedestrians to the presence of the edge of the footway.

The podium entrance at Angel Lane is 2.9m higher than the existing footpath level. We have described how the podium entrance on Angel Lane deals with this level change on the following page. To physically join the new podium to Angel Lane the stone paving of the podium will form the footpath at the back of the highway.

Vehicle protection for pedestrians is provided in the form of bollards located on the edge of the footpath. In some places the bollards are replaced with concrete blocks with timber seats on them.
7.0 ACCESS

7.4 Access - Angel Lane Connection to North Hub

The podium entrance at Angel Lane is 2.9m higher than the existing footpath level. The height of podium level is determined by the existing level of the town centre link bridge and the clearance required over railway lines for the proposed new bridges 1 and 2. If the podium was lower pedestrians would have the inconvenience of going up and then down again to reach the podium. Furthermore if the podium was lower it would not be possible to fit 2 levels of servicing beneath the podium.

The podium is level to maintain easy and simple circulation around the sphere. To deal with the level change we have designed a sculptural set of stairs and a landscaped accessible ramp.

The 1 in 21 accessible ramp is 2m wide allowing two wheelchair users to pass. The ramp has landings at every 363mm rise, including a landing at every change in direction. These landings break the ramp up into 8 short lengths. After every 2 short ramp lengths there is a large rest area. In the middle of the ramp there is a break out area that takes you out of the ramp network and has seating. It is possible to see the top of the route from the bottom, helping to avoid collisions.

The most commonly used approaches to the podium are likely to be from the south where all of the routes will have lift access.

The stairs will provide access to the podium for the large event day crowds. The stairs will have a going of 280mm and 170mm risers. Handrails will be provided on both sides of the ramps and stairs. Corduroy warning surfaces will be included at the top and bottom of the flight and the step nosings will include contrasting strips. Planters and seating opportunities have been built into the design to frame the entry point and to connect The North Hub to Angel Lane. The planting also helps to soften the streetscape and provide a green, welcoming space.

The materiality of the retaining walls and seating edges in this area will reference the timber facade visible on the stage box in the background. The larger wall surfaces will feature inlay MSG Sphere branding and lighting. Corten mesh panels will be visible in the background of the entrance from the street.
7.0 ACCESS

7.5 Access - Podium Entry Points

We have determined the number of visitors who will arrive at the different entry points to the podium by assessing the local public transport exit points. We have determined the percentage ratios of people arriving via either Montfichet Road, the town centre link bridge or Angel Lane.

Access onto the site is based on a maximum capacity on the site of up to 25,000. This is broken down into 21,500 for the venue, 1,500 in the music club, 1,000 staff and 1,000 people in all other ancillary spaces.

The site is surrounded on three sides by railway lines so there are only 4 practical pedestrian access points onto the site.

Bridge 1 is anticipated to accommodate 5-10% of the ingress population and 5-10% of the egress population. The bridge is 6.8m wide. The bridge lands on Montfichet Road with a 3.55m wide stair and a 21 person accessible lift.

Bridge 2 is anticipated to accommodate 40% of the ingress population and 40% of the egress population. The bridge is 9.6m wide. The bridge lands on Montfichet Road with a 3.55m and 7.1m wide stair and a 21 person accessible lift.

Bridge 3 is anticipated to accommodate 40% of the ingress population and 40% of the egress population. The bridge is 8.975m wide. The bridge connects to the existing town centre link bridge and relies on the four existing 21 person URWestfield operated accessible lifts.

The Angel Lane entrance does not require a bridge, it has a 11.250m wide stair and a 2m wide accessible ramp. Angel Lane is anticipated to accommodate 10-15% of the ingress population and 10-15% of the egress population. All percentages are based on a maximum capacity main venue event.

Wheelchair users and other mobility impaired guests will be assisted by a MSG operated shuttle service. The percentage of these guests arriving at each podium entry point will vary from the figures above based on how the shuttle service operates.
The design strategy for Bridge 1 is that it is an extension of the podium spanning across the railway line. However, the simple rectangular bridge form and the expanded Corten cladding have been selected so that the bridge appears to be part of the Engie complex. The Engie building is clad in a similar material.

Bridge 1 serves visitors arriving from the north of Montfichet Road and from Stratford International Station. It connects the podium level to Montfichet Road. It is located north of the Engie building.

The structural solution for the bridge are simple Corten steel beams spanning the railway located below a concrete bridge deck. This solution maximises pedestrian visibility from the bridge and creates a zone between the steels within which Engie pipework that serves the venue can be concealed.

Corten as been chosen as a material because it requires no maintenance over the rail lines. Using Corten references the town centre link bridge which has a Corten structure. The internal balustrades of the bridge are glass fixed in frames so that both sides can be cleaned from the bridge. The glass is clear in the vicinity of Montfichet Road but as visitors get closer to MSG Sphere the panels start to become more opaque. The opaque glass at the bridge terminus signifies arrival at MSG Sphere and focuses views towards the sphere. The glass bridge balustrade joins seamlessly with the internal glass surface of the podium balustrade. The Corten flashings that cap the podium balustrade become the capping to the bridge balustrades creating further continuity between the two structures.

The concrete bridge deck is finished in the same stone setts as the podium for continuity of experience and to connect the bridges to the podium. Tactile metal studs are proposed to be inset into the setts at the top and bottom of the stair flights, to form a corduroy warning surface to warn people with visual impairments of the presence of the stairs. The bridge handrails on both sides of the stair will be bronze in colour, which will contrast adequately with glazed panels and opaque glazed panels. Contrasting nosing strips will be bronze in colour and recessed into the stone steps.

The bridge has light fittings integrated into the balustrade, with coloured low level fittings running along the edge of the drainage channel in the floor. These fittings will up light the balustrades with colour that suits the event. Low level wall flood lights will be used to achieve required light levels on landing areas. The stairs will have integrated lighting built into the bronze coloured stainless steel handrails.

The bridge is provided with a 1600kg, 21 person lift. The lift has a 1.3m clear door opening and will be large enough to accommodate more than one wheelchair user. The lift will also be large enough to carry mobility scooter users. The lift is configured as a through lift with doors on opposite sides of the lift car, which is safer and easier to use for wheelchair users as they avoid needing to turn around within the lift. The stairs address the 7.4m level difference between Montfichet Road and the podium. The stairs have 4 flights with 2 pairs separated by a large landing.

The bridge has been designed in consultation with Engie to ensure that the bridge landing does not disrupt existing Engie building pipework and allows for planned future pipework installations. The bridge is setback from Montfichet Road to allow for these pipes. Above ground pipework, that would be visible at the entrance to the bridge is screened. The screen is used as a device to help locate the bridge. Existing Network Rail access is retained, with the same overall width. A new Network Rail access gate is designed into the architecture of the bridge.
7.0 ACCESS

7.7 Access - Bridge 2

Bridge 2 is similar to Bridge 1, they have been designed as a pair. This is because both bridges have the same architectural requirements. They are an extension of the podium and they are designed to look like part of the Engie complex. The design details described for Bridge 1 on the opposite page apply also to Bridge 2.

Bridge 2 serves Stratford Underground Station and guests who arrive from the south of Montfichet Road. Bridge 2 connects the podium level to Montfichet Road. It is located south of the Engie building.

The structural solution is similar to Bridge 1 with simple steels spanning the railway line. These steels land on two in-situ concrete piers that flank the vehicle entrance into the Engie service yard. The bridge has been designed in consultation with Engie; vehicle tracking has been carried out to demonstrate that the design will not affect the operation of their service yard. Access to their water storage tanks is maintained and 1m clearance to the Engie building is provided.

Bridge 2 differs from Bridge 1 in that it has stair access from both the north and the south of Montfichet Road. The south flight faces Stratford Underground Station and is wider because it will be favoured by most people arriving from the station. The lift access has been deliberately located alongside the north flight to discourage people who are able to use the stairs from selecting the lift. This will ensure that the queuing time for wheelchair users and ambulant disabled guests are kept to a minimum. The lifts will be sign posted and well illuminated though to ensure that those who need to use the lift can locate it.

To accommodate the Bridge 2 landing on Montfichet Road the footpath has been redesigned. The proposals include a 3m wide cycle path, 2m wide pedestrian footpath and 1.3m landscape strip alongside the bridge landing.
7.0 ACCESS

7.8 Access - Bridge 3

Bridge 3 connects the podium to Stratford Station and serves visitors to MSG Sphere arriving from Westfield Stratford City Shopping Centre. Bridge 3 connects the podium level to the town centre link bridge (TCLB). It is located at the southern tip of the MSG Sphere site. The bridge relies on the two existing TCLB lifts to provide wheelchair user access and the existing escalators for general access. The bridge spans across Stratford Railway Station platforms below.

Bridge 3 has been designed to match the existing TCLB architecture. The concept is that structurally it will appear as a T shaped bridge that was originally conceived as a single structure. The structure of bridge 3 will have a Corten finish and the structure will form the sides of the bridge. Bridge 3 is different from the TCLB. It has mesh on the outside so that it connects visually with bridges 1 and 2. The internal glazing is located within the structure rather than lining over it. Expressing the Corten uprights of the structure references the Corten panels used extensively within the landscape design on the podium. The structure is rectangular without the sloping plates that give the TCLB its unique shape. These changes signify that Bridge 3 is part of the MSG Sphere development.

The new bridge is the same height as the existing TCLB where it joins. The structure then tapers down to connect with the much lower parapet walls of the podium. The podium parapet walls are splayed out to meet the last column of the bridge. The splay also creates an arrival point on the podium.

To make the physical connection with the existing TCLB four existing glazed panels will need to be removed along with the glazing bars that support them. The primary TCLB structure will remain unaltered and will continue to be clad on the TCLB side with illuminated panels.

On the bridge 3 side the uprights will be fitted with aerofoils to improve crowd flows. Between the aerofoils will be glass gates allowing MSG to close the bridge when required.

The internal surfaces of the bridge structure will be clad in LED panels. Refer to the separate advertising consent application for details.

The floor surface of bridge 3 will feature piezoelectric panels that will generate renewable energy from visitors footsteps. The balustrade glazing of the bridge follows the same concept as bridges 1 and 2 becoming more opaque as visitors get closer to MSG Sphere.
7.0 ACCESS

7.9 Access - Bridge 4

Bridge 4 has been designed to appear as part of the original HS1 rail box on which it sits. The bridge connects the service road alongside the HS1 rail box with the service road that runs parallel to MSG Sphere. Bridge 4 is not publicly accessible.

Bridge 4 is required to improve vehicle access to the site during the construction phase and for servicing when the venue is operational. The bridge connects the service level (6.5m AOD) with a service road leading to the A112 Leyton Road, bridging across the subterranean HS1 railway. The bridge spans the HS1 infrastructure.

The bridge is a piece of functional infrastructure with a simple structural design. The design is not intended to compete with the architecture of the main venue. One side of the bridge features a pedestrian walkway. The bridge parapets are shaped to improve the visibility for drivers turning off of the bridge. The existing fences around the HS1 rail box will be modified to interface neatly with the new bridge.

To erect the bridge a section of the existing HS1 rail box parapet needs to be removed.

The bridge structure is Corten steel. The bridge is capped with stainless steel cappings.
7.0 ACCESS

7.10 Access - Securing The Podium

Access to the podium has been explained in the previous pages of this section. The open space on the podium is available for use by the public during operational hours. On the advice of the Metropolitan Police and MSG's security consultants, measures will be in place to secure the site outside of operational hours. The podium could be closed 30 minutes after the finish of an evening event at the venue or at 23.00 on days where no event is taking place. The podium will re-open at 07.00 the following morning. The podium could also be closed for safety, security and maintenance reasons.

The secure line has been developed based on ease of operation, security advice and the desire to keep gates to a manageable size. Given the width and openness of the connection at Angel Lane it is not practical to locate a secure line on this boundary. The secure line is pulled back to the narrow parts of the podium where gates are a more manageable size.

Bridges 1 and 3 are provided with gates at their entrances. Bridge 2 has gates on the flat part of the bridge rather than at street level where the gates would be impossible to incorporate without affecting the flow of people off of the bridge when they are locked open and without impacting on the streetscape.

The gates on the bridges are integrated into the architecture of the bridge so that when they are locked open they will not be perceived as a gate.

The gates at the narrow parts of the podium will be a deployable system stored close to the required gate position. In the stored location the gates will not be visible. This solution has been developed so as not to reduce the narrow parts of the podium in width and not to detract from the sphere when the gates are open.

The stairs up to the Level 03 north terrace are outside of the secure line so they will be provided with gates at the top of the stair. The North Hub is always open for community use. This space will be managed by MSG when the venue is closed.
7.0 ACCESS

7.11 Access Into The Main Venue

Once visitors have arrived onto the podium they are presented with 3 routes to continue their journey. Route 1 is to enter directly into the venue, route 2 is to descend into the plaza at Level 01 and route 3 is to ascend to the terrace levels at Level 03. The inclusion of the plaza and the terraces in the design helps to organise guests before they enter the venue. This in turn helps to reduce the pressure on the internal vertical circulation system within the venue at peak times. An example of this is that guests with a ticket for the stage floor will have automatically arrived at the correct level by descending to the Level 01 plaza. The terraces and plaza also provide additional area for people to gather away from the podium.

This circulation system is designed into the landscape of the podium. Careful consideration has also been given to how the podium physically interfaces with the sphere. The three primary circulation levels, Level 03, Level 02 and Level 01 are visually connected together.

All routes are fully accessible with lifts provided alongside stairs and escalators.

For further information on accessibility refer to Appendix III of this report and the Transport Assessment.
Once inside the venue guests need to find their way to the correct floor level and finally to their seat.

The podium and MSG Sphere design will have wayfinding information designed into the landscape and the architecture. Our podium landscape has digital wayfinding included as part of the content. Digital wayfinding is useful because it can be controlled and easily changed to suit particular show requirements. This can assist with traditional ticket strategies (paper) and digital ticketing strategies. The diagrams below show how a simple venue app could be designed to assist with the venue wayfinding. The app could allow customers to use the site Wi-fi, which in turn could unlock commercial and event content.

Illustrative example of digital wayfinding content sent directly to fans via an app.

1. **Wayfinding Mode**
   - Arrival to site
   - “Go to West Stalls”
   - “25 minutes to show”

2. **Ticket Mode**
   - At entrance
   - “Scan Ticket”
   - “22 minutes to show”

3. **Push Back**
   - At concourse
   - “Get your snacks and drinks”
   - “19 minutes to show”

4. **Wayfinding Mode**
   - Find your area
   - “Go to Door 101”
   - “10 minutes to show”

5. **Wayfinding Mode**
   - Find your seat
   - “Go to Row 11, Seat 08”
   - “Enjoy the show!”

Illustrative example of digital wayfinding content sent directly to fans via an app.
7.0 ACCESS

7.13 Access to Auditorium

Visitors move through the venue from the entrances, via concourses and lounges to their seats. The entry point into the auditorium is via a doorway or an opening in the seating bowl called a vomitory. Access to the auditorium varies with each tier. A description of each access point or vomitory follows.

L01 Stalls.
The stalls floor seating and standing area is accessed directly from the Level 01 concourse, with steps taking up the 500mm drop between the concourse level and the stalls floor. The stairs are sized for the maximum standing capacity. Accessible ramps either side of the stage allow wheelchair user access to the floor.

L02 Upper Stalls.
The upper stalls are back fed directly from the concourses behind.

L03 Lower Boxes.
Each box has its own dedicated stair accessed from within the box.

L04 Wings.
A standard stepped vomitory allows access to the wing tier seating.

L04 Lounge.
2 level access vomitories provide access to the seating area.

L05 Lounge.
Level access vomitories give direct access to the L05 seating.

L06 Boxes.
Each box has its own dedicated stair accessed from within the box.

L08 Circle.
The Circle tier is back fed directly from the open concourses behind.

L09 Balcony.
A standard stepped vomitory allows access to the balcony tier seating from the concourses behind.
7.0 ACCESS

7.13 Access to Auditorium (Continued)
Wheelchair accessible viewing positions are placed throughout the auditorium, offering a considerable array of choices for wheelchair users.

In all areas of public seating where standing is likely, the accessible platforms are raised with a super riser to maintain good sightlines over people standing in front of the accessible platforms. 135 positions are provided within the general admissions seating, there are 9 permanent hospitality positions and within private viewing boxes the last row of seats will have a number of removable seats to provide wheelchair accessible viewing positions to box users. This provision meets the requirements set out in the Accessible Stadia Guidance published by the Sports Grounds Safety Authority.

Ramps on either side of the stage give access from the Level 01 concourse to the stalls floor giving wheelchair users the choice of viewing experience during non-seated events. Flexibility within the design allows for an increase in the number of accessible positions dependent on event mode.

The Level 08 circle and the Level 09 balcony are effectively a single large upper tier split in two. The offer on the concourse serving these tiers is identical. For this reason we have only provided wheelchair viewing positions on the more accessible Level 07 concourse. Lift access is provided to the higher concourses.

An equal number of amenity seats will be provided. These seats will be located around the entrances to vomitories limiting the number of steps needing to be negotiated to reach the seat to 3.

Diagram explaining how a “Super riser” works
7.0 USE - SPHERE

7.14 Wheelchair User Access To Auditorium (Continued)
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8.0 LANDSCAPE

8.1 Landscape - Introduction
8.0 LANDSCAPE

8.2 Landscape - Open Space

The podium surface will be a new piece of urban infrastructure within Stratford. It will extend the high quality urban environment created by Westfield Stratford City Shopping Centre across the railway line into the east of Stratford. The podium will be open to the public when the venue is operational. The improved connectivity that the development will bring to the area has been explained earlier in this report.

The open space on the podium has been designed with year round usage in mind. The environment and thermal comfort has been carefully considered. Solar exposure to the spaces is controlled with landscaping and terraces providing shade. The impact of wind is mitigated by the landscape. The terraces provide shelter against the weather on the podium.

The open space has been designed to become a destination in itself attracting people to the site on non-event days. It has been designed to create a sense of community. There is a variety in the type of spaces included in the design, small and intimate, large for the gathering of crowds, soft and hard. Some spaces are a route others are a destination.

The landscaped open spaces are located on Level 03 (Terraces), Level 02 (Podium) and Level 01 (Plaza). Additionally, landscaping is provided to the new streetscapes on Angel Lane and Montfichet Road.

The following pages explain each of the open spaces in more detail. With the exception of the streetscape improvements which are described in the access section of this report (refer to pages 114 - 116) and the plaza which is described in the use section of this report (refer to pages 75 - 77).
Clear height between podium and soffit of terrace above 4.8m

Clear height within plaza 3.7m
The podium open space is connected together over three levels, terrace (L03), podium (L02) and plaza (L01). Glass floors, glazed balconies and wide staircases connect the levels together.
8.0 LANDSCAPE

8.3 Landscape - Scale Comparison

On the following pages we explain the design of the different open spaces on the podium. The following diagrams demonstrate how big these open spaces within the proposed development are, in comparison to some well known open spaces within London.

1. The Square - 4,482m²
2. South Terrace - 2,460m²
3. Montfichet Corner - 1,597m²

1. The Scoop at More London - 4,200m²
2. Somerset House - 2,925m²
3. Barbican Centre Roof - 1,680m²
8.3 Landscape - Scale Comparison (Continued)

4. North Hub - 2,907m²
5. North Terrace - 209m long (2,094m²)
6. Green roof to stage box - 1,259m²

4. Granary Square - 2,625m²
5. Stratford Station Platform 8 - 215m long
6. City Hall Plaza 1,260m²
8.0 OPEN SPACE

8.4 Landscape - Digital Content

Planted landscape is supplemented at MSG Sphere by digital landscaping in keeping with the futuristic theme of the venue. Two digital ideas help to unify the different open spaces around MSG Sphere. These ideas will make the open space around MSG Sphere unique and different from locally available spaces like Westfield’s Stratford City Shopping Centre. MSG Sphere open spaces will be serviced by fast Wi-fi that could be accessed by visitors when entering the site. This amenity has the potential for partnerships with established technology providers. Allowing guests within MSG Sphere open spaces access to content that will extend their stay on the site.

The Wi-fi provision within the digitally connected open spaces will additionally allow guests to control the digital landscape. During the day the open spaces will be filled with traditional landscaping. However as the day ends and the daylight levels drop, the digital landscape comes alive. The Wi-fi will allow visitors to interface with and control the digital landscape. An example of this would be changing the colour of digital flowers by moving a phone closer to them. The venue management will also be able to control the landscape allowing ‘events’ to take place at a certain time of the day, for example the digital flowers changing to a certain colour at a particular time of the day.
8.5 Landscape - Digital Content

The digital landscape is designed to become more visible as the day ends and light levels drop.
8.6 Landscape - The Square

'The Square' is the name of the large Level 02 podium space located to the south of MSG Sphere. It is anticipated to be the main point of arrival on the podium.

Given the nature of the site and predicted pedestrian patterns The Square will act as the anchor point for the development.

There are four entrances onto The Square. Bridge 3, connecting the podium to the town centre link bridge and bridge 2, landing on Montfichet Road, are likely to be the primary pedestrian routes. It is anticipated that 80% of guests will arrive by these routes. In addition, two routes on the podium around the east and west sphere perimeter connect The Square to the rest of the site.

To service the anticipated footfall, The Square acts as a junction space feeding guests through The Square to the appropriate venue entrance and eventually into their seat.

It is the anticipated crowd flow and expected population which has driven the spacial design of the space, allowing it to service a maximum capacity event in the venue efficiently. The landscape response and detailing allows The Square to also feel comfortable with only a small number of people occupying it.

Ample seating space exposed to the sun in the summer, covered from the rain in winter, but sheltered from the wind year-round, will provide the infrastructure required for the space to serve as a small town square.

This space will be serviced by food and beverage 'pop up's' positioned on the south western edge of The Square. Water, power and data services for these mobile units will be contained in outlets recessed into the podium floor surface. Toilet facilities serving this space are located in the plaza below.
8.0 LANDSCAPE

8.7 Landscape - The Square - Section

1. The Square
2. Raised timber stage
3. Seating on raised deck
4. Viewing platform on terrace
5. Open space
6. Seating on planter
7. Bridge connecting Restaurant / Members Lounge / Night Club to the South Terrace
8. View down to stage
9. LED Screen incorporated into the edge of the terrace slab.
The Square features a central, raised deck. The raised deck has been designed to provide The Square with a focus. The deck will serve a number of functions, it will become a place where people can arrange to meet and it is a place where people can gather and sit.

The raised deck assists with circulation acting like a pedestrian roundabout. This will smooth the flow of people moving around The Square. Adequate space has been allowed around the raised deck for circulation when people are ingressing and egressing the venue. The raised deck has been sized so that there is sufficient space within The Square to accommodate large crowds prior to the start of an event.

The raised deck is partly covered by the Level 03 terrace above. This will allow the deck to be used both when the weather is hot, and when it is raining. The raised deck has been positioned so that people standing on the Level 03 viewing platform above have a clear line of site to the people located on the southern tip of the raised deck.

The raised deck will be clad in timber. This material was chosen because it is comfortable to sit on and is ideal for use as a deck. LED lighting will be integrated into the risers of the steps that lead up to the top of the raised deck and the seating terraces that surround it.

The height of the raised deck is 1,350mm. This height has been chosen so that people can see over the structure to the venue entrances.
8.0 LANDSCAPE

8.9 Landscape - The Square - Café

In order to ensure that The Square has year round use it needs to be serviced with amenities that will attract people to the space and encourage a sense of community. These amenities include toilets, baby change facilities and the ability to buy a drink or a snack.

The design of this space progressed initially with a large glass fronted café in the centre of The Square, which had the ability to open up into the outdoor space and contained toilet facilities, kitchen and a servery. During the pre-application process feedback was received that this café caused the Level 02 podium space to feel too enclosed and dark, spoilt the sightlines across The Square, and in particular prevented people from seeing the sphere entrances at Level 02 when they arrived in the space. In response to this we have omitted the café and instead are proposing semi-permanent ‘pop up’ vehicles to supply the amenities that The Square requires. This is a better solution because it is flexible, it allows MSG to easily update the offer to keep it ‘fresh’ and ‘fashionable’ and to change the offer so that it relates to current or forthcoming events at MSG Sphere.

The location of the ‘pop ups’ will be carefully controlled so that the number of units does not become excessive, and to ensure that the positioning of the units does not impact on ingress to or egress from MSG Sphere. The exact type, size and look of the vehicle is unknown at this stage but the examples on this page show the design intent. The capacity of the ‘pop ups’ will be selected to serve around 50 people. The toilet facilities serving The Square are located in the Level 01 Plaza, which is connected to The Square via stairs, accessible lifts and escalators.
8.0 LANDSCAPE

8.10 Landscape - The Square - Landscape Planting

Planting location
Along the western edge of The Square is a large pocket of planting. This planting provides wind mitigation. In addition it frames the space with a green boundary which softens the harder elements of the space and creates a strong visual link between the Level 02 podium and the clusters of evergreen trees on the Level 03 terrace above. The landscape area has seating and lounging opportunities. In addition, this pocket will include several feature trees and pockets of emergent planting. An industrial aesthetic helps ground The Square in its industrial past.

Planting character
The selected tree species will be robust and wind tolerant. Trees will be selected for wind mitigation and to provide shelter, creating conditions suitable for the proposed use of The Square.

To minimise the potential of leaf fall on surrounding railway tracks, evergreen species will be the primary species selected. However, strategic placement of deciduous trees will allow winter sun through denser planting.

The selected species will bring a strong sense of character to the site and seasonal color through flowering species.

The robust nature of the proposed species reflects the demands of large crowds moving across space. The proposed planting plan will reflect the intended uses of the site and ensure that natural light levels are maintained.

Shrubs and short trees will play an important role in creating pockets of character and shelter from the wind. Flowering species will bring a strong seasonal character to offset the solid colour of the evergreen trees and soften the design.

Examples of the types of planting proposed
**8.0 Landscape**

**8.11 Landscape - The Square - Landscape Planting**

**Softscape - trees**

The proposed evergreen trees have been selected for their aesthetic beauty and form as well as being robust in windy conditions making them ideal as wind mitigation for The Square. As they are evergreens there will be limited leaf fall. The species being considered include:

- Scots Pine - Pinus sylvestris
- Pinus sylvestris watereri nana
- Cedrus atlantica
- Cedrus atlantica 'Aurea'
- Atlas Cedar - Cedrus atlantica glauca
- Cypress Leyland
- Southern Magnolia - Magnolia grandiflora
- Podocarpus totara
- Sophora tetraptera
- Common Holly - Llex aquifolium
- Juniperus communis
- Cordyline australis

The proposed feature trees for The Square have been selected as they can bring sensational seasonal change to the space while being small enough to be protected from the wind by the larger evergreens. They will only produce a small amount of leaf fall which can be managed on site before it blows off site:

- Lagerstroemia indica
- Quercus rubra

**Softscape - under-story planting**

The selected biologically diverse understory species have been chosen as they are robust and can survive being stepped on by accident when larger crowds are in The Square.

Selection of proposed shrub species:

- English Holly (Llex aquifolium)
- Hebe albicans
- Hebe rakaensis
- Hebe ‘Midsummer Beauty’
- Juniper (Juniperus spp.)
- Red Osier Dogwood (Cornus sericea)
- Shadbush Serviceberry (Amelanchier)
- Ader-leaf shadbush (Amelanchier alnifolia)
- Helianthus annuus ‘Prado Red’

Selection of proposed perennials and ground cover species:

- Ficaria verna
- Lithospermum purpureocaeruleum
- Helianthus × laetiflorus
- Carex elata ‘Aurea’
- Lamium galeobdolon
- Hyacinthoides non-scripta
- Carex elata ‘Aurea’
- Festuca rubra var. commutata
- Carex pendula
- Eupatorium cannabium
- Papaver somniferum
- Malva sylvestris
- Carex elata ‘Aurea’
- Aster tripolium
- Linaria vulgaris
- Tanacetum parthenium
- Cochlearia anglica
- Dactylis glomerata
- Epilobium hirsutum
- Carex flacca

Images of some of the tree types proposed.

Images of some of the perennials and ground cover species proposed.
8.0 LANDSCAPE

8.12 Landscape - The Square - Details

Hardscape

The proposed materials used across the site are inspired by the industrial heritage of the area and the influence of the sphere. These materials are aesthetically pleasing, contrast with the high tech sphere and are inherently robust, therefore ideal in high usage urban spaces.

To develop an interesting and engaging space, the paving strategy is to use robust, high quality concrete pavers creating variation and patterns across The Square via tone, size and texture. The intent is to subtly engage guests via route finding and develop a true sense of place via inlaid industrial details in the paving.

The drainage approach is to use sustainable urban drainage (SUD's) principles where possible. Throughout The Square we are using permeable pavers to encourage natural percolation and reduced surface water runoff.

Inlaid metal strips radiate from the centre of the sphere. The metal strips will contain messaging about the history of the site, the area and MSG.

Lighting

The entrance to the The Square has high level flood lighting to achieve the required light levels for safe movement and security monitoring.

Staircase entrances will have colour graze lighting on the stairwells as part of the wayfinding strategy. The stairs up to the Level 03 terrace and down to the Level 01 Plaza will have light fittings built into the balustrade to avoid the need for additional fittings. Low-level walkway light will be used to flood the podium pathway.

Soffit lighting to the underside of the terrace will create the impression that the terrace is floating on light. Planters and seating will have low level edge lighting, while up lighting will be used to highlight the vegetation with colour floods.
8.0 LANDSCAPE

8.13 Landscape - The Square Hardscape Materials

The proposed paving will use three colours in four different combinations.

Example of proposed inlays within paving.

The plan on the previous page shows the hardscape design of The Square. These details show how that design will be achieved.
8.0 LANDSCAPE

8.14 Landscape - South Terrace

The South Terrace on level 03 is a large open terrace to the south of MSG Sphere. It serves as an entrance to the main venue and the Restaurant / Members Lounge / Night Club that will operate inside MSG Sphere. Its southern orientation and prominent location at the ‘front’ of MSG Sphere makes it the premier open space in the development.

A large area of The Square below is covered by the terrace providing cover for visitors gathering before an event. The covered part of The Square provides shelter from the weather and ensures The Square will be used throughout the year. MSG will manage the covered space whilst the venue is open.

During the pre-application process it was highlighted that the South Terrace covered too much of The Square below. In response to this feedback we have cut back the western and eastern edges of the space by 1.2m and significantly reduced the extent to the south. The South Terrace is now no larger than its needs to be to accommodate wind mitigating planting, adequate circulation space and sufficient space into which people can evacuate in the event of an emergency. Overall the terrace was reduced by 500m².

The South Terrace will be an open hardscape area, free of clutter. This allows crowds to flow towards venue entrances. On non-event days the Restaurant / Members Lounge / Night Club will have the ability to take over the terrace with outdoor dining space.

Open space is positioned away from the flow of the circulation routes to the venue entrances, creating a space in which people can relax. This space has been designed to allow for food and beverage ‘pop-ups’ to occupy the space and to provide amenities.

The observation deck provides a location where visitors can watch people arriving onto the podium from bridge 3. This is important to the scheme as it advertises the South Terrace to The Square as accessible, encouraging upward movement.
8.0 LANDSCAPE
8.15 Landscape - South Terrace -Details

Landscape

Two different planting strategies are deployed on the upper terrace.

The first is the main feature of the South Terrace. A tree lined woodland habitat edge providing mitigation against the wind. It is not accessible to the public. The proposed evergreens will create a comfortable human space while providing an undisturbed habitat for insects, lizards and birds.

The second strategy creates smaller pockets of planting on the south terrace. These help to divide the spaces but still allow for a clear line of sight into the adjacent areas. These pockets will provide colour and organic shape to the terrace.

The materials on the South Terrace change to emphasize the different conditions and experience between the podium and the terrace. The materiality retains the industrial character. White pavers and raised white precast stone planters replace the dark grey robust pavers on the podium. This creates a lightness to the elevated terrace.

Lighting

The design goal for this space is to create a pleasant and secure space for visitors. Lighting will be built into raised planters to emphasize their shape and form, and to also provide the appropriate lighting levels for safety, accessibility and pedestrian movement. Lighting will be designed to limit visual conflict with the LED sphere surface and its light spillage on terrace. Feature lighting will include strip lighting in shadow gaps and soft uplights in planting.

Examples of the type of planting proposed

Woodland habitat
Pockets of planting
8.0 LANDSCAPE

8.15 Landscape - South Terrace - Details (continued)

Examples of the character of the types of spaces proposed

Enclosed space on Level 03 South Terrace
Montfichet Corner is a large triangular space to the north west of MSG Sphere. It is the landing point on the podium for people arriving from Montfichet Road via Bridge 1.

Bridge 1 is expected to serve roughly 10% of event day crowds and maintain a low level of pedestrian foot traffic day to day.

Montfichet Corner is not considered a destination space in its own right, but instead acts as a transitional zone welcoming guests with a spectacular view of the sphere.

The space is framed by landscape. The landscape softens the space from the outside world to create a peaceful space that benefits from the evening sun.

To maintain views of the sphere, raised stone planters offering seating opportunities have been positioned to the edge of the space. The seating is timber while the planting consists of robust grasses with several small to medium sized evergreen trees.

The seating in this area has strip lighting and a shadow gap detail to allow the seats to float above the permeable grey pavers on the podium.
8.0 LANDSCAPE

8.17 Landscape - Montfichet Corner - Cycle Storage

Within Montfichet Corner 100 secure bike racks have been provided based on the predicted number of staff employed within the venue.

The 100 racks are divided between two storage locations. The first store is positioned on the western edge of Montfichet Corner, and holds 40 bikes. The second holds 60 bikes and is positioned under the North Terrace on the northern edge of the space. The bikes will be stored in a stacked cycle storage system to minimise the footprint of the stores. These stores have been designed to integrate with the internal podium balustrade and will be capped with green roofs providing additional habitat area.

Public cycle parking for 50 bikes is provided under bridge 2. Please refer to section 7.2 of this report for more details.
8.0 LANDSCAPE

8.18 Landscape - Montfichet Corner - Details

As the expected crowd flows in Montfichet Corner are smaller than elsewhere on the podium, colorful perennials will be planted. These plants will act as brilliant visual markers linking The Square and The North Hub through seasonal planning. In addition, planting along the podium balustrade will include a number of shade tolerant and robust species. Trees will be selected for wind mitigation to create a comfortable human space.

To minimize the potential of leaf fall on surrounding railway tracks, evergreen species will be the primary species selected throughout the space.

The selected species will bring a strong sense of character to the site. Seasonal colour will be added by flowering species. Climbing species will be used in targeted areas to help break up the massing of the internal façade and to partially conceal the bike store structures.

Hardscape

The hardscape layout of Montfichet Corner is shown in section 8.16. Montfichet Corner is an extension of the surfacing in The Square and so the hardscape uses the same details. For details see sections 8.12 and 8.13.

Softscape - trees

Selected proposed species include:
- Cedrus Atlantica ‘Aurea’
- Cedrus Atlantica Glauca
- Cypress Leyland

Softscape - Under-story Planting

Selection of proposed shrub species:
- English Holly (Llexaquifolium)
- Hebe albicans
- Hebe rakaiensis
- Hebe ‘Midsummer Beauty’
- Juniper (Juniperus spp.)
- Red Osier Dogwood (Cornus sericea)
- Shadbrush Serviceberry (Amelanchier)
- Ader-leaf shadbush (Amelanchier alnifolia)
- Helianthus annuus ‘Prado Red’

Selection of proposed perennials and ground cover species:
- Ficaria verna
- Lithospermum purpureoaculeum
- Helianthus × laetiflorus
- Carex elata ‘Aurea’
- Lamium galeobdolon
- Hyacinthoides non-scripta
- Carex flacca

Softscape - plants

- Aster tripolium
- Linaria vulgaris
- Tanacetum parthenium
- Epilobium strictum
- Cochlearia anglica
- Dactylis glomerata
- Epilobium hirsutum
- Carex flacca

Images of some of the perennials and ground cover species proposed.
The North Hub is a large space to the north east of MSG Sphere connecting the podium to Angel Lane. This space is the ‘rear’ of the sphere and connects directly to Stratford’s residential areas to the east of the railway lines that divide the area. With this in mind the design intent in this area is to create a community space.

To support the North Hub a café is integrated into the facade of the stage box. The café is described in more detail in section 8.22.

The North Hub contains five features, a bespoke community café, a richly landscaped accessible ramp and stairs, an outdoor gym, a nature garden and a small playground amongst the planting.

Angel Lane is one of four exits from the podium. Therefore this space is required to be simple and assist with egress from the site.

The north east corner of the site is not a high pedestrian flow environment. 10%-15% of guests are expected to arrive and leave via this site exit. The Angel Lane entrance benefits from a great view of MSG Sphere as it lands on the stage box facade and the green roof.
8.0 LANDSCAPE

8.20 Landscape - North Hub - Amenities

The North Hub will contain a bespoke, nature inspired play space located near the outdoor seating of the café. The play space will offer play opportunities for children aged from 2-12. The softscape surrounding this space includes robust native flower species. Concrete raised planters provide seating opportunities.

The North Hub will contain a nature garden located in the north west of the podium. It flows from the café and play space into its own enclosed garden environment. The space provides an opportunity to sit amongst the meadow flowers, sheltered from the busy podium but allowing a view back toward these spaces. The ground treatment within the nature garden is bound aggregate, giving it a permeable and gritty texture. At night the lighting scheme within this space floods the ground plane, maintaining its secluded nature by giving it a completely unique quality. Natural interventions such as small insect hotels will be hidden amongst the planting.

The outdoor gym is aimed at improving the fitness of local people by providing a street workout. The facility includes parkour equipment, body weight bars and bouldering stations. This equipment will encourage people to engage in a dynamic street workout and to use the space throughout the day.

A dog spending area is provided in the North Hub. This space is enclosed by Corten mesh to screen it from the podium. This facility is for the use of service dogs and assistance dogs. A 40% hard and 60% soft surface split has been provided with a 2.5m by 2.5m natural lawn area and bound hardstanding. A hose for wash down is provided. The North Hub was selected as its location as it is near the blue-badge drop off point and the accessible public toilets in the café.

The planting character of the approach to the dog spending station and the outdoor gym includes several small to medium sized evergreen trees which will shelter the seating areas. Small deciduous trees will also be used in this area as seasonal features.

Diagram showing linkages between amenities

Examples of the type of equipment proposed for the playground
8.0 LANDSCAPE

8.21 Landscape - North Hub - Sections

1. Lowland meadow ecosystem
2. Seating on planter
3. Playground
4. Outdoor cafe seating area. Clear height below soffit is 4.7m
5. Trees providing wind mitigation
6. North Terrace
7. Green roof to stage box

8. Outdoor gym
9. Seating platforms
10. North Terrace seating area. Clear height below soffit is 4.7m
11. Green roof to stage box
8.0 LANDSCAPE

8.22 Landscape - North Hub - Café

The North Hub includes a café that has been sized to cater for around 50 people. The café will have toilets, baby changing facilities and a servery. The design of the café is focussed on connecting the amenity with the external North Hub space. The façade of the café is completely glazed and some panels fold and slide to allow the café to open up to the external space in the summer.

The café is integrated into the timber stage box facade. The café is double height, the timber stage box facade is detailed to fold into the café forming the ceiling and a feature wall at the back of the space. The glazed façade of the café extends up from Level 02 onto Level 03 where passers-by can look down into the café. The detailing of the timber stage box at Level 03 changes around the café area to become seating integrated into the façade.
8.0 LANDSCAPE

8.23 Landscape - North Terrace

The North Terrace provides an egress route from the venue to the north from Level 03. We have taken this practical requirement and developed it to provide an amenity connected to the North Hub.

The North Terrace provides shelter to the North Hub below and is connected to that space via a lift, stair and escalator.

The North Terrace will be a quiet space away from the pedestrian flow on the podium below. The only time it will become busy is when people egress from an event. With this usage in mind the surface of the North Terrace is a mixture of grass and timber decking, providing a space where people can relax and spend time.

Example of the types of planter proposed.

- Grass
- Decking
- Stairs and escalator down to podium Level 02
The venue is a spherical form sat within a triangular site. Where the sphere is closest to the podium parapets it creates narrow parts of the podium.

The width of these areas at their narrowest point is shown here. Glass balustrades and well designed lighting will prevent these spaces from feeling narrow and enclosed.

To the north of the sphere where there is a terrace above the soffit it will feature edge lit glass reinforced concrete ceiling panels ensuring that the podium is well lit at night. The soffit will include discrete CCTV cameras.

Crowd modelling analysis has demonstrated that the width of these spaces are sufficient to allow people to circulate around the sphere at the peak crowd movement times of venue egress and ingress.
A key landscape goal is to provide a biologically diverse and ecologically robust habitat across the development scheme.

Ecologically driven planting is being proposed. Three key areas of habitat are being created as part of the design. They are as follows:

1. **Woodland habitat (1,050m²)**. The striking South Terrace woodland habitat is to be initially planted as a meadow with a diverse range of evergreen species (planted at 3m-8m tall) spread across the slope. The meadow environment will provide an undisturbed, biologically diverse habitat as the trees mature and eventually replace the meadow habitat with a woodland habitat. The selection of trees will mature over decades and maintain a constant canopy habitat once established. This habitat will support insect and bird populations.

2. **Lowlands meadow ecosystem (480m²)**. This will be developed as part nature garden and part ecological habitat. The raised planters on the north east corner of the podium will provide biologically diverse, semi-undisturbed, meadow habitat. This habitat will support insect, lizard and bird populations.

3. **The green roof (1,281m²)**. This will create a substantial habitat area to help support the habitat created on the podium in the lowlands ecosystem. The proposed green roof is a wildflower blanket system that includes over 24 species of wildflowers and herbs selected to provide a viable and vibrant plant community, whilst also delivering a range of native species and habitat.

Beyond the specific habitat areas, all other planting across the site will enjoy a wide mix of native and non-native ground covers, shrubs and trees. This will provide a stunning range of colour and texture while also providing islands of habitat for insects and birds to move between. To support the ecological planting strategy, clusters of rocks, logs and found industrial elements will be positioned within the planting to expand the habitat types being provided for insects and lizards.
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MSG Sphere will be a sustainably designed venue with a high level of environmental performance. We anticipate that it will achieve a BREEAM score of Very Good and the latest design assessment shows that it is close to achieving a theoretical Excellent. Excellent is theoretical because some mandatory credits required to achieve that score are unobtainable.

The venue is sustainable for two main reasons. Firstly it will be connected to the Engie district heating system, allowing MSG Sphere to receive 100% of its heating and the majority of its cooling demand from the local district heating network. Secondly, the building has an efficient and optimised structural form. The spherical form is very efficient as there are no long span structures typically associated with this building type. This will result in a building with a low embodied energy for its type.

The most sustainable buildings are those that use the fewest materials to achieve their purpose. Lightweight buildings are resource efficient. However a lightweight building is contrary to the requirements of acoustic separation which requires material mass to achieve. To achieve good acoustic separation one layer of the sphere is made of concrete. This heavy acoustic layer provides thermal mass which will result in a good fabric U-Value and help make the building air tight. This will result in a low operational energy profile for the internal parts of the venue in non-event mode.

**Materials**

The building will contain a substantial amount of concrete in the structural frame, the precast terracing, precast facade panels, the acoustic concrete shell and the piled foundations. To achieve low carbon concrete we will be using cement replacements, the type of which will depend on the availability of the replacement and where in the UK it can be found. We will be using steel panels, steel bridge structures and steel mesh with a Corten finish. This is a naturally forming finish requiring no additional painting, meaning that the steel will be easy to recycle at the end of its lifespan.

The sphere will be clad in stainless steel. The panels will have a high recycled content. The LED's are fitted into the panels. This allows individual LED units to be replaced rather than whole panels. Because the LED's are removable the entire panel will be able to be recycled at the end of its life.

The other two main materials present on the project are glass and brick. The brick will be used in slip form to improve the speed in which it can be installed and to reduce the amount of material required in the facade.

**Energy**

The operational energy requirements for a building of this type are high. The event peak loads are very high because of event demands and the high occupancy of the building. A comprehensive Building Management System and metering strategy will be installed to enable energy consuming systems and areas within the sphere to be metered individually, thereby giving better control to building management over the energy consumption during venue operation.

The background requirements are lower and will be offset by Photo Voltac (PV) generation installed within the podium open spaces and on the bridges. Piezoelectric power generating paving has been included on the heavily trafficked bridges, which will also be used for data gathering about arrival and departure of guests to refine the building’s operation. Both of these systems will generate carbon free energy.

Heat loss in the building will be very low, largely due to the acoustic requirements that are generating a multi layered facade up to 4m thick on the sphere. All building lighting will be low energy LED, to comply with current standards. The large Level 01 plaza is naturally ventilated. Natural ventilation and daylighting in other spaces is limited by the presence of the railway lines on all sides of the building and the solid concrete acoustic shell of the sphere.

**Water**

The building will primarily reduce its potable water consumption by using waterless urns and low capacity, dual flush WC fittings. All sanitary fittings in the building will be low flow. Leak detection will be required to ensure the venue operates without interruption. Water meters are being installed so that the water consumption of specific areas can be measured.

In a venue of this size, with the quantity of sanitary fittings that will be present, these strategies will make a massive difference. Rainwater will also be collected in the basement. This will be used to irrigate the extensive landscape within the open spaces on the podium. All of the podium hard surfaces feature a substantial water retention layer to slow run off, this is part of a sustainable urban drainage solution for the whole site.

**Materials**

Precast concrete unit of the type that will be used to create the seating bowl.

Architect Buckminster Fuller pioneered efficient spherical structures.
9.0 ENVIRONMENT AND SUSTAINABILITY

9.2 Materials - Acoustics

MSG Sphere has excellent acoustic separation being provided by the fabric of the venue.

The fabric of the venue satisfies two acoustic requirements. Firstly, it ensures that the noise of concerts does not cause nuisance to surrounding residences. Secondly, it provides an ideal environment for shows, excluding noise from the surrounding railway tracks and aircraft overhead and controlling reflected sound and distortion within the auditorium.

To the north and west of the venue are residential buildings separated from the site by HS1 and network railway lines respectively. The basic criteria that has driven the design of the venue is that concerts should not be audible at a point one metre outside the windows of the residential buildings.

These acoustic requirements have generated the basic form of the building and the material requirements. The form consists of two independent shells; a heavy concrete inner shell surrounding the auditorium, and a second acoustic outer shell on an independent steel structure. Separating the two shells is an air-gap, which in combination with a lining of acoustic absorption material within the void, prevents vibration passing from inside to outside and vice versa. All plant is designed to meet the same noise emission criteria as concerts described above.
9.0 ENVIRONMENT AND SUSTAINABILITY

9.3 Carbon, Biodiversity, Ecology, Waste

Carbon

We would encourage efforts to carbon cost the project at construction stage and to endeavour to make procurement decisions based on carbon cost alongside the usual parameters of aesthetics and capital cost.

Biodiversity and Ecology

We are developing a brownfield site and implementing a significant investment in soft landscaping that will promote biodiversity and ecology. This report has previously explained how each of the open spaces around the podium will be extensively landscaped. The various levels of the podium will extend the green corridors within Stratford.

Waste

A substantial basement is required in order to house plant below the service level. This is unavoidable on a constrained urban site. The basement is only one storey deep. The excavated material will need to be removed from site because MSG Sphere fills the available site.

We have a long boundary wall with the adjoining Network Rail platform. The wall will need to be removed to construct our facade. Subject to the type of mortar bonding the bricks together, the bricks will be cleaned and recycled. If that is not possible they will be crushed and used on site as fill material or as a piling mat.

The in-situ concrete frame and the in-situ concrete acoustic shell have the potential to generate substantial amounts of site waste in the form of discarded timber formwork. We will work with the contractor to design reusable moulds where possible and standardise the design to allow repetition.

All other concrete structures will be precast and designed with a limited number of moulds to keep fabrication simple and cost effective. The contractor will be required to manage and separate waste streams on site.

Waste separation will be required to achieve a compact venue waste operation. The venue design assumes food waste will be spun and composted. Cardboard will be bailed and recycled. Glass and plastic will be crushed and recycled.
In order to carry out wind tunnel testing a scale model was built with local winds reproduced to measure the conditions on site. The images on this page show the extent of the model created.

The wind tunnel test has assessed the impact of wind on the proposed development with no mitigation and the effect of wind after the implementation of appropriate mitigation.

Wind tunnel testing has been used to develop the design and to assist the design team in creating comfortable environmental conditions in the open spaces on the podium and surrounding the proposed development. This is particularly important for people standing on the railway station platforms that adjoin our site and for the visitors to MSG Sphere who will be inhabiting the open space on the podium. The wind tunnel testing resulted in a number of mitigation solutions being introduced into the design. This includes planting in certain locations on the podium. Other details include porous facades within the podium plinth and porous balustrades on the edge of the podium. Some measures will be added as an overlay, for example screens being erected around outdoor seating areas as part of the ‘take over’ of the space. This subject is discussed in greater detail in the wind microclimate chapter of the Environmental Statement.
# APPENDIX

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Levels 11, 13, 16, 18 and 19 provide access to equipment located in voids between the immersive surface and the concrete acoustic shell and the concrete shell and the acoustic outer shell. There are no rooms or floorplate at these levels that count as area.

### A Appendix I

#### Building Areas

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TOTAL FLOORSPACE COMMERCIAL & RETAIL | 4295 | 6090 | 7762

TOTAL OFFICE SPACE | 684 | 729 | 531

TOTAL VENUE FLOORSPACE | 65962 | 73925 | 79624

TOTAL | 70941 | 80744 | 87917

Venue floorspace is inclusive of all back of house and ancillary support facilities.

Levels 11, 13, 16, 18 and 19 provide access to equipment located in voids between the immersive surface and the concrete acoustic shell and the concrete shell and the acoustic outer shell. There are no rooms or floorplate at these levels that count as area.
A APPENDIX II

Fire Strategy - By The Fire Surgery

This statement describes the principles that will inform the detailed fire strategy, which will be prepared in accordance with Building Regulations 2010 for Part B - Fire Safety. The statement has been prepared in support of the Environmental Impact Assessment, the Design and Access Statement and acknowledges the contents of Policy D11 of the draft London Plan.

Fire Strategy Objectives

The primary objective of the fire strategy for the project is to meet the functional requirements of the Building Regulations 2010 for Part B - Fire Safety. The fire strategy will show that all people can escape to a place of relative safety at all times, and then to a place of ultimate safety outside the building. The fire strategy will ensure that fire and smoke spread will be controlled both internally and externally. There will be suitable provisions for the fire service to undertake search and rescue and fire fighting operations.

The Building Regulations approvals process is progressing with regular and ongoing interactions with Newham Building Control and London Fire Brigade to provide them with the confidence that the finished scheme will be acceptable. As such what is being proposed for planning approval will, subject to the ongoing development of the internal elements, provide a building that meets the required standards for fire and life safety.

Approach and Guidance Documents

Given the complexity of the building, it is not possible to apply standard fire safety design guidance throughout the project. Therefore, a performance-based fire engineering strategy is being designed for the development, with the aim of showing that the building satisfies the functional requirements of the Building Regulations 2010 for Part B-Fire Safety.

The methodology provided in PD 7974 and the International Fire Safety Engineering Guidelines is being used. This provides a recognised, structured approach to applying fire engineering to complex projects. A primary requirement is to identify all key stakeholders who will have a clear interest in the design and management of the building for fire safety and allows them to contribute to the design at the early stages and as the design develops. This process is the only practical approach for the design of complex or unusual projects.

The fire strategy is based on fire risk, the likelihood of fire within the space, and the consequence on the occupants. The likely fire scenarios within the building are considered and agreed with the stakeholders. Active and passive systems are used to mitigate the risk of fire and provide a solution that allows for safe egress and fire fighting. Fire and smoke modelling are undertaken to show that the proposed solutions will work. Non-fire threats are addressed in the security strategy.

Guidance documents are used to inform the design. Those chosen are agreed with Building Control, and London Fire Brigade. The fire strategy approach is as follows:

- Spectator areas and general concourses are designed using the Guide to Safety at Grounds (Green Guide). This is considered to be the industry benchmark for the design and management of entertainment venues with large numbers of spectators and as such is routinely applied in the design of this building type.
- Where it is applicable, BS 9999:2017 will be the principle fire safety guidance for areas not described within the Green Guide including back of house areas, ancillary accommodation and fire fighting provisions.

Approvals Process

As with all new developments, it will be necessary to achieve Building Regulations approval from a Building Control Body, including a statutory Consultation with the Local Fire Authority. An entertainments licence will be required from the Local Authority. Regular meetings have been held with representatives of London Borough of Newham Building Control and London Fire Brigade (the Fire Safety Engineering Group and the Local Inspecting Officers). Strategic input has been included from these authorities to help inform the building design and the fire strategy being developed. This remains an ongoing process.

Methods of Construction

The structure of the building is designed to enable it to resist the effects of fire, support the requirements of life safety and allow Fire Service intervention. Where necessary applied fire protection will be provided appropriate to the risk.

Compartmentation is a passive method of restricting fire spread throughout a building. The objective is to prevent rapid fire spread that could trap occupants of the building, and to reduce the chance of fires becoming large, on the basis that large fires are more dangerous to occupants and the Fire Service. Adequate compartmentation will be provided for different functional parts of the building to protect the integrity of the structural elements and limit the number of people exposed to the fire. Therefore, the building will be subdivided into several areas by horizontal and vertical barriers such as, walls, floors and in some instances, compartmentation is maintained via doors and fire shutters.

Facade

The performance requirements of the Building Regulations is to “adequately resist fire spread over the facade”. This is to protect those in and around the building from fire. The building is unique and innovative and proposes technologies developed specifically for the venue, for example the LED technology. The whole facade design is to be addressed through a structured fire engineering approach involving the approving bodies and considering the types of materials present in the facade which the facade is constructed to ensure that the required performance is achieved. Full scale fire testing will be carried out where necessary via an accredited test laboratory.

Means of Escape

The development is to be provided with a digital, addressable, multi-zoned, automatic fire detection alarm system. The fire detection system will be linked to other systems such as the Building Management System, mechanical plant, lifts, smoke ventilation, fire shutters and security and communications systems to facilitate implementation of the fire and safety strategy.

MSG Sphere is to be provided with a PAVA system, which will be extended to cover the exterior podium areas and the bridges which lead from the building so that the management team and/or Fire Service are able to issue instructions for occupant assembly or dispersal, as appropriate.

The suppression system will be designed to suit a wide range of individual hazards involved with such a complex structure and use. Fast response sprinkler heads will be used to limit the potential fire size at activation and therefore reduce the damage associated with a fire.

Several mechanical smoke management systems are being proposed to provide an overall coordinated smoke control package. These systems will assist in managing the smoke within the space where the fire exists or between spaces not separated by physical construction. Smoke management systems are provided to support the evacuation strategy and prolong the period available for escape beyond the period required. Smoke clearance systems are also used in the back of house areas to aid internal firefighting operations.

Means of egress is addressed by providing occupants with appropriately sized routes for escape to a place of safety outside of the building and these options will be easy and safe to use. Factors considered include:

- Occupants have a choice of egress (dead end conditions and common paths of travel are limited).
- Travel distances are not excessive.
• Egress widths are appropriate to the numbers of people using them, the hazards and level of safety.
• Main entrance and access routes are used for egress (as occupants are likely to be familiar with these routes and will use them in an emergency).
• Final exits discharge to the exterior of the venue into open air and occupants can move away from the building.
• The final exits from the building will be on a different level from the arriving Fire Service to remove any conflicts.
• Exit routes are illuminated and clearly signed facilitating occupant movement through and away from the site.

Escape for people with mobility impairments where a change in level is required, is provided by dedicated evacuation lifts designed with enhanced fire safety features to allow their continued safe operation in the event of an emergency. These will be used by management to facilitate the evacuation of mobility impaired persons.

Each floor is to be provided with a suitably sized area of refuge for the anticipated number of wheelchair users. The refuge will be a place of relative safety.

Fire Fighting Access and Facilities

The principal arrival point for the Fire Service will be a dedicated fire control room located at Level 00. The active fire system panels will be located here. This will provide the fire service with a command centre to control fire fighting operations.

Fire Service vehicle access will be provided around the development via the perimeter access road, which is separate from pedestrian circulation areas on the levels above. This provides access to dedicated fire fighting shafts, including a fire fighting lift and fire fighting stair all enclosed in 2 hours fire resistant construction. The shaft will be provided with mechanical smoke ventilation to prevent smoke from entering the stair during fire fighting operations.

To access the inside of the building, fire fighting shafts will be provided so that there is a safe route to all floors. The shaft includes a protected stair, ventilated lobby, fire fighting lift and a wet mains riser to provide water close to the seat of the fire.

Wet rising mains will be installed to provide the Fire Service with a readily available means of quickly delivering considerable quantities of water to the seat of a fire. Outlets will be placed at strategic locations to allow firefighters to either extinguish or prevent the spread of fire.

There are no public fire hydrants within acceptable distances of the development so a system of pumped private fire hydrants will be provided in addition to the wet riser system.

A fire command centre will be provided, to be used as a point from which to manage fire fighting operations. Management of a fire incident within the development will require a coordinated response by the Management Team, Security Team, Stewards, responding Fire Service crews and potentially the Police.

As well as supporting the building occupant life safety objectives, the provision of active fire safety systems also provides substantial benefits to fire fighter operations. This is achieved by limiting the potential for the fire to grow and spread beyond the area of fire origin, which could otherwise present unnecessary risks during fire fighter operations.

Operational Fire Safety Management

Ultimately, the success of the fire strategy will be via ongoing operational fire safety management. Therefore, operations advisors have been appointed on the scheme and are an active stakeholder in the development of the fire strategy. They will continue to input towards completion of the building, its occupation and the development of an operational fire safety plan.
1. Introduction

This Accessibility and Inclusion Statement describes the design team’s approach to inclusive design within the Stage 3 proposals for the MSG Sphere and the associated public realm. The document has been produced by People Friendly, the accessibility and inclusion advisors on the project in collaboration with the rest of the Populous lead design team.

The key aim of the Statement is to create an agenda for an ongoing dialogue between all stakeholders in the design process and in the management of the building. The Statement describes the design intent on everything from the approaches to the building, to the use of the facilities within the building. The document will be a living document evolving at each stage in the design process, starting strategic and becoming more specific as the design develops, giving a commitment to achievable aims for the project. The final version of the document will form part of the handover documentation.

2. Inclusive Design

2.1 Introduction

The aim of inclusive design is to include the needs of the widest range of people into a design, removing unnecessary barriers to enable everyone to use and enjoy an environment on equal terms.

The Commission for Architecture and the Built Environment (CABE) defined five principles of inclusive design. These principles state that inclusive design should:

- Place people at the heart of the design process.
- Acknowledge diversity and difference.
- Offer choice where a single design solution cannot accommodate all users.
- Provide for flexibility in use.
- Provide buildings and environments that are convenient and enjoyable for everyone to use.

3. Approach

3.1 Introduction

MSG Sphere will be located to the east of Westfield Stratford City Shopping Centre on what is effectively an island site bounded by railway lines on all sides with the exception of the short section of boundary with Angel Lane to the north of the site. Designing an inclusive venue will assist MSG in meeting its obligations under the terms of the Equality Act 2010 and add to the quality of the experience for everyone.

In terms of technical detail, the design team is applying the principles described in the London Legacy Development Company’s Inclusive Design Standards to the project, as well as the minimum standards set by Building Regulations.

Other good practice references include:
- FLA, Accessible Stadia
- BS8300:2018 “Design of an accessible and inclusive built environment”
- BS9999, Code of practice for fire safety in the design and management of buildings
- DfT Inclusive Mobility, 2002
- The Sign Design Guide and many other publications

3.2 Involve ment

The involvement of users in the design process has a key role to play in applying the principles of inclusive design and the design team met with LLDC Built Environment Access Panel (BEAP) in May to discuss the Stage 2 design. A ‘tracker’ listing the Panels comments from the meeting follow this statement along with the team’s response describing how the issues raised are being considered within the design process. The design team see this as an ongoing discussion and the team are committed to meet with the panel again as the design develops.

3.3 Mobility Assistance

A vehicle set-down and pick-up point is proposed on Montfichet Road to the north of the junction with Hitchcock Lane, which is close to bridge 1, and is approximately 150m away from MSG Sphere. The facility will be capable of accommodating up to five vehicles (including minibuses with tailgate lifts), which is the largest that can be provided within the available space. A strict stewarding regime will be required for the set-down and pick-up point during major events at MSG Sphere, in order to prioritise access to this facility for disabled people. This will be developed as part of the operational planning.

No visitor car parking can be provided on the MSG Sphere site due to spatial constraints, safety reasons, and security concerns associated with parking in a live service yard. Therefore, the 109 blue Badge parking spaces that will serve MSG Sphere and the other facilities within the development will be provided within the Westfield Stratford City Shopping Centre car park. The number of parking spaces has been established based on venues of a similar size and does not take into account MSG Sphere’s superior public transport access. For example, The O2 Arena, which has a similar number of wheelchair user spaces and seats for ambulant disabled people within the venue, has 110 Blue Badge spaces. However, it also has a far higher reliance on car use due to the capacity limitations of North Greenwich Underground Station. The travel distance from the Blue-Badge spaces to the venue will be approximately 200m, and the parking charges are yet to be established.

3.3.1 Set-down Point and Parking

A vehicle set-down and pick-up point is proposed on Montfichet Road to the north of the junction with Hitchcock Lane, which is close to bridge 1, and is approximately 150m away from MSG Sphere. The facility will be capable of accommodating up to five vehicles (including minibuses with tailgate lifts), which is the largest that can be provided within the available space. A strict stewarding regime will be required for the set-down and pick-up point during major events at MSG Sphere, in order to prioritise access to this facility for disabled people. This will be developed as part of the operational planning.

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3.4 Pedestrian Links

The podium surrounding MSG Sphere will be linked to Angel Lane to the north of the site and a new link (Bridge 3) will be provided to the Stratford Town Centre Link Bridge (TCLB) which provides a pedestrian link over the railway tracks from Stratford High Street to Westfield Stratford City Shopping Centre. Two new bridges (Bridges 1 and 2) will provide pedestrian access to MSG Sphere Podium from Montfichet Road to the east of the site.

It is anticipated that the majority of visitors will arrive from the south of the site, being closest to Stratford Underground and Railway Station, arriving via Bridge 3 from the TCLB and from Bridge 2 from Montfichet Road. Bridge 1 to the north of Montfichet Road is likely to be the third most used route and the remainder of visitors will arrive from Angel Lane.

Angel Lane

The design team has taken on-board the BEAP comments and separated the inclined route from the steps within the proposals for the Angel Lane access. The step-free route will be obvious from the top and bottom of the steps, but it will be separate and segregated by landscaping from the steps.

The inclined route will have a gradient of 1 in 21 with landings included every 500mm rise, including a landing at the change in direction. The inclined route will be over 2,000mm wide, which is wide enough for two wheelchair users to pass and it will be possible to see the top of the route from the bottom helping to avoid collisions. The route will be obvious from the top and bottom of the steps meeting good practice but the rise will be approximately 2,650mm which is 650mm higher than recommended for any series of ramps if there is no alternative lift access. However, the gradient is slightly shallower than 1 in 20, the gradient at which an incline constitutes a ramp. In addition the most commonly used approaches to the podium are likely to be from the south where all of the routes will have lift access.

The Angel Lane steps will have a going of 280mm and 170mm risers. Handrails will be provided on both sides of the ramps and steps. Corduroy warning surface will be included at the top and bottom of the flight and the step nosings will include contrasting strips. Light fittings will be integrated within the handrails on the steps and the ramp will be lit by low level lighting. Additional handrails will be integrated into the design of the steps. Barriers will be included at the top of the seating to avoid pedestrians and particularly people with vision impairments confusing the seats with the steps. Spaces for wheelchair users will be including within the seating.

The Angel Lane vehicle ramp to the podium is intended for maintenance access and for emergency vehicles, but with a gradient of 1 in 12 it will be suitable for many wheelchair users, particularly when leaving the podium.

Bridge 1

Bridge 1 will be located to the north of the site, providing a pedestrian link from the eastern footway on Montfichet Road to the podium, which is approximately 9m above footway level. One passenger lift (1,400 x 2,400mm) and a stair will provide access between the bridge deck and the footway.

The lift and stair are set back from Montfichet Road to avoid Engie services, provide an adequate landing for the stair and lift and to maintain a Network Rail access route across the site. The design of the screen around the services will be designed to highlight the stair and lift, which could otherwise be hidden from view.

The lower landing outside the lift is approximately 3m deep by 4m wide clear of the bottom of the stair avoiding conflict between those using the stair and those using the lift. The top landing is separated from the stair and shown as 2,350mm wide, which is wider than the minimum of 1,800mm required for two wheelchair users to pass. The lift is configured as a through lift with doors on opposite sides of the lift car, which is safer and easier to use for wheelchair users as it avoids the need for wheelchair users to turn around within the lift. The lift is the largest that could be accommodated within the available space. The lift will also be large enough to carry mobility scooter users.

The stair is designed with 300mm goings and 168mm risers meeting good practice. A corduroy warning surface is provided at the top and bottom of the stair to warning people with vision impairments of the potential hazard. Handrails are provided on both sides of the stair and contrasting nosing strips will be integrated within the design of the stair nosings.

The bridge deck will rise 500mm at a gradient of 1 in 30 to provide adequate clearance over the railway tracks with minimal cross-falls for drainage of 1 in 50 or less which meets good practice.

Bridge 2

Bridge 2, located to the south of Bridge 1, will have two stairs and one lift providing a pedestrian link from the eastern footway on Montfichet Road to the podium. The main wider stair on the south of the bridge abutments is closest to the pedestrian flow from Stratford Station and Westfield Stratford City Shopping Centre. One narrower stair is located to the north of the abutment above the lift which will be 1,400 x 2,400mm.

The lift is configured as a through lift with doors on opposite sides of the lift car, which is safer and easier to use for wheelchair users as it avoids the need for wheelchair users to turn around within the lift. The lift is the largest that could be accommodated within the available space. The lift will also be large enough to carry mobility scooter users. The stair is designed with 280mm goings and 169mm risers. Corduroy warning surface is provided at the top and bottom of the stair to warning people with vision impairments of the potential hazard. Handrails are provided on both sides of the stair and contrasting nosing strips will be integrated within the design of the stair nosings.

The bridge deck will rise 1,000mm at a gradient of 1 in 50, with a 4m long intermediate landing half way up the incline, to provide adequate clearance over the railway tracks and Engie site. There will be minimal cross-falls for drainage of 1 in 50 or less meeting good practice.

Rest areas with a variety of seating types, spaces alongside for wheelchair users and space for double buggies are incorporated across the podium at a maximum of 50m intervals. A proportion of the seats will have back and arm rests. The exception to this is Bridge 2 which is longer than 50m and too narrow for any potential obstructions given the anticipated peak pedestrian flows. However, seats are incorporated within the Montfichet Road improvement works close to the Bridge.

Bridge 3

Bridge 3 will link the podium to the Town Centre Link Bridge (TCLB) which already has lift and lift access - two lifts, a stair and two escalators at the Stratford High Street abutment and two lifts at the Westfield Stratford City Shopping Centre's end of the bridge. Bridge 3 will be virtually level with minimal gradients for drainage purposes within standards of good practice.

At the connection between Bridge 3 and the TCLB the columns within the TCLB parapet structure will be retained to maintain the structural integrity of the bridge. Visually contrasting aerofoil shaped cladding will be added to these existing columns to guide people around them.

The LLDC BEAP commented that there are regularly large queues for the lifts on the Town Centre Link Bridge, even on non event days. However, the crowding modelling studies carried out by the design team indicate that the highest demand for access to the podium will be in the evening when the pedestrian flows to the surrounding facilities and attractions are at their lowest. Therefore, the team feel that the current lift provision on TCLB are likely to be adequate to accommodate the expected demand from new and existing uses. However, improvements to the existing TCLB lift and escalator maintenance regime will be explored by MSG.
4. Podium

The podium (Level 02) will form the main circulation route around MSG Sphere, linking the four approach routes to the island site. The podium will be virtually level with drainage falls of approximately 1 in 60.

The paving material will be stone and will have a suitable slip-resistance. The routes across the podium will be lit to CIBSE standards lux levels meeting good practice. Feature lighting will be used in certain areas of the podium at specific times and there is also likely to be light spill from the LEDs mounted on the surface of the sphere. The potential impact of this light will be considered further as the design is developed, for example in terms of people with vision impairments and photosensitive epilepsy.

The podium will have hard and soft landscaped areas and will include a variety of seat types, from conventional benches with back and armrests to loungers and the edges of planters. The seating types provided within the Olympic Park are being used as examples of good practice for the project. Locations for wheelchair users to sit alongside benches have been identified, which will also assist parents with double buggies. Seats will be available at least every 50m along circulation routes to provide places to rest across the podium.

To the north of the podium by the Angel Lane there will be an outdoor gym area and a soft landscaped garden area adjacent to the cafe. The routes through the garden are likely to be surfaced in resin bonded gravel.

An Assistance Dog Spending area will be incorporated within the Podium landscaping.

The entrances to MSG Sphere are arranged around the southern elevation.

The signage strategy will be developed in the next stages of the design and will include directional signage to the lifts and entrances.

5. Upper Terrace Level

The Upper Terrace (Level 03) is split into two separate terraces, one to the north and the other to the south of the sphere with separate external lifts and stairs from podium Level. To the north, a lift integrated within the podium cafe facade will serve the upper level and to the south the lifts serving the nightclub will extend up to serve this level. The lifts are relatively close to the stairs serving the upper level, but signage will be important to make it easier to find these features.

The North Terrace is likely to be surfaced in wooden decking with integrated carbonbond strips to ensure adequate slip resistance. The southern terrace will be surfaced in the same stone paving as the podium.

6. Entrances

The entrances will be designed to be distinctive from the facade, including through the use of colour and tone. Building Regulations requirements for the minimum clear opening width of doors and maximum door opening force will be considered as the design is developed. The opening force is difficult to achieve on external doors and ideally sliding automatic doors should be provided.

It is proposed that handheld ticket scanners will be used to admit spectators on the approaches to the entrances, rather than by using turnstiles, as this is a more inclusive approach to ticket controls. Security screening will be carried out on entering the building and disabled people are being considered in developing the systems necessary and in particular the need to avoid waiting in long queues.

Storage with charging points for mobility scooters and wheelchairs will be incorporated within the design to facilitate the most effective use of the wheelchair user viewing areas by those who need these spaces most, this was an issue raised by LLDC BEAP. The storage areas should ideally be close to the accessible seating.

7. Vertical Circulation

There will be a choice of lift, stair and escalator access within each entrance lobby, providing access to all levels of MSG Sphere relevant to the ticket type.

The main lifts will be 1,400 x 2,400mm allowing many wheelchair users to turn around within the lift. All passengers lifts will be larger than the minimum Building Regulation requirement, with the exception of the lifts that will service the bar on Level 10 from Level 09 which meets the minimum requirements. Please note that there are no wheelchair user spaces on Level 09 due to the geometry of the sphere.

All of the main circulation stairs and with a few exceptions the secondary stairs, will have 300mm goingos and 170mm risers. All stairs meet minimum requirements.

8. Horizontal Circulation

Spectators circulate through concourses and the narrowest routes are significantly wider than 1,800mm which is required for two wheelchair users to pass.

The signage strategy is yet to be fully developed, but standards of good practice will be referred to.

The colour schemes chosen for all areas of the building will consider the needs of people with vision impairments.

9. Seating

MSG Sphere will offer an immersive experience. The inner surface of the sphere will be covered in LEDs and will be used as a video screen. High definition speakers will be used to project sound. The venue will host a variety of different types of show, from those where the main focus of the event will be a stage on the floor of the auditorium, to those where the immersive screen will be the focus. The field of view will be different for different events. Standing during performances is another factor being considered, spectators are unlikely to stand up during a 3D immersive performance, but standing is common during pop concerts, potentially blocking the view of wheelchair users seated behind.

The wheelchair user spaces and amenity seating for ambulant disabled people will be grouped together at different levels around the Sphere to offer a choice of viewing locations for all categories of spectator meeting good practice. The only area of seating without wheelchair user spaces is the seating accessed from the Level 09 concourse, since while there is lift access to this level, the vomitories have steps due to the sphere’s geometry. In other locations, such as the back row of the lower tier, there will be opportunities to increase the number of wheelchair user spaces beyond the minimum requirements if required.

Please refer to section 7.14 for more details on accessible seating within the venue.

The wheelchair user spaces and their associated companion seats will be raised on super-risers when standing in the row in front is likely and when it is necessary to bring the spaces forward on temporary staging to ensure wheelchair users have the same quality of sight-lines as everyone else in MSG Sphere. The configurations of the wheelchair user spaces at the back of the seating tiers is likely to require temporary staging to provide the same field of view for fully immersive shows. The wheelchair user spaces will be 900mm wide by 1,400mm.

Amenity seats with extra legroom and Easy Access seats will be accessed by a maximum of two or three steps.

The design of the companion seating associated with wheelchair user spaces will consider the need for flexibility to accommodate different groups of people on the viewing platforms. For example, a family with a disabled member or a group of wheelchair users.
10. People with Sensory Impairments

The communication needs of people with hearing impairments and sight loss will be considered when developing the AV strategy for MSG Sphere. This includes appropriate provision of assistive listening systems, such as induction loops, infrared and/or FM radio systems. Closed captioning for people who are deaf or hard of hearing and audio description to assist people with vision impairments will also be considered.

11. Quiet Room

The LLDC BEAP requested that there should be a quiet area where people can take a break from crowds, noise and the lively atmosphere. This is particularly important for people who are neurodiverse, including people on the autistic spectrum. Two quiet rooms have been identified at GA level, one next to the first aid room and the other off the main concourse and these rooms may double as staff meeting rooms in non event mode.

12. Faith Rooms

The LLDC BEAP requested that there are prayer facilities provided. A staff faith room will be provided at Level 00 and the design will consider the need for men and women to pray separately and the facility will be close to faith wash facilities.

13. Bars, Concessions and Ticket Counters

The counters at bars, concessions and ticket offices will be designed to meet the needs of a wide range of users, including incorporating lower sections to accommodate the needs of children, wheelchair users and people of short stature. They will also provide induction loops to assist hearing aid users where appropriate. The design of these counters will be influenced by the queuing systems, which are yet to be fully considered.

14. Back of House

The back of house horizontal and vertical circulation routes are designed to accessibility standard, with lift access to all areas. Accessible changing rooms are included for staff, performers and crew. For example, one of the eleven performers changing rooms has a combined shower and WC suitable for a wheelchair user.

Where WCs or showers are provided for one group of users, at least one of the facilities is designed to accessibility standards.

The accessibility of the back of house areas will be developed further in the next design stage.

15. Sanitary Provision

There will be one spectator accessible WC for every twelve to fifteen wheelchair user spaces within 40m of the spaces. Facilities such as the podium cafes, Restaurant / Bar and Restaurant / Members Lounge / Night Club will also include accessible WCs within 40m of all areas. The plaza WCs are close to the south entrances of the venue and are available for those arriving at MSG Sphere meeting good practice.

Accessible WCs located close together will be handed where possible to cater for disabled people with a weakness on one side of their body. WC cubicles suitable for ambulant disabled people are included within the male and female facilities, with outward opening cubicle doors and suitable grab-rails.

Two Changing Places facilities have been included, one off the GA concourse and the other off a VIP area in a location that can be accessed easily from the other VIP areas.

Six accessible baby change facilities have also been included within the proposals, as follows:

- Level 01 – One baby change on the GA Concourse
- Level 05 – Two baby change, one on either side of the VIP concourse
- Level 06 – One parenting room close to the VIP suites
- Level 08 – One baby change on GA concourse
- Level 09 – One baby change on the GA concourse

16. Emergency Egress

The Fire Strategy describes the evacuation strategy for all building users, including disabled people.

MSG Sphere is split into a number of fire compartments allowing disabled people to move horizontally away from the source of a fire. Evacuation Lifts will be used to manage the evacuation of disabled people from the building in the case of a fire. Each floor will be provided with a suitably sized area of refuge for the anticipated number of wheelchair users. The refuge will be a place of relative safety.
Parking and Drop-Off/Pick-Up

A dedicated pick-up/drop-off point for disabled users to be identified as close as possible to one of the venue entrances. Must be signposted that parents with children (and others) will also want to drop-off close by, what is the strategy for this.

Rest Areas with Seating –

APPENDIX III

LLDC Lead:
Leona Roche

Architect:
Pipipipipue

Access Consultant:
Tom Lister

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<tr>
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<tr>
<td>BEAP</td>
<td>01/05/2018</td>
<td>Parking and Drop-Off/Pick-Up – design team to come back with options and a proposed strategy</td>
<td>All the badge parking spaces will be provided for the Sphere. The number of spaces was established based on the 120 wheelchair user spaces and 130 seats for ambulant disabled people allowed for within the Sphere and comparisons with other similar venues of a similar size, although these comparison venues all had lower levels of access to public transport than the Sphere. The parking charging regime is yet to be fully considered. MSG has been negotiating two options for guests with Blue Badge permits who wish to drive. The first is to utilise the Westfield Car Park. We envisage guest using a pre event booking system to secure their space in advance of the event day. Guests can use the internal lifts to descend to either Ground Level or Level 1 and then travel to the MSG Sphere via the TCLB or the lift at Bridge 2. The second option is to make use of the MSG car park on International Way. MSG have been in detailed discussions with the owners to provide sufficient spaces to accommodate the peak levels of Blue Badge permit holders anticipated to attend events, including multiple event days. The HS1 option is our preferred option, as it allows greater flexibility on how a mobility shuttle could be allowed to link the Blue Badge car parking to the MSG Sphere, whilst also providing a straightforward route to the Bridge 1 lift. This option also provides capacity to create a drop off location for those guests with mobility issues who choose to be driven to the venue. Irrespective of event activity at neighbouring venues and the level of visitation, the HS1 provides more than enough dedicated Blue Badge parking. The HS1 option does require permission to change the conditions of use of the car park by LLDC. If we are unable to secure a deal on HS1 and vary the consent we will fall back on the Westfield option. Both options are illustrated within the supporting Concept of Operations document. A vehicle set-down and pick-up point is proposed on Montfichet Road north of the junction with Hitchcock Lane close to Bridge 1, a distance of approximately 150m from the Sphere. The facility will be capable of accommodating up to 5 vehicles, including minibuses with tailgate lifts, this is the largest facility that can be provided within the available space. A strict stewarding regime will be required during major events at the Sphere to prioritise access to this facility for disabled people and this will be developed as part of the operational planning.</td>
</tr>
<tr>
<td>BEAP</td>
<td>02/05/2018</td>
<td>Mobility Assistance – design team to consider support for disabled people getting from parking, drop-off and public transport links to the venue. Design team to also consider fast-track options for disabled customers arriving at the venue (in tandem with management procedures to be applied)</td>
<td>It is proposed to provide free-of-charge mobility assistance from the blue badge parking, Stratford Regional Station and the Montfichet drop-off point. The exact form that this mobility assistance will take will be developed in the period prior to opening. A shuttle drop off point has been allowed for at a podium level at Angel Lane. Enough space has been provided here to ensure that a shuttle can turn around and descend the ramp without being a safety risk. And enough space has also been provided to accommodate spectators who may be waiting for the shuttle after an event. The proactive use of technology to communicate with visitors is likely to make up an important part of the mobility strategy and wider transport strategy, allowing the venue operator to inform visitors about the mobility assistance options and update them in case of an issue for example a lift being unavailable. This is likely to be in the form of a mobile app as well as through direct communication via phone and email and the venue website.</td>
</tr>
<tr>
<td>BEAP</td>
<td>03/05/2018</td>
<td>Best Areas with Seating – a full sized accessible pedestrian route both externally and internally considering the significant travel distances involved. LLDC’s Inclusive Design Standards (IDS) recommends rest areas at no more than 50m intervals</td>
<td>Rest areas with a variety of seating types and space alongside for wheelchair-users and double buggies are incorporated across the proposals at a maximum of 50m intervals, a proportion of the seats will have back and arm rests. The exceptions to this are Bridge 2 and 3 which are longer than 50m and too narrow for any potential obstructions given the anticipated peak pedestrian flows. However, seats are incorporated within the Montfichet Road improvement works close to the Bridges 1 and 2 and at the entry point from Bridge 3.</td>
</tr>
<tr>
<td>BEAP</td>
<td>04/05/2018</td>
<td>Passenger Lifts Capacity – design team to take into account that the existing passenger lifts on the town centre link bridge are known to regularly have large queues, even on non-event days. The size and number of lifts proposed to get up to podium level need to be robust and display how they will accommodate the anticipated use considering not just wheelchair users but ambulant disabled people, older people, people with young children, people with a temporary disability and people who just choose the lifts over the stairs</td>
<td>There will be step-free access to the Sphere island from all four pedestrian access points providing choice, adequate capacity and resilience for those who cannot or do not wish to use steps. A large (1400x2400mm) 21 person lift will be provided on each of the bridges on Montfichet Road, one lift on Bridge 1 and one lift on Bridge 2, providing access to the podium from Montfichet Road. A new link bridge (Bridge 3) will provide access to the podium from the Stratford Town Centre Link Bridge. There are two lifts at each end of the TCLB and the people movement studies carried out by the design team indicate that the highest demand for access to the Sphere will be in the evening when the pedestrian flows to the surrounding facilities and attractions are at their lowest. Therefore, the team feel the analysis indicates that the current lift provision on TCLB is likely to be adequate to accommodate the expected demand from new and existing users. Ramp access will be provided to the arched from Angel Lane.</td>
</tr>
<tr>
<td>BEAP</td>
<td>05/05/2018</td>
<td>Angel Lane Entrance Area – design team to develop options that allow for an inclusive route whilst offering protection for wheelchair users during crowded event and emergency access</td>
<td>The Angel Lane entrance has been taken on-board the BEAP comments and separated the 2nd level from the steps within the proposals for the Angel Lane access. The ramp will be obvious from the top and bottom of the steps but it will separate and segregated by landscaping from the steps. The vehicle ramp will have a gradient of 1:20 which will be usable for some wheelchair users.</td>
</tr>
<tr>
<td>BEAP</td>
<td>06/05/2018</td>
<td>Flexibility and Capacity of Wheelchair Viewing Positions – design team to demonstrate flexibility and not just target minimum numbers from Accessible Stadia. Wheelchair user spaces should be available in multiple locations and configurations including hospitality areas and allow wheelchair users to sit with a group and not just one single companion</td>
<td>The wheelchair user spaces and amenity seating for ambulant disabled people will be grouped together at different levels around the Sphere to offer a choice of viewing locations for all categories of spectator meeting good practice. The only area of seating without wheelchair user spaces is the seating accessed from the Level 9 concourse, since while there is lift access to this level the combiners have steps due to the Sphere’s geometry. The Sphere will offer a more immersive experience than any other venue currently offers with the inner surface of the sphere covered in LEDS used as a video screen and high definition speakers used to project sound. The venue will host a variety of different types of show from those where the main focus of the event will be on the floor of the auditorium to those where the immersive screen will be the focus, the field of view will be different for different events. Standing during performances is another factor being considered, spectators are unlikely to stand up during, for example a 3D immersive performance but standing is common during pop concerts, potentially blocking the view of wheelchair users seated behind. There will be the flexibility to accommodate all of the required wheelchair users spaces in any of the seating modes. The flexibility of the compliant seats will be also be key to accommodation different sizes of group, for example a family with one wheelchair user or a group of wheelchair users. The companion seat design will be developed further in the next stages of the design.</td>
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## Response to comments raised by LLDC Built Environment Access Panel (continued)

<table>
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<tbody>
<tr>
<td>MSG BEAP 01</td>
<td>01/02/2019</td>
<td>Disabled Performers Provision – Design team to ensure that facilities for performers are equally inclusive as those for staff and customers. Dressing rooms to be appropriately sized and include accessible shower and changing facilities</td>
<td>The lack of short horizontal and vertical circulation routes is designed to accessibility standard, with lift routes to all areas. Accessible changing rooms are included for staff, performers, and crew. For example, one of the eleven performers changing rooms has a combined shower and WC suitable for a wheelchair user. Where WCs or showers are provided for one group of users at least one of the facilities is designed to accessibility standards. The accessibility of the back of house areas will be developed further in the next design stage.</td>
</tr>
<tr>
<td>MSG BEAP 02</td>
<td>01/02/2019</td>
<td>Multi-faith and quiet space – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider quiet areas in the building where people can go to take a break from the crowds, noise and lively atmosphere if they need to</td>
<td>Facilities for performers are equally accessible to those for staff and customers. Also consider quiet areas in the building where people can go to take a break from the crowds, noise and lively atmosphere if they need to.</td>
</tr>
<tr>
<td>MSG BEAP 03</td>
<td>01/02/2019</td>
<td>Mobility Equipment Storage – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Consider that more people may attend in large powered wheelchairs and mobility scooters given the lack of parking close by. Develop a strategy for mobility equipment use and storage during performances. Also consider impact on passenger lift sizes</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
</tr>
<tr>
<td>MSG BEAP 04</td>
<td>01/02/2019</td>
<td>Parking – Verify required on exact location of site.</td>
<td>Parking will be made available.</td>
</tr>
<tr>
<td>MSG BEAP 05</td>
<td>01/02/2019</td>
<td>Mobility Services – a shuttle bus mobility service is currently being proposed as a solution for visitors that require additional support on ingress and egress. Panel members need detail to feel confident that this can work and is deliverable.</td>
<td>This will be developed further in MSG’s operational planning prior to opening.</td>
</tr>
<tr>
<td>MSG BEAP 06</td>
<td>01/02/2019</td>
<td>Vertical Circulation – Panel members would like to see examples and detail of how catering offer seating is being implemented and the positive impact it could have on the disabled visitors’ experience. Visitors. The panel would like to see some examples of the kind of assistive technology that might be implemented and the positive impact it could have on disabled visitors’ experience.</td>
<td>The design team to demonstrate how the active façade will not negatively impact visitors. Additionally circulation and egress routes to and from the venue will need to be kept clear of furniture to enhance the visual impact.</td>
</tr>
<tr>
<td>MSG BEAP 07</td>
<td>01/02/2019</td>
<td>External Design – Panel members appreciated the attention to detailing for making main face outdoors on arrival to Bridges 1 and 2. However, they expressed the need for a balance to ensure that the passenger lifts don’t feel like a second-class entrance for disabled visitors. Design team to demonstrate how they will ensure this is not the case.</td>
<td>The lift enclosures are designed to be easy to locate but not on the primary route to the entrance. They are designed to be distinctive features that are easy to locate on the approach from either end of Montfichet Road. Colour, lighting and signage will also be used to highlight the lifts.</td>
</tr>
<tr>
<td>MSG BEAP 08</td>
<td>01/02/2019</td>
<td>Travel Distance – Panel members are keen to see examples mitigation measures for people unable to walk the long distances over the link bridges. They have considered an alternative approach to the link bridges. Colour, lighting and signage will also be used to highlight the lifts.</td>
<td>Further to our response to MSG BEAP 02 above. The lifts on Bridge 1 and 2 are through lifts with doors at each end of the lift and each has a capacity of 21 persons (1400mm x 4000mm) which are large enough to accommodate all types of mobility scooter.</td>
</tr>
<tr>
<td>MSG BEAP 09</td>
<td>01/02/2019</td>
<td>Glass Floors – Panel members are keen to see examples of how glass floors will be designed. They have considered an alternative approach to the link bridges. Colour, lighting and signage will also be used to highlight the lifts.</td>
<td>The glass floors will be designed to be distinctive features that are easy to locate on the approach from either end of Montfichet Road. Colour, lighting and signage will also be used to highlight the lifts.</td>
</tr>
<tr>
<td>MSG BEAP 10</td>
<td>01/02/2019</td>
<td>Accessible Changing Rooms – design team to ensure that facilities for performers are equally accessible to those for staff and customers. Accessible shower and changing facilities for staff and performers.</td>
<td>Accessible changing rooms are included for staff, performers, and crew. For example, one of the eleven performers changing rooms has a combined shower and WC suitable for a wheelchair user. Where WCs or showers are provided for one group of users at least one of the facilities is designed to accessibility standards. The accessibility of the back of house areas will be developed further in the next design stage.</td>
</tr>
<tr>
<td>MSG BEAP 11</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff</td>
<td>Accessible changing rooms are included for staff, performers, and crew. For example, one of the eleven performers changing rooms has a combined shower and WC suitable for a wheelchair user. Where WCs or showers are provided for one group of users at least one of the facilities is designed to accessibility standards. The accessibility of the back of house areas will be developed further in the next design stage.</td>
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<td>MSG BEAP 12</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<tr>
<td>MSG BEAP 13</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<td>MSG BEAP 14</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<td>MSG BEAP 15</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<td>MSG BEAP 16</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<tr>
<td>MSG BEAP 17</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<td>MSG BEAP 18</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
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<td>MSG BEAP 19</td>
<td>01/02/2019</td>
<td>Glass Floors – Design team to ensure that facilities for performers are equally accessible to those for staff and customers. Also consider the need for a dedicated multi-faith room for staff and customers.</td>
<td>Facilities for mobility equipment storage will be considered further as the design is developed. All of the main passenger lifts are large enough to accommodate mobility scooters if required.</td>
</tr>
</tbody>
</table>

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The areas of glass within the Podium and Terrace paving will be away from pedestrian routes to the entrances and there will be no need to cross or go anywhere near the glass. The glazed area of paving will be limited to a narrow strip of paving adjacent to the surface of the sphere and this is intended to enhance the shape of the sphere continuing to the lower levels. The glass floors will have glass balustrades around them.
A APPENDIX IV

Exterior Lighting Drawings

- Phillips Street lighting to match surrounding architecture
- Low level strip lighting to timber street furniture to create harmony with the podium space.
- Spot floodlighting to underside of bridge/stair structure to light bicycle storage.

LIGHTING PRODUCT INFORMATION KEY
1  - Philips MileWide2 BPP435 / BPP436
3  - VarioLED™ Flex SKYLLA TV W830
IP67 - 500

LIGHTING INTENT PHILOSOPHY
Street lighting is designed to fit in with existing lighting and will meet minimum CIBSE Lux levels of 30lx for circulation areas.

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NOT FOR CONSTRUCTION
Exterior Lighting Drawings

- Handrail illumination to light the stairways, avoiding the requirement for additional high-level lighting that detracts from The Sphere.

- Small uplighting spread throughout the landscape, illuminating planting and trees.

- Low-level linear lighting to one side of ramps (facing away from oncoming traffic) to assist wheelchair access while also avoiding glare to the users.

- Philips Street lighting to match the surrounding environment.

- LED screens to walls in line with the Activation design and specification.

- Graze lighting on walls to both sides of the emergency access route.

- Wall graze lighting to the vehicle access route (placed at the top of the wall, above the gateway).

LIGHTING INTENT PHILOSOPHY

Angel Lane is intended to be a feature entrance way, directly off the public realm. The lighting will act to celebrate this feature entrance while not distracting from The Sphere. Surrounding landscape lighting will be soft and discreet, focusing the attention more on The Sphere.

External lighting is designed to fit in with existing lighting and will meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30 Lx to circulation routes
- 30 Lx to street/traffic routes
- 20 Lx to flower bed/landscaping

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Angel Lane Plan

Angel Lane Section 1

Angel Lane Section 2 - Stairs

Angel Lane Section 3 - Ramps
A APPENDIX IV

Exterior Lighting Drawings

Colour flood lights hidden within planting used to interact with site features during show/marketing days.

Handrail illumination to light the stairways avoiding the requirement for additional high level lighting, detracting from The Sphere.

ACTIVATION:
- Vertical lights that respond to proximity movement and density of crowd. Originating at the base moving vertical and away from the cafe in movement. Default setting to soft light.

Soffit of Upper Podium above columns.

Vertical pixel map LED lighting to wayfinding columns.

Downlight from soffit, creating a warm secure location.

Key Location Plan

As indicated @ A1

Podium - Kids Play Zone Plan
1 : 100

Kids Play Zone Section 1
1 : 150

Kids Play Zone Section 2
1 : 150

Kids play zone Section 3
1 : 150

Podium - Kids Play Zone Plan
1 : 100

Kids Play Zone Section 1
1 : 150

Kids Play Zone Section 2
1 : 150

Kids play zone Section 3
1 : 150

LIGHTING PRODUCT INFORMATION KEY

3a - VarioLED™ Flex SKYLLA TV W830 IP67 500
4b - DW Windsor GARDA Pro Assym-1200-4k - Asymmetric

LIGHTING INTENT PHILOSOPHY

The Kids Zone is an area where secrets are held, discovering the interactive cube hidden behind the staircase. A chance for children to play with the cube, changing the lights and discovering the magic it holds within. There will be areas of soft light and other areas where the lights will be more interactive with event/marketing day features.

External lighting is designed to meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30Lx to circulation routes
- 20Lx to flower bed/ landscaping

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NOT FOR CONSTRUCTION
A APPENDIX IV

Exterior Lighting Drawings

Lighting strips to be RGBW. They will be interactive with features columns.

Lighting during shows will be more soft colour light/ rain/ pulse during events. Columns will have a soft colour light/ rain/ pulse during events.

This will only be active during non-show days.

Lighting at the base moving vertical and away from the site in movement. Vertical pixel lights to wall light.

Lighting strips to create pools of light at stairways and ramp areas.

Lighting to create pools of light at stairways and ramp areas. Low level lighting to create pools of light at stairways and ramp areas.

LED strip lighting to soffit of Podium Plaza deck face of Podium incorporated into display to face of Podium.

Interactive text display to face of Podium incorporated into display.

Lighting strips to be RGBW. They will be interactive with feature columns.

Lighting during shows will be more soft colour light/ rain/ pulse during events. Columns will have a soft colour light/ rain/ pulse during events.

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LED strip lighting to soffit of Podium Plaza deck face of Podium incorporated into display to face of Podium.

Interactive text display to face of Podium incorporated into display.
Handrail illumination to light the stairways avoiding the requirement for additional high level lighting detracting from The Sphere.

Colour graze lighting to stairway walls will allow for interactive colour wash over walls to work with wayfinding and marketing on event days.

Small uplighting spread throughout landscape illuminating planting and trees. Interactive colour features will be used on event/marketing days.

Linear low-level lighting built into the furniture and planting boxes to create pools of light at floor level and not to clash with The Sphere.

Escalators to have illuminated handrails.

ACTIVATION: Each stairwell to be lit in a contained colour wash or similar edge lighting to create visible portals from level to level. Similar to the lighting on Angel podium to create the low level graze effect.

Vertical pixel map LED lighting to wayfinding columns.

White flood uplighting through timber structure.

LED strip screen to front risers of performance area.

External lighting is designed to meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30 Lx to circulation routes
- 30 Lx to street/traffic routes
- 20 Lx to flower bed/landscaping
- 50 Lx to security/monitoring areas

Soffit lighting to be built up of beam lights to highlight the structure.

NOT FOR CONSTRUCTION
Exterior Lighting Drawings

- High level flood lighting to extrude from planters. Required to satisfy lux level requirements for safe movement and security monitoring.
- Low level lighting to create pools of light at floor level and not to clash with The Sphere.
- Small uplighting spread throughout landscape illuminating planting and trees. Interactive colour features will be used on event/marketing days.
- Linear low level lighting built into the furniture and planting boxes to create pools of light at floor level and not to clash with The Sphere.
- Doorway to bicycle store to be framed with bead lighting.
- Fatron based screen vertically between glass panels.

**LIGHTING PRODUCT INFORMATION KEY**

1. VarioLED™ Flex SKYLLA TV W830 IP67 500
2. Ecosense Rise FZ080
3. Martin Exterior Linear Quad Graze
4. Ligman_Triangle 5
5. Simes S.p.A S5075W.14
6. Dirigo_Terreno_64590W00
7. Simes S.3374N
8. iGuzzini Trick

External lighting is designed to meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30Lx to circulation routes
- 30Lx to street/traffic routes
- 20Lx to flower bed/landscaping
- 50Lx to security/monitoring areas

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**NOT FOR CONSTRUCTION**
Exterior Lighting Drawings

- Small uplighting features spread throughout landscape illuminating planting and trees.
- Downlighting to be incorporated into soffit above to achieve the required lux levels required to ensure safe movement and security monitoring.
- Linear low-level lighting built into the furniture and planting boxes to create pools of light at floor level and not to clash with The Sphere.
- Inground interactive media lighting to be used to assist egress from the doors during events. Pulse lighting directing foot traffic towards staircases and escalators.
- Integrated lighting into rail of balustrading.
- Back-lighting timber cladding with horizontal batten fixing RGBW LED’s. To create a light wave movement, playing with shadows from the timber.
- Escalators to have illuminated handrails.
- Vertical linear lighting integrated into timber facade to light around doorways.

LIGHTING PRODUCT INFORMATION KEY

- 3  - VarioLED™ Flex SKYLLA TV W830 IP67 500
- 4a - BW Windsor GARDA - Symmetric
- 4b - BW Windsor GARDA - Asymmetric
- 5  - Ecosense Rise FZ080
- 13a - Martin Exterior PixLine 20 - 1270mm flat diffuser
- 13b - Martin Exterior PixLine 20 - 310mm flat diffuser
- 26 - Phillips ReachElite IntelliHue Power Core

External lighting is designed to meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30Lx to circulation routes
- 20Lx to flower bed/landscaping

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NOT FOR CONSTRUCTION
A Appendix IV
Exterior Lighting Drawings

Interactive illuminated grass and flower features within flower beds.

LED strip lighting to frame the edge of the seating.

Interactive illuminated grass and flower features within all flower beds.

Linear low-level lighting built into the furniture and planting boxes to create pools of light at floor level and not to clash with The Sphere.

Colour flood lights hidden within planting used to interact with site features during show/marketing days.

Handrail illumination to light the stairways avoiding the requirement for additional high-level lighting, detracting from The Sphere.

Interactive illuminated grass and flower features within flower beds.

Lighting spread throughout landscape illuminating planting and trees. Interactive colour features will be used on event/marketing days.

Animated LED's behind Corten cladding to respond to proximity detectors.

External lighting is designed to meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30 Lx to circulation routes
- 20 Lx to flower bed/landscaping

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A APPENDIX IV

Exterior Lighting Drawings

Light Tower will be able to provide an interactive light feature for event/marketing days.

Handrail illumination to light the stairways avoiding the requirement for additional high level lighting, detracting from The Sphere.

Light Tower will be able to provide an interactive light feature for event/marketing days.

An interactive line of light directing footfall towards The Sphere during event days.

Low level colour strip uplighting to graze the bridge walls and stairway (to be placed between glass panels and mesh).

High level colour strip downlighting to graze the bridge walls and stairway (to be placed between glass panels and mesh).

Commercial in Confidence

NOT FOR CONSTRUCTION
Low level colour strip uplighting to graze the bridge walls and stairways (to be placed between the glass panels and mesh)

Light Tower will be able to provide an interactive light feature for event/marketing days

High level floodlighting at end of bridge to provide security lux levels.

Vertical light strips at edges of glass panels along bridge walls.

Light Tower will be able to provide an interactive light feature for event/marketing days

High level colour strip downlighting to graze the bridge walls and stairways (to be placed between the glass panels and mesh)

Lift tower walls to be iMagic Weave (LED mesh)

Low level uplighting to provide colour uplighting to the walls on event/marketing days

Linear light fittings integrated into top of balustrading.

Light Tower will be able to provide an interactive light feature for event/marketing days

High level colour strip downlighting to graze the bridge walls and stairways (to be placed between the glass panels and mesh)

Lift tower walls to be iMagic Weave (LED mesh)

Low level colour strip uplighting to graze the bridge walls and stairways (to be placed between the glass panels and mesh)

Light Tower will be able to provide an interactive light feature for event/marketing days

High level floodlighting at end of bridge to provide security lux levels.

LED Architectural mesh

Commercial in Confidence
A APPENDIX IV

Exterior Lighting Drawings

External lighting is designed to meet minimum CIBSE Lux levels:
- 100 Lx to stairways and ramp areas
- 30 Lx to circulation routes
- 20 Lx to flower bed/landscaping

**LIGHTING PRODUCT INFORMATION KEY**

36 - SACO Smartvision HYBRID LED screen
37 - G-SMATT media glass

**ACTIVATION:** Lightedging using the architecture of the bridge with the flow of light running from off site towards the podium in event mode for ingress.

**Existing bridge lighting panels to remain.**

**G-SMATT media glass to gates featuring LED embedded within the interlayer of double glazed glass panels.**

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