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7.1 INTRODUCTION

7.1.1 Company

Mott MacDonald

7.1.2 Authors

7.1.2.1 Transport Impacts

7.1.2.2 Author

Kevin Blakey- Principal Transport Planner for Mott MacDonald. 17 years' experience in Transport Planning, Chartered member of the Royal Town Planning Institute and Master of Civic Design.

7.1.2.3 Reviewer

Dave Drury - Director for Mott MacDonald. An experienced Project Manager and Director with approximately 28 years' experience, 17 of which were working for the Local Authorities of Wirral Borough Council and Liverpool City Council. Has significant experience in traffic and transportation working in both the public and private sector.

7.1.2.4 Crowd Disasters and Violence

Advice and guidance on crowd disasters and violence has been provided by Buro Happold- security advisors to Everton on the People's Project.

Gez Hart – Associate security consultant Buro Happold Engineers. Gez is a counter-terrorism expert with considerable experience at strategic and operational levels. He has also conducted physical security audits, Threat and Risk Assessments of critical utilities (gas & oil, communications, and power supply infrastructure) relating to Counter Terrorism and Counter Sabotage for many UK and International based Buro Happold Engineering projects.

7.1.3 Chapter Purpose

This Chapter considers the transport impacts associated with the construction and operation of the proposed development at Bramley-Moore Dock (BMD). This Chapter describes the methods used to assess the impacts, the baseline traffic and transport conditions, the mitigation measures which will be implemented as part of the proposed development to mitigate potential impacts, and the direct or indirect effects of the proposed development.

This Chapter should be read in conjunction with Appendix 7.1, which contains the Transport Assessment (TA) for the planning application. The objectives of this chapter are to assess the transport impact in terms of:

- Non-Match Day Impacts:
 - Severance;
 - Vehicle Delay;

- Pedestrian Delay;
- Pedestrian Amenity; and
- Road Safety;
- Match Day & Event Day Impacts:
 - Operation of the transport network; and
 - Risk of crowd disasters or violence.

7.1.4 Chapter Updates for Revised 2020 Submission

In accordance with the methodology outlined in Chapter 2, a Level 2 update has been undertaken. Due to:

- the relevance and scale of the proposed development amendments (including amendments to the construction methodology);
- the validity of the baseline data;
- the addition of new cumulative schemes; and
- statutory consultee comments and the appropriateness of the previously identified mitigation measures;

limited technical assessment has been undertaken to confirm the validity of the previous conclusions.

In terms of bullets 1 and 4 above, and match day / major event day assessments, the changes to match day parking capacity on site (as a result of design changes) from 481 spaces to 85 as well as changes to the proposed Football Management Parking Zone (FMPZ) outside the site (as a result of statutory consultee comments) respectively change the match day modal split. Notwithstanding this the changes to the modal split have been found to have no impact on the assessments and conclusions drawn in the originally submitted ES. The revised modal splits are included in Section 10 of the TA in Appendix 7.1. There is sufficient capacity on the transport network to accommodate travel demand on match days and major event days.

For the first three bullets above, in relation to the assessment of non-matchday traffic impact, analysis of the changes in development quantum and committed / cumulative development have been undertaken. The analysis demonstrates that the modelling and assessment of non-match day traffic remains valid and robust. This analysis is included in Section 13.6 of the TA in Appendix 7.1.

In respect to the assessment of construction impact relating to the first bullet point in this section, and changes to construction methodology, this has resulted in a small change to traffic flow in the immediate vicinity of the site on one of the road links assessed. Accordingly, the change in traffic has been accounted for in Section 7.6. The changes have not resulted in a difference to the magnitude or significance of impact and our conclusions on construction impact remain the same.

This Transport ES chapter has also been reviewed against Legislation / Policy Revisions, there are no related updates to legislation or policy that have affected either the methodology or the findings of this assessment.

7.1.5 Figures

- Figure 7.1: Non-Match Day/Non-Event Day Study Area
- Figure 7.2: Match Day/Event Day Study Area

7.1.6 Appendices

- Appendix 7.1: Transport Assessment
- Appendix 7.2: Transport EIA Technical Appendix

7.2 METHODOLOGY

7.2.1 Guidance

This technical assessment has been conducted with reference to:

- The Institute for Environmental Assessment (IEA) guidance note 'Guidelines for the Environmental Assessment of Road Traffic' [1];
- Volume 11 of the Design Manual for Roads and Bridges (DMRB) [2]; and
- Guide to Safety at Sports Grounds – Sports Grounds Safety Authority [3].

7.2.2 Legislation & Policy

In terms of the key policy documents which have informed this chapter the following are relevant:

- National Planning Policy Framework – Ministry of Housing, Communities and Local Government (MHCLG) [4];
- Liverpool City Region Local Journey Strategy – LCRCA [5];
- Merseyside Local Transport Plan 3 — Merseytravel [6];
- City of Liverpool Unitary Development Plan (UDP), (adopted November 2002) – Liverpool City Council (LCC) [7];
- Liverpool Local Plan (Pre-Submission Draft including draft schedule of main modifications, April 2020) – LCC [8];
- Liverpool City Region Long Term Rail Strategy – Liverpool City Region Combined Authority (LCRCA) [9];
- Ensuring a Choice of Travel Supplementary Planning Document (SPD) – LCC [10];
- Liverpool City Region Combined Authority Transport Plan-LCRCA;
- Strategic Investment Framework- [11].

These documents are reviewed in terms of their relevance to the development in Section 3 of the TA at Appendix 7.1.

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7.2.3 Consultees & Scoping

7.2.3.1 Scoping Consultation

Following issue of the EIA Scoping Report (Appendix 2.1) to LCC on 15th May 2017, no specific advice was received from LCC in regard to transport considerations within the formal Scoping Opinion (Appendix 2.2) that was issued by LCC on 8th November 2017.

Consequently, the assessment in this chapter is carried out in broad accordance with the scoping note. The assessment scope has expanded since 2017 to include match day and major event day transport impacts as well as impacts on Nelson Dock future occupants to represent the worst-case effects of the construction and operation of the proposed development, following advice from CBRE. The methodology of how cumulative development is addressed, and the approach to assessing the capacity of the transport network has been informed by the TA scoping process. This is detailed in Section 2 of the TA in Appendix 7.1.

7.2.3.2 Planning Application Consultation

In preparing the TA which accompanies this planning application (LPA ref. 20F/0001) the following key bodies have been consulted:

- LCC;
- LCRCA/Merseytravel;
- Merseyrail Electrics;
- Merseyside Police;
- Public Transport operators including Stagecoach, Arriva and Unite - the Union representing taxis; and
- Sefton Council.

A full list of consultees and meetings held is included in Section 2 of the TA at Appendix 7.1.

Following submission of the initial planning application, consultation responses were received from Liverpool City Council, Merseytravel, Sefton Council, Highways England, United Utilities and the Canal and River Trust. No comments were received on this ES chapter, all comments received related to the Transport Assessment at Appendix 7.2. A detailed breakdown of how these points have been addressed are included in the Transport Assessment in Section 2.3 of Appendix 7.2.

The comments that required further assessment work and clarification were received from Liverpool City Council in relation to disabled access within the Transport Strategy. A disabled shuttle bus service from Sandhills station and Stanley Park car park (the latter a pre-booked 'park & ride' service) is now proposed on match days and this is now included in Table 7.7.

Other comments from Liverpool City Council related to match day car parking capacity. This required minor amendments to parking capacity calculations. These are included in Section 10.2 of Appendix 7.2 and do not materially impact on this chapter other than the parking capacities

stated 7.2 of this chapter which have been revised. Other comments received from Liverpool City Council were minimal in nature and related to detailed points on highway changes and minor clarifications that do not materially impact on this chapter.

Sefton Council's comments related to clarifications on travel planning and this is addressed in Section 14.8 of Appendix 7.2. The changes do not impact on this chapter.

Merseytravel's comments generally related to an acceptance and approval of the Transport Assessment with some detailed comments on the funding of bus services. Dialogue on funding will continue following the resubmission of this planning application and do not impact on this chapter.

Highways England provided a formal response to the application that they had no objections to it.

United Utilities requested clarification on the series of match day road closures which would be in place and how access to their site would be maintained. Mott MacDonald contacted United Utilities to discuss this issue. This did not require any changes to the Transport Assessment as the information on access to United Utilities is already included within it.

The Canal & River Trust provided comment on the application requesting funding for canal towpath improvements for a section of the Leeds & Liverpool Canal. Planning consultants CBRE responded formally to this request and the outcome does not impact on this chapter.

7.2.4 Consideration of Climate Change

The projected climate that is predicted to occur as a result of climate change is set out in Chapter 2 EIA Methodology of this ES. Those climate changes that are predicted are not anticipated to significantly affect the operation of transport in respect of the existing situation at the application site or that associated with the proposed development.

It is acknowledged vehicle emissions are a key contributor to climate change. This is elaborated on in more detail in Chapter 8 Air Quality of this Environmental Statement (ES).

7.2.5 Consideration of Human Health

In terms of human health this document assesses impact in terms of road safety. It should be noted that it is the intention that travel by sustainable modes will be encouraged including walking and cycling. Cycle facilities will be provided at the site to encourage this mode. It should also be noted that a Framework Travel Plan accompanies the planning application, which includes measures to encourage staff to travel sustainably to the site.

Finally, the Match Day Transport Strategy includes a range of measures which will be implemented on match days to encourage sustainable travel, which could potentially have positive health benefits in terms of active travel and reduction in polluting emissions.

7.2.6 Consideration of Risk of Major Accidents and/or Disasters

In accordance with the Scoping Report (Appendix 2.1) and Scoping Opinion (Appendix 2.2), the identified major accidents and disasters that are to be considered in relation to transport are transport accidents, crowd disasters, and, football related violence and disorder.

The risk of road accidents is assessed in this chapter. The transport and crowd movement implications during a match-day or other large-scale event once fans leave the application site have also been considered.

For crowd disasters, it should be noted that the proposed development has been designed in accordance with the 'Green Guide' or 'Guide to Safety at Sports Grounds 2018' [3].

A range of design interventions are integral to the design of the proposed development. Additional operational mitigation measures are included in the Event Safety Policy & Event Day Contingency Plan that has been initially developed by the Club and will be further refined during technical design development. These strategies will be employed at every event at the proposed development to reduce the risk of disaster and violence. In addition to this, the Match Day Transport Strategy and Event Day Strategy (Sections 11 & 12 Appendix 7.1) contains measures specifically aimed at supporting the safe movement of crowds outside and in the vicinity of the application site.

7.2.7 Consideration of Match / Major Event Day Impact on the Operation of the Road Network

The impact of the proposed development on the operation of the road network on match days is not considered to be one of the main impacts of the proposed development. In reaching this conclusion the following has been reviewed and considered:

- analysis of existing traffic changes that take place at Goodison Park on match days;
- the established approach to traffic management in Liverpool for events and football matches;
- traffic survey analysis of the main road routes surrounding the application site and a qualitative assessment of the reliance of the network in the TA Appendix 7.1 Section 14.2;

In addition, the following considerations have also informed the decision to not undertake transport modelling of the match day road impact nor a specific assessment of its individual impact but rather the assessment of the impact on the transport network during match day and non-match day events:

- the assessment methodologies adopted for other recent stadium planning applications; and
- the considerable limitations of modelling match day traffic changes.

Each of the above points has been explained more fully in the subsequent sections of this chapter.

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7.2.7.1 Temporary traffic changes on match days at Goodison Park

The temporary changes in traffic levels generated by football matches and the traffic restrictions associated with them is illustrated by the results of traffic surveys undertaken as part of the Goodison Park Legacy project. As part of the Transport Assessment which accompanied the Goodison Park planning application a comparison of match day traffic levels with non-match day traffic levels is provided in Section 5. Existing capacity at Goodison Park stadium is approximately 39,500.

The two key traffic routes in the vicinity of Goodison Park are County Road (some 250m to the west of the stadium) and Walton Lane (to the immediate east of the stadium and the main route from which the existing stadium car park is accessed). It should be noted that traffic restrictions and road closures currently in place on match days at Goodison Park are significantly smaller in scale than that proposed at BMD. At Goodison Park the residential streets that immediately border the stadium (Goodison Road, Bullens Road and Gwladys Street) are closed in the pre and post-match periods. The key routes of County Road and Walton Lane remain open all day with the exception of Walton Lane which is typically closed for around 20 minutes in the post-match period only.

Parking restrictions such as the Football Match Residents Parking Zone (FMPZ) are in place for a substantial area surrounding Goodison Park. The restrictions limit on-street parking in the immediate vicinity of Goodison Park to residents and businesses only. The FMPZ means that the closest streets within which supporters could park their cars are around 20 minutes' walk to the north, west and east (FMPZ extent north of A5057 Balliol Road and Breeze Hill, west of A5038 Melrose Road and east of A5057 Queens Drive). To the south the FMPZ limit is wider at around 30 minutes' walk on account of the area extending around Anfield Stadium.

The traffic surveys revealed that on a match day, traffic levels in the hour before kick-off and hour after final whistle were around 200 vehicles per hour higher than non-match day conditions on County Road. For context, during the weekday morning and evening network peak hours the route typically accommodates around 1,400 vehicles per hour.

The Walton Lane dual carriageway accommodates increases of around 300 vehicles per hour in the pre and post-match periods. Again, for context Walton Lane typically accommodates around 2,100 vehicles per hour during the weekday network peak hour. In both cases the traffic increases were largely isolated to the period immediately preceding and following the match event. For Walton Lane the level of increase can partly be explained by the fact that both the Goodison Park stadium car park (capacity approximately 150 spaces on match days) and the nearby high capacity Stanley Park & Utting Avenue car park (capacity over 1,500 spaces) are both accessed via Walton Lane.

It is evident therefore, that despite the significant match day transport demand generated by the existing stadium at Goodison Park that this is not reflected in substantial changes in traffic flow on the road network. These changes are limited to the periods immediately before kick-off and following final whistle. These events only take place at Goodison Park

around 24 times per year (based on fixture frequency for the last 5 complete football seasons at Goodison Park).

For BMD, football and non-football traffic would be deterred from routing on streets close to the stadium to a greater degree than is the case at present for Goodison Park. This is due to the proposed FMPZ for BMD being wider in its extent than for Goodison Park. Furthermore, the extent of road closures and traffic restrictions is wider and includes the main two routes in the immediate vicinity of the application site, namely Regent Road and Great Howard Street. In addition, there are be no high capacity car parks located in such close proximity as is the case with Goodison Park.

7.2.7.2 Established traffic management practice in Liverpool for football and other major events

Liverpool City Council as Highway Authority is experienced in the development of event management plans to accommodate major events in the City. As well as the temporary traffic management measures which are employed when Everton or Liverpool Football Club (LFC) (LFC current stadium capacity circa 54,000) play at home, the city plays host to a wide variety of events through the year which require temporary road closures or restrictions. In 2018 and 2019 these have included sports events (Liverpool Triathlon, Liverpool Half Marathon, Wales Touring Car Rally Parade, Red Bull Drift Series) and cultural events (Liverpool River of Light, Liverpool Dream). The Liverpool Dream staged over three days in Liverpool City Centre attracted some 1.2 million visitors (Liverpool Echo <https://www.liverpoolecho.co.uk/whats-on/whats-on-news/revealed-records-broke-giants-liverpool-15541969>).

For football and major events requiring road closures LCC uses its Urban Traffic Control (UTC) systems to maintain the safe and efficient operation of the road network. Through this system, LCC are able to monitor traffic conditions and make changes to signal timings and staging to assist in the movement of traffic. For football matches at Goodison Park and Anfield Stadium, LCC's UTC typically alters the operation of traffic signals local to the stadia and wider area to assist in the expedient movement of traffic. LCC in scoping has confirmed that for the proposed development's operation at BMD the same approach would be used. As has already been explained in Section 3 of the TA (Appendix 7.1), there will be a comprehensive signage system in place warning motorists of match day road closures so they can avoid the area.

The focus of all transport strategies associated with football and major events staged in Liverpool is to discourage traffic from driving close to the stadium / event location both for crowd safety and for sustainable transport reasons. This is achieved via temporary road closures, on-street parking restrictions and other softer measures such as including transport information in marketing and event material. There is an acceptance that these restrictions will lead to a temporary re-distribution of traffic and that some routes remote from the event will accommodate more traffic than is usual. These changes are needed to assist in the movement and dispersion of large crowds. This redistribution of traffic is accepted on the basis it is temporary and short term in nature and that events take place on an

infrequent basis outside of traffic network peak hours.

On account of the transient and temporary nature of events, mitigation seldom takes the form of physical capacity changes to the road network to accommodate changes to traffic flow traffic or higher pedestrian flows. The focus is on temporary changes which are implemented on the day of the event to assist in the movement of people on foot and by public transport. The temporary nature of the mitigation works reflect the temporary impact of the event. Where permanent highway changes are made to accommodate events, such as those around Goodison Park and Anfield Stadium these typically take the form of signage and traffic regulation orders to regulate parking in the area.

7.2.7.3 Traffic Survey Analysis

Appendix 7.1 Section 14.4 provides analysis of traffic flows on key routes of the road network surrounding BMD including consideration of road diversions and closures as follows:

- Regent Road - Road to be under hard and soft closure in the pre and post-match period;
- (A565) Great Howard Street - Road open in the pre match period, under hard closure for a short period following final whistle;
- (A5038) Commercial Road - Diversion route for traffic during time of road closure;
- (A59) Scotland Road - Diversion route for traffic during time of road closure;
- Great Homer Street - Diversion route for traffic during time of road closure.

The analysis of traffic data concludes that:

- Traffic flows on the network during the match arrival and departure periods and when road closures will take place on Regent Road and Great Howard Street is well below peak hour traffic levels;
- There is sufficient network resilience during pre and post-match, and, event periods to accommodate diverted and match traffic;
- It should be noted that over the past 10 years road closures on Regent Road and Great Howard Street / Derby Road have been a frequent occurrence. In 2010, Regent Road was closed for 27 months on account of repairs needed to the bascule bridge at Walter Street. In 2017, Great Howard Street was closed for 13 months to replace a railway bridge near Oil Street. Presently (Autumn 2019), Regent Road is currently closed at Boundary Street as part of the Liverpool North Key Corridor scheme which is detailed in Section 4.4, of Appendix 7.1. As part of the works the A565 Derby Road is currently reduced to a single lane running in the vicinity of Millers Bridge. The works began in Spring 2017 and are scheduled to complete in 2020. During these periods of road closures, alternative routes have been used by motorists, therefore the use of alternative routes by local traffic to Regent Road and Great Howard Street is well established.

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7.2.7.4 Conclusions on Match / Major Event Day Impact on the Operation of the Road Network

Overall, it is concluded that although the proposed development will increase in capacity from the existing 39,500 at Goodison Park to 52,888 at BMD, the operation of the road network on match days will not be one of the main impacts of the proposed development, the reasons being:

- Match day / event day traffic redistribution resulting from events at BMD would be limited in frequency, temporary, and, short term in nature, only occurring a maximum of some 28 – 32 occasions per year and outside of peak traffic periods.
- On these limited occasions motorists will be warned of the match / event day traffic restrictions well in advance by signage and publicity. Therefore, on these limited occasions non -match and non- event traffic will either: divert, avoid the area, or choose to travel by a different mode on match days. Match / event day traffic redistribution will therefore be spread over a wide area and across different transport modes.
- It has been demonstrated that increases in traffic flow on major routes close to Goodison Park on match days is modest and limited to match arrival and departure times. The range of parking and road closure measures implemented on match days at BMD will be far greater in geographical scope than is the case at Goodison Park. It is therefore expected that at BMD match / event traffic will be dispersed over a wider area than is the case at Goodison Park.
- Liverpool City Council as Highway Authority is experienced at developing and managing transport strategies associated with football and major events in the city including football at Goodison Park (capacity circa 39,500), Anfield Stadium (capacity circa 54,000) and other major sporting and cultural events with far higher attendances than football matches. For these events the mitigation employed is temporary in nature reflecting the temporary impact of the event and focusses on discouraging traffic from driving close to the stadium / event location. In this way any traffic impacts are dispersed over a wide geographical area.
- Traffic survey analysis included within the TA in Appendix 7.1 Section 14.2 illustrates that on the limited occasions there is a football match or major event on at BMD, there is sufficient network resilience during pre and post-match, and, event periods to accommodate diverted and match traffic.

7.2.7.5 Precedent Stadium Planning Applications

Mott MacDonald reviewed assessment methodologies employed in other football stadium applications made in recent years prior to undertaking this transport assessment. The applications are:

- New Tottenham Hotspur FC Stadium 62,000 capacity and mixed-use development (development granted planning consent and now open). Planning Ref: HGY/2010/1000 & HGY/2015/3000;

- Crystal Palace FC- Extension of Main Stand Selhurst Park by 8,200 spectators (planning permission granted). Planning Ref: Croydon 18/00547/FUL;
- Chelsea FC- Redevelopment of Stamford Bridge Stadium for 60,000 capacity (development granted planning consent). Hammersmith & Fulham 2015/05050/FUL;
- Anfield Stadium, Liverpool – stadium expansion to 58,600 capacity: (expansion plans for Main Stand element implemented and open) Planning Ref: Liverpool City Council 14F/1262;
- Anfield Stadium, Liverpool – application to host concerts and non-football sporting events (planning permission granted, and events hosted) Planning Ref: Liverpool City Council 18F/1632;
- City of Manchester Stadium, Manchester – planning permission: (stadium now built- now called Etihad Stadium); and
- Etihad Stadium, Manchester – seated capacity expansion: (capacity enhancements implemented and open).

Within the Transport Assessments and EIA's submitted for the schemes above it should be noted that no detailed traffic modelling was undertaken for the match day / major event day scenarios. The main reason cited for this being that any increase or re-distribution of vehicle traffic on account of events and football matches is dissipated over a wide area. This is because:

- For urban stadia, most spectators travelling by car typically cannot park close to the stadium. Stadium car parks or publicly available car parking close by are usually limited. Residents Parking Zones and football match parking restrictions similar to those proposed for BMD force most match day vehicles to park remotely, spreading demand for car parking over a wide area;
- Match day road closures and traffic restrictions mean that non -match and non- football traffic either: diverts, avoids the area, or chooses to travel by a different mode on match days. The variety of alternative routes and alternative modes of transport available means that this redistribution is spread over a wide area and across different transport modes.

Furthermore, the timing and frequency of football matches and major events should be taken into account when considering an appropriate approach to the assessment of the potential impacts and effects:

- Although sporting events are the primary purpose of most stadia, these typically take place infrequently. As set out in Appendix 7.1 Section 3 the proposed new stadium will host a maximum of 28 Everton home fixtures per year (19 league games plus Domestic and European cup competitions) with a maximum of 4 non-football events. Therefore, it is apparent that football matches are in fact extraordinary events at stadia with no event or football match taking place for the vast majority (91%) of the days of the year.
- As set out in Appendix 7.1 Section 11: Regent Road will be under hard closure for around one hour before and a maximum of one hour after

each event / football match. Therefore, based on a closure period of 3.75 hours per match this would result in a worst case of Regent Road being under hard closure for 120 hours per annum. For Great Howard Street, assuming a closure period of 30 minutes per event, hard closure will take place for a maximum of 16 hours per annum. In this context, closures are short term and infrequent.

- The arrival and departure window for football matches and major events typically take place outside of peak traffic periods. This means that any increases in traffic, or redistribution in traffic that takes place on account of football and events takes place in off-peak periods when there is spare capacity on the network.

7.2.7.6 Limitations of modelling match day traffic changes

Traffic models are developed to understand the performance of the highway network under peak traffic conditions. They are used to identify issues with network performance and test mitigation and solutions. As such, they typically represent periods of peak demand on the highway network that occur regularly, this is usually the weekday AM and PM peak time periods which coincide with the commute to and from work. A weekday interpeak period (between these peak hours) is also sometimes represented. Off peak periods (before 7am or after 7pm on a weekday; and any time over weekends) are rarely represented, as there is limited congestion on the highway network at these times, or if there is, it is not a regular occurrence. The approach to the development of traffic models only covering peak periods reflects the considerable data requirements, time and costs required to develop a traffic model.

Football matches are almost always scheduled on weekends or on weekday evenings, with some variation in scheduled kick-off times. Match related traffic impacts on the highway network occur in both the period leading up to the kick-off as people arrive at the stadium and post-match, when people depart from the stadium. Existing traffic models rarely cover these time periods and specifically exclude any non-regular events e.g. football matches. This is the case in Liverpool where the City Council's strategic traffic models cover the weekday peak hour and average interpeak time periods. There is therefore no existing traffic model available covering Liverpool to assess the impacts of a football match even though the city is home to two Premiership football clubs.

There are several challenges associated with developing a traffic model to assess the traffic impact of a football match. First, there is a need to select the time periods to cover, noting that match days and kick off times vary, and the traffic impacts are felt over several hours around the football match. These time periods would all have different travel demands and network conditions. Either a model representing each of these time periods would need to be developed, or a "typical" model that is broadly representative of all these time periods would be required. The former is unrealistic given the number of models that would be required, and the latter would produce an average model that would not necessarily represent any time period particularly well.

Traffic models require detailed information on transport supply (the

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capacity of the road network) and travel demand. Transport supply remains largely unchanged between time periods, so can be easily determined. Travel demand varies significantly by day and time of day. Therefore, if developing a traffic model to represent new time periods, data would need to be collected on travel patterns and traffic volumes for each period, a significant undertaking given the numerous time periods in question and the wide geographical area which would need to be modelled. This information would be required for attendees at the football match and all existing users of the transport network.

Assuming an existing traffic model was available or could be made readily available, there are a number of limitations in using a model to assess the traffic impact of football matches. Traffic models represent "typical" conditions, which excludes non-regular events such as football matches. If using a model to assess a football match, assumed details of the number and travel characteristics of people attending the football match would need to be included in the model. This would likely need to include a number of scenarios depending on the modal split of supporters on match days - for instance lower car dependence against higher car dependence. In addition, how existing travellers not attending the match react to a football match would also need to be included in the model and each of these scenarios modelled for the entire arrival, match, and departure periods.

For people attending the football match, detail of their travel, for example: travel mode, where they have travelled from, and where they would be parking if travelling by car; would all need to be determined for all 52,888 attendees. This would in part be based on surveys of users of the existing stadium, however some elements of this would relate to the location of the new stadium e.g. travel mode and parking location and would have to be based on assumptions.

Details of existing traffic on the highway network on a match day would also need to be collected. However, it is noted that people's travel behaviour on a match day would change, and the traffic model would not be able to reflect all of this. For example, people may decide not to travel, to travel at a different time, or mode different route. The traffic model is able to reflect rerouting but not the other effects.

The level of detail included in a traffic model is therefore typically not sufficient to fully represent many aspects of football travel. Traffic models do not include minor roads in the network, and so are unable to reflect these local impacts. The traffic model would not represent the exact location that people are travelling to i.e. the destination included in the traffic model is defined by a general geographical area, so even if the local road network is included, the model will still not fully represent traffic on individual local roads.

The traffic model does not always reflect the exact parking location, large car parks can be specifically represented in the model, but smaller car parks and on-street car parking will not be represented, in addition there is no representation of car park capacity, so models are not able to reflect the search for car parking spaces.

As impacts would only occur on a limited number of days per year, the modelling would generally not be used to inform physical off-site mitigation works. The mitigation measures considered on match days may not be able to be represented in the traffic model. So, although road closures could be represented; measures such as parking restrictions, advanced messaging to advise people not to travel or take an alternative route would not be reflected in the model.

Overall, a traffic model is not able to fully represent travel behaviour on a match or event day and would be reliant on many assumptions relating to both attendees and the behaviour of existing road users. Consequently, it is considered that a traffic model is not an appropriate or proportionate tool to assess the traffic impacts of a football match or major event given that match day traffic is not one of the main impacts of the proposed development.

As such, transport modelling of the **match** day/event day road impact has not been undertaken, nor has a specific assessment of its individual impact but rather, an assessment of the impact on the transport network during match day and non-match day events has been undertaken, which allows for a more proportionate consideration of how such matches/events affect the wider transport network of the City.

7.2.8 Alternatives

A comprehensive alternative sites assessment has been undertaken and is addressed within Chapter 5 Alternatives and Design Evolution. This assessment included an appraisal of key sites in terms of accessibility to the road network, access to public transport and access to pedestrian and cycle networks. An alternative future baseline scenario has been included within the assessment for comparison purposes as stated in Chapter 2 EIA Methodology.

7.2.9 Assessment Scenarios

7.2.9.1 Future Year Traffic Data - Years of Assessment

The baseline conditions and assessment years that have been considered are as follows:

- 2019 existing baseline conditions;
- 2023 base (no development) – future baseline with cumulative development and Liverpool Waters;
- 2023 year of opening with proposed development and future baseline with cumulative development and Liverpool Waters;
- 2028 base (no development) – future baseline with cumulative development and Liverpool Waters; and
- 2028 - 5 years after the proposed development opens and future baseline with cumulative development and Liverpool Waters.

The operation of the proposed development will be significantly different on match days and major event days when compared to non-football/non

major event days. Consequently, assessment of the match day/event day scenario has formed a separate assessment to the non-match day/non major event day. Different impacts have been assessed for each scenario, reflecting the significantly different level of transport demand generated between them.

Over the past five seasons, Everton have played an average of 24 home fixtures per season. In Section 8.2 of the TA (Appendix 7.1), a case is made that in future seasons it is anticipated that the proposed development will host approximately 23 – 28 home Everton fixtures per season. In addition, the Club have advised that it is anticipated that the proposed development will host a maximum of four non-football events per season. As such, the proposed development in terms of the full 52,888 capacity, will be operational for approximately 27 - 32 occasions each year. For the remaining 338 – 333 days of the year (90% - of the time), the proposed development will not be subject to this type of use.

On non-match days and non-event days the proposed development will have conference/meeting space available for hire for a multitude of potential smaller scale events. Furthermore, a club shop, box office, museum and restaurant will be open seven days a week. These facilities will be in operation in isolation when there is no football match or large event being held at the proposed development for 90% of the days of the year.

On match days and event days when transport demand is higher, any impact will only be temporary as it will only feature for 10% of the days of the year. Furthermore, on event days and match days increases in demand for travel will only take place on the build up to the match and then for a period following the end of the match / event. On non-match and non-event days transport demand will be much lower. Consequently, different scenarios of Match/Event Day and Non-Match/Non-Event days have been assessed.

Accordingly, the full set of match day and non-match day scenarios that have been assessed in this ES chapter against the baseline conditions are:

- 2023 non- match day/non-event day with cumulative development and Liverpool Waters;
- 2023 match day/event day with cumulative development and Liverpool Waters;
- 2028 non-match day/non-event day with cumulative development and Liverpool Waters; and
- 2028 match day/event day with cumulative development and Liverpool Waters.

The traffic data used in the assessment of the non-match day/non-event day scenarios is included at Appendix 7.2 of this Chapter.

7.2.10 Relevant Associated Development

An area of hardstanding outside Sandhills station will be constructed to provide a suitable area for pedestrians to wait in a safe environment whilst

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they wait for trains at Sandhills in the post-match / post event period. The facility will be located on land owned by Merseytravel. It is envisaged that this would be secured via a Section 106 contribution.

7.2.11 Assessment of Baseline Conditions & Receptor Sensitivity

7.2.11.1 Study Area for Non-Match Day – Non-Event Day Assessment

The study area is identified on Figure 7.1. The study area represents the street connections where the highest concentrations of road traffic are expected to route on non-match days and non-event days at the proposed development. The area has been defined by traffic generation and distribution carried out for the TA (Section 13) in Appendix 7.1.

The following roads are within the study area:

- Regent Road between the junctions of Boundary Street and Walter Street;
- Great Howard Street/Derby Road between the junctions of Boundary Street and Walter Street;
- Walter Street between Great Howard Street and Regent Road;
- Blackstone Street between Great Howard Street and Regent Road; and
- Boundary Street between Derby Road and Regent Road.

For the assessment of driver delay the study area is slightly smaller and is limited to the major junctions within this part of the transport network. These major junctions are listed below. These have been identified as the key links for assessment for vehicle delay as they are under signal control, all other junctions in the study area are priority controlled and not included in the assessment on account of their minor nature.

- Derby Road/Boundary Street 4 arm junction
- Derby Road/Blackstone Street / Great Howard Street;
- Great Howard Street/Lightbody Street / Walter Street

It should be noted that this study area is consistent with the study area used for the TA and the assessment of non-match day / non-event day impact.

7.2.11.2 Study Area for Match Day/Event Day Assessment

The study area is identified on Figure 7.2. The study area represents the transport network within a 30-minute walk of the application site. It should be noted that this study area is consistent with the study area used for the assessment of match day/event day impact in the TA.

The study area was agreed with LCC in scoping and represents the area within which most supporters would be prepared to walk from on match days. Accordingly, within the 30-minute catchment most supporters will walk to and from the application site having:

- travelled by car and parked within the area;
- travelled by taxi and dropped off in the area;

- travelled by bus or car and been dropped off in the area
- having alighted a train at a city centre train station or those closer to the application site.
- Having walked or cycled directly to the application site.

7.2.11.3 Baseline Data Sources

Road works, as part of LCCs North Key Corridors Improvement Scheme, have been underway on Great Howard Street and Regent Road since 2017 and will continue into 2020. The works involve closures on these routes, temporary diversions and lane restrictions. Accordingly, it has not been possible to collect accurate turning flow traffic data in the vicinity of the application site for some time.

On account of this, and in line with other planning applications in the local area, the Liverpool City Region Saturn model has been used to produce traffic turning flows for the network peak hours. This turning information has then been converted to Annual Average Daily Traffic (AADT) figures using Automatic Traffic Count data for the study area.

To account for the traffic growth that will take place in Liverpool to the assessment years, the Trip End Model Presentation Program (TEMPro) has been used. This program developed by the Department for Transport (DfT) uses planning data to calculate changes in transport demand in the future. In addition, cumulative developments which LCC has requested to specifically be included in assessments have been accounted for by using the data included in the specific TAs (further details regarding the schemes considered is provided subsequently). Road Safety Data has been provided by LCC to inform the road safety assessment.

For the assessment of transport network capacity for the match day and event day assessment, baseline information has been provided by Merseytravel, Merseyrail, other public transport operators and LCC. In addition to this; traffic surveys, parking surveys and public transport surveys have been undertaken. Section 2 of the TA (Appendix 7.1) sets out in detail all data sources in the preparation of the transport work.

7.2.11.4 Receptors

In this section the receptors to be assessed and their sensitivity are identified. Examples of receptors and their sensitivity according to EIA Guidance is set out below.

Table 7.1 Receptor Sensitivity

SENSITIVITY	DESCRIPTION
High	Schools, colleges, playgrounds, retirement homes
Medium	Congested junctions, shops/businesses, pedestrians/cyclists, areas of ecological/nature conservation value, residential properties close to the highway
Low	Site of tourist/visitor attraction, places of worship, residential areas set back from the highway. Uncongested junctions on the road network.

SENSITIVITY	DESCRIPTION
Very Low	Those people and places located away from the affected highway link

It should be noted that impact of traffic in terms of air quality and noise & vibration on populated buildings or open areas be they: residential, educational, commercial or conservation areas is assessed in Chapter 8 and 9 respectively.

It is noted that the site is located in a conservation area with listed structures in a historic setting. The impact of the development on these issues is undertaken in Chapter 9 Cultural Heritage. More detail on receptors and sensitivity is provided in Appendix 7.2. Receptors for Non-Match Day/Non-Event Day Assessment

In line with the assessment of the non-match day/non-event day scenario in the TA (Section 13 in Appendix 7.1) the assessment focuses mainly upon the increase in road traffic in the area and the impact this will have.

In accordance with the EIA scoping and the impacts identified to be assessed, the receptors are as follows:

- Pedestrians (existing and proposed) using the transport network within the study area;
- Cyclists (existing and proposed) using the transport network within the study area;
- Vehicles (existing and proposed) travelling through the study area.

7.2.11.5 Receptors for Match Day/Event Day Assessment

For the match day/event day assessment the transport receptors are identified broadly as transport network users. This includes the main modes of travel used by both supporters travelling to and from the proposed development and the users already on the network not travelling to or from the application site. The receptors include:

- People using car parks in the study area and within the application site;
- People on the train network in the study area;
- People using taxis or being dropped off by car;
- People on the bus network in the study area; and
- People on the walking and cycling networks in the study area.

Taking into account the advice on receptor sensitivity in Table 7.1 receptors and their sensitivity identified in this assessment are as follows:

Table 7.2

Scale of Receptor Sensitivity Used in the Assessment

SENSITIVITY	DESCRIPTION
High	Vehicle traffic, car park users, train passengers, taxi passengers, bus passengers on a congested road network
Medium	Pedestrians and cyclists.

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SENSITIVITY	DESCRIPTION
Low	Vehicle traffic, car park users, train passengers, taxi passengers, bus passengers on an uncongested road network

The aim of this assessment is to determine at a high level whether the transport network has sufficient resilience to accommodate the demand generated by the proposed development and operate in a safe manner. More detail on the identification of receptors and their sensitivity is provided in Appendix 7.2.

For the transport network to operate satisfactorily and safely on match days and event days it must operate within its broad capacity. Where the network is operating at or above its defined capacity, measures must be implemented as part of the Transport Strategy to mitigate this impact. Should a certain mode operate over its capacity on match days / event days its operation will suffer causing potential operational and safety issues. Similarly, should the operation of a certain mode be severely affected by the event impact, reducing its integrity – for instance an influx of traffic reducing street space available to people traveling on foot – the operation of the transport network will be compromised.

As demonstrated within the TA, football matches and the proposed events at the application site will take place outside of the transport peak hours. Accordingly, in the build up to matches/events and in the period following the match/event it is considered that the transport network is uncongested. (this is set out in detail in Section 10 of the TA in Appendix 7.1). Therefore, it is considered that the transport network users' receptors will predominantly have low sensitivity. In line with the EIA guidelines the sensitivity of pedestrians and cyclists is medium.

Impact of pedestrian, cycle and vehicular access to the Nelson Dock area of Liverpool Waters is assessed for the match day/event day scenario. On match and event days the area immediately to the east of this area on Regent Road and adjoining roads will be subject to high transport demand. As part of the delivery of Liverpool Waters and included in the Liverpool Waters Masterplan, continuous pedestrian and cycle routes will be delivered through the entire site. It is considered that Nelson Dock is a worst-case assessment of pedestrian, cycle and vehicular impact at Liverpool Waters as this scheme is located immediately adjacent to the application site. Receptors for this assessment are:

- Pedestrians in Liverpool Waters- residents & employees.
- Cyclists in Liverpool Waters- residents & employees.
- Vehicles in Liverpool Waters- residents & employees.

In summary, in line with the EIA guidelines, the sensitivity of pedestrians and cyclists is medium. In line with the rest of the road network in the study area receptor sensitivity for vehicle traffic, car park users, train passengers, taxi passengers and bus passengers is low on account of the uncongested road network.

For the assessment of crowd disaster and football related violence the receptors are identified as pedestrians. In line with the other assessment

scenarios it is considered these pedestrians have medium sensitivity. The pedestrians will consist of those attending the match / event and those passing through in the vicinity of the application site.

7.2.12 Assessment of Transport Demand Generated by the Proposed Development

7.2.12.1 Construction Assessment

Construction traffic has been estimated by Laing O'Rourke as the Club's pre-construction adviser and used to inform the draft construction management plan for the proposed development (Chapter 4 of this document)).

The draft construction management plan estimates the number of construction vehicle movements to be generated by the proposed development through the three-year build process. The busiest period of the construction process in terms of vehicle movements has been used as the basis of the assessment. In line with the construction management plan it is expected that the most logical route for Heavy Goods Vehicle (HGV) traffic to and from the application site will be from the motorway network using the A5036 Dunnings Bridge Road and then A565 Derby Road. Traffic has been distributed on the network using this method.

7.2.12.2 Operational Assessment

For the non-match day/non-event scenario the traffic generation of the proposed development has been calculated using the Trip Rate Information Computer System (TRICS), an industry-standard database of trip rates for developments used in the United Kingdom for transport planning purposes, specifically to quantify the trip generation of new developments. The development traffic has then been distributed on the surrounding road network using Census (travel to work data [12]) (<https://www.ons.gov.uk/census/2011census>). This is set out in detail in the TA (Appendix 7.2 Section 13).

For the match day and event day scenarios, the travel demand assessment is based upon the capacity of the proposed development (52,888 persons) and that in the worst case (weekday evening match) all 52,888 people would seek to exit the application site within the minutes immediately following final whistle. This is considered to be a worst-case assessment given that ingress to stadia is typically much slower than that of egress. This is because it is typical at football matches and events for spectators to arrive at the proposed development in a more even rate, many having socialised in other areas beforehand or wishing to partake in the pre match/event atmosphere. Following the match/event most spectators depart at a quicker rate than they arrived. Details on the expected modal split of the supporters / people attending major events is included in the TA (Appendix 7.2 Section 10)

7.2.12.3 Cumulative Assessment

In scoping, LCC identified that the following developments were those required to be considered in any future year assessments for the purposes

of the transport assessment:

- Liverpool Waters (Ref. 10O/2424 and latest NMU application Ref. 19NM/1121;
- Isle of Man Ferry Terminal (Ref. 18L/3232);
- Romal Developments – Plot C04 & C06 (Ref. 17F/1628);
- Tobacco Warehouse (Ref. 15F/2438);
- Cruise Liner Terminal (Ref. 17O/3230);
- Proposed Regent Road/Blackstone Street Hotel (LPA ref. 20F/0217);
- Residential Development at Lightbody Street (Ref. 20F/1947) and
- LCC Highway Schemes: Liverpool City Centre Connectivity

In scoping for the TA assessment, it was agreed that the impact of the proposed development should be compared against the baseline situation where the cumulative schemes noted had been implemented. This is a typical approach for TAs. LCC have a high degree of certainty that the schemes above will be delivered within the timeframe of the proposed development. To ensure a consistency of approach between the TA and EIA, the same methodology has been employed for both assessments

The schemes have been taken account of by taking the committed traffic flows from the transport assessments which accompanied their respective planning applications. This approach has been taken to ensure that a robust assessment is undertaken. The detail of how traffic has been taken account of is provided in Section 13.5 & 13.6 of the TA at Appendix 7.1.

For construction traffic, the Liverpool Waters and Isle of Man ferry terminal schemes include estimates of this traffic in the respective EIAs. This information has been used to inform the construction sections of this assessment. For the other schemes no detail of construction traffic is available. Accordingly, professional judgement has been used to take account of construction traffic based on the other committed schemes that have been included in the assessment.

7.2.13 Assessment of Magnitude

The approach to the assessment of magnitude in accordance with the broad principles outlined in the IEA Guidelines is provided in Appendix 7.2. It should be noted that the guidelines do not provide thresholds for all impact criteria. Nor do they provide guidance on the assessment of impact on users of public parking areas and public transport networks. As such a degree of professional judgement is required for most assessment topics.

The criteria used in assessing the magnitude of impact for each of the seven categories is summarised in Table 7.3-7.10.

Table 7.3

Scale of magnitude for severance impacts used in the assessment

MAGNITUDE	DESCRIPTION
High	Increase in AADT traffic flows of above 90%

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MAGNITUDE	DESCRIPTION
Medium	Increase in AADT traffic flows of 61— 90%
Low	Increase in AADT traffic flows of 31% to 60%
Very Low	Increase in AADT traffic flows 10% -30% or under
Negligible	Threshold for assessment total AADT below 4,000 vehicles. Increase in traffic flow 10% or under

Table 7.4
Scale of magnitude for driver delay impacts used in the assessment

MAGNITUDE	DESCRIPTION
Very High	Average vehicle delay changes of more than 1 minute as a result of the proposed development during the peak hour periods
High	Average vehicle delay changes are between 30 and 60 seconds as a result of the proposed development during the peak hour periods
Medium	Average vehicle delay changes are between 21 and 30 seconds as a result of the proposed development during the peak hour periods
Low	Average vehicle delay changes are 20 seconds or less as a result of the proposed development during the peak hour periods
Negligible	Threshold for assessment junctions operating over design capacity at less than 0% PRC

Table 7.5
Scale of magnitude for pedestrian delay impacts used in the assessment

MAGNITUDE	DESCRIPTION
High	Increase in AADT traffic flows of above 90%
Medium	Increase in AADT traffic flows of 61— 90%
Low	Increase in AADT traffic flows of 31% to 60%
Very Low	Increase in AADT traffic flows 10% -30% or under
Negligible	Threshold for assessment total AADT below 4,000 vehicles. Increase in traffic flow 10% or under. Road links with no or inadequate pedestrian facilities.

Table 7.6
Scale of magnitude for pedestrian amenity impacts used in the assessment

MAGNITUDE	DESCRIPTION
High	Increase in AADT traffic flows or lorry component above 200%
Medium	Increase in AADT traffic flows or lorry component— 100 - 200%
Low	Increase in AADT traffic flows or lorry component of 51% to 100%
Very Low	Increase in AADT traffic flows or lorry component 30-50%
Negligible	Threshold for assessment total AADT below 4,000 vehicles. Increase in traffic flow or lorry component 30% or under.

Table 7.7
Scale of magnitude for road safety impacts used in the assessment

MAGNITUDE	DESCRIPTION
High	Area identified as an accident cluster site. Increase in traffic of 30% or more. Area not identified by LCC as an accident cluster site. Increase in traffic of 50% or more.
Medium	Area identified by LCC as an accident cluster site, increase in traffic 15% or more. Area not identified as an accident cluster site, increase in traffic of 30% or more
Low	Threshold for assessment total AADT of 4,000 or above. Area identified by LCC as an accident cluster site increase in traffic below 15%. Area not identified as an accident cluster site, increase in traffic below 30%.

Table 7.8
Scale of magnitude for impacts on operation of the transport network (parking, train, taxi, bus, walking & cycling) used in the assessment

MAGNITUDE	DESCRIPTION
Very High	Impact is Very High where it is demonstrated that transport demand exceeds capacity and that the operation of the network will suffer causing operational and safety issues.
Low	Where it can be demonstrated that there is enough capacity on the transport network to accommodate demand without detriment to the operation of the network or safety of its users.

It should be noted that the ‘very high’ criterial has been used here on account of the potentially dangerous and life threatening situation that could occur when large crowds with no policing or crowd management measures in place spill onto live traffic (as would be the situation at a football match where there are no road closures) or whereby train stations become seriously congested with no crowd management in place.

We consider that there is little scope for an impact magnitude that sits comfortably between ‘very high’ and ‘low’ for this assessment criteria. Either the circumstances to create the potentially life endangering situation are present, or they are not. Accordingly, the impact magnitude here is either ‘very high’ or low.

Table 7.9
Scale of magnitude for impact on access to Nelson Dock (vehicles, walking & cycling)

MAGNITUDE	DESCRIPTION
High	Impact is high where it can be demonstrated that access to the site will be severely inhibited with no alternative routes available.
Medium	Impact is medium where it can be demonstrated that access is maintained although route choice is limited.

MAGNITUDE	DESCRIPTION
Low	Impact is low where there it can be demonstrated that access is materially similar.

Table 7.10
Scale of magnitude for impacts on pedestrians in terms of crowd safety and violence

MAGNITUDE	DESCRIPTION
Very High	Impact is very high where it cannot be demonstrated that there are adequate measures and controls in place to manage risk and mitigate impact.
Low	Impact is low where it can be demonstrated that there are sufficient measures and controls in place that would effectively manage the risk of crowd disaster or violence occurring and mitigate the impact should such an event occur.

Similar to the operation of the transport network, it should be noted that the ‘very high’ criterial has been used here on account of the potentially dangerous and life-threatening situation that could occur for events with large crowds and no management, monitoring or policing this has been confirmed with security experts Buro Happold.

We consider that there is little scope for an impact magnitude that sits comfortably between ‘very high’ and ‘low’ for this assessment criteria. Either the circumstances to create the potentially life endangering situation are present, or they are mitigated and no longer present this risk. Accordingly, the impact magnitude here is either ‘very high’ or low.

7.2.14 Assessment of Effect Significance

Table 7.11 shows how the significance of traffic has been established with reference to the receptor magnitude and effect.

Table 7.11
Significance Matrix

MAGNITUDE OF EFFECT	SENSITIVITY OF RECEPTOR				
	Very High	High	Medium	Low	Negligible
Very High	Major Significance	Major Significance	[3]	Moderate Significance	[1]
High	Major Significance	[3]	Moderate Significance	Minor Significance	[2]
Medium	[3]	Moderate Significant	Minor Significance	[2]	Negligible Significance
Low	Moderate Significance	Minor Significance	[2]	Negligible Significance	Negligible Significance
Very low	[2]	[2]	Negligible Significance	Negligible Significance	Negligible Significance

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MAGNITUDE OF EFFECT	SENSITIVITY OF RECEPTOR				
	Very High	High	Medium	Low	Negligible
Negligible	[1]	Negligible Significance	Negligible Significance	Negligible Significance	Negligible Significance
[1] The choice between 'Moderate Significance', 'Minor Significance' and 'Negligible Significance' will depend on the specifics of the impact and will be down to professional judgement and reasoning.					
[2] The choice between 'Minor Significance' and 'Negligible Significance' will depend on the specifics of the impact and will be down to professional judgement and reasoning.					
[3] The choice between 'Major Significance' and 'Moderate Significance' will depend on the specifics of the impact and will be down to professional judgement and reasoning.					
n.b. 'Negligible Significance' includes 'Neutral' and 'No Impact' assessments.					

Based on the above, the magnitude of change and the sensitivity of the receptor are compared to determine overall significance.

It should be noted that only effects of 'major' and 'moderate' significance are significant in EIA terms. Nevertheless, where 'minor' adverse effects are

predicted, efforts have been made to identify appropriate mitigation measures.

7.2.15 Assumptions/Limitations

In undertaking the transport assessment of the application site and wider surrounding area, there are several assumptions and limitations that have been made. These are as follows:

- The traffic data which forms the basis of the traffic assessments is sourced from a SATURN Model. This has been agreed with LCC. On account of the ongoing roadworks in the vicinity of the site for several years it has not been possible to undertake traffic surveys which would be representative of 'normal' traffic conditions;
- Cumulative traffic data has been taken from the TAs which supported each specific scheme; and
- For the Liverpool Waters scheme, it is assumed that in line with other parts of Liverpool Waters which have been delivered, that the road network inside the site will not form part of the adopted highway and will be privately maintained. Furthermore, it is assumed that in line with the Liverpool Waters masterplan that new pedestrian and cycle routes

will be delivered connecting the neighbourhoods. This would include Nelson Dock to the north. At present it is not determined whether this would also include pedestrian and cycle connection directly to the application site. For Liverpool Waters a continuous road network connecting all neighbourhoods internally is not proposed. Although connections will be possible through certain neighbourhoods, they may not be present during the early to middle stages of delivery of the scheme. In line with the TA submitted to support the Liverpool Waters planning application it is expected that any parking constructed as part of the scheme will be for the express service of the various residential and commercial uses proposed in the Liverpool Waters planning application. The planning application does not include for public parking to serve developments outside the consented Liverpool Waters uses, such as the proposed development. Furthermore, as the roads inside of Liverpool Waters will be privately managed it is expected that measures will be in place on roads internal to Liverpool Waters to protect them from any potential adverse parking impact generated by developments external to the Liverpool Waters site.

7.3 BASELINE CONDITIONS

7.3.1 Existing Baseline

KEY RECEPTORS	DESCRIPTION	SENSITIVITY	FURTHER INFORMATION
Vehicles travelling through the study area: -	<p>Figure 7.1 shows the location of the application site and study area in relation to the highway connections. The application site is bounded by the River Mersey to the west and Regent Road to the east, with highway connectivity access to the city centre and northwards provided by the parallel north – south routes of the A565 Great Howard Street and Regent Road. The site is currently in use by Svitzer and Cataclean until their leases expire in January 2021 (at earliest). The existing uses generate an anticipated low level of traffic. The existing traffic generation of the site is included in all baseline assessment. The A565 Great Howard Street is the key north-south dual carriageway corridor in the area that connects to the city centre and onwards to the M62, and north to the A5036 for access to the M57 and M58 it forms part of the Liverpool City Regions Key Route Network. Regent Road serves a lower level, local distributor function being a single carriageway of around 7.5m with off street cycle facilities.</p> <p>The north - south corridors of the A565 Regent Road and A565 Great Howard Street are connected by the east – west routes Boundary Street, Blackstone Street and Walter Street. All these east – west connecting streets are single carriageway and on account of the industrial nature of the area are particularly wide and able to accommodate HGV movements. Carriageway width is around 12m on Boundary Street and Blackstone Street, Walter Street is narrower at 9.5m width.</p> <p>Fulton Street runs parallel to Regent Road and is unadopted and gated between its junctions with Regent Road and Blackstone Street. North of its junction with Blackstone Street it forms part of the adopted highway, it terminates at its junction with Boundary Street. This short street serves as a local route primarily serving the residential and commercial dwellings that are accessed off it and does not attract through traffic.</p> <p>Figure 7.1 shows the location of the application site in relation to the highway connections. All vehicular and pedestrian access to the site is via Regent Road through the existing dock wall. All streets in the vicinity of the application site are subject to a 30mph speed limit apart from Great Howard Street, which, once improvement works are completed on this route in 2020 will be a 40mph dual carriageway.</p> <p>The local road network around the application site and within the study area has a high proportion of businesses distributed across it. There are a small number of residential dwellings on Regent Road and Fulton Street to the immediate east of the site, north of Blackstone Street.</p> <p>The three major junctions within the study area are:</p> <ul style="list-style-type: none">■ Derby Road / Boundary Street 4 arm junction;■ Derby Road / Blackstone Street / Great Howard Street;	Low	Please refer to Appendix 7.1 Section 4.4. for further detail on the highway network.

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KEY RECEPTORS	DESCRIPTION	SENSITIVITY	FURTHER INFORMATION
	<div><div>■ Great Howard Street / Lightbody Street / Walter Street;</div><div>All junctions consist of four arms with Regent Road/ Derby Road forming the major dual carriageway arms. All junctions are equipped with pedestrian crossing facilities (push button) and cycle reservoir facilities.</div><div>The road network at these junctions and within the study area is uncongested in nature on account of site observations and modelling undertaken as part of the Transport Assessment. Section 13.6 in Appendix 7.1 assesses the capacity of the following junctions:</div><div><div>■ Derby Road/Boundary Street 4 arm junction PRC 47% AM Peak and 67% in the PM Peak</div><div>■ Derby Road/Blackstone Street / Great Howard Street; PRC 4% AM Peak and 14% in the PM Peak</div><div>■ Great Howard Street/Lightbody Street / Walter Street PRC 44% AM Peak and 18% in the PM Peak</div></div><div>The assessment demonstrated that all junctions will operate within their design capacities in the morning and evening peak periods with positive PRC (Practical Reserve Capacity) results. Furthermore, it should be noted that the junctions have been subject to major improvements in 2019 on account of LCCs North Liverpool Key Corridor scheme increasing their capacity. Accordingly, in line with the IEA Guidelines [1] the sensitivity of vehicles passing through the network to changes in traffic is determined to be low.</div></div>		
Pedestrians:	<div>Within the study area all road links are equipped with pedestrian footways on both sides of the road. As part of the North Liverpool Key Corridor schemes the footways on Regent Road have recently been resurfaced and widened. Furthermore, footways on Derby Road and Great Howard Street have been resurfaced and widened.</div> <div>Signalised pedestrian crossing facilities have been installed and upgraded at the three major junctions cited in the table section above. All other minor junctions within the study area are equipped with dropped kerb crossings with tactile paving. On the interconnecting Walter Street, a segregated footway is only provided on one side of the road, however, this suits the low pedestrian flows currently experienced on these streets. Fulton Street, similarly, has discontinuous pedestrian facilities; however, this route is mainly a residential and commercial access road and does not attract through movement of pedestrians. In general, with the recent upgrades, pedestrian facilities are of a good standard within the study area.</div> <div>With reference to the IEA Guidelines [1] pedestrians will have medium sensitivity to changes in traffic.</div>	Medium	Please refer to TA Section 4.5 & 10 in Appendix 7.1 for further detail on the pedestrian network.
Cyclists:	<div>Cyclists are permitted to cycle on all streets within the study area. Regent Road has recently been upgraded as part of the North Liverpool Key Corridor scheme to include a segregated cycle lane separated from the footway and from the vehicular carriageway. Within the study area the upgrade to Regent Road/Derby Road to a dual carriageway has allowed the creation of advance stop lines for cyclists at the three major junctions in the study area. Taking this into account it is considered that the cycle network is of a good standard.</div> <div>With reference to the IEA Guidelines [1] cyclists will have medium sensitivity to changes in traffic</div>	Medium	Please refer to TA Section 4.5 in Appendix 7.1 for further detail on the cycle network.
Transport Network Users — Bus:	<div>Within the 30-minute walk time study area illustrated in Figure 7.2 the bus network is largely concentrated along Vauxhall Road, Stanley Road, Scotland Road and Great Homer Street. Bus services on Regent Road and Great Howard Street are infrequent and limited. The TA sets out that at match / event times there is substantial capacity available in the network and that commercial services on these routes will be attractive (Appendix 7.1 Section 4.7). On Regent Road itself the route is served by one single bus service of which there is a bus frequency of two buses per day. On Great Howard Street there are no bus services following the cancellation of the 103 service, the single service which stopped on this route. On Vauxhall Road bus frequency is around 4 buses per hour through the day, reducing to two in the evening. For Scotland Road frequency is around 25 buses per hour through the day falling to 14 per hour in the evening. On Great Homer Street frequency is 22 buses per in the day hour falling to 9 per hour in the evening.</div>	Low	Please refer to TA Section 4.7 in Appendix 7.1 for further detail on the bus network.
Transport Network Users- Rail:	<div>Within the 30-minute walk time study area, Sandhills Station (closest station to the application site) and Bank Hall Station are located to the east and north of the application site, respectively. The city centre stations of Moorfields and James Street are also located within the 30-minute catchment to the south. From these stations, connections to Lime Street and Liverpool South Parkway are possible to wider national destinations. The TA sets out that the rail network has substantial capacity available on match days (Appendix 7.1 Section 4.6 & 10.2) Trains passing through Sandhills Station during match times have combined capacity for around 11,000 additional passengers per hour on weekdays and 12,000 on Saturdays. Sandhills is served by 4 trains per hour throughout the day and evening in each direction between Hunts Cross and Southport, 4 trains per hour between Kirkby and Liverpool Central, and 4 trains per hour between Ormskirk and Liverpool Central. The Kirkby and Ormskirk services reduce to 2 services per hour in each direction in the evenings.</div>	Low	Please refer to TA Section 4.6 & 10 in Appendix 7.1 for further detail on the rail network.
Public Transport Network Users- Taxi: match day / event day scenario	<div>The TA (Appendix 7.1 Section (10.2) sets out that taxis operating within the study area have significant capacity on match days. Based on taxi patronage at other events in the city it is established that there is capacity to move around 15,000 supporters in the pre and post-match period by taxi in the City of Liverpool. This has been agreed in pre application discussions with taxi operators. In accordance with the low level of taxi demand in the immediate vicinity of the application site. There are no taxi ranks close to the application site at present with all taxi ranks located within the city centre.</div>	Low	Please refer to TA Section 10 in Appendix 7.1 for further detail on taxi capacity.
Public Transport Network Users- Car parking: match day / event day scenario	<div>Within the 30-minute catchment there is substantial parking capacity available in off street car parks and on street. The TA (Appendix 7.1 Section 10.2) establishes via parking survey that within a 30-minute walk of the application site and extended area to account for interchange parking capacity and available spaces are as follows:</div> <div><div>■ 10,800 spaces on weekday evenings of which 8,300 would be available.</div></div>	Low	Please refer to TA Section 4.10 & 10 in Appendix 7.1 for further detail on parking

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KEY RECEPTORS	DESCRIPTION	SENSITIVITY	FURTHER INFORMATION
	<ul style="list-style-type: none">9,700 spaces on Saturday of which 5,400 would be available. <p>It should be noted that the parking totals exclude any areas on street which LCC has indicated in pre application discussion would be subject to new parking restrictions once the proposed development opens.</p>		

7.3.2 Future Baseline 2023 and 2028

KEY RECEPTORS	DESCRIPTION	SENSITIVITY	FURTHER INFORMATION
Vehicles travelling through the study area:	<p>With the construction of Liverpool Waters and the other identified cumulative schemes, there are no road improvements planned within the traffic study area for either 2023 or 2028. There will be an increase in traffic on the network resulting from these schemes.</p> <p>Of the cumulative developments included in this assessment only Liverpool Waters and the Isle of Man Ferry Terminal included transport sections in the ES which accompanied each planning application. The ES which supported the Liverpool Waters planning application determined that the residual impact of the operation of the development would be negligible or slight positive at locations away from the proposed development in terms of driver delay. For severance and road safety the residual impact was found to be negligible. No other transport impacts were assessed. The ES which supported the Isle of Man Ferry Terminal determined that the residual impact on the road network would be negligible as was severance, and driver delay. Impact on pedestrians, cyclist’s pedestrian amenity, fear, intimidation and highway safety were determined to be moderate beneficial.</p> <p>The TA Appendix 7.2 Section 6 sets out that the cumulative developments would generate in the region of 2,500 traffic movements in the morning peak hour and 2,100 in the evening peak hour. In terms of operation of the highway network the TA assesses future baseline conditions at 3 junction locations in Appendix 7.1 Section 13 as follows</p> <ul style="list-style-type: none">Derby Road/Boundary Street 4 arm junction 2023 PRC 24% AM Peak, 60% in the PM Peak. 2028 PRC 13% AM Peak, 64% in the PM Peak 2028Derby Road/Blackstone Street / Great Howard Street; 2023 PRC -11% AM Peak, 5% in the PM Peak. 2028 PRC -21% AM Peak, -1% in the PM Peak 2028Great Howard Street/Lightbody Street / Walter Street 2023 PRC 22% AM Peak, 8% in the PM Peak. 2028 PRC 12% AM Peak, 2% in the PM Peak 2028 <p>The assessment demonstrated that all junctions will operate within their design capacities in the morning and evening peak periods with positive PRC (Practical Reserve Capacity) results with the exception of the Derby Road / Blackstone Street / Great Howard street junction which is predicted to operate over its operational capacity in the morning peak hour. As the operation of only one junction is affected and limited to a single peak hour of the day in line with the IEA Guidelines [1] the sensitivity of vehicles passing through the network to changes in traffic is determined to be low as the network will be largely uncongested.</p>	Low	Please refer to TA Section 4.4 & 6 in Appendix 7.1 for further detail on the committed highway works and Section 13 for traffic modelling.
Transport Network Users – Bus	For Liverpool Waters, the planning conditions attached to the scheme require contributions to bus services. It is therefore possible that new bus services could emerge on Regent Road as part of the scheme. However, the timeframe for these new services is not known. The cumulative schemes would largely give rise to increases in peak hour journeys. With capacity remaining unaffected at other parts of the day and evening. It should be noted that none of the ES documents which supported these developments identified a significant detrimental impact on the bus network.	Low	Please refer to TA Section 6.3 in Appendix 7.1 for further detail on the committed highway works.
Transport Network Users - Rail	No improvements to rail facilities will be brought forwards on account of the cumulative schemes. Like the bus review above the cumulative developments could largely give rise to increases in peak hour rail demand. Travel during other parts of the day and evening would remain largely unaffected. It is considered that rail capacity will remain largely unaffected by these cumulative schemes. It should be noted that none of the ES documents which supported these developments identified a significant detrimental impact on the rail network.	Low	Please refer to TA Section 10 in Appendix 7.2 for further detail on rail capacity.
Transport Network Users - Taxi	It is considered that the cumulative schemes will have a negligible effect on taxi access and capacity. None of the cumulative schemes propose new taxi ranks in the area. Like the bus and rail reviews above the cumulative developments will largely give rise to increases in peak hour travel demand. Travel during other parts of the day and evening would remain largely unaffected. Therefore, taxi capacity will remain largely unaffected by these cumulative developments. It should be noted that none of the ES documents which supported these developments identified a significant detrimental impact on the taxi network.	Low	Please refer to TA Section 10 in Appendix 7.1 for further detail on taxi capacity.

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KEY RECEPTORS	DESCRIPTION	SENSITIVITY	FURTHER INFORMATION
Transport Network Users - Walking & cycling	A range of highway improvements are proposed for Liverpool Waters within the timeframe of this scheme. The works are aimed at mitigating impact of the scheme on highway, pedestrian and cycle networks. Accordingly, the works will mitigate any reduction in convenience of existing walking and cycling networks caused by traffic from the Liverpool Waters scheme. It should be noted that none of the ES documents which supported the cumulative developments identified a significant detrimental impact on the pedestrian or cycle environment. As part of the Liverpool Waters masterplan new continuous pedestrian and cycle routes will be created through Liverpool Waters connecting to Liverpool City Centre. Should these be delivered they will form viable alternative north – south pedestrian and cycle routes to the existing Regent Road and Great Howard Street. The only other cumulative scheme of significance is LCC’s Liverpool City Centre Connectivity Scheme which will provide enhanced pedestrian and cycle connections on Waterloo Road and Bath Street, better connecting the application site to the City Centre on foot and bicycle. It is therefore considered that the cumulative schemes will not result in a reduction in the capacity or convenience of the walking and cycling networks. On account of the Liverpool City Centre Connectivity Scheme and new connections through Liverpool Waters there should be some improvement to the existing walking and cycling networks.	Medium	Please refer to TA Section 4.4 & 6.2 in Appendix 7.1 for further detail on pedestrian and cycle improvements included as cumulative schemes.
Transport Network Users - Car parking	No increases in car parking are proposed as part of the cumulative schemes other than that intended to serve the cumulative schemes themselves. The exception to this is the Regent Road/Blackstone Street Hotel (Ref. 20F/0217 167-bedroom hotel with an 87-space car park). The TA which accompanies the application states that a proportion of hotel car parking could be made available to the public. However, this proportion is not fixed. Therefore, to provide a robust assessment on parking availability in the local area, no allowance for the potential additional local parking capacity this development could provide is taken account of in this assessment. As with the bus and rail assessments above, the cumulative schemes will largely give rise to increases in peak hour parking demand. Travel during match times and event times is largely off peak. Therefore, parking capacity will remain largely unaffected by these cumulative schemes.	Low	Please refer to TA Section 10 in Appendix 7.1 for further detail on car parking capacity.

7.4 POTENTIAL SIGNIFICANT IMPACTS

PHASE	RECEPTOR	DESCRIPTION	ADVERSE/BENEFICIAL
Construction	Vehicles through the area: Existing	Increase in HGV traffic leading to increase in driver delay and road safety. Increase in traffic on account of staff vehicles on the network.	Adverse
Construction	Pedestrians: Existing	Increase in HGV traffic resulting in an increase in severance, pedestrian delay and risks to road safety Increase in traffic on account of staff vehicles on the network.	Adverse
Construction	Cyclists: Existing	Increase in HGV traffic resulting in increased risks to road safety Increase in staff traffic leading to increased risk to road safety.	Adverse
Operation: Non match day/non-event day	Vehicles through the area: Both existing and proposed	Increase in vehicle traffic leading to increase in driver delay and road safety.	Adverse
Operation: Non match day/non-event day	Pedestrians: Both existing and proposed	Increase in vehicle traffic resulting in increased in severance, pedestrian delay, worsening pedestrian amenity and risk to road safety.	Adverse
Operation: Non match day/non-event day	Cyclists: Both existing and proposed	Increase in vehicle traffic leading to increased risk to road safety.	Adverse
Operation: Match day/event day	Transport Network Users: Bus, rail, taxis, pedestrians, cyclists & car parking: Both existing and proposed	Increase in transport demand leading to compromised operation of the bus, rail, taxi, pedestrian networks or car parking facilities resulting in safety and operational issues.	Adverse
Operation: Match day/event day	Pedestrians: at Nelson Dock	Increase in transport demand outside the proposed scheme resulting in compromised access on foot.	Adverse
Operation: Match day/event day	Cyclists at Nelson Dock	Increase in transport demand outside the proposed scheme resulting on compromised access by bicycle.	Adverse
Operation: Match day/event day	Vehicles at Nelson Dock	Increase in transport demand outside the proposed scheme resulting on compromised access by vehicle.	Adverse

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PHASE	RECEPTOR	DESCRIPTION	ADVERSE/BENEFICIAL
Operation: Match day/event day	Pedestrians: Existing and proposed	Introduction of football supporter crowds and other event crowds as a result of the proposed development staging football matches / events, Risk of crowd disaster.	Adverse

7.5 DESIGN INTERVENTIONS

DESIGN INTERVENTION	DESCRIPTION	REASON FOR INTERVENTION	FURTHER INFORMATION
Design Standards	The proposed development including the stadium and the public realm has been designed to the appropriate British Standards and those guidelines set out in the ‘The Guide to Safety at Sports Grounds’ authored by the Sports Ground Safety Authority.	Law and good practice to avoid crowd disaster	Design & Access Statement & Chapter 5: Alternatives and Design Evolution
Pedestrian Modelling & Design of circulation areas, concourses, external evacuation route widths and Regent Road Wall opening widths	Pedestrian modelling has been undertaken throughout the design stage to test the internal layouts and circulation. The main focus of this modelling has been the emergency egress scenario when it is expected that sudden egress from the proposed development would put most strain on the internal circulation areas and the evacuation through the Regent Road wall openings. The modelling undertaken by Buro Happold has demonstrated that the full capacity 52,888 can egress the proposed development in a safe and expedient manner.	Good design practice to avoid crowd disaster	Design & Access Statement & Chapter 5: Alternatives and Design Evolution
Counter-terrorism arrangements	Offsetting of Regent Road Wall openings from Boundary Road to prevent vehicle acceleration towards opening. Installation of Hostile Vehicle Mitigation (HVM) barriers at entrances to the site.	Good design practice to avoid crowd disaster	Design & Access Statement: Security Report
Monitoring	Crowd monitoring equipment will be installed including CCTV which will be used to monitor crowd behaviour and evaluate risk. Fire detection equipment will also be installed enabling the fire situation to be continually monitored.	Law and good practice to avoid crowd disaster	Design & Access Statement: Security Report
Segregation of away supporters	Away supporters will be accommodated within a dedicated section within the application site. Away support will therefore be segregated from home support inside the stadium including seating, Food and Beverage offer (F&B), toilets, Concourses and internal circulation. The police room and holding cells are located at Ground Floor with an access point to the away fan entrance. Coach parking for away supporters will be located as close as possible to the away section of the ground.	Good practice to avoid crowd violence.	Design & Access Statement: Security Report

7.6 ASSESSMENT PRE-MITIGATION (INCLUDING DESIGN INTERVENTION) 2023 & 2028 BASE- CUMULATIVE DEVELOPMENT, LIVERPOOL WATERS & PROPOSED DEVELOPMENT

PHASE	RECEPTOR(S) AFFECTED	IMPACT	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction	Vehicles through the area, pedestrians and cyclists: Existing	Road Safety No construction staff parking will be provided on site. In this way vehicles belonging to staff who choose to drive will be dispersed widely on the network to offsite car parks and where on-street parking is available. In this way traffic impact of staff cars will be spread over a wide area. It is demonstrated in the Technical Appendix 7.2 that traffic increase on any road link in the study area on account of HGV traffic will not exceed 4%. The traffic generation of the construction phase is predicted to be lower than the operation stage. The accident review undertaken as part of the Transport Assessment concluded that there is no existing road accident safety issue on the existing streets within the study area. None of the network has been identified by LCC as an accident cluster site.	Low	Negligible	Yes	Appendix 7.1 Section 4. Chapter 4 of this document & Appendix 7.2
Construction	Vehicles through the network: Existing	Vehicle Delay No construction staff parking will be provided on site. In this way staff vehicles will be dispersed widely on the network to offsite car parks and where on-street parking is available. The modelling work undertaken as part of the Transport Assessment concluded that the development on non-match days would not have a material impact on the operation of the road network. This modelling work assessed the impact of the operational traffic on the network consisting as a worst case of some 277 traffic movements in the morning peak hour and 133 in the evening peak hour. This is significantly higher than the traffic to be generated in the construction stages; estimated as a worst case of 192 daily traffic movements	Negligible	Negligible	Yes	Appendix 7.1 Section 13.6, Appendix 7.2
Construction	Pedestrians: Existing	Severance, Pedestrian Delay The level of increase in traffic will not have a material impact on these pedestrian issues considering the pedestrian facilities in the local area. Traffic increase will not exceed 4% on any of the links assessed.	Negligible	Negligible	Yes	Appendix 7.2

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PHASE	RECEPTOR(S) AFFECTED	IMPACT	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction	Pedestrians: Existing	Pedestrian Amenity On account of the level of increase in HGV traffic particularly on Regent Road to the north of Blackstone Street, and north of Walter Street where HGV traffic will almost double or more over baseline levels there will be an impact on pedestrian amenity. The percentage increase in HGV traffic is high as HGV traffic on this link as a proportion of total traffic is modest in the baseline situation, notwithstanding this there will be a significant change to traffic composition on this links which are closest to the construction vehicle access point. It should be noted that HGV levels will increase by around 400% on Blackstone Street however traffic levels here are below the 4,000 AADT threshold for assessment.	Medium	Minor	Yes	Appendix 7.2
Operation: Non match day/ non-event day	Vehicles through the area, pedestrians and cyclists: Both existing and proposed	Road Safety The accident review undertaken as part of the Transport Assessment concluded that there is no existing road accident safety issue on the existing streets within the study area. None of the network has been identified by LCC as an accident cluster site. The Transport Assessment also took note of the highway improvement works which are ongoing in the study area and the safety benefits this will have for all road users. Traffic increase on any of the road links in the study area within the defined assessment threshold will experience traffic increase above 7%	Low	Negligible	Yes	TA in Appendix 7.1 Section 4.4. Appendix 7.2
Operation: Non match day/ non-event day	Vehicles through the area: Both existing and proposed	Driver Delay Junction assessment undertaken for the TA demonstrate that the development will only have a marginal impact on the operation of the three key junctions. PRC values are presented below along with an analysis of the resulting change in delay at the junction. <ul style="list-style-type: none">Derby Road/Boundary Street 4 arm junction 2023 PRC 24% AM Peak (same as base), 60% in the PM Peak (same as base). 2028 PRC 12% AM Peak (13% in base), 63% in the PM Peak 2028 (64% in base)Derby Road/Blackstone Street / Great Howard Street; 2023 PRC -13% AM Peak (-12% in Base), 5% in the PM Peak. (same as base) 2028 PRC -23% AM Peak (-21% in base), -2% in the PM Peak (-1% in base)Great Howard Street/Lightbody Street / Walter Street 2023 PRC 22% AM Peak (same as base), 8% in the PM Peak (same as base). 2028 PRC 12% AM Peak (same as base), 1% in the PM Peak (2% in base). In terms of junction operation all junctions continue to operate within their design capacity with the proposed development in place with the exception of Derby Road/Blackstone Street / Great Howard Street. Change in average vehicle delay through the Great Howard Street/Lightbody Street / Walter Street junction is analysed in the TA for the peak hour periods. The average vehicle delay through the junction in the baseline 2023 AM situation is 75 seconds. With development traffic added these increases by 17 seconds. For the 2028 AM peak scenario the level of average delay at the junction is approximately 179 seconds per vehicle in the ‘2028 Base + Proposed Development’ scenario. This represents increase of approximately 20 seconds when compared with the ‘2028 Base’ scenario.	Low	Negligible	Yes	Appendix 7.1 Section 13. Appendix 7.2
Operation: Non match day/ non-event day	Pedestrians: Both existing and proposed	Severance, Pedestrian Delay & Pedestrian Amenity Traffic increase on any link within the traffic study area with AADT of 4,000 does not experience an increase in traffic on account of development of 10% or above	Negligible	Negligible	Yes	Appendix 7.2
Operation: Match day/ event day	Transport network users: parking, bus, rail, taxi, pedestrians & cyclists	Operation and Safety Without mitigation in place to prevent traffic travelling in and parking on local streets the pedestrian network will be compromised with insufficient capacity to accommodate crowds safely. Without crowd management measures on the rail network there is potential that this mode will be compromised. Without shuttle buses in place the transport demand could shift to other unsustainable modes and increase traffic impact.	Very High	Major	Yes	Appendix 7.2
Operation: Match day/ event day	Pedestrians & Cyclists at Nelson Dock	Access to Nelson Dock Without mitigation in place to maintain access to Regent Road during the surges of pre and post-match transport demand access to Nelson Dock via Regent Road will prove difficult on account of crowds and traffic in the area. Notwithstanding this alternative north — south movement will still be possible via the pedestrian and cycle routes to be created through Liverpool Waters.	Medium	Minor	Yes	Appendix 7.1 Sections 11 & 12. Appendix 7.2

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PHASE	RECEPTOR(S) AFFECTED	IMPACT	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation: Match day/ event day	Vehicles at Nelson Dock	Access to Nelson Dock Without mitigation in place to maintain access to Regent Road during the surges of pre and post-match transport demand access to Nelson Dock via Regent Road will prove difficult on account of crowds and traffic in the area. There are potentially no alternative vehicle routes through Liverpool Waters to Nelson Dock during early to middle phases of the delivery of Liverpool Waters.	High	Minor	Yes	Appendix 7.1 Sections 11 & 12. Appendix 7.2
Operation: Match day/ event day	Pedestrians	Crowd Disaster and Violence Without stewarding, policing and the implementation of the crowd safety measures and policies as well as the transport strategy which include road closures, the separation of vehicles and traffic, stewarding, policing and contingency plans the risk of crowd disaster and violence occurring inside the stadium and outside is very high	Very High	Major	Yes	Appendix 7.1 Sections 11 & 12. Appendix 7.2. Appendix 7.2

7.7 MITIGATION & ENHANCEMENT MEASURES 2023 & 2028

PHASE	POSSIBLE EFFECT BEING MITIGATED	MITIGATION MEASURE	HOW SECURED / TRIGGER	MAGNITUDE POST-MITIGATION	ADVERSE/BENEFICIAL	FURTHER INFORMATION
Construction	Severance, pedestrian delay, pedestrian amenity, driver delay, road safety	Construction Management Plan (CMP) Prior to construction taking place a construction management plan will be agreed with LCC. This will contain a range of measures to reduce the traffic impact of the construction of the development. A draft version of the document to inform the planning application is provided at Appendix 4.1. The draft plan sets out a range of measures that would be employed at the site to reduce transport impacts. This includes: <ul style="list-style-type: none">Workers to be encouraged to use public transport, walking and cycling wherever possible, staff private vehicles not to be permitted to park on the site and discouraged from parking in nearby streets.Remote car parks to be used by workers who choose to drive. Potential for a shuttle service to these.Designated HGV access routes so that HGVs do not adversely impact on residential areas.The site normal working hours will generally be 7.00am to 7.00pm Monday to Friday and 7.300am to 1.00pm on Saturdays.No works are planned for Sundays or Bank Holidays.Some work outside of normal working hours will be required at times; this will be agreed with LCC in advance in writing. Where appropriate CMPs typically identify temporary traffic management measures which can be deployed on the local road network to mitigate impact this can include temporary signalised pedestrian crossing points. It is also possible in construction management plans to identify specific construction traffic routes. In this way HGV traffic can be limited to use the most appropriate routes to site.	Planning Condition	Negligible for all apart from pedestrian amenity-medium	Adverse	Appendix 5.1 and Appendix 7.2
Operation	Severance, pedestrian delay, pedestrian amenity, driver delay, road safety	Travel Plan Within a defined period following occupation a staff travel plan will be agreed with LCC which contains a series of measures to encourage the sustainable travel of staff working at the proposed development. The measures will seek to reduce travel by single occupancy vehicles and encourage sustainable travel where practical.	Planning Condition	Negligible for all apart from Road safety (low) and pedestrian amenity (medium)	Adverse	Appendix 7.2
Operation	Operation of the Transport Network	Match Day Transport Strategy and Event Day Transport Strategy On match days and event days, a series of transport measures will be in place in the interest of safety, encouraging sustainable travel and maintaining the operation of the transport system. As part of this a series of permanent and temporary match / event day measures will be in place. This includes the following: Match Day & Event Day Only Measures:	Planning Condition / Section 278 & Section 106	Minor	Adverse	TA Sections 7.2 and 7.3 in Appendix 7.1

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PHASE	POSSIBLE EFFECT BEING MITIGATED	MITIGATION MEASURE	HOW SECURED / TRIGGER	MAGNITUDE POST-MITIGATION	ADVERSE/BENEFICIAL	FURTHER INFORMATION
		<ul style="list-style-type: none">■ Hard road closures enforced by HVM barrier to both protect and provide road space to pedestrians in streets in the immediate vicinity of the application site;■ Soft Road closures to prevent match day traffic from entering the streets in the wider vicinity of the application site to provide more road space to pedestrians and protect the amenity of residents and businesses;■ Traffic Restrictions to slow traffic speeds on key routes and provide more pedestrian space to pedestrians in the post — match period;■ A pass system will be implemented so that residents and businesses will still have access to their properties and car parking through the closure period. This will be managed by marshals on street.■ Match day shuttle buses to the city centre and north to Bootle;■ Match day taxi ranks;■ Rail staff to manage and marshal the operation of Sandhills station.■ Coach parking areas created on closed roads■ Disabled shuttle services from Sandhills station and Stanley Park car park (latter being a pre-booked ‘park & ride’ service) <p>Permanent Match Measures:</p> <ul style="list-style-type: none">■ The creation of a waiting area outside Sandhills station for supporters to wait in the post-match period in a safe environment prior to boarding trains.■ Parking restrictions within a wide area to prevent match day parking- creation of residents and business only parking zones like those already in existence at Goodison Park. This will prevent supporters from parking within residential, business and other unsuitable areas.				
Operation	Crowd Disaster & violence	<p>Crowd Safety Policies and Measures</p> <p>As part of the development, on match days and event days an ‘Event Safety Policy’, ‘Event Day Contingency Plan’ and ‘Event Transport Strategy’ will be in place. These plans will set in place crowd safety and transport measures to be employed at every match and event day.</p> <p>The Clubs existing Safety Policy sets out responsibilities, and actions to ensure a reasonable level of spectator safety on event days. These would be applied at the new development. Lines of communication with police, internal communications, CCTV monitoring are all described in detail so ensure that each event is as safe as possible. In summary, it sets out the approach to monitoring and preventing crowd disasters and crowd violence including:</p> <ul style="list-style-type: none">■ Stewarding;■ Crowd management;■ Inspection & safety reviews;■ Communications;■ Fire Precautions;■ Medical & First Aid requirements■ Counter — terrorism arrangements■ Crowd Disorder & Anti-Social Behaviour■ Contingency Plans. <p>In addition to the Safety Policy, the Working Contingency Plan sets out the plans in place for dealing with emergency’s including:</p> <ul style="list-style-type: none">■ Fire;■ Bomb threat / suspect packages / hazardous substances;■ Damage to structures / gas leaks, electricity supplies;■ Safety systems;■ Crowd problems (including disorder);	Planning Condition and Licencing Requirements	Low	Adverse	Appendix 7.2

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PHASE	POSSIBLE EFFECT BEING MITIGATED	MITIGATION MEASURE	HOW SECURED / TRIGGER	MAGNITUDE POST-MITIGATION	ADVERSE/BENEFICIAL	FURTHER INFORMATION
		<div><div><div>■</div>Evacuation procedures;</div><div><div>■</div>Control of major incidents;</div><div><div>■</div>Adverse weather conditions.</div></div> <p>As can be seen, a comprehensive package of policies and measures will be in place to ensure the risk of crowd disaster and crowd violence is kept to a minimum and that should such an incident occur its impact is minimised as much as practically possible.</p>				
Operation	Access to Nelson Dock	<p>As stated above, the following mitigation measures would be employed:</p> <div><div>■</div>Match Day Transport Strategy</div> <div><div>■</div>Event Day Transport Strategy</div> <div><div>■</div>Crowd Safety Policies and Measures</div>	Planning Condition / Section 278 & Section 106 and Licencing requirements	Low for pedestrians and cyclists. Medium for vehicles	Adverse	Appendix 7.2

7.8 ASSESSMENT POST-MITIGATION

PHASE	RECEPTOR	RESIDUAL IMPACT	RESIDUAL EFFECT					
			SIGNIFICANCE	ADV/BEN	ST/MT/LT	D/IND	P/T	R/IRR
Construction	Vehicles through the area, pedestrians and cyclists: Existing	Road Safety On account of the relatively modest traffic generation of the construction phase compared to the operational phase it is not expected there would be a material change to traffic generation through the day and therefore the pre-mitigation traffic generation and impact.	Negligible	Adv	ST	D	T	R
Construction	Vehicles through the network: Existing	Vehicle Delay It is expected that the implementation of the Construction Management Plan will help reduce traffic impact of the construction phase in terms of HGV impact and the encouragement of staff to travel sustainably. On account of the relatively modest traffic generation of the construction phase compared to the operational phase it is not expected there would be a material difference to the pre-mitigation traffic generation and impact.	Negligible	Adv	ST	D	T	R
Construction	Pedestrians: Existing	Severance, Pedestrian Delay It is expected that the implementation of the Construction Management Plan will help reduce traffic impact of the construction phase in terms of HGV impact and the encouragement of staff to travel sustainably. On account of the relatively modest traffic generation of the construction phase compared to the operational phase it is not expected there would be a material difference to the pre-mitigation traffic generation and impact.	Negligible	Adv	ST	D	T	R
Construction	Pedestrians: Existing	Pedestrian Amenity Although there is potential for the Construction Management Plan to potentially restrict vehicle movements to certain parts of the day where practical to reduce impact, it is considered that the absolute volume of HGV construction traffic would not materially change. On account of this and the likely routes construction vehicles will take it is not expected there would be a material change to the pre-mitigation impact.	Minor	Adv	ST	D	T	R
Operation: Non match day/ non-event day	Vehicles through the area, pedestrians and cyclists: Both existing and proposed	Road Safety It is expected that the implementation of the Framework Travel Plan will help reduce traffic impact of the operational phase in terms of traffic generation. However, the majority of traffic to be generated by the development is likely to be from visitors / customers on non-match / non-event days. To ensure a robust assessment is undertaken it is considered that the post-mitigation traffic generation, and therefore impact will be the same as the pre-mitigation.	Negligible	Adv	LT	D	P	R

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PHASE	RECEPTOR	RESIDUAL IMPACT	RESIDUAL EFFECT					
			SIGNIFICANCE	ADV/ BEN	ST/MT/LT	D/IND	P/T	R/IRR
Operation: Non match day/ non-event day	Vehicles through the area	Driver Delay It is expected that the implementation of the Framework Travel Plan will help reduce traffic impact of the operational phase in terms of traffic generation. However, the majority of traffic to be generated by the development is likely to be from visitors / customers on non-match / non-event days the potential for a significant reduction in traffic is limited. To ensure a robust assessment is undertaken it is considered that the post-mitigation impact will be the same as the pre-mitigation.	Negligible	Adv	LT	D	P	R
Operation: Non match day/ non-event day	Pedestrians: Both existing and proposed.	Severance, Pedestrian Delay and Pedestrian Amenity It is expected that the implementation of the Framework Travel Plan will help reduce traffic impact of the operational phase in terms of traffic generation. However, the majority of traffic to be generated by the proposed development is likely to be from visitors / customers on non-match / non-event days. To ensure a robust assessment is undertaken it is considered that the post-mitigation traffic generation, and therefore impact will be the same as the pre-mitigation.	Negligible	Adv	LT	D	P	R
Operation: Match day/ event day	Transport network users: parking, bus, rail, taxi, pedestrians & cyclists.	Operation and Safety The implementation of the Transport Strategy and the Crowd Safety policies and measures means that vehicular access in the streets in the immediate vicinity of the site will be managed to provide more road space to pedestrians. Parking restrictions will be in place to prevent the local area being affected by match day / event day traffic. Shuttle buses will be in place encouraging the use of sustainable travel. Rail management measures will be in place as well as new taxi ranks and coach parking areas. It is considered that with these measures in place, in line with the findings of the TA there will be sufficient capacity on the transport network to accommodate demand without detriment to its operation or the safety of its users.	Minor	Adv	ST	D	T	R
Operation: Match day/ event day	Pedestrians and Cyclists at Nelson Dock	With mitigation in place (Transport Strategy and the Crowd Safety policies) pedestrian access to and from Regent Road will be maintained. At the busiest times in terms of crowds it is expected that cyclists will need to dismount on Regent Road for a distance however alternative similar routes are available on Great Howard Street and routes internal to Liverpool Waters.	Negligible	Adv	ST	D	T	R
Operation: Match day/ event day	Vehicles at Nelson Dock	With mitigation in place (Transport Strategy and the Crowd Safety policies) vehicular access to and from Nelson Dock will be maintained to Regent Road where a one-way circulation system will be in operation. A pass system will be implemented where only residents and employees are permitted access to the traffic restricted areas. Although access is still permitted vehicles will not have access and egress from all directions and some diversion to their normal route will be needed.	Negligible	Adv	ST	D	T	R
Operation: Match day/ event day	Pedestrians: Existing and proposed	Crowd Disaster & Violence With mitigation in place (Transport Strategy and the Crowd Safety policies) crowds will move through a managed environment with police and crowd and traffic marshals controlling traffic & pedestrian movement and reducing risk of disaster. With these measures in place it is demonstrated that there are sufficient measures and controls in place that would effectively manage the risk of crowd disaster or violence occurring and mitigate the impact should such an event occur.	Minor	Adv	ST	D	T	R
Key: ADV/BEN = Adverse/Beneficial; ST/MT/LT = Short-term/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible								

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