Appendix 7.2

TRANSPORT TECHNICAL APPENDIX

APPENDIX 7.2: TRANSPORT EIA TECHNICAL APPENDIX

INTRODUCTION

Company

Mott MacDonald & Buro Happold

Authors

Author

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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.

Crowd Disasters and Violence

Advice and guidance on crowd disaster and violence issues 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.

Appendix Purpose

This appendix provides the following detail to Chapter 7 Transport, of Volume 2 of the ES:

- Identification of receptors and sensitivity;
- Determination of Impact magnitude; and
- Likely Significant Impact Assessments.

Appendix Changes for 2020 Resubmission

In accordance with the methodology outlined in Chapter 2, ES Volume II, a Level 2 update has been undertaken. This is in response to:

1. The relevance and scale of the proposed development amendments (including amendments to the construction methodology);
2. The validity of the baseline data; and
3. The addition of new cumulative schemes; and
4. Statutory consultee comments and the appropriateness of the previously identified mitigation measures.

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In terms of points 1 and 4 and match day / major event day assessments, the changes to match day parking capacity on site (as a result of design changes) as well as changes to the proposed 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, ES Volume III. There is sufficient capacity on the transport network to accommodate travel demand on match days and major event days.

For points 1, 2 & 3 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, ES Volume III.

In respect to the assessment of construction impact relating to point 1 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, Chapter 7, ES Volume II and in Table 7.9 in this Appendix. 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 (Chapter 7, ES Volume II) has also been reviewed against Legislation / Policy Revisions, and there are no related updates to legislation or policy that have affected either the methodology or the findings of this assessment.

IDENTIFICATION OF SENSITIVE RECEPTORS- NON- MATCH DAY – NON-EVENT DAY

The IEA's Guidelines for the Environmental Assessment of Road Traffic set groups or locations which may be sensitive to changes in traffic conditions. This includes:

- People at home
- People at work places
- Sensitive groups including children and the disabled
- Sensitive locations e.g. hospitals, churches, schools, historical buildings
- People walking
- People cycling
- Open spaces & recreational sites
- Sites of ecological / nature conservation value
- Sites of tourism attraction.

Although there are no schools, hospitals or churches on the network most streets in the study area are lined with places of work. There are also a small number of residential properties on Regent Road between Fulton Street and Regent Road as well as future residential receptors at Nelson Dock as part of the Liverpool Waters scheme. Also in future there will be hotel use on Regent Road (Regent Road hotel) which is curently occupied by residential properties as well as residential use at Lightbody Stree,currentl occupied by industrial premesis.

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There are no institutions in the study area which would indicate especially high numbers of children, the elderly or disabled. People who work and live in the area will walk and cycle through the network and these people will be sensitive to traffic change, as will those who drive through the area.

It is noted that the application site is situated within a conservation area (Stanley Dock) and the site itself has many historic features which are listed (Regent Road wall; BMD 'dock' walls; and Hydraulic Engine House).

It has been determined in scoping that the following impacts will be assessed for the non-match day / non-event day scenario:

- Severance;
- Vehicle Delay;
- Pedestrian Delay;
- Pedestrian Amenity; and
- Road Safety;

Impacts are focussed on transport network users which will consist of:

- Pedestrians using the transport network within the study area; This will include all pedestrians living and working in the area as well as those passing through;
- Cyclists using the transport network within the study area. This will include all cyclists living and working in the area as well as those passing through;
- Vehicles travelling through the study area this will include all vehicles including those operated and containing those who live and work in the area and those passing through;

It is noted that the IEA's Guidelines for the Environmental Assessment of Road Traffic recommend a range of other potential impacts are assessed including: noise, vibration, visual effects, hazardous loads, air pollution, ecological effects, heritage and conservation, and social impacts. These impacts are pertinent to many of the sensitive groups and locations cited previously including people at home, people at work and sites of historic interest.

Of these effects, the impact of the proposed development is considered in chapters elsewhere within this Environmental Statement due to the specialist skills required (e.g. Air Quality - Chapter 8; Noise & Vibration- Chapter 9; Cultural Heritage Chapter 18; and Socio-economics Chapter 19). The remaining relevant effects are defined and discussed below with recommendations on significance criteria for each (based on the IEMA guidance where possible).

- Potential effects on pedestrians associated with severance caused by an increase in traffic levels during construction and operation of the proposed development.
- Potential effects on vehicles associated with driver delay caused by additional traffic generated by the proposed development.
- Potential effects on pedestrians associated with delays caused by changes in traffic volume or speed of traffic.
- Potential effects on pedestrian amenity caused by the increase in traffic flow, traffic composition and pavement width/separation from traffic.
- Potential effects of highway safety caused by the increase in traffic flow as a result of the proposed development.

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In line with the IEA's Guidelines the pedestrian and cyclist receptors have medium sensitivity to change. Vehicles on the network will have low sensitivity to change on account of the roads on the network being uncongested.

IDENTIFICATION OF SENSITIVE RECEPTORS- MATCH DAY –-EVENT DAY

Operation of the Transport Network

For the match day / event day scenario the operation of the proposed development will be significantly different on match days and event days when compared to non-match / non–event days. Consequently, assessment of the match day / event day scenario has formed a separate assessment to the non-match day / event day. Different impacts have been assessed for each scenario, reflecting the contrasting level of transport demand generated between them and the duration of impact.

The impact of the match/event day will only be temporary, lasting just on a single day in the build up to and a period after the event. Furthermore, major events and matches will only take place a maximum of around 32 days per year. The impacts must be viewed in this context and as such their assessment must focus on the main modes of travel which supporters will use within the study area and the temporary effect that this demand will have.

It is usual for stadia, most spectators arrive having parked elsewhere some distance away, walked from a train station or other form public transport some distance away. Accordingly, the assessment of pedestrians on the network is critical here as is the cycle network.

In terms of the mode of transport used to arrive in the vicinity of the proposed development, car parking-facilities are spread wide around the study area and as such car traffic will be spread far and wide. The implementation of parking controls as part of proposed mitigation will also assist the spread of traffic. Accordingly, in terms of car travel the focus here is on impact on car parking.

The other main modes of travel identified in the TA are taxis, buses and trains. As such the impact on the operation of these modes is assessed.

As set out in detail in the TA the Transport Strategy (which is a mitigation measure) guides people to specific modes of transport so that best efficient use of transport capacity is made. Management measures will be implemented as part the strategy including: parking restrictions and new waiting facilities at Sandhills Station. In this way the risk is reduced of specific modes being overburdened compromising their operation and safety.

It should be noted that in terms of sensitivity of public transport networks and car parking the IEA's Guidelines do not provide advice, so it is necessary that professional judgement is used here. In line with the IEA advice that uncongested traffic junctions have a low sensitivity to traffic changes the public transport networks and parking networks (which are uncongested at match / event times) will have low sensitivity to changes in transport demand. Pedestrians and cyclists on the network will have medium sensitivity.

The receptors to be assessed will be:

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

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Impact at Nelson Dock

Impact of pedestrian, cycle and vehicular access to the Nelson Dock area of the approved Liverpool Waters scheme (LPA ref. 10O/2424 – latest variation is ref. 19NM/1121) is assessed for the match day / event day scenario. On match days the area will be subject to high pedestrian 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. We consider Nelson Dock to be a worst-case assessment of impact at Liverpool Waters as this development locale is situated closest to the proposed development site. Receptors for this assessment are:

- Pedestrians in Liverpool Waters- residents, employees and people passing through;
- Cyclists in Liverpool Waters- residents, employees and people passing through;
- Drivers in Liverpool Waters- residents, employees and people passing through;

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 is low on account of the uncongested road network.

Crowd Disaster & Violence

Similarly, the impact of development in terms of crowd disaster and violence is not covered in the Guidelines. Accordingly, this part of the assessment has co-authored with Buro Happold who the security consultants for the People's Project. Their professional judgement has been used to assess impact of development on these crowd disaster and violence.

For the assessment of crowd disaster and football related violence the receptors are identified as pedestrians both existing and proposed. In line with the other assessment scenarios we consider these pedestrians have medium sensitivity.

DETERMINATION OF IMPACT MAGNITUDE

The IEA's Guidelines for the Environmental Assessment of Road Traffic set out the broad principles of how to assess the magnitude of effect for each category identified for assessment. Where appropriate this is summarised in this section. For some effects the IEA's guidelines suggest that professional judgement should be used where there are no thresholds defined. For other topic areas such as impact on public transport networks no guidance is provided at all, accordingly it is appropriate to use professional judgement in these instances as well.

Non-Match Day / Non-Event Day Traffic Based Assessments:

Environmental effects will be assessed in the context of two 'rules of thumb' which are taken from the IEA Guidelines and informed by DMRB, which help to define which roads need to be considered within the assessment:

Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%).

Rule 2: Include any other specifically sensitive areas where traffic flows will increase by 10% or more.

Given the preceding analysis of receptor sensitivity it is not considered that there are any areas within the study area especially sensitive to changes in traffic levels beyond those already identified in the 'sensitivity of receptor' section. Pedestrians and cyclists have medium sensitivity so the 10% threshold for assessment will be used here.

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The 30% threshold relates to the level at which humans may perceive there to be a noticeable change, therefore there may be an effect. Effects which are above this level do not suggest that there is a significant effect; only that further consideration is required to assess the significance.

Although these two rules are used, it is important to note that the IEA guidelines do not distinguish between temporary and permanent changes in traffic flow. Short duration increases are likely to be more tolerable than permanent increases, and therefore less significant.

Generally, increases in traffic flow which amount to less than 10% of the baseline are considered to have a negligible impact on the road network given that daily fluctuations equal to this figure can occur.

Severance

The Guidance states that "severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery". Further, "Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively". However, the guidance acknowledges that the measurement and prediction of severance is extremely difficult. The assessment of severance pays full regard to specific local conditions, in particular the location of pedestrian routes to key local facilities and whether or not crossing facilities are provided.

The Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 8, Chapter 6 states that for severance two-way daily traffic flows of 8,000 vehicles or below may be classed as 'slight'. Severance can be 'moderate' with traffic flows between 8,000 and 16,000 and severe with flows of 16,000 or more.

Based on the above, a threshold of 4,000 vehicles AADT is a useful starting position above which assessment of severance could begin. This is comfortably below the 8,000 threshold that DMRB states to be the limit where severance is of a slight magnitude and is therefore considered a robust approach. Following that, the magnitude criteria have been developed using professional judgement based on the aforementioned 'slight, moderate, and substantial' criteria. Table 7.1 illustrates the severance magnitude criteria to be used:

Table 7.1

Scale of magnitude for severance 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

Driver Delay

The IEA guidance states that – such delays "… are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system".

For this topic, driver delay will be assessed on a case by case basis using professional judgement subject to the sensitivity of the receptor and informed by the delay results from traffic modelling undertaken as part of the Transport Assessment (TA). In this way junctions which are predicted to operate at -1% or less PRC on account of development are analysed in terms of change t driver delay. Table 7.2 shows the impact magnitude criteria.

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Table 7.2

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

Pedestrian Delay

The IEA guidance states that "Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads". The guidance suggests that assessors "… use their judgement to determine whether pedestrian delay is a significant impact". Accordingly, this issue will be assessed on a case by case basis using professional judgement subject to the sensitivity of the receptor.

The Guidance notes that delays will depend not only on the increase in traffic but the likely level of pedestrian demand. The note states that flows of around 1,400 per hour can generate delay of up to 10 – 40 seconds. However, given the vast array of local conditions which can affect delay, the Guidance states professional judgement should be used rather than specific thresholds. Taking due cognisance of the 4,000-vehicle threshold for severance this threshold is also applied to pedestrian delay analysis, as severance includes an element of delay. Table 7.3 illustrates the magnitude criteria to be used.

Table 7.3

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.

Pedestrian Amenity

The IEA guidance broadly defines this as the relative pleasantness of a journey - it is affected by traffic flow, traffic composition and pavement width/separation from traffic. The guidance suggests a tentative threshold for judging the significance of changes in pedestrian amenity of where traffic flow (or its lorry/HGV component) is halved or doubled. This threshold will be adhered to when assessing this issue based on professional judgement. Table 7.4 illustrates the impact magnitude criteria for this assessment.

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Table 7.4

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.

Road Safety

The guidance suggests that "Professional judgement will be needed to assess the implications of local circumstances, or factors, which may elevate or lessen risks of accidents, e.g. junction conflicts".

The TA produced a thorough review of Road Traffic Collisions (Section 4.4 Appendix 7.1). This analysis will form the basis of the impact magnitude assessment. The criteria used in this assessment is illustrated in Table 7.5 below:

Table 7.5

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%.

Match Day / Event Day Traffic Based Assessments:

Operation of the Transport Network

A high-level assessment of the operation for the transport network is undertaken using the findings of the TA as the basis. There is a distinct lack of guidance on assessing environmental impact of increased demand on public transport networks and parking. Accordingly, based on professional judgement a straightforward approach is identified here.

Impact is Low where it can be demonstrated that there is enough capacity and management measures in place on the transport network to accommodate demand without detriment to the operation of the network or safety of its users.

Impact is very high where it can be demonstrated that transport demand would lead to impact to the network causing operational and safety issues.

In this way the assessment of magnitude will consider the capacity of the transport network and transport demand as identified in the Transport Assessment along with the management measures proposed as mitigation as part of the Match Day and Event Day Transport Strategy.

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Table 7.6

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.

Impact on Nelson Dock

A high-level assessment of the 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 matchdays the proposed development site will be subject to significant transport demand as 52,888 supporters arrive and depart the site within a short period.

Magnitude of impact is assessed using the following criteria:

Table 7.7

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. Impact is medium where it can be demonstrated that access is maintained although route choice is limited
Medium	Impact is medium where it can be demonstrated that access is maintained although route choice is limited.
Low	Impact is low where there it can be demonstrated that access is materially similar.

Crowd Disaster & Crowd Violence

For the assessment of crowd disaster and crowd violence a Buro Happold, safety consultant for the People's Project has used professional judgement to assess the risk of crowd disaster and violence. The methodology for risk assessment of these topics is not covered in transport EIA guidance.

Overall, the security for the proposed development at Bramley Moore Dock (BMD) is commensurate to the identified security threats and resultant risks. Crowd safety and security have been considered in the complex design for event periods. Crowd safety is not just considered in a single layer as an operational activity or control by stewards. The safety through design approach has been embedded to include operational activities and the physical and technological security infrastructure.

In identifying the overall strategic security design for the proposed development, the risk of an incident does not start and stop at the entrance to the event site. We are also mindful that the application site level of security is holistic to the immediate surrounding area, in short - a good level of security within the perimeter of the application site may can push an attack onto a 'softer' target within the immediate periphery (i.e. outside the stadium and plaza demise. The security envelope does cover the immediate surrounding areas and responsibilities identified and communicated to supporting agencies such as

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police and the EFC operating policies that shall be updated from Goodison Park to the application site. The assessment criteria are as follows:

Table 7.8

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.

LIKELY SIGNIFICANCE IMPACTS: CONSTRUCTION PRE-MITIGATION

It should be noted that there will be no staff car parking provided on the construction site and therefore any construction workers choosing to drive to the site will have to park remotely at offsite car parks or where available on street. In this way the traffic impact of staff vehicles will be spread widely on the network and any impact will be dispersed across a wide area.

Table 7.9 illustrates the traffic flow changes expected on account of construction traffic on the network. The table demonstrates that in terms of percentage increase in vehicles that AADT traffic increase on road links on account of construction is well below 10% across the network. The highest percentage increase in traffic occurs on Boundary Street West with an increase in AADT traffic of 4%. Notwithstanding this it is evident that there is a notable rise in HGV traffic on some links. For instance, on Boundary Street west the increase in HGV traffic represents an increase of over 400% over current HGV traffic.

When considering whether this will have an impact it is important to note that based on the expected working hours at the development this level of increase represents an increase of only around 12 vehicles per hour or one vehicle every 5 minutes. It is interesting to note the Boundary Street West link is only 120m long, taking approximately 1 minute to walk. It is therefore possible to walk the route without experiencing any change in HGV levels.

It is the relatively low level of HGV traffic in the base on this link (only 13 per day or just over 1 per hour through the working day) which has resulted in a disproportionately high percentage increase in HGV traffic. It is notable that the change represents only a 2% increase in the percentage of HGV traffic as a proportion of Total AADT traffic on the link.

There are other links within the study area where HGV traffic increases as a percentage of baseline HGV traffic appear high: Regent Road adjacent to Boundary Street 54%, Regent Road adjacent to Blackstone Street 93% and Regent Road adjacent to Walter Street 96%. For all these links the same analysis is appropriate in that HGV traffic is relatively low on this links and that when this increase in HGV traffic is viewed as a proportion of total traffic the level of increase is in contrast. The increase in HGV traffic as a proportion of all traffic on these links is as follows: Regent Road adjacent to Boundary Street 2%, Regent Road adjacent to Blackstone Street 2% and Regent Road adjacent to Walter Street 2%.

Construction Impact Significance Pre-Mitigation: Severance,

The receptors in the study area (pedestrians) have medium sensitivity. In none of the network analysed will there be an increase in traffic of over 30% on links with a minimum of 4,000 vehicles per day. In all these cases the impact will be of a negligible significance. This impact of negligible significance will be

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temporary (as construction will only take place for a limited period), direct and short term. The nature of the impact is adverse and reversible.

Construction Impact Significance Pre-Mitigation: Pedestrian Delay

The receptors in the study area (pedestrians) have medium sensitivity. In none of the network analysed will there be an increase in traffic of over 30% on links with a minimum of 4,000 vehicles per day. In all these cases the impact will be of a negligible significance. This impact of negligible significance will be temporary (as construction will only take place for a limited period), direct and short term. The nature of the impact is adverse and reversible.

Construction Impact Significance Pre-Mitigation: Pedestrian Amenity.

The receptors in the study area (pedestrians) have medium sensitivity. In none of the network analysed will there be an increase in traffic of over 30% on links with a minimum of 4,000 vehicles per day. On parts of the network there will be an increase in HGV traffic of over 50%:

- Regent Road at Boundary Street: 54%
- Regent Road at Blackstone Street: 93%
- Regent Road at Walter Street: 96%
- Boundary Street West; 492% - 13HGV per day to 77 HGV per day

It is noted that percentage increase in HGV traffic is over 50% on account of the baseline level of HGV traffic being modest. Indeed, daily traffic on Boundary Street West is only 1651 vehicles per day which is below the 4,000-vehicle threshold for assessment. Notwithstanding this the increase in HGV traffic in these areas will be noticeable. Using professional judgement the magnitude of effect is considered to be medium, with a minor significance. This impact will be temporary (as construction will only take place for a limited period), direct and short term. The nature of the impact is adverse and reversible.

Construction Impact Significance Pre-Mitigation: Driver Delay

The modelling work undertaken as part of the Transport Assessment (Appendix 7.2 Section 13) 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 lower than the traffic to be generated in the construction stages; estimated as a worst case of 192 daily traffic movements. Taking this into account, given that the level of traffic increase is negligible across the network and the sensitivity of the road network to change is low, the magnitude of the impact will be of negligible significance. This impact of negligible significance will be temporary (as construction will only take place for a limited period), direct and short term. The nature of the impact is adverse and reversible.

Construction Impact Significance: 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. 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. None of the network has been identified by LCC as an accident cluster site. Traffic increase on any of the road links in the study area within the defined assessment threshold will experience traffic increase above 30%

The sensitivity of pedestrians and cyclists is medium. The sensitivity of vehicles is low. The magnitude of impact is low considering the e increase in traffic, the lack of existing safety issues and the road

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improvement works being implemented by LCC. The significance of this impact will be negligible. This impact of negligible significance will be temporary (as construction will only take place for a limited period), direct and short term. The nature of the impact is adverse and reversible.

LIKELY SIGNIFICANCE IMPACTS: CONSTRUCTION POST MITIGATION

Construction Impact Significance Post- Mitigation: Severance, Pedestrian Delay, Driver Delay, Road Safety

All the pre mitigation assessments for the effects above resulted in negligible impact significance. 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.

Construction Impact Significance Post Mitigation: Pedestrian Amenity

The mitigation measures as set out in the Construction Management Plan will be able to reduce HGV impact by setting specific HGV access routes and potentially limit the arrival and departure times of HGV traffic. Notwithstanding this we consider that it will be difficult to mitigate all impact here as there is no other way (known at present) into and out of the site other than via Regent Road. Accordingly, there will always be some impact here to pedestrian amenity through the construction process.

We consider the impact will remain medium, with a minor significance. This impact will be temporary (as construction will only take place for a limited period), direct and short term. The nature of the impact is adverse and reversible.

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Table 7.9

Construction Traffic Analysis

RECEPTOR LOCATION	2023 BASE		2023 BASE + DEVELOPMENT		DIFFERENCE		% DIFFERENCE		
	AADT	# HGV	AADT	# HGV	AADT	# HGV	% AADT	% HGV	CHANGE IN HGV AS TOTAL TRAFFIC
Regent Rd adj Boundary St	8058	235	8186	363	128	128	2%	54%	2%
Regent Rd adj Blackstone St	8098	206	8290	398	192	192	2%	93%	2%
Regent Rd adj Walter St	9544	200	9736	392	192	192	2%	96%	1%
Regent Rd adj Saltney St	6187	140	6187	140	0	0	0%	0%	0%
Boundary St West	1651	13	1714	77	63	64	4%	492%	4%
Blackstone St West	1906	31	1906	31	0	0	0%	0%	0%
Walter St	1321	11	1321	11	0	0	0%	0%	0%
Derby Rd North	24639	665	24703	729	64	64	0%	10%	0%
Derby Rd South	24772	690	24772	690	0	0	0%	0%	0%
Great Howard St North	26957	692	26597	692	0	0	0%	0%	0%
Great Howard St South	26607	688	26607	688	0	0	0%	0%	0%
Boundary St East	518	38	518	38	0	0	0%	0%	0%
Blackstone St East	4239	94	4239	94	0	0	0%	0%	0%

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LIKELY SIGNIFICANT EFFECTS: NON-MATCH DAYS & NON-EVENT DAYS PRE-MITIGATION

Tables 7.10 and 7.11 show the traffic increase in terms of AADT on the network for the opening year of 2023 and future year 2028 on account of development.

Table 1.6 shows that in 2023 no road links would experience an increase in traffic above 30%. The highest traffic increase is experienced on Blackstone Street West, immediately outside the application site, an increase of 20%. AADT traffic on this link is 2,555 rising to 3,061 AADT. The next largest increase is on Boundary Street West, an increase of 13%. On both these links AADT is below the 4,000 AADT threshold for pedestrian assessment. All other increases in the study area are below 10%

Table 1.7 shows that in 2028 the level of impact is similar in there are no links where the increase in traffic is 30% or above. The highest traffic increase is experienced on Blackstone Street West, an increase of 19%. The next largest increase is on Boundary Street West, an increase of 13%. On both these links AADT is below the 4,000 AADT threshold for pedestrian assessment. All other increases in the study area are below 10%

Non- Match and Non- Event Day Impact Significance Pre-Mitigation: Severance

In 2023 and 2028 the only road links which experience an increase in traffic above 10% are Boundary Street West and Blackstone Street West which both experience increases between 13% and 20%. AADT on these links is below 4,000 vehicles. The receptor sensitivity (pedestrians) is medium, impact magnitude is negligible, significance is negligible, permanent, direct and long term. The nature of the impact is adverse and reversible.

Non- Match and Non- Event Day Impact Significance Pre-Mitigation: Pedestrian Delay

In 2023 and 2028 the only road links which experience an increase in traffic above 10% are Boundary Street West and Blackstone Street West which both experience increases between 13% and 20%. AADT on this links is below 4,000 vehicles. The receptor sensitivity (pedestrians) is medium, impact magnitude is negligible, significance is negligible, permanent, direct and long term. The nature of the impact is adverse and reversible.

Non- Match and Non- Event Day Impact Significance Pre-Mitigation: Amenity

In 2023 and 2028 no road links experience an increase in traffic or HGV traffic above 50%. The receptor sensitivity (pedestrians) is medium, impact magnitude is negligible, significance is negligible, permanent, direct and long term. The nature of the impact is adverse and reversible.

Non- Match and Non- Event Day Impact Significance Pre-Mitigation: Driver Delay

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. In daily traffic terms this equates to around 1,900 movements per day.

Junction assessment undertaken for the TA demonstrates (Appendix 7.2 section 13) 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.

- 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)

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- 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.

Based on this level of increase in delay on the network the magnitude of impact is low, the sensitivity of the receptor is low, the impact significance is negligible. The impact is permanent, direct, long term, adverse and reversible.

Non- Match and Non- Event Day Impact Significance Pre-Mitigation: Road Safety

As part of the Transport Assessment (Appendix 7.1 Section 4) a comprehensive review of RTC (Road Traffic Collision) data for a five-year period has been undertaken in the study area. The review concluded that the nature and frequency of the RTCs observed period is considered typical of that for an urban road network. Any identified collision clusters as well as RTCs involving vulnerable road users will be mitigated against by the significant remodelling of many of the key junctions and links with the study area as part of the committed North Liverpool Key Corridors scheme. The remodelled junctions and highway connections will be subject to Road Safety Audits at the appropriate stages.

As such, this review concludes that the development should not exacerbate any significant road safety issues existing on the local highway network surrounding the site. As such, the proposed development at Bramley-Moore Dock is not expected to significantly impact upon local road safety in the area.

None of the network has been identified by LCC as an accident cluster site. Traffic increase on any of the road links in the study area within the defined assessment threshold will experience traffic increase above 30%

The sensitivity of the receptors is medium and includes pedestrians and cyclists. Drivers through the area have low sensitivity. The impact magnitude of the development is low, the significance of the impact is negligible. This impact will be permanent, direct, long term, adverse and reversible.

LIKELY SIGNIFICANT EFFECTS: NON-MATCH DAYS & NON-EVENT DAYS POST-MITIGATION

In terms of mitigation the implementation of a travel plan will help to encourage sustainable travel to and from the site. Notwithstanding this to ensure a robust assessment we assume a scenario where the travel plan does not have a significant impact in reducing traffic generation of the site.

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Accordingly, it is considered for the non-match day / non-event day scenario post mitigation that the development will be no change to the magnitude and significance of impacts assessed in the pre-mitigation scenario.

LIKELY SIGNIFICANT EFFECTS: MATCH DAYS & EVENT DAYS PRE-MITIGATION

Match and Event Day Impact Significance Pre-Mitigation: Operation of the transport network

The Transport Assessment sets out in some detail the capacity of available car parks, the train network, the bus network, and the walking and cycling networks (Section 10 in Appendix 7.2).

The Match Day and Event Day Transport Strategies set out in some detail the measures which will influence travel behaviour. We consider that without some of these key measures in place there is a significant risk that this will be to the detriment of the satisfactory and safe operation of the transport network on match days. A number of key points as follows:

- Without parking measures in place to prevent supporters parking on local streets in the immediate vicinity of the application site there will be a detrimental impact on residents and businesses amenity. In addition, this reduces the amount if road space for pedestrians to circulate in outside the application site and presents as security and safety risk.
- Without road closures and restrictions in place local streets will become congested with match / event traffic to the detriment of the amenity of residents and businesses. This will reduce road space available to pedestrians and present significant safety and security risk.
- Without match day shuttle buses and disabled mini buses (the latter to include a pre-booked service from Sandhill station or Stanley Park car park) in operation for events and matches this could shift some supporters towards more unsustainable modes of transport placing undue pressure on other modes.
- Without crowd management measures at Sandhills station, rail travel from the station becomes unmanageable to the detriment of the operation of this mode.

It is clear that without the measures included within the Match Day Transport Strategy that the transport network would not be able to cope, particularly the road network in the study area. This would result in significant safety and security issues for pedestrians. Furthermore, there is the danger that without management measures that supporters are likely to choose more unsustainable modes of travel. The sensitivity of transport network users is medium. We consider the impact magnitude to be very high, the impact significance is major adverse. This impact would be direct, temporary short term and reversible.

Match and Event Day Impact Significance Pre-Mitigation: 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.

On this basis impact magnitude on pedestrians will be medium as access is maintained although route choice is limited. The sensitivity of the receptor is medium resulting in an impact of minor significance. Impact will be direct, temporary short term and reversible.

For vehicles, 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

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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.

Impact is high and the sensitivity of the receptor is low. Impact significance will be minor. This impact would be direct, temporary short term and reversible.

Match and Event Day Impact Significance Pre-Mitigation: Crowd Disaster and Crowd Violence

We have already explained in the EIA Transport chapter the design features which will be included within the design of the proposed development to reduce the risk of crowd disaster. However, 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 proposed development and outside remains very high.

We consider therefore that the sensitivity of pedestrians to crowd disaster and violence issues is medium, the magnitude of impact considering the above is very high, the significance is major. The impact will be temporary, direct, short term, adverse and reversible.

LIKELY SIGNIFICANT EFFECTS: MATCH DAYS & EVENT DAYS POST-MITIGATION

Match and Event Day Impact Significance Post-Mitigation: Operation of the transport network

The main EIA chapter sets out in some detail the mitigation measures to be implemented as part of the Match Day Transport Strategy. The strategy will reduce the impact of traffic in the study area and encourage the use of more sustainable modes of travel. The measures in the Transport Strategy and the target modal splits will help ensure that there is enough capacity and management in place on the transport network to accommodate demand without detriment to the operation of the network or safety of its users.

The impact magnitude will be low on the receptors with medium sensitivity. Impact significance is minor, direct, temporary, short term and reversible.

Match and Event Day Impact Significance Post-Mitigation: Access to 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 (as and when the various phases of the scheme are constructed).

Impact is low and the sensitivity of the receptor is medium. Impact significance will be negligible. This impact would be direct, temporary short term and reversible.

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.

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Impact is medium and the sensitivity of the receptor is low. Impact significance will be negligible. This impact would be direct, temporary short term and reversible.

Match and Event Day Impact Significance Post Mitigation: Crowd Disaster and Crowd Violence

We have already explained in the EIA Transport chapter the comprehensive set of safety policies, measures and monitoring which will be employed on match days and event days to prevent these disaster events occurring, and if such an event occurs that measures are in place to reduce impact. Pedestrian modelling has been undertaken to inform the design of the proposed development which has been undertaken in accordance with recognised standards.

Given the measures that will be in place and the fact that a licence to hold events at the application site would not be granted by Liverpool City Council until they are satisfied that the proposed development and event measures will ensure the safety of all spectators and staff, we consider that the likelihood of such a disaster event occurring is minor. The safety of spectators has been considered in the design of the proposed development itself and in match day / event day operations.

We consider therefore that the sensitivity of pedestrians to crowd safety issues is medium, the magnitude of impact considering the above is low, the significance is minor. The impact will be temporary, direct, short term adverse and reversible.

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Table 7.10

2023 base and base plus development traffic flows- non match day, no event day scenario

RECEPTOR LOCATION	2023 BASE		2023 BASE + DEVELOPMENT		DIFFERENCE	
	AADT	# HGV	AADT	# HGV	AADT TOTAL	% AADT
Regent Rd adj Boundary St	10760	249	11327	262	567	5%
Regent Rd adj Blackstone St	10810	210	11597	225	786	7%
Regent Rd adj Walter St	12917	204	13102	207	186	1%
Regent Rd adj Saltney St	9978	147	9978	147	0	0%
Boundary St West	1651	13	1871	15	220	13%
Blackstone St West	2555	42	3061	50	506	20%
Walter St	2079	17	2266	18	187	9%
Derby Rd North	26588	399	26924	404	336	1%
Derby Rd South	26720	426	26838	427	116	0%
Great Howard St North	28454	424	26640	427	186	1%
Great Howard St South	28879	426	29195	431	316	1%
Boundary St East	518	38	518	38	0	0%
Blackstone St East	4423	98	4626	102	203	5%

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Table 7.11

2028 base and base plus development traffic flows- non match day, no event day scenario

2028 AADT Comparison

RECEPTOR	2028 BASE		2028 BASE + DEVELOPMENT		DIFFERENCE	
	AADT	# HGV	AADT	# HGV	AADT TOTAL	% AADT
Regent Rd adj Boundary St	12548	290	13115	303	567	5%
Regent Rd adj Blackstone St	12605	245	13392	260	786	6%
Regent Rd adj Walter St	14797	234	14982	236	186	1%
Regent Rd adj Saltney St	11671	172	11671	172	0	0%
Boundary St West	1742	14	1962	16	220	13%
Blackstone St West	2661	43	3167	52	506	19%
Walter St	2152	17	2339	19	87	9%
Derby Rd North	28621	430	28957	435	336	1%
Derby Rd South	28092	447	28208	449	116	0%
Great Howard St North	30596	456	30782	459	186	1%
Great Howard St South	31022	458	31338	462	316	1%
Boundary St East	526	39	526	39	0	0%
Blackstone St East	4660	103	4862	107	203	4%