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Our Ref: BR/6096

15th October 2025

Holly Drury
Hampshire County Council
The Castle
Upper High Street
Winchester
SO23 8UJ

Dear Holly

Re: Interbridges, New Brighton Road, Emsworth (LPA ref. APP/24/01010)

Bellamy Roberts has been instructed by PNH Properties to prepare a further written response to further consultation comments received from the Highway Authority dated 23rd May 2025.

The consultation comments are enclosed however in summary the Highway Authority has requested additional information relating to the following matters:

- Sustainable Access
- Site Access
- Trip Generation
- Junction Assessments
- Parking Provision
- Internal Road Network
- Travel Plan

A meeting was held with the Highway Authority on 5th August and the above matters were discussed in greater detail. This letter has been prepared to provide the Highway Authority with the information requested and to ensure a positive response to the planning application.

The Highway Authority has requested a more ambitious improvement to the Horndean Road/New Brighton Road junction than the tactile paving proposed following the WCHAR assessment.

No such improvement scheme is currently being considered either by Hampshire County Council or Havant Borough Council, as confirmed by both Authorities.

Whilst the existing junction accommodates both pedestrian and cycle movements, some deficiencies have been noted regarding pedestrian and cycle provision and are considered in the following paragraphs.

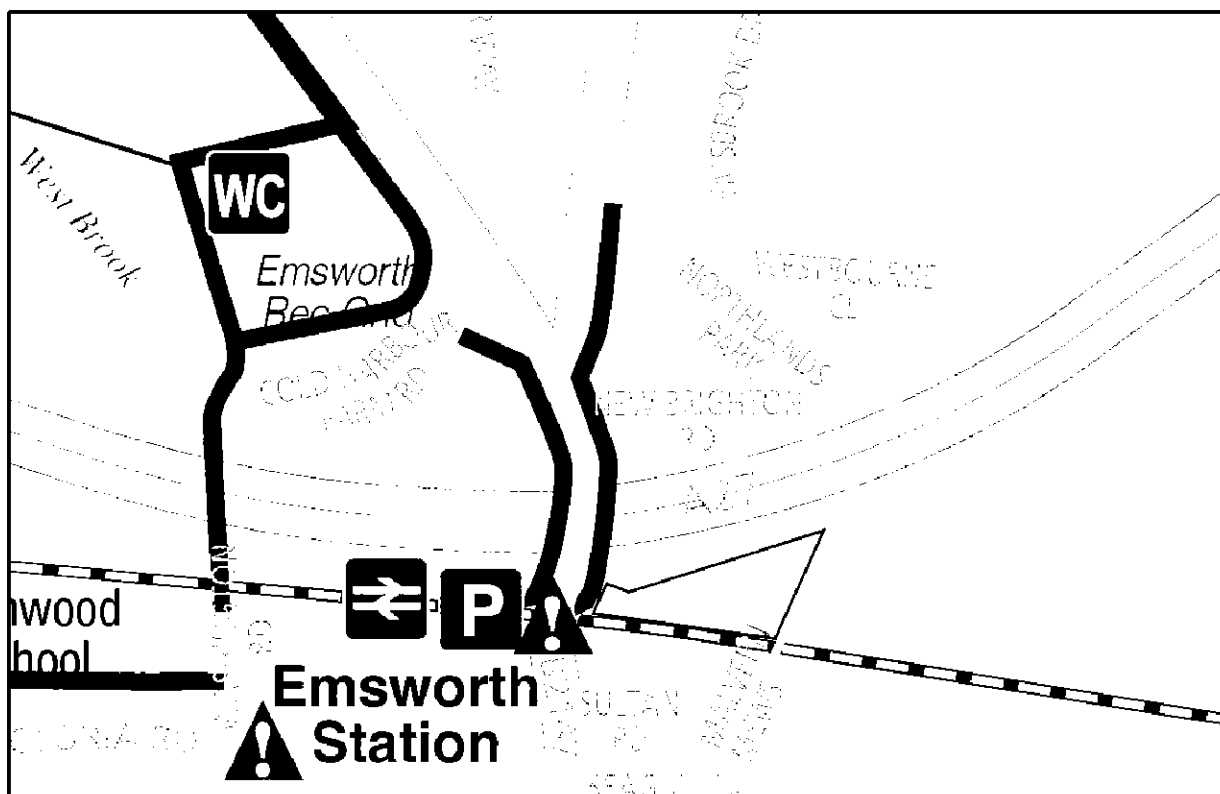
The existing junction layout is shown on the enclosed plan 6096/012. This shows the presence of a dropped kerb crossing on New Brighton Road, albeit this located approximately 20m from Horndean Road. Pedestrians travelling either north or south along the eastern side of Horndean Road would therefore need to deviate from the desire line in order to cross New Brighton Road.

With reference to Havant Borough Council's cycle map and guide, Horndean Road and New Brighton Road are part of the signed cycle network and a shared footway/cycle way is located in this area. An extract from the cycle map is provided at Figure 1 and shows the location of these facilities in relation to the application site, which is shaded red.

Director:
IT Roberts MCIHT
Associate Director:
MJ Twinberrow BEng MCIHT
Consultant:
GD Bellamy BSc CEng MICE

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The current junction arrangement does not provide a means for southbound cyclists on Horndean Road to access the shared footway/cycleway south of New Brighton Road.

To address the deficiencies identified for pedestrian and cyclists, an improvement scheme has been prepared showing a continuous footway crossing for pedestrians and a means for cyclists to access the shared footway/cycleway when travelling south along Horndean Road. This is shown on the enclosed plan 6096/013.

The Highway Authority state that this junction is *"the most directly relevant location for a contribution to be made"*. Should the proposed scheme be acceptable to the Highway Authority, it is suggested that the applicant make a fair and reasonable contribution to its implementation.

The continuous footway crossing at the proposed site access has been amended following discussions with the Highway Authority and the amended layout is enclosed. This now reflects the guidance contained within Technical Guidance Note 10 (TG10) and ensures pedestrians are not taken away from the desire line along North Street.

The drawing pack has been updated to show a consistent general arrangement and the updated plans are enclosed.

Visibility at the site access will not be obstructed by the guard rail to the south. For the purposes of demonstrating a clear gap between the visibility splay and guard rail on the visibility splay drawing, the splay has been plotted at an offset of 500m from the nearside carriageway edge. However, an offset of 310mm is sufficient to avoid any obstruction from the guard rail.

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Hampshire County Council's Technical Guidance Note 3 (TG3) states that the y-dimension may be relaxed to a maximum 300mm from the channel.

During the meeting with the Highway Authority on 5th August, the Authority stated that any offset greater than the 300mm stated in TG3 would require a departure from standard. The TG3 document states that non-compliance with a mandatory requirement, defined as being associated with the words "shall" or "shall not", will require a departure. The relevant text within TG3 states as follows:

The point to which the Y distance is measured should be to the channel line as shown in Figure 3.2. This may be relaxed to the wheel track (a maximum of 300mm from the channel) if required, with the wheel track being measured either from the face or the kerb or edge line, if one exists, otherwise from the edge of the surface course.

This passage does not contain the words "shall" or shall not" therefore I would question whether this does in fact require a departure.

In any event, such a departure request is considered wholly unnecessary given the additional offset is 10mm only and of no material impact when considered over the length of the visibility splay, it is purely to demonstrate no obstruction of the visibility splay.

Nevertheless and as requested by HCC, the relevant departure from standard form has been completed and this is enclosed.

It is evident therefore that a signalised junction is not required to ensure that safe and suitable access can be achieved to the proposed development.

The Stage 1 RSA of the proposed relocated crossing point identified a problem at the western crossing point, stating that "pedestrians crossing from a dark area could lead to sudden braking and rear end shunt collisions, or vehicle to pedestrian collisions."

The recommendation by the Auditor being that suitable lighting is provided to illuminate pedestrians.

In addition to this, the Highway Authority also requested that consideration should also be given to the effects of glare on drivers passing under the A27 bridge deck and its impact on visibility at the pedestrian crossing.

To address the issues raised in the Stage 1 RSA and by the Highway Authority, the applicant has commissioned Designs for Lighting (DFL) to undertake the necessary assessments. It is understood that the scope of works was agreed between DFL and the Highway Authority prior to the assessment being undertaken.

The assessment undertaken by DFL comprised a review of the existing street lighting provision in the area and a daytime visibility and glare assessment.

The street lighting assessment has determined that additional lighting provision is required along North Street, under the A27. Two new lighting columns are proposed, both on the western side of North Street. An existing lighting column on the eastern side of North Street will be relocated to accommodate the proposed site access. It is understood that the additional street lighting has been agreed with the relevant officers at HCC.

The purpose of the daytime visibility and glare assessment was to assess visibility and the potential for glare to occur in daylight conditions at the proposed road crossing location adjacent to the A27 underpass.

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The report concludes that the proposed crossing will:

- Be clearly visible to drivers on the approach to the crossing and from within the underpass.
- The proposed crossing location is not likely to result in unacceptable levels of glare resulting from daytime luminance levels

The full results of both lighting assessments are enclosed and address the matters raised by the Safety Auditor and Highway Authority.

The Highway Authority has also stated that the relocation of the pedestrian crossing point would result in a deviation away from the desire line for access to the northern railway station platform. This would only affect those travelling to/from the south and this premise assumes that those travelling from this direction would use the crossing point and thus any relocation further north would increase the journey distance.

However, an underpass beneath the railway line exists at the station which will allow pedestrians travelling to/from the south to access the northern platform, without having to use the relocated crossing point.

This matter was discussed with the Highway Authority during the meeting of 5th August, and the Authority asserted that this underpass was 'not used'. However, no evidence to substantiate this was put forward by the Authority.

Therefore, to determine whether or not this underpass is used, Nationwide Data Collection (NDC) were commissioned to undertake a pedestrian and cyclist survey on Tuesday 9th, Thursday 11th and Saturday 13th September 2025, for a 24 hour period on each survey day. The results of this assessment are enclosed.

A summary of the recorded pedestrian and cycle movements using the underpass is presented below:

Date	Northbound	Southbound
Tuesday 9 th September	362 pedestrians 23 cyclists	305 pedestrians 22 cyclists
Thursday 11 th September	304 pedestrians 15 cyclists	252 pedestrians 14 cyclists
Saturday 13 th September	222 pedestrians 9 cyclists	229 pedestrians 8 cyclists

The surveys show significant usage of the underpass, contrary to the assertion made by HCC during the August 5th meeting. The surveys clearly demonstrate that those accessing the railway station from the south and travelling on eastbound services will utilise the underpass. Similarly, those accessing the railway station from the north and travelling on westbound services will use the underpass.

The results of this assessment therefore show that the relocation of the pedestrian crossing point will not impact existing users. The only group of users who will be affected by the relocation of the pedestrian crossing will be future employees to the site who may arrive or depart by train. Whilst this would require these users to walk slightly further, there is a significant betterment in relocating the crossing in that commensurate visibility splays will be provided for pedestrians and cyclists which far outweighs the minor increase in walking/cycling distance.

The Highway Authority also stated that the crossing North Street is difficult given the volumes of traffic. However, the relocation will improve visibility making it easier to cross and the survey demonstrates that both pedestrians and cyclists cross North Street at present.



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A summary of the recorded pedestrian and cycle crossing movements is presented below:

Date	Eastbound	Westbound
Tuesday 9 th September	143 pedestrians 4 cyclists	47 pedestrians 1 cyclists
Thursday 11 th September	149 pedestrians 2 cyclists	36 pedestrians 0 cyclists
Saturday 13 th September	80 pedestrians 0 cyclists	32 pedestrians 0 cyclists

A signalised crossing is therefore not required to ensure safe pedestrian or cycle access to the proposed development.

Pedestrian and cycle visibility splays are shown at the proposed crossing point, in accordance with TG3, demonstrating that appropriate visibility is achievable. These plans are enclosed.

No changes are proposed for cyclists accessing Emsworth railway station. Cyclists are advised to dismount south of the site access and the existing corduroy paving will be maintained.

The Highway Authority has requested that the agreed trip rates from the nearby Downley Road scheme (LPA ref. APP/24/00606) be applied to the proposal at Interbridges. Whilst this approach does not accord with the TRICS Good Practice Guide and is considered bad practice, the agreed trip rates have been considered. These are presented in Table 1.

Morning Peak 0800 – 0900	0.460	0.241	0.701	15	8	23
Evening Peak 1700 – 1800	0.189	0.449	0.638	6	15	21

The revised trip rate is not material different to that presented to HCC previously and the resultant traffic generation would not have a material impact on the local highway network.

The capacity assessment has been updated to reflect the revised trip rates and shows that the proposed development will have no material impact on the local highway network. The full results are enclosed.

A simple priority T-junction is therefore adequate to serve the proposal.

All proposed car parking bays measure 2.4m x 4.8m which is standard. No designated 'landing area' as requested previously by the Highway Authority is required because the site layout will operate in a similar way to any other car park.

The internal road network will remain private and will not be offered for adoption.

Matters relating to the internal layout will be explored separately with the Case Officer and whether alterations are needed internally to make the development acceptable in planning terms.



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The Travel Plan has been agreed with the relevant officers from HCC.

It has been demonstrated that safe and suitable access to the proposed development can be achieved via the proposed simple priority T-junction. A signalised junction arrangement is therefore not required.

It has been demonstrated that the relocation of the pedestrian crossing point will not have a detrimental impact on existing users.

I trust the additional information set out in this letter will allow the Highway Authority to remove their current objection to the scheme and/or confirm whether any remaining comments or concerns are considered so severe as to render the proposal unacceptable, representing defensible refusal reasons in the context of paragraph 116 of the NPPF.

Yours sincerely

Matt Twinberrow BEng. MCIHT
Associate Director
(matttwinberrow@bellamyroberts.co.uk)

Enclosures:

- 1 HCC Consultation Comments (23rd May 2025)
- 2 Existing Junction Layout (6096/012)
- 3 Proposed Junction Improvements (6096/013)
- 4 Site Access (6096/001 rev. H)
- 5 Swept Path Analysis (6096/201 rev. G & 6096/204 rev. A)
- 6 Departure from Standard
- 7 DFL Lighting Assessment
- 8 NDC Pedestrian and Cycle Survey
- 9 Pedestrian and Cycle Visibility Splays (6096/002 rev. E & 6096/011 rev. E)
- 10 PICADY Analysis

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<i>Direct Line</i>	N/A	<i>Your reference</i>	APP/24/01010
<i>Date</i>	23 May 2025	<i>Email</i>	havantdc@hants.gov.uk

For attention of Mr Eaves

Dear Sirs

Re: APP/24/01010 At Interbridges Site, New Brighton Road, Emsworth

Proposed employment development, with associated access, parking, yards and Landscaping Classes B2 (General Industry), B8 (storage & distribution) and Class Ec-g

Thank you for your consultation on the additional information submitted to support the application. This includes a response to our letter dated 13 February 2025, a revised Travel Plan and a WCHAR document. The Highway Authority have reviewed the submitted information and wish to make the following comments.

Sustainable Access

In response to our comments requesting a WCHAR considering the LCWIP route along the A259 and the routes to the bus stops identified within the Transport Statement (TS), the applicant has submitted a WCHAR assessment which has been reviewed. The assessment extents are agreed to be appropriate.

The WCHAR states that a review of the LCWIP does not identify any improvements relevant to the routes assessed however this is not agreed. The following are identified:

- 277.3.8 – improvements to cycling continuity through the Horndean Road/Southleigh Road junction including potential provision of a controlled crossing
- 277.3.10 – a dutch style roundabout at the New Brighton Road/Southleigh Road junction

Deputy Chief Executive and Director of Hampshire 2050
Gary Westbrook

The WCHAR itself identifies the following deficits:

- Lack of tactile paving on the side road junctions along New Brighton Road
- Footpath obstruction by overgrown vegetation on New Brighton Road (southern end)
- Tactile paving at the New Brighton Road/Horndean Road junction
- Tactile paving at the Woodlands Avenue and the Cotton Drive junctions with Southleigh Road
- Hedgerow maintenance on Southleigh Road
- Tactile paving at the King's Terrace junction.

However, the WCHAR has not considered the infrastructure against the healthy streets assessment tools or LTN1/20 and therefore is not forthcoming with meaningful improvements beyond tactile paving provision. The Highway Authority also note that reference is made to contributions towards improving walking and cycling access to this new employment space through CIL. This is not agreed an appropriate mechanism to meet the needs of ensuring the site is accessible by all modes.

The Highway Authority do agree that the New Brighton Road/Horndean Road junction is the most directly relevant location for a contribution to be made towards given its proximity to the site. However, the Highway Authority would be seeking a more ambitious improvement to the pedestrian and cycling provision around this core junction than simply providing tactile paving.

Site Access

The Highway Authority have reviewed the comments made by the applicant in the letter dated 14 March 2025 and have the following comments to make.

Site Access

Whilst additional information has been provided on several drawings it is noted that the footprint of the site access arrangement is not consistent across the drawing pack. A consistent GA should be provided for consideration.

The Highway Authority consider that the priority arrangement shown on drawing 6090/001 Rev F would take pedestrians away from the desire line and is therefore not supported. The priority give way arrangement shown also only gives priority to those vehicles exiting the site which is not considered appropriate. Vehicles waiting at the give way line would also sit across the priority arrangement if larger than a family car. A crossing should therefore be maintained on the desire line.

The width of the bellmouth should be confirmed. The crossing distance may require provision of a refuge island to support all users.

Regarding visibility splays, the Highway Authority note the drawings and evidence provided within the letter. However, it is felt that insufficient information is presented to enable the Highway Authority to agree with the

conclusions of the consultant and to address the concerns raised within the previous response.

The relocation of the crossing point also remains a point of concern, whilst the comments are noted from the applicant. Notwithstanding the deviation away from the desire line for access to the northern train station platform, the light issues identified within the audit report and accepted by the applicant remain outstanding. The designer's response states that this can be dealt with at detailed design stage however this is not agreed.

The letter also does not set out how the impact to pedestrians and cyclists is to be addressed through the design or how the cycle infrastructure will be altered.

Additional information should be provided as follows to demonstrate whether a safe and suitable access can be achieved in the form proposed:

- A visibility assessment should be provided within the vertical plane in addition to the horizontal assessment.
- Pedestrian and cyclist visibility should be shown from the uncontrolled crossing of the major carriageway in accordance with TG3.
- Amendments to the cycle path as a result of the access and therefore revised routing for cyclists to the train station should be clearly shown.
- Consideration of the effects of glare on the drivers passing under the bridge to the north and its impact on visibility of the pedestrian crossing. Appropriate assessment and consideration should be given and put forward for review to the LHA including a glare assessment and the forward visibility to users of the crossing given the glare considerations.

Notwithstanding the points of concern around the design, crossing the B2149 is difficult given the volumes of traffic and the signals whilst providing access to the site also addressed this crossing severance issue. Given the road safety concerns a standalone signalised controlled crossing may address the issues around the need to relocate the crossing to accommodate the proposed site access. This should be considered by the applicant.

Revised tracking drawings as requested have been provided at 10mph for vehicles expected to access the site and show a refuse vehicle passing a car within the internal layout and at the site access.

Trip Generation:

The applicant has submitted the request TRICS data to the response letter. This has been reviewed, and it is noted that sites within Wales have been included and this should be removed. There are also surveys undertaken during 2020 when COVID19 restrictions were in force and therefore the surveys should be removed from the data set.

Notwithstanding the above the resulting proposed trip rates equated to 28 movements in the AM peak and 23 in the PM peak. The applicant has also

undertaken a comparison to the Downley Road trip rates demonstrating for the B2 and B8 uses the resulting trip generation put forward by the applicant is higher than if the Downley Road trip rates were used pro-rata.

The applicant sets out that the Downley Road site is forecast to generate 34 movements in the AM peak and 39 movements in the PM peak as a result of its trip generation assumptions.

Whilst the comparison work may show that the TRICS assumptions for the mixed B2/B8 use are robust the proposed development site is more open in its use than the Downley Road site. In addition, the suitability of the access form is open to more specific considerations around whether it is safe and suitable. Therefore, the TRICS work required to ensure all operational scenarios are understood is key here.

The Downley Road site showed for example that the existing trip generation would have been 70 movements in the AM peak and 63 in the PM peak if all B2 use. Therefore, demonstrating that the type of use to come forward on the development does influence the overall trip rate.

This application sites total potential uses is greater in breadth with E class uses included, therefore as requested a comparison between the uses proposed for the development should be made to ensure the trip generation presented is suitable.

Junction Assessments

The applicant has not provided any further information or discussion points around the junction assessment work.

The junction assessment work has still not been reviewed in detail, but it is not contested that a priority junction would be insufficient for the needs of the site.

Summary

Whilst the priority junction arrangement design remains a concern the amendments to design standards means the Highway Authority are minded to reconsider the position given benefits to the B2149 through traffic. However suitable evidence must be provided to address the design concerns raised within this and the previous response and appropriate provision for pedestrians and cyclists that mitigate the need to cross the access proposals and divert away from the core desire line. The Highway Authority therefore welcome further engagement with the applicant to consider whether a bellmouth arrangement can operate safely in this location.

Parking Provision

No amendments have been made to the parking provision and the letter from the applicant simply states that Havant Borough Council as Parking Authority have agreed the parking requirements. There are however design considerations raised within our previous response and the Planning Authority

should give due consideration to these design points to ensure parking is safely accessible for users within the internal layout.

Internal Road Network

The Highway Authority made observational points regarding the internal layout design within the initial response to inform the Planning Authority in their decision making. The applicant has not looked to address the design issues raised and the Planning Authority are reminded of the points noted within that response which should be given due consideration.

Visibility splays for the internal crossing point of the access road have now been provided on drawing 6096/007. These should be shown and given the boundary levels and vegetation a long section should also be provided however no long sections have been included to ensure that these can be achieved with the levels of the site, in particular towards the site access. Visibility splays have been shown for this crossing at 1.5m*25m distance in accordance with Hampshire's TG10 guidance. However internally these visibility splays are obstructed by vehicle occupying parking spaces and therefore it is considered that the crossing point is poorly located within the internal layout.

Information has not been provided by the applicant on the following matters:

- A topographical survey has been provided for the existing levels however the proposed levels should be provided on an engineering drawing of the site layout.
- A drainage strategy has also been shown however this does not cover the drainage provision for the proposed access and these details should be provided.

Travel Plan

A revised travel plan has been provided by the applicant. This has been reviewed using Hampshire County Council's (HCC's) evaluation criteria for the assessment of travel plans – "A guide to development related travel plans". There are some additional measures which should be considered for inclusion within this FTP. Some of these measures may be applicable only to residents or employees, or to both groups

- Bike services stations
- Staff feedback sessions
- Advertising TP to staff through recruitment, e.g. how to get there for interview and on the website

The total costs for the Green Travel Voucher cannot be calculated due to the staffing levels being unknown at this stage of the application.

As we need to calculate a bond or deposit based on the value of the measures in the travel plan's action plan, the next revision should include a educated estimate of the total number of staff that would likely be working in the development. The alternative is the travel plan is secured with a bond

value of 110% the cost of the travel plan within any S106 should a positive determination be made on the site, with the bond figure confirmed at the full travel plan stage.

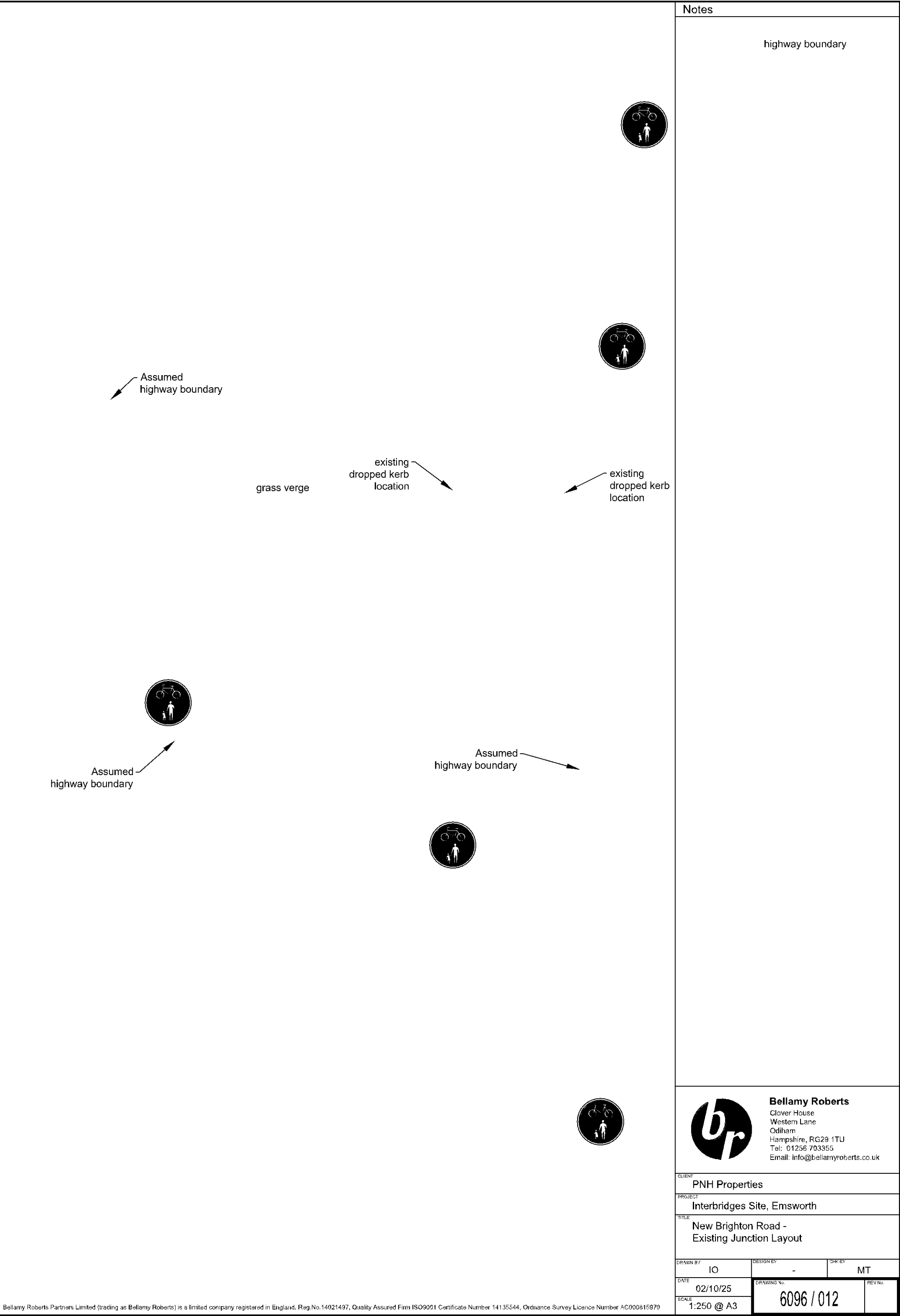
Recommendations

The Highway Authority remain concerned that the site access has not been demonstrated to be suitable in terms of operational safety and therefore would require additional information before an objection to the proposals could be withdrawn.

In the absence of the additional information and if the Planning Authority are minded to determine the application please contact me for our reasons for refusal.

Yours faithfully,

Holly Drury
Principal Transport Planner – Highways Development Planning
Hampshire 2050



Notes

highway boundary



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CLIENT PNH Properties		
PROJECT Interbridges Site, Emsworth		
TITLE New Brighton Road - Existing Junction Layout		
DRAWN BY IO	DESIGN BY -	CHECK BY MT
DATE 02/10/25	DRAWING No. 6096 / 012	
SCALE 1:250 @ A3	REV No.	

Notes

highway boundary



Assumed
highway boundary

grass verge

existing
dropped kerb
location

existing
dropped kerb
location

2.33ex

DK

2.4



Assumed
highway boundary

Assumed
highway boundary



DK



2.54ex

proposed dropped kerb
location



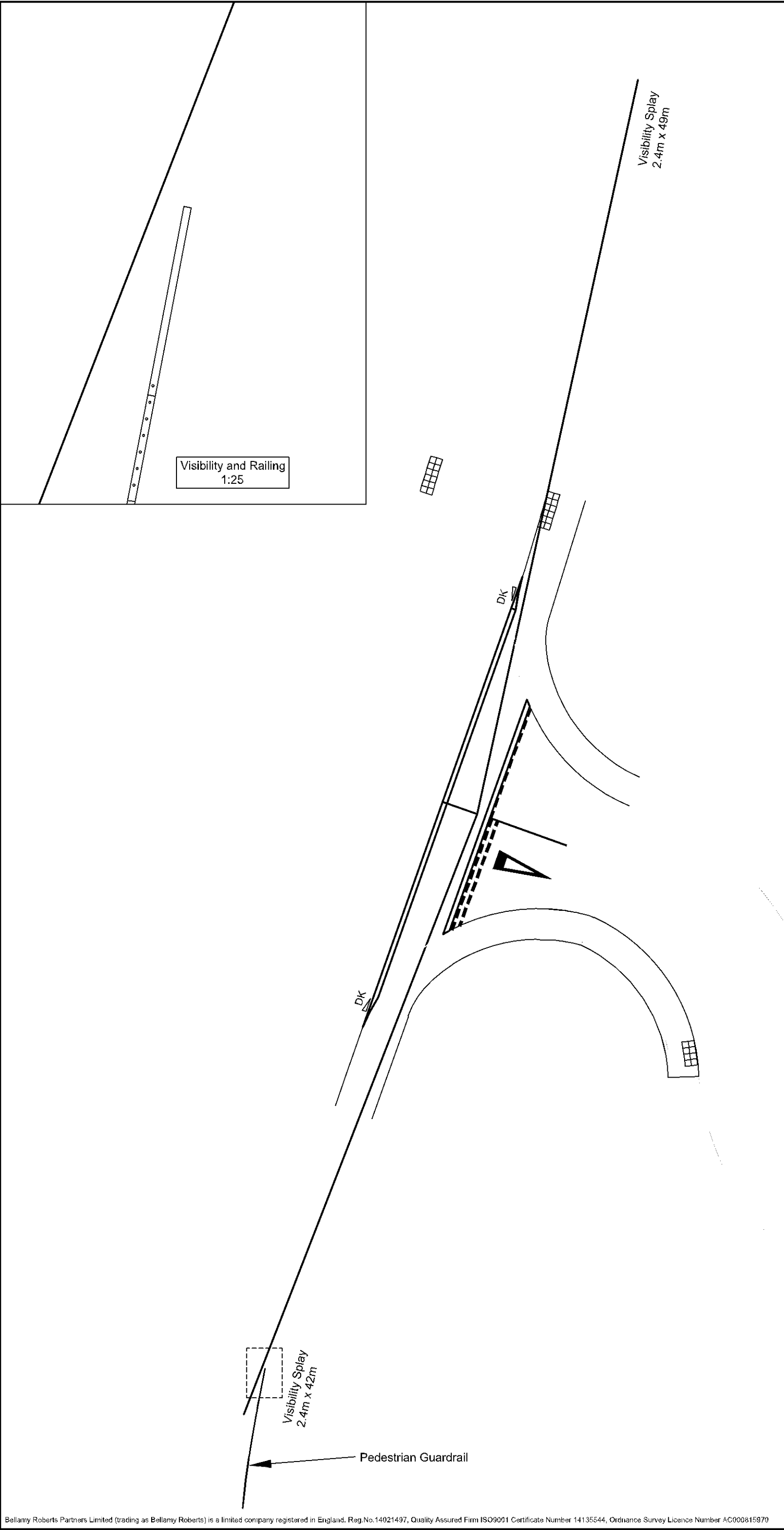
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CLIENT
PNH Properties

PROJECT
Interbridges Site, Emsworth

TITLE
New Brighton Road -
Proposed Junction Layout

DRAWN BY IO	DESIGNED BY -	CHECKED BY MT
DATE 07/10/25	DRAWING No. 6096 / 013	REV No.
SCALE 1:250 @ A3		



Notes

Highway boundary

Visibility taken to 300mm offset north, and 500mm offset south from kerbs

Speeds -
Northbound: 29.5mph
Southbound: 33mph

H	Footway crossing updated	MB	10/09/25	MT
G	Visibility updated	MB	24/09/25	MT
F	Visibility and plan updated	MB	11/03/25	MT
E	Access and visibility updated	MB	22/11/24	MT
D	Red line boundary added	MB	22/11/24	MT
C	Site updated	MB	10/11/24	MT
B	Site and access updated	MB	03/07/24	MT
A	Site and access updated	MB	28/06/24	MT
REVISION	AMENDMENT	DRN	DATE	CHK

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CLIENT

PNH Properties

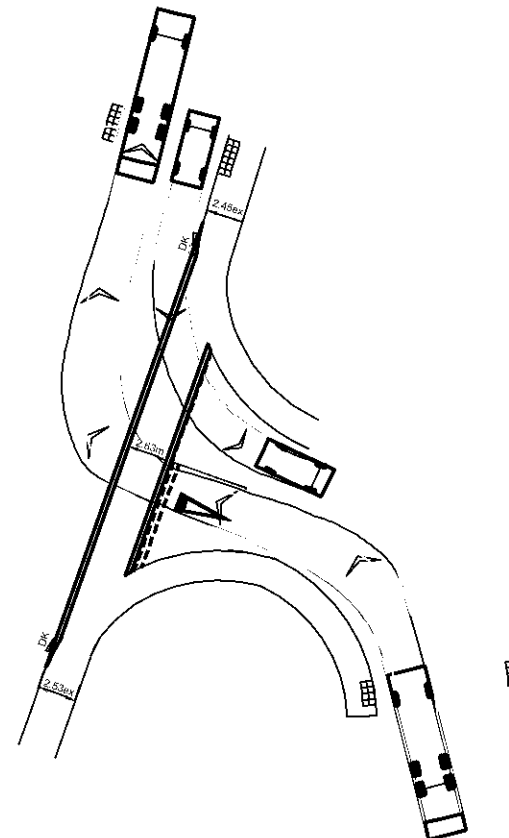
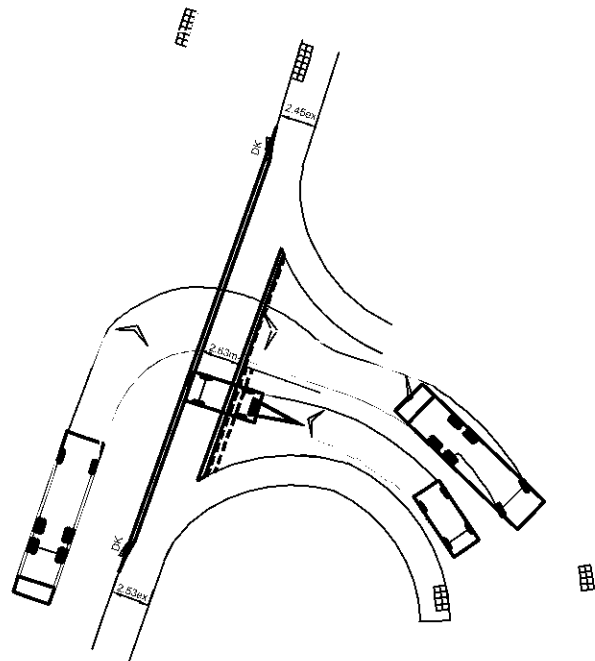
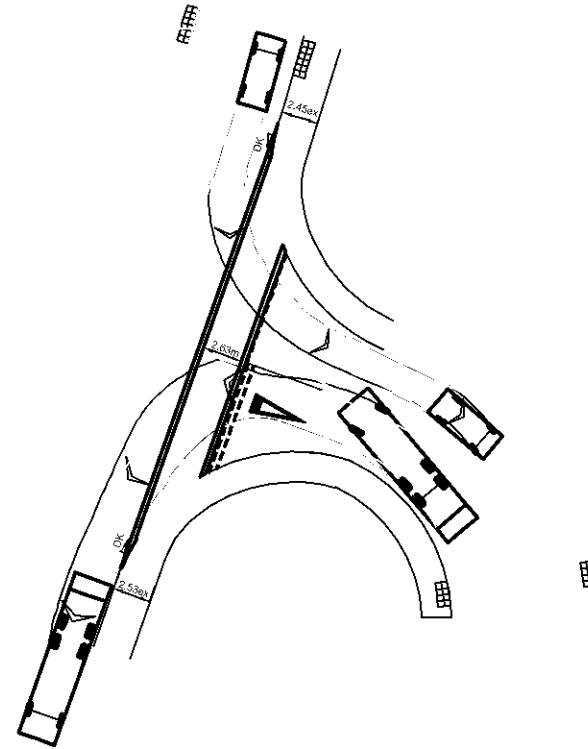
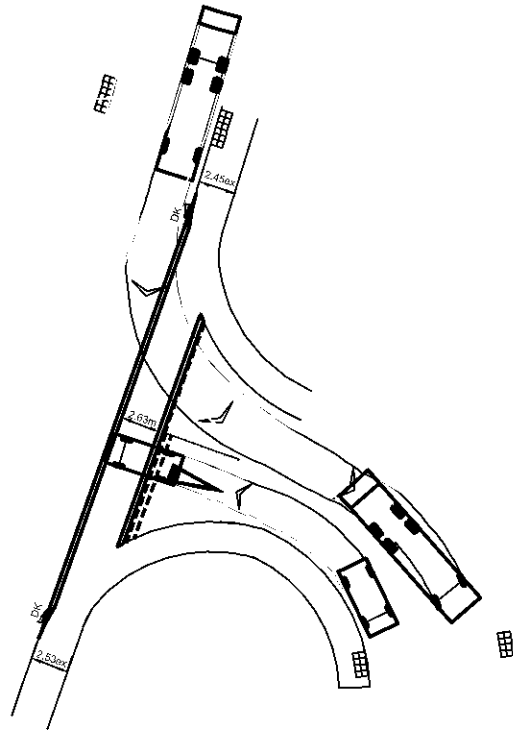
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Interbridges Site, Emsworth

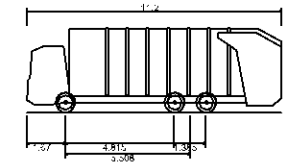
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Access and Visibility

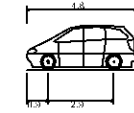
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DATE	DRAWING No.	REV No.
23/05/24	6096 / 001	H
SCALE		
1:250 @ A3		



Notes



Phoenix 2 Duo (P2-15W with Elite 6x4 chassis)
Overall Length 11.200m
Overall Width 2.530m
Overall Body Height 3.751m
Min Body Ground Clearance 0.304m
Track Width 2.500m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 9.500m



Standard Design Vehicle (SDV)
Overall Length 4.800m
Overall Width 2.000m
Overall Body Height 1.950m
Min Body Ground Clearance 0.100m
Track Width 2.000m
Lock to lock time 4.00s
Wall to Wall Turning Radius 5.000m

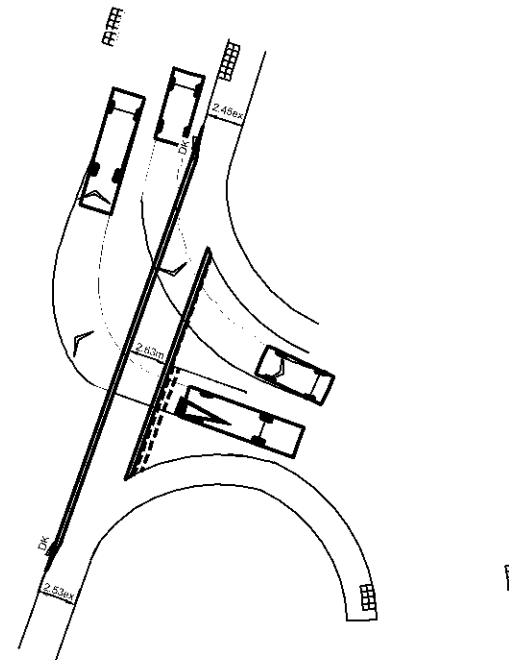
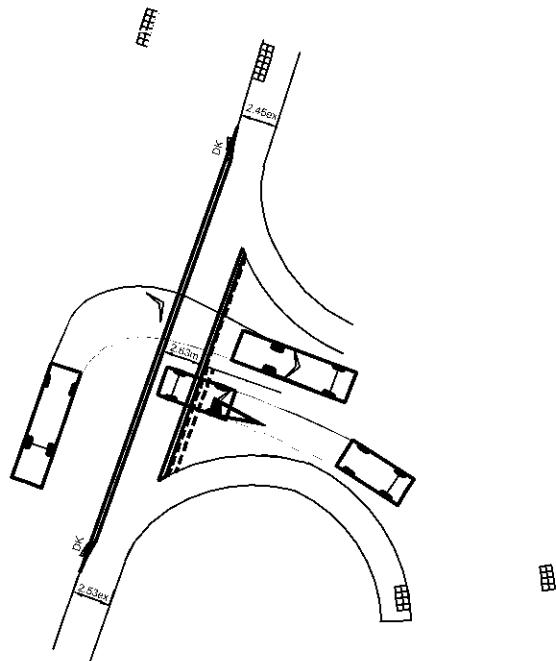
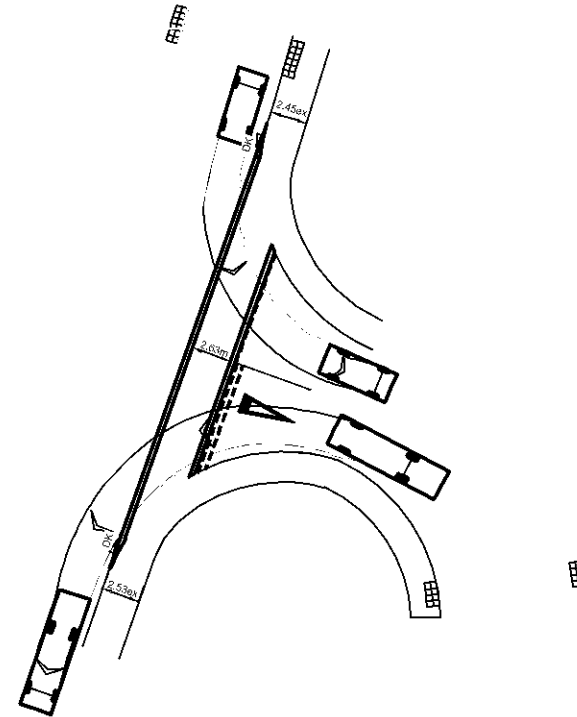
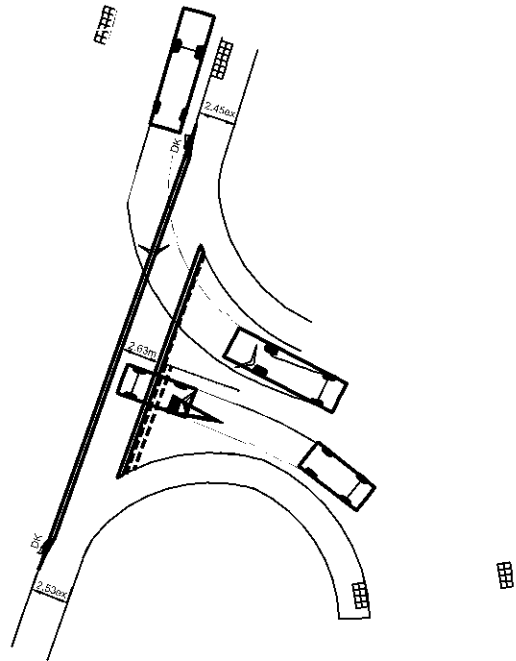
Tracking Speed: 10mph

G	Access updated	IO	MT
F	Tracking updated	MB	MT
E	Site and tracking updated	MB	MT
D	Site updated	MB	MT
C	Site and tracking updated	MB	MT
B	Site and tracking updated	MB	MT
A	Site and tracking updated	MB	MT
REVISION	AMENDMENT	DRN	CHK

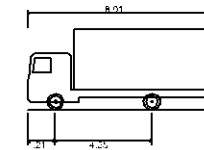
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CLIENT
PNH Properties
PROJECT
Interbridges Site, Emsworth
TITLE
Refuse Access Tracking

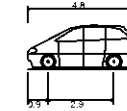
DRAWN BY MB	DESIGN BY -	CHK BY MT
DATE 24/05/24	DRAWING No. 6096 / 201	RFV No. G
SCALE 1:500 @ A3		



Notes



7.5t Box Van
Overall Length 8.01m
Overall Width 2.100m
Overall Body Height 3.556m
Min Body Ground Clearance 0.351m
Track Width 2.054m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 7.400m



Standard Design Vehicle (SDV)
Overall Length 4.800m
Overall Width 2.000m
Overall Body Height 1.950m
Min Body Ground Clearance 0.100m
Track Width 2.000m
Lock to lock time 4.00s
Wall to Wall Turning Radius 6.000m

Tracking Speed: 10mph

REVISION	AMENDMENT	NO	DATE	CHK	MT
A	Access updated				



Bellamy Roberts
Clover House
Western Lane
Odiham
Hampshire, RG29 1TU
Tel: 01256 703355
Email: info@bellamyroberts.co.uk

CLIENT		
PNH Properties		
PROJECT		
Interbridges Site, Emsworth		
TITLE		
7.5t Delivery Vehicle Access Tracking		
DRAWN BY	DESIGN BY	CHK BY
MB	-	MT
DATE	DRAWING No.	RFV No.
12/03/25	6096 / 204	A
SCALE		
1:500 @ A3		



Submission for a Departure from Standard

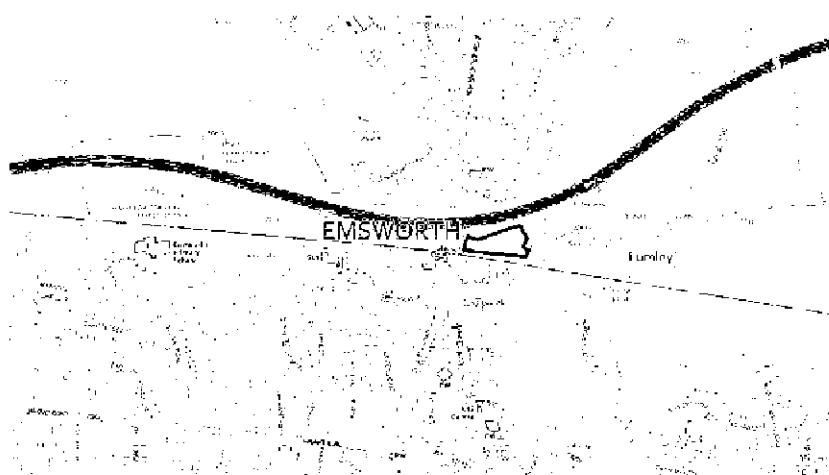
**ONLY SUBMIT AS A WORD DOCUMENT – THE FILE WILL BE CONVERTED TO PDF ONLY UPON FINAL DECISION.
PLEASE SUBMIT ONE FORM FOR ONE DEPARTURE FROM STANDARDS ONLY.**

Project Name:	Interbridges, New Brighton Road, Emsworth
Project Ref:	BR/6096
HCC DfS list Reference:	
Client / Developer Details:	PNH Properties
	Andy Williams
	Unit 5, Passfield Business Centre, Lynchborough Road, Liphook, GU30 7SB
Consultant / Designer Details:	Bellamy Roberts
	Matt Twinberrow
	Suite 5, Brightwater House, Market Place, Ringwood, BH24 1AP
Date Submitted:	15 th October 2025

Scheme Details

Site Location

The site is located on land to the east of North Street between the A27 (to the north) and railway line (to the south). A site location plan is provided below.



Description of Scheme

The scheme is for a new simple priority T-junction serving a commercial development.

Accident Data

Collision data has been obtained from Hampshire Constabulary which shows no collisions occurred at or near the proposed access.

Speed Limit	30mph	85%ile Speed	33mph southbound & 29.5mph northbound
--------------------	--------------	---------------------	--

Details of the Departure

Relevant Standard(s) and Clause(s)

TG3 – paragraph 3.3.3

"The point to which the Y distance is measured should be to the channel line as shown in Figure 3.2. This may be relaxed to the wheel track (a maximum of 300mm from the channel)".

Details of Departure from Standard

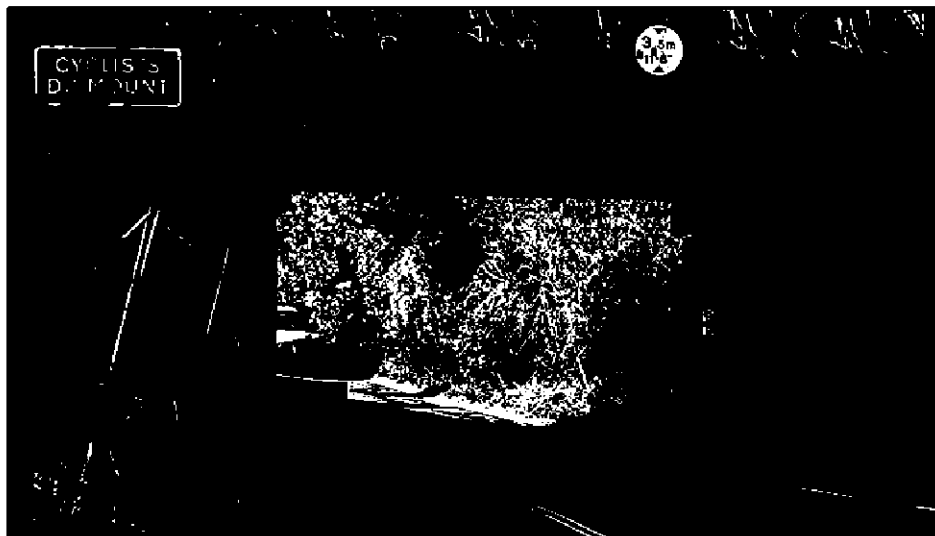
The visibility splay to the south requires an offset of 310mm to avoid a pedestrian guard rail.

Reason for Departure

To ensure commensurate visibility is achieved to the south of the proposed access.

Visibility Splays considerations

A photograph from the location of the proposed site access, looking south is provided below:



Related Departures:

NA



Detail any Relaxations in the area of the Departure:

The relaxation is 10mm from the quoted standard of 300mm.

Justification for Departure (include positive and negative impacts)

Consultants Mitigation

No mitigation is proposed.

Safety

The scheme has been subject to a Stage 1 RSA and no comments were raised on the visibility splay in this direction.

Environmental/Sustainability:

NA

Accessibility:

NA

Maintenance:

NA

Construction Programme:

NA

Cost:

NA

List of included documents and drawings

Departure Request Review (Office Use only)



S278/S38 Design Auditor's Comments & Recommendations

Name:

Signed:

Job Title:

Date:

Chief Highways Engineer Comments

Name:

Signed:

Job Title:

Date:

Departure State

(X as appropriate)

Approved

Approved with comments

Declined



INTERBRIDGES, NORTH ST

DESIGN SUMMARY

DFL-UK

17 City Business Centre, Hyde Street, Winchester, SO23 7TA
+44(0)1962 855080 | info@dfi-uk.com | www.dfi-uk.com



PROJECT NUMBER: 3447	DOCUMENT REF: 3477-DFL-HLG-XX-RP-EO-13002
----------------------	---

P01	First Issue	AC	DS	AL	10/09/2025
Revision	Purpose Description	Originated	Checked	Approved	Date

Designs for Lighting (DFL) is a business built on successfully collaborating with our clients. We have over 20 years proven experience in our industry, listening to the challenges our clients face, developing the best solutions and being innovators in our specialism. Our role is to find the most effective and sustainable outcome to enhance and support your projects. We proudly work with recognised industry bodies to promote and shape the future of the industry and ensure our staff are trained to exceed the required competency levels of our industries. Above all, we ensure each project delivers against our values.



Quality



Knowledgeable



Dependable



Clear Advice

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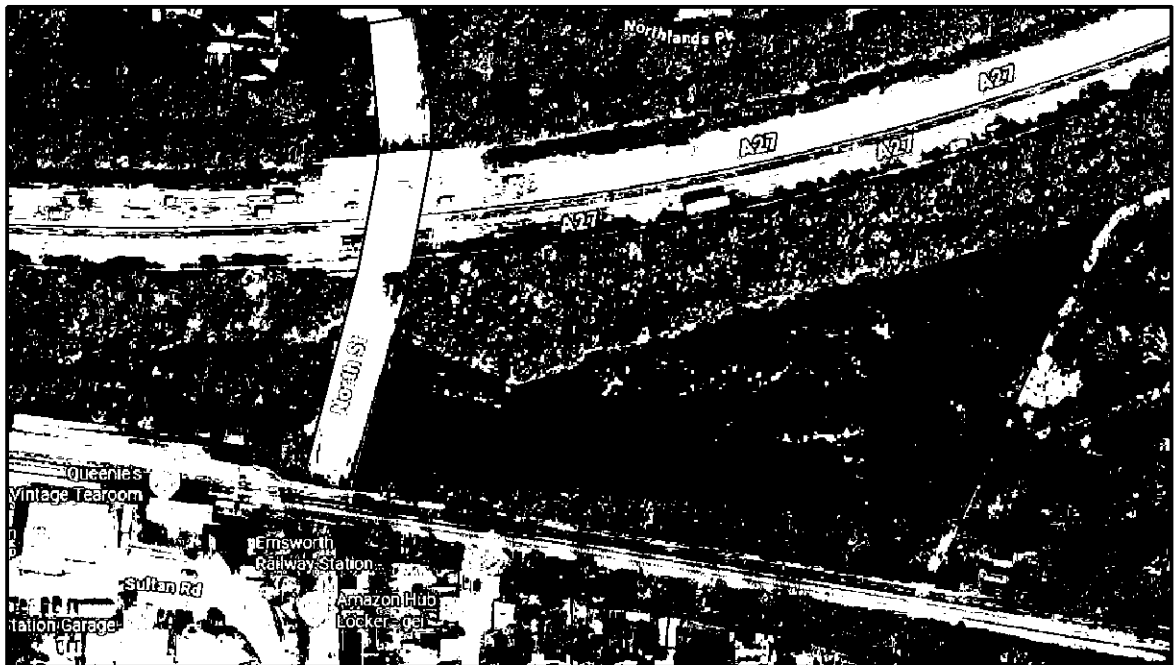
1. INTRODUCTION

1.1. Scope of Works

- 1.1.1. DFL have been asked to review the existing lighting along North Street, outside of the new proposed development, and propose new lighting to comply with British Standards.

1.2. Site Description and Context

- 1.2.1. North street is a primary access road stretching from Rowlands Castle / Leigh Park into Emsworth, that passes underneath the A27 and the railway line. North Street also provides pedestrian access to Emsworth Train station. Please refer to figure 1 for an overview of the site.



2. LOCAL POLICIES

2.1. Introduction

- 2.1.1. The relevant Local Highway Authority (LHA) for the Application Site is Hampshire County Council (HCC). Hampshire County Council have published an adoptable specification for lighting systems as detailed in the documents:

> [TG13 Technical Guidance Note Streetlighting-REV 5.pdf](#)

3. BRITISH STANDARDS

3.1. BS 5489-1:2020 - Lighting of Roads and Public Amenity Areas - Code of practice.

- 3.1.1. This standard gives recommendations on the general principles of road lighting, its aesthetics and technical aspects and provides guidance on operational maintenance. It also provides guidance on means of minimizing energy consumption and limiting the impacts on the environment and adjacent properties.

3.2. BS EN 13201-2:2015 - Road lighting. Performance requirements.

- 3.2.1. This British and European standard defines the performance requirements specified as lighting classes for road lighting aiming at the visual needs of the road users, as well as the consideration of the environmental aspects of the road lighting to be applied.

4. GUIDANCE

4.1. Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals GN01:2021)

- 4.1.1. The Lighting Strategy and this Lighting Impact Assessment is informed by industry guidance notes which aim to reduce the potential for obtrusive light to occur, which is typically caused by poorly designed and installed exterior artificial lighting. The Lighting Strategy and this Lighting Impact Assessment is informed by the most relevant sections of GN01:2021 that has recently been published to reduce the potential for obtrusive light from a wide range of exterior lighting applications.

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA Dark Sky Parks.
E1	Natural	Intrinsically dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, etc.
E2	Rural	Low district brightness (SQM ~ 15 to 20)	Sparsely inhabited rural areas, Village or relatively dark outer suburban locations.
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres or suburban locations.
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity.

Environmental Zones	Sky Glow ULR ¹ (Max %)	Light Trespass (Into Windows) E _v (lux)	Building Luminance Average, Pre-curfew
E0	0	0	0
E1	0	2	0 (1*)
E2	2.5	5	1
E3	5	10	2
E4	15	25	5

¹ ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.

² Curfew refers to a time when the local planning authority has agreed that the lighting installation should be switched off; this typically refers to 23h00 – 07h00

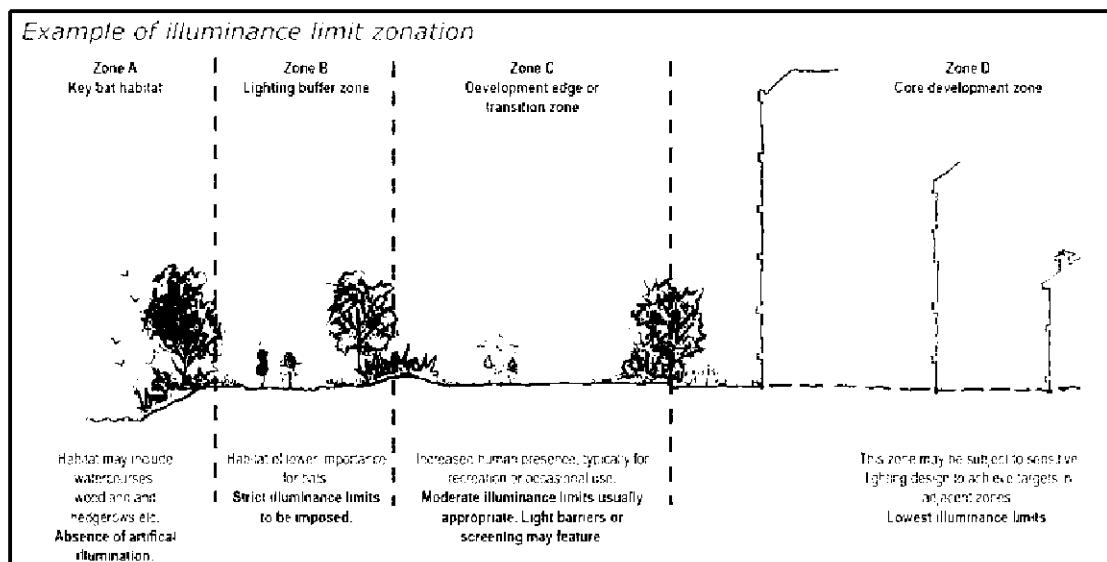
4.2. GN08:2023 Bats and Artificial Lighting in the UK – Bat Conservation Trust and Institution of Lighting Professionals

- 4.2.1. This document is aimed at lighting professionals, lighting designers, planning officers, developers, bat workers/ecologists and anyone specifying lighting. It is intended to raise awareness of the impacts of artificial lighting on bats, and mitigation is suggested for various scenarios. However, it is not meant to replace site-specific ecological and lighting assessments, which states the following.

"It is acknowledged that, especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero. Consequently, where 'complete darkness' on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane. These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light adverse behaviour (Stone, 2012)."

"A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component."

"A buffer zone subdivided to into smaller zones of increasing illuminance limit further away from the Supporting Habitat would ensure light levels (illuminance - measured in lux) do not exceed certain defined limits. This has the effect of a gradual decrease in lighting from the developed zone, rather than a distinct cut-off, which may provide useable area for the project which also limits lighting impacts on less sensitive species, or less well-used habitat." (see Figure 2).



5. DESKTOP ASSESSMENT

5.1. Site Description and Context

- 5.1.1. North street is a primary access road stretching from Rowlands Castle / Leigh Park into Emsworth, that passes underneath the A27 and the railway line. There is a proposal to relocate a pedestrian crossing on North Street, outside of the proposed new development. North Street provides pedestrian access to Emsworth Train station.

5.2. Environmental Zone Classification

- 5.2.1. The Environmental Zone criteria detailed within Table 1 and Table 2 informs the basis of the Lighting Impact Assessment.
- 5.2.2. The Application Site is considered to be located within an E3 environmental zone. This is because of the Application Sites location within a well inhabited rural area.
- 5.2.3. The lighting classes used within the Proposed Development, and the limitation placed on the lighting in terms of its environmental effect, is informed by the requirements for an E3 environmental zone (Table 3).

Zone	Surrounding	Examples	Limitations		Sky Glow ULR (Max)
			Pre-curfew	Post-curfew	
E3	Suburban	Well inhabited rural and urban settlements, small town centres or suburban locations.	10	2	5%

6. LIGHTING STRATEGY

6.1. Summary

- 6.1.1. Lighting will be of an appropriate specification and designed in accordance with British Standards.
- 6.1.2. Lighting in adopted areas will be required in the following application areas:
 - North Street (including the underpass)

6.2. Residential Road(s)

6.2.1. The lighting class can be seen within Table 4 below. This is derived from BS5489-1:2020 Table A.5, the performance requirements for which are based on BS EN 13201-2:2015.

Road	Environmental Zone	Traffic Flow	Speed Limit / Pedestrianised	Standard Lighting Class	Risk Assessment	Design Class
North Street	E3	Busy	≤30 mph	P3	No Change	P3

6.2.2. Following a risk assessment, the lighting class will remain as recommended in BS 5489-1:2020.

7. SUMMARY OF RESULTS

7.1. Design

- 7.1.1. As demonstrated in lighting calculation 3477-DFL-HLG-XX-CA-EO-13002, the following results have been achieved (Table 5). Where grids are non-compliant, the reason for non-compliance/departure from standard has been given.

Calculation Grid Ref	Compliant?	Non-compliance / Departures from Standards
Grid 1 – Class P3	✓	

8. LIGHTING DESIGN

8.1. Overview

- 8.1.1. The equipment to be used has been chosen in accordance with Hampshire County Council document TG13 Technical Guidance Note Streetlighting-REV 5.pdf
- 8.1.2. Raise and lower type columns have been proposed for LC01 & LC02. This is to aid in the installation and maintenance of the lighting columns.
- 8.1.3. 3m Columns have been specified within the underpass. During a site survey, the clearance of the underpass has been measured, and the heights are detailed on the drawings.
- 8.1.4. Flanged mounted columns have been specified within the underpass, this is to allow ease of installation. A 3m flanged mounted column will not require any extra length to account for the column's foundation. With the height restrictions of the overpass, a flanged mounted column will be required to allow installation of the column.
- 8.1.5. Two columns have been specified within the underpass to help reduce glare. The use of two columns allows the use of lower intensity luminaires and avoiding the need to tilt the luminaires, whilst still attaining a P3 lighting class.
- 8.1.6. The luminaires specified have been chosen because of their low I_{max} 70 value. The benefits of using a luminaire with lower I_{max} 70 values is a reduction in the risk of glare to oncoming motorists, which could restrict their view to pedestrians using the crossing. Using a luminaire with a higher I_{max} 70 value, would risk more glare to oncoming traffic, potentially reducing the visibility of pedestrians using the crossing.

8.2. Colour Temperature

- 8.2.1. The colour temperature chosen is 4000K, in keeping with TG13 Technical Guidance Note.

8.3. Column Locations (setbacks, clearances and clear zones)

- 8.3.1. Where possible, proposed columns have been designed at the rear of the footway at a minimum of 800mm from the face of the kerb to the leading edge of the column. In areas where columns cannot be placed at the rear of footways, they have been placed in other suitable locations.

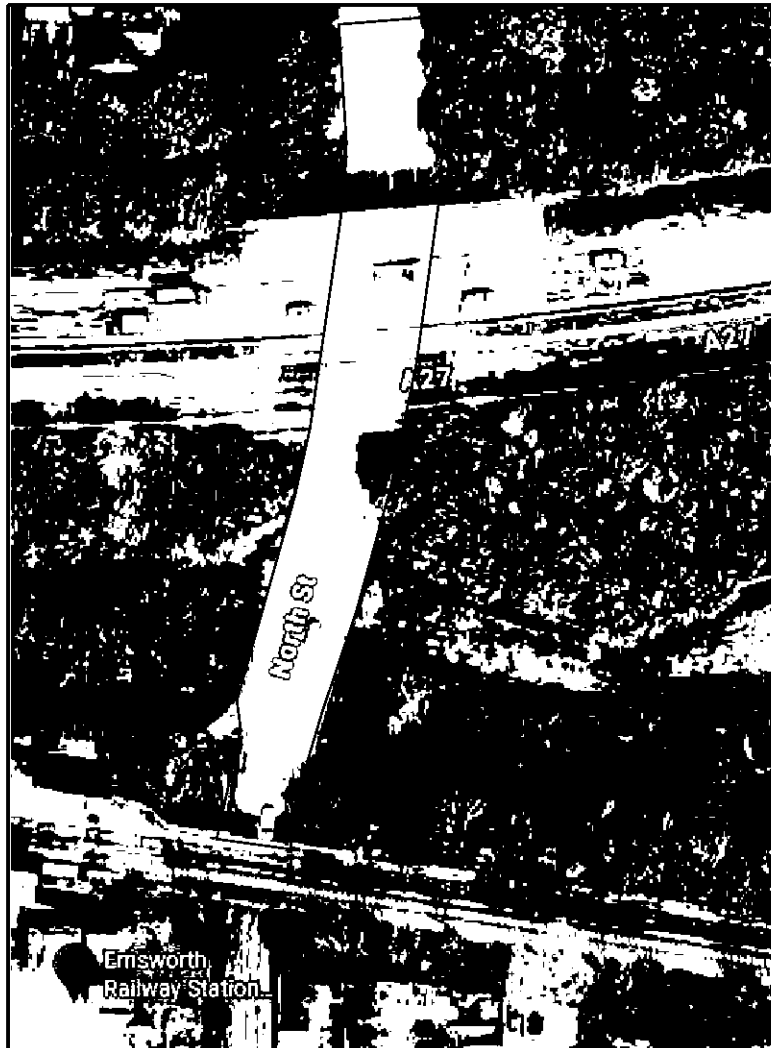
8.4. Supply

- 8.4.1. All new columns will be connected via the DNO (UKPN) low voltage mains network.

8.5. Maintenance Factors

- 8.5.1. Hampshire County Council have published guidance on the overall maintenance factor, derived from BS5489 methodology. This can be found in Hampshire County Councils TG13 Technical Guidance Note Streetlighting-REV 5.pdf document, under section 3.14. Maintenance factors (new equipment) & 3.15. Maintenance factors (legacy luminaires).

APPENDIX 1 – LIGHTING CLASS MAP



Lighting Colours

Colour Coding

P3

TECHNICAL DESCRIPTIONS, DEFINITIONS & ABBREVIATIONS

PHAR: is an abbreviation for a potential human amenity receptor, a location where an observer could have the potential to be affected by the proposed lighting to be installed

PSER: is an abbreviation for an area identified as or treated as a location that may host a potentially sensitive ecological receptor. This is generally used where light sensitive bats have the potential to live, forage or use as a flight path, other ecologically sensitive receptors such as (but not limited to) the Great Crested Newt may also be identified by this term.

PSR: is an abbreviation for an area where an individual maybe susceptible to light brightness (Light intensity) which may have the potential to cause a hazardous situation.

Obtrusive Light: refers to excessive or bothersome artificial light that goes where it shouldn't, causing discomfort and disruption.

Sky glow: When lights are directed upwards or light is scattered by particles in the air, like dust or water droplets, it creates a glow that makes it hard to see stars.

Vertical Illuminance: is how much light lands on upright surfaces like walls. It's measured in lux or footcandles and matters for places where the view from a vertical angle is important.

Correlated colour temperature (CCT): the appearance of light emitted by a light source measured in Kelvin (K), Lower CCT values such as 2700K represent warmer, more yellowish light,

Lux: measures the brightness of light as perceived by the human eye at a specific point on a surface.

Lumens: measure how bright a light appears to our eyes.

Glare: refers to an excess of bright light that makes you uncomfortable or hinders your vision. It happens when there's a big difference between a bright light and the rest of the surroundings.

Luminous intensity: is light brightness or how intense the light source is. light intensity is how intense a light source is emitted or received in a particular direction, this is measured candelas and is termed as luminous intensity

Candela: is a measurement for the brightness of a light source, taking into account the direction in which the light is emitted.

Uniformity (Uo): is an explanation for the even distribution of light across an area or surface

Luminance: is how bright a surface appears to our eyes. It considers the light coming from or reflected by an object.

Illuminance is how much light lands on a surface per square meter. It's measured in lux. More lux means a brighter area.

Luminaire: a light fixture, this is also sometimes referred to as a lantern or a light fitting, is a product that produces artificial light

ULOR: upward light output ratio or ULOR refers to the amount of light the light fixture will produce upwards as a percentage of its total light output.

Maintenance factor (MF): is an allowance for how well the lights keep working overtime. It considers things like dirt on the light fittings and "wear and tear".

...solution for what you need today. We also have the solutions you might need tomorrow. We have dedicated teams that deliver.

- **Designing Impact and Planning** teams that focus on delivering the right lighting solutions to support planning.
- **Residential** teams that cover all aspects of new and existing private, section 38 and section 278 design.
- **Public Realm** teams that are experts in creating spaces and opportunity for people.
- **Electrical** teams – we know what it's like to be up to it as well! Additionally, with the EV market rapidly expanding, make sure you have the right EV charging solutions might not live up to expectations.
- **Street** teams that bring Lighting and Electrical expertise for complex transport projects.

...help when you know what you want but you need someone to help you get there.

...might be facing something bespoke or niche. Don't worry – we might have the solution. Feel free to get in touch!

THE POWER OF MAKING IT WORK



Aaron Cockram
Lighting Technician



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www.dfi-uk.com/



17/18 City Business Centre, Hyde
Street, Winchester, Hampshire,
SO23 7TA

DATE: 9 September 2025
DESIGNER: DFL-UK
PROJECT No: 3477-DFL-ELG-XX-CA-EO-13001
PROJECT NAME: Interbridges, North St Emsworth Existing



Lighting Calculations to assess the suitability of the existing lighting on North Street, Emsworth for the repositioning of the road crossing to adjacent to the A27 underpass.

The existing lighting asset information is used as provided by Hampshire County Council Street Lighting. The existing lighting assets on Northstreet have been identified as:
"8 METRE NOMINAL HEIGHT POST TOP TUBULAR STEEL LIGHTING COLUMN, COMPLETE WITH POST TOP MOUNTED LANTERN. [PHILIPS SGS253 FITTED WITH 100W SON WITH 5 DEGREE TILT (OPTICAL SETTING P5)]."

A MF of 0.88 has been used as per TG13 - Street Lighting Technical Guidance Note 3.15.1

All lighting installations and equipment to be to Hampshire county council adoptable standards.

3477-DFL-ELG-XX-CA-EO-13001-S3-P01

PREPARED BY: Aaron Cockram
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Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	North Street - Existing Li...	1447.10	1281.27	30.00	120.00	1.50	1.50
2	Proposed Crossing Horizont...	1469.42	1334.13	12.21	4.40	0.49	0.49
3	Existing Crossing Horizont...	1459.54	1304.84	12.09	4.40	0.50	0.49

Luminaires

Luminaire A Data

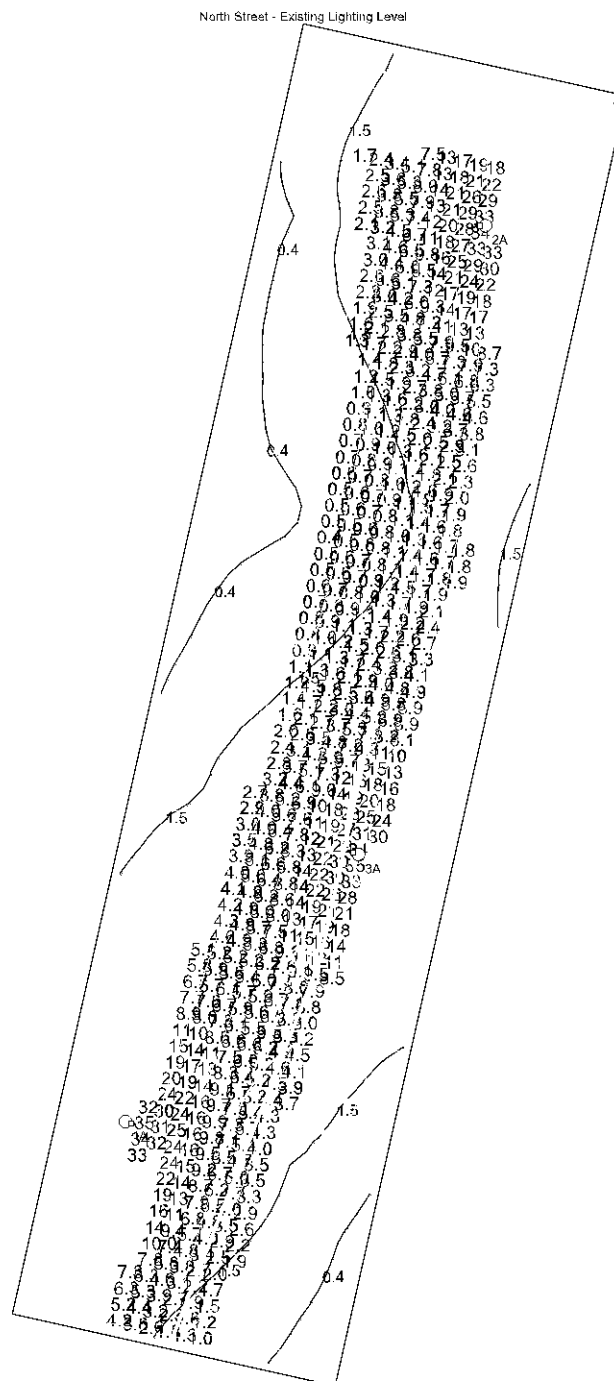
Supplier	
Type	SGS252 GB OR P5X
Lamp(s)	SON-TTP100W
LampFlux(klm)/Colour	10.70 -I
File Name	SGS252 GB 1xSON-TTP100W OR P5X.lgt
Maintenance Factor	0.86
Imax70,80,90(cd/klm)	368.5, 100.3, 1.7
No. in Project	3

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	1457.31	1298.71	8.00	345.00	5.00	0.00	0.53			
2	A	1490.00	1380.03	8.00	178.00	5.00	0.00	0.53			
3	A	1478.47	1322.96	8.00	160.00	5.00	0.00	0.53			

Horizontal Illuminance (lux)

North Street - Existing Lighting Level



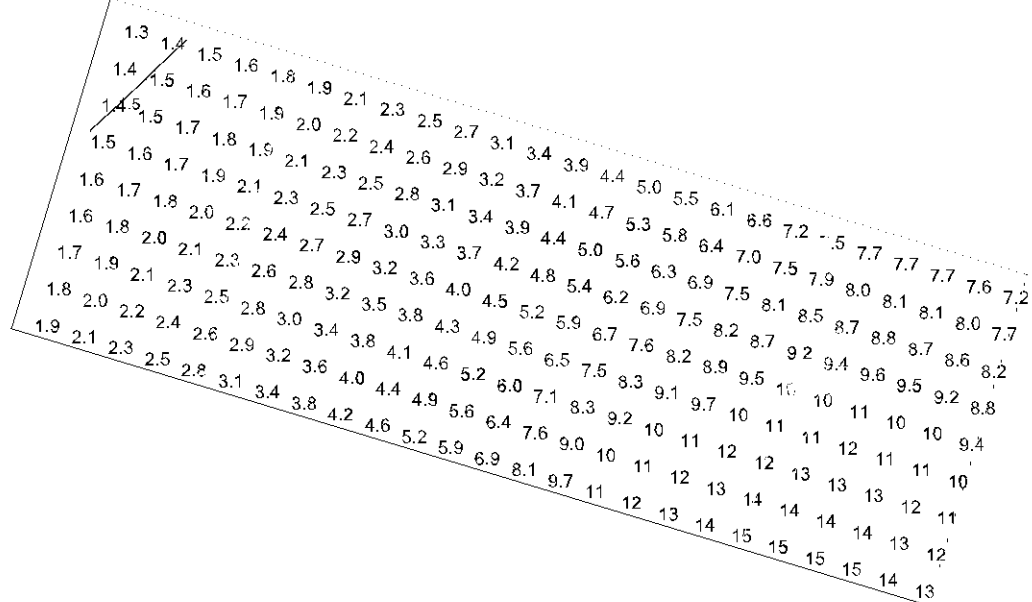
Results

Eav	7.62
Emin	0.45
Emax	34.96
Emin/Emax	0.01
Emin/Eav	0.06

Horizontal Illuminance (lux)

Proposed Crossing Horizontal Existing Lighting Level

Proposed Crossing Horizontal Existing Lighting Level



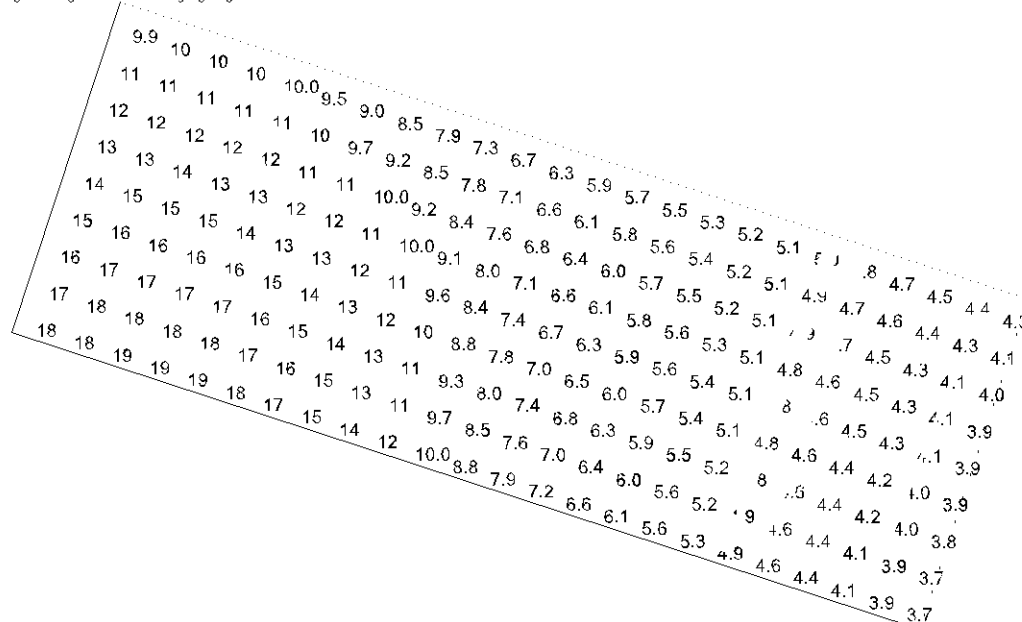
Results

Eav	6.03
Emin	1.32
Emax	15.50
Emin/Emax	0.09
Emin/Eav	0.22

Horizontal Illuminance (lux)

Existing Crossing Horizontal Existing Lighting Levels

Existing Crossing Horizontal Existing Lighting Levels



Results

Eav	8.68
Emin	3.68
Emax	19.41
Emin/Emax	0.19
Emin/Eav	0.42

DATE: 9 September 2025
DESIGNER: DFL-UK
PROJECT No: 3477
PROJECT NAME: Interbridges, North St Emsworth Proposed



Lighting Calculations are provided to assess a proposed solution for the lighting of North Street to account for the proposed new access and the repositioning of the existing uncontrolled crossing.

Location: North Street Emsworth

Environmental Zone: E3

Design Class: P3

Eav: 7.50 - 11.25 Lux - Emin: 1.50 Lux

Lighting classes as per BS5489-1:2020, the lighting levels for which are taken from EN 13201-2:2015

A MF of 0.85 is used for LED Luminaires & A MF of 0.88 is used for 100" SONT as per TG13 - Street Lighting Technical Guidance Notes section 3.14.1.

All lighting designs are subject to a full design brief to be requested from Hampshire County Council street lighting to determine lighting classes and specification of equipment.

The lighting layout and associated elements are subject to change and are shown for illustrative context only.

3477-DFL-ELG-XX-CA-EO-13002-S3-P01

PREPARED BY: Aaron Cockram
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SO23 7TA
e-mail: aaron.cockram@dfi-uk.com
website: www.dfi-uk.com

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	North Street - Proposed Li...	1447.10	1281.27	30.00	120.00	1.50	1.50
2	Proposed Crossing Horizont...	1469.42	1334.13	12.21	4.40	0.49	0.49

Luminaires

Luminaire A Data

Supplier	
Type	SGS252 PC OR P5X
Lamp(s)	SON-TPP100W
LampFlux(klm)/Colour	10.70 -I
File Name	SGS252 PC 1xSON-TPP100W OR P5X.lgt
Maintenance Factor	0.88
Imax70,80,90(cd/klm)	353.4, 92.0, 5.0
No. in Project	2

Luminaire B Data

Supplier	Urbis Schroder
Type	AXIA 3.1 5294 Integrated lenses 16 OSLO
Lamp(s)	SQUARE GIANT@870mA
LampFlux(klm)/Colour	16 OSLO SQUARE GIANT@870mA NW 74
File Name	0 230V
Maintenance Factor	5.67 NW 4000K/70
Imax70,80,90(cd/klm)	AXIA 3.1 5294 16 OSLO SQUARE GIANT 8
No. in Project	70mA NW 740 44W 435812 Integrated lense...

Luminaire C Data

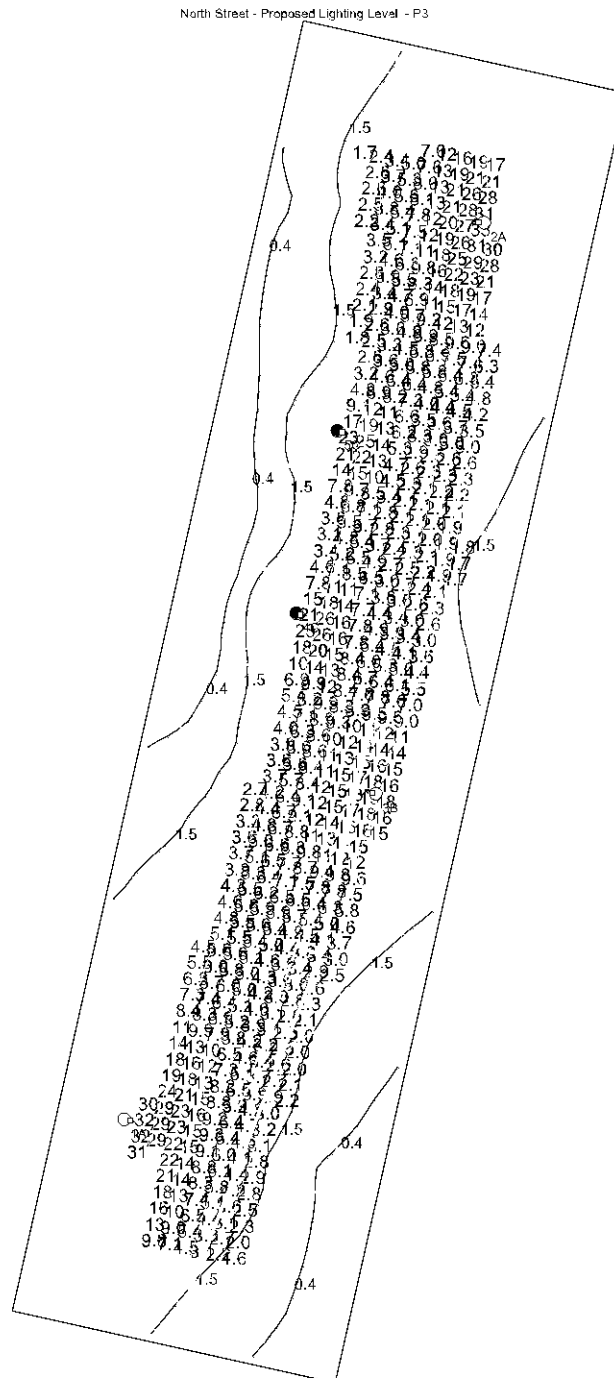
Supplier	Urbis Schroder
Type	AXIA 3.1 5294 Integrated lenses 8 OSLO
Lamp(s)	SQUARE GIANT@300mA
LampFlux(klm)/Colour	8 OSLO SQUARE GIANT@300mA NW 740
File Name	230V
Maintenance Factor	1.14 NW 4000K/70
Imax70,80,90(cd/klm)	AXIA 3.1 5294 8 OSLO SQUARE GIANT 30
No. in Project	0mA NW 740 8.3W 435812 Integrated lenses...

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	1457.20	1298.69	8.00	345.00	5.00	0.00	0.53			
2	A	1489.89	1380.05	8.00	174.00	5.00	0.00	0.53			
3	B	1480.06	1328.21	8.00	162.00	0.00	0.00	0.40			
4	C	1472.82	1344.60	3.00	344.00	0.00	0.00	0.40			
5	C	1476.58	1361.15	3.00	342.00	0.00	0.00	0.40			

Horizontal Illuminance (lux)

North Street - Proposed Lighting Level - P3



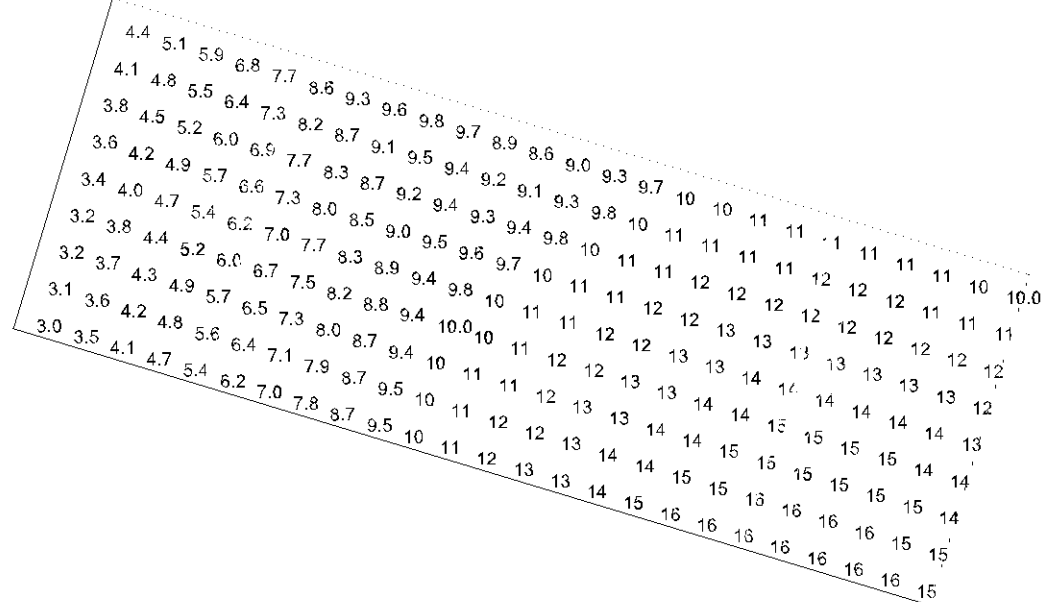
Results

Eav	8.50
Emin	1.64
Emax	32.92
Emin/Emax	0.05
Emin/Eav	0.19

Horizontal Illuminance (lux)

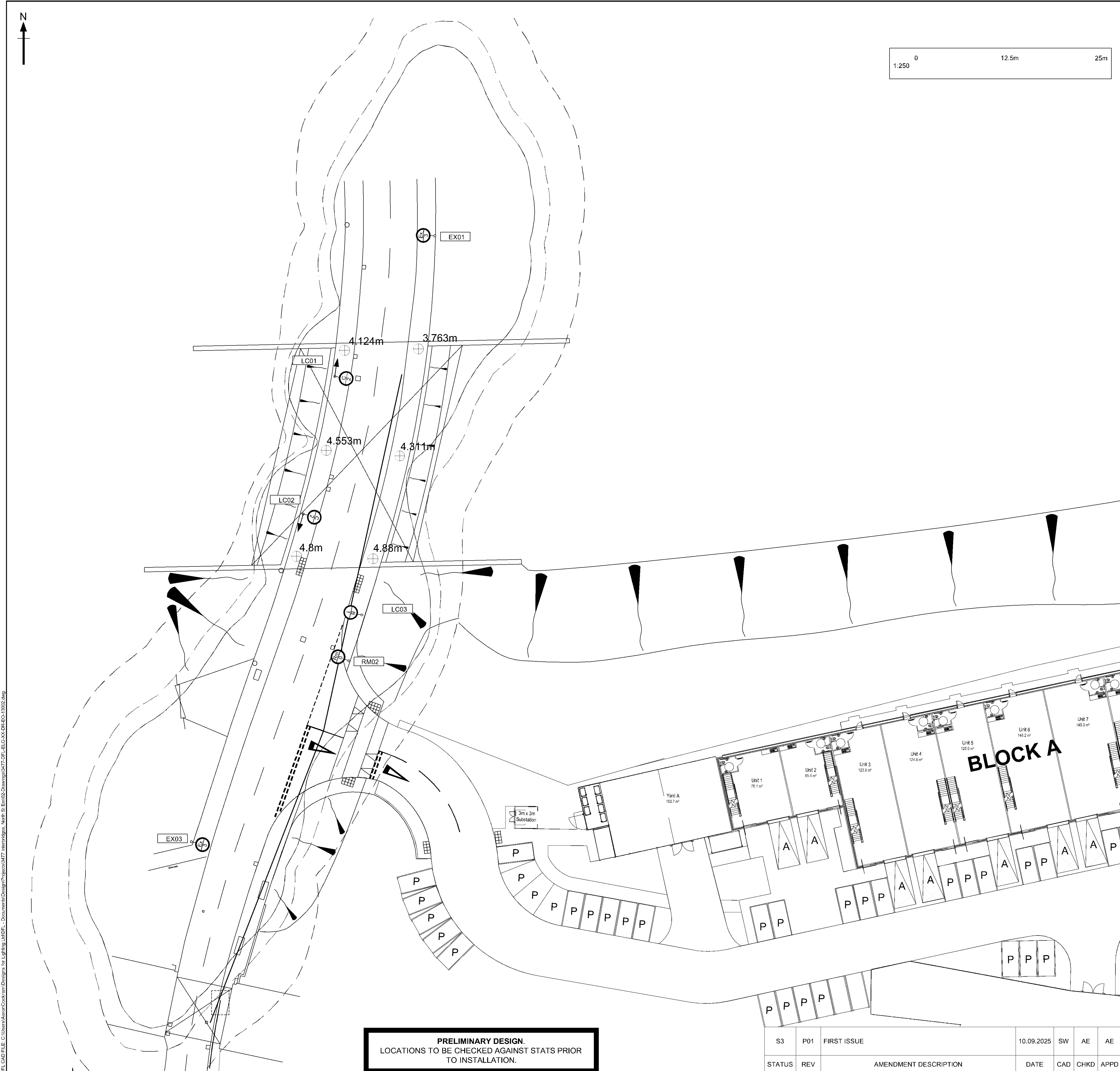
Proposed Crossing Horizontal Proposed Lighting Level

Proposed Crossing Horizontal Proposed Lighting Level



Results

Eav	10.08
Emin	3.03
Emax	16.26
Emin/Emax	0.19
Emin/Eav	0.30



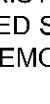
NOTES

1. THIS IS AN AUTOCAD DRAWING AND SHOULD NOT BE AMENDED BY HAND.
2. THE EXISTING LOCATIONS ARE APPROXIMATE AND THEIR ACCURACY CANNOT BE GUARANTEED.
3. ALL DIMENSIONS IN METRES UNLESS OTHERWISE STATED.
4. THIS DRAWING MUST NOT BE SCALED.
5. DRAWINGS ARE TO BE PRINTED IN COLOUR.
6. THE LIGHTING LAYOUT AND ASSOCIATED ELEMENTS ARE SUBJECT TO CHANGE AND ARE SHOWN FOR ILLUSTRATIVE CONTEXT ONLY.
7. ISO LUX CONTOURS SHOWN ARE APPROXIMATE ONLY AND DO NOT TAKE INTO ACCOUNT THE BLOCKING EFFECTS OF TREES, MAN MADE OBJECTS OR CHANGES IN TOPOGRAPHY.
8. ISO LUX CONTOURS SHOWN ARE WITH THE MAINTENANCE FACTOR OF THE LIGHT SOURCE SET TO 1.0, THEREBY SHOWING THE MOST ADVERSE HORIZONTAL LIGHT SPILL FROM THE PROPOSED INSTALLATION.
9. DRAWING TO BE READ IN CONJUNCTION WITH OTHER DESIGN DOCUMENTS:
 - 9.1. LIGHTING CALCULATION:
3477-DFL-HLG-XX-CA-EO-13001
 - 9.2. LIGHTING CALCULATION:
3477-DFL-HLG-XX-CA-EO-13002
 - 9.3. DESIGN SUMMARY REPORT:
3477-DFL-HLG-XX-RP-EO-13002
10. ALL BRIDGE HEIGHT MEASUREMENTS WERE TAKEN USING A LASER MEASURE. THE LASER MEASURE WAS PLACED ON THE FOOTPATH WITH THE MEASUREMENT RECORDED ON THE BOTTOM OF THE CONCRETE BEAMS, THESE BEING THE LOWEST POINT ON THE BRIDGE.

COLUMN INFORMATION DETAIL

COLUMN NO. ———



COLUMN TYPE —  LANTERN TYPE
COLUMN POSITION

COLUMN TYPE 0 = EXISTING COLUMN 8M POST TOP TUBULAR GALVANISED STEEL COLUMN WITH PLANTED ROOT BASE TO BE REMOVED AND REUSED/RECYCLED WHERE POSSIBLE.

COLUMN TYPE 1 = 8M POST TOP TUBULAR GALVANISED STEEL COLUMN WITH PLANTED ROOT BASE.

COLUMN TYPE 2 = 3M RAISE + LOWER MID HINGE GALVANISED STEEL COLUMN WITH FLANGED BASE.

COLUMN TYPE 3 = EXISTING COLUMN 8M POST TOP TUBULAR GALVANISED STEEL COLUMN WITH PLANTED ROOT BASE TO REMAIN IN SITU.

LANTERN TYPE Rm REFERENCE: EXISTING LANTERN TO BE RETURNED TO ASSET OWNER FOR POSSIBLE REUSE OR THE LANTERN AND ASSOCIATED ELECTRICAL EQUIPMENT TO BE REMOVED AND RECYCLED IN ACCORDANCE WITH THE WEEE REGULATIONS.

LANTERN TYPE Ex REFERENCE: EXISTING LANTERN TO REMAIN IN SITU.

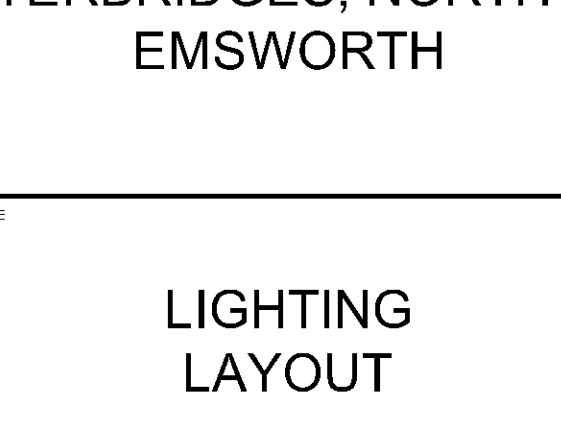
LANTERN TYPE B REFERENCE: URBIS SCHREDER AXIA 3.1 5294 INTEGRATED LENSES – 16 OSLOM SQUARE GIANT LED @ 870MA – 5.67 LUX – 4000K

LANTERN TYPE C REFERENCE: URBIS SCHREDER AXIA 3.1 5294 INTEGRATED LENSES – 8 OSLOM SQUARE GIANT LED @ 300MA – 1.14 LUX – 4000K

KEY:

QTY.	SYMBOL	
1		EXISTING LIGHTING COLUMN AND LANTERN TO BE REMOVED.
2		PROPOSED R&L COLUMN AND LANTERN.
1		PROPOSED COLUMN AND LANTERN.
		EXISTING LIGHTING COLUMN AND LANTERN TO REMAIN IN SITU.
— — — — —		0.4 LUX ISO-CONTOUR
— — — — —		1.0 LUX ISO-CONTOUR
— — — — —		1.5 LUX ISO-CONTOUR
		APPROXIMATE LOCATION OF BRIDGE HEIGHT MEASUREMENT

NOT FOR
CONSTRUCTION

DESIGNERS  DFL · LIGHTING DESIGN · ELECTRICAL · SMART CITIES · ENERGY REDUCTION · LIGHTING IMPACT					
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CURTIN 					
INTERBRIDGES, NORTH ST EMSWORTH					
DRAWING TITLE 					
LIGHTING LAYOUT					
DESIGNED CAD		CHECKED APPROVED			
AC SW		AE AE			
FIRST CREATED SHEET		SCALE SHEET SIZE			
04G 2025 1 of 1		1:250 A1			
DRAWING NUMBER PROJECT ORIGINATOR VOLUME LOCATION TYPE SCALE NUMBER					
3477-DFL-ELG-XX-DR-EO-13002					
JOB NUMBER STATUS		REVISION			
3477 S3		P01			



INTERBRIDGES, NORTH ST EMSWORTH

TECHNICAL REPORT – DAYTIME VISIBILITY AND GLARE ASSESSMENT

DFL-UK

17 City Business Centre, Hyde Street, Winchester, SO23 7TA

+44(0)1962 855080 | info@dfi-uk.com | www.dfi-uk.com



PROJECT NUMBER: 3477				DOCUMENT REF 3477 -DFL-ELG-XX-RP-EO-13003			
P01	S3	First Issue	DS	AS	AS	17/09/2025	
Revision	Suitability	Purpose Description	Originated	Checked	Approved	Date	

Designs for Lighting (DFL) is a business built on successfully collaborating with our clients. We have over 20 years proven experience in our industry, listening to the challenges our clients face, developing the best solutions and being innovators in our specialism. Our role is to find the most effective and sustainable outcome to enhance and support your projects. We proudly work with recognised industry bodies to promote and shape the future of the industry and ensure our staff are trained to exceed the required competency levels of our industries. Above all, we ensure each project delivers against our values.



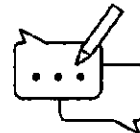
Quality



Knowledgeable



Dependable



Clear Advice

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1. INTRODUCTION

1.1. Overview

- 1.1.1. This Technical Report has been prepared by DFL (Designs for Lighting Ltd), a leading lighting design consultancy renowned for delivering expert Lighting Impact Assessments, innovative obtrusive light mitigation strategies, and precision-engineered lighting designs.
- 1.1.2. The purpose of this Technical Report is to provide an assessment of the visibility of and the potential for glare to occur in daylight conditions of the proposed road crossing location adjacent to the A27 underpass.
- 1.1.3. This report outlines the following:
- > Relevant policies in direct relation to the daytime assessment of road crossing locations,
 - > Relevant National and Local Policies,
 - > Relevant Guidance Documents,
 - > Details of the visibility for the proposed crossing location under daylight conditions,
 - > Details of the daytime lighting conditions survey that has been conducted,
 - > Results of the calculations of Veiling Luminance and Threshold Increment for the proposed crossing locations

2. LEGISLATIVE FRAMEWORKS AND NATIONAL POLICIES

2.1. Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

- 2.1.1. Since 2005, artificial light has been incorporated as a potential statutory nuisance. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states:

"The following matters constitute "statutory nuisances" for the purposes of this Part, that is to say— [...]

[...] artificial light emitted from premises so as to be prejudicial to health or a nuisance;

[...]and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint".

2.2. National Planning Policy Framework 2024 (Amended 2025)

- 2.2.1. The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how they are expected to be applied and provides a framework for local plans. With regard to light pollution, the NPPF was updated in February 2025 and states that the following elements are to be considered:

"198. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

2.3. Planning Practice Guidance

2.3.1. Guidance for assessing the effects of proposed artificial lighting is outlined in the planning practice guidance (PPG). The guidance states:

"The following questions indicate matters that may need to be considered in relation to managing the effects of light pollution:

- *Does an existing lighting installation make the proposed location for a development unsuitable, or suitable only with appropriate mitigation? For example, this might be because:*
- *the artificial light has a significant effect on the locality; and/or*
- *users of the Proposed Development (e.g., a hospital) may be particularly sensitive to light intrusion from the existing light source.*

Where necessary, development proposed in the vicinity of existing activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme, reflecting the agent of change principle. Additional guidance on applying this principle is set out in the planning practice guidance on noise.

- *Will a new development, or a proposed change to an existing site, be likely to materially alter light levels in the environment around the site and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?*
- *Will the impact of new lighting conflict with the needs of specialist facilities requiring low levels of surrounding light (such as observatories, airports and general aviation facilities)? Impacts on other activities that rely on low levels of light such as astronomy may also be a consideration but will need to be considered in terms of both their severity and alongside the wider benefits of the development.*
- *Is the development in or near a protected area of dark sky or an intrinsically dark landscape where new lighting would be conspicuously out of keeping with local nocturnal light levels, making it desirable to minimise or avoid new lighting?*
- *Would new lighting have any safety impacts, for example in creating a hazard for road users?*
- *Is a proposal likely to have a significant impact on a protected site or species? This could be a particular concern where forms of artificial light with a potentially high impact on wildlife and ecosystems (e.g. white or ultraviolet light) are being proposed close to protected sites, sensitive wildlife receptors or areas, including where the light is likely to shine on water where bats feed.*
- *Does the Proposed Development include smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies? (As it may change natural light, creating polarised light pollution that can affect wildlife behaviour.)"*

Paragraph 002 Ref ID: 31-002-20191101 revision 01 11 2019

3. LOCAL POLICES

3.1. Introduction

- 3.1.1. The relevant Local Planning Authority (LPA) for the Proposed Development is Havant Borough Council (HBC). HBC have published a local plan for the area including the Application Site:
- Havant Borough Core Strategy March 2011
- 3.1.2. There are no policies within this document that apply to the daytime assessment or natural light effects on roadways.
- 3.1.3. The relevant Local Highway Authority (LHA) for the Application Site is Hampshire County Council (HCC). HCC have published an adoptable specification for lighting systems as detailed in the documents:
- Hampshire County Council - Universal Service Directorate – Technical Guidance Note TG13 – Street Lighting
 - Hampshire County Council - Universal Service Directorate – Technical Guidance Note TG10 – Pedestrian and Cycle Facilities
- 3.1.4. Within these documents, glare is discussed within Technical Guidance Note TG13 – Street Lighting. However, glare is discussed exclusively in the context of achieving the requirements of glare limitation as detailed within BS 5489-1:2020 and BS EN 13201-2:2015 in relation to artificially lighting at night.
- 3.1.5. There is no information with these specification or policy documents related to the assessment of daylight effects on highways, footpaths, or road crossings points.

4. BRITISH STANDARDS

4.1. BS 5489-1:2020 - Lighting of Roads and Public Amenity Areas - Code of practice

- 4.1.1. This standard gives recommendations on the general principles of road lighting, its aesthetics and technical aspects and provides guidance on operational maintenance. It also provides guidance on means of minimizing energy consumption and limiting the impacts on the environment and adjacent properties.

4.2. BS EN 13201-2:2015 - Road Lighting. Performance requirements

- 4.2.1. This British and European standard defines the performance requirements specified as lighting classes for road lighting aiming at the visual needs of the road users, as well as the consideration of the environmental aspects of the road lighting to be applied.

4.3. BS EN 13201-3:2015 – Road Lighting. Calculation Performance

- 4.3.1. This British and European Standard specifies the conventions and mathematical procedures to be adopted in calculating the photometric performance of road lighting installations designed in accordance with the parameters described in EN 13201-2 to ensure that every lighting calculation is based on the same mathematical principles.

4.4. BS EN 13201-4:2015 – Road Lighting. Methods of Measuring Lighting Performance

- 4.4.1. The purpose of Part 4 of this British and European Standard is to:
- a) establish conventions and procedures for the characterization based on measurements of road lighting installations considering the photometric quality parameters, i.e. the set of quantities that characterize a lighting class, specified in Part 2;
 - b) give advice on the use and selection of luminance meters and illuminance meters for this particular application;
 - c) specify measurement requirements according to the aims of the measurement and expected accuracy;
 - d) establish conventions for evaluating the measurement uncertainty of involved parameters;
 - e) give information on the application of tolerance analysis in the design of the lighting installation.
- 4.4.2. A non-exhaustive list of possible measurement aims is:
- a) verification of compliance with standard requirements;
 - b) verification of compliance with design expectations;
 - c) road lighting installation monitoring, e.g. for maintenance purposes;
 - d) road lighting installation control, e.g. for optimizing energy saving;
 - e) investigation of discrepancies between real lighting conditions and design expectations.

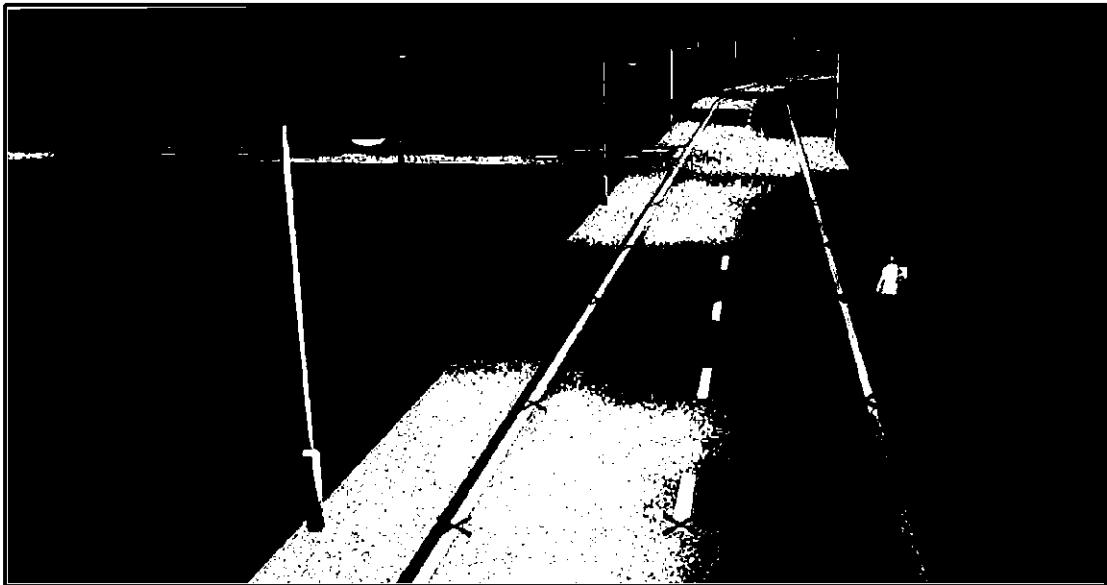
4.5. CIE 88:2004 – Guide for the Lighting of Road Tunnels and Underpasses

- 4.5.1. This standard provides methods for the lighting of both tunnels and underpasses during the day and the night, as well as metrics for the assessment of tunnel and underpass lighting conditions.
- 4.5.2. This includes the assessment of veiling luminance.
- 4.5.3. This guidance document also provides details of how to best use a camera for photographing the entrance for tunnels and underpasses during the day for assessment purposes. This has informed the methodology used for the survey.

5. GUIDANCE

5.1. Institution of Lighting Professionals – Technical Report 28 – Measurement of Road Lighting Performance (TR18:2007)

- 5.1.1. TR28 is a technical guidance document published by the Institution of Lighting Professional (ILP) for the measurement of road lighting performance.
- 5.1.2. This document is based on BS EN 13201-4.
- 5.1.3. This document provides guidance on the technical use of photometric equipment to measure and assess artificial lighting installations for compliance with design calculations, and does not provide a methodology for the measurement of daylight effects.
- 5.1.4. However, it provides a basis for the arrangement of measurement grids on roadways (Figure 1).



- 5.1.5. Due to this assessment being conducted for a road crossing point, two additional measurement points will be added to each row on the footpaths. This results in 5 readings across the roadway.

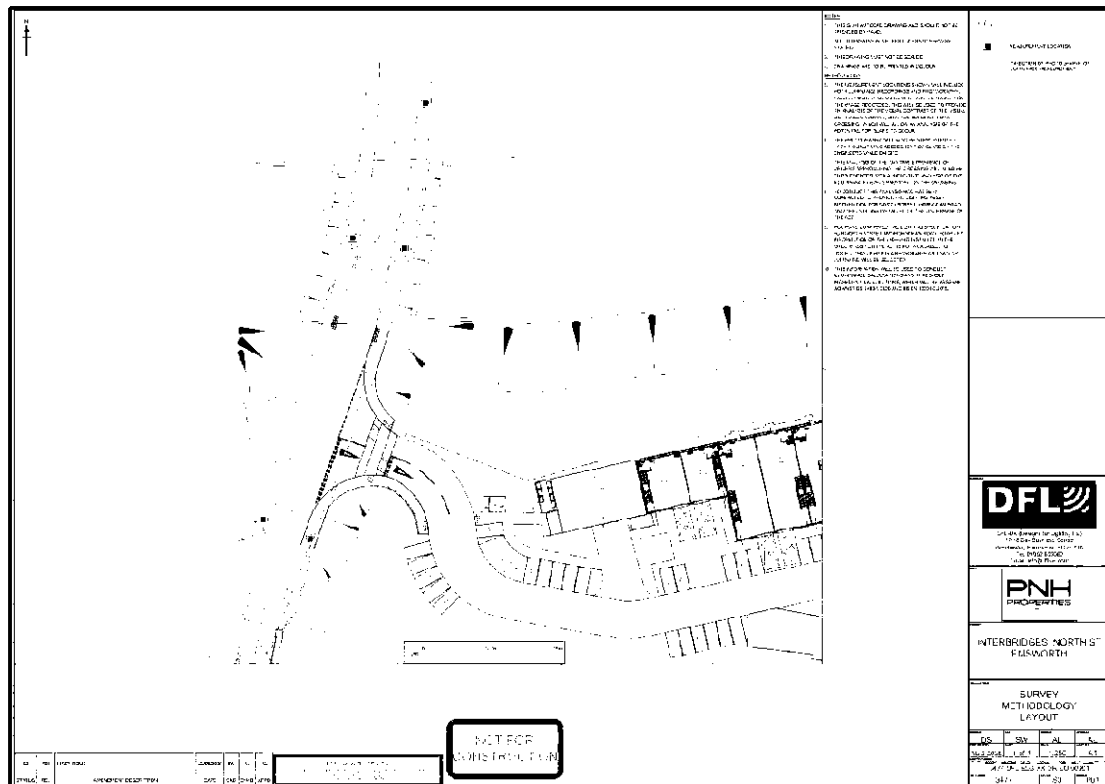
5.2. Institution of Lighting Professionals - Guidance Note 10 – Night-time Photography (GN010:2019)

- 5.2.1. This document provides guidance on how to take photography of lighting in night-time conditions.
- 5.2.2. However, the conventions on how to use a camera remain the same regardless of if photographing daytime or night-time conditions so this guidance has been used to set up the camera for the survey.

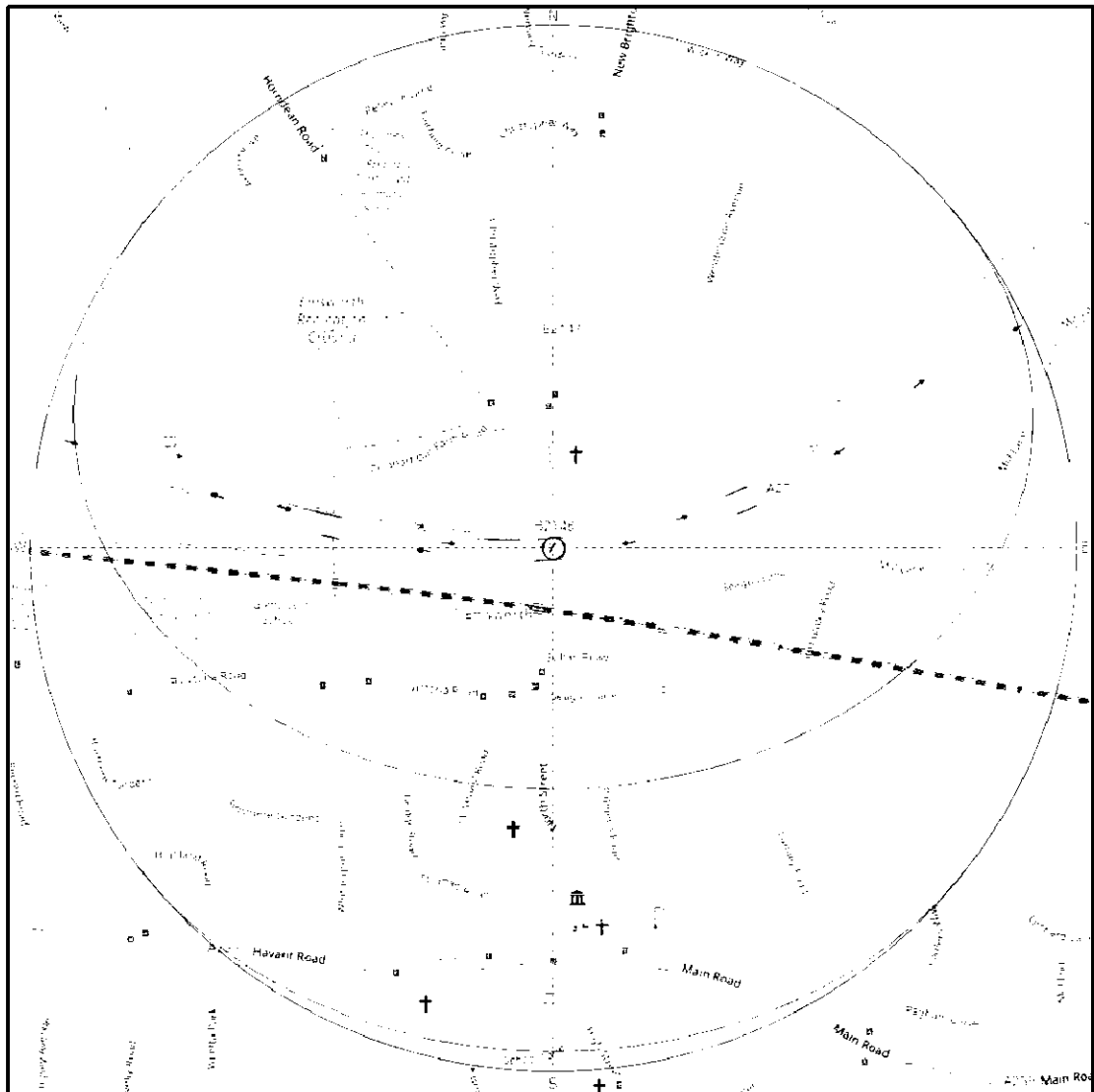
6. METHOD OF ASSESSMENT

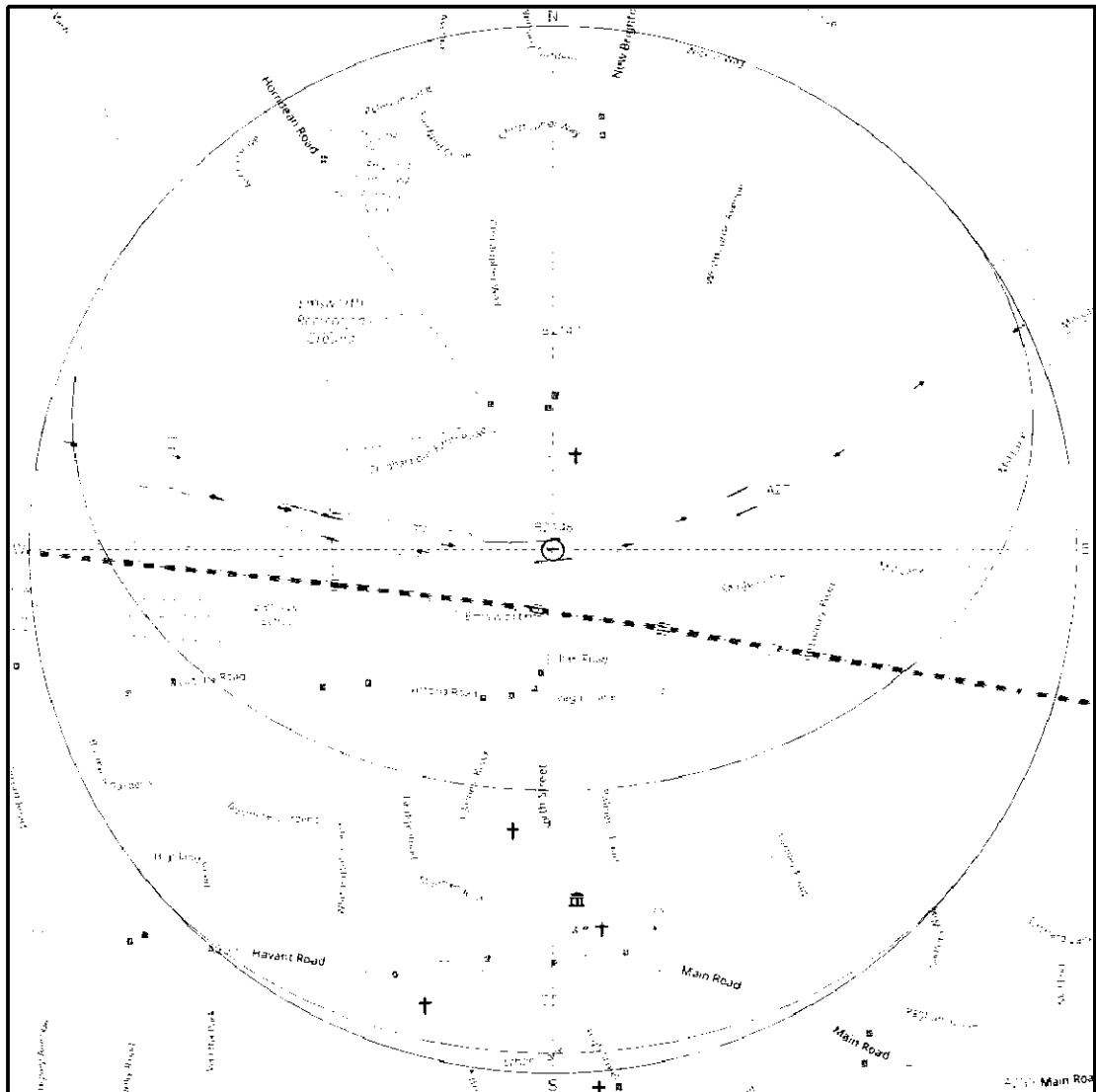
6.1. Methodology

- 6.1.1. To assess the proposed location of the road crossing for the potential effects of glare a combination of photography and luminance measurements were recorded.
- 6.1.2. The location and directions these readings were taken from can be seen in 3477-DFL-ELG-XX-DR-EO-13001-S3-P01 and **Figure 2**.



- 6.1.3. Readings and photography were recorded at 2 different times on the 12/09/2025 these were:
- > 10am
 - > 1pm
- 6.1.4. Sun path diagrams showing both the position and elevation of the sun for these times on 12/09/2025 can be seen in **Figure 3** and **Figure 4**.
- 6.1.5. This was done to provide a sample of the luminance levels surrounding the proposed crossing when the sun was in two different positions relative to the A27 underpass.





6.1.6. These two sun positions have been used because it provides assessment for the following situations:

1. The sun is lower in the sky and closer to the horizon at an approximately 45° angel to the A27 underpass and the road crossing, more closer simulating a winter sun position (**Figure 3**)
2. The sun is at its zenith and in line with the A27 underpass and the road crossing (**Figure 4**)

7. INITIAL VISIBILITY ASSESSMENT

7.1. Introduction

7.1.1. During the survey, photography was taken of the proposed road crossing location from the positions shown in 3477-DFL-ELG-XX-DR-EO-13001-S3-P01 and **Figure 2**. This was done to provide an initial visibility assessment of the road crossing when the sun was in two different positions relative to the A27 underpass.

7.1.2. The images taken during the survey are visible in **Figure 5- Figure 15**.

7.2. Morning Lighting Conditions



7.2.1. **Figure 5** shows a view of the proposed crossing location from View 1 when the sun was approximately in the position shown in **Figure 3**.

7.2.2. As can be seen in **Figure 5** the proposed crossing location is clearly visible on the approach and a pedestrian located on the dark side of the road is clearly visible.

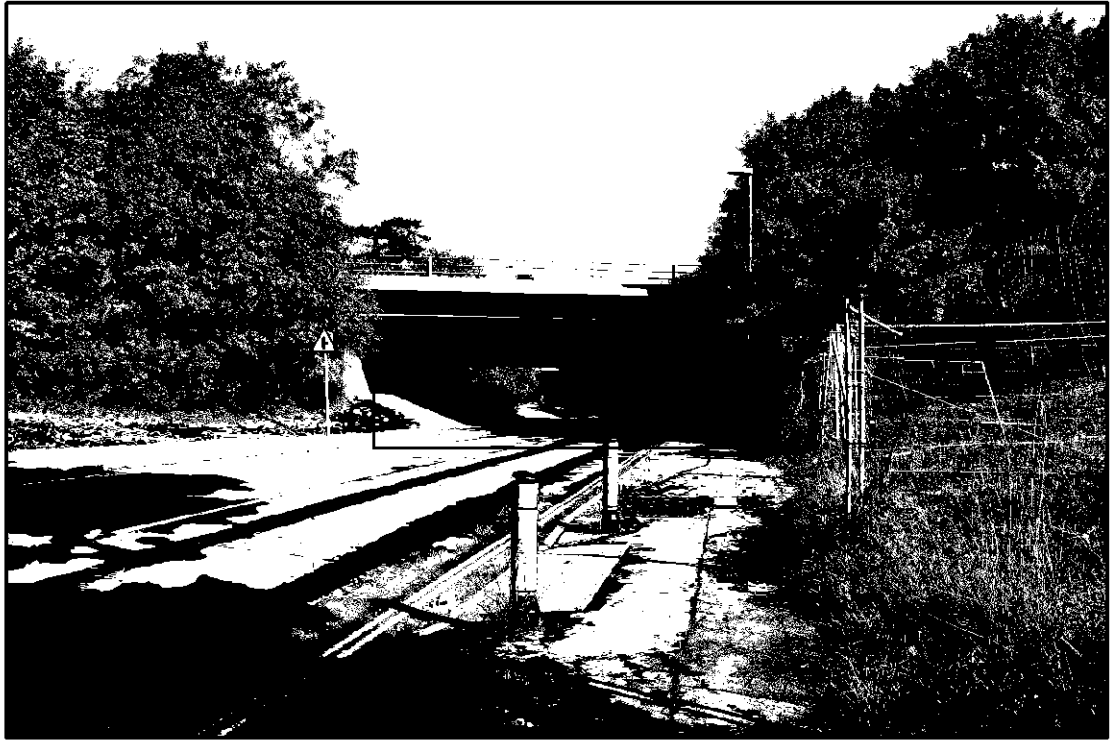
7.2.3. During the survey there was no experience of glare when the sun was in the position shown in **Figure 3**.



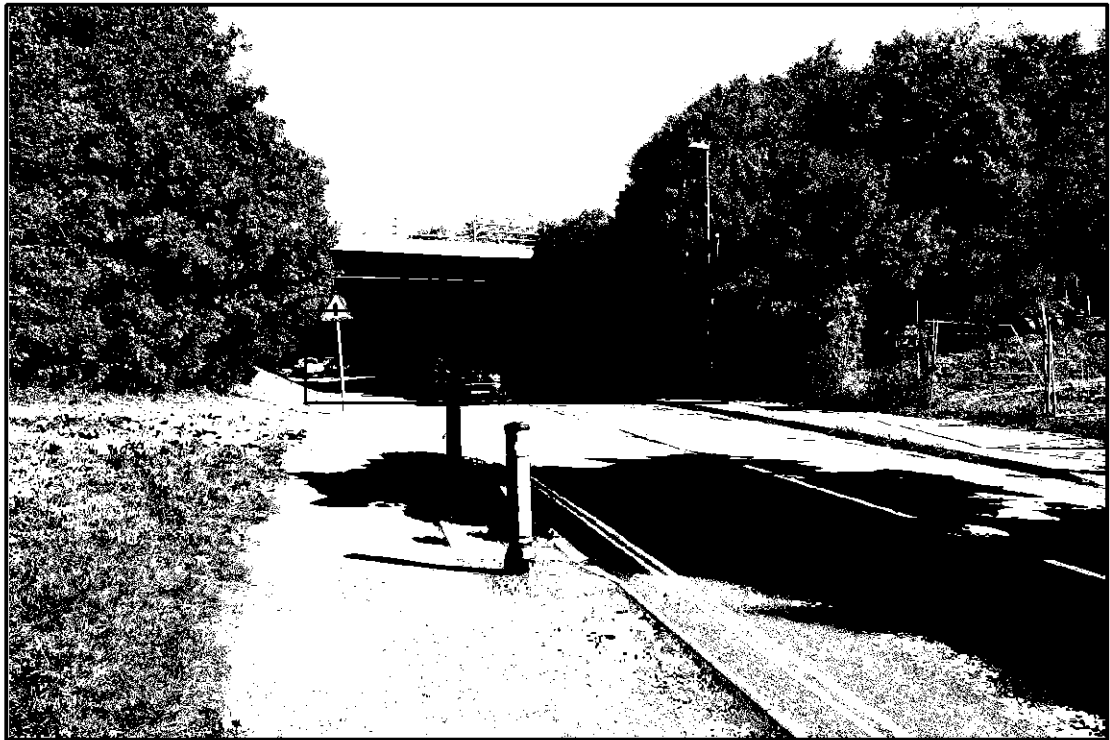
- 7.2.4. **Figure 6** shows a view of the proposed crossing location from View 2 when the sun was approximately in the position shown in **Figure 3**.
- 7.2.5. As can be seen in **Figure 6**, when under the underpass, the proposed crossing location is clearly visible.
- 7.2.6. During the survey there was no experience of glare when the sun was in the position shown in **Figure 3**.



- 7.2.7. **Figure 7** shows a view of the proposed crossing location from View 3 when the sun was approximately in the position shown in **Figure 3**.
- 7.2.8. As can be seen in **Figure 7**, when under the underpass, the proposed crossing location and a pedestrian approaching the proposed crossing location are clearly visible.
- 7.2.9. During the survey there was no experience of glare at when the sun was in the position shown in **Figure 3**.



- 7.2.10. **Figure 8** shows a view of the proposed crossing location from View 5 when the sun was approximately in the position shown in **Figure 3**.
- 7.2.11. As can be seen in **Figure 8** the proposed crossing location is clearly visible.
- 7.2.12. Glare from this location is not a concern due to this view facing north away from the sun as shown in both **Figure 3** and **Figure 4**, and when the sun is in the extreme east and west positions it will be obscured by the landscape, mature tree, buildings, and infrastructure.



- 7.2.13. **Figure 9** shows a view of the proposed crossing location from View 5 when the sun was approximately in the position shown in **Figure 3**.
- 7.2.14. As can be seen in **Figure 9** the proposed crossing location is clearly visible and a pedestrian in the location of the proposed crossing is also clearly visible.
- 7.2.15. For further clarity a closer view of the pedestrian is provided within **Figure 10**.
- 7.2.16. Glare from this location is not a concern due to this view facing north away from the sun as shown in both **Figure 3** and **Figure 4**, and when the sun is in the extreme east and west positions it will be obscured by the landscape, mature tree, buildings, and infrastructure.



7.3. Afternoon Lighting Conditions (Zenith)



- 7.3.1. **Afternoon Lighting** Conditions (Zenith)
- 7.3.2. Figure 11 shows a view of the proposed crossing location from View 1 when the sun was approximately in the position shown in **Figure 4**.
- 7.3.3. As can be seen in **Figure 11** both the proposed crossing location and pedestrians are clearly visible on the approach.



- 7.3.4. **Figure 12** shows a view of the proposed crossing location from View 2 when the sun was approximately in the position shown in **Figure 4**.
- 7.3.5. As can be seen in **Figure 12** the proposed crossing location is clearly visible.



- 7.3.6. **Figure 13** shows a view of the proposed crossing location from View 3 when the sun was approximately in the position shown in **Figure 4**.
- 7.3.7. As can be seen in **Figure 13** the proposed crossing location is clearly visible.



- 7.3.8. **Figure 14** shows a view of the proposed crossing location from View 4 when the sun was approximately in the position shown in **Figure 4**.
- 7.3.9. As can be seen in **Figure 14** the proposed crossing location is clearly visible along with a pedestrian.



- 7.3.10. **Figure 15** shows a view of the proposed crossing location from View 5 when the sun was approximately in the position shown in **Figure 4**.
- 7.3.11. As can be seen in **Figure 15** the proposed crossing location is clearly visible along with a pedestrian.

8. VEILING LUMINANCE AND GLARE ASSESSMENT

8.1. Introduction

8.1.1. To assess the potential for glare (threshold increment), and veiling luminance having the potential to impede visibility of the proposed road crossing, the method from CIE 88:2004 is applied.

8.1.2. This allows for the calculation of veiling luminance using the following formulae:

$$L_{seq} = 5.1 \cdot 10^{-14} \sum L_{ije}$$

With

$$L_{ije} = (Tws \cdot L_{ij})$$

Where:

L_{seq} : the total equivalent veiling luminance in cd/m^2

L_{ije} : the luminance of each section in cd/m^2 in front of the eye

L_{ij} : the average luminance of each section in cd/m^2 (measured outside the car, in front of the windscreen).

Tws : Is the transmission factor for a windscreen, and for the purposes of this assessment is assumed to be 0,8 as per page 8 of CIE 88:2004.

8.1.3. The locations of the luminance readings on each view can be seen in **Appendix 1** and the view locations can be seen in **Figure 2**.

8.1.4. To support the calculation of veiling luminance additional luminance values will be added from Table 6.2.3 from CIE 88:2004 for the sky luminance. This is done to provide a consistence value for across the year and to remove potential errors resulting from cloud cover. These values can be seen in **Table 1**.

North	8000
East/West	12000
South	16000

8.1.5. Depending on the direction of the view, 5 additional luminance readings for the sky have been added to the calculation of L_{ij} for the formulas shown in **Paragraph 8.1.2**.

- 8.1.6. No specific thresholds are provided within CIE 88:2004 on acceptable levels of veiling luminance. However, high levels of veiling luminance can make objects invisible dependant on the luminance (cd/m^2) of the object. This is because:
- > Veiling Luminance adds to the background luminance of the eye's image
 - > It reduces contrast between the object and background because the eye adapts to the combined luminance (object + veiling luminance)
 - > As the veiling luminance increases relative to the object luminance, contrast sensitivity drops, and visibility of the object decreases.

- 8.1.7. Example threshold ratio for when veiling luminance can impact the visibility of an object are detailed within **Table 2**.

Ratio of veiling luminance to background luminance	Visual effect
< 0.1	Negligible effect
0.1 – 0.3	Noticeable reduction in contrast but vision still functional
0.3 – 1.0	Strong loss of detail, difficult visual tasks impaired
> 1.0	Object may disappear; normal vision essentially lost

- 8.1.8. To provide a benchmark for the assessment of Threshold Increment, the values for a M1 Lighting Class from 13201-2:2015 is used. This is the most restrictive of all lighting classes and the limit on Threshold Increment for this lighting class is 10%.

¹ Thresholds taken from "Contrast thresholds of the eye: Blackwell (1946)" and "Visibility modelling: Adrian (1989)"

8.2. Veiling Luminance Calculations Based on Luminance Survey and CIE 88:2004 Method

8.2.1. The results of the veiling luminance calculations can be seen in **Table 3** and **Table 4**.

View Location	Line in View	Luminance (cd/m ²)					Average	L _{je} (cd/m ²)	L _{seq} (cd/m ²)
		1	2	3	4	5			
1	Near	154.30	378.00	297.00	1525.00	1092.00	3606.79	2885	1.47
	Mid Near	97.30	168.90	247.30	1392.00	1281.00			
	Mid Far	38.05	35.58	90.38	329.00	108.40			
	Far	408.40	470.20	817.90	511.30	727.70			
	Sky	16000.00	16000.00	16000.00	16000.00	16000.00			
2	Near	44.98	33.78	50.03	91.80	137.80	3851.88	3082	1.57
	Mid Near	94.73	464.20	496.80	337.60	1012.00			
	Mid Far	1216.00	1144.00	1511.00	1786.00	1571.00			
	Far	497.30	1339.00	1057.00	1939.00	1473.00			
	Sky	16000.00	16000.00	16000.00	16000.00	16000.00			
3	Near	54.38	82.50	60.08	68.93	1244.00	4674.83	3740	1.91
	Mid Near	90.38	216.90	453.40	2040.00	1735.00			
	Mid Far	1002.00	1195.00	1918.00	1597.00	1739.00			
	Sky	16000.00	16000.00	16000.00	16000.00	16000.00			
4	Near	2195.00	2564.00	2668.00	2355.00	3198.00	2638.71	2111	1.08
	Mid Near	1197.00	2010.00	1943.00	3540.00	2664.00			
	Mid Far	68.63	94.03	110.00	95.98	99.08			
	Far	139.10	68.32	173.30	259.90	525.30			
	Sky	8000.00	8000.00	8000.00	8000.00	8000.00			
5	Near	1449.00	1299.00	1825.00	1668.00	4011.00	2839.48	2272	1.16
	Mid Near	3953.00	1311.00	2846.00	3790.00	3195.00			
	Mid Far	87.93	98.18	236.80	1092.00	1217.00			
	Far	119.50	137.50	212.10	782.00	1657.00			
	Sky	8000.00	8000.00	8000.00	8000.00	8000.00			

View Location	Line in View	Luminance (cd/m2)					Average	L _{ije} (cd/m2)	L _{seq} (cd/m2)
1	Near	822.50	1608.00	1733.00	2082.00	2509.00			
	Mid Near	208.20	357.80	591.50	395.00	247.50			
	Mid Far	111.90	138.90	156.50	342.70	688.70	3919.05	3135	1.60
	Far	678.40	490.60	1591.00	1203.00	2020.00			
	Sky	16000.00	16000.00	16000.00	16000.00	16000.00			
2	Near	149.70	227.70	308.40	3787.00	2368.00			
	Mid Near	556.50	3162.00	5033.00	4527.00	4019.00			
	Mid Far	3211.00	5276.00	4690.00	3051.00	1833.00	5579.97	4464	2.28
	Far	2033.00	2770.00	5095.00	4036.00	3366.00			
	Sky	16000.00	16000.00	16000.00	16000.00	16000.00			
3	Near	117.40	542.60	3413.00	3007.00	2634.00			
	Mid Near	2221.00	2683.00	3760.00	3492.00	2307.00			
	Mid Far	3015.00	3811.00	4523.00	3726.00	4149.00	6170.05	4936	2.52
	Sky	16000.00	16000.00	16000.00	16000.00	16000.00			
	Near	1812.00	3266.00	2426.00	3311.00	3219.00			
4	Mid Near	1412.00	2577.00	2580.00	2589.00	2533.00			
	Mid Far	312.50	423.30	1598.00	866.80	1090.00	2866.30	2293	1.17
	Far	194.60	275.00	394.80	419.30	358.30			
	Sky	8000.00	8000.00	8000.00	8000.00	8000.00			
	Near	4000.00	386.30	3553.00	1840.00	1435.00			
5	Mid Near	3111.00	3762.00	2689.00	2280.00	1682.00			
	Mid Far	1536.00	1774.00	1288.00	916.30	194.30	2972.00	2378	1.21
	Far	1709.00	1286.00	397.00	273.10	187.90			
	Sky	8000.00	8000.00	8000.00	8000.00	8000.00			

8.3. Calculation of the Ratio Between Veiling Luminance and Background Luminance

- 8.3.1. To calculate the ratio between veiling luminance and background luminance the following values are used:
- > The L_{seq} values from **Table 3** and **Table 4**.
 - > The average luminance of the road surface from **Table 3** and **Table 4**.
- 8.3.2. The resulting ratio is then compared to **Table 2** to assess potential effects on the visibility of a pedestrian using the proposed crossing location.
- 8.3.3. The resulting ratios for veiling luminance and background luminance for each view and time can be seen in **Table 5** and **Table 6**. This is also used to approximate the expected Threshold Increment from daylight luminance at the proposed crossing location.
- 8.3.4. To calculate threshold increment the following formula from BS EN 13201-3:2015 has been used:

$$TI = 65 \left(\frac{Lv}{Lb^{0.8}} \right)$$

Where:

L_v : The veiling Luminance (L_{seq}) cd/m^2

L_b : Background/adaptation luminance (the average road luminance) cd/m^2

View Location	$L_{seq} (L_v)$ cd/m^2	Average Road Luminance (L_b) cd/m^2	Ratio (I_v/L_b) % cd/m^2	TI (%)
1	1.47	508.49	0.289	0.653
2	1.57	814.85	0.193	0.479
3	1.91	899.77	0.212	0.538
4	1.08	1298.28	0.0829	0.227
5	1.16	1549.35	0.0748	0.211

View Location	$L_{seq} (L_v)$ cd/m^2	Average Road Luminance (L_b) cd/m^2	Ratio (I_v/L_b) % cd/m^2	TI (%)
1	1.60	898.81	0.178	0.451
2	2.28	2974.97	0.0765	0.247
3	2.52	2893.40	0.0870	0.279
4	1.17	1582.88	0.0739	0.210
5	1.21	1715.00	0.0707	0.203

- 8.3.5. As can be seen in **Table 5** and **Table 6** the ratio between veiling luminance and the background luminance is at most within the "noticeable reduction in contrast but vision still functional effects" levels shown within **Table 2**.
- 8.3.6. The Threshold Increment is significantly lower than the 10% Threshold for an M1 Lighting Class from 13201-2:2015 (the most restrictive percentage for Threshold Increment from 13201-2:2015).
- 8.3.7. As such, it is not likely that there will be significant effects of glare from daylight luminance at the proposed crossing locations.

9. ASSUMPTIONS AND LIMITATIONS

- 9.1.1. The assessment of glare effects is based on a site survey that took place on the 12/09/2025 with the sun in the positions shown in **Figure 3** and **Figure 4**. As the sun position varies throughout the year so may the results of luminance readings.
- 9.1.2. To ensure consistent sky luminance is assessed the values for this from CIE 88:2004 are used rather than using on site measurements. This has been done to ensure atmospheric effects (for example cloud cover) are not unduly decreasing the values for expected sky luminance and means a maximum expected value can be used in the assessment.
- 9.1.3. All survey images are for electronic viewing only and must not be printed.

10. CONCLUSION

- 10.1.1. Based on the findings of the daytime luminance and visibility survey, the proposed crossing locations will:
- > Be clearly visible to drivers on the approach to the crossing and from within the underpass
 - > The proposed crossing location is not likely to result in unacceptable levels of glare resulting from daytime luminance levels
- 10.1.2. As such, the proposed crossing location is suitable in terms of the effects of daylight lighting effects.

APPENDIX 1

Location of luminance Readings within the Views

This appendix shown the positions of all luminance measurements within the views taken at both 1pm and 10am during the daytime survey of the proposed crossing location.

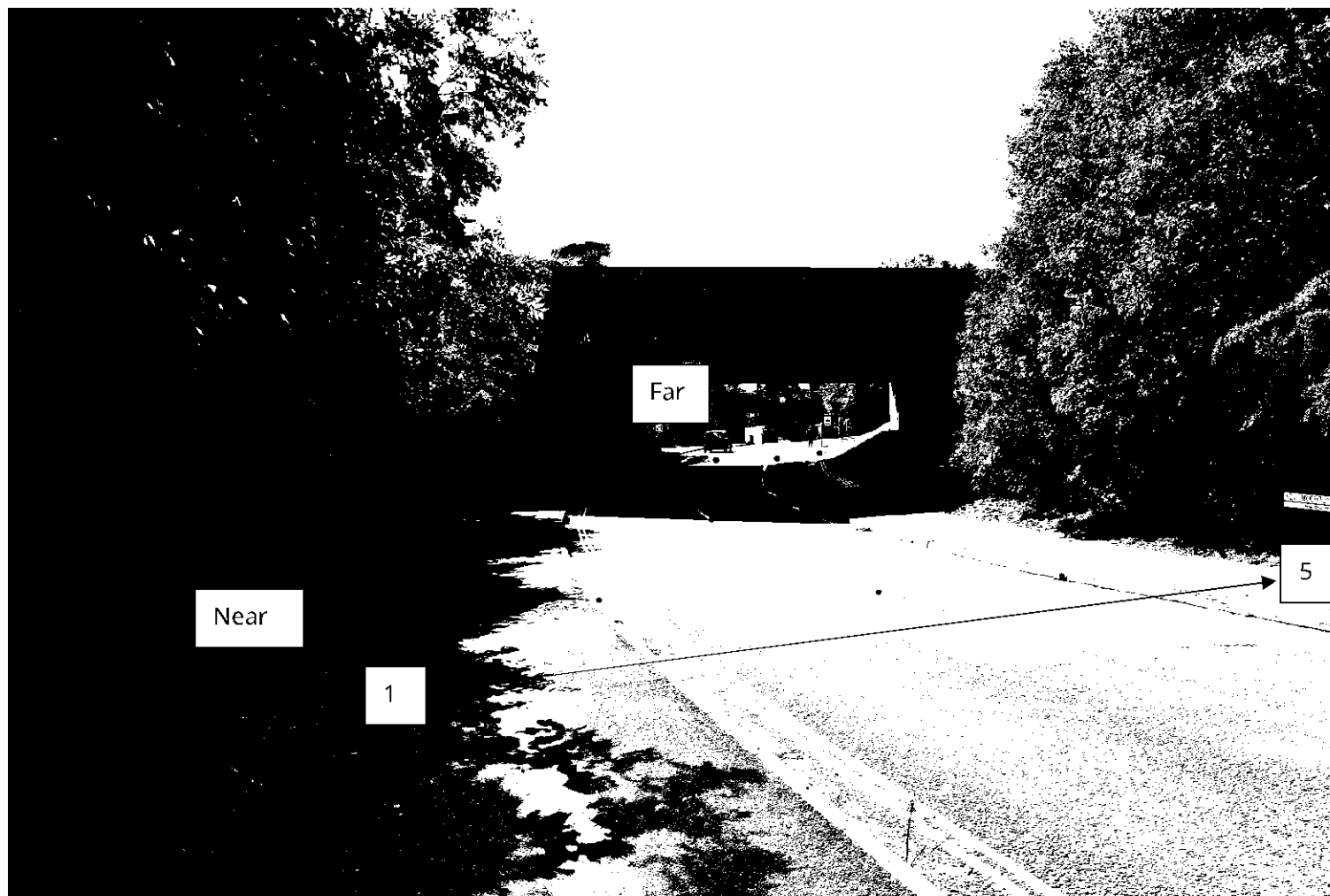
The arrangement of the measurement points can be seen in **Figure 16**.

The views for 1pm can be seen in **Figure 17 - Figure 21**.

The views for 10am can be seen in **Figure 22 - Figure 26**.

All survey images are for electronic viewing only and must not be printed.

Luminance Measurement Arrangement for all Views



1pm Views





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38





10am Views











TECHNICAL DESCRIPTIONS, DEFINITIONS & ABBREVIATIONS

PHAR: is an abbreviation for a potential human amenity receptor, a location where an observer could have the potential to be affected by the proposed lighting to be installed

PSER: is an abbreviation for an area identified as or treated as a location that may host a potentially sensitive ecological receptor. This is generally used where light sensitive bats have the potential to live, forage or use as a flight path, other ecologically sensitive receptors such as (but not limited to) the Great Crested Newt may also be identified by this term.

PSR: is an abbreviation for an area where an individual maybe susceptible to light brightness (Light intensity) which may have the potential to cause a hazardous situation.

Obtrusive Light: refers to excessive or bothersome artificial light that goes where it shouldn't, causing discomfort and disruption.

Sky glow: When lights are directed upwards or light is scattered by particles in the air, like dust or water droplets, it creates a glow that makes it hard to see stars.

Vertical Illuminance: is how much light lands on upright surfaces like walls. It's measured in lux or footcandles and matters for places where the view from a vertical angle is important.

Correlated colour temperature (CCT): the appearance of light emitted by a light source measured in Kelvin (K), Lower CCT values such as 2700K represent warmer, more yellowish light,

Lux: measures the brightness of light as perceived by the human eye at a specific point on a surface.

Lumens: measure how bright a light appears to our eyes.

Glare: refers to an excess of bright light that makes you uncomfortable or hinders your vision. It happens when there's a big difference between a bright light and the rest of the surroundings.

Luminous intensity: is light brightness or how intense the light source is. light intensity is how intense a light source is emitted or received in a particular direction, this is measured candelas and is termed as luminous intensity

Candela: is a measurement for the brightness of a light source, taking into account the direction in which the light is emitted.

Uniformity (Uo): is an explanation for the even distribution of light across an area or surface

Luminance: is how bright a surface appears to our eyes. It considers the light coming from or reflected by an object.

Illuminance is how much light lands on a surface per square meter. It's measured in lux. More lux means a brighter area.

Luminaire: a light fixture, this is also sometimes referred to as a lantern or a light fitting, is a product that produces artificial light

ULOR: upward light output ratio or ULOR refers to the amount of light the light fixture will produce upwards as a percentage of its total light output.



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Maintenance factor (MF): is an allowance for how well the lights keep working overtime. It considers things like dirt on the light fittings and “wear and tear”.

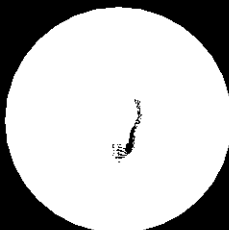
...solution for what you need today. We also have the solutions you might need tomorrow. We have dedicated teams that deliver.

- **Lighting Impact and Planning** team that focus on delivering the lighting solutions to support planning.
- **Residential** teams that cover all aspects of new and existing private, section 38 and section 278 design.
- **Public Realm** teams that are experts in delivering high quality spaces and opportunity for all.
- **Electrical** teams – we have the expertise to deliver it as well! Additionally, with the EV market rapidly expanding, make sure you have the expertise to deliver EV charging solutions might not live up to the hype.
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Principal Engineer



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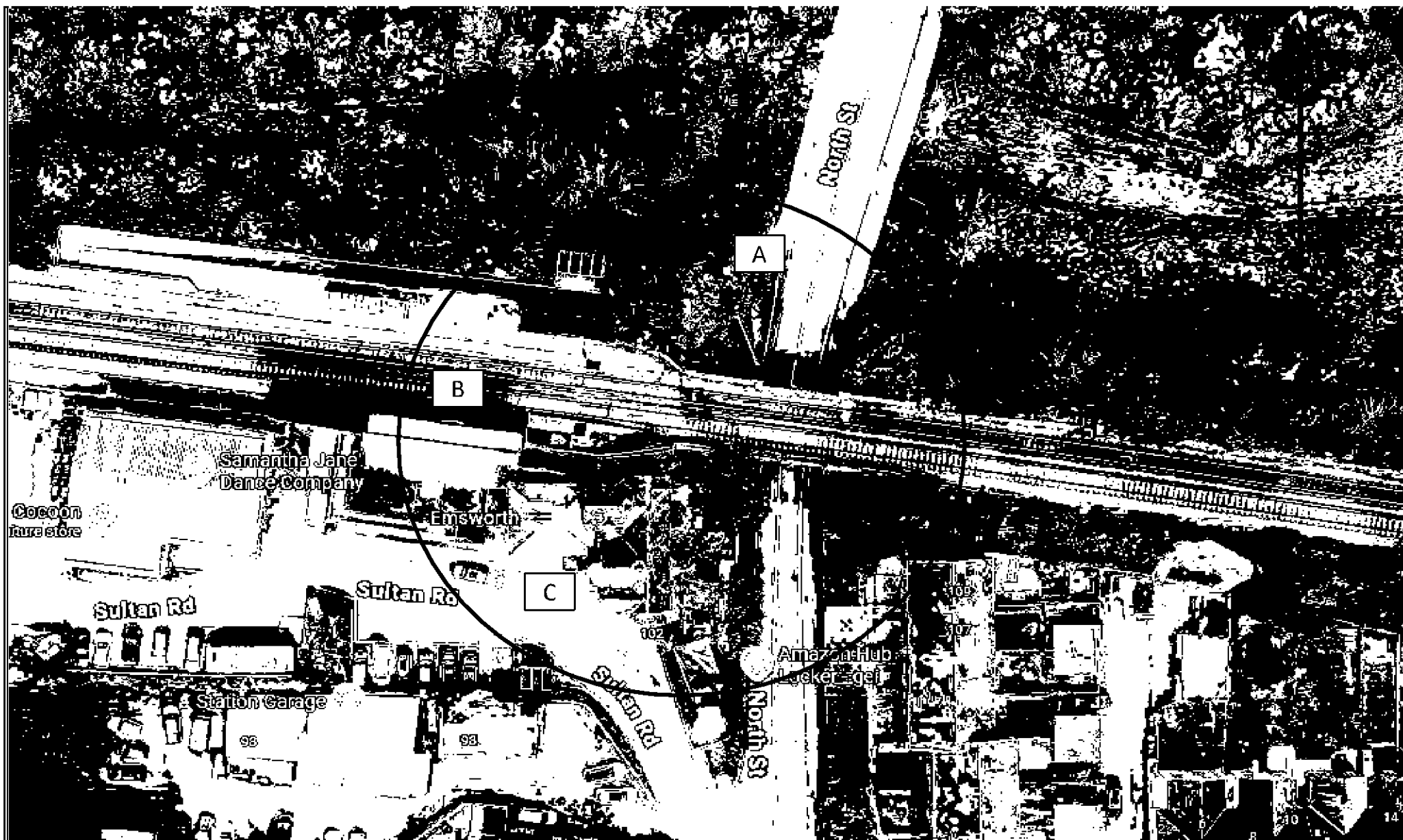
daniel.spreadborough@dfi-uk.com



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17/18 City Business Centre, Hyde
Street, Winchester, Hampshire,
SO23 7TA



 NDC NATIONWIDE DATA COLLECTION	Site / Location:	Site 1, Pedestrian underpass	Project No:	17266	Drawing No:	17266-01	Drawn By:	SS
	Survey Date:	Tuesday 9th, Thursday 11th & Saturday 13th September 2025	Project Name:		Emsworth			
	Survey Times:	00:00 to 24:00 Each Day	Drawing Title:		Site Layout and Observed Movements			



SITE: 1

DATE: 9/9/2025

LOCATION: Pedestrian underpass

DAY: TUESDAY

TIME	A to C		A to B		B to A		B to C		C to B		C to A	
	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's
0:00	0	0	0	0	0	0	0	0	0	0	1	0
0:15	0	0	0	0	0	0	0	0	0	0	0	0
0:30	0	0	0	0	0	0	0	0	0	0	0	0
0:45	0	0	0	0	0	0	1	0	1	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0
1:15	0	0	0	0	0	0	0	0	0	0	0	0
1:30	0	0	0	0	0	0	0	0	0	0	0	0
1:45	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	0	0	0	0	0	0	0	0	0	0	0
2:30	0	0	0	0	0	0	0	0	0	0	0	0
2:45	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0
3:15	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0
4:15	0	0	0	0	0	0	0	0	0	0	0	0
4:30	0	0	0	0	0	0	0	0	0	0	0	0
4:45	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	0	1	0	0	0	0	0	0	1	0	0
5:45	0	0	2	1	0	0	1	0	8	0	1	0
6:00	0	0	3	0	0	0	1	0	2	0	0	0
6:15	0	0	2	1	0	0	1	0	5	0	0	0
6:30	0	0	1	0	1	0	3	0	2	0	0	0
6:45	0	0	4	0	2	0	5	1	10	1	0	1
7:00	0	0	14	0	3	0	5	0	14	0	0	0
7:15	2	0	8	1	3	0	2	0	25	0	0	0
7:30	1	0	12	1	0	0	10	1	28	1	0	0
7:45	1	0	25	1	2	0	13	0	66	1	0	0
8:00	1	0	7	1	2	0	10	0	18	3	0	0
8:15	1	1	9	0	3	0	17	0	39	0	0	0
8:30	3	0	2	1	0	1	7	0	22	0	0	0
8:45	4	0	6	0	5	0	5	0	15	0	0	0
9:00	2	0	1	0	0	0	8	0	12	0	0	0
9:15	3	0	0	0	3	0	2	0	12	0	4	0
9:30	5	0	1	0	1	0	4	0	10	0	3	0
9:45	2	0	3	0	0	1	11	3	8	0	1	0
10:00	10	0	0	1	0	0	5	0	14	0	3	0
10:15	1	0	6	0	0	0	8	0	8	0	1	0
10:30	1	0	2	0	2	0	11	0	8	0	4	0
10:45	3	1	1	0	0	0	7	0	5	0	4	0
11:00	2	0	5	0	4	0	6	0	8	0	6	0
11:15	2	0	7	0	3	0	11	0	4	0	0	0
11:30	1	0	0	0	0	0	9	0	7	0	0	0
11:45	2	0	0	0	4	0	12	0	11	0	2	0



SITE: 1

DATE: 9/9/2025

LOCATION: Pedestrian underpass

DAY: TUESDAY

TIME	A to C		A to B		B to A		B to C		C to B		C to A	
	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's
12:00	2	0	8	1	2	0	8	0	5	0	5	0
12:15	7	0	1	0	3	0	10	0	11	0	2	0
12:30	0	0	5	0	0	0	12	0	6	0	1	0
12:45	1	0	0	0	6	0	6	0	9	0	1	0
13:00	0	0	1	0	1	0	6	0	7	0	0	0
13:15	0	0	2	0	0	0	3	0	4	0	1	0
13:30	3	0	0	0	4	0	19	0	6	0	2	0
13:45	4	0	4	0	17	0	11	0	3	0	0	0
14:00	2	0	2	0	2	0	11	0	5	0	1	0
14:15	1	0	3	0	1	0	11	0	8	0	1	0
14:30	0	0	0	0	1	2	10	0	3	1	1	0
14:45	1	0	2	0	1	0	14	0	8	0	0	0
15:00	0	0	1	0	2	0	17	0	5	0	1	0
15:15	1	0	0	0	20	1	19	1	10	1	3	0
15:30	1	0	4	0	43	0	71	0	7	0	9	1
15:45	1	0	1	0	6	2	17	0	3	0	6	0
16:00	3	0	5	0	3	0	8	0	5	0	1	0
16:15	4	0	3	0	8	0	27	0	9	0	3	0
16:30	5	0	4	1	17	0	20	0	12	0	0	0
16:45	2	0	1	0	14	0	29	1	12	2	6	0
17:00	1	1	4	0	2	1	19	1	7	1	0	2
17:15	4	0	3	0	9	2	24	0	8	1	1	0
17:30	1	0	1	0	0	0	15	0	6	0	4	0
17:45	6	0	3	0	9	1	11	0	5	1	3	0
18:00	0	0	0	0	2	0	23	0	8	0	2	0
18:15	0	1	1	0	1	0	8	0	8	0	5	0
18:30	0	0	1	0	5	0	14	0	9	0	1	3
18:45	1	0	3	1	2	0	4	0	2	0	3	0
19:00	5	0	2	0	5	0	13	0	1	0	2	0
19:15	4	0	0	0	1	0	3	0	0	0	4	0
19:30	0	0	2	0	2	0	10	0	1	0	1	0
19:45	2	0	1	0	0	0	3	0	5	0	1	0
20:00	0	2	1	0	5	0	3	0	1	0	0	0
20:15	0	0	0	1	3	0	11	0	8	0	0	0
20:30	1	0	0	0	1	0	2	0	2	0	0	0
20:45	0	0	0	0	5	2	7	0	4	1	0	0
21:00	0	3	0	0	0	1	2	0	0	0	0	0
21:15	1	0	0	1	3	0	3	0	3	0	0	0
21:30	1	0	0	0	0	0	5	0	6	0	0	0
21:45	0	0	0	0	3	1	1	0	4	0	4	0
22:00	0	0	1	0	2	0	7	0	1	0	0	0
22:15	0	0	0	0	0	0	0	0	2	0	0	0
22:30	0	0	0	0	1	0	0	0	0	0	0	0
22:45	0	0	0	0	0	0	0	0	1	0	0	0
23:00	0	0	0	0	1	1	2	0	0	0	0	0
23:15	0	0	0	0	0	0	3	0	1	0	0	0
23:30	1	0	0	0	4	0	6	0	2	0	1	0
23:45	0	0	0	0	1	0	4	0	0	0	0	0
P/TOT	113	9	192	13	256	16	707	8	595	15	106	7



SITE: 1

DATE: 9/11/2025

LOCATION: Pedestrian underpass

DAY: THURSDAY

TIME	A to C		A to B		B to A		B to C		C to B		C to A	
	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's
0:00	0	0	0	0	2	0	1	0	0	0	0	0
0:15	0	0	0	0	0	0	0	0	0	0	0	0
0:30	0	0	0	0	0	0	0	0	0	0	0	0
0:45	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0
1:15	0	0	0	0	0	0	0	0	0	0	0	0
1:30	0	0	0	0	0	0	0	0	0	0	0	0
1:45	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	0	0	0	0	0	0	0	0	0	0	0
2:30	0	0	0	0	0	0	0	0	0	0	0	0
2:45	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	0	0	0	0	0	0	0
3:15	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0
4:15	0	0	0	0	0	0	0	0	0	0	0	0
4:30	0	0	0	0	0	0	0	0	0	0	0	0
4:45	0	0	0	0	0	0	0	0	1	0	0	0
5:00	0	0	0	0	0	0	1	0	0	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	0	1	0	0	0	2	0	3	0	0	0
5:45	0	0	1	1	0	0	0	0	0	0	1	0
6:00	1	0	2	0	0	0	3	0	4	0	0	0
6:15	0	0	2	0	0	0	2	0	2	0	3	0
6:30	1	0	0	1	3	0	6	0	12	0	1	0
6:45	1	0	4	0	2	0	7	0	8	0	0	0
7:00	1	0	7	0	1	0	4	0	16	0	0	0
7:15	1	0	5	0	2	0	6	1	23	1	0	0
7:30	2	0	17	1	0	0	3	0	23	0	1	0
7:45	2	0	15	0	1	1	11	0	53	0	0	0
8:00	4	0	4	0	2	0	8	0	28	0	0	0
8:15	5	1	15	1	4	0	10	0	32	0	0	0
8:30	1	0	5	0	1	0	8	0	21	0	3	0
8:45	2	0	7	0	3	0	6	1	31	0	4	0
9:00	2	0	6	0	1	0	4	0	9	0	0	0
9:15	2	0	0	0	0	0	4	1	12	0	1	0
9:30	2	0	3	0	0	1	6	0	25	0	6	0
9:45	3	0	3	0	1	0	6	0	5	0	1	0
10:00	2	0	0	0	0	0	7	1	2	0	0	0
10:15	2	0	2	1	1	0	6	0	16	0	2	0
10:30	4	0	3	0	1	0	7	0	5	0	2	0
10:45	2	0	2	0	3	0	5	0	10	0	1	0
11:00	2	0	0	0	0	0	8	0	10	0	0	0
11:15	2	0	1	0	0	0	20	0	21	0	0	0
11:30	3	0	2	0	1	0	7	0	30	0	3	0
11:45	1	0	3	0	0	0	19	0	14	0	7	0



SITE: 1

DATE: 9/11/2025

LOCATION: Pedestrian underpass

DAY: THURSDAY

TIME	A to C		A to B		B to A		B to C		C to B		C to A	
	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's
12:00	0	0	2	0	1	0	5	0	5	0	1	0
12:15	2	1	2	0	2	0	7	0	12	0	3	1
12:30	1	0	4	0	3	0	6	0	10	0	3	0
12:45	0	0	2	0	1	0	14	0	11	0	4	0
13:00	1	0	1	0	2	0	4	0	7	0	5	0
13:15	5	0	0	0	4	0	10	0	12	0	3	0
13:30	2	0	2	1	4	0	4	0	9	0	2	0
13:45	1	0	0	1	4	1	9	0	4	0	0	0
14:00	2	0	0	0	3	0	10	0	4	0	1	0
14:15	3	0	2	0	0	0	11	0	3	0	2	0
14:30	1	0	0	0	2	1	8	0	1	0	2	0
14:45	4	0	1	0	1	1	9	0	7	0	2	0
15:00	1	0	2	0	3	0	9	0	12	0	0	0
15:15	0	0	3	0	31	1	65	0	8	0	3	0
15:30	1	0	0	0	20	0	22	0	4	0	0	0
15:45	1	0	3	0	3	0	7	0	5	1	1	0
16:00	0	0	1	0	6	0	14	0	4	0	2	0
16:15	2	0	1	0	12	0	45	2	7	0	1	0
16:30	0	0	1	0	6	1	14	2	14	0	2	0
16:45	2	0	4	1	20	1	32	0	5	0	4	0
17:00	3	0	1	0	3	0	10	0	9	0	1	0
17:15	0	0	0	0	10	0	26	1	10	0	1	0
17:30	4	0	0	0	2	0	7	0	9	0	0	0
17:45	0	0	0	0	11	0	16	0	10	0	0	0
18:00	1	0	0	0	6	0	17	0	7	0	0	0
18:15	2	0	3	0	5	0	8	0	8	0	2	0
18:30	1	0	1	0	0	1	15	0	6	0	0	0
18:45	4	0	2	0	3	0	4	0	6	0	2	0
19:00	4	0	1	0	8	0	6	0	7	0	0	0
19:15	1	0	1	0	2	0	11	0	3	0	3	0
19:30	0	0	1	0	2	0	1	0	10	0	1	0
19:45	0	0	2	0	3	0	5	0	3	0	4	1
20:00	1	0	0	0	3	0	6	0	0	0	0	0
20:15	0	1	0	3	3	3	4	4	10	3	1	1
20:30	0	0	0	0	1	0	8	0	4	0	5	0
20:45	0	0	0	0	0	0	2	0	7	0	0	0
21:00	0	0	1	0	4	0	12	0	1	0	0	0
21:15	0	0	0	0	0	0	2	0	1	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	4	0
21:45	0	0	0	0	0	0	0	0	1	0	0	0
22:00	0	0	0	0	0	0	10	1	4	0	0	0
22:15	0	0	0	0	4	0	3	0	5	0	0	0
22:30	0	0	0	0	1	0	0	0	6	1	0	0
22:45	0	0	0	0	0	0	0	0	1	0	0	0
23:00	0	0	0	0	1	0	11	1	0	0	0	0
23:15	0	0	0	0	0	0	2	0	3	0	0	0
23:30	0	0	0	0	1	0	0	0	2	0	0	0
23:45	0	0	0	0	3	0	3	0	0	0	0	0
P/TOT	98	3	154	11	233	12	671	15	693	6	101	3



SITE: 1

DATE: 9/13/2025

LOCATION: Pedestrian underpass

DAY: SATURDAY

TIME	A to C		A to B		B to A		B to C		C to B		C to A	
	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's
0:00	0	0	0	0	0	0	0	0	0	0	0	0
0:15	0	0	0	0	0	0	0	0	0	0	0	0
0:30	0	0	0	0	0	0	0	0	0	0	0	0
0:45	0	0	0	0	0	0	0	0	0	0	0	0
1:00	0	0	0	0	0	0	0	0	0	0	0	0
1:15	0	0	0	0	0	0	0	0	0	0	0	0
1:30	0	0	0	0	0	0	0	0	0	0	0	0
1:45	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	0	0	0	0	0	0	0	0	0	0	0
2:15	0	0	0	0	0	0	0	0	0	0	0	0
2:30	0	0	0	0	0	0	0	0	0	0	0	0
2:45	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	1	0	0	0	0	0	0	0	0	0	0
3:15	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	0	0	0	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0	0	0	0	0	0
4:15	0	0	0	0	0	0	0	0	0	0	0	0
4:30	0	0	0	0	0	0	0	0	1	0	0	0
4:45	0	0	0	0	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0	0	1	0	0	0
5:15	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	0	2	0	0	0	0	0	1	0	0	0
5:45	0	0	1	0	1	0	1	0	2	0	0	0
6:00	1	0	1	0	0	0	0	0	1	0	0	0
6:15	0	0	1	0	1	1	1	0	0	0	0	0
6:30	0	0	1	0	0	0	1	0	1	0	0	0
6:45	0	0	3	1	1	0	4	0	4	0	1	0
7:00	0	0	0	0	1	0	2	0	1	0	0	0
7:15	2	0	1	0	0	1	0	0	1	1	0	0
7:30	0	0	0	0	0	0	1	0	5	0	0	0
7:45	0	0	4	0	0	0	3	0	7	0	1	0
8:00	0	0	10	0	1	0	0	0	10	0	0	0
8:15	1	0	1	0	0	0	3	0	4	0	0	0
8:30	0	0	3	0	0	0	4	0	9	0	0	0
8:45	2	0	0	0	0	0	1	0	8	0	1	0
9:00	1	0	2	0	1	0	4	0	10	1	0	0
9:15	3	0	3	0	1	0	8	0	10	0	0	0
9:30	2	0	4	0	1	0	4	0	6	0	1	0
9:45	1	0	0	0	0	0	3	0	2	0	0	0
10:00	7	0	4	0	0	0	15	0	12	0	3	0
10:15	6	1	2	0	1	0	7	0	14	0	1	0
10:30	2	1	7	0	3	0	12	0	16	0	5	0
10:45	2	0	1	0	3	1	6	0	10	1	0	0
11:00	1	0	1	0	0	0	4	0	3	0	1	0
11:15	4	0	1	0	2	0	8	0	11	0	1	0
11:30	3	0	2	0	0	0	4	0	12	0	2	0
11:45	3	0	4	0	2	0	9	0	20	0	3	0



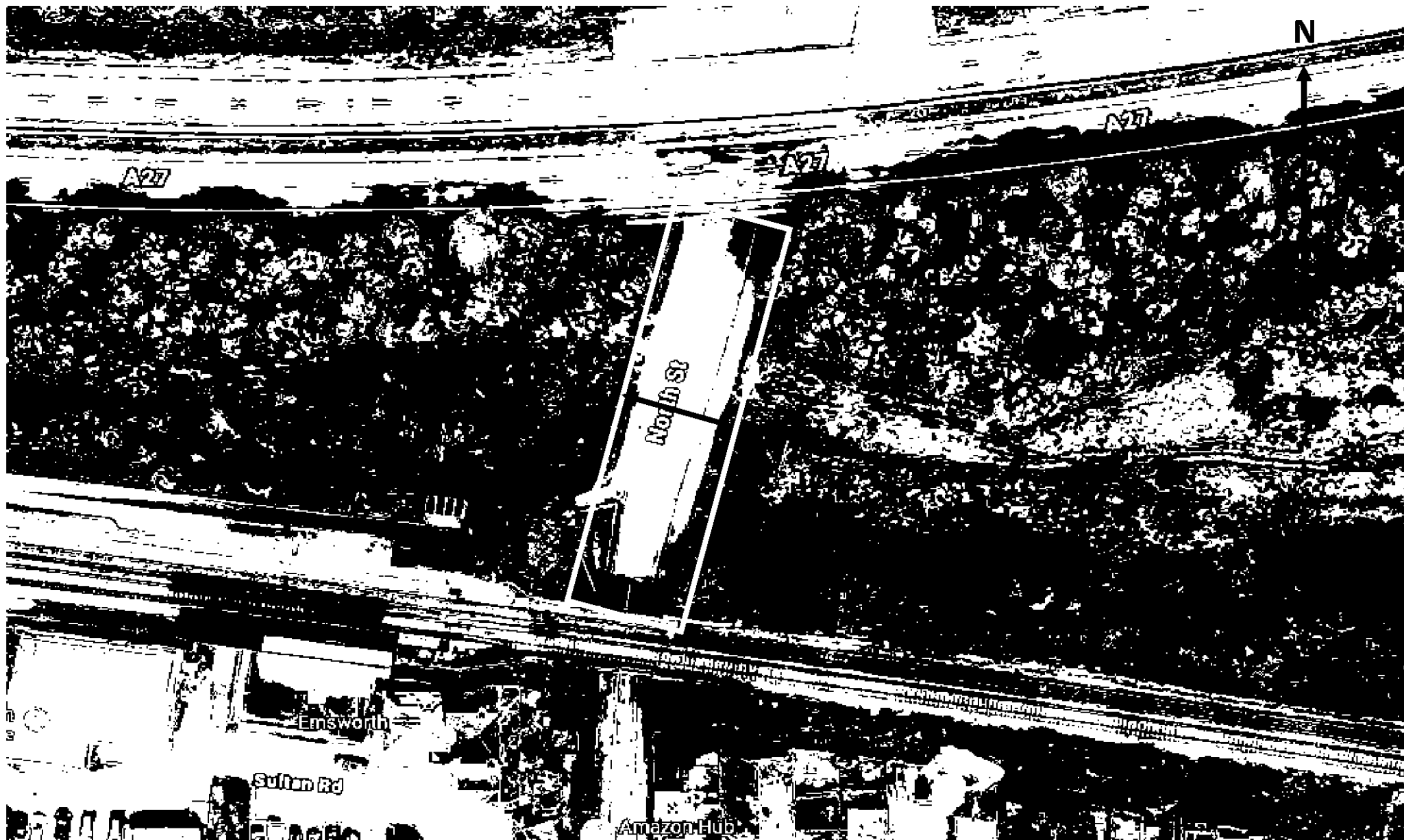
SITE: 1

DATE: 9/13/2025

LOCATION: Pedestrian underpass

DAY: SATURDAY

TIME	A to C		A to B		B to A		B to C		C to B		C to A	
	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's	Peds	Pc's
12:00	7	0	0	0	0	0	4	0	7	0	3	0
12:15	3	0	4	0	0	0	7	0	9	0	4	0
12:30	2	0	1	1	0	0	2	0	8	0	0	0
12:45	0	0	0	0	0	0	22	0	11	0	1	0
13:00	4	2	3	0	7	0	14	0	10	0	0	0
13:15	0	0	2	0	1	0	4	0	10	0	0	0
13:30	1	0	1	0	11	0	9	0	5	0	0	0
13:45	2	0	5	0	0	0	0	0	1	0	1	0
14:00	3	0	1	0	3	0	14	0	10	0	2	0
14:15	3	0	0	0	0	0	4	0	6	0	1	0
14:30	0	0	0	0	0	0	3	0	0	0	3	0
14:45	2	0	1	0	1	0	0	1	7	0	2	0
15:00	6	0	2	0	2	0	16	0	11	0	0	0
15:15	4	0	1	0	4	0	16	2	12	0	0	0
15:30	3	0	2	0	6	0	13	0	6	0	5	2
15:45	0	0	1	0	0	0	4	0	7	0	3	0
16:00	1	0	3	0	8	0	27	0	9	0	3	0
16:15	3	0	1	0	6	0	7	1	8	2	1	0
16:30	1	0	1	0	2	0	0	2	10	0	2	0
16:45	5	0	7	0	8	0	15	0	23	2	3	0
17:00	3	0	0	0	3	0	18	0	7	0	0	0
17:15	0	0	4	0	3	0	10	0	7	0	2	0
17:30	2	0	1	0	3	0	1	0	6	0	2	0
17:45	2	0	3	0	2	2	19	0	9	0	5	0
18:00	1	0	0	0	1	0	11	0	12	0	0	0
18:15	1	0	1	0	1	0	24	0	4	0	4	0
18:30	1	0	1	0	3	1	3	0	10	0	2	0
18:45	2	0	3	0	0	0	16	1	5	0	0	0
19:00	1	0	3	0	2	0	9	0	1	0	1	0
19:15	2	0	0	0	1	0	20	0	4	0	3	0
19:30	1	0	0	0	5	0	10	0	19	0	1	0
19:45	1	0	1	0	4	0	9	0	5	1	0	0
20:00	0	0	0	0	1	0	6	0	3	0	0	0
20:15	0	0	0	0	6	1	16	0	5	0	0	0
20:30	2	0	5	0	4	0	17	0	0	0	0	0
20:45	0	0	0	0	0	0	10	0	9	0	0	0
21:00	0	0	0	0	2	0	4	0	6	0	0	0
21:15	0	0	0	1	3	0	14	0	7	0	0	0
21:30	1	0	0	0	3	0	3	0	0	0	3	0
21:45	0	0	0	0	0	0	2	0	3	0	0	0
22:00	0	0	0	0	10	0	13	0	6	1	0	0
22:15	0	0	1	0	1	0	16	0	0	0	1	0
22:30	0	0	0	0	0	0	2	0	3	0	0	0
22:45	0	0	0	0	2	0	8	0	2	0	0	0
23:00	0	0	0	0	2	0	9	0	1	0	1	0
23:15	0	0	0	0	0	0	2	0	0	0	0	0
23:30	0	0	0	0	3	0	9	0	1	0	0	0
23:45	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	111	5	118	3	143	7	567	7	487	9	79	2



	Site / Location:	Site 2, North Street	Project No:	17266	Drawing No:	17266-02	Drawn By:	SS
	Survey Date:	Tuesday 9th, Thursday 11th & Saturday 13th September 2025	Project Name:		Emsworth			
	Survey Times:	00:00 to 24:00 Each Day	Drawing Title:		Site Layout and Observed Movements			



SITE:

2

DATE: 9/9/2025

LOCATION: North Street

DAY: TUESDAY

TIME	Eastbound		Westbound	
	Peds	Pc's	Peds	Pc's
0:00	0	0	0	0
0:15	0	0	0	0
0:30	0	0	0	0
0:45	0	0	0	0
1:00	0	0	0	0
1:15	0	0	0	0
1:30	0	0	0	0
1:45	0	0	0	0
2:00	0	0	0	0
2:15	0	0	0	0
2:30	0	0	0	0
2:45	0	0	0	0
3:00	0	0	0	0
3:15	0	0	0	0
3:30	0	0	0	0
3:45	0	0	0	0
4:00	0	0	0	0
4:15	0	0	0	0
4:30	0	0	0	0
4:45	0	0	0	0
5:00	0	0	0	0
5:15	0	0	0	0
5:30	0	0	0	0
5:45	0	0	0	0
6:00	0	0	0	0
6:15	0	0	0	0
6:30	1	0	0	0
6:45	2	1	0	0
7:00	2	0	1	0
7:15	1	0	0	0
7:30	0	0	0	0
7:45	1	0	3	0
8:00	2	0	1	0
8:15	0	0	0	0
8:30	1	0	2	0
8:45	1	0	1	0
9:00	1	0	0	0
9:15	2	0	0	0
9:30	2	0	2	0
9:45	1	0	1	0
10:00	2	0	0	0
10:15	5	0	3	0
10:30	1	0	4	0
10:45	3	0	1	1
11:00	2	0	0	0
11:15	2	0	0	0
11:30	0	0	0	0
11:45	3	0	2	0



SITE:2

DATE: 9/9/2025

LOCATION: North Street

DAY: TUESDAY

TIME	Eastbound		Westbound	
	Peds	Pc's	Peds	Pc's
12:00	0	0	0	0
12:15	6	0	0	0
12:30	1	0	3	0
12:45	4	0	0	0
13:00	1	0	1	0
13:15	2	0	1	0
13:30	1	0	1	0
13:45	1	0	0	0
14:00	1	0	0	0
14:15	0	0	0	0
14:30	0	1	0	0
14:45	1	0	0	0
15:00	2	0	0	0
15:15	6	0	0	0
15:30	16	2	2	0
15:45	3	0	3	0
16:00	1	0	1	0
16:15	4	0	1	0
16:30	4	0	2	0
16:45	11	0	1	0
17:00	0	0	1	0
17:15	5	0	0	0
17:30	2	0	1	0
17:45	4	0	0	0
18:00	2	0	0	0
18:15	2	0	0	0
18:30	6	0	1	0
18:45	0	0	0	0
19:00	4	0	1	0
19:15	0	0	0	0
19:30	0	0	0	0
19:45	3	0	2	0
20:00	2	0	1	0
20:15	0	0	0	0
20:30	0	0	0	0
20:45	1	0	1	0
21:00	0	0	0	0
21:15	2	0	0	0
21:30	0	0	0	0
21:45	0	0	0	0
22:00	1	0	1	0
22:15	0	0	0	0
22:30	1	0	0	0
22:45	0	0	0	0
23:00	1	0	0	0
23:15	0	0	0	0
23:30	6	0	1	0
23:45	1	0	0	0
P/TOT	143	4	47	1



SITE: 2

DATE: 9/11/2025

LOCATION: North Street

DAY: THURSDAY

TIME	Eastbound		Westbound	
	Peds	Pc's	Peds	Pc's
0:00	0	0	0	0
0:15	0	0	0	0
0:30	0	0	0	0
0:45	0	0	0	0
1:00	0	0	0	0
1:15	0	0	0	0
1:30	0	0	0	0
1:45	0	0	0	0
2:00	0	0	0	0
2:15	0	0	0	0
2:30	0	0	0	0
2:45	0	0	0	0
3:00	0	0	0	0
3:15	0	0	0	0
3:30	0	0	0	0
3:45	0	0	0	0
4:00	0	0	0	0
4:15	0	0	0	0
4:30	0	0	0	0
4:45	0	0	0	0
5:00	0	0	0	0
5:15	0	0	0	0
5:30	0	0	0	0
5:45	0	0	0	0
6:00	0	0	0	0
6:15	2	0	0	0
6:30	0	0	0	0
6:45	2	0	0	0
7:00	0	0	1	0
7:15	2	0	0	0
7:30	0	0	0	0
7:45	1	0	1	0
8:00	0	1	0	0
8:15	1	0	0	0
8:30	4	0	2	0
8:45	2	0	3	0
9:00	1	0	0	0
9:15	0	0	0	0
9:30	1	0	1	0
9:45	0	0	1	0
10:00	1	0	0	0
10:15	1	0	1	0
10:30	1	0	0	0
10:45	2	0	0	0
11:00	0	0	2	0
11:15	0	0	0	0
11:30	1	0	0	0
11:45	7	0	2	0



SITE: 2

DATE: 9/11/2025

LOCATION: North Street

DAY: THURSDAY

TIME	Eastbound		Westbound	
	Peds	Pc's	Peds	Pc's
12:00	3	0	1	0
12:15	0	0	1	0
12:30	0	0	1	0
12:45	4	0	3	0
13:00	1	0	1	0
13:15	2	0	2	0
13:30	9	0	1	0
13:45	0	0	0	0
14:00	0	0	2	0
14:15	4	0	0	0
14:30	2	0	0	0
14:45	4	0	0	0
15:00	2	0	0	0
15:15	6	0	1	0
15:30	9	1	0	0
15:45	4	0	1	0
16:00	4	0	0	0
16:15	6	0	0	0
16:30	2	0	0	0
16:45	11	0	1	0
17:00	0	0	0	0
17:15	7	0	0	0
17:30	0	0	0	0
17:45	10	0	2	0
18:00	4	0	0	0
18:15	2	0	0	0
18:30	2	0	0	0
18:45	2	0	0	0
19:00	1	0	2	0
19:15	4	0	0	0
19:30	3	0	0	0
19:45	4	0	0	0
20:00	0	0	0	0
20:15	2	0	0	0
20:30	0	0	0	0
20:45	0	0	1	0
21:00	3	0	2	0
21:15	1	0	0	0
21:30	0	0	0	0
21:45	0	0	0	0
22:00	0	0	0	0
22:15	1	0	0	0
22:30	0	0	0	0
22:45	0	0	0	0
23:00	1	0	0	0
23:15	0	0	0	0
23:30	0	0	0	0
23:45	0	0	0	0
P/TOT	149	2	36	0



SITE: 2

DATE: 9/13/2025

LOCATION: North Street

DAY: SATURDAY

TIME	Eastbound		Westbound	
	Peds	Pc's	Peds	Pc's
0:00	0	0	0	0
0:15	0	0	0	0
0:30	0	0	0	0
0:45	0	0	0	0
1:00	0	0	0	0
1:15	0	0	0	0
1:30	0	0	0	0
1:45	0	0	0	0
2:00	0	0	0	0
2:15	0	0	0	0
2:30	0	0	0	0
2:45	0	0	0	0
3:00	0	0	0	0
3:15	0	0	0	0
3:30	0	0	0	0
3:45	0	0	0	0
4:00	0	0	0	0
4:15	0	0	0	0
4:30	0	0	0	0
4:45	0	0	0	0
5:00	0	0	0	0
5:15	0	0	0	0
5:30	0	0	0	0
5:45	0	0	0	0
6:00	0	0	0	0
6:15	1	0	0	0
6:30	0	0	0	0
6:45	0	0	0	0
7:00	2	0	0	0
7:15	0	0	0	0
7:30	1	0	0	0
7:45	0	0	1	0
8:00	0	0	1	0
8:15	0	0	0	0
8:30	0	0	0	0
8:45	0	0	0	0
9:00	1	0	0	0
9:15	0	0	0	0
9:30	0	0	1	0
9:45	2	0	0	0
10:00	0	0	0	0
10:15	0	0	0	0
10:30	4	0	0	0
10:45	1	0	0	0
11:00	1	0	0	0
11:15	0	0	0	0
11:30	0	0	0	0
11:45	1	0	2	0



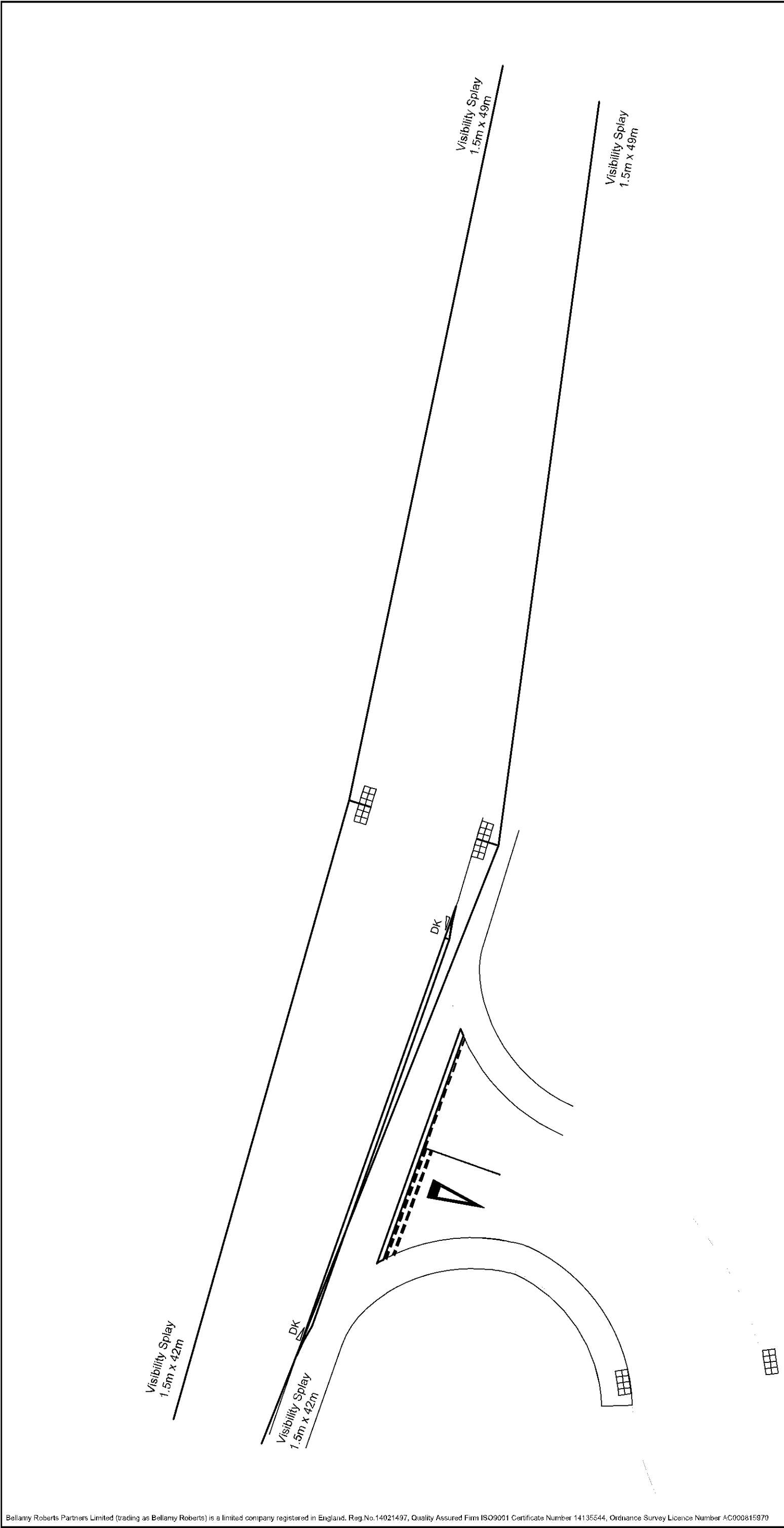
SITE: 2

DATE: 9/13/2025

LOCATION: North Street

DAY: SATURDAY

TIME	Eastbound		Westbound	
	Peds	Pc's	Peds	Pc's
12:00	1	0	0	0
12:15	0	0	2	0
12:30	0	0	0	0
12:45	0	0	0	0
13:00	3	0	1	0
13:15	0	0	1	0
13:30	7	0	1	0
13:45	0	0	3	0
14:00	2	0	2	0
14:15	0	0	2	0
14:30	0	0	2	0
14:45	1	0	0	0
15:00	1	0	0	0
15:15	0	0	1	0
15:30	3	0	2	0
15:45	0	0	0	0
16:00	7	0	2	0
16:15	5	0	0	0
16:30	2	0	0	0
16:45	4	0	0	0
17:00	2	0	0	0
17:15	1	0	0	0
17:30	0	0	0	0
17:45	3	0	0	0
18:00	1	0	3	0
18:15	1	0	0	0
18:30	0	0	2	0
18:45	2	0	0	0
19:00	2	0	0	0
19:15	1	0	0	0
19:30	1	0	0	0
19:45	2	0	1	0
20:00	1	0	0	0
20:15	3	0	0	0
20:30	2	0	0	0
20:45	0	0	0	0
21:00	0	0	0	0
21:15	1	0	1	0
21:30	0	0	0	0
21:45	0	0	1	0
22:00	1	0	0	0
22:15	2	0	0	0
22:30	0	0	0	0
22:45	2	0	0	0
23:00	0	0	0	0
23:15	0	0	0	0
23:30	2	0	0	0
23:45	0	0	0	0
P/TOT	80	0	32	0



Notes

Highway boundary

Speeds -
Northbound: 29.5mph
Southbound: 33mph

E	access updated	MB	10/10/25	MT
D	Site and access updated	MB	22/11/24	MT
C	Site updated	MB	10/11/24	MT
B	Site updated	MB	04/07/24	MT
A	Site and tilities updated	MB	28/06/24	MT
REVISION	AMENDMENT	DRN	DATE	CHK



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CLIENT

PNH Properties

PROJECT

Interbridges Site, Emsworth

TITLE

Pedestrian Crossing and Visibility

DRAWN BY

MB

DESIGN BY

-

CHK BY

RK

DATE

28/05/24

DRAWING No.

6096 / 002

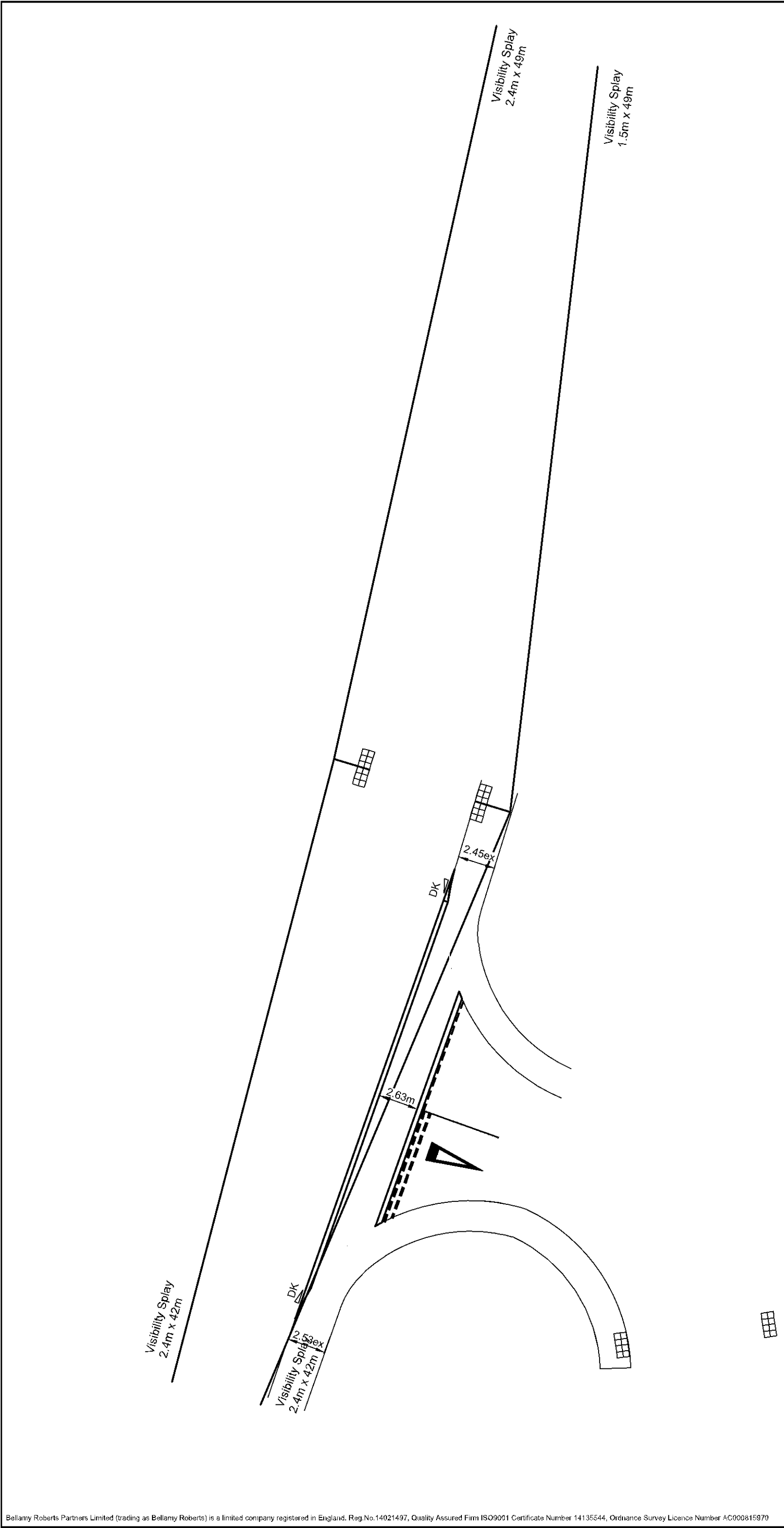
REV No.

E

SCALE

1:250 @ A3

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Notes

Highway boundary

Speeds -
Northbound: 29.5mph
Southbound: 33mph

E	access updated	MB	10/10/25	MT
D	Site and access updated	MB	22/11/24	MT
C	Site updated	MB	10/11/24	MT
B	Site updated	MB	04/07/24	MT
A	Site and facilities updated	MB	28/06/24	MT
REVISION	AMENDMENT	DRN	DATE	CHK



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CLIENT

PNH Properties

PROJECT

Interbridges Site, Emsworth

TITLE

Proposed Crossing Cyclist Visibility

DRAWN BY	MB	DESIGN BY	-	CHK BY	MT
DATE	27/06/25	DRAWING No.	6096 / 011		REV No.
SCALE	1:250 @ A3				E

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.2.1013

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Filename: T-Junction - Industrial Estate - North Street, Emsworth.j9

Path: S:\PROJECTS pre 6150\Admin-Projects\6051-6100\6096\Junction Modelling

Report generation date: 15/10/2025 16:31:06

Summary of junction performance

	AM			PM		
	Queue (Veh)	Delay (s)	RFC	Queue (Veh)	Delay (s)	RFC
	Site Access/North Street					
Stream B-AC	0.0	9.60	0.02	0.0	9.89	0.04
Stream C-AB	0.1	4.84	0.04	0.0	4.25	0.01

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

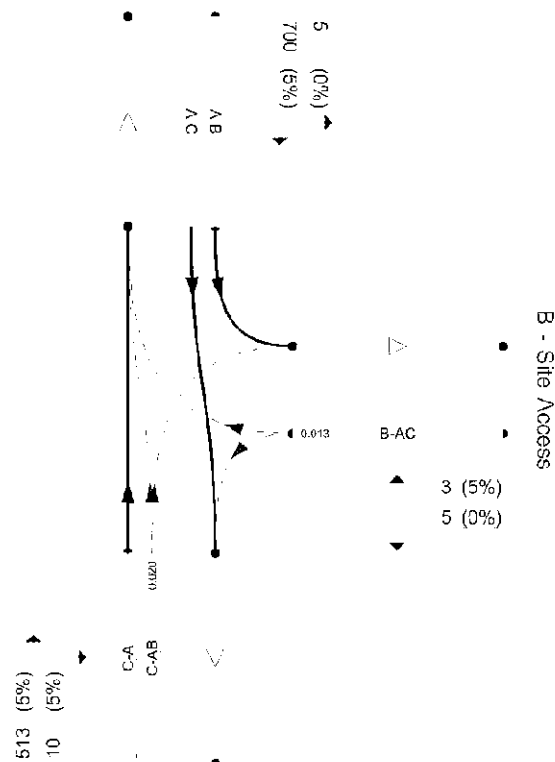
File Description

Title Interbridges T-Junction
Location
Site number
Date 07/02/2024
Version
Status (new file)
Identifier
Client
Jobnumber 5986
Enumerator BR\RoseKleingeld
Description

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

A - North Street / New Brighton Road (north)



C - North Street / New Brighton Road (south)

Flow from signal table details (vehicle)
 Green (duration) and red (RFC)

The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75	✓			0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Site Access/North Street	AM	ONE HOUR	07:45	09:15	15	✓
D7	Site Access/North Street	PM	ONE HOUR	16:45	18:15	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Site Access/North Street, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Site Access	T-Junction	Two-way		0.16	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	North Street / New Brighton Road (north)		Major
B	Site Access		Minor
C	North Street / New Brighton Road (south)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - North Street / New Brighton Road (south)	6.90			111.2	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Site Access	One lane	4.80	36	25

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	592	0.104	0.262	0.165	0.374
B-C	755	0.111	0.281	-	-
C-B	638	0.238	0.238	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments. Streams may be combined, in which case capacity will be adjusted. Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	Site Access/North Street	AM	ONE HOUR	07:45	09:15	15	✓
Vehicle mix varies over turn		Vehicle mix varies over entry		Vehicle mix source		PCU Factor for a HV (PCU)	
✓		✓		HV Percentages		2.00	

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - North Street / New Brighton Road (north)		ONE HOUR	✓	705	100.000
B - Site Access		ONE HOUR	✓	8	100.000
C - North Street / New Brighton Road (south)		ONE HOUR	✓	523	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - North Street / New Brighton Road (north)	B - Site Access	C - North Street / New Brighton Road (south)
From	A - North Street / New Brighton Road (north)	0	5	700
	B - Site Access	3	0	5
	C - North Street / New Brighton Road (south)	513	10	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - North Street / New Brighton Road (north)	B - Site Access	C - North Street / New Brighton Road (south)
From	A - North Street / New Brighton Road (north)	0	0	5
	B - Site Access	5	0	0
	C - North Street / New Brighton Road (south)	5	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.02	9.60	0.0	0.5	A	7	11
C-AB	0.04	4.84	0.1	0.5	A	23	35
C-A						457	685
A-B						5	7
A-C						642	963

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	6	2	479	0.013	6	0.0	0.0	7.612	A
C-AB	15	4	760	0.020	15	0.0	0.0	4.836	A
C-A	378	95			378				

A-B	4	0.94		4
A-C	527	132		527

08:00 - 08:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	7	2	440	0.016	7	0.0	0.0	8.321	A
C-AB	21	5	796	0.027	21	0.0	0.0	4.650	A
C-A	449	112			449				
A-B	4	1			4				
A-C	629	157			629				

08:15 - 08:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	9	2	384	0.023	9	0.0	0.0	9.600	A
C-AB	33	8	849	0.039	33	0.0	0.1	4.412	A
C-A	543	136			543				
A-B	6	1			6				
A-C	771	193			771				

08:30 - 08:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	9	2	384	0.023	9	0.0	0.0	9.600	A
C-AB	33	8	849	0.039	33	0.1	0.1	4.412	A
C-A	543	136			543				
A-B	6	1			6				
A-C	771	193			771				

08:45 - 09:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	7	2	440	0.016	7	0.0	0.0	8.324	A
C-AB	21	5	796	0.027	22	0.1	0.0	4.653	A
C-A	449	112			449				
A-B	4	1			4				
A-C	629	157			629				

09:00 - 09:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	6	2	479	0.013	6	0.0	0.0	7.615	A
C-AB	15	4	760	0.020	15	0.0	0.0	4.839	A
C-A	378	95			378				
A-B	4	0.94			4				
A-C	527	132			527				

Queue Variation Results for each time segment

07:45 - 08:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
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B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A
08:00 - 08:15									
Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.02	0.25	0.45	0.48			N/A	N/A
C-AB	0.03	0.03	0.25	0.45	0.48			N/A	N/A
08:15 - 08:30									
Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.05	0.03	0.25	0.45	0.48			N/A	N/A
08:30 - 08:45									
Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.05	0.00	0.00	0.05	0.05			N/A	N/A
08:45 - 09:00									
Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A
09:00 - 09:15									
Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.01	0.00	0.00	0.01	0.01			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

Site Access/North Street, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	Site Access	T-Junction	Two-way		0.15	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	Site Access/North Street	PM	ONE HOUR	16:45	18:15	15	✓
Vehicle mix varies over turn		Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)			
✓		✓	HV Percentages	2.00			

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A - North Street / New Brighton Road (north)		ONE HOUR	✓	495	100.000
B - Site Access		ONE HOUR	✓	15	100.000
C - North Street / New Brighton Road (south)		ONE HOUR	✓	632	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - North Street / New Brighton Road (north)	B - Site Access	C - North Street / New Brighton Road (south)
From	A - North Street / New Brighton Road (north)	0	4	491
	B - Site Access	9	0	6
	C - North Street / New Brighton Road (south)	630	2	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A - North Street / New Brighton Road (north)	B - Site Access	C - North Street / New Brighton Road (south)
From	A - North Street / New Brighton Road (north)	0	0	5
	B - Site Access	5	0	0
	C - North Street / New Brighton Road (south)	5	5	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-AC	0.04	9.89	0.0	0.5	A	14	21
C-AB	0.01	4.25	0.0	0.5	A	5	8
C-A						575	862
A-B						4	6
A-C						451	676

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	11	3	462	0.024	11	0.0	0.0	7.990	A
C-AB	3	0.85	850	0.004	3	0.0	0.0	4.251	A
C-A	472	118			472				
A-B	3	0.75			3				
A-C	370	92			370				

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	13	3	428	0.032	13	0.0	0.0	8.684	A
C-AB	5	1	903	0.005	5	0.0	0.0	4.009	A
C-A	563	141			563				
A-B	4	0.90			4				
A-C	441	110			441				

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	17	4	380	0.043	16	0.0	0.0	9.891	A
C-AB	8	2	979	0.008	8	0.0	0.0	3.706	A
C-A	688	172			688				
A-B	4	1			4				
A-C	541	135			541				

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	17	4	380	0.043	17	0.0	0.0	9.893	A
C-AB	8	2	979	0.008	8	0.0	0.0	3.706	A
C-A	688	172			688				
A-B	4	1			4				
A-C	541	135			541				

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	13	3	428	0.032	14	0.0	0.0	8.688	A
C-AB	5	1	903	0.005	5	0.0	0.0	4.010	A
C-A	563	141			563				
A-B	4	0.90			4				
A-C	441	110			441				

18:00 - 18:15

Stream	Total Demand (Veh/hr)	Junction Arrivals (Veh)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-AC	11	3	462	0.024	11	0.0	0.0	7.996	A
C-AB	3	0.85	850	0.004	3	0.0	0.0	4.253	A
C-A	472	118			472				

A-B	3	0.75		3
A-C	370	92		370

Queue Variation Results for each time segment

16:45 - 17:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.02	0.00	0.00	0.02	0.02			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

17:00 - 17:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.03	0.25	0.45	0.48			N/A	N/A
C-AB	0.01	0.01	0.25	0.45	0.48			N/A	N/A

17:15 - 17:30

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.03	0.25	0.46	0.48			N/A	N/A
C-AB	0.01	0.01	0.25	0.46	0.48			N/A	N/A

17:30 - 17:45

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

17:45 - 18:00

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

18:00 - 18:15

Stream	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A