



Environmental Associates

Baseline Lighting Survey

Hebburn Metro Station

April 2021

Nexus Metro Flow



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Client: Nexus Metro Flow

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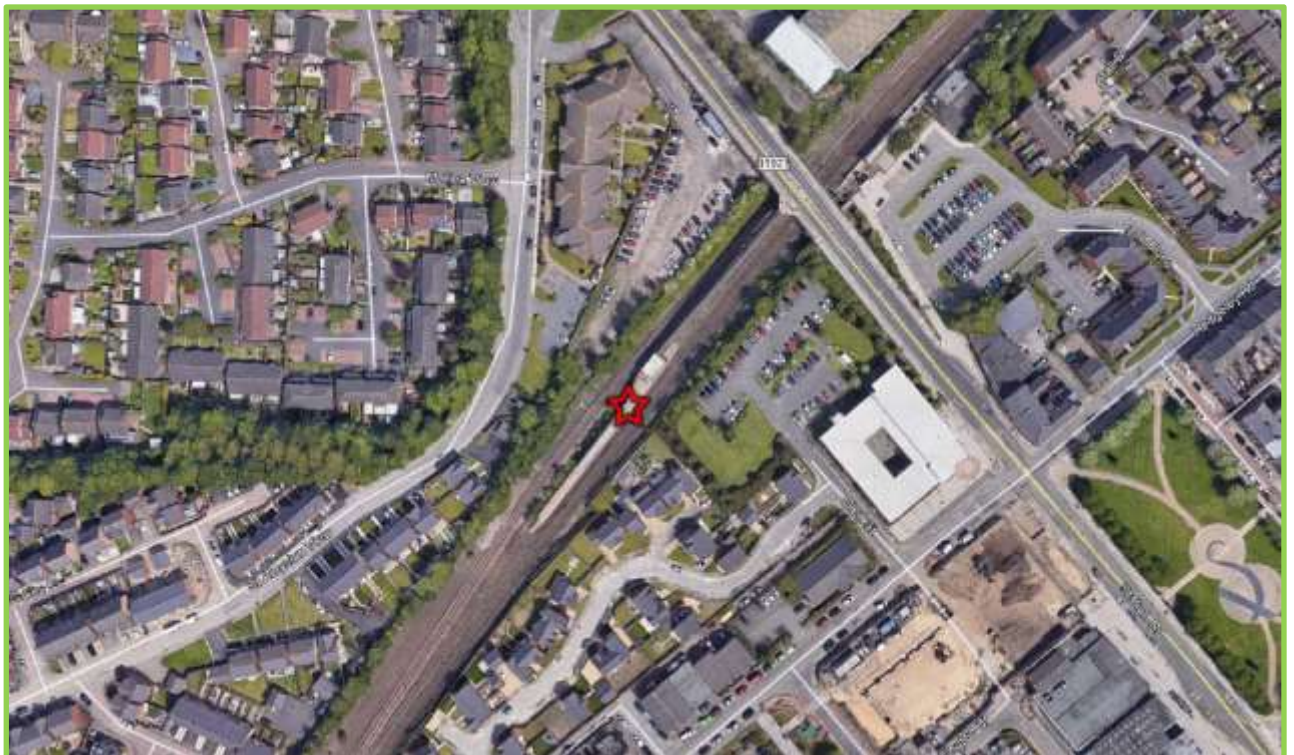
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1 INTRODUCTION

1.1 Background

- 1.1.1 NJD Environmental Associates Ltd was instructed by Nexus Metro Flow to undertake a baseline lighting survey to inform a prior approval assessment for a replacement metro station at Hebburn in South Tyneside. The site location is provided below in Drawing 1.



Drawing 1: Site Location Highlighting Platform 1

- 1.1.2 The proposed works form part of Nexus' Metro Flow Project, which involves the dualling of the three single track sections from Pelaw to Bede. The divested Network Rail track that runs alongside the Metro line in this location will be utilised and upgraded to create the dual tracked sections, creating the potential for more network capacity in the future. In order to accommodate freight traffic on the Metro system, track lowers are required in overbridge locations throughout the project area.
- 1.1.3 This includes Hebburn Metro Station, which has split platforms either side of Station Road bridge and, due to the proximity of the platforms, the track lowers will also result in the need to replace the present station.

- 1.1.4 Prior approval assessments have been prepared to consider two options as follows:
- Option A: Lowering of both platforms at Hebburn, which will necessitate the demolition of the current station buildings and their replacement with like-for-like facilities with lower platform heights to accommodate the track lowering works.
 - Option B: Replace the present split platforms at Hebburn with a single 'island' platform in the location of the present Platform 1. Both of the existing platforms would be demolished and, as well as achieving a lower platform height to facilitate the track lowering works, the new consolidated station would provide an enhanced facility for Hebburn and the local area.
- 1.1.5 At the prior approval assessment stage, a lighting design scheme has not been finalised. With regards to Option A, the lighting of the proposed platforms will replicate that of the current platforms, albeit 300 mm lower in height. On this basis, there is unlikely to be any increase in light spill as a result of the proposals, and the amenity of nearby residents and the neighbourhood will be unaffected.
- 1.1.6 Due to the increased height of the proposed new island platform associated with Option B, a baseline lighting survey has been undertaken in the locality. The baseline measurements have been considered alongside the relevant guidance in order to determine the most appropriate criteria to prevent excessive light spill at the closest existing dwellings to the site.
- 1.1.7 The criteria will then inform the final lighting design scheme for the installations at the new island platform, should Option B be selected.

2 LEGISLATION AND POLICY

2.1 Legislative Framework

2.1.1 This Prior Approval Assessment has been prepared in the context of the requirements of Part 18 Class A of Schedule 2 of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) ('the GPDO'):

A. Development authorised by

(a) *a local or private Act of Parliament,*

(b) *an order approved by both Houses of Parliament, or*

(c) *an order under section 14 or 16 of the Harbours Act 1964 (orders for securing harbour efficiency etc, and orders conferring powers for improvement, construction etc of harbours) (1),*

which designates specifically the nature of the development authorised and the land upon which it may be carried out.

Conditions

A.1 Development is not permitted by Class A if it consists of or includes:

(a) *the erection, construction, alteration or extension of any building, bridge, aqueduct, pier or dam; or*

(b) *the formation, laying out or alteration of a means of access to any highway used by vehicular traffic,*

unless the prior approval of the appropriate authority to the detailed plans and specifications is first obtained.

2.1.2 The prior approval of South Tyneside Council is required for the works comprising the development of a new Metro station at Hebburn. The GPDO goes on to explain that: 'A.2 The prior approval referred to in paragraph A.1 is not to be refused by the appropriate authority nor are conditions to be imposed unless they are satisfied that— (a) the development (other than the provision of or works carried out to a dam) ought to be and could reasonably be carried out elsewhere on the land; or (b) the design or external appearance of any building,

bridge, aqueduct, pier or dam would injure the amenity of the neighbourhood and is reasonably capable of modification to avoid such injury.'

- 2.1.3 With reference to the test under condition A.2(b), above, the guidance referred to in Section 3 of this Prior Approval Assessment has been used to assess any changes to the light levels resulting from the development of Hebburn station, so as to demonstrate that the proposed development would not injure the amenity of the neighbourhood.

2.2 National Planning Policy Framework (NPPF)

- 2.2.1 The revised NPPF, issued in February 2019, provides the following with regards to light:

"180. 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:

...

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

- 2.2.2 The relevant criteria outlined in this report, will be used to inform the final lighting design scheme, in order to ensure compliance with both the GDPO and paragraph 180 of the NPPF.

3 GUIDANCE CRITERIA

3.1 Identification of Effects

- 3.1.1 The proposed island platform associated with Option B has the potential to cause light trespass at existing residential dwellings around the site.
- 3.1.2 Recommended guidelines to inform the proposed lighting design have been defined to control light spill to acceptable levels. This included quantifying baseline lighting levels at existing receptors and identifying the relevant criteria as outlined in the following Sections.

3.2 Light Trespass

- 3.2.1 Environmental Zone classifications have been established by the Institute of Lighting Professionals (ILP) depending upon receptor location, from which light

limitations have then been determined for exterior lighting installations. The Environmental Zones are provided in Table 1 and the relevant limits in Table 2 below.

Table 1: Environmental Zone Classification		
Category	Description	Examples
E0	Dark landscapes	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Intrinsically dark landscapes	National Parks, Areas of Outstanding Natural Beauty, etc
E2	Low district brightness areas	Rural, small village or relatively dark urban landscapes
E3	Medium district brightness	Small town centres or urban locations
E4	High district brightness areas	Town/city centres with high levels of night time activity

Table 2: Obtrusive Light Limitations for Exterior Lighting Installations				
Environmental Zone	Light Trespass (into windows) Ev (lux)		Luminaire Intensity I (candelas)	
	Pre-curfew	Post-curfew	Pre-curfew	Post-curfew
E0	0	0	0	0
E1	2	1*	2,500	0
E2	5	1	7,500	500
E3	10	2	10,000	1,000
E4	25	5	25,000	2,500
*From public lighting installations only				

4 LIGHT SURVEY

4.1 Introduction

4.1.1 On the 12th April 2021 between 21300 and 2230h, light measurements were taken at locations representative of the closest receptors, in order to determine baseline lux levels.

4.1.2 A series of measurements were taken at each location; a horizontal ground level measurement and four vertical measurements at 1.5m facing north, east, south, west. The measurements were taken using a calibrated Minolta T10A light meter.

4.2 Monitoring Locations

4.2.1 Measurements were taken at the locations shown in Drawing 2 below.



Drawing 2: Light Monitoring Locations

4.3 Existing Lighting Levels

The results of the monitoring are provided in Table 3.

Table 3: Measured Illuminance (Lux)					
Location	Horizontal	Vertical North	Vertical East	Vertical South	Vertical West
1	17.57	5.08	5.97	15.00	21.96
2	2.80	0.36	2.40	2.01	4.92
3	31.90	22.67	2.61	20.27	23.98
4	5.25	6.09	1.28	0.96	8.89
5	7.35	9.26	11.04	1.29	1.38
6	0.42	0.68	1.36	1.35	0.55
7	3.76	1.10	3.43	8.25	3.22
8	3.51	0.40	5.55	7.30	3.95

- 4.3.1 As indicated in Table 3, the measured illuminance varied between the different survey locations. This was due to the effect of existing street lighting at each

monitoring position. Locations 1 to 4 were affected by the localised lighting installations around the existing metro car park.

- 4.3.2 Based on the site location and baseline measurements undertaken within the residential street areas, Environmental Zone E3 is considered to be appropriate to assign to this area, with medium district brightness.
- 4.3.3 Table 4 provides the relevant light limitations for the proposed development based on the E3 classification.

Table 4: Obtrusive Light Limitations for Exterior Lighting Installations						
Environmental Zone	Sky Glow ULR (Max %)	Light Intrusion (into windows) Ev (lux)		Luminaire Intensity I candelas (cd)		Building Luminance L (cd/m ²)
		Pre curfew	Post curfew	Pre curfew	Post curfew	
E3	5	10	2	10,000	1,000	10

5 EVALUATION

5.1 Proposed Lighting Scheme

- 5.1.1 A detailed lighting design scheme will be prepared for the development by a lighting design engineer, however is not available at the prior approval assessment stage and is anticipated to be drawn up once a decision on whether Option A or Option B is selected.
- 5.1.2 Although the number and type of lighting installations for the proposed island platform has not been selected at this stage, light spill is unlikely to be significant providing the above criteria is not exceeded, when also taking into consideration that the existing lighting installations will be removed and therefore no cumulative effects will occur.
- 5.1.3 Based on the assessment results and relevant guidance, the following parameters should be met when designing the proposed lighting scheme:

Lighting associated with the proposed development shall be designed to ensure:

- Light trespass at the windows of existing residential properties in the vicinity of the site is less than 10 lux for pre-curfew periods and 2 lux post-curfew; and
- Source intensity is less than 10kcd for pre-curfew periods and 1kcd post-curfew.

- 5.1.4 It is considered that a lighting design in accordance with the above parameters would control light spill at sensitive locations to an acceptable level, thus complying with both the GDPO and NPPF.

6 CONCLUSION

- 6.1.1 NJD Environmental Associates has undertaken a baseline lighting survey to inform a lighting design scheme for a prior approval assessment for a replacement metro station at Hebburn in South Tyneside
- 6.1.2 Artificial lighting associated with the proposed development has the potential to effect sensitive receptors. An assessment was therefore undertaken to consider baseline conditions in the vicinity of the site and determine suitable recommended guidelines to inform the final lighting design.
- 6.1.3 A baseline lighting survey was undertaken to determine existing conditions in the vicinity of the proposed development site. The results were utilised to classify the surrounding area as Environmental Zone E3- medium district brightness.
- 6.1.4 Based on the Environmental Zone classification and relevant guidance criteria, the lighting parameters set out at paragraph 5.1.3 have been provided to inform the final lighting design in order to avoid excessive light spill at sensitive locations.
- 6.1.5 A lighting design in accordance with the lighting parameters set out at paragraph 5.1.3 would control light spill at sensitive locations to a level which would not exceed the criteria set out in Table 4, based on the ILP E3 environmental zone classification. As such, the changes to the light levels resulting from the development of Hebburn station:
- Would not constitute an injury to the amenity of the neighbourhood, meaning the test for prior approval under condition A.2(b) to Part 18, Class A of Schedule 2 to the GPDO is satisfied; and
 - Would limit the impact of light pollution from artificial light on local amenity, in accordance with paragraph 180 of the NPPF.



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