Document 6.2

The West Midlands Rail Freight Interchange Order 201X
Technical Appendix 12.2 - Visibility Mapping/Photomontage Methodology
Regulation 5(2)(a)
FPCR - July 2018

West Midlands Interchange

Four Ashes Ltd

Appendix 12.2

Landscape and Visual Impact Assessment

Mapping Visibility and Photomontage Methodologies

Mapping Visibility

GLVIA3 advises that land that may potentially be visually connected with a proposed development should (subject to the scale and nature of the proposed development) be identified and mapped. It identifies two main approaches to mapping visibility - by a manual method and by a digital (or computer modelled) method. A combination of both approaches usually provides the best results.

In this instance the approach has adopted both methods to map the potential visible extent of the proposed development. Firstly, a digital modelled Zone of Theoretical Visibility (ZTV) has been defined as a desk based study. This ZTV has then been 'tested' and reviewed in the field and through cross sectional analysis to produce a more representative and refined ZTV indicating the main visible extents of the proposed development.

Zone of Theoretical Visibility (ZTV)

The Zone of Theoretical Visibility (ZTV), is a computer-generated tool used to identify the 'theoretical' extent of visibility of a development. It is a desk study component of the visibility analysis.

The digital terrain model of the Site and the surrounding area is sourced from Ordnance Survey. This computer model is a 'Bare Earth' terrain model and therefore does not feature any areas of settlement, buildings, woodland, vegetation or other features or boundaries. These elements can have a substantive visual screening effect, especially in combination. As a result, the computer modelled 'Bare Earth' ZTV presents an extreme view of the possible 'worst case' visibility of the proposed development, without taking into account of those features in the surrounding landscape that may contribute towards visually screening the proposed development from certain directions and positions.

This type of ZTV is frequently used as a starting point. GLVIA3 recognises the importance of surrounding landscape components in influencing actual visibility and in relation to these components it states; '*Their effects are best judged by field surveys that can examine and record their location, size and extent, and their effect in screening visibility at key points…Site surveys are therefore essential to provide an accurate baseline assessment of visibility.*' (para 6.10)

It is important that the benefits and limitations of ZTV are fully understood - it is a useful tool, amongst others, particularly in the early stages of a project, to assist in gaining an appreciation of the potential and maximum visibility of a development. The 'Bare Earth' ZTV;

- provides a useful guide to field survey and analysis by showing areas from which visibility may potentially occur.
- focuses the visual assessment process on those areas which may be affected and avoids those which won't.

- supports more detailed field based evaluation and analysis, which can draw upon the 'Bare Earth' ZTV, to more accurately determine the potential visibility of the development.

It is also important to recognise that the significance of the visual effects arising from a development are dependent on many other factors as described elsewhere in the landscape and visual impact assessment methodology.

Project (West Midlands Interchange) Specific Details:

ZTV (Bare Earth Computer Model):

OS Terrain5 Digital Terrain Model (DTM) data on a 5 metre grid has been used to model the 'Bare Earth'. The data was thinned using a vertical thinning tolerance of 0.2m and horizontal spacing of 50m to reduce the number of points in the data set. OS Terrain 5 typically exceeds a root mean square error (RMSE) value of 2 metres, and in urban areas and major communication routes the data has a measured RMSE of 1.5 metres.

The ZTV has been modelled and is based upon the Illustrative Masterplan layout of buildings and infrastructure and using both the maximum building/ structures heights and maximum plot/ floor levels as detailed on the Proposed Development Parameters Plan. In this scenario, it presents the 'worst case' situation in terms of visible extents.

The ZTV was carried out using the 'line of sight to features' function in LSS. The analysis was carried out on a 50m grid at an eye level of 1.6m.

ZTV (Site Analysis):

The ZTV (Site Analysis) has been prepared following preparation of the 'Bare Earth' ZTV. The ZTV (Site Analysis) represents a refined and more accurate representation of the potential visible extent of the Proposed Development. It has been 'tested' and reviewed by both site based analysis and further desk based analysis.

The resultant ZTV (Site Analysis) is approximate, yet it is sufficiently well researched to be representative of the potential visible extent of the proposed development. As depicted, it illustrates the main area from within which views towards the proposed development will be potentially possible. There will be some locations beyond the ZTV (Site Analysis) that will also have a view(s) towards part of the proposed development, yet in these instances the views are most likely to be limited and/or distant and not likely to result in any significant visual effects.

It is also acknowledged that there will be some locations within the ZTV (Site Analysis) that will not have a view(s) towards part of the proposed development. Both of these scenarios are inevitable due to the presence of woodland, trees, hedgerows, settlement, buildings and other visual barriers throughout the surrounding landscape and the resultant complexities of determining the likely visibility of the proposed development.

The resultant ZTV (Site Analysis) is however considered to be sufficiently refined and 'tested' to be an accurate representation of the main areas from within which the proposed development will be visible.

Photomontage Methodology

Representative photomontages for the proposed development have been prepared based upon the viewpoint locations agreed with Natural England, Staffordshire County Council and South Staffordshire Council. The methodology for the preparation of these photomontages is detailed below:

The photomontages were prepared in accordance with accepted guidance set out in The Landscape Institute and The Institute of Environmental Management & Assessment's – "*Guidelines for Landscape & Visual Impact Assessment – Third Edition"* and Landscape Institute Advice Note 01/11 – *"Photography and photomontage in landscape and visual impact assessment".*

A Canon 400D digital SLR, was used to take a series of adjoining photographs, with approximately 50% overlap, allowing the photos to be stitched using Canon Photostitch software, thus illustrating the full horizontal extents of each view. The horizontal field of view for each viewpoint montage varies, yet is based upon the landscape context for each respective view. This field of view is indicated on each Photomontage viewpoint.

A 3D model (created using LSS software) of the proposed development was created showing the proposed development. The proposed 3D LSS model was then accurately positioned in the photo viewpoints using reference markers. These markers are existing vertical features, such as buildings, pylons, and landform. Having set the 3D model accurately into the photo viewpoint, the model has then been rendered using Adobe Photoshop software. The textures used to create proposed workings were adjusted to suit the light conditions within the photograph.

Photomontage Project (West Midlands interchange) Specific Details:

The Proposed Development shown within the photomontages is illustrative only yet is based upon the maximum height for the development plot (and finished floor) levels and the maximum building heights (including the rail gantry cranes). The position and extent of the buildings and other elements of the Proposed Development reflect the Illustrative Masterplan , which is considered to be suitably representative of the potential layout, form, and extent of the proposals.

The use of the maximum height for the development plot (and finished floor) levels and the maximum building heights therefore represents the 'worst case' scenario in terms of the likely visible extent of the Proposed Development. 'Winter' views have also been adopted which also represents the 'worst case' scenario in terms of visual screening or filtering by woodland, trees and other planting.

The final design and detailing of the built development (elevational treatments, colours, rooflines etc) will be subject to subsequent detailed design work and agreement and therefore the final details of the buildings shown will differ. For further detail of the design approach to the scheme and proposed buildings, please refer to the accompanying Design and Access Statement.

The photomontages have been prepared for each of the agreed viewpoints and depict the scheme upon full completion (ie with all buildings, rail infrastructure, transport and other infrastructure and landscape and GI proposals included), detailed as Year 0, and after 15 years of planting growth.