

Land Behind Broadfields, Wivenhoe

Accurate Visual Representations

February Vs October - View Comparison
(Without Leaves / With leaves)

Document prepared by Preconstruct Ltd on behalf of Taylor Wimpey,
to accompany a planning application for the proposed development at
the land behind Broadfields, Wivenhoe.

15th November 2022
www.preconstruct.com



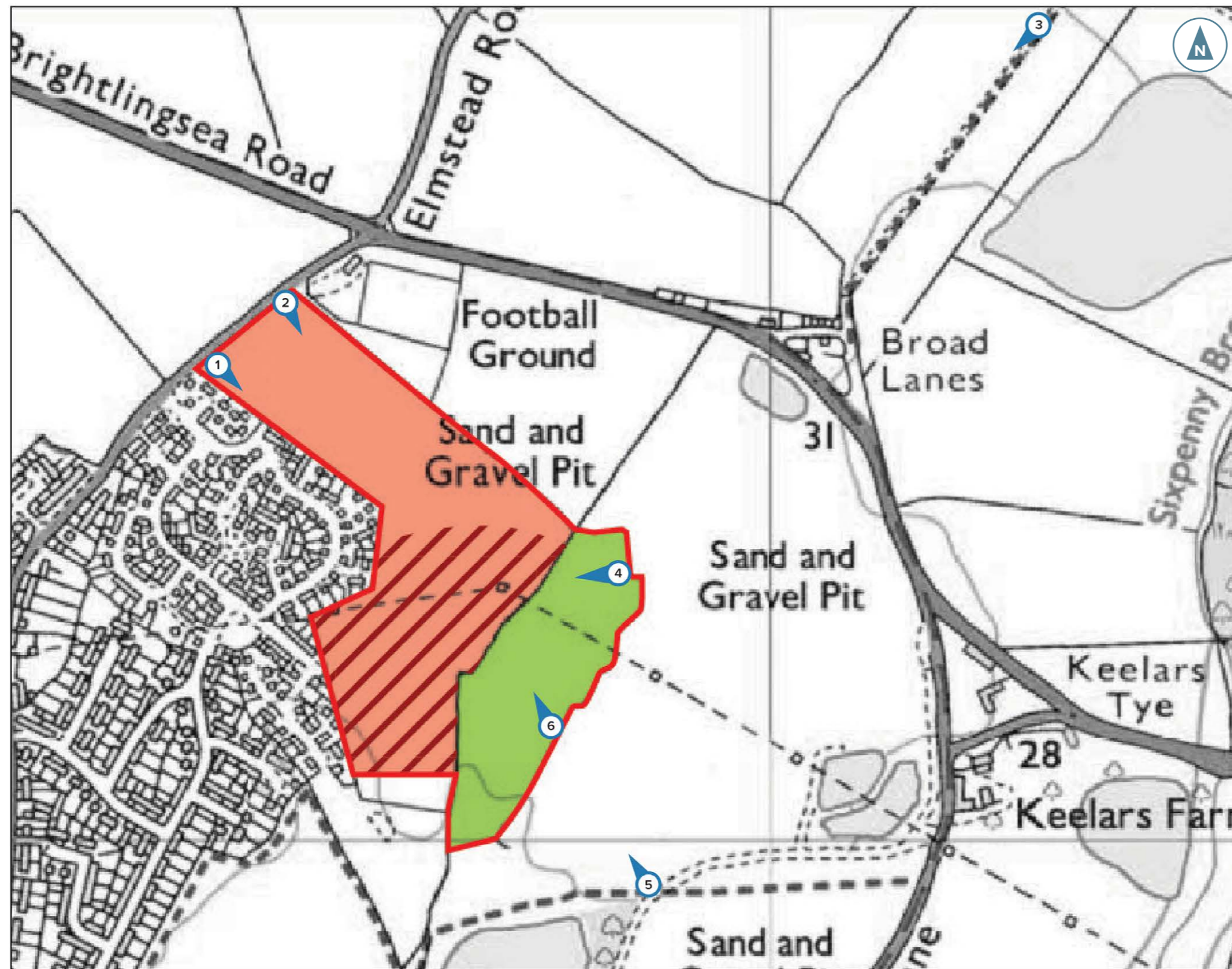
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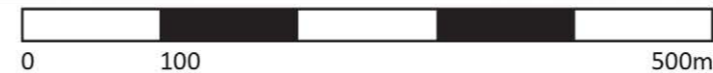
01 Viewpoint Locations



LEGEND

-  Application Boundary
-  Area assessed in LVIA
-  Area of proposed housing
-  Wivenhoe Crosspit Local (within application bound.)
-  Viewpoint Location

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02 Viewpoint Data

VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
01	Winter	North West Corner of Site Near Elmstead Rd	SE	AVR1 - Type4	312.5	604327.8	223569.7	33.0	2022-02-07 / 13:48	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
01	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 11:17	"	"	"	"	"	"	"
02	Winter	North End of Site Near Elmstead Rd	SE	AVR1 - Type4	306	604436.5	223651.8	33.4	2022-02-07 / 13:55	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
02	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 13:19	"	"	"	"	"	"	"
03	Winter	PRoW Between Broad Lanes and Fen Farm	SW	AVR1 - Type4	812.5	605303.9	223954.4	31.0	2022-02-07 / 11:10	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Planar	40°
03	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 11:47	"	"	"	"	"	"	"
04	Winter	North End of Circular Path in Broadfields Nature Reserve	W	AVR1 - Type4	121	604831.9	223284.2	31.2	2022-02-07 / 12:53	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
04	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 12:53	"	"	"	"	"	"	"
05	Winter	Intersection of Track and PRoW near Sand and Gravel Pit	NW	AVR1 - Type4	303.5	604834.1	222925.7	28.3	2022-02-07 / 13:22	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
05	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 12:20	"	"	"	"	"	"	"
06	Winter	East Edge of Circular Path in Broadfields Nature Reserve	NW	AVR1 - Type4	142	604749.0	223140.6	30.4	2022-02-07 / 13:05	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
06	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 12:43	"	"	"	"	"	"	"

" - Information as above (as per Winter Views).

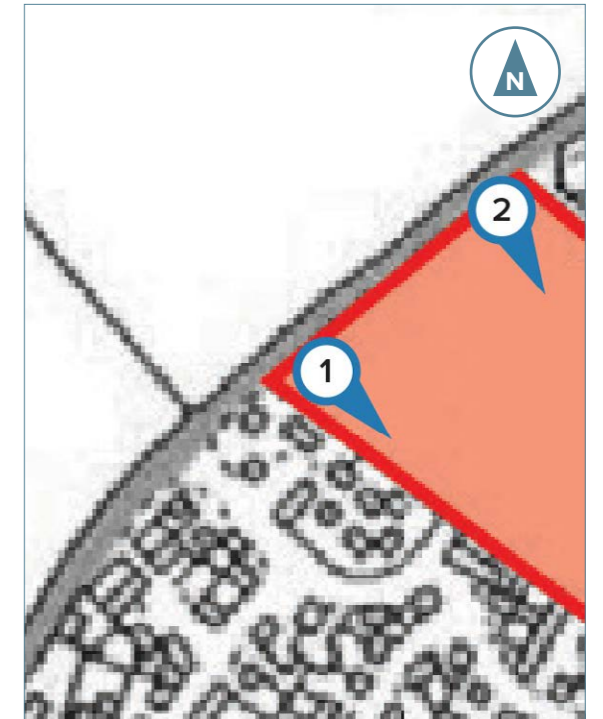
~ - Autumn view positions estimated to be within 1m from Winter view positions.

03 Views



View 1 North West Corner of Site Near Elmstead Rd

Existing and View Data



VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
01	Winter	North West Corner of Site Near Elmstead Rd	SE	AVR1 - Type4	312.5	604327.8	223569.7	33.0	2022-02-07 / 13:48	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
01	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 11:17	"	"	"	"	"	"	"

" Information as above (as per Winter Views) ~ Autumn view positions estimated to be within 1m from Winter view positions





Indicative Sports Pitch Locations

Proposed Cycle/Footpath

	Proposed Buildings
	Proposed Hedges
	Proposed Buildings where Occluded by Existing Context

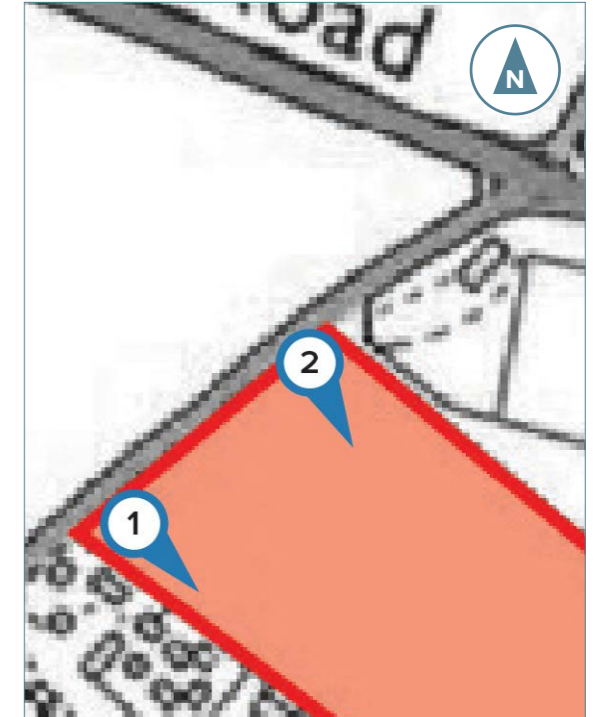
(Also depicted: seasonal trees at approx 15-year growth, additional annotated landscape surfaces)





View 02 North End of Site Near Elmstead Rd

Existing and View Data



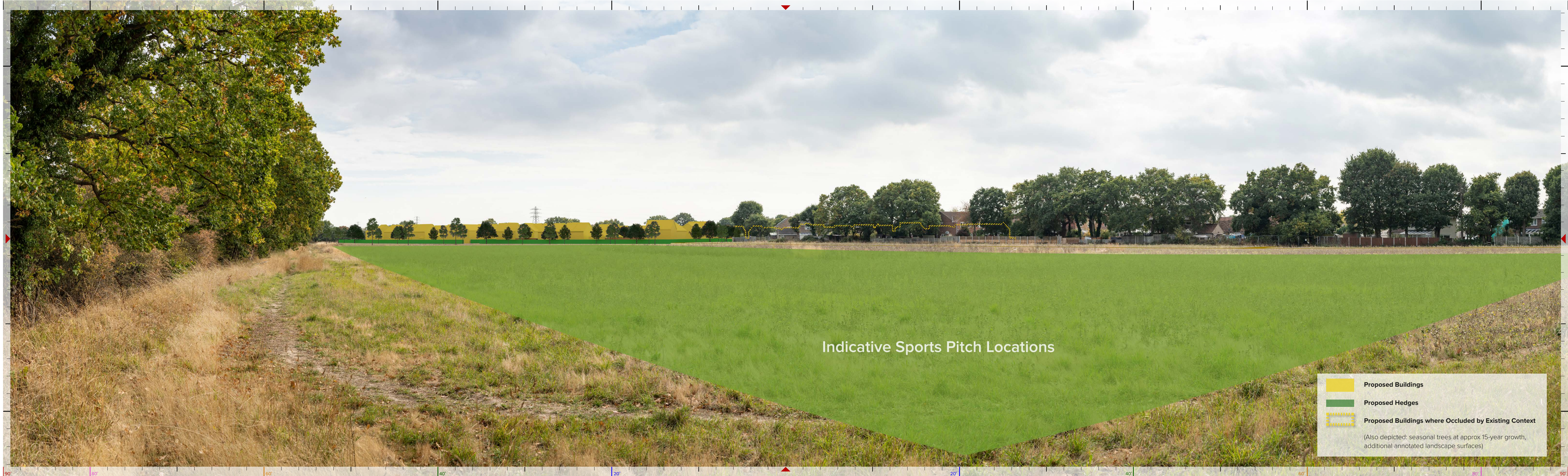
VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
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02	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 13:19	"	"	"	"	"	"	"

" Information as above (as per Winter Views) ~ Autumn view positions estimated to be within 1m from Winter view positions









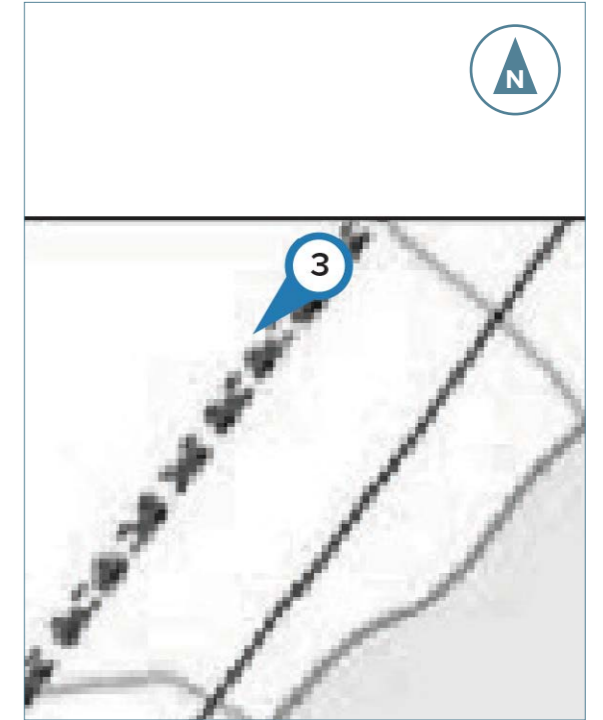
Indicative Sports Pitch Locations

	Proposed Buildings
	Proposed Hedges
	Proposed Buildings where Occluded by Existing Context

(Also depicted: seasonal trees at approx 15-year growth, additional annotated landscape surfaces)

View 03 PRow Between Broad Lanes and Fen Farm

Existing and View Data

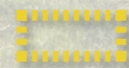


VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
03	Winter	PRow Between Broad Lanes and Fen Farm	SW	AVR1 - Type4	812.5	605303.9	223954.4	31.0	2022-02-07 / 11:10	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Planar	40°
03	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 11:47	"	"	"	"	"	"	"

" Information as above (as per Winter Views) ~ Autumn view positions estimated to be within 1m from Winter view positions






 Proposed Buildings where Occluded by Existing Context



40° | 20° | 20° | Full-width HFoV 40°



 Proposed Buildings where Occluded by Existing Context

View 04 North End of Circular Path in Broadfields Nature Reserve

Existing and View Data



VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
04	Winter	North End of Circular Path in Broadfields Nature Reserve	W	AVR1 - Type4	121	604831.9	223284.2	31.2	2022-02-07 / 12:53	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
04	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 12:53	"	"	"	"	"	"	"

" Information as above (as per Winter Views) ~ Autumn view positions estimated to be within 1m from Winter view positions





Proposed Buildings

Proposed Buildings where Occluded by Existing Context

(Also depicted: seasonal trees at approx 15-year growth)



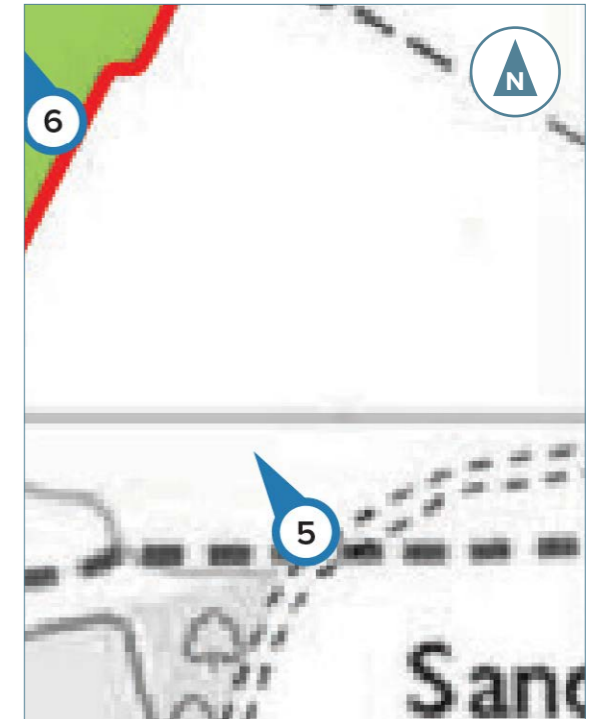


Proposed Buildings

Proposed Buildings where Occluded by Existing Context
(Also depicted: seasonal trees at approx 15-year growth)

View 05 Intersection of Track and PRow near Sand and Gravel Pit

Existing and View Data



VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
05	Winter	Intersection of Track and PRow near Sand and Gravel Pit	NW	AVR1 - Type4	303.5	604834.1	222925.7	28.3	2022-02-07 / 13:22	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
05	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 12:20	"	"	"	"	"	"	"

" Information as above (as per Winter Views) ~ Autumn view positions estimated to be within 1m from Winter view positions





Proposed Buildings

Proposed Buildings where Occluded by Existing Context

(Also depicted: seasonal trees at approx 15-year growth)



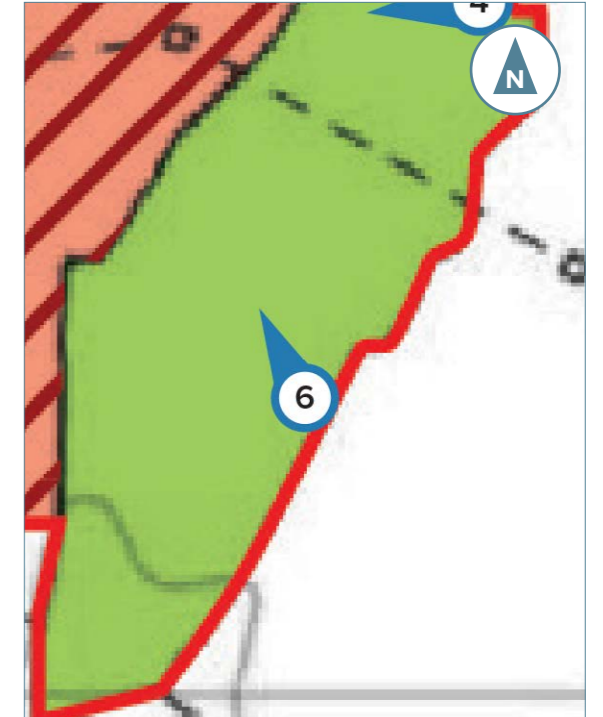


Proposed Buildings

Proposed Buildings where Occluded by Existing Context
(Also depicted: seasonal trees at approx 15-year growth)

View 06 East Edge of Circular Path in Broadfields Nature Reserve

Existing and View Data



VP	Season	Description	Direction (looking)	Visualisation Type	Distance to Nearest Proposed Building (m)	Easting	Northing	Ground AOD (m)	Date / Time	Camera Height (m)	Camera	Lens	Focal Length	Horizon	Projection	HFoV
06	Winter	East Edge of Circular Path in Broadfields Nature Reserve	NW	AVR1 - Type4	142	604749.0	223140.6	30.4	2022-02-07 / 13:05	1.65	Sony A7R IV (35mm)	Canon 50mm F/2.8L	50mm	Central	Cylindrical	90°
06	Autumn (With Leaves)	"	"	"	"	~	~	~	2022-10-12 / 12:43	"	"	"	"	"	"	"

" Information as above (as per Winter Views) ~ Autumn view positions estimated to be within 1m from Winter view positions





Proposed Buildings

Proposed Buildings where Occluded by Existing Context
(Also depicted: seasonal trees at approx 15-year growth)

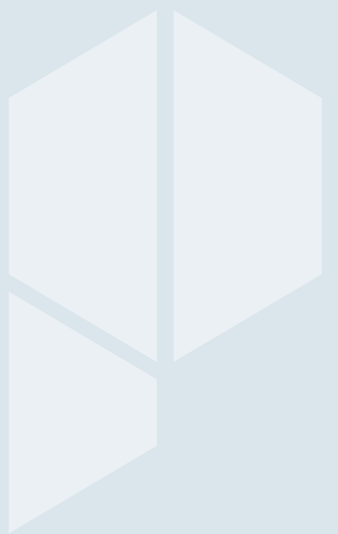




Proposed Buildings

Proposed Buildings where Occluded by Existing Context
(Also depicted: seasonal trees at approx 15-year growth)

Appendices



Appendix 01: Methodology

Overview

The process of generating verified views (also referred to as accurate visual representations / AVR) was carried out by Preconstruct.

Preconstruct use a methodology that is compliant with relevant sections of: The Landscape Institute/IEMA - Guidelines for Landscape and Visual Impact Assessment (3rd edition 2013); The Landscape Institute - Visual Representation of Development Proposals - Technical Guidance Note (September 2019); The Revised SPG London View Management Framework (March 2012).

High quality/resolution photographs were taken from the agreed locations by Preconstruct. An adequate number of visible features were subsequently surveyed, including the precise location and bearing of the camera. A development model was generated to correct geographical co-ordinates. With a known camera position and orientation, photographic and surveyed existing visible features, the development model was accurately aligned to the photograph.

Viewpoints Selection

The viewpoint locations were identified by arc 'Landscape Design and Planning' based on fieldwork and reference to relevant policy and guidance. Please see the accompanying Landscape and Visual Impact Assessment for further details.

Photography

The site was initially photographed in February 2022 when the trees had no leaves on. For each agreed viewpoint location, a high resolution photograph was taken with a 35mm (full frame) digital SLR camera. The location at which the photograph was taken was marked with a peg to allow the surveyor to record the precise location on a subsequent visit. The camera was levelled horizontally and laterally by means of a bubbled tripod head, camera-mounted spirit level and in-camera digital level.

Each viewpoint was revisited and re-photographed in October 2022 to recreate the views with leaves on the trees. It's estimated that the camera positions were matched to within 1 metre.

Lens Selection Criteria

There is no definitive camera, lens, or FoV (field of view), format suitable for all planning photomontages. Focal length selection was based on capturing the proposed development set within the important peripheral context of the environment. For view 3, a standard 50mm lens, with a 40° HFoV (horizontal field of view), was selected.

For views 1,2,4,5 & 6, a 90° HFoV cylindrical projection panoramic was created. This was stitched from a series of individual shots captured with a 50mm lens in portrait orientation (27° HFoV) and a rotational index of 15° (allowing an approximate overlap of 50%). Stitching was carried out in PT GUI.

We recommend that all parties use the planning photomontages as a complement to on-site assessment.

Lens Selection

50mm Prime Lens - landscape orientation.
40° horizontal field of view (HFoV).

Field of View (FoV) Frame

Views within this document are annotated with a FoV frame/scale. The red arrows indicate the vertical and horizontal points of perspective (Optical Axis). Each graticule/marker on the scale represents 1°. The numbers on the scale should be read in pairs. E.g. the space between the two markers | 40° and 40° | has a total horizontal field of view of 40°. Accuracy is estimated to be within 1° to 3°, to allow for rounding errors and lens variations.

Camera Make/Model

Sony a7R IV (ILCE-7RM4) (35mm)

Lens Make/Model

Canon TS-E 50mm F/2.8L

(Although this is a Tilt/Shift model lens, it was used with no T/S function. It therefore replicates a standard 50mm prime lens)

Tripod, Head & Other Photographic Equipment

- Manfrotto Tripod
- 360 Precision Head Panoramic Head
- Camera Mounted Spirit Level / In-Camera Digital Level
- Pegs

Post Production

Each base photograph has had a level of basic colour correction applied to it so that it best represents the impression of the scene as the photographer experienced it in person.

This processing is predominately done to the 16bit RAW file using Adobe Lightroom. It includes, but is not limited to, adjustments in; colour temperature and tint; levels such as exposure and contrast; shadow and highlight recovery; sky recovery through the use of gradient corrections; and other post processing effects such as sharpening and noise reduction.

Stitching of the panoramic views was carried out in PT GUI. The subsequent October 2022 panoramic views were stitched and corrected to match the February 2022 views as closely as possible.

Survey

For each agreed viewpoint location an instructional document was released to the survey subcontractor. The surveyor was instructed (by means of a marked-up photograph, map and tripod (in situ) photograph) to record a range of contextual reference points and the viewpoint location.

Survey Equipment

- Leica 1200 series GPS Smartnet enabled dual receiver (GPS and GLONASS)
- Leica Total Station (1201 or TS16 or TS15) 1' accuracy with 1000m reflectorless laser

Field Survey Methodology

- Camera locations: where possible, the camera position will be used as a setup point for the total station, enabling the re-creation of the view as seen in the imagery and reducing the risk of wrong interpretation of detail. Connection is

usually via GPS Smartnet derived control points in OSGB datum and grid. 3-4 control stations are used, to ensure long distance accuracies and to identify possible outliers.

- Reference points visible in the photography are measured with reflectorless means from the total station. If long distance views have suitable detail too far from the camera station, further setups are used closer to the detail. Common visible detail points are observed from different setup points to check and increase accuracy achieved.
- Accuracies of camera positions and surveyed details will vary due to setup geometry and distance, but will typically always be below 20 centimetres.

Data Processing and Delivery

Data is processed using industry standard software (Leica GeoOffice and TerraModel) to create points listings. A3 verification plots or digital photos are marked up with the surveyed points to aid identification. All points are to OSGB36 grid and datum, to allow the use of common Ordnance Survey products and industry standard site surveys.

The Proposed Development

Preconstruct imported a .3ds model of the proposed development as supplied by the project architect. This was subsequently directed and reviewed by the project architect. The model was subsequently aligned to the OSGB36 co-ordinate system.

Vegetation

Proposed trees are depicted at approx 15-year growth (6-8m tall with a 2m clear stem). They are depicted with a semi-realistic 'look' rather than the AVR1-Wireline approach used for built-form.

The Verification Process

The collected survey reference point data and camera location data was imported into the 3D model environment from the delimited text file (relative to the OSGB36 co-ordinate system) by means of a proprietary script.

At each viewpoint location a virtual camera was set up in the 3D software (Autodesk 3DS Max) using the coordinates provided by the surveyor. The 3D coordinates of the survey reference points were used to create an accurate 'point

cloud' model of the contextual surveyed parts of the scene. The scene was verified by matching the contextual surveyed points to the photograph. To do this, for each viewpoint, a 'point cloud' render* was made from the virtual camera in the 3D model. Using Adobe Photoshop CC, the photography and surveyed references from the 'point cloud' render were aligned.

Subsequently more renders were made for the proposed scheme. The alignment process was repeated to provide accurate placement of the proposed built-forms within the context of the photographs.

Additionally, LIDAR point-cloud data was used to confirm alignments and improve accuracy.

Where proposed built-form is occluded by existing foreground context, it was masked-out and a dashed-outline was applied. When proposed built-form is occluded by proposed trees no dashed-outline is applied.

* Rendering is the process of generating an image from a model (or models in what collectively could be called the 3D environment), by means of computer programs - specifically, in this case Chaos Group's Vray.

Printing, Viewing Distance and Image Enlargement

The 'Viewing Distance' and 'Image Enlargement' (as per specified in LI Technical Guidance Note 06/19 - Sep 2019) are relevant only to printed documentation.

image enlargement values (monocular) are included within this document on each view. Images to be viewed at a comfortable arm's length (approx 542mm).

All focal lengths listed relate to a 35mm full-frame sensor camera.

Caution is needed in regard to the automatically scaling of printers and printing software. Printing should be 100% and edge-to-edge to match the listed sheet sizes.

Appendix 02: Sources of Data

Survey Data

Asset	Description	Supplier	Reference	Date	Comment
Survey Data	Table of Points (XLSX file) Surveyors notes/mark-up (PDF)	Mastermap Surveys	VV- 0102	12/02/2022	Imported using proprietary script. Origin Shift -604640 E -223360 N

Supplied Data

Asset & Description	Format	Supplier	Reference	Date	Comment
Proposed Housing Scheme Model	.3ds export from Sketchup	JCN Design and Planning	Wivenhoe 3D base LVIA.3ds	07/02/2022	Model not in OS coordinate system. Model not set at correct AOD Heights.
Topographical - Site Survey	DWGs	Survey Solutions Via JCN Design and Planning	25565se-12@A1.dwg	07/02/2022	
Landscape/Site Plan	DWG	Andrew Hastings Via arc Landscape Design and Planning	TW027 CAD Layout Option 9 rev Zf 03-02-2022 AHLC VERSION.dwg	14/02/2022	Contains OS reference. Used to assist in alignment of Proposed Housing Model to OS coordinate system.
AOD Mark-up	Annotated Image - png	arc Landscape Design and Planning	Levels.png	08/02/2022	Used to assist in alignment of Proposed Housing Model to indicative AOD heights.

Supporting Data

Asset & Description	Format	Supplier	Reference	Date	Comment
LIDAR - Surface Height Data	Point Cloud (.laz)	Environment Agency	TM0422_P_11843_20200128_20200128 TM0422_P_12147_20201112_20201112	Downloaded: 10/02/2022	Used to confirm accuracy of alignment of photography to models.

Generated/Compiled Data (by Preconstruct)

Asset	Description	Reference	Comment
3D Model / Scene	Scene files generated in Autodesk 3DS Max to create and render model data	4975 + 5091 MaxRender	

Example Survey & Lidar Data



Point #	Eastings	Northings	Height (AOD)
V3	605303.909	223954.406	31.001
03C1	605080.877	223622.248	34.405
03C2	605079.155	223622.496	33.399
03C3	605083.013	223624.8	33.579
03C4	604897.451	223655.401	34.015
03C5	604897.476	223655.385	35.155
03C6	605000.979	223631.822	34.761
03C7	605089.966	223649.261	32.229
03C8	605074.244	223706.182	31.271
03C9	605083.44	223618.649	36.343
03C10	605097.156	223644.821	38.597
03C11	605091.509	223644.022	36.73
03C12	605027.167	223635.08	38.042
03C13	605000.776	223632.218	36.793
03C14	604893.976	223656.109	36.369
03C15	605050.484	223627.545	35.28
03C16	605088.196	223662.867	31.41

Appendix 03: AVR Type Description

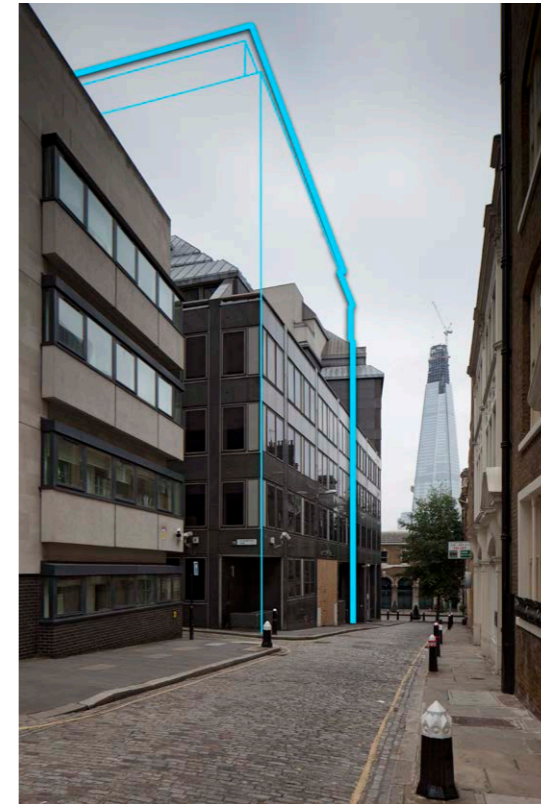
Text extracted from The London View Management Framework (SPG March 2012 - Part 3, page 248) Appendix C: Accurate Visual Representations.

“To assist agreement between all parties prior to AVR preparation, the following classification types are presented to broadly define the purpose of an AVR in terms of the visual properties it represents. This classification is a cumulative scale in which each level incorporates all the properties of the previous level.”

- AVR (Level 0) Location and size of proposal
- AVR (Level 1) Location, size and degree of visibility of proposal
- AVR (Level 2) As level 1 + description of architectural form
- AVR (Level 3) As level 2 + use of materials



AVR0
Showing location and size (in this case as a toned area superimposed on photograph)



AVR1
Confirming degree of visibility (in this case as an occluded 'wireline' image)



AVR2
Explaining architectural form (in this case as a simply shaded render in a uniform opaque material)



AVR3
Confirming the use of materials (in this case using a 'photorealistic' rendering technique)



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