

**Cambridge Waste Water Treatment Plant Relocation Project**  
Anglian Water Services Limited

# Appendix 15.1: Photomontages

Application Document Reference: 5.4.15.1  
PINS Project Reference: WW010003  
APFP Regulation No. 5(2)a

## Methodology used for the preparation of the verifiable photomontages with a 90 degree x 27 degree field of view

The photomontages have been prepared following the Landscape Institute Technical Guidance Note 06/19 : Visual Representation of Development Proposals (September 2019). The methodology used is described in more detail in the appendix to Chapter 15 of the ES: Landscape and Visual Amenity (Application Document reference 5.4.5.15).

**CAMERA EQUIPMENT** Camera – Sony A7rIV with Sigma 35mm lens. Panoramic mount - custom engineered to rotate the camera in a flat plane within 0.015 degrees to the horizon.

**IMAGE CAPTURE** The camera was mounted on a tripod 1.65m above the ground and high quality architectural photographic practice was used to capture the view in two-point perspective. For panoramic images the camera was placed on a rotating mount and a sequence of images sharing the same point of perspective and orientation with respect to the horizon were captured using a fixed 35mm lens. Images were captured in RAW format and a photograph taken of the camera in its location. Reasonable effort was made to capture images in the best weather and at the best times of day with regards to the angle of the sun.

**SURVEY** A Leica total station was used to record a set of 15-25 3d coordinates within the view. These coordinates were aligned to OS using a Leica Viva GNSS system. Where a view was in a rural location with no fixed survey points, temporary survey targets were placed and the survey undertaken at the same time as the photography.

**IMAGE PROCESSING** The RAW image was processed into a tiff image which was remapped to remove all lens distortion to ensure a perfect fit with the 3d data. For panoramic images, the individual frames were stitched together in specialist software to create a seamless image to the specified FOV in an equirectangular projection. The image was then placed into a larger background and positioned so that the

calculated position of the image's optical axis was aligned with the centre of the background to compensate for any lens shift.

**CAMERA ALIGNMENT** The OS coordinate and orientation of the camera was calculated using the 3d OS survey coordinates and their corresponding 2d coordinates on the image. The values obtained by this process along with the OS coordinates were moved to a local point of origin to reduce their numerical size and entered into the 3ds Max Physical camera controls and the survey points rendered out over the background image to verify the alignment.

**OUTPUT PACKAGE** A high resolution layered tiff file with marked survey points and corresponding rendered objects as separate layers. Information describing the physical parameters of the camera and the time and date of the image capture. 3ds Max Physical Camera aligned to survey. A spreadsheet and DXF of survey points and camera coordinates in original OS and local coordinates. A photographic record of the camera in its position.

In year 1, mitigation planting is shown at planting size.

In year 15, mitigation planting is shown between 5 - 7.5m high for woodland, 7.5 - 10m high for trees and 2 - 3m high for hedgerows. Heights vary depending on the location of planting.

	PM 1 - View north-east from High Ditch Road	PM 2 - View east from Biggin Abbey	PM 3 - View south-east from Horningsea Road near the Harcamlow Way	PM 4 - View south-east from Horningsea Road near Low Fen Drove Way	PM 5 - View east from Horningsea Road bridge over the A14	PM 6 - View south-east from Low Fen Drove Way	PM 7 - View south from Footpath Horningsea 130/6
Visualisation type	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4
Projection	Cylindrical	Cylindrical	Cylindrical	Cylindrical	Cylindrical	Cylindrical	Cylindrical
Enlargement factor	96% @ A1	96% @ A1	96% @ A1	96% @ A1	96% @ A1	96% @ A1	96% @ A1
Date and time of capture	16.12.21, 09.53am	16.12.21, 11.42am	16.12.21, 11.17am	16.12.21, 10.21am	16.12.21, 10.09am	16.12.21, 10.50am	16.12.21, 12.22pm
Make and model of camera, sensor format	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV
Make, focal length of lens	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm
Horizontal field of view	90 degrees	90 degrees	90 degrees	90 degrees	90 degrees	90 degrees	90 degrees
Vertical field of view	27 degrees	27 degrees	27 degrees	27 degrees	27 degrees	27 degrees	27 degrees
Direction of view	North-east	East	South-east	South-east	East	South-east	South
OS coordinates of lens	548899.41, 260112.828	548828.305, 261656.772	549163.877, 261813.906	549112.036, 261574.855	548946.657, 261200.709	549198.16, 261519.477	550156.111, 262799.919
Lens height mAOD	14.859	07.256	10.378	08.785	17.958	09.423	05.996
Ground height mAOD	13.209	05.606	08.728	07.135	16.308	07.773	04.346
Distance to nearest site boundary	592m	within site boundary	within site boundary	within site boundary	within site boundary	within site boundary	1.26km
Height of camera lens above ground	1.65	1.65	1.65	1.65	1.65	1.65	1.65

### Methodology used for the preparation of the photomontages with a 39.6 degree x 27 degree field of view

The photomontages have been prepared following the Landscape Institute Technical Guidance Note 06/19 : Visual Representation of Development Proposals (September 2019). The methodology used is described in more detail in the appendix to Chapter 15 of the ES: Landscape and Visual Amenity (Application Document reference 5.4.5.15).

**CAMERA EQUIPMENT** Camera – Sony A7rIV with Sigma 35mm lens. Panoramic mount - custom engineered to rotate the camera in a flat plane within 0.015 degrees to the horizon.

**IMAGE CAPTURE** The camera was mounted on a tripod 1.65m above the ground and high quality architectural photographic practice was used to capture the view in two-point perspective. For panoramic images the camera was placed on a rotating mount and a sequence of images sharing the same point of perspective and orientation with respect to the horizon were captured using a fixed 35mm lens. Images were captured in RAW format and a photograph taken of the camera in its location. Reasonable effort was made to capture images in the best weather and at the best times of day with regards to the angle of the sun.

**SURVEY** A Leica total station was used to record a set of 15-25 3d coordinates within the view. These coordinates were aligned to OS using a Leica Viva GNSS system. Where a view was in a rural location with no fixed survey points, temporary survey targets were placed and the survey undertaken at the same time as the photography.

**IMAGE PROCESSING** The RAW image was processed into a tiff image which was remapped to remove all lens distortion to ensure a perfect fit with the 3d data. For panoramic images, the individual frames were stitched together in specialist software to create a seamless image to the specified FOV in an equirectangular projection. The image was then placed into a larger background and positioned so that the

calculated position of the image's optical axis was aligned with the centre of the background to compensate for any lens shift.

**CAMERA ALIGNMENT** The OS coordinate and orientation of the camera was calculated using the 3d OS survey coordinates and their corresponding 2d coordinates on the image. The values obtained by this process along with the OS coordinates were moved to a local point of origin to reduce their numerical size and entered into the 3ds Max Physical camera controls and the survey points rendered out over the background image to verify the alignment.

**OUTPUT PACKAGE** A high resolution layered tiff file with marked survey points and corresponding rendered objects as separate layers. Information describing the physical parameters of the camera and the time and date of the image capture. 3ds Max Physical Camera aligned to survey. A spreadsheet and DXF of survey points and camera coordinates in original OS and local coordinates. A photographic record of the camera in its position.

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	PM 1 - View north-east from High Ditch Road	PM 2 - View east from Biggin Abbey	PM 3 - View south-east from Horningsea Road near the Harcamlow Way	PM 4 - View south-east from Horningsea Road near Low Fen Drove Way	PM 5 - View east from Horningsea Road bridge over the A14	PM 6 - View south-east from Low Fen Drove Way	PM 7 - View south from Footpath Horningsea 130/6
Visualisation type	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4
Projection	Planar	Planar	Planar	Planar	Planar	Planar	Planar
Enlargement factor	100% @ A3	100% @ A3	100% @ A3	100% @ A3	100% @ A3	100% @ A3	100% @ A3
Date and time of capture	16.12.21, 09.53am	16.12.21, 11.42am	16.12.21, 11.17am	16.12.21, 10.21am	16.12.21, 10.09am	16.12.21, 10.50am	16.12.21, 12.22pm
Make and model of camera, sensor format	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV	Sony A7rIV
Make, focal length of lens	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm	Sigma 35mm
Horizontal field of view	39.6 degrees	39.6 degrees	39.6 degrees	39.6 degrees	39.6 degrees	39.6 degrees	39.6 degrees
Vertical field of view	27 degrees	27 degrees	27 degrees	27 degrees	27 degrees	27 degrees	27 degrees
Direction of view	North-east	East	South-east	South - east	East	South-east	South
OS coordinates of lens	548899.41, 260112.828	548828.305, 261656.772	549163.877, 261813.906	549112.036, 261574.855	548946.657, 261200.709	549198.16, 261519.477	550156.111, 262799.919
Lens height mAOD	14.859	07.256	10.378	08.785	17.958	09.423	05.996
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Distance to nearest site boundary	592m	within site boundary	within site boundary	within site boundary	within site boundary	within site boundary	1.26km
Height of camera lens above ground	1.65	1.65	1.65	1.65	1.65	1.65	1.65



# Photomontage location plan

- 1 View north-east from High Ditch Road
- 2 View east from Biggin Abbey
- 3 View south-east from Horningsea Road near the Harcamlow Way
- 4 View south-east from Horningsea Road near Low Fen Drove Way
- 5 View east from the Horningsea Road bridge over the A14
- 6 View south-east from Low Fen Drove Way
- 7 View south from Footpath Horningsea 130/6

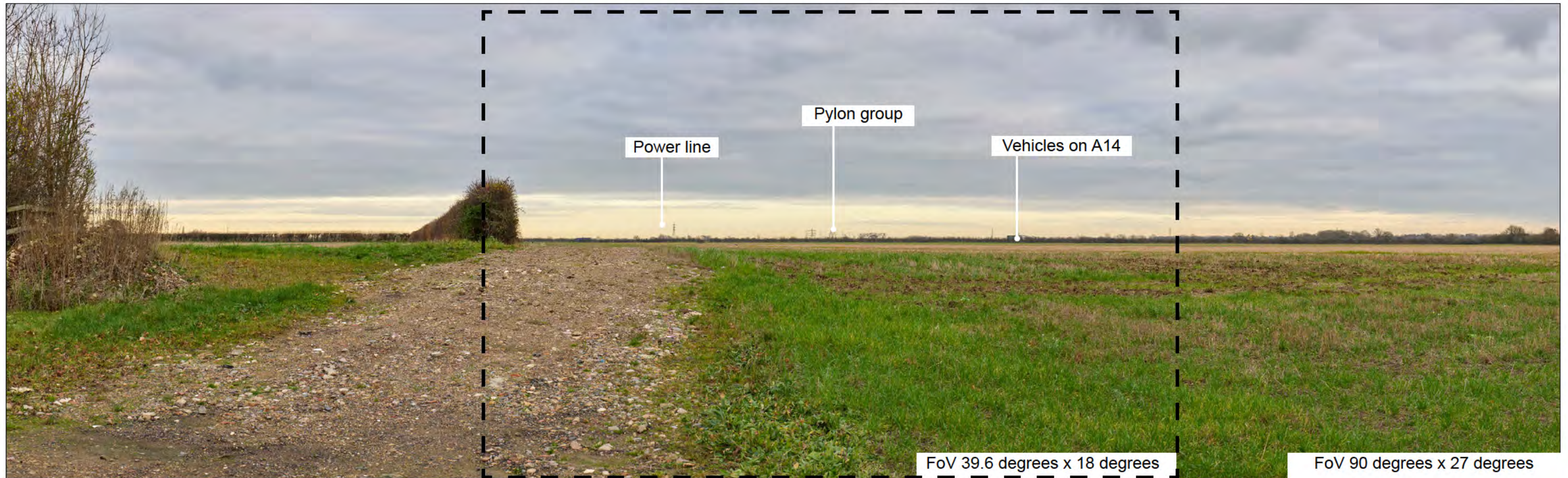




# Photomontage 1: View north-east from High Ditch Road

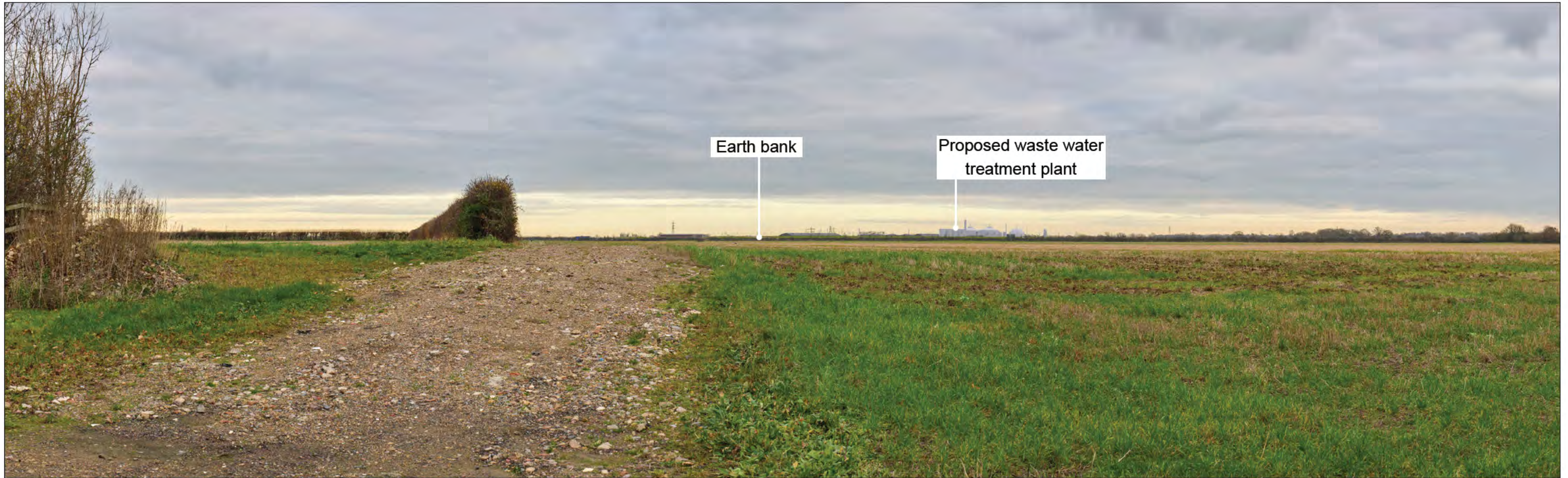


Viewpoint location plan (NTS)



Photomontage 1: Existing views (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 1: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



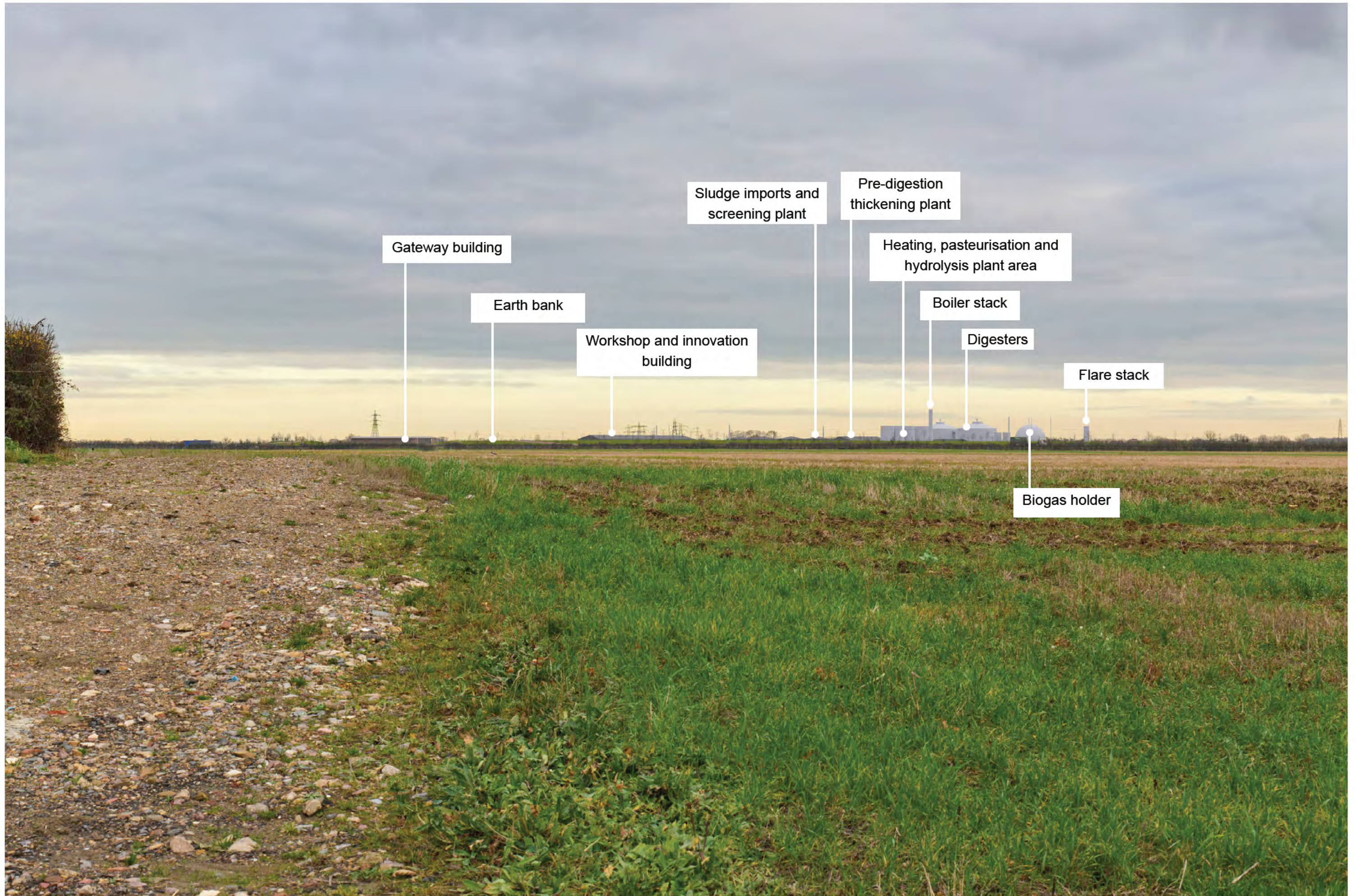
Photomontage 1: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





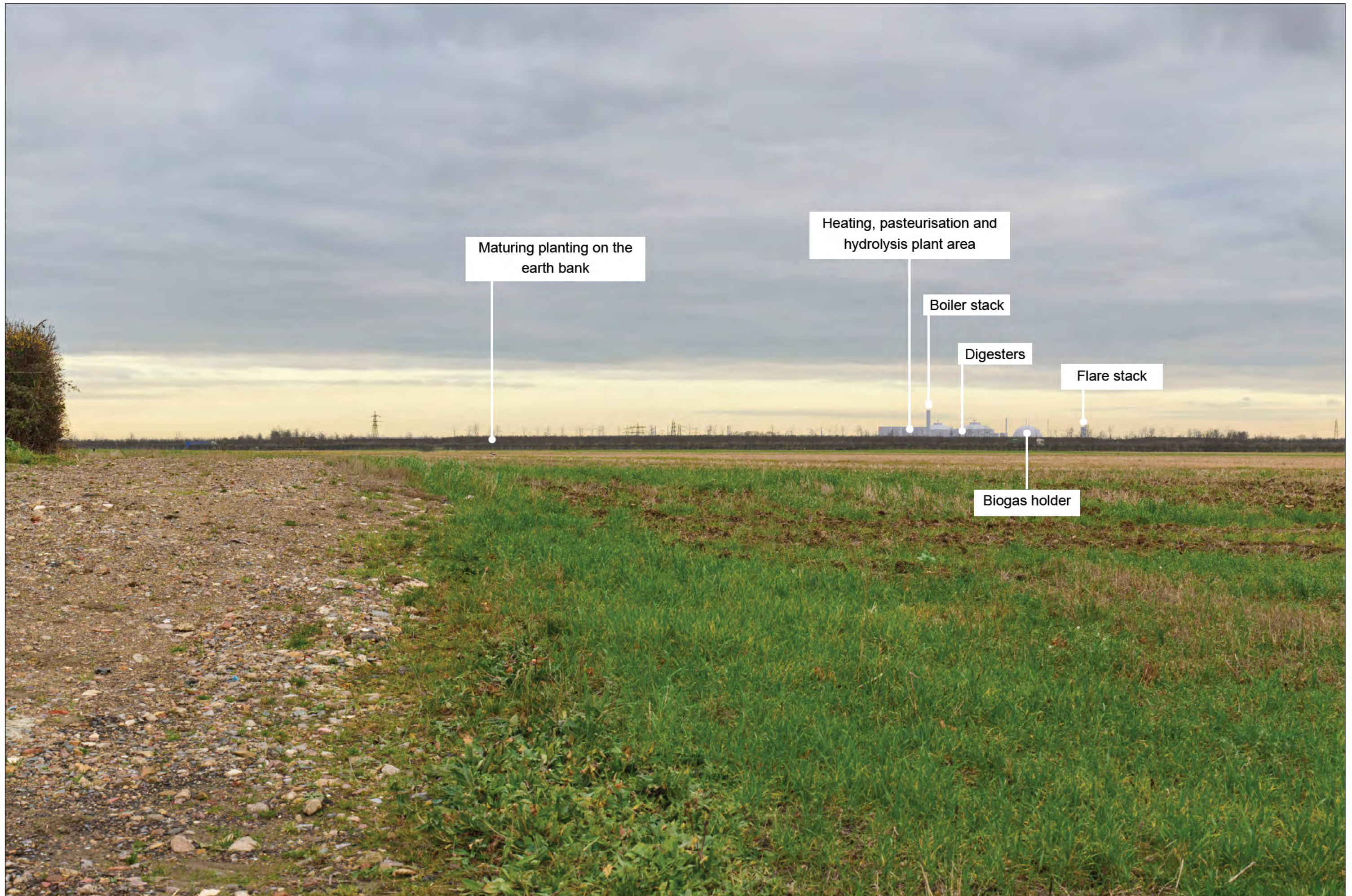
Photomontage 1: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 1: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages

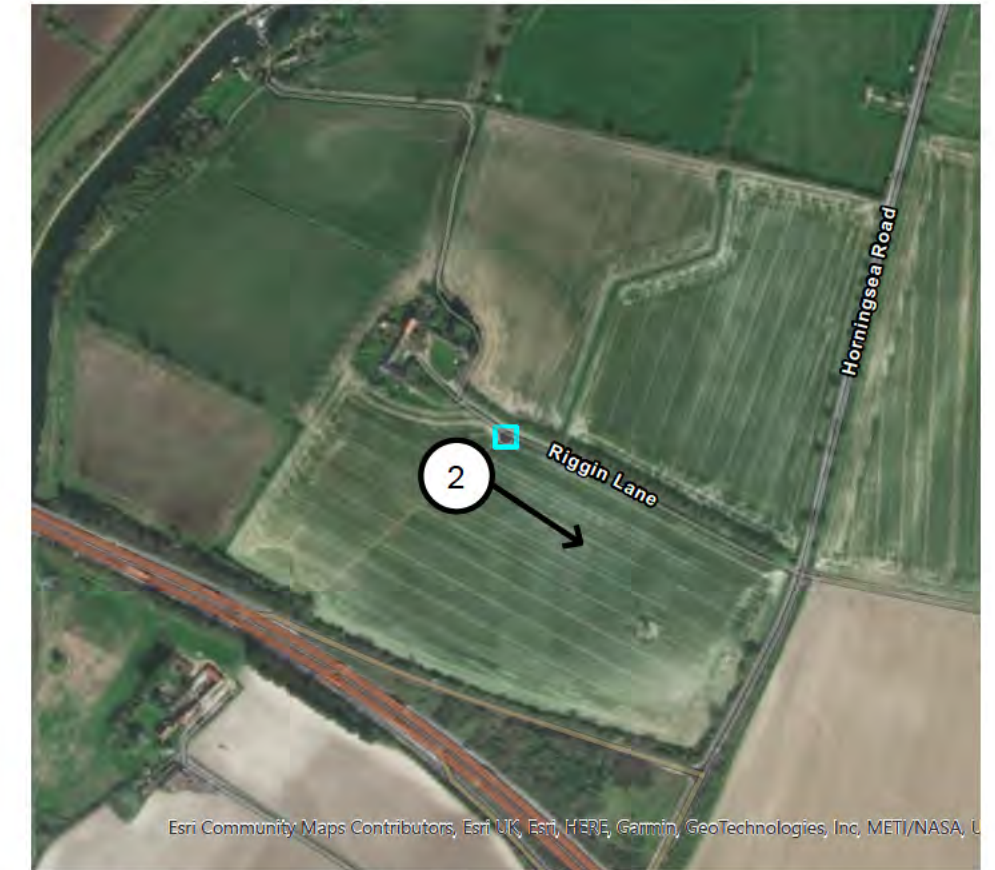




Photomontage 1: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



## Photomontage 2: View east from Biggin Abbey

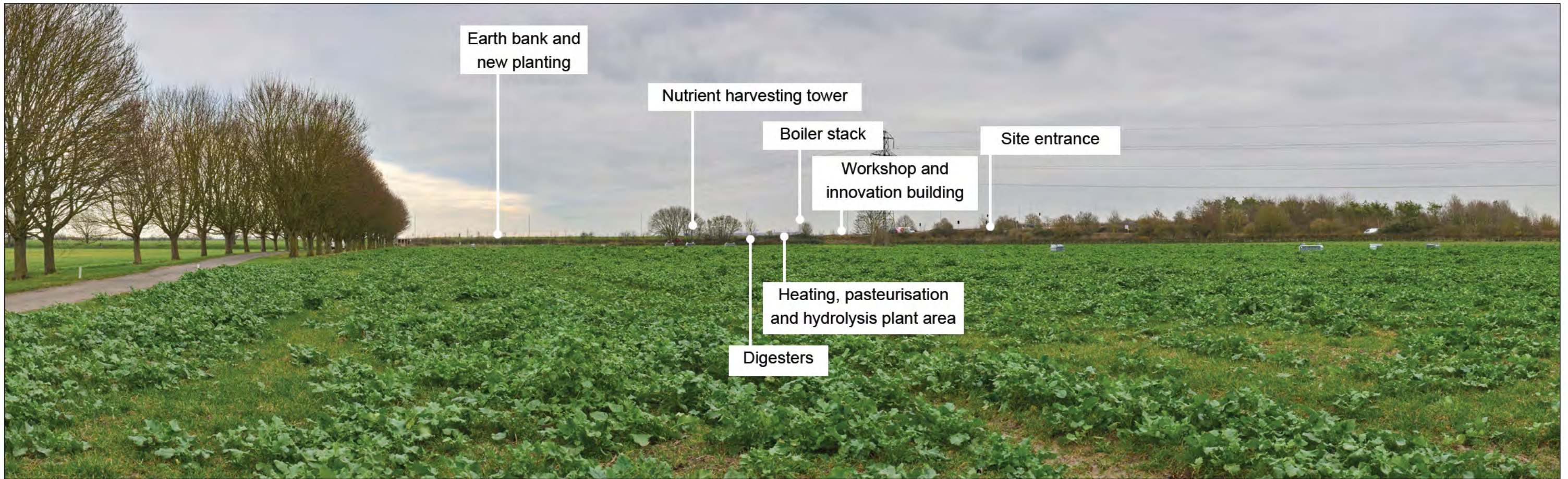


Viewpoint location plan (NTS)



Photomontage 2: Existing view (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



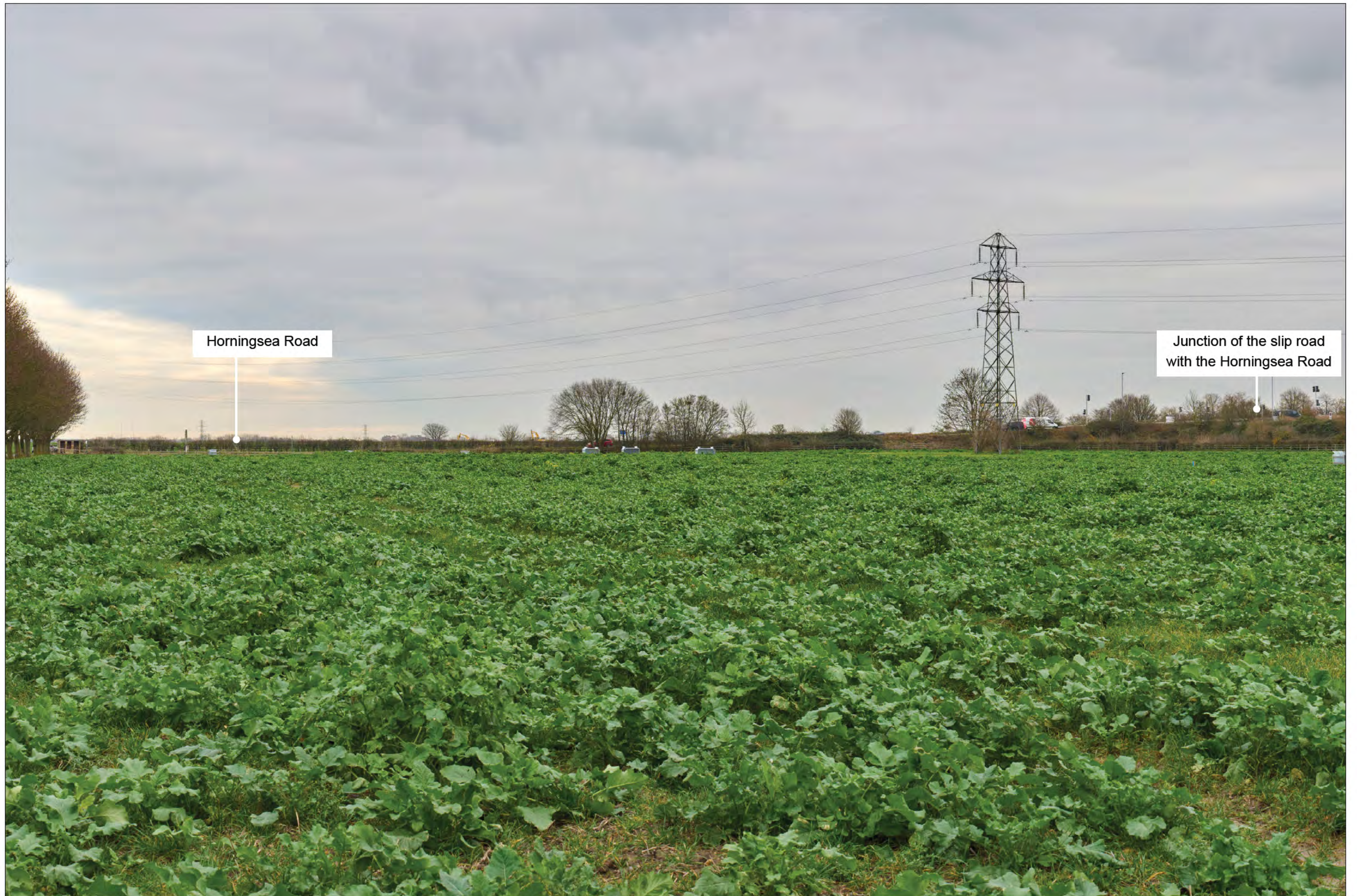


Photomontage 2: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



Photomontage 2: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Horningsea Road

Junction of the slip road  
with the Horningsea Road

Photomontage 2: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
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Earth bank and new planting

Nutrient harvesting tower

Boiler stack

Workshop and innovation building

Site entrance

Heating, pasteurisation and hydrolysis plant area

Digesters

Photomontage 2: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





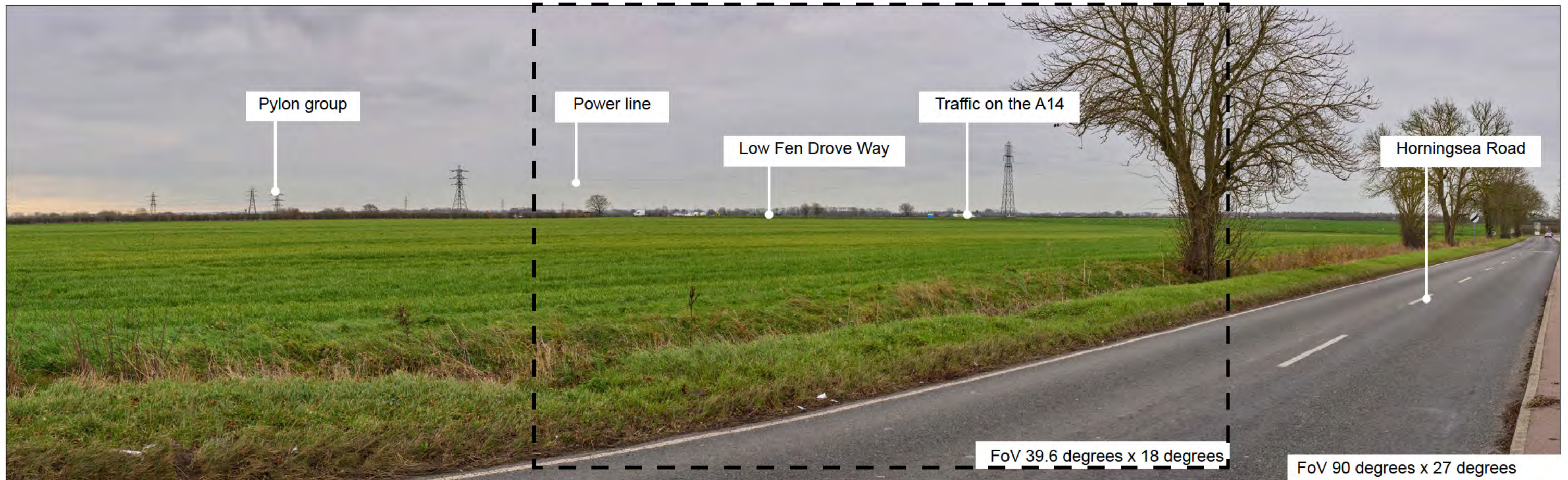
Photomontage 2: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



### Photomontage 3: View south-east from Horningsea Road near the Harcamlow Way

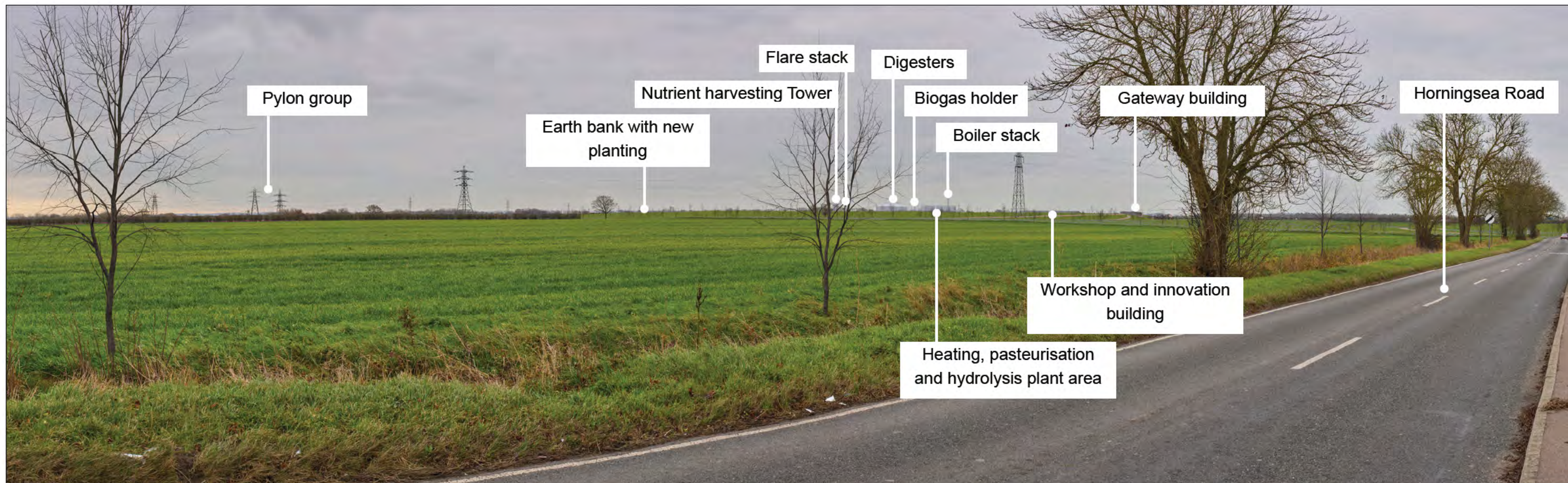


Viewpoint location plan (NTS)

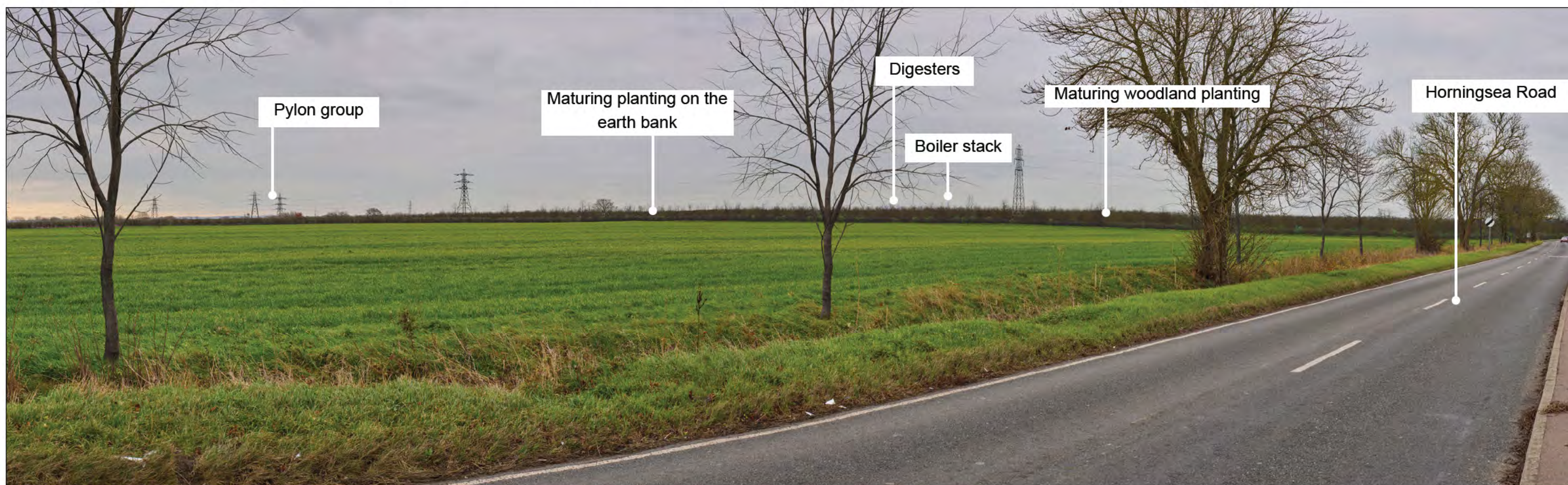


Photomontage 3: Existing views (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 3: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



Photomontage 3: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





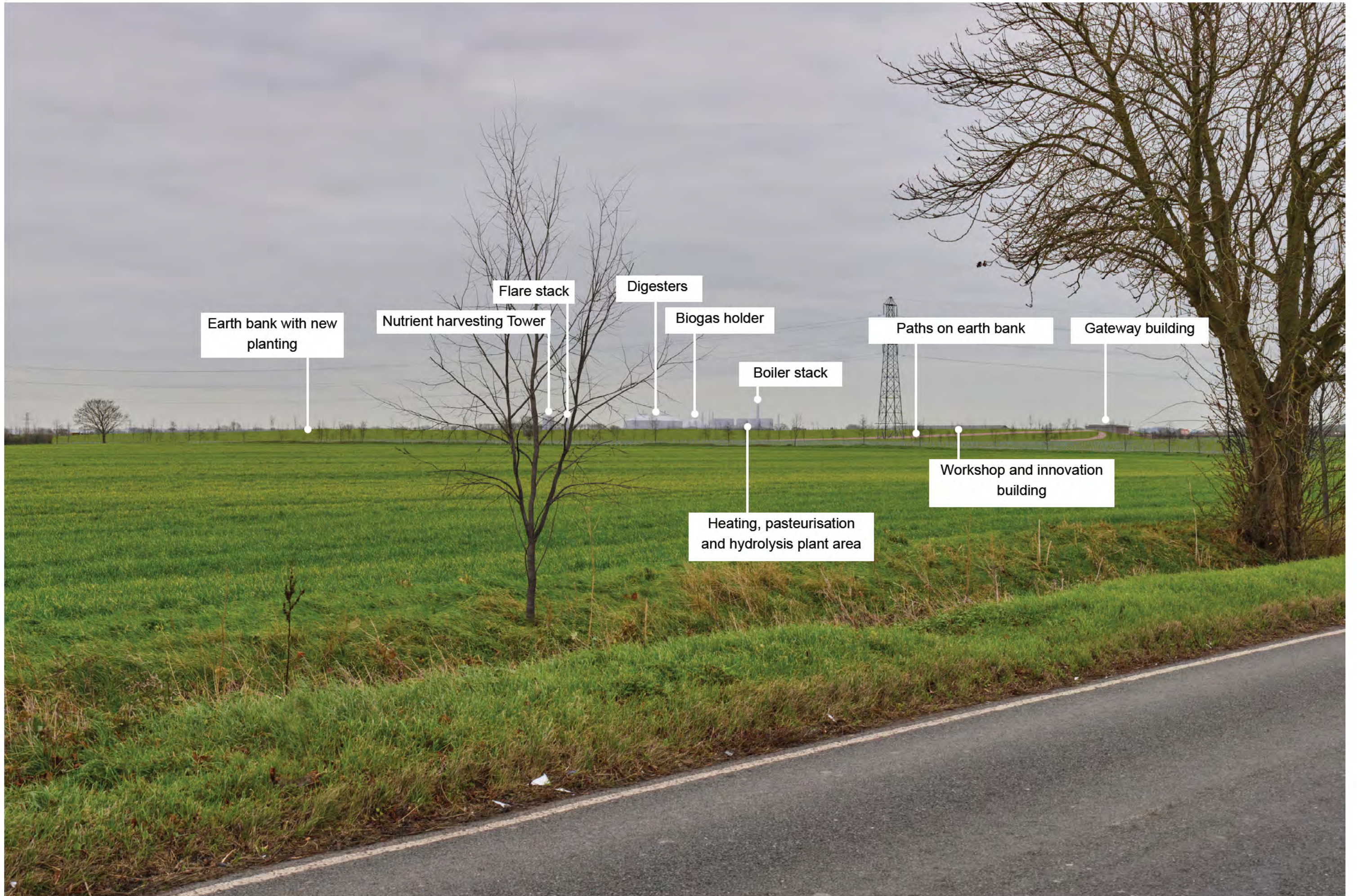
Power line

Low Fen Drove Way

Traffic on the A14

Photomontage 3: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 3: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 3: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



# Photomontage 4: View south-east from Horningsea Road near Low Fen Drove Way

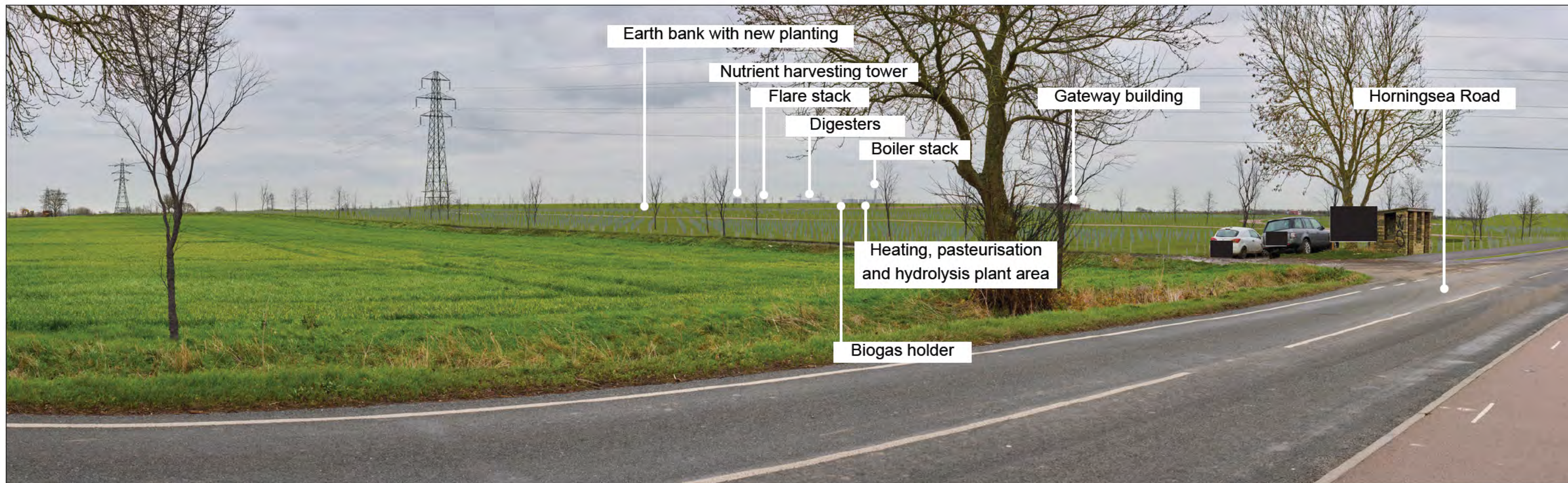


Viewpoint location plan (NTS)



Photomontage 4: Existing view (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 4: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



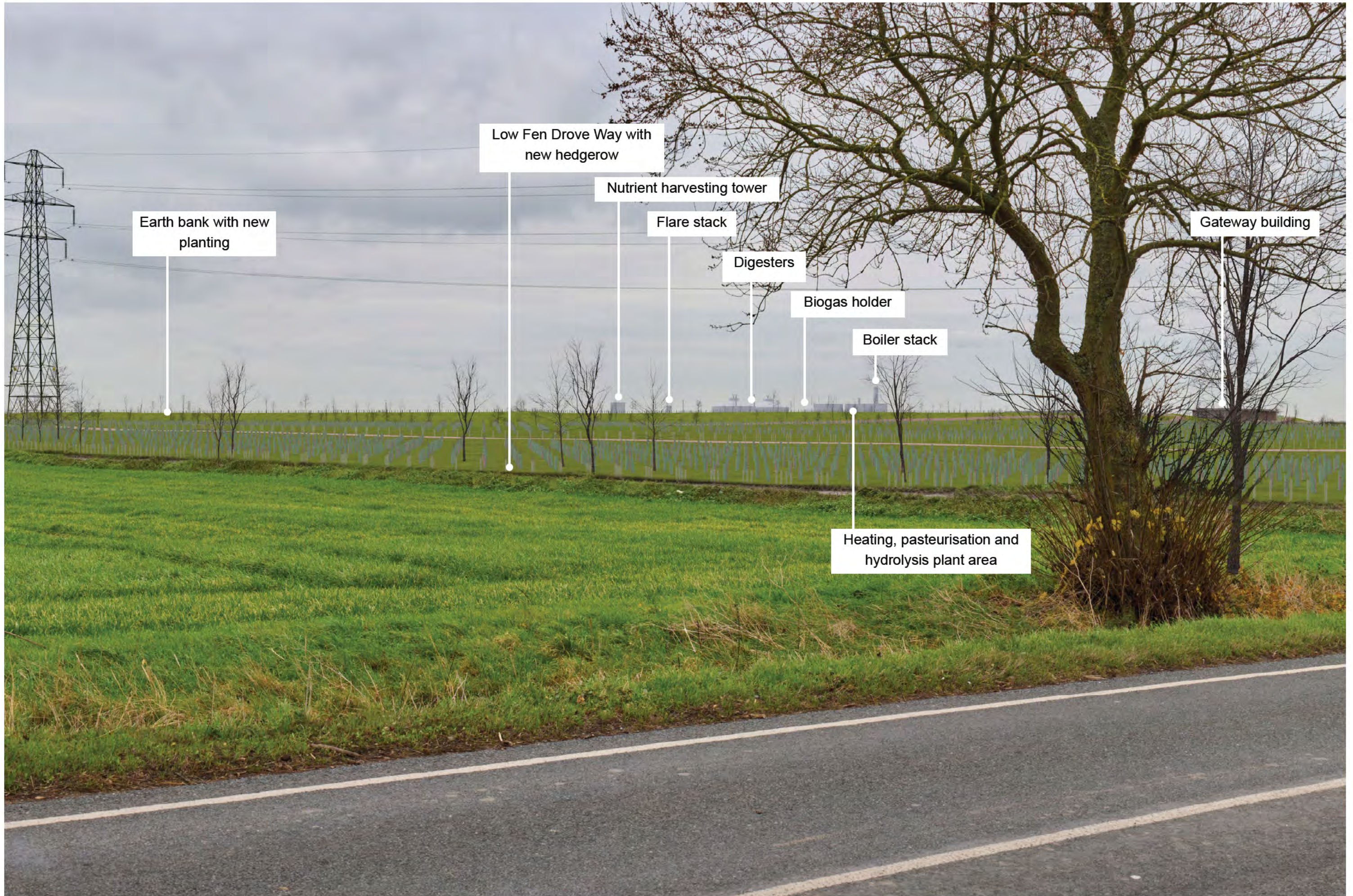
Photomontage 4: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 4: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Earth bank with new planting

Low Fen Drove Way with new hedgerow

Nutrient harvesting tower

Flare stack

Digesters

Biogas holder

Boiler stack

Gateway building

Heating, pasteurisation and hydrolysis plant area

Photomontage 4: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 4: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



# Photomontage 5: View east from Horningsea Road bridge over the A14

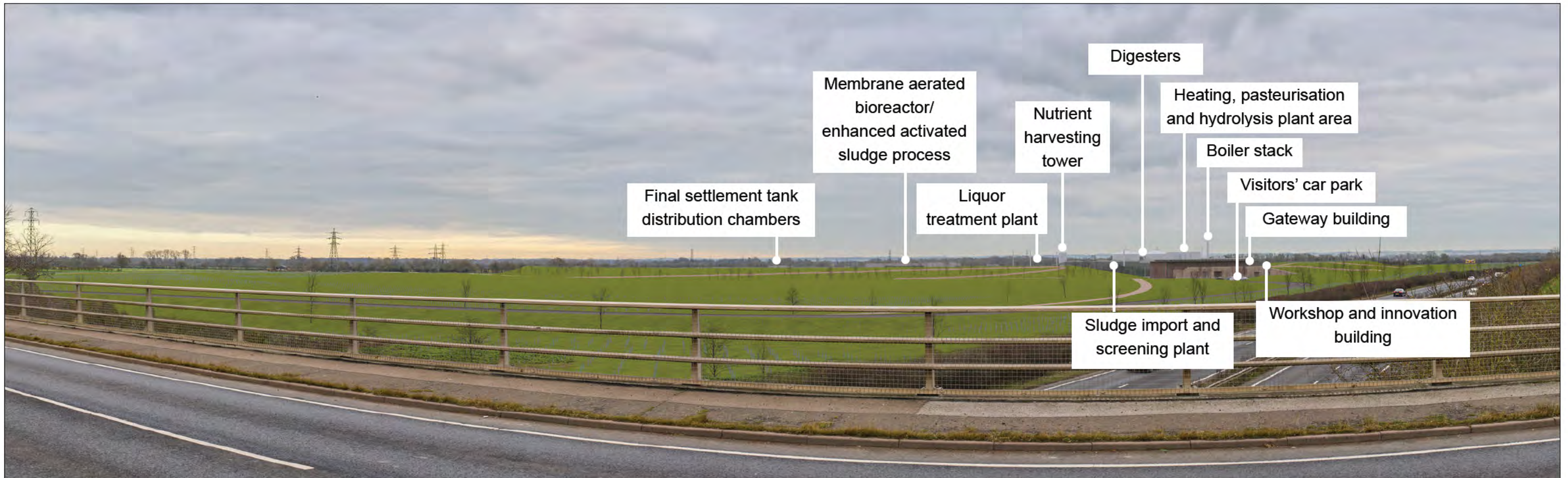


Viewpoint location plan (NTS)



Photomontage 5: Existing view (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 5: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



Photomontage 5: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)

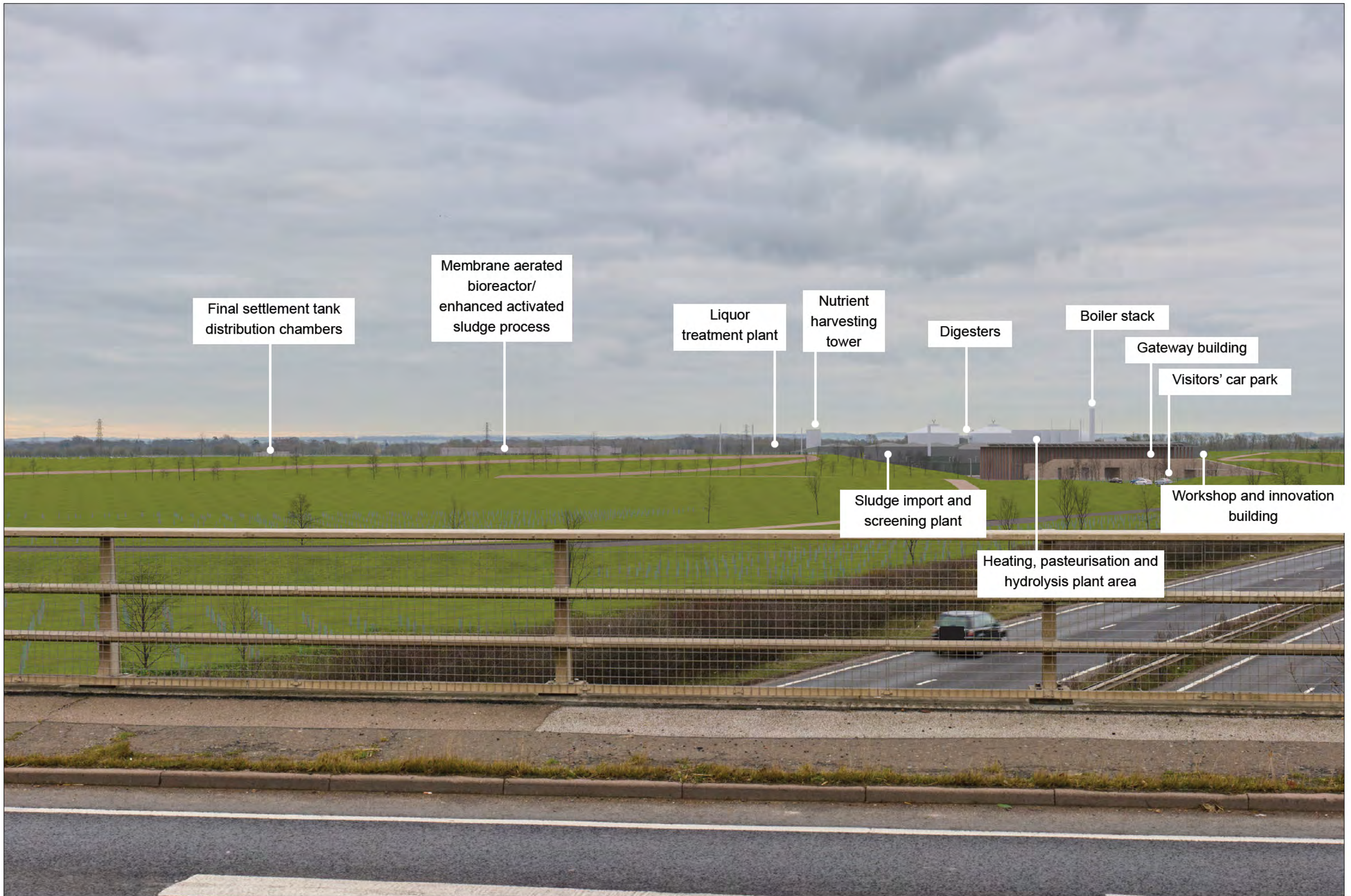




A14

Photomontage 5: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 5: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Maturing woodland planting

Nutrient harvesting tower

Digesters

Boiler stack

Gateway building

Sludge import and screening plant

Workshop and innovation building

Heating, pasteurisation and hydrolysis plant area

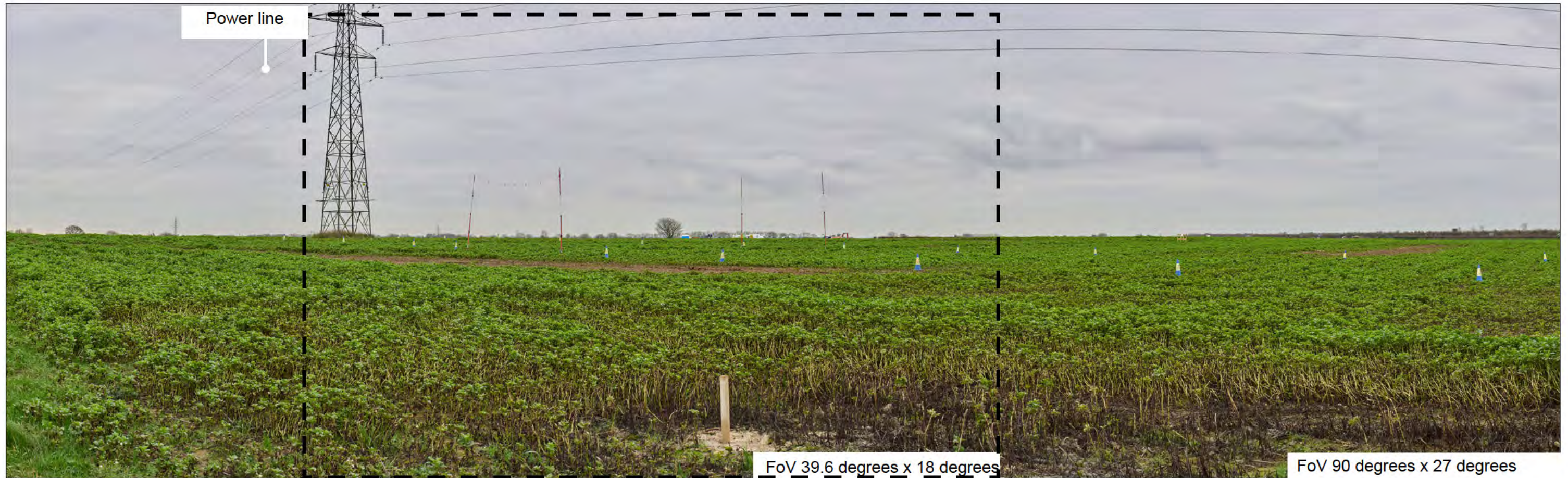
Photomontage 5: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



# Photomontage 6: View south-east from Low Fen Drove Way

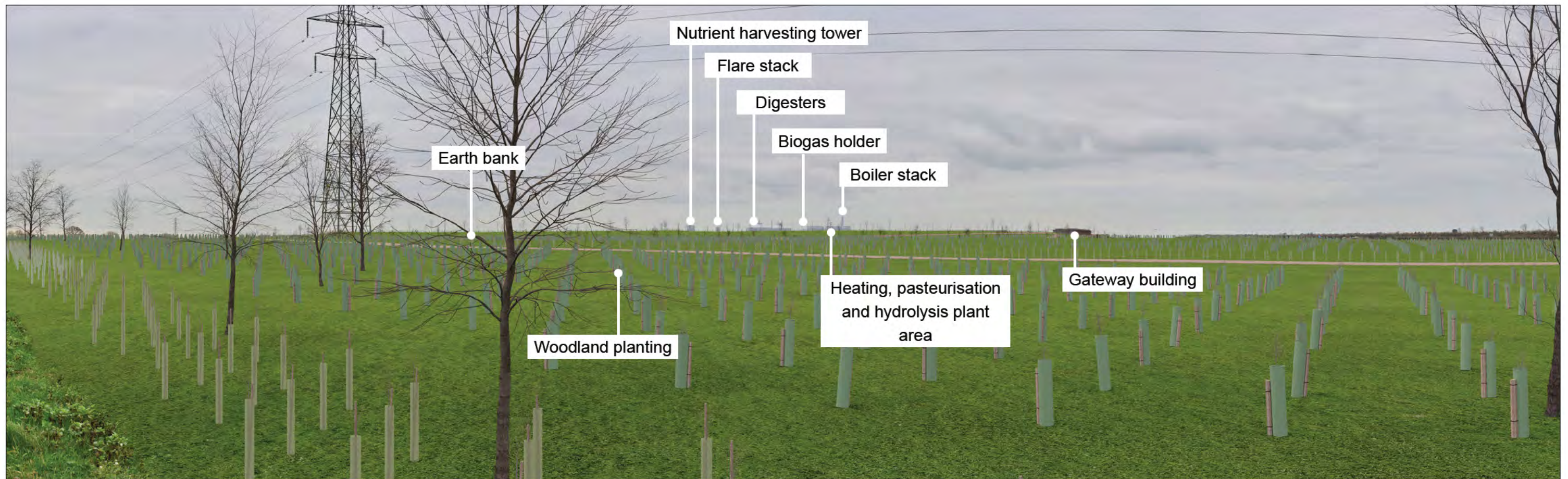


Viewpoint location plan (NTS)



Photomontage 6: Existing view (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 6: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



Photomontage 6: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





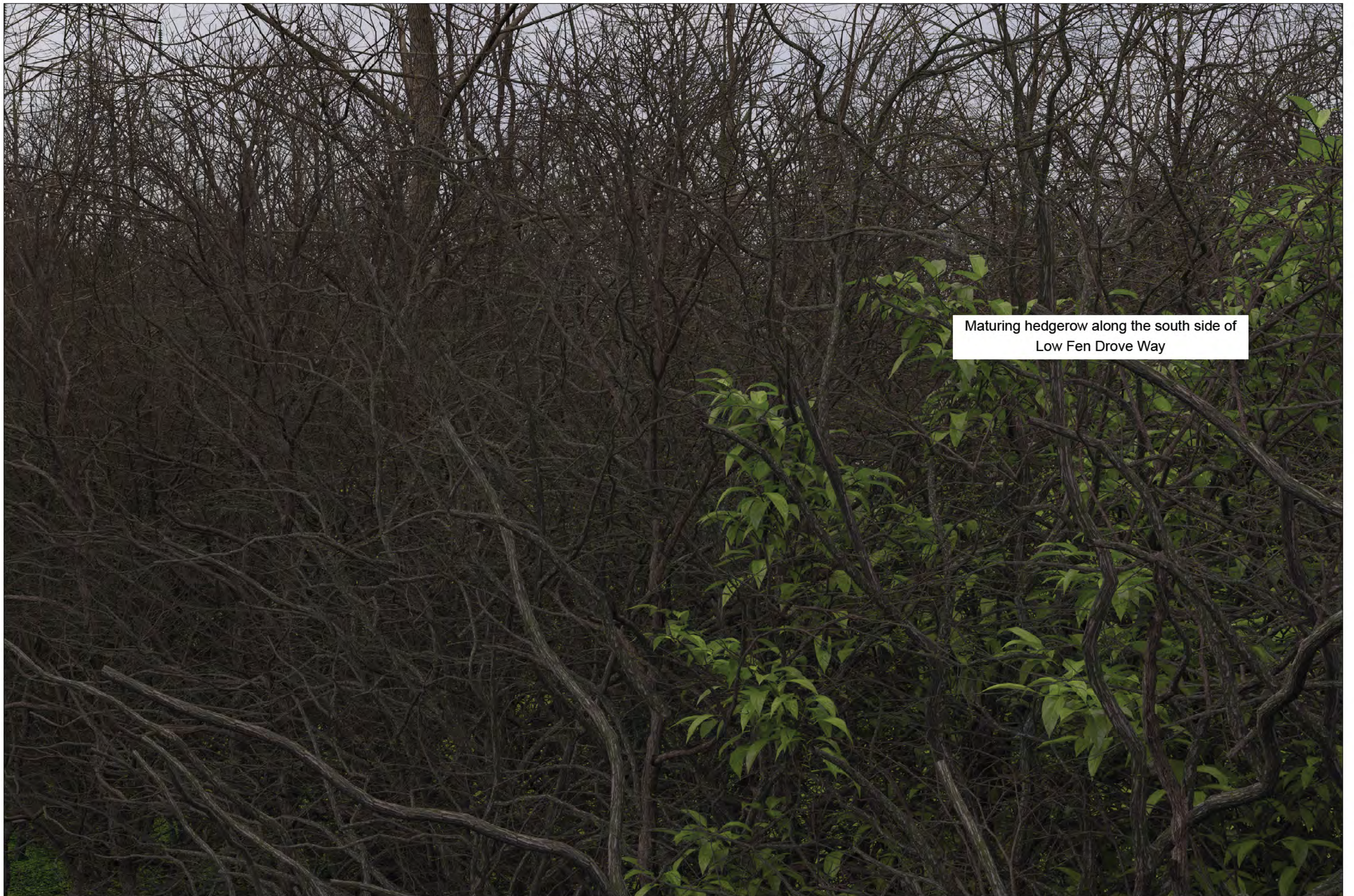
Photomontage 6: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 6: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Maturing hedgerow along the south side of  
Low Fen Drove Way

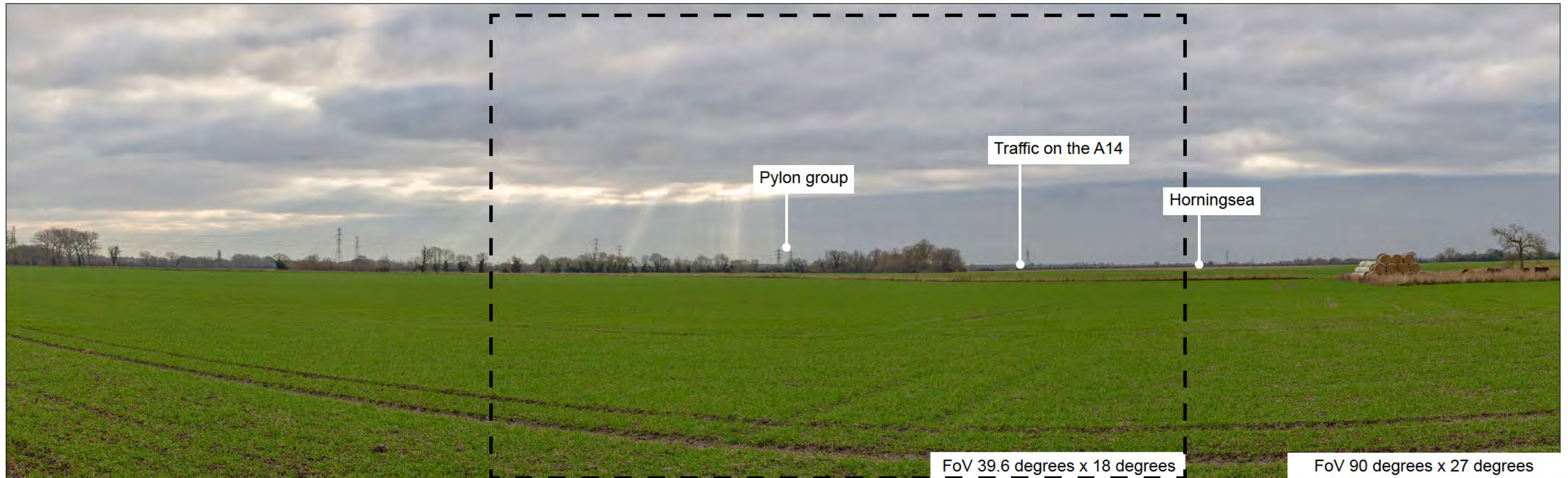
Photomontage 6: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



# Photomontage 7: View south from Footpath Horningsea 130/6



Viewpoint location plan (NTS)



Photomontage 7: Existing view (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 7: Year 1 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)



Photomontage 7: Year 15 in operation (cylindrical projection, field of view 90 degrees x 27 degrees, to be viewed at A1)





Photomontage 7: Existing view (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 7: Year 1 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages





Photomontage 7: Year 15 in operation (planar projection, field of view 39.6 degrees x 18 degrees, to be viewed at A3)  
Cambridge Waste Water Treatment Relocation Project: Photomontages



## Get in touch

You can contact us by:



Emailing at [info@cwwtpr.com](mailto:info@cwwtpr.com)



Calling our Freephone information line on **0808 196 1661**



Writing to us at **Freepost: CWWTPR**



Visiting our website at 

You can view all our DCO application documents and updates on the application on The Planning Inspectorate website:

<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/cambridge-waste-water-treatment-plant-relocation/>