



Five Fords Wastewater Treatment Works

Landscape and Visual Impact Assessment

June 2016

Dŵr Cymru Welsh Water

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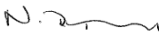
Landscape and Visual Impact Assessment

June 2016

Dŵr Cymru Welsh Water

Tŷ Awen, Celtic Springs Business Park, Coedkernew, Newport, NP10 8FZ

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
P01	April 2016	Neil Jones	Jo Morrison	Clive Williams	First Issue
P02	June 2016	Neil Jones 	R Smith	C Williams 	Second Issue

Information class: Standard

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Executive Summary

Mott MacDonald Bentley (MMB) is currently designing an Advanced Anaerobic Digestion facility (AAD) at the existing Five Fords Wastewater Treatment Works (WwTW), near Wrexham on behalf of Dŵr Cymru Welsh Water Limited.

The purpose of this report is to provide a Landscape and Visual Impact Assessment (LVIA) in support of the planning application for this development. This assesses the likely potential for landscape and visual impacts in the area as a result of the proposed works.

The site is situated in an industrial and semi-rural type area approximately 3.7km south-east of Wrexham city centre. The site is not within or near any landscape designated areas apart from a block of ancient woodland adjacent to the southern boundary of the existing WwTW.

The main views towards the site are from public rights of way (PRoW) and local roads to the east of the site where the landscape is more open and relatively flat. Views from other directions are generally obscured by intervening topography, buildings and vegetation.

Landscape mitigation will include the creation of a landscape bund to the eastern boundary of the site. This will integrate with an existing bund to the south-eastern corner of the WwTW site and also provide screening to the lower section (as seen in elevation) of the proposed development. Hedgerow and tree planting along the bund will further provide landscape integration and screening, particularly in the summer months.

The sensitivity of the landscape is considered to be *medium* and there will be a *minor* adverse effect on landscape character during the construction period. The completed development will be experienced in the context of the existing much larger WwTW infrastructure and effects in year 1 of operation will be *minor* adverse and *negligible* in year 5 of operation.

The sensitivity of visual receptors is *high* for residents of Marchwiel, *medium* for users of local public rights of way and *low* for all other receptors. There will be *minor* adverse effects on visual receptors on public rights of way, local roads and

at the Maelor Abbatoir and *negligible* effects on residents of Marchwiel and workers on the Wrexham Industrial Estate during construction. The completed development will result in *minor* adverse effects on visual receptors on public rights of way, local roads and at the Maelor Abbatoir and *negligible* effects on residents of Marchwiel and workers on the Wrexham Industrial Estate in year 1 of operation. All visual effects will decline to *negligible* after 5 years of operation, when mitigation planting will have become established.

1 Introduction

1.1 Project Background

Dŵr Cymru Welsh Water Limited (DCWW) are proposing to construct an Advanced Anaerobic Digestion facility (AAD) at the existing Five Fords wastewater treatment works (WwTW). The site of the proposed AAD facility is within the administrative boundaries of Wrexham County Borough Council.

The proposed AAD facility will supplement the operation of the existing digesters and will treat sewage sludge arising from the wastewater treatment process, to produce methane gas to be fed into the national gas supply grid.

1.2 Site Location

The site of the proposed development is approximately 400m northeast of the northern edge of Marchwiell village and 3.7km southeast of Wrexham city centre.

The proposed AAD facility will be located on the eastern side of the existing WwTW although part of the proposed facility will be located within the existing operational area of the WwTW. The main development will be located in an area of farmland, which has planning permission for the erection of a solar PV array.

1.3 Site Description

The existing WwTW forms the western and southern boundaries of the proposed AAD facility. The land immediately to the east and north has been developed for a solar PV array.

The meandering Afon Clywedog runs to the north of the WwTW site and some 240m to the north of the proposed AAD site.

There is a disused railway to the south of the WwTW site, running from a north-westerly to an easterly direction, which now forms a well-used footpath within mature lines of trees. This disused railway forms the main feature in the local landscape.

Marchwiell Covert, an area of designated ancient woodland, is located immediately to the west of the proposed AAD site but will not be affected by the proposed works.

The nearest residential properties are located 400m to the south west of the proposed development at Hollyhedge off Bangor Road in Marchwiell.

1.4 Proposed Development

The proposed AAD facility comprises a number of new tanks and buildings, together with the demolition and modifications to some existing items of plant. The proposed site layout is included in Appendix A and includes provision of:

- Removal and demolition of redundant tanks (lime plant, post-digestion tank, lime equipment);

- 1 no new cake building (5mx5m);
- Extension to existing cake building (to be clad in green at request of planners);
- Liquid treatment plant (LTP) feed pumping station and new transformer;
- New post digestion tank and blowers with centrifuge feed pumps and above ground pipework to sludge cake building;
- Thermal Hydrolysis Plant (THP) centrifuge buffer tank outlet pumps;
- 2 no. THP transformers;
- New boiler house (16mx12m);
- 2 no. new THP feed silos – painted in green (approximately 12m in height);
- New THP sludge coolers – consists of pipework at a maximum of 3m off the ground (15mx10m);
- New THP compressor (3mx3m);
- 2 no. new THP above ground stainless steel tanks (14.4mx12.2m each);
- New liquor treatment plant;
- New imported cake pumps / cake dilution and FE service water system;
- 2 no. new cake reception hoppers;
- New pre-THP centrifuge;
- Cake preparation OCU;
- 3 no new concrete slabs for storing equipment (imported cake delivery platform, final effluent filtration storage;
- Site roads; and
- An earth bund to the eastern boundary of the new works (1-2m approx. height and volume depending on amount of soil removed).

It is understood at this stage that the majority of the buildings and tanks can be clad in green to match the existing tanks and integrate with the existing WwTW development. However, there will be two large THP feed silo tanks that are to be manufactured in stainless steel.

1.4.1 Construction

Construction traffic associated with the proposed AAD plant will utilise the new improved WwTW site access road which is to be constructed this year. Site establishment and decommissioning of the construction compound will entail a short term increase in vehicle movements as plant and accommodation are delivered and removed from site.

During the construction phase it is estimated that there will be approximately 310 large vehicles visiting the site to deliver construction materials. A contractor's compound is proposed immediately to the east of the proposed AAD plant.

Construction activities will take place during the site's usual operating period with construction anticipated to last approximately 36 months.

Construction works will follow the sequence outlined below:

- Establish site compound, fence the sides of the construction site to limit trespass and prevent any conflict with the normal site operation;
- Strip topsoil from the site and store in stockpiles;
- Undertake service diversions, as required;
- Excavate and place soils to the required ground profile;
- Pile foundations for structures (where required);
- Construct above ground infrastructure (a mixture of bespoke units built on site and proprietary units brought to site as components);
- Construct landscape bund along eastern site boundary; and
- Decommission contractors' compound.

1.4.2 Operation

Vehicles will use the improved access off Cefn Road to enter the site. It is anticipated that the proposed development will generate approximately 8 additional sludge tanker deliveries each day, together with approximately 13 additional trailer movements distributing the treated sludge. It has been assessed by the Traffic Assessment Report that these additional vehicle movements associated with the proposed development account for less than a 1% increase in traffic movements in both directions on Cefn Road.

2 Baseline Conditions

2.1 Assessment Methodology

This assessment follows the guidelines set out in the 'Guidelines for Landscape and Visual Impact Assessment' published by the Landscape Institute and Institute for Environment Assessment (2013).

2.2 Desk Study and Site Survey

A chartered landscape architect undertook a desk study and identified the receptors that would be likely to have views towards the site based on the existing visual envelope. The receptors were identified from information on built form, topography and existing vegetation and a visual envelope was defined to establish the probable places from where there might be views into the site. A site survey was then undertaken to confirm the assumptions of the desk study and take panoramic photographs representative of key views towards the site (see Appendix C). The visual envelope defined the study area for the assessment.

2.3 Landscape Planning Designations

The site is not situated within any landscape designated areas. The nearest relevant designated areas are as follows:

- Marchwiel Covert, an area of ancient woodland, is located immediately to the west of the proposed AAD plant;
- The nearest Area of Outstanding Natural Beauty is the Clwydian Range, 15km to the northwest;
- Grade II listed buildings include the Church of Saints Marcella and Deiniol, approximately 760m to the southwest and Pum-Rhyd, approximately 700m southwest; and
- The nearest Scheduled Ancient Monument (Hillbury Round Barrow) is located 3km west.

2.4 Existing Landscape Character

2.4.1 National Landscape Character

The site is covered at national level by the Natural Resources Wales (NRW) landscape character mapping initiative (LANDMAP). This evaluates the landscape in terms of its visual and sensory aspects and its cultural landscape. The visual and sensory character region of the Five Fords study area is described as *Lowland rural*. It is described as having a strong sense of place with a distinctive vegetation cover, landscape pattern and settlement distribution.

The overall value of the landscape is described as *Moderate* in terms of its visual and sensory, historical, geological and cultural evaluations with the scenic and integrity quality valued as *high*. The aspect provides a number of views of attractive rolling and undulating landscapes mainly viewed from roads but also PProW. Views are framed by over mature hedgerows and woodland fringes. The key characteristics are:

- Attractive undulating lowland farmland to the south of Wrexham;

- Affected by proximity to urban areas;
- Historic settlement pattern with remnants of medieval ridge and furrow;
- The Erddig Estate important for tourism, recreation, nature conservation and heritage; and
- Village of Marchwiell and hamlets of Eyton, Erbistock, Pen Y Lan, Rhosymadoc, Crabtree Green, Gyfelia, Old Sontley.

2.4.2 Landscape Character

The site lies in landscape character area (LCA) 13A Welsh Maelor as described in the Wrexham Landscape Character Guidance, produced by Wrexham County Council. This is an attractive archetypal rolling farming landscape to the south of Wrexham and west of the River Dee, containing a number of large estates. However the character of the area is threatened by urban pressures due to its close proximity to Wrexham and economic changes in farming. Features of note include:

- Erddig and Wynnstay of particular importance with Erddig retaining a valuable old orchard;
- Disused Ellesmere railway now used as a PRoW in places;
- Abundance of well managed hedgerows and trees; and
- Irregular fields.

2.4.3 Landscape Quality, Value and Sensitivity

The quality of the landscape incorporating the study area is *medium*. Even though the local landscape has become industrialised over the years, the wider landscape still retains its scenic quality and sense of place.

The LANDMAP assessment has evaluated the area for each of its five aspects of geological landscape, landscape habitats, historic landscape, cultural landscape and visual sensory. This assesses the value of the landscape area as *moderate* over each of the five aspects, apart from landscape habitats which is valued as *high*.

Landscape features in the area of the site (within 1km) include the old railway line, which is evident as a well-used footpath within mature trees. This is considered to have a *high* landscape value in the local landscape for its scenic and amenity value.

The landscape receptor susceptibility to change in regard to the type of development proposed is assessed as low because the proposed scheme is an extension to an existing WwTW.

Taking into account the above factors, the overall sensitivity of the LCA is considered to be *medium*.

2.5 Visual Baseline

To identify the potential visual effects of the proposed AAD plant on the varying receptor groups, a Zone of Theoretical Visibility (ZTV) was identified to accurately map the areas likely to be affected. Viewpoints were selected to represent various receptor groups. These included locations occupied by residents and

frequented by members of the public, such as settlements and dwellings, public rights of way and popular viewpoints.

The sensitivity of receptors is derived from a judgement about the susceptibility of the visual receptor to the type of change arising from the proposed development and the value attached to the views that are experienced as defined in the baseline.

Receptors present within the study area (1km from the proposed scheme) include users of PRow and local roads and people in residential and industrial properties. During the site visit, seven representative viewpoints were identified. A location and visual assessment plan which shows these viewpoints and a visual envelope is provided in Appendix B. Photographs illustrating the views from these viewpoints are provided in Appendix C.

All views have been observed from publicly accessible areas or within the curtilage of dwellings and buildings.

The existing WwTW contains a mixture of green painted large tanks and grey clad buildings at a range of sizes and heights and these are clearly visible in open views from the east, but seen against a backdrop of woodland vegetation (Marchwiell Covert). A solar farm, situated to the north, and east of the site, is also visible from the east, however because the land is relatively flat, the solar panels cannot be seen from the wider landscape.

Due to the relatively flat topography of the area and the wooded corridor to the south of the site, there are a limited number of close and long-distance viewpoints towards the site from the north and west. The clearest views are from the east, from the new Wrexham Industrial Estate Link road, approximately 600m in distance from the site, and from points along the minor road (Bedwell Road at 900m distance).

The type of visual receptors that could be affected by changes in views and visual amenity include the following:

- People working in the area (number of industrial buildings evident);
- People passing through the area by road;
- People living in the area; and
- People using local footpaths.

2.5.1 Public Rights of Way and Footpaths

There is one PRow immediately east of the site running between the access road and the former railway line with views of the site.

The other PRows within 1km of the site are approximately 800m to the south and south west. These run between the A525, across fields, to surrounding minor roads. The flat topography means that any views towards the site from these PRows are screened by intervening hedgerows and the residential properties in Marchwiell.

The dismantled railway approximately 200m to the south is a well-used footpath. There are filtered views of the site through the mature trees that line either side of the footpath.

2.5.2 Local Roads

The local roads include:

- The main A525 (Bangor Road) approximately 500m to the south;
- The new Wrexham Industrial Estate Link road approximately 600m to the east (linking the A525 with the Five Fords Bridge junction and the large industrial area to the north east of the site);
- The A528 from the junction of the A525 and running southwards; and
- Minor roads to the east and north (Bedwell Road to the east and Cefn Road to the north).

Receptors in this area include workers, delivery drivers and customers travelling from the south (avoiding Wrexham town centre). Views from this road are open and expansive due to the flat topography and current lack of roadside vegetation. These are represented in representative viewpoint 1 photograph in Appendix C).

From the other local roads, the views are general filtered and obstructed by the intervening topography and vegetation. These are represented in representative viewpoints 6 and 7 photographs in Appendix C.

2.5.3 Residential and Public properties

The main residential properties in the local area are in the village of Marchwiell whose northern boundary lies approximately 500m to the south west of the site. This village has a population of approximately 1,400 and includes a school on the northern boundary. Views from this village are limited to filtered views from the northern edge of the settlement. These are filtered by the intervening vegetation that exists along the dismantled railway line and also the ancient woodland (Marchwiell Covert).

Residential properties outside the village of Marchwiell include scattered farmsteads and a hotel of which the following are within 1km of the site:

- Little Llwyn Onn, approximately 500m to the north of the site;
- Old Llwyn Onn Farm, approximately 500m to the north east of the site;
- Llwyn Onn Hall Hotel, approximately 600m to the north east of the site;
- Holly Hedge Farm, approximately 900m to the south east of the site;
- Chetwynd Grove, approximately 1km to the south east of the site; and
- Highfield Farm, approximately 1km to the south of the site.

The views from all these properties are restricted by the intervening topography and vegetation. The Maelor Abattoir is approximately 800m east of the site. There are open but filtered views of the site through intervening vegetation (representative viewpoint 5 photograph in Appendix C). The industrial character of the area is due to the proximity of the large Wrexham industrial estate to the north east of the site. The southern entrance to this estate is approximately 600m from the site. This estate covers 550 hectares and

is the largest in Wales containing around 300 businesses. There is a view of the site from the southernmost boundary of the estate (representative viewpoint photograph 7 in Appendix C).

The locations from where the scheme is likely to be visible are:

- Open views from the new road to the east of the site (representative viewpoint 1 in Appendix C) approximately 600m in distance from the site;
- From the PRow immediately east of the site (representative viewpoint 2 in Appendix C);
- Filtered views from the dismantled railway (footpath) to the south of the site (representative viewpoint 3 in Appendix C) ;
- From the Maelor Abbatoir east of the site (representative viewpoint 5 in Appendix C);
- From Bedwell Road, east of the site (representative viewpoint 6 in Appendix C); and
- From the Wrexham Industrial Estate (representative viewpoint 7 in Appendix C).

One other viewpoint in Marchwiell (representative viewpoint 4 in Appendix C) was considered but through site survey the site was assessed as not being visible.

The Zone of Theoretical Visibility includes an area within 1km in distance from the site.

2.5.4 Visual Receptor Sensitivity

The susceptibility of the visual receptors to the proposed change in the landscape is *low* because their view of the development site already includes the substantial and utilitarian structures of the existing WwTW. The sensitivity of receptors is derived from the combination of their susceptibility to change and the value receptors place on their view. No residential receptors or protected views are likely to be affected by the development. Consequently the sensitivity of receptors is as follows:

- Residents of Marchwiell have a high sensitivity: their attention is focussed on the view;
- Users of PRows and local footpaths have a *medium* sensitivity: Their attention is focussed on the view which already includes the WwTW;
- Local road users have a *low* sensitivity: their attention is focussed on the road; and
- Local business employees have a *low* sensitivity as their focus is on their work.

3 Mitigation

3.1 Overall Measures for Consideration

In terms of retaining the local character and protecting the visual amenity, the key elements of design consideration for the proposed AAD plant will be:

- The design of the buildings and tanks;
- The siting and massing of the proposed buildings and tanks;
- The design and use of materials;
- Colour scheme considerations;
- The height and profiling of the landscape bund; and
- Landscape design.

3.2 Design Proposals

The design of the buildings and tanks will be dictated by their use as an anaerobic digestion facility. Such issues as the required capacity and latest machinery access will in turn dictate the size and massing of the buildings and tanks. As the majority of the plant has not been designed yet, the following descriptions of size and materials are approximate only and based on previous similar developments and the current outline designs for this scheme.

There is understood to be a restriction on the materials and colour of the main THP tanks as these need to be in stainless steel. These tanks are understood to be approximately 6m in height and so will be about half the height of the existing buildings on site. The reflective materials used in these two tanks could be prominent in views and detract from the rest of the existing WwTW and proposed development, resulting in adverse visual impacts. The proposed bund will help to reduce these impacts. Hedgerow and tree planting on the bund locality will further screen the reflective tanks.

The majority of the buildings and tanks will be clad in metal and painted green to integrate with the existing WwTW. The tallest structure will be the THP feed silos which will be approximately 12m in height. These will be clad in green as already requested by the Local Planning Authority.

The existing cake building is to be extended and the whole building clad in green. The existing colour of this building is grey, so there will be an improvement visually to this building.

In summary, the design mitigation proposals are as follows:

- Earth bunding (1-2m height) and hedgerow (1.5 – 2m mature height) and scattered tree planting (5-15m mature height) to the eastern boundary of the proposed development will be integrated with the existing bunding on site, screen the lower section of the AAD scheme and screen the stainless steel THP tanks; and
- Green cladding to the majority of the buildings and tanks for the AAD development to integrate the new scheme with the colour scheme of the existing AAD facility and also the surrounding woodland.

4 Assessment of Likely Landscape Effects

4.1 Scale of Landscape Effects

4.1.1 Construction Phase

There is potential for landscape effects during the construction and completion stages of the development. However the works are of a relatively small scale in comparison to the footprint of the existing WwTW. Cranes and construction plant will be new features in the landscape during construction but the proposed development will be seen in the context of the existing industrial uses of the WwTW and the solar farms immediately to the north and east. These have a larger footprint than the proposed AAD scheme. The works will affect a contained area and the magnitude of change to landscape character will be *minor*.

4.1.2 Operation

This proposed development is within the existing treatment works site boundary and consequently will not introduce uncharacteristic new features into the landscape once construction is complete. No key landscape elements or features will be lost as a result of the development. The proposed development will introduce new infrastructure into the landscape but it will be adjacent to the existing WwTW into the landscape and therefore will not seem incongruous. The change will be minimised when the proposed landscape mitigation has matured and the scheme is seen in relation to the larger existing WwTW. The magnitude of change to landscape character will be *low*, reducing to *negligible* after five years when the mitigation planting has matured.

4.2 Duration and Reversibility of Landscape Effects

The construction phase will generate the greatest effects and is expected to last for 36 months. Once completed, the effects of the proposed development on the landscape will be reduced, with lower levels of activity on site and the removal of construction plant. Landscape effects will further reduce as landscape mitigation planting matures.

After 5 years, the new proposed development will be integrated into the existing infrastructure of the WwTW. The proposed AAD will be a permanent feature in the landscape.

4.3 Significance of Effect on Landscape Character

4.3.1 Construction Phase

The magnitude of change to landscape character will be *minor*. Combining this magnitude of change with the medium sensitivity of the landscape, the significance of effect will be *minor* adverse.

4.3.2 Operation

The magnitude of change to landscape character will be *low*, reducing to *negligible* after five years when the mitigation planting has matured. Overall, the significance of effect will be *minor* adverse on completion of construction and *negligible* five years after.

5 Assessment of Likely Visual Effects

5.1 Scale of Visual Effect

Assessment of the effects on views is based on a combination of different criteria:

- The magnitude of the change to the visual quality that will be caused by the proposed AAD plant, its prominence, distance, context of the view and position and scale of the proposed AAD plant in relation to the receptor and to other features;
- The viewpoint location, number of people and nature of receptor groups and their sensitivities; and
- The existing visual character and quality of the viewpoint.

5.1.1 Construction Phase

Cranes and construction plant will be new features in close views from the north, east and south. Cranes may be visible above vegetation when viewed from the west, but they will be narrow elements in the view. Otherwise, the construction works will be screened from the west. The construction works will introduce new features into the view but they will be seen against the back drop of the existing industrial uses of the WwTW and the solar farms immediately to the north and east. The magnitude of change to views from the representative viewpoints during construction are described below:

- Representative viewpoint 1 from the new road to the east of the site: the works will be clearly visible in close views, but seen in the context of the existing WwTW. The magnitude of change will be *low*.
- Representative viewpoint 2 from the PRow east of the site: the works will be clearly visible in close views, but seen in the context of the existing WwTW and solar farm. The magnitude of change will be *low*.
- Representative viewpoint 3 from the footpath along the dismantled railway: the works will be visible in filtered views but in the context of the existing WwTW. The magnitude of change will be *low*.
- Representative viewpoint 4 from Marchwiel: the works will not be visible from this location. The magnitude of change will be *negligible*.
- Representative viewpoint 5 from the Maelor Abbatoir: the works will be visible in filtered views, but seen in the context of the existing WwTW. The magnitude of change will be *low*.
- Representative viewpoint 6 From Bedwell Road: the works will be visible in clear views, but seen in the context of the existing WwTW. The magnitude of change will be *low*.
- Representative viewpoint 7 from the Wrexham Industrial Estate the works will be visible in from a small area of the estate and seen in the context of the existing WwTW. The magnitude of change will be *low*.

5.1.2 Operation

On completion, the proposed development will be situated within the existing treatment works site boundary and consequently will not introduce uncharacteristic new features into the view once construction is complete. The new structures will be seen in the context of the existing adjacent WwTW plant and the solar farms. The proposed landscape bunding and planting will screen the lower parts of the new development from view on completion and once the planting is established after five years, will further screen the new development from view.

The magnitude of change to views from the representative viewpoints are described below:

- Representative viewpoint 1 from the new road to the east of the site: the works will be clearly visible in close views, but seen in the context of the existing WwTW. The magnitude of change will be *low* in year 1 and *negligible* by year 5.
- Representative viewpoint 2 from the PRow east of the site: the works will be clearly visible in close views, but seen in the context of the existing WwTW and solar farm. The magnitude of change will be *low* in year 1 and *negligible* by year 5
- Representative viewpoint 3 from the footpath along the dismantled railway: the works will be visible in filtered views but in the context of the existing WwTW. The magnitude of change will be *low* in year 1 and *negligible* by year 5
- Representative viewpoint 4 from Marchwiel: the works will not be visible from this location. The magnitude of change will be *negligible*.
- Representative viewpoint 5 from the Maelor Abbatoir: the works will be visible in filtered views, but seen in the context of the existing WwTW. The magnitude of change will be *low* in year 1 and *negligible* by year 5
- Representative viewpoint 6 From Bedwell Road: the works will be visible in clear views, but seen in the context of the existing WwTW. The magnitude of change will be *low* in year 1 and *negligible* by year 5
- Representative viewpoint 7 from the Wrexham Industrial Estate the works will be visible in from a small area of the estate and seen in the context of the existing WwTW. The magnitude of change will be *negligible* in years 1 and 5.

5.2 Duration and Reversibility of Visual Effect

The effect on the visual amenity will be during construction and operation stages. The construction phase is expected to last for 36 months. Once completed, the effects of the proposed development on views will be reduced, with the removal of construction plant and the presence of the landscape mitigation bunding.

After 5 years, the new proposed development will be integrated into the existing infrastructure of the WwTW. The proposed AAD will be a permanent feature in views.

5.3 Significance of Visual Effect

The level of significance of effect upon visual amenity is determined by correlating the magnitude of change with the sensitivity of receptors.

5.3.1 Construction Phase

The significance of effect on receptors' views during construction is described below:

- Representative viewpoint 1 from the new road to the east of the site: the magnitude of change will be *low* and combining this magnitude of change with the *low* sensitivity of the receptor, the significance of effect will be *minor* adverse.
- Representative viewpoint 2 from the PRow east of the site: the magnitude of change will be *low* and combining this magnitude of change with the *medium* sensitivity of the receptor, the significance of effect will be *minor* adverse.

- Representative viewpoint 3 from the footpath along the dismantled railway: the magnitude of change will be *low* and combining this magnitude of change with the *medium* sensitivity of the receptor, the significance of effect will be *minor* adverse.
- Representative viewpoint 4 from Marchwiel: the proposed development will not be visible from this location. The significance of effect will be *negligible*.
- Representative viewpoint 5 from the Maelor Abbatoir: the magnitude of change will be *low* and combining this magnitude of change with the *low* sensitivity of the receptor, the significance of effect will be *minor* adverse.
- Representative viewpoint 6 From Bedwell Road: the magnitude of change will be *low* and combining this magnitude of change with the *low* sensitivity of the receptor, the significance of effect will be *minor* adverse.
- Representative viewpoint 7 from the Wrexham Industrial Estate: the magnitude of change will be *negligible* and combining this magnitude of change with the *low* sensitivity of the receptor, the significance of effect will be *negligible*.

5.3.2 Operation

The significance of effect receptors' views on completion and after five years is described below:

- Representative viewpoint 1 from the new road to the east of the site: the significance of effect will be *minor* adverse on completion and *negligible* five years after.
- Representative viewpoint 2 from the PRow east of the site: the significance of effect will be *minor* adverse on completion and *negligible* five years after.
- Representative viewpoint 3 from the footpath along the dismantled railway: the significance of effect will be *minor* adverse on completion and *negligible* five years after.
- Representative viewpoint 4 from Marchwiel: the proposed development will not be visible from this location. The significance of effect will be *negligible*.
- Representative viewpoint 5 from the Maelor Abbatoir: the significance of effect will be *minor* adverse on completion and *negligible* five years after.
- Representative viewpoint 6 From Bedwell Road: the significance of effect will be *minor* adverse on completion and *negligible* five years after.
- Representative viewpoint 7 from the Wrexham Industrial Estate: the significance of effect will be *negligible*.

6 Conclusions and Recommendations

This report assesses the likely magnitude and significance of effects on the landscape character and visual amenity of the scheme based on the design information as is currently made available at the time of writing this report.

The development site is well screened from Marchwiell and the wider landscape and views by woodland, hedgerows and the existing WwTW. The character of the landscape has changed over the years, with the WwTW and the industrial estate having an industrialising effect on the rural quality of the landscape. A small number of visual receptors will be affected by the development. They are north, east and south of the scheme where views are more open. However, views from these directions already include the existing WwTW and the adjacent solar farms. Consequently, the development in construction and operation will not introduce uncharacteristic new elements into the landscape or views. A planted earth bund will help to integrate the new development into the existing landscape and gradually screen it from view.

The susceptibility of the landscape and visual receptors to the change resulting from the type of development proposed is medium or low because the development is an extension to an existing WwTW. This means that landscape and visual effects will be minor or negligible in construction and operation.

Appendices

Appendix A. Zone of Theoretical Visibility / Visual Receptor Location Plan	17
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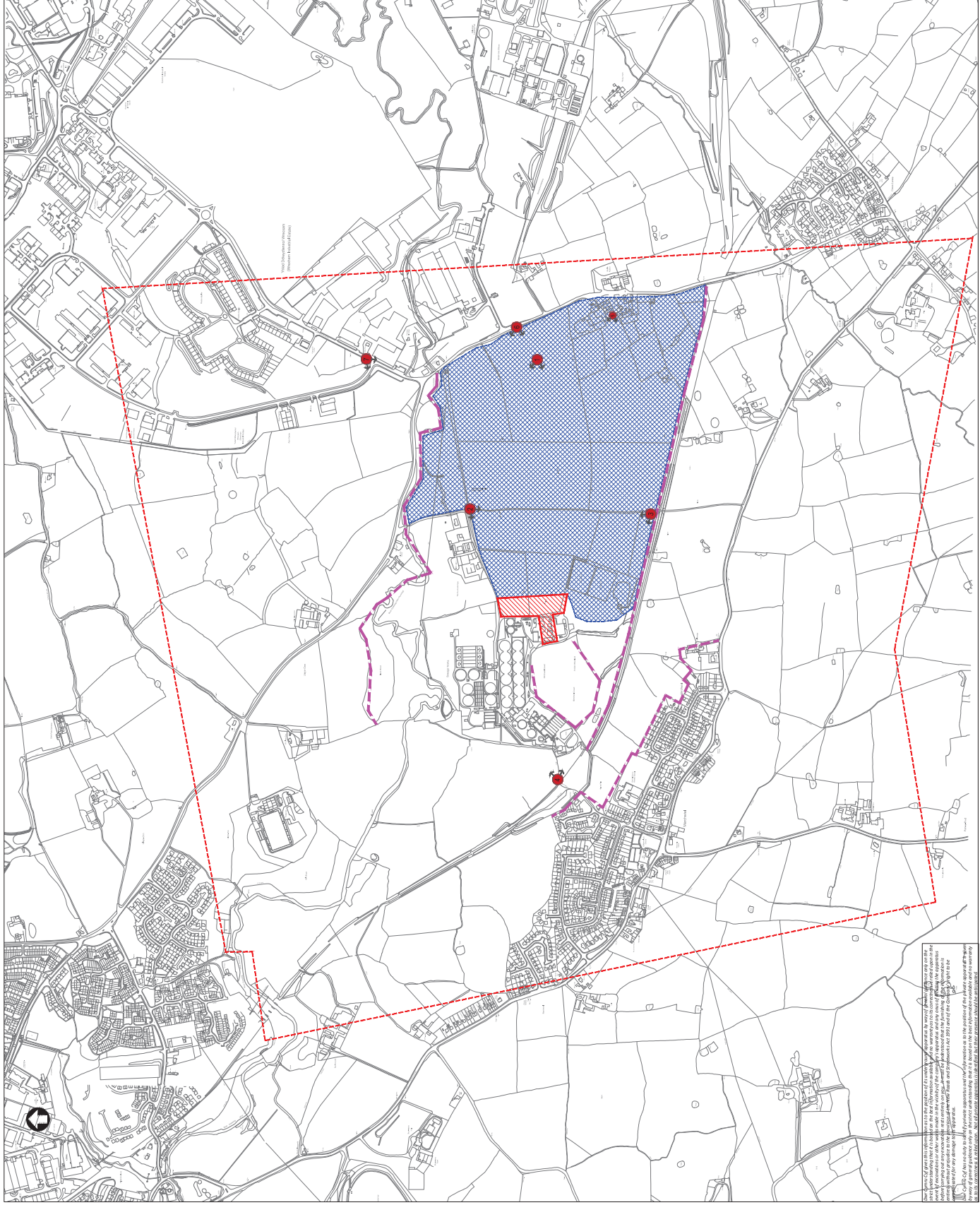
Appendix A. Zone of Theoretical Visibility / Visual Receptor Location Plan

NOTES:

1. Key viewpoints are shown in drawings
DCWW-4791-S-201-MMD-16-XX-DR-LA-03001 to
DCWW-4791-S-201-MMD-16-XX-DR-LA-3004



- | Study Area | Visual Barrier | Visual Envelope | Application Site | Key Viewpoint |
|------------|----------------|-----------------|------------------|---------------|
|------------|----------------|-----------------|------------------|---------------|



PO# 210416	SC	ISSUED FOR PLANNING	NU	QW	210416
Rev.	Date	Event	Description	Created By	Date
					
Capital Delivery Alliance Capital Offsets Office <i>To learn more, contact us at 800-367-2672</i>					
FIVE FOODS (WREHAM) W/WH					
Project Name		Visual Baseline Against Visual Envelope and Receipt Location Plan			
Drawing Title		Visual Baseline Against Visual Envelope and Receipt Location Plan			
Drawing No.		SC 21042016			
Drawing Date		Rev. P01			
Drawing Scale		1:1000			
Drawing Notes		N2026			
Drawing Description		DCWV-4791-S-201-MMB-B-X-CR-CA-03000			

Appendix B. Key Viewpoint Photographs

Viewpoint 1



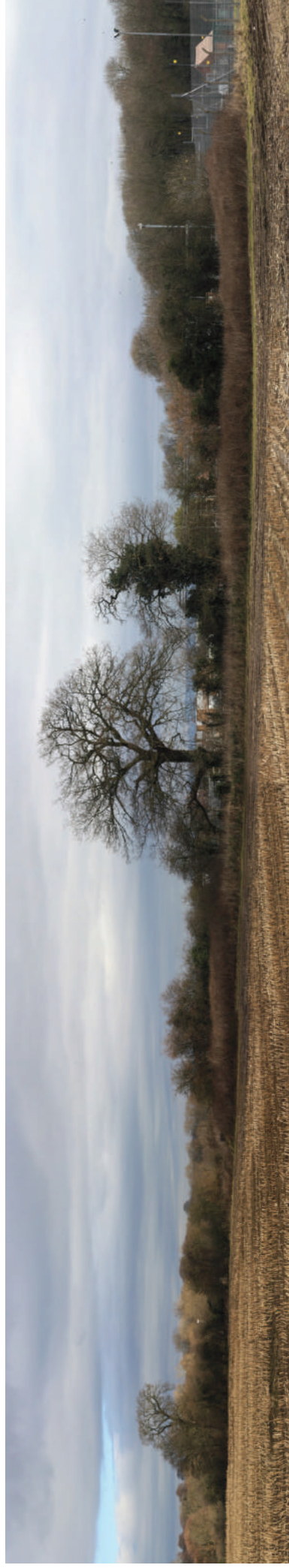
Viewpoint 2



Viewpoint 3



Viewpoint 4



Viewpoint 5



Viewpoint 6



Viewpoint 7

