

Technical note

Project:	Newgale WeITAG Stage 1	To:	Neil Carpenter
Subject:	Agricultural Land Use	From:	
Date:	12 December 2016	cc:	

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N.B. The text within this Technical Note will be inputted into a multi-discipline WeITAG assessment prior to issue to the client and will be subject to further change/review.

1. Existing Conditions

1.1. Land Use

1.1.1. Agriculture

The study area is under grassland for beef cattle and sheep, with occasional fields of arable crops (mainly barley) and fodder crops (mainly beet, hay and silage). There are no dairy farms in the area.

Most of the grassland is improved, except on steep banks where there is gorse and bracken and north of Roch Bridge where there are fields of rushy pasture. There are small areas of woodland alongside streams.

The floodplain of Brandy Brook has a semi-natural bog vegetation and is probably rarely, if ever, grazed.

Option 3 occupies coastal strip south of Newgale where the land use is recreational and includes a camping site operated by Wood Farm.

1.2. Soils

The only published soil map of Newgale is the 1:250,000 scale National Soil Map, Sheet 4, Wales (Soil Survey of England and Wales, 1983)¹ and the accompanying book, Soils and Their use in Wales (Soil Survey of England and Wales 1984)². This map shows three soil associations in the study area.

On the floodplain of the Brandy Brook there are waterlogged alluvial silty clay soils of the Conway association.

Most of the land has the Neath association of well drained, loamy soils over the country rock of interbedded sandstone, siltstones and mudstones.

¹ Soil Survey of England and Wales (1983). Soils of England and Wales, Sheet 2, Wales. Harpenden.

² Soil Survey of England and Wales (1984). Soils and their Use in Wales. Harpenden.

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West of the road north of Roch Bridge, between Bramble and Upper Eweston, there is the Brickfield association of slowly permeable, medium and heavy clay loams in glacial drift (mainly Till). These soils are generally wet for long periods from early autumn through to early summer, but drier soils occur on raised ground where the drift is thinner.

A study of aerial imagery found additional areas of Brickfield soils, identified by the uneven tone of the grassy vegetation, on the lower slopes of the southern valley side of the Bramble Brook.

There are disused colliery workings to the west of Roch Bridge and extending close to Option 7.

1.2.1. Agricultural Land Classification

The MAFF 1:250,000 Provisional ALC Map of Wales ³ shows the study area as being a mixture of Grade 3 (land with moderate limitation to agriculture) and Grade 4 (land with severe limitations). However, this map does not subdivide Grade 3 into 3a and 3b.

The 1988 Revision of the ALC system⁴ classifies land into six grades, Grade 3 being additionally subdivided into Subgrades 3a and 3b. Best and most versatile (BMV) land is defined as Grades 1, 2 and Subgrade 3a.

Available information on soils, climate and topography allows a preliminary assessment to be made of the land quality in the study area, according to the 1988 revised ALC system.

Climate, in combination with soil type and gradient is the main determinant of land quality in the Newgale area. Climatic data in Soils and their Use in Wales shows that average annual rainfall is around 1100mm, and the number of Field Capacity Days (FCDs), when the soils are fully charged with water is around 225.

Neath soils, being well drained, are in Wetness Class I and are in Subgrade 3a (i.e. BMV) where gradients are 7 degrees or less (1 in 8). Where gradients exceed 7 degrees the land is in 3b or 4 (non BMV).

Most Brickfield soils are in Wetness Class IV (waterlogged for long periods) which means that in this climate they cannot be better than Grade 4. This supports the grading on the earlier MAFF Provisional ALC Map. Patches of better drained soils on raised ground (Wetness Class II – III) are in Subgrade 3b.

The floodplain of the Bramble Brook is in Grade 5 because of continuous waterlogging.

Figure D-3000 shows the occurrence of non-BMV land along each route option, based on this preliminary assessment of the ALC. Landtake and loss of BMV land is summarised in Table 3.5. Option 3 is non-agricultural

As a proportion of length of the routes, BMV land is estimated to comprise around 55% of Option J and Option 7 and 69% of Option 11.

Table 1-5 Total Landtake and Loss of BMV Land

Option	Total landtake ha	Loss of BMV land ha	BMV land as %
3	0.73	n/a	n/a
J	9.3	5	55
7	11.1	6	55
11	16.6	11	69

³ Ministry of Agriculture, Fisheries and Food. Agricultural Land Classification. Wales. 1:250,000. 1982.

⁴ Agricultural Land Classification of England and Wales. Revised Guidelines and Criteria for Grading the Quality of Agricultural Land. MAFF, 1988.

2. Environment Impacts

2.1. Land Use and Soils

2.1.1. Introduction

The options have the potential to impact on land use and on soils in a number of ways during construction and operation of the scheme. This section assesses the potential impacts arising from demolition, loss of existing land use, impact on future development, contamination risks and fragmentation or severance of land parcels.

2.1.2. Method

An assessment of the impact of the options on soils and agriculture has been undertaken following guidance provided in WelTAG and Design Manual for Road and Bridge Works (DMRB). The assessment has regard to the impact on existing soil quality with reference to the Agricultural Land Classification provided by DEFRA. The assessment then considers the impact of the options in respect of severance and fragmentation of agricultural land.

The land use and soils assessment was made by a desk study drawing on published information and aerial imagery.

Having identified the potential contaminative sources in the study area, the assessment provides a commentary on whether these sources are on the route of the different options or in proximity to them.

In order to cover the impact of the route options on non-agricultural land use a DMRB Stage 2 assessment has been undertaken following the guidance set out in Volume 11 Section 3 Part 6 of the DMRB. Accordingly the assessment of impact on non-agricultural has considered the impact of the options with respect to the following:

- Demolition of Private Property;
- Loss of Land Used by the Community; and
- Effects on Development Land.

Planning and Regulatory Framework

The national planning policy framework for Wales is provided by Planning Policy Wales, and the series of Technical Advice Notes (TAN) published by the Welsh Government. TAN 6, covering national planning policy for sustainable rural communities, requires that local government seeks to protect and preserve, where possible, BMV agricultural land⁵. Consultation is required where loss of BMV land will exceed 20ha (Section B2). TAN 6 also requires assessments to take into account the impact of a proposed development on farm size and structure and any buildings and fixed equipment.

Pembrokeshire County Council's Local Development Plan (2013)⁶ supports these objectives. Retaining the best quality agricultural land is a Key Environmental Issue (p42). General Policy GN 10 supports the continuing agricultural operation of farms (p91).

⁵ <http://wales.gov.uk/topics/planning/policy/tans/tan6/?lang=en>

⁶ <https://www.pembrokeshire.gov.uk/content.asp?nav=1626,109,2045&id=28946&language=>

Potential development land within the study area has been identified through a review of land allocated for development in the Pembrokeshire Local Development Plan (adopted 2013) and the Pembrokeshire Coast Local Development Plan (2010).

There is no official means by which impacts on non-agricultural land use impacts can be captured in the ASTs. The impact of the options on land use is therefore ranked separately from the AST.

2.1.3. Impacts

This section identifies the impacts of the options on soils, agriculture, private property, land used by the community and development land.

Sensitivity of Environmental Resources and Receptors

On agricultural land the key receptors are soils (considered in terms of loss of BMV land), the farms and fields affected by land take and severance and the associated impacts on items of farm infrastructure such as trackways, hedgerows and water supplies.

Agricultural land in ALC Grades 1, 2 and 3a is considered to be of high sensitivity, agricultural land in ALC Subgrade 3b is considered to be of medium sensitivity, whilst land in ALC Grades 4 and 5 is considered to be of low sensitivity.

Preliminary ALC assessments (Fig 3-? and Table 3-?) indicate that land of high sensitivity occupies around 55% of Options J and 7 and 69% of Option 11.

For farms the following sensitivity criteria are applied:

- High: farm types in which the operation of the enterprise is dependent on the spatial relationship of land to key infrastructure, and where there is a requirement for frequent and regular access between the two, or dependent on the existence on the infrastructure itself, e.g. dairying; irrigated arable cropping and field scale horticulture; intensive livestock or horticultural production;
- Medium: farm types in which there is a degree of flexibility in the normal course of operations, e.g. combinable arable crops; grazing livestock farms (other than dairying);
- Low: farm types and land uses undertaken on a non-commercial basis.

There is no dairying in the study area and affected farms are assessed as being of medium sensitivity.

Several farms provide camping sites but aerial imagery shows no static facilities along Options J, 7 and 11 are affected. In Option 3, Newgale Camping Site is of high sensitivity

Assessment of magnitude of impact

The general methodology for assessment of the significance of soil and land use impact includes consideration of the magnitude of impacts on soils, farming practice, access, broad economic impacts and drainage and water supply. The main considerations are:

- Type of impact - direct or indirect;
- Nature of impact - beneficial or adverse or neutral;
- Duration of impact - short or long term, reversible or not;
- Frequency of impact - continuous or intermittent, changing with time or constant;
- Geographical context - international, national, regional or local.

Table 7-34 – Magnitude of Impact on Agricultural Land

Magnitude	Criteria
High	The identified impacts are predicted to result in a large loss of BMV land and/or major damage to a farm business
Medium	The identified impacts are predicted to result in the loss of a significant amount BMV land and/or significant damage to a farm business
Low	The identified impacts are predicted to result in a small loss of BMV land and/or a small amount of damage to a farm business
Negligible	The identified impacts are predicted to result in the loss of little or no BMV land and/or little or no damage to a farm business

Assessment of Significance of Effects

Loss of BMV land

The significance of loss of BMV land is assessed as follows, with the Welsh Government's Technical Advice Note (TAN) 6's benchmark of 20ha (section B2) taken as the indicator for a large adverse impact:

- Large adverse (-3) - Potential for loss of >20 ha of BMV land
- Moderate adverse (-2) - Potential for loss of between 5 ha and 20 ha of BMV land
- Slight adverse (-1) - Potential for loss of < 5 ha of BMV land

The potential for loss of BMV land is moderate adverse for all options (see Fig 3-?), with the Option 11 taking most (11ha) and Options J and 7 losing 5ha and 6ha respectively. Option 3 contains no BMV land.

Impacts on farm viability

A nationally recognised set of standard assessment criteria for effects on farm and rural businesses does not exist. A bespoke set of criteria has therefore been used for this assessment, reflecting the known impacts and local farming conditions.

Table 7-35 Significance of Effect on Local Farm Businesses

Effect	Criteria
Large Adverse (-3)	Renders a full-time farm business, including any diversification enterprises, unworkable in its current form, such that it could not continue unchanged; the business would have to change the activities undertaken on the remainder of the holding as well as seeking some form of alternative income.
Moderate Adverse (-2)	Changes the workability of a full-time farm business, including any diversification enterprises, but without preventing the business continuing largely as before; there would be reductions in income and changes in day-to-day management, such as longer journeys to access severed land parcels.
Slight	Affects the workability of a full-time farm business, including any diversification enterprises,

Adverse (-1)	but with little change to the business continuing largely as before; there would be limited change in income and day-to-day management.
Neutral (0)	Very slight or negligible impact on farm business that can often be easily compensated for by modifications to management system.

Loss of agricultural land

Loss of agricultural land, whether or not it is of BMV quality, always has an adverse impact on a farm. However, landtake by each option is less than 12 ha and so the impact on any farm business is likely to be no more than slight adverse (-1).

The only environmental mitigation possible for loss of land is for the engineering design to minimise the footprint of the scheme and for disturbed soils outside the highway boundary to be restored to farming in a condition not worse than their existing state.

Severance of agricultural land

Options J and 7 cross open farmland, severing farms and bisecting fields. Option 11 widens an existing road and so does create new physical severance of land. This new road will be a strategic road and at times traffic will be heavy, particularly in holiday periods. Thus, livestock and large agricultural machinery may have difficulty in crossing the road safely

Mitigation will involve creating (Options J and 7) or restoring (Option 11) field and farm accesses or providing overbridges or underpasses. Where the latter are not provided the mitigation is installation of handling pens in gateways, wide gates set back to allow farm vehicles to pull off the carriageway and adequate turning splays.

No mitigation is possible on Option 3's Newgale Camping Site and the impact is large adverse (-3).

For the other options, the impact of severance and road widening on affected farms is assessed as moderate adverse (-2), although this may be reduced where underpasses and overbridges are provided. The longer the option, the greater the overall impact and so the options can be ranked according to length with Option 11 (6229m) being the most affected, Option 7 (3253m) the second, Option J (2557m) third and Option 3 the least.

Farm buildings

No farm buildings would be demolished by any option. Option 7 passes close to a large agricultural building at chainage 1550, but the road would be designed to avoid damage.

Land drainage

It should be assumed that much of the land in the study area contains field drains. Drainage systems would be restored or diverted during scheme construction and monitored for an agreed period of aftercare. Since this impact is only temporary and able to be fully mitigated it is considered to be neutral and no distinction can be made between the options.

Water supply

Most fields will contain troughs or watering points, such as springs, for livestock. All options would likely disrupt some of these necessitating relocation of both troughs and their water supply. Again, since this impact is only temporary and able to be fully mitigated it is considered to be neutral and no distinction can be made between the options.

Summary

The agricultural impacts that allow the options to be compared are loss of BMV land, total loss of farmland and severance. The greater the length, the more land will be lost and more farms and fields will be affected by severance, so that Option 11 has the greatest magnitude of impact, followed by Option 7 and Option J.

For the options J, 7 and 11 the significance of effect of these is moderate adverse for severance and slight adverse for loss of land. Option 3 is different from the other options in that it does not cross farmland and so it has no impact in terms of loss of agricultural land. Severance is restricted to one camping field where the impact on that enterprise is large adverse. Overall, however, it is the option of least impact on soils and farming.

Table 7-36 Summarises the scoring and ranking of ranking of the options

Table 7-36 Ranking of Options

Option	Score for loss of BMV land	Score for Severance	Total score	Ranking	Relative adverse impact
11	-2	-2	-4	1	Greatest
7	-2	-2	-4	2	↓
J	-2	-2	-4	3	↓
3	0	-3*	-3	4	Least

*Note: The severance in Option 3 is restricted to one camping field