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Forestry Appraisal
land at Ashenhurst Mill
PP-04562626

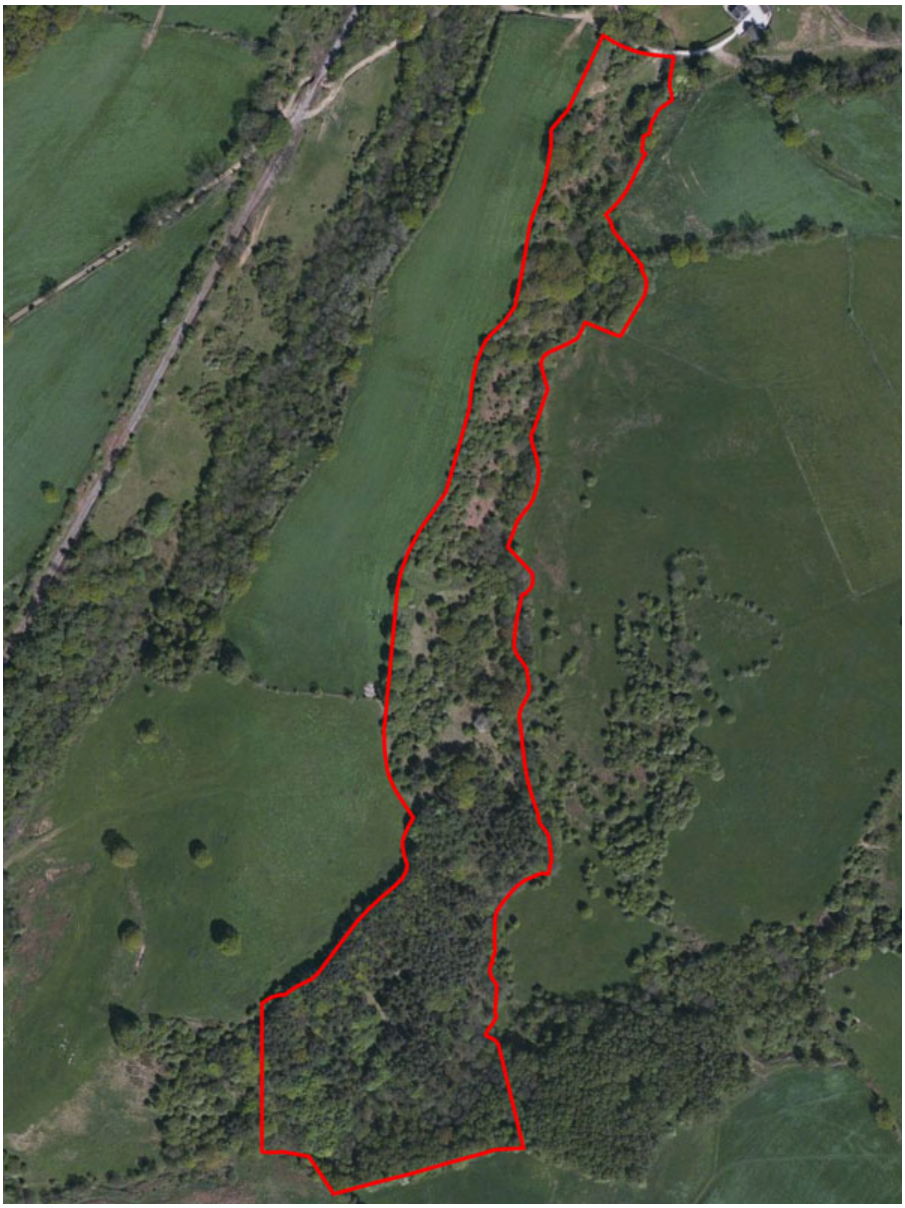


Fig. 1 Aerial View of the Site

1. Site & Applicant Details:

Tom Hine,
Ashenhurst Mill,
Bradnop,
Staffs ST13 7NB.

OS Grid Ref SJ 998 545
Northing 354575
Easting 399860

2. Introduction

2.1 The site comprises 6.53 hectares, (16.13 acres) of woodland on the the south eastern edge of Leek.

2.2 Vehicular access is via Middlecliffe Lane an adopted unclassified road, the D1104 which runs from Ashenhurst Lane, past Middlecliffe Farm terminating at a point 50m or so to the west of Ashenhurst Mill. The site may also be accessed via a farm track which leads west from the end of Ashenhurst Lane.

2.3 An unmade forest track runs south from the access for a length of 0.75km but is not a public right of way.

2.4 The site is a mixture of broadleaved woodland, continuous dense scrub and mixed coniferous plantation interspersed with small areas of bracken and small areas of poor semi improved grassland.

2.5 The Jackfield Plantation lies at the southern end of the site and is a mixture of douglas fir and scots pine, interspersed with the occasional native broadleaved species. The trees were planted about sixty years ago by the applicant's forebears and are the optimum age for felling.

2.6 The land owner is seeking planning consent for the construction of four environmentally sustainable alpine style holiday cabins and for resurfacing a forestry track.

2.7 The land owner also intends to exploit the economic value of the some or all of the woodland as a source of timber and fuel.

3. Scope

3.1 This report assesses the economic value of the woodland and considers the viability of exploiting it as a forestry enterprise.

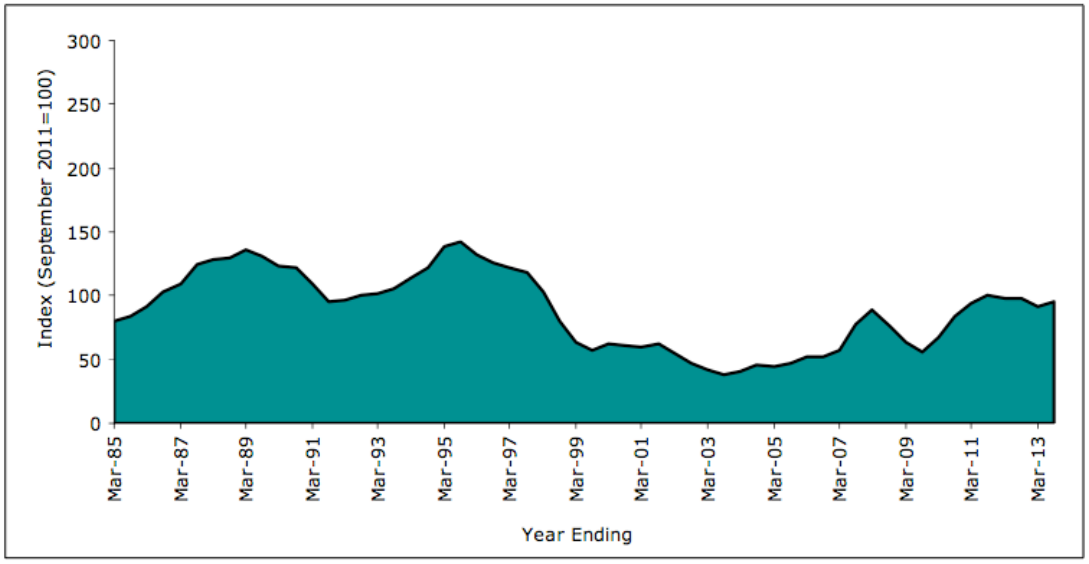
3.2 The social benefits of harvesting and reforestation are weighed against the ecological costs and landscape impacts.

3.3 The report may be used to help assess whether the proposed development should be supported.

4. Forestry Trends

4.1 Domestically-produced wood accounts for under a fifth of the total used in Britain. Changes in UK prices are thought to largely reflect changes in import prices.

4.2 The Coniferous Standing Sales Price Index monitors changes in the price per cubic metre for timber that the Forestry Commission and Natural Resource Wales sold standing, where the purchaser is responsible for harvesting. The price in nominal terms (prices at time of sales) fluctuates from year to year and shows significant recovery from a ten year low.



4.3 Generally, the purchaser is responsible for harvesting, (so called roadside prices tend to be higher to cover the costs of harvesting and extraction). The Forestry Commission Timber Prices Index, published in November 2013 gives an overbark price of £13.93/m^3 for coniferous standing.[1]

4.4 Time series data for hardwood is limited. Forestry Commission data from 2007/8 provides a mean hardwood prices of £35/m^3. The mean price of softwood for the same period, 30th September 2007 to 30th September 2008 was £10.73/m^3. Were changes in hardwood prices simply assumed to reflect changes in softwood prices this would imply that British hardwoods are greater in value by a factor of 3.26 giving an overbark price of £45.42/m^3 for deciduous standing. [2]

4.5 The National Forest Inventory Report provides figures for stocked area and standing timber volume for trees of different age classes. The overbark volume per tree is the volume to area ratio. For example, for coniferous trees of age class 41 to 60, the overbark volume for Great Britain is 196.2 million m^3 with a stocked area of 645.7 thousand hectares giving an overbark volume of 304m^3/Ha. For broad leaved trees of age class 41 to 60, the overbark volume is 53.89 million m^3 with a stocked area of 261.1 thousand hectares giving an overbark volume of 206m^3/Ha. The lower value for broad leaved woodland is indicative of reduced planting density. [3,4]

4.6 The Office for National Statistics have recently published a report which provides a monetary value of UK timber recourses. The report applies the net present value (NPV) accounting convention to the value of timber of different age classes, applying a social discount rate to convert future revenue to current prices. The methodology can be used to assess the NPV of a specific resource:

$$NPV = \text{resource rent} / (1 + r)^t$$

resource rent = 5 year averaged unit resource rent x volume
r = social discount rate
t = asset life, harvesting age - age class

A social rate is more appropriate than a market rate for green assets because of the long term nature of the investment and social benefits including carbon sequestration and the production of carbon neutral wood-fuel. The Treasury Green Book gives a social discount rate of 3% for assets maturing in 31 to 75 years. The mean harvesting age for softwood is 50 years. [3]

5. Jackfield Plantation

5.1 The Jackfield Plantation extends to 19,756 sq.m, approximately 2.0 hectares. The plantation is predominantly douglas fir and scots pine, aged 60 years.

5.2 The current overbark prices are £13.93/m^3 for coniferous standing and £45.42/m^3 for deciduous standing.

5.3 The overbark volume for trees of age class 41-60 is 304m^3/Ha for coniferous trees and 206m^3/Ha for deciduous trees

5.4 Analysis of aerial photographs shows a 10:90 mix of deciduous to coniferous trees.

5.5 The present value of the Jackfield Plantation is therefore:

Value = overbark price x overbark volume x proportional area
Coniferous Value = 13.39 x 304 x 2 x 0.9 = £7,327
Deciduous Value = 45.42 x 206 x 2 x 0.1 = £1,871
Total Value = £9198

6. Deciduous Woodland

6.1 The total site area is 6.53 hectares. The Jackfield Plantation is 2.0 hectares, leaving 4.53 hectares of deciduous woodland, scrub and meadow.

6.2 Aerial photographs show approximately 60% of the area outside of the Jackfield Plantation is deciduous woodland, or 2.72 hectares.

6.3 The current overbark prices are £45.42/m^3 for deciduous standing.

6.4 The overbark volume for trees of age class 41-60 is 206m^3/Ha for deciduous trees

6.5 The present value of the deciduous woodland is therefore:

Value = overbark price x overbark volume x area
Deciduous Value = 45.42 x 206 x 2.72 = £25,443

7. Net Present Value

7.1 The net present value method can be used to access the potential value of the whole site arising from natural regrowth and restocking with conifers after harvesting.

7.2 The unit resource rent for British coniferous woodland is a 5 year average overbark stumpage price:

URR = (7.95+12.15+14.77+14.03+13.93)/5 = £12.57/m^3

7.3 resource rent = URR x overbark volume x area
= 12.57 x 304 x 6.53
= £24,953

7.4 NPV = resource rent/$(1 + r)^t$ = £24,953/$(1.03)^{50}$
= £5,691

7.5 The same method can be used to asses the net present value of the Jackfield Plantation alone.

7.6 Jackfield resource rent = 12.57 x 304 x 2.0 = £7,642

7.7 Jackfield NPV = resource rent/$(1 + r)^t$ = £7,642/$(1.03)^{50}$
= £1,743

8. Total Values

8.1 The resource value depends on the area harvested and restocked. Leaving the Jackfield Plantation past it's optimum harvesting age, termed overdue timber, reduces the overbark volume and it's value. The minimum approach would therefore be to exploit the Jackfield plantation.

8.2 Jackfield resource value = present value of the Jackfield Plantation
+ Jackfield NPV
= £9,198 + £1743
= <u>£10,941</u>

This figure is the lower bound if the value of the Jackfield Plantation is exploited but the remaining woodland is left untouched.

8.3 The total resource value = present value of the Jackfield Plantation
+ present value of deciduous woodland
+ NPV of whole site
= £9,198 + £25,443 + £5,691
= <u>£40,332</u>

This figure is the upper bound if the woodland value of the whole site is exploited.

8.4 The potential value lies somewhere between the two figures depending on the area exploited for timber and woodfuel.

8.5 The cost of forgoing the maximum potential net resource value by limiting forestry work to the Jackfield Plantation is £29k, most of which is a short term loss attributed to the present value of the deciduous woodland.

9. Access

9.1 The bgs survey data for the site shows an overburden of diamicton till over Morridge mudstone and the ground is poorly drained. Recent drainage work has improved matters, but the track becomes muddy even with light use and good weather conditions.

9.2 Forestry contractors will be unable to harvest the timber until the track has been resurfaced. Resurfacing is therefore considered to be 'reasonably necessary'. The General Permitted Development Order permits the formation, alteration or maintenance of private ways providing that no part lies within 25 metres of the metalled portion of a trunk road or classified road. [5]

9.3 The Permitted Development Order also permits operations to obtain the materials required for the formation, alteration or maintenance of the track. However, quarrying the underlying mudstone may be damaging to the landscape and ecology and it may therefore be better to source the materials from the limestone quarries at Cauldon. Alternatively recycled construction aggregates could be used.

9.4 Typically a forest track would be constructed with a 100mm clause 804 sub base and a 100mm 0-40mm type 1 MOT surface. The track will need to be surfaced for a length of 760m with a track width of 3m. On the reasonable assumption that the land owner carries out the construction work, the cost of the track is calculated to be £10,800.

10. Ecology & Landscape Character

10.1 Whilst harvesting and reforestation has social benefits including carbon sequestration and the production of carbon neutral wood-fuel, there are ecological costs.

10.2 An ecological appraisal has been carried out. This found the ground cover within the Jackfield Plantation to be impoverished due to the canopy cover and also historical disturbance to the location, most likely from the clear felling that enabled the planting of coniferous species.

10.3 The landscape character is identified in the Churnet Valley Landscape Character Assessment as "Dissected Sandstone Cloughs and Valleys 1c". A key management issue is the loss of wet woodland in the upper reaches of the Churnet.

10.4 Clear felling and restocking the whole site with conifers risks degrading the diverse meadow and broadleaved habitats to the same state as the Jackfield Plantation and would be harmful to the landscape character.

11. The proposal

11.1 The preference is to clear fell the Jackfield Plantation and to replant with native broad leaved species. The mix should reflect the species found elsewhere in the valley, alder in the wetter areas, beech, oak hazel and silver birch on higher ground. Felling will also require the removal of some broadleaved trees in order to access the plantation which lies approximately 80 meters beyond the end of the track. Refer to inset Plan 4 for details.

11.2 Ecologists have advised the following woodland management measures :

i). Re-instigate hazel coppicing – provides wood fuel and increases biodiversity value to woodland through light penetration and structure

ii). Thin woodland – remove weak and overcrowded trees to increase light penetration and enable more natural growth forms of key specimen trees.

iii). Thin scrub from grassland areas – rotationally thin scrub (not all scrub at one location each year) from the grassland areas to prevent scrub from taking over (succession). This will enable wild flowers to grow. [6]

The cost of managing the woodland ecology has not been assessed.

11.3 The development involves the construction of four environmentally sustainable alpine style holiday cabins. Two small holiday cabins are to be sited on a small area of broadleaved woodland to the east of the stream. Two larger cabins are to be sited on each of the areas of meadow on the western side of the stream. Refer to proposed inset Plans 1,2,3 for details.

11.4 The development includes the associated ground works and will require the provision of small parking areas. The small woodland site lies on the opposite side of the stream from the track and requires a footbridge and path for access.

11.5 The use of any land for the purposes of agriculture or forestry (including afforestation) does not constitute development. [7]

12. Conclusion

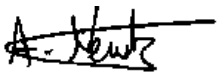
12.1 The net resource value of the woodland taking into account the cost of works to the track ranges from £141 to £29,532 depending upon the area involved and is therefore a viable forestry enterprise.

12.2 Reforestation has social benefits including carbon sequestration and the production of carbon neutral wood-fuel but has ecological costs and would be harmful to the landscape character. Ecologically and in

landscape terms, it would be be better to limit the extent of harvesting and reforestation to the Jackfield Plantation.

12.3 The loss of potential woodland revenue combined with the cost ongoing ecological costs may be questionable as a purely commercial forestry enterprise but may be sound when combined with a rural holiday enterprise.

12.4 Planning approval subject to appropriate land management conditions would provide a suitable mechanism for safeguarding and enhancing the diverse ecological value of the site and for enhancing the particular landscape character of the area.



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Glossary

Broadleaves: Trees that do not have needles or cones, such as oak, birch and beech. A few, such as alder, have cone–like structures for their seeds which are not true cones.

Conifers: Trees with needles and cones, such as spruce, pine and larch.

Net Present Value (NPV): A valuation technique that values the future income streams and then discounts these back into today's money as a value of the asset or resource.

Overbark Volume: The volume of the tree including bark, but excluding small branches, twigs and foliage.

Overdue timber: The trees which are currently older than the optimum age of harvesting.

Resource rent: This is the surplus produced by the resource itself after all costs and normal returns have been taken out.

Social Discount Rate: The discount used in computing the net present value of investments in projects with benefits to society.

Standing sales: The UK term for for timber sold standing. Synonymous with the international term, stumpage price.

References

1: The Forestry Commission Timber Prices Indices, data to September 2013, published 7th November 2013.

2: UK National Economic Analysis Report on Woodlands NEA Economic Analysis Report, Chapter 8, Chris Quine, Christine Cahalan, Alison Hester, Jonathan Humphrey, Keith Kirby, Andy Moffat and Gregory Valatin published June 2011

3: Monetary Valuation of UK Timber Resources, Jawed Khan, Peter Greene and Kah Wei Hoo; Office for National Statistics, published 2013

4: NFI preliminary estimates of quantities of broadleaved species in British woodlands, with special focus on ash, Forestry Commission, Alan Brewer, published May 2013

5: Schedule 2, Part 7, Class A of The Town and Country Planning (General Permitted Development) Order 1995.

6: Ecological Assessment, Ashenhurst Mill, A Dukes, Nick Mott, S Gower, published September 2014

7: Section 55 of the Town and Country Planning Act 1990