

# WHINLATTER MOUNTAIN BIKE TRAIL ENVIRONMENTAL IMPACT ASSESSMENT

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## **SUMMARY**

Set in a key location in the Lake District National Park as the proposed Whinlatter Forest Mountain Bike Trails development is, any such proposal requires careful consideration as to its impacts, be they environmental, economic or social. This

document looks at the key environmental elements within and in proximity to the Forest and assesses the development's potential to impact on them and makes recommendations for mitigation measures where appropriate.

The broad conclusion to be drawn is that there will be little impact if a number of principles are adhered to, both in the construction and subsequent management. Indeed there are opportunities for positive environmental impacts to be derived from the trail developments.

The elements examined were as follows

- ❑ Archaeology - desk study only
- ❑ Ecology - part desk, part field study
- ❑ Geology and geomorphology - desk study
- ❑ Landscape - field study
- ❑ Water environment - part desk, part field study

The proposals in their present form would not impact on archaeology, geology and geomorphology. There is potential for impact on aspects of biodiversity, in particular moorland habitats, wetlands/watercourses and raptors. Appropriate recommendations are made on these issues.

There will be little or no landscape impact, as with very few exceptions the trails are contained well within the forest edge and hence within a visual barrier. With respect to the water environment, the main concern devolved around run-off and siltation in the Bassenthwaite catchment. Again recommendations are made with respect to mitigation and prevention measures.

Final details of the proposed development at Revelin Moss are needed before an assessment and mitigation recommendations are possible.

## **1 INTRODUCTION**

1.1 This EIA is concerned with determining the impacts the proposal to develop a major mountain bike resource within Whinlatter Forest may have on an array of environmental indicators both within it and in its vicinity.

1.2 The impact factors to be considered are :

- ❑ archaeology
- ❑ ecology
- ❑ geology and geomorphology
- ❑ landscape and
- ❑ water environment.

1.3 In each of these areas it will look at :

- ❑ the current situation,
- ❑ the potential impacts of the development
- ❑ the possible measures required to mitigate those impacts

Due to the timing of the work, some issues may require additional consideration. Therefore it will also determine if more detailed surveys are required to address any

key areas of concern. Given FE's track record there is no reason why its in-house expertise cannot be used.

1.4 In the context of the overall proposal, it is worth considering the position of Forest Enterprise. It is one of the UK's key providers of land and recreational management and has an enviable recent record of species and habitat management developed through its Forestry Design Plan process. There is no reason to suppose that as an organisation it will not wish to sustain this reputation through its development at Whinlatter.

## **2 THE PROPOSAL**

### **2.1 Trail Construction**

2.1.1 The proposal is to construct a series of mountain bike trails from novice to international standard, utilising a mixture of existing routes and new construction. With that construction will be an associated trailhead location to be sited at Revelin Moss. This will include a car park, changing and refreshment facilities, and cycle hire and repair.

2.1.2 Each trail will be constructed using a 5 ton digger working within a 2m machine track on the line of the trail. Where the trails are machine built on a steep hillside the access track could require an initial bench cut of up to a metre vertical depth at the inside corner. In such cases this should be refilled with dug material and organic matter as part of the post construction shaping.

2.1.3 Material to form the trail base will be taken from the inside corner of the track and will be compacted with the machine bucket. The as-dug materials on site are shaly and are suitable for the trail base in almost all areas. The trail tread will be laid with 'borrowed' materials from a good site when necessary and/or with imported crusher spoil or fine hardcore from an FC or local quarry. High wear and technical sections will be constructed from imported rock, again from an FC or local quarry.

2.1.4 Any remaining spoil is returned to the inside corner of the machine track and this is graded. Any topsoil, stones, brash etc are placed on this to return it to a relatively 'natural' appearance.

2.1.5 The remaining trail is 500-1500 mm wide, depending on 'Grade'.

2.1.6 Off line construction will allow trails to meander beyond 2m to make the trail snake for speed control purposes and for technical riding skills. Where this is the case limiting barriers [brash, logs etc] are constructed to prevent encroachment into surrounding areas.

2.1.7 Tree removal may be necessary. Dependent on species, the nature of the forest at that particular location and careful examination for species use [particularly birds and bats], this could be a positive development in the forest ecology. However first construction will be targeted at recently felled areas. Trail routes should be allowed to regenerate naturally.

2.1.8 The ideal areas for mountain biking are dry surfaces. Where wet areas are encountered, boardwalks should be constructed if appropriate. Otherwise culverts, stone drains and concrete pipes should be used. Such features already exist within the forest and are effective in sustaining wet habitats.

2.1.9 Run off wash is not expected to be a problem, with the tracks grades sending water to their margins. This does provide the potential for some small scale habitat creation, particularly shallow pools and wet areas, which are at a premium throughout much of the forest because of the preponderance of steep, free draining slopes. These areas would also act as silt traps.

### **2.2 The Trail Head**

2.2.1 The new buildings and car park will be sited at Revelin Moss. In the case of the car park much already exists. However it would benefit from additional landscaping and needs to be screened from the Pass Road.

2.2.2 Although views of Revelin are extremely limited, the siting and design of the buildings will need careful consideration. To minimise any impact their location needs to be at the western end of the site. Detailed consideration then needs to be given to materials, elevations and the roofs in particular. If the proposal to bury the building is followed through, then details of arisings disposal will be needed, together with temporary measures to contain run-off.

2.2.3 Where reasonably practical, measures should be taken to ensure that the buildings are environmentally sustainable. In particular the following steps should be put in place

- ❑ rainwater and grey water recycling
- ❑ details of final waste water disposal
- ❑ solar panels and/ or wind turbine if practical
- ❑ heating system using forest waste / chips
- ❑ integrated recycling facility

### **2.3 Signage and Interpretation**

2.3.1 Another key tool in the successful implementation and management of the trails will be the provision of quality interpretation material, backed up with up to date information on detail changes, temporary restrictions etc. This in turn needs to be backed up by clear trail signage to prevent inadvertent entry into sensitive areas. There is a clear need for reinforcing messages about the important wildlife communities of the Forest and also the needs of other users.

2.3.2 An agreed programme of interpretation/signage/information dissemination should be developed in parallel with the trail building.

## **3 ARCHAEOLOGY**

3.1.1 Evidence of archaeological remains within Whinlatter itself appears to be fairly sparse. However the LDNPA records show a concentration of old lead mining and mill sites in the valley of Comb Beck. The mines are clearly visible and are secured from public access. The area of Comb Beck in itself is also of interest for landscape and habitat reasons, and proposed works here are minimal and should have no impact.

3.1.2 Much of Whinlatter has been subjected to serious surface disturbance from forestry operations, including 'rigg and furr' ploughing. The impact on any archaeological features which might have existed will have been profound and probably destructive. This disturbance is likely to continue as new clearance and replanting takes place. Compared with this level of activity, the proposed mountain bike works are fairly low key. The scraped area itself in the construction work is shallow, generally no greater than 250mm. This would largely correspond to the current surface layer, which in most instances will have already been disturbed.

### **CONCLUSIONS TO ARCHAEOLOGICAL ISSUES**

3.2.1 The known archaeological sites are outside the trail development areas. Much of the area where construction will take place has received substantial disturbance in the past through forest operations. It is unlikely that the trail development will compromise any archaeological resources.

3.2.2 To ensure proper recording if issues do arise, a risk assessment methodology should be agreed with the County Archaeologist or the LDNP Authority's Archaeology Advisor.

## **4 ECOLOGY**

4.1.1 The ecology of Whinlatter is greatly influenced by the Forest development process. Areas around, and some remnant areas within, illustrate clearly the nature of habitats which would have once existed here. Part of the FE ownership falls within the Buttermere Fells SSSI, the main biological interest of which derives from the range and extent of montane and sub-montane dwarf shrub heath communities. It is probable that the bulk of Whinlatter would have had similar communities prior to its afforestation. Evidence of this is manifested along the forest tracks where marginal vegetation has been allowed to develop. Because of the loss of habitat within the planted areas, these margins are important to Whinlatter's biodiversity. Any works related to the MTB development should seek to conserve and extend these habitats.

### **Habitats Within Whinlatter**

4.2.1 Plan 1 shows the broad distribution of habitat types within and immediately adjacent to Whinlatter. The dominant vegetation within the Forest is coniferous woodland. However there are important areas of upland heath, stream habitat and small areas of bog and flushes.

### **AFFORESTED AREAS**

4.3.1 The forest can be subdivided into the following categories

- spruce dominant
- larch dominant
- other evergreens
- mixed larch/hardwoods
- clear felled

4.3.2 The age structure of the various compartments is usually even aged. However the Forest itself has compartments at a range of ages.

In terms of biodiversity, this gives rise to a range of opportunities for plants and animals to exploit until the full closure of the canopy. At which point almost total exclusion of sunlight leads to total loss of base layers, giving the gloom characteristic of mature coniferous plantations. But the succession planning within the Forest Design Plan should see habitats replaced.

4.3.3 The construction of the MTB trails will lead to some removal of trees. Where this is in mature/closed canopy woodland in particular, it will have the effect of opening some of these areas to light and creating rides. The close canopy suppresses growth on the forest floor and prevents natural regeneration. There is an almost total absence of ground flora and opening out for the MTB trails will make significant improvements. In turn this will provide opportunities for colonisation and use by a range of fauna, in particular birds and invertebrates.

4.3.4 Once the detailed routes for the trails are finalised and trees are identified for removal, checks should be made to ensure that

- specimens used for nesting/roosting are not removed
- bat roosts are not disturbed or damaged

4.3.5 With very limited exceptions, the new trails are all within the afforested area and therefore will be constructed on ground that has already had severe habitat modification.

4.3.6 The construction programme will target recently clear felled areas in the first instance. The early stages of afforestation, say up to 3m growth, can be valuable in terms of the species range. Targeting such areas will enable some of those habitat benefits to be retained over time, rather than lost to close canopy development. In addition any disturbances to fauna will have happened through the forest operations, further minimising impacts from trail construction.

#### UPLAND OAK WOODLAND

4.4.1 There is a small area of upland oak around Masmill Beck. This is a key habitat in Cumbria's Biodiversity Action Plan. These woodlands often contain rare and important communities of ferns, mosses, liverworts, birds, invertebrates etc. Oak woodlands are important because they represent the once climax vegetation of the area. In addition they contain associations of flora and fauna from which new woodlands can regenerate. The proposed trails do not encroach at all on this area. Indeed, FE has taken active steps to manage and conserve these areas. However, their importance should be made clear through quality interpretation material.

#### MOORLANDS

4.5.1 Upland heath covers extensive areas between 300 and 750m. The Buttermere Fells SSSI and cSAC designation is in part because of this habitat. Parts of the Whinlatter estate adjacent to the Hobcarton and Swinside Plantations fall within the SSSI. Other parts of the estate also are upland heath habitat, particularly between Ullister Hill and Lords Seat. Much of the area around is habitat of this type.

4.5.2 It overlies base poor rocks which are characteristic of the Skiddaw series and has acid or strongly base deficient soils. This habitat is recognised as being of international importance because it is confined to the western sea board of Europe. It is mainly dry heath dominated by heather and some bilberry. It has an important variety of bird species including red and black grouse, merlin, twite, curlew, skylark, wheatear, meadow pipit. The most commonly seen birds are the meadow pipit and the raven.

4.5.3 It has a species poor flora but is rich in invertebrates. Most noticeable invertebrates are moths, and some dragon fly species around pools. In the case of the former it is those species the caterpillars of which feed on heather, bilberry and purple moor grass.

4.5.4 There is little or no active management here, particularly through the traditional method of burning, which has implications for the long term viability of the habitat. This is more of an issue than the mountain biking proposal. However, the trail design must ensure no encroachment into these adjacent areas. This can be achieved through robust track edge treatment.

4.5.5 Fescue and nardus grasslands are also present in adjacent areas, particularly to the N of Lorton Fells and W/NW from Ullister Hill. These are characteristic of much of upland Britain. The former is dominated by sheeps fescue [*Festuca ovina*] and bents [*Agrostis tenuis /stolonifera*].

Nardus grassland also has the typical heath rush [*Juncus squarrosus*] association here. This type of vegetation is generally a result of overgrazing.

4.5.6 The key issues for the trail construction revolve around encroachment. This means closing off all obvious potential access routes and designing constraints into those few areas where the trails will cross moorland. It might also involve closures at key times of the year when ground nesting species are potentially vulnerable. A code of conduct needs to be drafted with the relevant ornithological bodies.

#### WATER ENVIRONMENTS

4.6.1 **Mountain streams** are relatively impoverished in vascular plants but are rich in low growing bryophytes with many invertebrates in the largely stony channels. The latter are key species in the chain of biodiversity and are important indicators of health within the water environment. The streams in Whinlatter conform very much to this type.

4.6.2 All will have important invertebrate populations with mayflies and stoneflies well represented, also caddis species and black fly.

Important species which feed on them are dippers and salmonids.

4.6.3 The streams themselves are generally fast flowing and dynamic, the flow brings a continuous supply of food and the water is well oxygenated.

4.6.4 All the streams in Whinlatter are important for biodiversity. This importance is magnified by the lack of certain types of biodiversity in much of the mature forest. Like the various track and trail margins they are key corridors in the movement of flora and fauna. They are also reservoirs from which cleared forest areas can be colonised. The MTB trail construction should employ techniques which minimise intrusion into stream beds, and which on completion will separate riders from water courses. Only in exceptional circumstances should fill material be used.

4.6.5 Whinlatter does not appear to have benefited from detailed and ongoing study of the biodiversity of its water courses. A potentially important addition to this knowledge could be made through the establishment of an integrated study of the flora and fauna of the becks and their margins as part of a monitoring package. This knowledge could benefit and inform other proposals for recreation development in forest areas. A formal proposition, including a possible sponsorship package, should be devised and sent to universities with a known expertise in freshwater biology.

4.6.6 **Flushes** are supported by the constant downward movement of soil and drainage water from above. They contain an array of vegetation types consistent with the characteristics of the main nutrient inputs, aspect and drainage. Wet flushes are the most common type characterised by rushes and sedges at the margins but all influenced by grazing and by bryophyte vegetation ie mosses and liverworts. As a rule the bryophyte flushes are comparatively small in Whinlatter but add to its biodiversity and are important because they are typical of this part of the Lake District. The MTB trails should generally avoid all such areas. Where this is not possible, boardwalks should span them and no fill material should be used within them.

4.6.7 **Bogs and mosses** are usually small areas within Whinlatter and are confined to hollows. They are of interest for their varied plant communities – sphagnum species, crossleaved heath, liverworts, sundew. They appear to be subject to invasion by cotton sedges and calluna. Potentially they offer greater variety than any other habitats in Whinlatter apart from stream margins. The mountain bike trails should avoid all such areas.

4.6.8 Whilst not present within Whinlatter, **mesotrophic lake** habitat is an important consideration to be taken into account in all proposed physical works programmes in the catchment of such lakes. Such lakes are amongst the most biologically diverse in the UK. They contain naturally high concentrations of nutrients. They only occur relatively infrequently in the UK, and there is a key concentration in the Lake District.

4.6.9 The key consideration here is Bassenthwaite and part of Whinlatter drains to it[see plan 2]. Bassenthwaite is an SSSI, a National Nature Reserve, a candidate Special Area of Conservation and a candidate World Heritage Site.

4.6.10 It's management is being developed through the Lake District's Still Waters Partnership of which the Forestry Commission is a member. The 'Lake Bassenthwaite Catchment – Heritage Enhancement Project' is the second Still Waters project in the Lake District. Some of the key issues it is seeking to address include – sedimentation, nutrient enrichment, water abstraction.

4.6.11 Sedimentation in particular has been raised as an issue for the development of the MTB trails. The concerns relate to sedimentation during construction and from run-off once routes are operational. Under the provisions of the Forest Design Plan sections of the forest will be subject to clear felling at some stage which can lead to soil erosion and does lead to leaching. Whilst this is probably a more serious issue for siltation in the Bassenthwaite catchment than the construction of the MTB trail, the trail works as proposed should design these issues out. However, the following measures should be included

- ❑ the works should be implemented over a 3 year period which means that any potential run off problem will not be concentrated into a small time frame.
- ❑ recent cleared areas should be targeted first. Broken and damaged ground provides opportunities for creative silt containment measures.
- ❑ 'natural' silt traps including small ponds and ditches with emergent vegetation should be constructed. These will contain features to slow run off and cause silt to be deposited before run off enters the main drainage network. They have the added benefit of creating new habitats.
- ❑ The latter should be constructed as the trails are being built.

#### OTHER AREAS

4.7.1 Whilst not strictly speaking a habitat type, the **public road margins** through the Forest are of some importance because they contain an array of flora in particular which reflects what the seminatural habitat would be if it were not for afforestation. Unlikely to contain major rarities, they support an array of fauna because seed bearing plants and invertebrates abound here. Therefore they are important in the context of Whinlatter's overall wildlife offer.

4.7.2 The key concern is that increased vehicular usage could lead to such areas being damaged by casual parking. Protection of those margins needs to be addressed either through traffic regulation, physical barriers or a combination of both.

#### Species Within Whinlatter

4.8.1 The species rapidly gaining iconic status in this part of the National Park is of course the **osprey**. Forest Enterprise is committed to ensuring there is no impact from the mountain bike development on it. As well as the frequent use of Bassenthwaite by the osprey, there is regular passage across the Forest to Loweswater, Crummockwater and Buttermere. There do not appear to be any favoured resting posts within the Forest, so the MTB activity will not cause disturbance from this point of view. [pers.com. Matt Easton].

4.8.2 The Osprey Project Manager has indicated that in his opinion the initial route proposals did not represent a threat to the osprey. However of greater concern would be any attempt to link Wythop to Whinlatter. Whilst not a proposal of the development, active steps need to be taken which discourage this. The key route is the red route up to Seat How. There are 3 points on it at which it is feasible to strike northwards out of Whinlatter and onto Wythop. These are indicated on Plan 3. Physical barriers, reinforced with interpretation measures, will need to be put in place.

4.8.3 As well as the osprey there are issues concerning a number of Schedule 1 and Red List species of bird. In particular goshawk, merlin, red grouse, ring ouzel and skylark.

4.8.4 The presence of **goshawk** is acknowledged to be difficult to verify and could only be done so through specific study. The FE Wildlife Ranger was not aware of any recordings in Whinlatter. Also experience on FE land elsewhere has tended to indicate a preference for larch woodland which is present in Whinlatter, but is not the

dominant species. Goshawk could be a possible breeder. It has a preference for coniferous woodland and is a tree nester, nesting close to the main trunk. Loss of mature conifers is likely to be a greater issue than mountain biking.

4.8.5 Because of the concern however, it is recommended that a detailed study be undertaken to determine the status of goshawk at Whinlatter.

4.8.6 **Merlin** are known to be present in the open ground adjacent to and within the forest proper. Although primarily ground nesters, usually in heather or bracken, they do adapt to trees and conifers in particular. This probably indicates old breeding haunts. However generally the former habit seems the most common at Whinlatter, with some use of crags. The SSSI around Hobcarton is prime merlin and peregrine habitat. There are no proposals to enter these areas.

4.8.7 However to prevent encroachment onto potential breeding and hunting sites the following measures should be undertaken

- ❑ trails close to heather moor should be kept well within the tree line.
- ❑ an annual survey to identify critical occupied sites should be made and any necessary temporary restraints be put in place. This could be built into the FE wildlife ranger's annual work programme. A similar scheme operates with the British Mountaineering Council and peregrine falcon.
- ❑ forest roads which lead to the forest edge and which are linked to or are part of the new network, need to have clear barriers to access for cyclists. Particular areas of concern are in Hospital Plantation and on the forest boundary to the SW of Revelin Moss.

4.8.8 **Red grouse** are present in small numbers around Lord's Seat. However a greater threat to their survival probably arises from the lack of heather management and intrusion by walkers rather than the mountain bike trail, the nearest point of which is some 4-500m away. A similar situation probably pertains to **ring ouzel** and **skylark** which are primarily ground nesters in sheltered spots on open moorland. Again intrusion by the new trails is very limited. Such sites could also be subject to seasonal restriction as proposed for the merlin.

4.8.9 There is a large population of **red squirrel** and it is proposed to make Whinlatter a refuge. Experience shows that red squirrel are not put off by people and the structure of the forest is favourable to their conservation. Disturbance should not be an issue.

4.8.10 The FE Wildlife Officer has reported [pers.com] that the principle **bat species** is pipistrelle. There are known roosts in Noble Knott and by the Swan Inn. The only potential issue relates to tree removal, with older trees possibly containing roosts. FE has a dead wood policy and also uses a box scheme where clear felling is taking place. This encourages movement from area to area and appears to be successful.

4.8.11 All trees scheduled for felling as part of the MTB Trail development will be surveyed for bat and bird roosts before any line is finalised. There are 2 known **badger** setts none of which are affected by the proposed routes. **Roedeer** is common with the occasional red passing through the Forest [pers. com. FE Wildlife Ranger]. The deer should be unaffected. Any monitoring can again be built into the ranger's work programme.

#### CONCLUSIONS TO HABITAT AND SPECIES ISSUES

4.9.1 Despite the poorly developed ground flora throughout most of the Forest areas, within it and its immediate vicinity there is an interesting array of habitats which allows a diverse array of exciting fauna to flourish. These include an excellent range of raptors, a good population of bats and larger mammals, a significant range of small woodland birds and good bryophyte flora.

4.9.2 It is unlikely that the proposed MTB trail development will have a detrimental impact on this variety and indeed will present opportunities for habitat creation.

4.9.3 However there still remain issues of concern in relation to the following

- ❑ osprey – isolation from Wythop needs to be reinforced
- ❑ goshawk – a survey to determine status and forest use is needed
- ❑ merlin and other ground nesting species – annual monitoring is needed to identify nest sites and agree a code of proximity access
- ❑ upland stream habitats – little work has been done to determine the impact of recreation developments on such habitats. Structured study here could be useful across whole areas of the UK where similar pressures exist. This could inform both development and management of facilities.
- ❑ dead end forest roads – a number of the proposed trails use existing forest roads or link into them in some way. A number of these roads in turn lead right to the forest edge and could encourage encroachment into sensitive open moorland. Discussions need to be held with FE to see how this might be addressed yet meet operational needs.
- ❑ public road margins – these often contain a broad mix of flora species typical of the sub montane flora of the area. Whilst not unusual in themselves, because of the general lack of ground flora within the Forest they take on a degree of importance which would not normally be the case. The key issue revolves around the potential for damage arising from increased parking demand which might lead to such areas being used. Measures need to be agreed with FE and the County Council over traffic management on the Whinlatter Pass road.

4.9.4 Most, if not all of the species monitoring is within the competence of FE staff and appropriate work schedules should be developed to reflect this.

## **5 GEOLOGY**

5.1.1 The basic geology of this part of the Lake District is Skiddaw Slates. The main outcrop forms the Northern Lake District of which Whinlatter is part. The prominent and dominant expression of the Skiddaw Slates form much of the visible backdrop for Whinlatter – Skiddaw itself and Grisedale Pike.

5.1.2 The slates are fine grained and contain no lime. They have innumerable minute joints which fragment into small particles through mechanical weathering action, and by solution. This produces a soil favourable to the growth of moorland grasses and heathers.

5.1.3 Much of the geology has been modified through glaciation but because of the nature of the Skiddaw Slates not to the same dramatic effect as in the Borrowdale Volcanics. Nevertheless, the Hobcarton Dale with Grisedale Pike and Hobcarton Crag at its head is a spectacular piece of landscape, the drama of which is reinforced by its comparative isolation. Overall the glaciation has created characteristic steep slopes with fast flowing and precipitous water courses. Because of the nature of the slates there are not a significant number of rock outcrops. There is one RIG in Hospital Plantation but this should not be compromised by the proposal.

5.1.4 Scargill and Glaze Becks are geological SSSIs. The trails do not impact on them.

### **CONCLUSIONS TO GEOLOGY ISSUES**

5.2.1 There are no issues outstanding.

## **6 THE LANDSCAPE**

6.1.1 It is not the purpose of this study to undertake a qualitative analysis of the landscape. Its national and international status says all that needs to be said and provides the policy context in which any impacts from development need to be judged. This section will assess what those impacts might be.

### **METHOD**

6.2.1 The guidance received from the LDNP Authority, together with representations from other key interest groups, provided the following criteria against which landscape impacts should be judged :

- routes be contained within the Forest boundaries
- routes be kept away from the Forest edge
- skyline routes be avoided
- impacts on key recreation routes be avoided

6.2.2 The method used to assess landscape impacts is based on the identification of and view from key user routes both within the Forest and the surrounding area.

6.2.3 The points selected were as follows :

- 1 Grisedale Pike and Sleet How
- 2 Ladyside Pike
- 3 Barf/Beckstones
- 4 Whinlatter Top
- 5 Knott Head
- 6 Hobcarton Valley
- 7 A66 near Derwent Bridge
- 8 SE of Keswick at Castlerigg
- 9 Whinlatter Pass

These provide a range of distant, near distant and internal views. The detailed conclusions are on the attached sheets.

6.2.3 In particular the following factors are considered in relation to the landscape impact of the trails and their associated developments

- where is the site visible from
- to what or whom is it visible
- how much is visible
- what is the degree of impact
- compatibility with surroundings

#### CONCLUSIONS TO LANDSCAPE ISSUES

6.3.1 The broad impact on the landscape will be fairly low key and localised. There are however some key areas for concern which will need to be addressed within the final design of the trails. These relate to potential to access open and sensitive areas the locations of which are detailed on the analysis sheets.

6.3.2 More detail is also required of the Revelin site, in particular the building details and siting, together with proposed landscape mitigation.

6.3.3 The choice of materials for the trails' construction should represent the locality. The proposal is, in the main, not to import material but to use those derived from the excavation, in which case there should be a reasonable landscape fit. Any timber etc should be from a sustainable source.

## 7 WATER

7.1.1 The main water network is shown on plan 2. A number of issues in relation to it have been addressed in this report already. However it is worth recapping the issues because of the importance attached to water concerns from almost all consultees to date. Those concerns are

- siltation of the Bassenthwaite catchment
- loss of aquatic habitat
- water abstraction

It is worth pointing out in relation to the siltation issue that whilst all of Whinlatter is in the Derwent catchment not all of its network flows to Bassenthwaite. [see plan2]

## CONCLUSIONS TO WATER ISSUES

7.2.1 To address those concerns the following actions are proposed to be carried out within the development and its subsequent operation

- ❑ run off from the trails should be by reduced velocity dispersement to encourage deposition
- ❑ this should have the added bonus of creating new habitat
- ❑ crossings of existing water courses should not normally involve the deposit of fill material into the stream channel
- ❑ where practical crossings should be constructed at times of low flow to prevent disturbance to sediment in the channel. Temporary crossings may be needed during construction; these too should be constructed to the same principles
- ❑ bog and flush areas should only be crossed where alternatives are impractical. Such crossings should be on boardwalks and should not involve the deposit of any fill material
- ❑ the proposed development at Revelin Moss should incorporate grey and rain water recycling, with surplus being directed through a 'natural' filtration medium – a pond and reedbed – before entering the main stream network
- ❑ abstraction will be by consent of the Environment Agency

## 8 OTHER ISSUES

### 8.1 EVALUATION AND RESEARCH

8.1.1 Certain proposals for additional survey are made in this report and they are mainly specific to aspects of the construction. However, once each phase of construction is completed, base line surveys of flora and fauna should be made. These could be done on a sample basis, not necessarily covering every inch of the trails and their surrounds. This could be monitored over time and the results would prove valuable in similar proposals elsewhere. The design and scope of such surveys should be agreed with the LDNP's ecologist. This also has the potential to form the basis of an ongoing research project with education institutions with a specialism in biodiversity.

### 8.2 TRAFFIC MANAGEMENT

8.2.1 This report has already commented on the impact of traffic particularly on the verge margins and how this could be managed. 8.2.2 However, there appears to be a suggestion from the local community that traffic trying to access the forest could be taken away from Braithwaite. The route postulated would be across open moorland from close to the FE depot at Wythop. Apart from the wholly inappropriate introduction of traffic into a quiet moorland zone, it would form a major visual intrusion into the landscape, it would destroy extensive areas of rare habitat, it would disturb breeding and feeding grounds for a range of rare and protected birds, and in particular it could have a disastrous impact on the osprey. This should not be considered as an option for this development.

## 9 CONCLUSIONS

- ❑ The broad impacts of the proposed development on other users, biodiversity and landscape are fairly low key
- ❑ There are detailed areas of concern, particularly in the construction phases, and these can certainly be addressed as much of the construction is by small machines and hand building
- ❑ The development does provide an opportunity to add to biodiversity in the Forest and all possible opportunities to do so should be exploited, particularly where this could lead to new wet areas and water bodies

- There is a need, and indeed an opportunity, to undertake monitoring work post construction. This could inform a whole range of other initiatives as UK's forests seek to diversify their offer