Evidence Table

Name of Evidence Review:	Uplands Evidence Review
Name of Review Sub-topic (if any):	Tracks
Review Question	Do tracks alter the hydrological system of blanket bogs at either surface or sub-surface level?

Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Barden, L. Year: 1968 Aim of study: To propose a simplified model for predicting primary and secondary consolidation of clay and peat. Study design: Quantitative experimental Quality Score: 2+	Source population: Data taken from existing studies/models and compared with laboratory studies. Setting: Laboratory, Manchester, UK.	Methods of allocation: Critical review of existing models compared with laboratory findings. Intervention description: Loading of clay and peat in laboratory. Control / comparison description: existing clay and peat loading models. Baseline comparisons: Study sufficiently powered:	Primary outcome measures: Development of simplified model of primary and secondary consolidation of clay and peat soils. Secondary outcome measures: Follow-up periods: ongoing at time of paper. Methods of analysis: rate of compression against time using known rate of	1. A simplified model for primary and secondary consolidation of clay and peat. 2. Agreement with others that drainage results in deformation of the peat but not necessarily agreement over the processes taking place. 3. Recognition that drainage of micro-pores a key process but physics not yet	Limitations identified by author: Acknowledges gaps in scientific understanding. Limitations identified by review team: More detail on method of analysis and (statistical) significance of results would be helpful but must take into account age of paper. Evidence gaps and/or recommendations for

External validity: 2+		No data provided on power or statistical techniques.	pressure.	established.	further research: The physics surrounding drainage of micro-pores and water movement. Sources of funding: Not given.
Authors: Barry, A.J., Brady, M.A. & Younger, J.S. Year: 1992 Aim of study: To propose a road construction method on peat subject to specific environmental constraints. Study design: Expert opinion combined with collection of field and observational data	Source population: Tropical peats. Setting: East Sumatra	Methods of allocation: Engineering problem identified in relation to construction of roads on peat. Intervention description: To identify suitable road construction method. The key constraints are especially relevant to this review. Control / comparison description: Existing failed roads. Sample sizes: N/A Baseline comparisons: N/A	Primary outcome measures: Proposed construction that ensured road remained 0.5 m above ground level for the life of the road. Secondary outcome measures: Follow-up periods:None given. Methods of analysis:	1)The study identified that lowering of water table may be expected to cause settlement by three mechanisms: a) increase in effective stress, causing rapid settlement in permeable peat; b) drying shrinkage, which causes irreversible changes in the peat; c) allowing aerobic conditions,	Limitations identified by author: None reported. Limitations identified by review team: No follow-up to see if proposal was successful following construction. Evidence gaps and/or recommendations for further research: Revisiting sites where this method has been adopted to investigate whether settlement has taken place.

Quality Score 2+ External validity: 2+		Study sufficiently powered: N/A		resulting in an increased rate of decomposition. 2) Field monitoring indicated that ditches cut close to the road increased settlement by reducing the ability of the peat to act as a mat. 3) A road constructed from corduroy(logs) and stone has been shown not to be capable in general of remaining 0.5 above the surrounding ground. A timber piled raft with a geogrid reinforced stone pavement has been shown to perform satisfactorily.	Sources of funding: None given.

Authors: Berry, P. L. Year: 1983 Aim of study: Review of consolidation theory and calculation of preloading times and weights on peat to be used for housing development Study design: Quantitative experimental. Quality Score: 2+ External validity: 2+	Source population: lowland raised mire Eligible Population: n/a Inclusion & exclusion criteria: n/a Setting: Manchester, UK.	Methods of allocation: area representative of fibrous peatland sites and identified for building purposes. Intervention description: peat samples collected and tested for rates of consolidation. Control / comparison description: n/a Sample sizes: 24 Baseline comparisons: previous studies. Study sufficiently powered: No power figures given.	Primary outcome measures: Establishment of pre-loading settlement rates for use in a reclamation scheme. Secondary outcome measures: n/a Follow-up periods: n/a Methods of analysis: modelled and experimentally tested. Statistical tests not reported.	Two options proposed for loading of peat identifying predicted settlement and time required for the site in the study to reach the settlement level required.	Limitations identified by author: results should be used to form basis for field trial scheme and not be considered a substitute for a pilot scheme. Limitations identified by review team: Earlier paper by author questioned appropriateness of size of each soil sample. This was not discussed or referred to in the present study despite the earlier paper being referenced. Evidence gaps and/or recommendations for further research: These figures are based upon known and laboratory calculated data that

					requires actual field testing. Sources of funding: Not given.
Authors: Berry, P. L. & Poskitt, T. J. Year: 1972 Aim of study: Review of published experimental data aimed at proposing a method of engineering assessment in the field of the consolidation of peat. Study design: Quantitative experimental Quality Score: 2+	Source population: not reported Eligible Population: n/a Inclusion & exclusion criteria: n/a Setting: not reported	Methods of allocation: Review of experimental data plus authors own experimental data on peat. Intervention description: not reported Control / comparison description: not reported Sample sizes: not reported Baseline comparisons: not reported Study sufficiently powered: details not reported.	Primary outcome measures: Proposed method of assessing peat consolidation for engineering purposes. Secondary outcome measures: none given Follow-up periods: not reported Methods of analysis: not reported	An experimental investigation on the settlement of amorphous granular and fibrous peat showed very close agreement with theoretical predictions.	Limitations identified by author: The mechanical properties of peats vary at different sites and any theory needs to take account of the type of peat involved. Limitations identified by review team: 1) No information on the nature of the experimental work. 2) No information on the numbers of samples or the locations from where the samples were taken. 3) Not particularly clear on what information based upon review of experimental data

External validity: 2-					and what information based upon authors experimental data. Evidence gaps and/or recommendations for further research: Sources of funding: None reported.
Authors: Berry, P. L. & Vickers, B. Year: 1975 Aim of study: Review and testing of theory of consolidation of fibrous peat. Study design: Quantitative Experimental Quality Score: 2+ External validity:	Source population: n/a Eligible Population: n/a Inclusion & exclusion criteria: n/a Setting: Peats taken from road construction site in Cheshire, UK.	Methods of allocation: Site identified as typical of resource. Intervention description: Samples taken and subject to loading in laboratory. Control / comparison description: All samples undisturbed at time of collection. Sample sizes: 9 samples	Primary outcome measures: Permeability of soils in relation to vertical consolidation and compressibility Follow-up periods: measures of creep done over a minimum of 3 months. Methods of analysis: standard measure of loading against time.	1. Close agreement between the observed and predicted rates of settlement. 2. The agreement between the experimental and theoretical rates of pore pressure dissipation was not exact but considered acceptable. 3. The decrease in vertical permeability during a	Limitations identified by author: 1. Further investigation into whether the size of the individual peat sample is physically big enough to be representative. 2. In applying this theory to predict field behaviour it will be necessary to ensure that the laboratory samples are representative of the soil mass.

2+		Study sufficiently powered: Possibly under-powered.		consolidation process is of the order 10^3. The corresponding decrease in compressibility is very much less than this with the net effect being a reduction in drainage rates. 4. Settlement times vary depending upon consolidation pressure.	Limitations identified by review team: Relatively small number of samples. Evidence gaps and/or recommendations for further research: Comparison with more humified peat. Sources of funding: Not given
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Lane, S. N. and Milledge, D. G. Year: 2012 Aim of study: Impacts of upland drains on run-off generation.	Source population: n/a Eligible Population: n/a Inclusion & exclusion criteria: n/a	Methods of allocation: Intervention description: modelling impacts of drains and drain removal. Control / comparison description: n/a	Primary outcome measures: model of run-off generation and influence of drainage. Secondary outcome measures: n/a	Most of the paper is not relevant to this review. The part that is relevant is: Drainage channels re-arrange the surface drainage patterns of a slope resulting in	Limitations identified by author: Many assumptions and weaknesses identified and discussed by authors. Limitations identified by review team: None

Study design: Modelling with real data. Quality Score: 2++ External validity: 2++	Setting: Data used from North Pennines	Sample sizes: n/a Baseline comparisons: n/a Study sufficiently powered: Possibly not but range of statistical validations used and data presented.	Follow-up periods: n/a Methods of analysis: comparison of flow rates against time including assessment of surface roughness and hillslope.	reductions in surface saturation.	Evidence gaps and/or recommendations for further research: an assessment of how much tracks mimic drains in terms of water interception and changing of flows. Sources of funding: Environment Agency, Yorkshire Peat Project and Yorkshire Dales Rivers Trust.
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Mesri, G. & Ajlouni, M. Year: 2007 Aim of study: Quantification of consolidation and compression of	Source population: Blanket Peat Eligible Population: n/a Inclusion & exclusion	Methods of allocation: n/a Intervention description: n/a Control / comparison description: n/a	Primary outcome measures: compression rates and shear strengths of peat. Secondary outcome measures: n/a	1) Fibrous peat particles are large and filled with water making them very compressible. 2) Upon compression, permeability of	Limitations identified by author: None. Limitations identified by review team: Some of the laboratory techniques not clearly explained.

fibrous peats. Study design: Experimental evaluation with use of existing data. Quality Score: 2+ External validity: 2+	criteria: n/a Setting: U.S.A & Canada	Sample sizes: 2 samples for laboratory testing but also used existing published data. Baseline comparisons: n/a Study sufficiently powered:	Follow-up periods: NR Methods of analysis: compression/shear tests, no statistical test details provided.	fibrous peats decreases dramatically. 3) For fibrous peats, effective surcharge ratios of 1 to 2 may be required to substantially reduce post-construction secondary settlements.	No details on statistical evaluation or confidence levels. Evidence gaps and/or recommendations for further research: Further research into field examples to measure applicability of laboratory calculations. Sources of funding: None reported.
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	
Authors: Dargie, T. Year: 2004 Aim of study: reporting experiences of wind farm construction on blanket peat.	Source population: Blanket Peat. Eligible Population: n/a Inclusion & exclusion criteria: n/a	Methods of allocation: n/a Intervention description: Road construction associated with wind farm developments Control / comparison	Primary outcome measures: n/a Secondary outcome measures: n/a Follow-up periods: n/a	1. Acknowledges importance to minimising crossings of water courses and avoidance of wet and deep peat. 2. Makes comment “Overall, roads	Limitations identified by author: Recognises that his conclusion may change to size of future developments and the experience at Derry brien. Limitations identified

Study design: Expert opinion Quality Score: 4- External validity: 4-	Setting: Scotland	description: n/a Sample sizes: n/a Baseline comparisons: n/ Study sufficiently powered: n/a	Methods of analysis: non reported.	from the largest impact on blanket bog". 3. Peat overburden from cut road used in floating road construction thereby reducing costs of material movement and haulage. 4. Floating road construction used stone laid on geotextile to depth of 700-800mm. Vegetation cover either side of the road stripped back for 4-5 m then re-instated. 5. Heavier vehicles require 4-4.5 , width with about 1,000 mm of stone laid on geotextile. 6. The wettest ground had two layers of	by review team: It is assumed that there was a scientific basis to the monitoring and restoration discussed but no data is presented so the inference of minimal impact cannot be readily assessed. This is particularly significant given the authors acknowledgement of some of the issues and experiences. Evidence gaps and/or recommendations for further research: Sources of funding: Employed by wind farm industry on some construction projects but no specific funders mentioned.

				geotextile. 7. 200m of road sank to depth of 0.7 m and required building up with rocks. 8. Acknowledges that roads have an impact upon blanket bog hydrology and that some compression takes place with probable changes to hydraulic conductivity. 9. Cut roads through blanket peat have a steepened upper slope, a side ditch, cross-drains and a zone of disturbance where water and sediment is discharged which is likely to result in drier conditions adjacent to much	

				of the road corridor. 9. Concludes that wind farms in Scotland do not pose a serious risk to blanket bogs (see note in next box).	
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Ruseckas, J. Year: 1998 Aim of study: changes to water-physical properties in soil in a peatland forest following drainage. Study design: Quantitative Experimental Quality Score: 2+	Source population: drained peat bog. Eligible Population: n/a Inclusion & exclusion criteria: n/a Setting: Russia	Methods of allocation: not clear. Intervention description: Peat bog drained in 1963 and impacts after 30 years investigated. Control / comparison description: control site(s) used but no details given. Sample sizes: Not clear how many samples taken.	Primary outcome measures: Identification of changes in settlement, compression and hydraulic conductivity. Secondary outcome measures: n/a Follow-up periods: not clear. Methods of analysis: Field recording and laboratory	THIS PAPER IS IN RUSSIAN WITH AN ENGLISH SUMMARY AND ENGLISH CAPTIONS FOR THE TABLE AND GRAPHS. 1. Over 30 years the peat had settled 15-25 cm in the middle of the drained area and 24-37 cm near the ditches. 2. The bulk density in the 0-20	Limitations identified by author: not known. Limitations identified by review team: Not clear as to whether the road is track or metalled. 2. Not clear how much tree cover there is and whether this has an impact upon settlement through water uptake.

External validity: 2+		Baseline comparisons: not clear. Study sufficiently powered: Possibly although not reported.	analysis.	cm zone was increased 1.6-2.1 times. 3. A 60-150 times reduction in hydraulic conductivity was observed in the 0-20 cm zone under the impact of road construction on peat bogs.	Evidence gaps and/or recommendations for further research: Further investigations of same subject on different sites including different types of track/road. Sources of funding: not known
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Charman, D.J. & Pollard, A. J. Year: 1995 Aim of study: Recovery of vegetation after vehicle track abandonment Study design: Quantitative	Source population: Upland vegetation communities including blanket bog Eligible Population: n/a Inclusion & exclusion	Methods of allocation: Sits subject to vehicle use and abandoned at time of study. Intervention description: assessment of recovery of vegetation. Control / comparison description: either side of tracks.	Primary outcome measures: Assessment of recovery rates of different vegetation communities at different altitudes. Secondary outcome measures: n/a Follow-up periods: n/a	1. The two sites with blanket bog vegetation had a poorer recovery of vegetation compared to the other communities. 2. Neither tracks were assessed as having regenerated successfully. 3.	Limitations identified by author: Main one being placing precise timescales of abandonment of tracks. Limitations identified by review team: None Evidence gaps and/or recommendations for

correlation. Quality Score: 2++ External validity: 2++	criteria: n/a Setting: Dartmoor, UK.	Sample sizes: 15 Baseline comparisons: n/a Study sufficiently powered: Probably.	Methods of analysis: Canonical Correspondence Analysis	The direction of succession was towards a grassland-heath community rather than the original blanket bog composition. 4. Suggested period of recovery for blanket bog on Dartmoor > 24 years and that natural restoration to undamaged state may never take place in the absence of intervention.	further research: Further studies on recovery of blanket bog vegetation after track use in different locations and following different levels of intensity of use. Sources of funding: BES Grant and Dartmoor National Park.
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Bradof, K.L. Year: 1992 Aim of study:	Source population: Eligible Population: Peatland	Methods of allocation: Existing road and drainage system. Intervention description: Impact of road upon	Primary outcome measures: Quantification of settlement of peat by road and growth of tree species.	Only result relevant to this review is presented. 1. Diversion of natural flow path	Limitations identified by author: several relating to control sites, comparisons with baseline points that were under the

Investigation into impacts of road building and drainage upon peat structure and vegetation. Study design: Quantitative experimental. Quality Score: 2++ External validity: 2+	Inclusion & exclusion criteria: n/a Setting: Minnesota, USA.	structure and vegetation growth on peat. Control / comparison description: sites nearby. Sample sizes: two sites, 22 and 24 paired sampling points respectively for peat depth. 14 water-table sampling points in 2 transects. Baseline comparisons: data from time of road construction. Study sufficiently powered: Yes.	Secondary outcome measures: n/a Follow-up periods: not reported. Methods of analysis: Range of statistical tests.	of water led to lowering of water table on one side of the road. 2. No evidence of a rise in water table resulting from blocked drainage. 3. Changes in water table result in changes in peat surface elevation.	road, slight confounding due to proximity of some paired sites to ditches. Relatively slow rate of subsidence may reflect that some/many ditches were blocked. Limitations identified by review team: No issues beyond those identified by authors. Evidence gaps and/or recommendations for further research: Type of ditch required for track construction and relationship with subsidence. Timescales. Does pre-loading have a positive/negative effect. Role of track acting as a drain and

					overland surface water trap. Sources of funding: None reported.
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	
Authors: Hobbs, N. B. Year: 1986 Aim of study: Review of testing procedures for predicting settlement in peat. Study design: Review of quantitative experimental. Quality Score: 2++ External validity: 2+	Source population: Studies from N. America and Europe. Inclusion & exclusion criteria: n/a Setting: see above	Methods of allocation: n/a Intervention description: Review of knowledge of distribution of water within peat, permeability and compression based upon reported field and laboratory testing. Control / comparison description: n/a Sample sizes: n/a Baseline comparisons: n/a Study sufficiently powered: Probably.	Primary outcome measures: Evaluation of settlement rates in different peat types. Secondary outcome measures: n/a Follow-up periods: n/a Methods of analysis: collation of previously published field and laboratory data.	In relation to this Review: <u>Water properties</u> 1. Bulk of water held as intracellular and inter-particle water with proportions depending upon structure and morphology of plants present. 2. Drainage of peat influences the proportions and quantity of water in the peat. 3. Considerable evidence that fibrous peats have	

				higher total water contents than granular-amorphous peats. 4. Stronger less decomposed peat is more susceptible to compression than softer more highly decomposed peat. <u>Engineering Properties</u> 1. Permeability controls rate of consolidation. 2. Acrotelm - tensile strength depends upon plant cover. More permeable than catotelm but permeability declines with depth. 3. Catotelm - permeability depends upon: botanical composition	

				(sphagnum moss least permeable); degree of humification - least humified are more permeable; bulk density - higher bulk density the lower permeability; fibre content - higher fibre content, the higher permeability; void ratio/porosity, the higher the quantity the higher the permeability; drainable void ratio /porosity - the higher the drainable void ration the higher the permeability as most readily drainable voids present the least resistance to the water flow;	

				surface loading - this diminishes the permeability by decreasing the void ratio/porosity. <u>Permeability under load</u> 1. Primary consolidation - the expulsion of pore water accompanied by structural re-arrangement of the particles is relatively short-term process. 2. Secondary compression which is influenced by the size of the load, is the dominant process with settlement possibly increasing over time. This process is largely	

				independent of the water content. <u>Overburden and pre-consolidation</u> 1. Drainage of mires increases the overburden pressure with the extent depending upon draw down. The age of the drainage scheme may affect the calculation of settlement. 2. It is concluded that accurate prediction of the amount and progress of settlement is not possible.	
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	
Authors: Lindsay, R.	Source population: wind farm	Methods of allocation: n/a Intervention description:	Primary outcome measures: Common weaknesses of the	In relation to this Review key findings are:	

Year: 2007 Aim of study: Discussion of general issues surrounding wind farm industry and blanket peat. Study design: Expert opinion. Quality Score: 4+ External validity: 4+	developments on blanket peat. Eligible Population: n/a Inclusion & exclusion criteria: n/a Setting: UK	wind farm construction especially roads. Control / comparison description: n/a Sample sizes: not reported. Baseline comparisons: n/a Study sufficiently powered: Unlikely.	process of wind farm construction. Secondary outcome measures: n/a Follow-up periods: n/a Methods of analysis: Literature review and site visits.	1. Continuous road-lines represent marked disjunctions in at least surface hydrology. 2. Whereas drain-lines typically represent disjunctions of the surface hydrology over distances of several hundred metres, the continuous nature of road systems means that they can represent surface-water disjunctions that extend for several kilometres. 3. Upslope disruption will depend whether a drain is installed alongside the upslope side of the road. If it is, then any upslope	

				disruption is likely to be associated with drying, slumping, cracking and oxidative wastage of the peat along the drain margins, coupled potentially with development of erosion gullies. 4. If there is no upslope drain there is a tendency for water to pond along the upslope side of the road. 5. Ponding means that water is not moving across the surface as it naturally would and could contribute to slope instability. 5. Cross-drains are usually distributed at intervals of c.50	

				metres so can only feed a small part of the downslope surface. In many cases, cross-drains are fed into water courses. 6. The response to the sinking and consequent flooding of roads on some sites has often been to install major drainage works.	
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Lindsay, R. & Bragg, O. Year: 2005 Aim of study: Review of the adequacy of the EIA & EA; to highlight and	Source population: Blanket peat Eligible Population: n/a Inclusion & exclusion criteria: n/a	Methods of allocation: Site of bog slide. Intervention description: Construction of wind farm and associated infrastructure. Control / comparison	Primary outcome measures: issues related to the instability and alteration of hydrology of blanket bog. Secondary outcome measures: n/a	1. Where floating roads use timber raft the raft eventually becomes waterlogged. The weight of aggregate on the raft pushes the raft into the	Limitations identified by author: These relate to the omissions at EA/EIA stage. Some concerns about whether all Factors of Safety calculations would be completed but this may reflect timing of

consider additional issues not covered in the report; to assess in similar terms the two geotechnical investigations undertaken after the peat slide. Study design: Quantitative Review with some correlative data. Quality Score: 4+ External validity: 42+	Setting: Scotland, UK.	description: n/a Sample sizes: n/a Baseline comparisons: n/a Study sufficiently powered: n/a	Follow-up periods: n/a Methods of analysis: Review of documents relating to development with additional field data.	surface of the peat. As the raft becomes waterlogged it sinks further. In times of high rainfall water from the acrotelm begins to drain into the road as it is lower than the surrounding peat. 2. This then increases the requirement for drainage which are often in parallel to the road and subsequent maintenance leads to further exposure of the catotelm which results in oxidative wastage, shrinking and cracking of the peat. 3. Drainage from culverts can	respective reports. Limitations identified by review team: Whilst processes reported are recognised there is still a general lack of data to support them. Evidence gaps and/or recommendations for further research: settlement rates of tracks on peat and impact upon hydrology. Sources of funding: Derrybrien Development Cooperative.

				lead to increased forces that remove vegetation and initiate erosions. This is especially the case during heavy rain when the water pressures are higher than would normally be encountered on a healthy bog surface.	
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Dykes, A. P. & Kirk, K. J. Year: 2001 Aim of study: 1. To examine role of drainage and pipes in peat slide. 2 Establish whether mass movement	Source population: Blanket Bog Eligible Population: n/a Inclusion & exclusion criteria: n/a	Methods of allocation: n/a Intervention description: n/a Control / comparison description: n/a Sample sizes: n/a	Primary outcome measures: Determination of causes of peat slide on site. Secondary outcome measures: n/a Follow-up periods: n/a	1. The presence of a degraded drain and pipes in clay contributed to the failure of slope.	Limitations identified by author: Slight chance that peat samples suffered some deformation in their collection. Failure of peat very difficult to explain. Limitations identified

could have been initiated failure of a small slope segment. Study design: Quantitative correlation. Quality Score: 2++ External validity: 2++	Setting: Ireland	Baseline comparisons: n/a Study sufficiently powered: No details given.	Methods of analysis: Combination of modelling and data collected from site visit and analysed in laboratory.		by review team: None Evidence gaps and/or recommendations for further research: The role of drainage ditching in creating instability in peat. Sources of funding: None reported.
Study Details	**Population and setting**	**Methods of allocation to intervention / control**	**Outcomes and methods of analysis** (inc effect size, CIs for each outcome and significance	**Results**	**Notes**
Authors: Dykes, A. P. & Kirk, K .J. Year: 2006 Aim of study: review of slope instability and mass movements in peat deposits. Study design: Review of existing	Source population: n/a Eligible Population: n/a Inclusion & exclusion criteria: n/a Setting: n/a	Methods of allocation: n/a Intervention description: n/a Control / comparison description: n/a Sample sizes: n/a Baseline comparisons: n/a	Primary outcome measures: n/a Secondary outcome measures: n/a Follow-up periods: n/a Methods of analysis: n/a	The part most relevant to this review relates to how drainage channels affect peat stability. This is based in part upon the authors own work and in part upon other publications. 1. Ditches cut	Limitations identified by author: several with theme being the unpredictability of peat slope failures due to lack of knowledge. Limitations identified by review team: None.

data plus a case study using authors data. Quality Score: 2++ External validity: 2++		Study sufficiently powered: n/a		across a sloping bog may eliminate down-slope support for the bog above the ditch (2 cases). 2. A more common effect may be the transferring of additional storm runoff water into failure zones either directly or indirectly through connecting natural pipes (4 cases). 3. Drains associated with plowing for forestry planning were thought to contribute to one failure.	Evidence gaps and/pr recommendations for further research: the authors make several recommendations relating to greater understanding of hydrological processes including role of pipes; further work on the tensile strength of peat and the role of climate change in altering properties of peat are perhaps the priorities. Sources of funding: None reported.