Agenda Item No: 6

Peat Soil Affected Roads – Safety and Management Plans

To:	Highways and Transport Committee
Meeting Date:	23 January 2023
From:	Executive Director of Place and Sustainability
Electoral division(s):	All
Key decision:	Yes
Forward Plan ref:	2024/022
Executive Summary:	This report sets out the work that has been undertaken in response to the Council Motion of 17 October 2023 concerning Peat Soil Affected Road Safety and Management. The report details work already undertaken, and the short and medium-term plans to manage the roads through maintenance and safety management. The report details the actions to achieve the long-term technical solutions and required finances from key funders. A detailed Lobbying Plan is provided at Appendix 4 to highlight this significant issue at the regional and national level.
Recommendation:	The Committee is recommended to: a) Agree the actions set out in this report to manage the peat soil affected roads following the motion of 17 October 2023. b) Note the work undertaken to identify and prioritise peat soil affected roads. c) Note that the actions outlined in this report can be delivered within the proposed budget for 24/25 onwards and through existing compliant procurement routes.

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1. Creating a greener, fairer, and more caring Cambridgeshire

1.1 Ambition 1 – Net Zero carbon emissions for Cambridgeshire by 2045, and our communities and natural environment are supported to adapt and thrive as the climate changes.

As set out in 2.2, climatic conditions (extreme rainfall or dry periods) have significant impacts on the structural integrity of the roads. Should such weather events become more frequent, roads will further deteriorate, so it is increasingly important to implement effective structural, and management solutions, to ensure network resilience.

1.2 Ambition 2 – Travel across the County is safer and more environmentally sustainable.

It is vital that road user safety is maintained on these routes. As set out in this report safety will be managed through a combination of; increased monitoring; appropriate and timely defect repairs and the implementation of traffic management measures.

As set out in 3.12, an empirical, proactive approach to risk has been taken, considering both route demand, and road safety. The County Council Road Safety Team have supported the technical work to date and are producing complementary route risk assessments on soil affected A roads.

1.3 Ambition 6 – Places and Communities prosper.

Safe, reliable, functional roads are crucial to business and commuter transport as well as economic productivity. Proactively managing the soil affected roads will enable safe use by all traffic.

Safety management and improvement of road condition is crucial to support the local economy and enable access to public services. Many of the Soil Affected Roads are important links between communities.

2. Background

Cambridgeshire County Council motion.

2.1 On 17 October 2023, the County Council carried a motion requiring the preparation of a clear plan, following consultation with Parish Councils, to detail:

- Emergency repair work to immediately identify and correct high-risk faults particularly near waterways and steep banks, where this can be done within budgets accessible to the council.

- Short-term safety measures already identified to reduce the risk of road accidents as and when appropriate. Including lowering of speed limits or introduction of weight restrictions.

- A medium-term programme, dependant on Government funding to identify and systematically rebuild the worst sections of roads that residents and businesses rely on to safely travel every day.

- The estimated capital investment required to undertake this essential work and forward plan to lobby Government to secure the necessary funding.

Issues associated with peat soil affected roads.

2.2 A significant proportion of the Cambridgeshire road network lies on peat-based soils (primarily, but not exclusively, located in Fenland and East Cambridgeshire District Council areas). These soils naturally saturate and expand in wet weather, and dry-out and contract in dry weather.

2.3 This cycle of expansion and contraction affects all roads constructed on peat-based soils across Cambridgeshire and neighbouring authorities to a greater or lesser extent. This results in damage to the road structure, through deformation and cracking at the surface, which cannot flex sufficiently to accommodate this level of movement. Recent years have seen the extent and frequency of these cycles increase, resulting in accelerated deterioration of these routes.

2.4 Peat soil affected roads are a pressing issue with significant issues not just for Cambridgeshire, but for the wider nation. The issue of peat soil affected roads presents a national level challenge to maintaining community connectivity through a resilient highway network. Tackling the issue is crucial to ensure safe efficient transport, safeguard the environment, and mitigate the associated economic burden of lost productivity and constant repairs. As with all the County Council's maintenance activities, safety is the primary consideration. Maintaining safety will continue to underpin operational and investment decisions relating to peat soil affected roads.

3 The Main Issues

Action taken so far to tackle peat soil affected roads.

3.1 Prior to the October 2023 motion, funding and resources have been directed to the management of drought damaged roads each year as part of the Highways Maintenance Capital Programme. This has been funded through Highways Maintenance budgets, and additional external funding such as the Department for Transport Highways Maintenance Challenge Fund. In 2018 the successful Challenge Fund bid saw the investment of £5 million for a programme of structural improvements at 10 affected locations. In 2021 a further significant programme was undertaken, whereby the B660, Long Drove Holme, B1040 Ramsey Road Pondersbridge, B1093 Fifty Road Manea and B1104 Prickwillow Road were reconstructed. In 2023 Crack and Safety Repairs have been undertaken to B1093 Bennick Road Whittlesey, 40Ft Bank, 16Ft Bank and the A605, amongst others.

3.2 The ongoing and increasing need to carry out repairs on the peat soil affected roads demands an increasing proportion of the yearly Highways Maintenance funding. Through further assessment and continuing extreme weather it has emerged there are a significant and increasing number of routes affected by the movement of the soils beneath them. Building on work undertaken in April 2023 a total of 156 'peat soil affected routes' have been identified by County Council officers (see Appendix 1: Peat Soil Affected Roads Longlist).

3.3 **Repair works**: Maintenance engineers have used various innovative solutions on affected routes across the network, including:

- **Edge treatment:** Road edge reinforcement using recycled tyres and sheet piles. This treatment aims to strengthen the road edges on embankments to stop longitudinal cracking and displacement.

- **Recycling:** In-situ recycling of road layers to reprofile affected deformed roads, removing any undulations, and rolling away road edges. The road is ploughed up, broken up, remixed with new binders and re-laid, followed by a surface treatment to seal the road and provide grip and skid resistance. This treatment provides a smoothing of the surface and improved grip. It avoids use of new virgin aggregates and waste material making it a carbon efficient and more environmentally sustainable intervention. The treatment avoids the addition of weight to the road construction which helps avoid increasing the burden on the soils.

- **Reinforcement layers and grids**: Use of grids to provide enhanced structural integrity and enhance load capacity. The grids help provide rigidity to the road construction helping resist the deformation forces that cause the cracks and humps in the road surface.

- **Grip fibre**: In 2022, Officers successfully trialled the use of 'grip fibre' to repair longitudinal cracking and vertical displacement. This repair helps to tackle road cracking, which is particularly hazardous to cyclists and motorcyclists. The fibres resist tearing forces as cracks expand, helping to slow the formation and reformation of cracks.

3.4 Some of the above measures have proved more effective than others. None are providing a long-term maintenance-free solution to these roads that assures ongoing road users safety. Whilst not suited for all roads, in situ recycling surface repair is generally providing a practical short to medium-term solution, in combination with traffic management and speed limit measures.

3.5 **Ongoing route management:** Management of individual roads is tailored to the location, level of deterioration, and use. Generally, the actions taken as a road deteriorates to manage the immediate safety hazards presented to road users are:

- Repair of localised defects through patching to remove localised undulations, potholes, and cracks.

- More extensive patch repairs as the deformation increases.

- Localised, and then route signing, to warn road users of the potential hazards.

- Weekly route inspections to ensure signage remains visible and to monitor the state of the road,

These route management measures are being undertaken by highways teams utilising a standard approach based on the Highways Operational Standards (HOS) and on-site dynamic risk assessments. The works and measures on the roads are implemented at a

scale in line with the risk the road and its location, such as adjacent to water or on a high bank, presents for road users.

3.6 **Highways Operational Standards revisions:** The Highways Operational Standards were reviewed and updated during 2023 to reflect the risks associated with deteriorating and defective peat soil affected roads, as follows:

- *Cracks and Gaps in Carriageways, a defect already identified in the Highways Operational Standards will be repaired or made safe within 5 days.*

- *New defect of Gaps and Cracks in Cycleways and Footways has been implemented as a Category 1A defect (highest priority) Intervention = Repair or make safe within 36 hours.*

- *Category 2 non safety defect (low priority) Gaps and Cracks (minor) Intervention = Add to planned programmes of work.*

3.7 Safety Inspectors and Local Highways Officers are implementing these additional measures to support the safety of vulnerable road users, and have received complementary guidance, alongside the Highways Operational Standards, attached at Appendix 2.

3.8 The remainder of this report sets out the programme of short, medium and long-term measures to tackle peat soil affected roads, within available budgets, and the plan for attracting additional funding.

Short-term

3.9 In addition to continued route management and emergency defect repairs as set out in 3.5, short-term measures to reduce risk and improve drivability of the affected roads include:

- **Physical road repairs** to (i) remove safety hazards, (ii) to remove undulations, and (iii) remove edge deterioration. This type of repair is being implemented across the affected roads on an on-going basis as the requirement is identified by Highways Maintenance teams.

- **Enhanced safety signage** using temporary and permanent signs along the affected route. This includes the use of edge marker posts to aid and guide users. These have already been implemented on the Sixteen Foot Bank in late 2022, early 2023. As roads are assessed the safety signage is being installed and enhanced as necessary to strengthen and reinforce the messages to drivers. In 2024/25 it is planned to undertake a programme of safety signage on the advisory freight routes (see 3.15).

- **Traffic management measures** including:

    - **Speed limits**: to slow traffic. Speed limits are in place along a number of routes. Examples are Holme Road at Yaxley and the A10 Lynn Road at Littleport

    - **Traffic signals**: to control movement through areas of significant risk. These are currently in place on the B1093 Bennick Road at Whittlesey. As the roads are monitored further, locations may require temporary signals to maintain safety whilst repairs are planned and organised.

- **Temporary road closures with associated diversion routes:** whilst major repairs to dangerous sections of road are designed, funding secured, and implemented. This measure will be used where short-term repairs and other measures are not effective in enabling safe use of a section of road. Signed diversions will accompany any road closures.

- **Weight restrictions**: Consideration has been given to the implementation of weight limits on peat soil affected roads. The theory is that with lighter use the roads may not deteriorate as quickly. However, the nature of the network across the rural areas presents difficulties in achieving benefits from limiting the weight of vehicles on affected roads. A number of factors limit the impact weight restrictions can have:

    - Weight limits on higher use roads (A and B) will generally result in the displaced traffic moving to other peat soil affected roads. The resultant higher volumes of heavy vehicle traffic on these roads could result in increased congestion and accelerated deterioration of these roads.

    - The agricultural businesses across the County tend to use large vehicles and machinery. Where these need access to agricultural land and businesses weight limits will not restrict them using peat soil affected roads.

  The application of weight limits as a measure to help manage the peat soil affected roads will need to be carefully considered on a case-by-case basis to avoid detrimental impacts to local businesses and communities. Further work will be undertaken in early 2024 with Traffic Management colleagues to consider how the County Council Heavy Goods Vehicle Policy can respond to peat soil affected route management challenges (for example, the potential for application of structural weight limits on peat soil affected routes).

- **Freight route maintenance:** part of the current work the County Freight Network Map is being used to identify the roads road freight is signposted to use. These roads will be prioritised for maintenance to help support businesses and the economy on the basis that roads designated to carry freight will be higher trafficked roads and have an increased importance in the local economy. Officers will also review the on-road signage to ensure that freight is being directed to use the Freight Network with the aim of reducing large vehicles on roads that can be avoided.

  The safety signage on the advisory freight roads that are peat soil affected will be reviewed and enhanced as part of the management strategy across the soil affected roads.

3.10 **Funding of short-term interventions**: The Council's Draft Business Plan includes an investment in Highways Maintenance. A proportion of the revenue element of this investment is proposed to be used to implement short term maintenance and safety works on peat soil affected roads, Countywide, in 2024/25. This will be in addition to the normal highways funding allocations.

Medium-term

3.11 To further ensure the roads can be used safely a range of medium-term measures will be implemented. These are more extensive and higher cost. The road repairs are extensive

and should provide a number of years before the road surface starts to deteriorate again. The duration these measures are effective for is dependent on the extent of movement of the soils below and the level of traffic using them.

3.12 The proposed Highways Maintenance Capital Programme includes schemes to improve Chatteris Road Somersham and Padgetts Road Christchuch planned for 24/25. A number of further Peat Soil Affected roads are identified in the longer term 3-to-5-year indicative programme. These include sections of the A603 at Wimpole, A1101at Littleport, B1040 at Whittlesey and Ramsey, B1093 Benwick Road, B1381 Chain Causeway and B1411 Hundred Foot bank. The evidence base to help inform future investment considers risk from both a usage and road safety perspective.

3.13 County Council officers assess and respond to risk on peat soil affected roads on an ongoing basis, with safety being the fundamental principle underpinning the approach. Supporting workstreams are also progressing, to inform proactive repair interventions and investment packages, as set out below:

3.14 **Peat soil affected road route assessments:** A detailed engineering assessment will be carried out for all affected routes. This is combined with safety assessments of the same roads. This initial work, focused on 25 of the 156 roads, will provide a model to be used on all the affected roads to support the safe management of the affected the network.

3.15 Officers have initially focused on the 25 *most used* roads to understand the extent of deterioration of these roads and identify maintenance repair options for funding (see Appendix 3). The initial 25 represent the affected roads that carry the most traffic. As such these roads are the most significant in terms of community connectivity and economy.

3.16 The assessment provides a score each road using an industry standard for the roughness of a road surface carried out by specialists. Based on the roughness and a detailed engineering inspection of the road, potential interventions are recommended each with varying benefits and associated cost.

3.17 This work will be repeated, at a scale commensurate to the importance and risk each road presents for the remaining peat soil affected roads to build up a full assessment and understanding of technical and financial requirements to maintain safe use. This work when completed provides a significant element of the evidence base for making the case for support and funding from potential funders.

3.18 In parallel work is ongoing within the Road Safety team to assess the road safety risk and identify specific road safety measures to be implemented. Each route will be fully audited and recommendations for intervention will be provided. All soil affected routes will be considered, and particularly where there are acute risks, such as those routes next to watercourses (e.g., Sixteen Foot Bank). Officers will assess and monitor these risks in accordance with the route management approach set out in this report and consider further intervention as appropriate.

3.19 Methodology to assess safety of 'A' roads: Furthermore, as part of its wider road safety programme, the County Council Road Safety Team is undertaking International Road Assessment Plan (IRAP) assessments on all the County's 'A' roads. This work will be completed in March 2024 and will proactively assess risks across the entire route (for example, undulating surfaces), attaching associated risk scores and identifying remedial

measures. This work will assist in identifying solutions for associated peat soil affected 'A' roads and will support making the case for further funding.

3.20 **Winter maintenance**: The winter salting network includes a proportion of the peat soil affected roads. It is not proposed to add additional roads and routes to the winter network this season. Reports and incidents are being monitored. The consideration of peat soil affected roads will be included in the ongoing winter service review.

3.21 **Funding of medium-term interventions**: The Council's Draft Business Plan includes an investment in Highways Maintenance. A proportion of this capital investment, indicatively £5million is proposed to be used to implement maintenance and safety works specifically on peat soil affected roads. This will be in addition to the normal highways funding allocations (which include, for example, carriageway repairs). Furthermore, officers will continue to liaise with the Cambridgeshire and Peterborough Combined Authority (CPCA) to explore funding opportunities associated with its proposed £9m climate allocation.

Long-term

3.22 The primary long-term focus will be lobbying with key funders and stakeholders to attract the required substantial funding to provide a systemic solution to peat soil affected roads. A Lobbying Plan has been developed and is attached as Appendix 4 Peat Soil Roads Lobbying Plan

3.23 Officers have been working with Department for Transport (DfT) to raise awareness of peat soil affected roads as a regional, climate-driven economic issue. DfT Local Roads, Adaptation and Resilience Officers are engaged and supporting the development of a solution to this. DfT has identified a potential source of limited funding that might be accessed to explore longer term engineering solutions. This is to be explored by officers.

3.24 As part of the lobbying plan national organisations will be engaged to seek advice and support on the issue. These will include association of Directors for Environment, Planning and Transport (ADEPT), Local Government Technical Advisors Group (LGTAG) and Local Councils Road Innovation Group (LCRIG) and England's Economic Heartland amongst others.

3.25 The CPCA published a Climate Action Plan in 2022, which set out a wide range of recommendations to ensure the region can deliver on its net zero goals. Projects outlined to be funded include understanding the economic impact of, and exploring innovative solutions for, drought damaged roads in the Fens and Peterborough. The CPCA Medium Term Financial Plan identifies £9million for the Climate Action Plan. Officers will work with CPCA long term funding for the management of the peat soil affected roads.

3.26 In December 2023, Government announced funding for the Ely Area Capacity Scheme. This scheme will help reduce road freight through improving local rail links. Whilst this will not provide immediate benefit to the peat soil affected roads it will help relieve congestion in the long term.

Consultation with Town and Parish Councils

3.27 As part of the implementation of the short and medium-term measures, a series of engagement meetings are planned to be undertaken with the Town and Parish Councils to

inform them of proposals and seek to understand local implications of traffic management measures with a view to mitigating where possible. These stakeholders also form an important part of the Lobbying Plan for longer term funding.

4. Alternative Options Considered

4.1 An alternative option would be to manage the affected roads through an entirely reactive regime. This option does not provide an assured way to maintain safe and functional use of the roads. The nature of reactive interventions is costly, time consuming and higher in carbon than the current short and medium-term measures being undertaken.

4.2 Another option would be to exclusively focus on major surfacing and reconstruction. This option is not considered deliverable, particularly in the short-medium term, within available budgets. Major surfacing and conventional reconstruction methods are not providing an increased road life much in excess of the current short and medium-term interventions being carried out.

5. Conclusion and reasons for recommendations

5.1 The short, medium and long-term options and approaches are set out and agreement of these is sought from Committee.

5.2 The evidence base for the first 25 routes is built and being developed. We will further expand on this evidence base to support the management of the roads and to support lobbying for longer-term funding.

5.3 Additional funding is identified through the Council's Highways Investment Plans within the Business Plan 24/25. Opportunity for local and further funding from the CPCA is identified.

5.4 A Lobbying Plan is outlined at appendix 4 to highlight the need for funding at a national and regional level to tackle this issue.

5.5 Town and Parish Councils will be consulted early in 2024 about the short, medium, and long-term approach to repair and management of the affected network.

5.6 Ultimately the long-term repair solutions and associated funding are required. The implementation of the Lobbying Plan is key in achieving the support required to fully resolve the issue of peat soil affected roads. The short and medium-term measures will help support safe use whilst the long-term solutions are achieved.

6. Significant Implications

6.1 Finance Implications

Peat soil affected roads are a continual and increasing draw on available Highway funding. The adoption of the short and medium-term management approach will enable improved and targeted use of funding to support safe use of the affected roads whilst long-term solutions are achieved. The highways asset management approach supports prioritising funding as necessary to these roads.

The proposed additional highways investment from 24/25 will enable more sections of the affected network to be treated early, reducing the need for reactive maintenance.

6.2 Legal Implications

If the roads are not effectively managed there is risk of third-party claims following road traffic collisions. Safety management plans support delivery of the duty to maintain providing and a basis for section 58 defence.

6.3 Risk Implications

Risks as set out below are managed through the evidence-led, planned activity set out in this paper.

Safety risk: risk of road user injury and damage to vehicles resulting from defects on the affected roads.

Financial risk: Increasing costs of maintenance as the condition of the affected roads deteriorates, particularly if a reactive approach is taken to repairs. The decline is forecast to accelerate due to the changing weather patterns and propensity for more extreme weather events.

Reputational risk: Reduction in County Council reputation based on perception of network quality and safety.

Business productivity risk: Delays to journey time due to peat soil affected roads (or associated diversions) compromising business efficiency.

Community connectivity: Reduction in the ability for communities to travel easily and safely between locations, affecting community resilience and quality of life.

Third party claims risk: Increase in third party claims for damage to vehicles due to the road condition.

6.4 Equality and Diversity Implications

The highway is maintained for all users. Consultation with users and communities will help ensure maintenance activities on the affected roads provides a safe and functional network for all users.

A completed Equality, Impact Assessment (EqIA) form (Equality Impact Assessment Hub) must be attached as an appendix to this report, if appropriate.

6.5 Climate Change and Environment Implications (Key decisions only)

The peat soil affected roads are an impact of the changing weather as a result of climate change. The increasing wet weather and hotter drier summers is resulting in an increase in the cycles of expansion and contraction of the soils below the affected roads.

7. Source Documents

Appendix 1 Longlist Peat Soil Affected Roads

Appendix 2 Peat Soil Affected Roads LHO Guidance

Appendix 3 Peat Soil Affected Roads – Sites Review and Treatment Options

Appendix 4 Peat Soil Affected Roads Lobbying Plan