

Scrutiny review of highway drainage in East Sussex

Report by the Review Board

of the Economy, Transport and Environment Scrutiny Committee

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Report of the scrutiny review of highway drainage in East Sussex

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Introduction by the Chair of the Review Board

Councillor Richard Stogdon

Since 2010, the combined effect of hard or exceptionally wet winters has taken its toll on all parts of the network of our roads in East Sussex. In some cases, the impact of failure in the drainage network can be almost alarming. Whatever cleaning qualities water may have, the overall effect of its activity in regard to our roads in more recent years has been damaging and inimical to the overall lifespan of the network. Nor is damage to our road system the whole of the story. The effect of run-off from our roads on residential property has given rise to claims in the past five years of £64,000.

As far as the County's highways asset is concerned, one of our Senior Highways Officers told us that "***the drainage network is the most important asset we have***".

With all that in view, a Review Board was set up by the County Council's Economy, Transport and Environment Scrutiny Committee to consider the maintenance, repair and investment in the systems of drains, gullies and ditches forming the underlying infrastructure of East Sussex roads.

When Scrutiny looked at these issues prior to 2010, the Committee was made aware of the extent to which records and data relating to the location and specification of large parts of our highways drainage network had either been lost, or, was missing. While physical damage arising through either fire or flooding was, in part, responsible for destroyed data, a further factor related to the significantly diminished workforce having long term, but unrecorded knowledge, skill and experience of the maintaining the network. By way of further background, in the context of diminishing resources, the Council's policy of blanket routine maintenance changed to a risk based approach based on the known requirement for intervention.

While the locations of gullies and ditches are mostly known along with the function they perform, what is not known relates to the dimensions of pipework, the condition of the drainage pipes and most particularly, where they outfall. The Department is taking steps to complete a satisfactory survey to create a detailed "map" for effective maintenance purposes of the highway drainage infrastructure. The Review Board greatly regrets that the full picture of the road drainage network in East Sussex is not available to those charged with the maintenance and care of our roads and recommends further investment to speed up the completion of survey information.

The beneficial effect of the investment made over the past six years of increased re-surfacing of East Sussex roads was noted with favour by the Review Board. Prior to that, East Sussex was one of the worst performing Local Highway Authorities in the UK. Since then, the County Council's significant investment in road re-surfacing has borne fruit, placing the County in the top quartile for Authorities such as ours. All that illustrates the point that, if we regard our road network as a significant asset, then, investment is what is now required for that which underpins it, namely the drainage network. It is for that reason the Board recommends such capital investment as part of an "invest to save" programme. This would also help correct some of the historic under investment in the highway drainage infrastructure.

The Review Board's recommendations are grouped under four principle headings below.

Councillor Richard Stogdon Chair

Recommendations		Page
1	<p>Maintenance arrangements for highway drainage</p> <p>The Board recognises the value of the Council’s changed approach away from routine maintenance of drains and gullies to a risk based approach which focusses on actual need. The Board endorses the following key performance indicators in the new Highway Maintenance contract (below) which incentivise actions to keep the drainage infrastructure in good working order:</p> <p>(1) The percentage progress of gully cleansing against the agreed (Accepted) Service Delivery Programme. (2) The percentage of emergency response incidents attended within the specified timescales. (3) The percentage of safety intervention defects (including drainage related) repaired within required response time.</p> <p>It therefore recommends that the department ensures the new Highways Maintenance contractor develops this approach, and uses all the contractual tools available. The department should also check satisfactory performance of the highway drainage network and that all elements of the highway drainage system work effectively, to ensure surface water is captured and discharged efficiently.</p>	10
2	<p>Responsibilities of adjacent landowners</p> <p>The Review Board considers that clear information needs to be communicated to residents regarding their responsibilities as adjacent landowners and householders to the Highway drainage network. The Board recommends that clarification is provided as to that for which the County Council is responsible, and that for which landowners and householders are responsible.</p>	10
3	<p>Investment in the highway drainage infrastructure</p> <p>The Board:</p> <p>(1) recommends that measures are taken accelerate the projects underway to ascertain a fully and more detailed knowledge of the scope, condition and location of the East Sussex highway drainage infrastructure including its connecting pipework and outfall arrangements;</p> <p>(2) advocates and wholly supports the application of additional capital investment in the highways drainage infrastructure – invest to save – as part of the Department’s capital financing process; and</p> <p>(3) endorses the principles of the draft Highways Asset Strategy Management Drainage Strategy 2015-2018 (appendix 2) and recommends its adoption.</p>	12 13 13
4	<p>Working with others</p> <p>The Board considers the Director of Communities, Economy & Transport and the County Council generally are well placed to co-ordinate its strategy in regard to flooding with the strategies of different organisations and agencies charged with responsibility within East Sussex for flood management. That particularly applies, to Southern Water, Environment Agency, Boroughs, Districts, Town & Parish Councils along with the local drainage boards. The Review Board therefore recommends:</p> <p>(1) The creation of a forum to include such organisations to align strategies and increase local knowledge of highway drainage assets and the impact on them from the surrounding land and built form;</p>	14 14

	<p>(2) In the County Council's capacity as statutory consultee with regard to planning applications and as Lead Local Flood Authority, the County Council needs to focus particularly on securing adequate highway drainage in respect to new development within East Sussex;</p>	14
	<p>(3) By working with the Joint Waste Partnership the County Council needs to establish pilot projects to tackle flooding "hot spot" areas to gauge the impact of street and road cleaning activity on flooding events and frequency of gulley blocking.</p>	16

Overview

1. The maintenance and improvement of the road network, and the drainage networks that run alongside and beneath it, are vital to the prosperity of East Sussex. East Sussex County Council (ESCC) has a statutory duty to maintain the adopted highway within East Sussex. This includes 'A', 'B', and 'C' roads as well as unclassified roads, but excludes the strategic road network, which is the responsibility of Highways England (formerly the Highways Agency).
2. The Economy, Transport and Environment (ETE) Scrutiny Committee, through its work on the Highways contract re-procurement, understands the important role that highway drainage has in prolonging the life of the carriageway surface, preventing flooding and ensuring road safety. The current highways drainage asset is comprised of:
 - 98,000 gullies (N.B. there are a number of different types of gully pot);
 - 500 kilometres of ditches;
 - 10,000 grips;
 - an unknown number of soakaways; and
 - unknown lengths and specification of connecting pipework.
3. Given the extent to which elected Members receive complaints from residents about blocked gullies, drains and local highway flooding within their Divisions, the Scrutiny Committee considered that it would be worthwhile to conduct a Scrutiny Review of this service area.
4. The Review has examined the factors that lead to the efficient and effective management of highways drainage infrastructure in order to prolong the life of the carriageway surface, prevent flooding and ensure road safety. The review examined all the factors involved with highways drainage including: the arrangements for gully emptying; maintenance of drainage ditches and grips (grips are small channels which are cut through the verge to connect the drainage ditch with the edge of the road); maintenance and renewal of highway drainage pipes and culverts; and the impact of street cleansing on highway drainage.
5. Officers are undertaking work to improve the highway drainage infrastructure and the information the department holds on the highway drainage assets. A Highways Asset Management Drainage Strategy has been developed which outlines the work needed and makes the case for additional investment in highway drainage infrastructure.
6. The new Highways Maintenance contract has incorporated improvements to the routine maintenance of the drainage infrastructure including the maintenance of drainage ditches and grips. The use of 'outcome based' specifications in the new contract (e.g. the requirement for all gullies to be kept free flowing) will also improve highway drainage condition and performance.
7. The Board is conscious of the financial challenges ESCC faces, and in particular, the constraints on the future capital programme. However, without additional investment, the pace of improvement will be slower, and the backlog of known drainage problems will not be tackled as quickly as residents and Members would like.
8. This report makes a number of recommendations to address the issues identified in the review, with some focussed on how ESCC uses existing resources and works with other organisations. Having a complete knowledge of the highway drainage asset is of key importance as this will ensure ESCC makes the most effective use of any investment available.

1. Highway drainage budget and maintenance contract arrangements

9. At present £3.1m a year is spent on highway drainage maintenance. The service includes an emergency flood response, which operates during periods of heavy rainfall and extreme weather events. Two high-pressure jetting machines are available to respond to reported incidents.
10. The department spends £1.7m from the revenue budget on routine maintenance. This is split between:

- Gulley emptying: £1.3m
- Ditch and grip clearance: £400,000

There is a £1.4m capital budget. This is spent on:

- Drainage investigation and improvement: £1.2m
- Surveys: £200k

11. The majority of the gulley emptying budget, approximately £1.1m is spent on routine maintenance. This breaks down to a cost of approximately £7 per gulley, which includes the disposal cost of the waste taken out of the gulley.
12. The current Highway Maintenance contractor (running until 30th April 2016) is Kier Ltd. (formerly May Gurney) who have operated the contract since September 2005. Under this contract, Kier is required to empty gullies and provide an emergency flooding response service. Kier sub-contract the specialist gulley cleansing work to FM Conway Ltd. The new Highway Maintenance contract starts on the 1 May 2016 and will be operated by Costain Ltd. Under the new contract arrangements, Costain will be responsible for the routine maintenance of highway gullies, ditches and grips, as well as an emergency flooding response service.

2. Quality and frequency of gulley maintenance

Gulley emptying frequencies

13. The Board identified the area of most concern was road flooding and the initial focus of the review was on highway gullies and the frequency that they are emptied. The current highways contract includes a schedule of rates for gulley emptying and other maintenance activities and a contract requirement to attend all gullies on a fixed frequency. The department's approach to gulley emptying was changed in 2013 to a risk based approach in order to achieve departmental savings targets so that:
 - Only gullies that need cleaning are emptied through revised maintenance frequencies, rather than emptying all gullies at fixed intervals whether they need it or not.
14. This 'intelligent' approach means the frequency of maintenance is based on recorded silt levels in the drains. Data on silt levels has been collected over the last two years, and is added to on an ongoing basis. The frequency of emptying has been adjusted to reflect how quickly the drain fills up with silt, or are known to be prone to flooding, as part of a two year programme of routine maintenance. Gullies will usually be emptied when they are 50% full. Over a two year period, gullies are emptied on one of the following frequency levels:

- Once every 3 months
 - Once every 6 months
 - Once every 12 months
 - Once every 24 months
15. These frequencies are applied to whole sections of road, rather than on a drain by drain basis. The gullies that are emptied once every 24 months tend to be the ones in urban areas e.g. residential roads where evidence suggests that a reduced frequency of maintenance is appropriate. The contractor is required to jet the connecting pipe five metres either side of the gully when it is emptied. If the drain is still blocked it is reported for further investigation by a specialist team. By the start of the new Highway Maintenance contract in May 2016, all of the gullies will have been emptied at least once since 2014.
16. The Board heard that in order to reduce the revenue cost of cyclical maintenance (the number of times the gully has to be emptied within the two year maintenance programme period) there is a need to invest in the drainage infrastructure (mainly capital) to bring it up to a maintainable standard.

Gulley emptying performance

17. Prior to the changes introduced in 2013, the gully emptying maintenance was not wholly effective. This is because the benefits of cyclical maintenance were not fully understood and teams were diverted from cyclical maintenance operations towards reactive maintenance. This practice has stopped and Kier believe this has improved the overall standard of maintenance. This ensures the cyclical maintenance plan is delivered without hindrance whilst a separate team deals solely with reactive maintenance.
18. Kier holds a weekly meeting to monitor performance by looking at whether it is following the cyclical maintenance plan and whether the work has been carried out properly. Kier also carries out a programme of random inspections to check the quality of work.
19. The Board heard that the industry has raised the standard of services on offer in order to secure more contracts and are offering 'intelligent' emptying services. Kier sub-contracts the gully emptying work in East Sussex to FM Conway which is offering high levels of service and, importantly, has invested in recycling facilities for gully waste. This has led to the company tendering and winning a significant number of gully emptying contracts in the South East.
20. The new Highway Maintenance contract specification is outcome based meaning that, amongst other things, the contractor will be required to keep all gullies free flowing at all times. The new contractor will have responsibility for all aspects of highways drainage. The department will have a greater ability within the new contract to incentivise good performance including financial penalties for non-performance.

Gulley waste

21. The debris removed from gullies tends to be mostly silt and organic matter such as leaves. Silt levels are usually highest where there is run-off from fields and adjacent land. Officers gave evidence that there is a relationship between the frequency of street sweeping carried out by the Boroughs and Districts, and the frequency with which gullies need to be emptied. This is explored in detail in section 6.
22. FM Conway has invested in the specialist vehicles and disposal facilities needed for gully emptying work and carry out gully emptying for a number of local authorities. The waste collected in gully sucking machines is taken to a site in Dartford, Kent for processing.

23. Typically, between 25 – 50 kg of waste taken out of each gully which is contaminated with harmful residues requiring specific treatment, recycling, and disposal as set by the Environment Agency (EA). Environmental regulations have changed over the years and gully waste now has to be disposed of in line with these regulations. The cost of waste disposal and transport makes up a significant part of the cost of gully emptying work.
24. Whilst there are other gully emptying contractors, FM Conway currently provides the most cost effective overall solution for East Sussex. Alternatives would require investment in specialist waste treatment facilities.

Ditch maintenance

25. The current revenue budget allocated for drainage ditch maintenance work is £400,000 - £500,000 per year. The department has an inventory of all the ditches and has established a two year maintenance programme for ditches. Ditch clearing work is done by teams who clear whole lengths of ditch. In rural areas the material taken out of the ditch will be placed next to the ditch on the verge if there is room.
26. The Board heard that the drainage revenue budget has reduced over recent years. Ditching maintenance work was stopped in 2007 due to budget constraints and was started again in 2010. A consequence of the pause was that more work has to be carried out now to get ditches back into a maintainable condition. The target is to get all ditches on 3-4 year programme of cyclical maintenance, with flooding hot spots cleared annually.

Adjacent Landowners and householders

27. The Board heard evidence that adjacent landowners and householders have a role to play in clearing gullies and ditches, but are generally unaware of their responsibilities and opportunities to help. Landowners should be made aware that it is illegal to discharge water onto the highway and should take steps to maintain their drainage ditches and systems. They should also be encouraged to adopt land management practices that reduce the run-off of water and silt from their land onto the highway.
28. Householders (and Parish Councils) could be encouraged to adopt highway verges to maintain drainage ditches and enhance the visual amenity of their local area. This could operate in the same way as householders who maintain grass verges outside their homes. Better awareness of their responsibilities, together with advice on safety and liabilities, could help encourage people to maintain highway drainage (as was the case with snow clearance). As with anyone working on the highway, householders should only be encouraged to carry out work where it is safe to do so.
29. Information on landowners and householders responsibilities could be provided via the ESCC web site and Your County. Evidence suggests that this would be more cost effective than taking enforcement action against individual landowners, due to the staff resources needed and the costs involved in undertaking prosecutions. Householders and other community organisations could be encouraged to undertake the drainage management and 'adopt' highway verges as part of a community action scheme in a similar way to some of the schemes in the current Community Match programme.

Findings

30. Regular gully emptying reduces highway flooding problems but does not, of course, deal with pipework damaged by tree roots or other pipework breakdown. For that reason the requirement for intelligence led gully emptying programmes, is approved by the Board. Work to repair and replace non-working drains is examined in more detail in section 4 (below).

31. The quality of gully emptying operations has improved and there are provisions in the new Highway Maintenance contract to incentivise good contract performance. The current gully emptying operations are cost effective and it is unlikely that further efficiencies can be achieved without additional, significant investment in local gully waste treatment facilities.
32. The Board welcomed the incorporation of regular, routine ditch and grip maintenance into the new Highway Maintenance contract. Evidence from Dorset County Council indicated that this is a significant factor in reducing localised highway flooding in rural areas.
33. The Board considered that it would be beneficial for adjacent landowners and householders to be made aware of their responsibilities in respect of highway drainage and the role they can play in reducing run-off and keeping drains, ditches, grips etc. in good working order.

Recommendations

1. The Board recognises the value of the Council's changed approach away from routine maintenance of drains and gullies to a risk based approach which focusses on actual need as indicated by the following key performance indicators (below) in the new Highway Maintenance contract:

(1) The percentage progress of gully cleansing against the agreed (Accepted) Service Delivery Programme;

(2) The percentage of emergency response incidents attended within the specified timescales;

(3) The percentage of safety intervention defects (including drainage related) repaired within required response time.

It therefore recommends that the department ensures the new Highways Maintenance contractor develops this approach, and uses all the contractual tools available. The department should also check satisfactory performance of the highway drainage network and that all elements of the highway drainage system work effectively, to ensure surface water is captured and discharged efficiently.

2. The Review Board considers that clear information needs to be communicated to residents regarding their responsibilities as adjacent landowners and householders to the Highway drainage network. The Board recommends that clarification is provided as to that for which the County Council is responsible, and that for which landowners and householders are responsible.

3. The asset management approach to maintaining the highway drainage infrastructure

Knowledge of the highway drainage infrastructure

34. Silt removal, gully and ditch clearing has been rationalised over recent years. However, challenges remain due to underinvestment in the highway drainage infrastructure and its maintenance over a number of years. The condition of drainage assets has deteriorated. The department and contractor currently have an incomplete knowledge of the condition and location of all the highways drainage assets, in particular the connecting pipework. Without this information, it is difficult to determine the optimum future maintenance requirements. Plans are therefore in place to capture the missing information through the new highway maintenance contract.
35. While the department's knowledge of its gullies, ditches and grips is extensive, it can realistically only establish the location of any connecting pipework via survey work and excavation on finding a drainage problem. The survey team is gradually building up knowledge of the drainage infrastructure as it undertakes reactive and investigatory work into blocked drains. All this information is systematically being added to the asset management database.
36. An inventory survey of drainage ditches and grips was completed in the summer of 2014. In the spring of 2015 a survey of all newly adopted roads identified a further 2,000 gullies.
37. ESCC is still in the process of establishing the location and condition of some of its drainage assets and the connection to outfalls. The next step is to survey the pipes and soakaways and establish how they are connected to outfalls. Outfalls could be a connection to Southern Water's sewer network, a field drain system, a natural watercourse, or some other drainage feature.

The asset management approach

38. The Board considered the draft Highways Asset Management Drainage Strategy 2015 – 2018, and the Highway Asset Management Strategy 2015 – 2022, as part of the Review. There is a significant commitment to improve our understanding of the drainage network in order to target investment effectively and develop intelligent routine maintenance programmes.
39. There is evidence that ESCC is advanced in its approach to highways drainage and is in a similar position to many other local authorities. For example, a scrutiny review by Manchester City Council (July 2014) endorsed a proposal to adopt a cyclical intelligence-led approach to drainage cleansing and to target priority gullies for the programme of repair work, based on agreed criteria and in consultation with Members.
40. The process of involving Members was explained in a follow up report: *"We were awarded £800,000 of Clean City funding to undertake drainage repairs and a programme has been developed identifying known problem locations in each ward. This information has been sent to ward Members for them to review and add any additional schemes that may be required. Work has already begun on a number of known and high priority locations across the city and once all feedback is received from ward Members, we will begin by cleaning all of the drains to better understand the exact nature of the problem and arrange for camera surveys and begin construction repairs."*

Findings

41. The evidence presented to the Board indicates that most highway authorities do not have a complete picture of the drainage system they are managing. It can be very expensive to carry out a complete survey of all drainage assets all in one go and yet without this picture, it is difficult to target maintenance work effectively and efficiently. For example, Hampshire County Council estimated that it would cost £500,000 to camera survey all the pipes and soakaways. ESCC is similar position to many highway authorities in tackling this issue because of its established asset management approach.
42. There is clear evidence of the continuing work by ESCC to gain a better knowledge and understanding of the drainage asset. However, Officers acknowledged that further work is required. The Board consider that developing a full knowledge of the drainage asset is a priority and steps should be taken to accelerate this process.
43. The Highways Asset Management Drainage Strategy is a long term plan to invest in the drainage infrastructure over a ten-year period. If the department is able to secure additional investment (see also section 4, below) it may reduce the need for cyclical maintenance over the term of the plan.

Recommendations

3. (1) The Board recommends that measures are taken accelerate the projects underway to ascertain a fully and more detailed knowledge of the scope, condition and location of the East Sussex highway drainage infrastructure including its connecting pipework and outfall arrangements.

4. Work to repair and replace non-working drains

Investment to bring the highway drainage infrastructure up to a maintainable standard

44. The department estimates that a further investment of £27.3m over the next seven years is required to bring the highway drainage asset up to a maintainable standard. This is based on the current capital expenditure of £1.4m per year plus an additional £2.5m per year over the next seven years. This is the amount that the department estimates is needed to survey and improve the drainage infrastructure based on an extrapolation of existing costs of undertaking the surveys and the associated costs of fixing and repairing blocked drains. The seven year term is based on the term of the next Highways contract.
45. The current the capital programme for drainage is £1.4m per year. With this level of investment it has not been possible to target all the flooding hot spots. At present the team are trying to deal with these problem areas in a prioritised way, and give priority to those issues that are likely to represent a safety issue for road users and cause flooding damage to property. The Review Board was informed that the department is seeking an additional £2.5m per year of capital funds.
46. The Board heard evidence from ESCC's current Highway contractor was that if the drainage network is in good condition then the need for cyclical routine maintenance may be lower.

Findings

47. There are currently 4,000 – 5,000 outstanding drainage problems, where repair work is needed to fix damaged or blocked drains, logged on the fault reporting system. Many of these have been reported as a result of routine maintenance work, where the gulley emptying teams have been unable to get the drainage working.
48. The department is developing a prioritisation policy for dealing with drainage problems, and currently takes a risk based approach to prioritising remedial work. Those problems where there is a risk of household flooding, or damage to other property, are given a higher priority.
49. It was confirmed that if additional capital investment is not forthcoming, the department would continue with the current maintenance regime which will only deal with the most urgent problems where houses or property are at risk.
50. Further investment is needed in the highway drainage infrastructure to reduce flooding and routine maintenance costs.

Recommendations

- 3. (2) The Board advocates and wholly supports the application of additional capital investment in the highways drainage infrastructure – invest to save – as part of the Department’s capital financing process.**
- 3. (3) The Board endorses the principles of the draft Highways Asset Strategy Management Drainage Strategy 2015-2018 (appendix 2) and recommends its adoption.**

5. Working with other organisations

51. In order to achieve an effective solution to drainage problems, a co-ordinated approach needs to be taken with other organisations e.g. the Environment Agency (EA), Southern Water, land owners and Borough and District Councils. For example, strategies need to be aligned so that work undertaken by the different organisations supports the resolution of drainage problems and shares information on the drainage system. The Assistant Director, Operations is currently involved in a project where the Environment Agency and the water utility companies are working with Highways Authorities across the South East to develop their understanding of drainage infrastructure and work on drainage issues.

Involvement of volunteers and Parish Councils in drainage work

52. There is an opportunity to involve Parish Councils and volunteers in addressing some of the drainage issues. The Board heard how Hampshire County Council operates a “Parish Lengthsman” scheme to carry out certain types of drainage work (e.g. keeping ditches free flowing). In particular, communities can assist by clearing leaves and other debris from gulley covers and drains. A notice requesting community help with this has been included in the latest edition of Your County.

Future drainage requirements

53. Highways experts maintain that no drainage system is designed to cope with severe weather events and periods of extremely heavy rain (such as one in a fifty year rainfall events). The Board heard evidence that it appears that unusual weather events are becoming more frequent. This may have design implications for drainage systems in the future.
54. Sustainable urban drainage systems (SUDs) are a requirement for many new developments as Southern Water will no longer allow surface water from housing developments to be discharged into the sewer network. SUDs are designed to reduce surface run-off and often feature permeable surfaces. These surfaces still require positive drainage systems to transport water away and have a maintenance cost associated with them. ESCC is not responsible for the maintenance of SUDs, but is now the consenting authority through its role as Lead Local Flood Authority.

Findings

55. The Board considered that there would be benefits in establishing a forum with other organisations to focus on improving highway drainage and flooding issues, as well as sharing information on drainage infrastructure. Work could involve aligning strategies for investing in drainage infrastructure and tackling flooding problems in East Sussex.

Recommendations

Working with others

4. The Board considers the Director of the Communities, Economy & Transport and the County Council generally are well placed to co-ordinate its strategy in regard to flooding with the strategies of different organisations and agencies charged with responsibility within East Sussex for flood management. That particularly applies, to Southern Water, Environment Agency, Boroughs, Districts, Town & Parish Councils along with the local drainage boards. The Review Board therefore recommends:

4. (1) The creation of a forum to include such organisations to align strategies and increase local knowledge of highway drainage assets and the impact on them from the surrounding land and built form.

4. (2) In the County Council's capacity as statutory consultee with regard to planning applications and as Lead Local Flood Authority, the County Council needs to focus particularly on securing adequate highway drainage in respect to new development within East Sussex.

6. Street sweeping and highway drainage

Street sweeping operations

56. It is important to remove debris from the drainage channels of roads to reduce the need to empty gullies and to prevent gully covers from becoming blocked. Street sweeping is therefore a contributing factor in keeping drains clear and preventing flooding. In rural areas, street sweeping becomes more significant due to the increase in debris in these areas, but is less routinely carried out than in urban areas.

57. Sweeping operations are the responsibility of District and Borough councils and are undertaken in line with the requirements of the Code of Practice for Litter and Refuse (COPLAR), issued under section 89 of the Environmental Protection Act 1990. Street sweeping includes the removal of litter (including dog excrement) and detritus from roads and other highways. The waste removed from streets is, in contrast to common perception, predominately detritus (i.e. dust, mud, soil, grit, gravel, stones, rotted leaf and vegetable residues, and fragments of twigs, glass, plastic and other finely divided materials) and not litter.
58. Detritus, left unattended, blocks drains and poses a safety hazard if left on road surfaces. It is important to note that COPLAR sets out the standard of cleanliness that has to be met and does not specify the frequency with which areas have to be cleaned. The Code states that: *“It seeks to encourage duty bodies to maintain their land within acceptable cleanliness standards. The emphasis is on the consistent and appropriate management of an area to keep it clean, not on how often it is cleaned.”* COPLAR categorises land into four zones:
- High intensity of use
 - Medium intensity of use
 - Low intensity of use
 - Areas with special circumstances
59. Duty bodies (i.e. District and Borough councils) are expected to allocate all land into one of the four zones and manage it accordingly. The Code categorises the standard of cleaning required in the four zones depending on the type of environment. So for high streets (high intensity of use/zone 1) the standard to be achieved means it is typically swept once a day and sometimes twice a day (e.g. in Hastings town centre). For rural roads (low intensity use) the standard is lower and means sweeping might only be undertaken once a year or not at all.
60. The Board heard that on rural roads, it may be acceptable to have a level of detritus at the edge of road where there is no curb or defined edge of the metalled surface. It is better to let verges build up in order to have something to sweep up against and mark the edge of the highway. Rural roads are swept once per year, but the road will not be swept if it does not need it, and generally, rural lanes are not swept.
61. The Borough and District Councils set their cleansing standard (as per COPLAR) and the street sweeping contractor (usually same as the waste contractor e.g. Kier) then decide on frequencies. The Boroughs and Districts are responsible for policing and monitoring the condition of roads for litter and detritus.
62. Grass cutting (on verges) and leaf fall also need to be considered when looking at the factors relating to gullies and street cleansing.

Co-ordinating street cleansing and highway drainage routine maintenance

63. Borough and District Councils base sweeping frequencies on the visual appearance of an area (i.e. the amount of litter and detritus present), rather than need to keep drains clear. The Board explored whether it might be better if street sweeping was overseen by ESCC, so that sweeping frequencies could be better aligned with highways drainage needs.
64. The Board was informed that if the same contractor does both street cleaning and gully emptying it could lead to efficiencies, but the evidence shows that in practice it has proved difficult to effectively co-ordinate such different work (which requires different types of machinery) across such a large area as East Sussex.

Contractual and financial arrangements

65. The Joint Waste Contract includes the cost of street sweeping, as well as refuse and recycling collections, in the four areas covered by the Contract (Eastbourne, Hastings, Rother and Wealden). Contractual arrangements have changed from having two separate contracts (one for domestic refuse collections and one for street cleansing), to one contract, and then one combined contract under the Joint Waste Contract arrangements.
66. ESCC Officers believe that if it is possible to combine street sweeping and gulley emptying operations under one contract, it would then be possible to look at doing more of what is cheaper i.e. street cleansing. However, there are obstacles to doing this as the source of funding is with the Boroughs and Districts, and there are differing priorities to do with appearance and need. Evidence needs to be gathered to evaluate the cost benefit impact of increasing street cleaning frequencies in highway flooding “hot spots”.

Finding solutions

67. Officers believe there is enough flexibility in the existing contract arrangements to apply more resource in drainage problem areas, in an effort to find solutions. More could be done to co-ordinate work, but because councils have reduced client resources in contracts, it would probably need more client resources to bring about more co-ordination.

Findings

68. There are key differences between scheduled highways drainage maintenance work, and street sweeping teams which are deployed to react to the prevailing weather conditions and the condition of the streets. There are a number of practical difficulties in using one contractor for both types of work, but it would be worth exploring measures to better co-ordinate the two areas of work.
69. The Highways Team and the Joint Waste Partnership should set up a project to explore whether there is a correlation between an increase in street sweeping frequency and a reduction in the amount of detritus going into the gulley and subsequent reduction in highway flooding in flooding “hot spot” areas.

Recommendations

4. The Review Board recommends:

- 4. (3) By working with the Joint Waste Partnership the County Council needs to establish pilot projects to tackle flooding “hot spot” areas to gauge the impact of street and road cleaning activity on flooding events and frequency of gulley blocking.**

7. Concluding comments

70. If ESCC does nothing, the evidence suggests that the backlog of outstanding drainage problems will remain and will potentially undermine the investment in carriageway repairs and resurfacing. Without a full knowledge of the highway drainage infrastructure, ESCC may be spending more on routine and reactive maintenance. The capital budget that is available now for drainage work, is insufficient to get through the backlog of drainage problems.

71. It is clear that gaining a full knowledge of the location and condition of all highways assets is key to delivering improvements and ensuring any investment is targeted to get the most benefit for road users and residents alike. This approach has been demonstrated by the work the department has done to establish an Asset Plan for highway carriageways that has delivered both a reduction in maintenance revenue budgets and an improvement in road condition.
72. The Review Board is aware of the financial challenges that ESCC faces, but believes a long-term plan for investment in highway drainage infrastructure is essential, and offers the best opportunity to maintain the roads in East Sussex in a safe and useable condition. Without additional investment the pace of change will be slower and may present further financial challenges.

Appendix 1

Scope and terms of reference

Through its work on the Highways contract re-procurement, the Economy, Transport and Environment Scrutiny Committee understands the important role that highways drainage has in prolonging the life of the carriageway surface, preventing flooding and ensuring road safety.

The scope of the review is to examine the factors that lead to the efficient and effective management of highways drainage infrastructure. The review will identify and confirm what is known about the key factors involved in highways drainage infrastructure maintenance and assess the impact of measures already put in place to maintain drainage assets including:

- The quality and frequency of gulley maintenance;
- The progress of work to fully understand the highway drainage infrastructure;
- The programme of work to repair/replace non- working drains;
- The maintenance arrangements for other highways drainage assets; and
- The role of other organisations in ensuring the highways drainage works efficiently and in particular the role of the Borough and District councils in street cleansing.

Review Board Members

Councillors Richard Stogdon (Chair), Michael Pursglove, Pat Rodohan and Barry Taylor

Support to the Board was provided by the following officers:

Karl Taylor, Assistant Director – Operations, ESCC

Witnesses

Madeleine Gorman, Partnership Manager, East Sussex Waste Collection Partnership
Bernard Hodgkinson, Contract Manager, Kier
Roger Williams, Head of Highways, ESCC

Chris Dyer, Team Manager – Asset Management, ESCC
Tom Crawshaw, Senior Asset Technician

Peter Mitchell, Highway Manager (Asset Planning & Delivery) Hampshire County Council

Mike Hansford, Asset & Performance Team Leader, Dorset County Council

Review Board meeting dates

29 May 2015

30 September 2015

2 November 2015

18 February 2016

List of evidence papers

Item	Date
Waste Management Licencing Regulations 1994	1994
Code of Practice on Litter and Refuse (DEFRA)	2006
Traffic Signs Manual – Chapter 8 - Traffic Safety Measures and Signs for Road Works and Temporary Situations	2009
Highways Maintenance Efficiency Programme (HMEP) Guidance on the Management of Highway Drainage Assets	November 2012
Manchester City Council – Neighbourhoods Scrutiny Committee – Drainage Maintenance Task and Finish Group	July 2014
Manchester City Council – Neighbourhoods Scrutiny Committee – Drainage Maintenance Task and Finish Group – six month update	February 2015
ESCC Highways Asset Management Drainage Strategy 2015-2018	October 2015
ESCC Highway Asset Management Strategy 2015-2022	October 2015
Your County - A notice requesting the community help to clear leaves and other debris from gully covers and drains.	Autumn 2015

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Appendix 2 Highways Asset Management Drainage Strategy 2015 -2018

The highway drainage asset is critical to ensuring the controlled removal of water from the carriageway to allow customers to use it safely. The impact that failure of the drainage asset can have on other highway assets, wider transport infrastructure and private property is significant.

The challenge facing East Sussex County Council in managing highway drainage and local flood risk is defining the location, specification and condition of highway drainage assets in order to identify what is needed to improve their performance. With a focus upon outcome delivery and performance at the core of the new Highways Maintenance Contract, the Highways Asset Management Drainage Strategy complements the new contract and sets the direction for collaborative working between both Client and Contractor.

The objectives and actions outlined in this strategy have been aligned to both deliver the council priorities and implement the industry guidance in order to achieve DfT capital funding for highway drainage improvements in East Sussex. By working to secure DfT capital funding and deliver drainage schemes, savings will be realised through reducing the maintenance cost to other highway infrastructure, especially carriageway which often suffers from accelerated deterioration as a result of failing highway drainage systems.

East Sussex County Council

Highways Asset Management Drainage Strategy

2015 – 2018

Document History:

Date	Document Version	Document Revision History	Document Author / Reviser
31 July 2015	1.3		Tom Crawshaw

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Highways Asset Management

Drainage Strategy



Highway Drainage – A Critical Asset

The highway drainage asset is critical to ensuring the controlled removal of water from the carriageway to allow customers to use it safely. The impact that failure of the drainage asset can have on other highway assets, wider transport infrastructure and private property is significant.

The **Highways Act 1980** empowers highway authorities to construct and maintain drainage systems to remove surface water from the highway. More recently, the **Flood and Water Management Act 2010** gives local authorities a role for the management of local flood risk.

The biggest challenge facing highway authorities in managing highway drainage and local flood risk is **defining the asset to identify the need**. In many cases the location and condition of highway drainage assets are far from understood which presents real challenges in making the case for investment.

Highway drainage assets across East Sussex have suffered from significant under investment over many years. As a result **we have a dated drainage system that we have very little knowledge about** which is costing us more to maintain year on year. Our existing approach to maintaining highway drainage assets is largely reactive. This is very costly and does not address the issue of needing to understand where to invest to halt the deterioration.

Highways Asset Management Drainage Strategy



Council Priorities

The Highways Asset Management function and approach to highway drainage is following the '**One Council**' approach and will be steered by the Council's Priorities:

- **Helping People Help Themselves**
- **Driving Economic Growth**
- **Making Best Use of Our Resources**
- **Keeping Vulnerable People Safe**

The East Sussex County Council **Highway Asset Management Policy** establishes the Council's commitment to Highway Asset Management and demonstrates how this approach aligns with the Council Plan. The Policy has been published alongside the **Highway Asset Management Strategy** on the Council's website.

Drainage Objectives

To help deliver the Council Priorities and implement the relevant recommendations from the **Highways Maintenance Efficiency Programme (HMEP) - Guidance on the Management of Highway Drainage Assets (2012)**, the objectives for highway drainage in East Sussex are as follows:

- **Define the Highway Drainage Asset**
- **Deliver an Efficient & Effective Highway Drainage Service**
- **Work in collaboration with People & Partnerships**

These objectives will guide the approach to highway drainage asset management in East Sussex and will focus the delivery of the actions identified within this strategy.

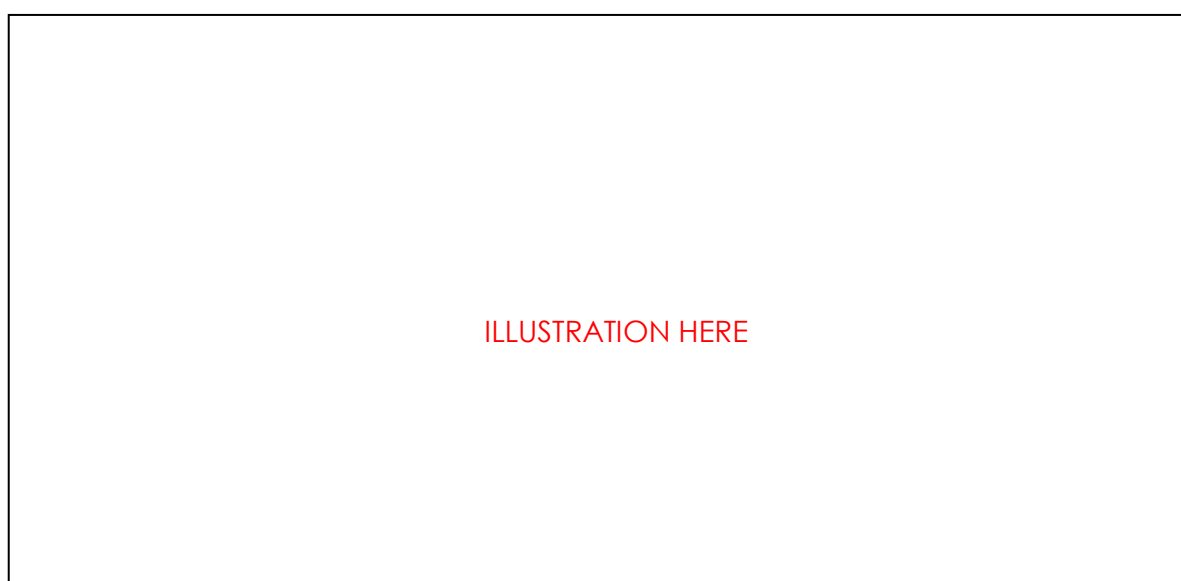
The Drainage Asset

Objective 1 – Define the Highway Drainage Asset

Improving our understanding

The current inventory of highway drainage assets across East Sussex includes approximately **98,000 gullies**, **10,000 grips** and **500km of drainage ditch**. In addition to details about the location and specification of these assets there is a good understanding of their condition from inspections and surveys. In particular, observation of silt levels in highway gullies at regular inspections provides useful statistics to help focus, support and inform a prioritised cyclical maintenance approach. What we do not know is the location, the specification and most importantly, the condition of the **pipes** connecting these assets (see **Figure.1**).

Figure.1 – Illustration of highway drainage system (known/unknown assets).



To direct resources to define the highway drainage asset in areas of **greatest risk first**, targeted surveys will be undertaken in areas of East Sussex which are at risk of local flooding. We use a **'whole system'** approach to build an inventory of drainage assets from inputs (e.g. gullies) to outputs (e.g. ditches) and every element in between (e.g. pipes). An understanding of the drainage asset as whole systems in areas at risk of local flooding will help to identifying issues and constraints while focusing, supporting and informing maintenance activities.

The Drainage Service

Objective 2 – Deliver an Efficient & Effective Highway Drainage Service

Historically, the approach in East Sussex to repairing and improving our highway drainage assets has been **predominantly reactive**, rather than pro-active.

We are now shifting our focus to proactively maintain our drainage asset and **deliver a safe, serviceable and sustainable drainage service** into the future.

To achieve an efficient and effective drainage service we will deliver the following:

- **Safety** – Ensuring the controlled removal of water from the carriageway to allow customers to use it safely.
- **Serviceability** – Maintaining the drainage asset to a condition in which it remains functional for draining the highway.
- **Sustainability** – Designing, constructing and maintaining drainage assets to meet both current and future needs in a changing environment while making effective use of limited budgets.

Future Delivery

The principles of Asset Management are at the core of the new Highways Contract beginning in May 2016. With a focus upon outcome delivery and performance, the new contract has been structured to accommodate the limited understanding of asset condition, meanwhile encouraging collaborative working between both Employer (County Council) and Contractor to improve this understanding through the life of the contract (2016-2023).

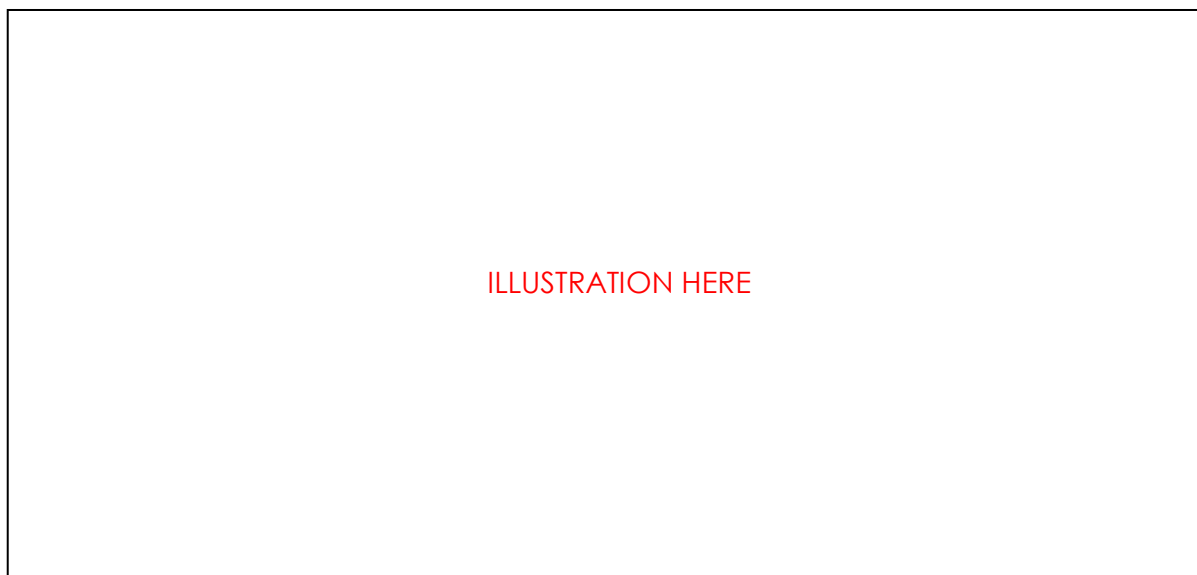
We will work with the incoming Contractor to deliver a safe, serviceable and sustainable drainage service while improving our understanding of the drainage asset.

Efficiency and Effectiveness

The two elements of efficiency and effectiveness must be balanced appropriately to ensure the effective use of limited budgets.

We are addressing this balance by ensuring that our gully cleansing operations are undertaken efficiently by targeting **all** gullies along a whole road instead of individual gullies (see **Figure.2**). Whole roads are visited on a prioritised basis informed by recorded silt levels. Effectiveness of the operation is monitored by recording silt levels after cleansing in addition to site audits.

Figure.2 – Illustration of cyclical gully cleansing operations.



We will continue to target our gully cleansing resource to areas where the gullies need cleansing more often. By **applying a risk factor to every one of our gullies based on flood risk and road hierarchy** we have been able to prioritise which gullies need to be fixed first when a problem is reported.

Data & Systems

It is recognised that effective Asset Management planning and decision making relies on having the appropriate data available to those who need it and for that data to be appropriate, reliable and accurate.

We have worked with external software providers to build a **Data Management System** which holds our current drainage inventory along with condition information.

Highways Asset Management

Drainage Strategy



We will continue to develop this system further by mapping know areas at risk of flooding (hotspots) which will focus maintenance activities. The development of this system will ensure that we address the causes of failing drainage assets rather than just the symptoms.

Working in Partnership

Objective 3 – Work in collaboration with People & Partnerships

County Council employees and other organisations responsible for drainage assets and flood risk management are a valuable source of asset management information. Therefore, both individuals and partnering organisations will be engaged and their knowledge captured and incorporated into data records.

We will be working with the Council's **Flood Risk Management Team** to draw upon flood history records from **Surface Water Management Plans**. These have been undertaken in areas at risk of local flooding across the County. Furthermore, we will assist in delivering the actions identified within the **Local Flood Risk Management Strategy**.

External organisations such as the Environment Agency and Southern Water will be engaged to address water management issues and share information and data to help **achieve shared objectives**.

Highways Asset Management

Drainage Strategy



The Drainage Challenge

Due to historic under investment in the maintenance of our highway drainage systems there is a **significant backlog** of defective drainage assets across the county. Addressing this backlog will put pressure on limited revenue budgets and therefore we will **target capital investment** to resolve the cause of the drainage issues rather than just the symptoms.

By investing in capital drainage schemes, savings will be realised through reducing the maintenance cost to other highway infrastructure, especially carriageway which often suffers from accelerated deterioration as a result of failing drainage systems.

The immediate future (2015-2016)

Asset Management will be at the core of the new Highways Contract beginning in May 2016. In preparation for this, we will begin building our understanding of the drainage asset by undertaking a series of targeted inventory surveys in areas at risk of local flooding. We will work to co-ordinate maintenance activities across our teams and drainage assets whilst collecting on-the-go inventory and condition data for use in the future. This will improve the performance of this critical asset in the short term and begin to set the building blocks in place for **future programmes of prioritised maintenance**.

Department for Transport (DfT) - Future Funding

We will be improving our knowledge of drainage infrastructure across the county to develop **capital schemes of between £5-20m**. These schemes will demonstrate evidence based decisions on drainage improvements, enabling us to bid for capital funding under the **DfT Challenge Fund in 2017** and meet the requirements for the **DfT Incentive Fund**.

Action Plan (2015-2018)

To achieve the County Council's Priorities and the objectives for highway drainage asset management in East Sussex a plan has been developed which will be delivered between 2015 and 2018.

Action Plan (2015-2018)

Drainage Objectives	Action	Timescale	Links to County Council Priority Outcomes	Links to the HMEP - Guidance on the Management of Highway Drainage Assets (2012)
Define the Highway Drainage Asset	Define investment required and areas at risk of local flooding for targeted inventory and condition surveys to be undertaken.	August 2016	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 3 Recommendation 4
	Undertake targeted inventory & condition surveys in areas at risk of local flooding	December 2018	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 3 Recommendation 4
Deliver an Efficient & Effective Highway Drainage Service	Complete the agreed two-year targeted cyclical gully cleansing programme on-time.	April 2017	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 1 Recommendation 6 Recommendation 9 Recommendation 11

Drainage Objectives	Action	Timescale	Links to County Council Priority Outcomes	Links to the HMEP - Guidance on the Management of Highway Drainage Assets (2012)
	Implement new process for prioritising investigation of drainage defects	October 2015	Making Best Use of Our Resources Keeping Vulnerable People Safe	Recommendation 1 Recommendation 6 Recommendation 11
	Develop prioritised programme of capital schemes in advance of DfT's Challenge Fund 2017 .	March 2017	Making Best Use of Our Resources	Recommendation 1 Recommendation 6
Work in collaboration with People & Partnerships	Engage with internal teams and external organisations especially in relation to flood risk management	December 2015	Making Best Use of Our Resources Helping People Help Themselves	Recommendation 2 Recommendation 7 Recommendation 8 Recommendation 10
	Develop existing Data Management System to include all known drainage asset inventory and mapped areas at risk of flooding to focus maintenance activities.	December 2018	Helping People Help Themselves	Recommendation 5

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