North Yorkshire Council

Transport, Economy, Environment and Enterprise Overview and Scrutiny Committee

10 April 2024

Preventing Flooding on Highways – Gully Clearance and Maintenance

Report of the Corporate Director - Environment

1.0 Purpose of Report

1.1 To provide members with an update on the progress and performance to date of NY Highways (NYH), the Council's company for the operational delivery of highway services, on highway gully cleansing.

2.0 Background and relevant data

2.1 A highway delivery options exercise was undertaken in 2018/19 to determine the mechanism for the operational delivery of highways services. In April 2019 the Executive approved the implementation of a wholly owned "Teckal company" to deliver the highways operational services. A Teckal company was recommended as the preferred way forward and, upon the approval of the Teckal company, a 5 Year Plan was developed which contained the following milestones:

- 2019/20 and 2020/21 Development of NY Highways (years 1 and 2)
- 2021/22 Implementation of NY Highways (year 3)
- 2022/23 and 2023/24 Review performance of NY Highways (years 4 and 5)

2.2 NY Highways has since undertaken collaborative reviews with colleagues on current and future ways of working that promote innovation and efficiency throughout its services. A report was presented to this committee on 11 July 2022 and again on 10 July 2023, outlining a number of achievements and performance milestones, which included but was not limited to:

- Seamless mobilisation of NY Highways during Covid-19
- Successful delivery of the winter service
- Delivery of the Capital schemes programme
- Responses to named storms and other weather events / highways emergencies
- New methods of service delivery, including gully clearance & maintenance
- Securing of Local Council Road Improvement Group (LCRIG) Innovation funding
- Roll-out of applications for Safety and Audit purposes

2.3 One key element and of particular interest to Members is the highway gully cleansing operation. The July 2022 and 2023 NYH performance reports outlined the roll-out of a pilot scheme utilising software from a company called Kaarbontech, the key points being a new risk-based approach for gully cleaning based on previous year's data to determine the number of gullies to be attended each year and at which locations. The analysis of this data ensures that the gully crews only need to attend gullies that require attention, therefore saving time and costs associated with gully maintenance. During the NYH mobilisation period, five new state of the art gully tankers were purchased in addition to three existing

tankers that were transferred from Ringway. There were unfortunately some reliability issues with the new gully tankers which were resolved but meant NYH were able to attend around 75% of the programmed gullies in 2021/22, which was comparable with the previous contractor's performance.

2.4 In addition to the annual NY Highways reports in July 2022 and July 2023, a report focussing on gully maintenance was presented to your meeting of 12 April 2023. Further to the information presented in the April 2023 report, the final figures showed that in 2022/23 the attendance figure based on the cyclic programme increased to 85% of the whole cyclic programme being completed, which was a 10% improvement on the 2021/22 year. Of those gullies attended during 2022/23, a total of 93.2% of those gullies attended did need cleaning, showing the risk based / data-led programme was working.

2.5 More recent developments:
During the course of the last year, discussion has taken place regarding how to further-evolve the use of the Kaarbontech system. The initial programme was set up where each individual gully was risk-assessed to determine the frequency of attendances and programmes developed around those individual assets. A review of data led to an interim programme being introduced in September 2023, which took into account concerns over gullies on main roads, gullies that had not been cleaned for more than 2 years as well as a data set of local knowledge relating to known flooding issues.

2.6 Current position:
2022/23 and 2023/24 have been years during which the Kaarbontech programme has been subject to ongoing review and revision with regard to developing and fully embedding the risk-based approach. Our surveys show that there are 164,171 gullies on the highway network. This risk-based programme approach identifies that some 98,503 gullies need to be attended in any given year, with certain higher-risk locations requiring more than one clean in a twelve month period, taking the total number of attendances to circa 106,000 per annum (this figure varies between 105,820 in year 1 of a 2 year programme and 105,846 in year 2). These targeted locations are constantly reviewed and updated by performance data that directs where those cleanses are required. By comparison, the previous cleansing regime, built up over a number of years on a combination of limited data and local knowledge, was much less-reliable and included inefficiency, with some locations being attended only to find that the gully pot was silt-free and water in the pipework running freely.

Data collected and sense-checked indicates that as of 11 March 2024, the total number of gullies attended was 92,554 based on information to the end of the previous week. This represents 87.11% of the programme, meaning the 2022/23 figure (of 85%) has already been exceeded. Based on a pro-rata performance, the anticipated figure by year-end will be 98,854 or 93% of the cyclic programme being achieved and would represent a further improvement on 2022/23, however efforts are ongoing to exceed that figure. Of the 92,554 gullies attended to date, 85,420 gullies (representing 92.3% of that 92,554) required cleaning thus indicating the correct gullies are still being targeted for attendance.

It is also worth noting that the 23/24 figures will have been achieved against a backdrop of ten named storms during the winter season, all of which necessitated NYH resource to be deployed to deal with flooding issues as a direct consequence of those storms. Due to those storm related activities, other customer service requests and / or highway officer instructions, NYH has had to respond to non-programmed gully orders in addition to the cyclic programme. It is currently estimated that in excess of 10,000 additional gullies have been attended in addition to those scheduled as part of the cyclic programme referenced above.

3.0 Forward look / planning & programme:

3.1 By April 2024, all parts of the county will have had over twelve months of the new Kaarbontech risk-based regime. Iterative work to remove the inefficiency of unnecessarily attending gullies that may have occurred under the old regime continues as part of this process so only those gullies that do need attending form part of the 'living' Kaarbontech programme. A full two-year programme has also been evolved and will be introduced from April 2024 and this will continue to be constantly reviewed based on ongoing data collection.

4.0 Conclusion

4.1 Programmes of scheduled (and non-scheduled) gully cleansing contribute towards the policy objectives contained in the over-arching Highway Asset Management Plan. The relevant extract from this plan is included as Appendix A to this report. Ultimately, the core objective as outlined in the policy extract is removing water from the highway network. This in turn improves safety for those travelling within and through the county and reduces risk of accidents, particularly during winter where ice is an additional hazard. Taking this risk-based approach and using empirical data, which is continually evolved, means that resource is deployed where needed as opposed to travelling to a site and finding the gully is free of silt / detritus and free-flowing. Fully embedding the two-year Kaarbontech programme from April 2024 alongside the performance improvement that has been achieved in 2023/24 is commended to members to note.

5.0 Financial Implications

5.1 There are no financial implications arising directly from this report as it provides an update on progress. The risk-based approach and targeting only those gullies that do need attendance / cleaning based on continually evolving empirical data assists in keeping the cost of this operation to a minimum.

6.0 Legal Implications

6.1 There are no legal implications arising directly from this report as it provides an update on progress.

6.2 Further consideration of whether any legal implications arise will be required during the delivery of the operational services under the programme.

7.0 Equalities Implications

7.1 An initial equalities impact assessment form was completed and is included as Appendix B. The assessment of this report concluded that there is no impact on people with protected characteristics.

8.0 Environmental Impacts/Benefits including Climate Change Impact Assessment:

8.1 See Appendix C.

9.0 Recommendation

9.1 Committee Members are requested to note the information within the report and offer comments or suggestions where necessary.

Appendices:

Appendix A – Highways Drainage System information / policy taken from Generic NYC Highways Asset Management Plan
Appendix B – Initial equality impact assessment screening form
Appendix C – Climate Change Assessment

Background Documents:

Reports to TEE O&S Committee 11 July 2022 and 10 July 2023 on NYH overall performance
Reports to TEE O&S Committee 12 April 2023 on NYH performance on gully clearance & maintenance

KARL BATTERSBY
Corporate Director, Environment
County Hall
Northallerton
15 March 2024

Report Author and Presenter: Nigel Smith, Head of Highway Operations NYC

Note: Members are invited to contact the author in advance of the meeting with any detailed queries or questions.

Highways Drainage System information / policy taken from Generic NYC Highways Asset Management Plan

Highways drainage systems
The condition of highway drainage systems can contribute to the core objectives as follows:

- Safety - accumulation of water on carriageways, footways and cycleways
- Serviceability - accumulation of water on carriageways, footways and cycleways
- Sustainability - polluted effluent from clearing of highway drainage affecting watercourses
    - Inadequate drainage of the highway structure will reduce effective life and increase maintenance liability.
    - Authorities have a duty to prevent nuisance to adjoining landowners by flooding and should also work with others in the wider community to minimise the future risk of flooding.

Highway drainage systems fall into the main headings of:

- culverts
- grips and ditches
- piped drainage
- pumps.

Under these headings there are two distinct categories of drainage system maintenance and drainage cleaning/cleansing.

Drainage system maintenance comprises:

- maintenance and replacement of existing carriageway drainage systems
- replacement and realignment of kerbs for drainage purposes
- maintenance and replacement of culverts and structures up to a diameter of 1.5m or a span of 1.5m (culverts and structures exceeding these measurements fall within the scope of the bridges team and their associated Highways Structures Asset Management Plan)
- all drainage works not included in reconstruction, overlay, resurfacing or surface dressing
- maintenance to pumps and sumps is carried out by specialist contractors.

The objectives of drainage system maintenance are to maintain the structural integrity of existing drainage systems to prevent accumulations of water on the carriageway, to prevent the ingress of water into the pavement structure and to maintain the highway in a safe condition for road users and pedestrians.

The Highway Gully Cleansing policy describes the cyclical maintenance of the gulley infrastructure throughout the county. The risk based approach mirrors the safety, serviceability and sustainability core objectives. The policy recognises the need for a reactive service to exist to assist in the management of highways drainage however mandates that this is a part of a whole process feeding back into the cyclical maintenance.

Any reactive maintenance is decided on a needs based approach assessed by the regular inspection of the highway, local knowledge and reports from the public.

In regard to safety, types of defects to be recorded and investigatory levels are included in the Highways Safety Inspection Manual. Culverts under roads and manholes should be inspected for structural damage or deterioration and cleaned when required. Piped drainage, soakaways and associated systems should be checked and flushed during service inspections and cleared when required.

Where a drainage system exists, it should be capable of removing water from the carriageway as it reaches a gully or grip. Where this is not the case and cleaning or jetting does not affect an improvement, the necessary remedial action should be taken as soon as possible.

For ironware comprising covers, gratings, frames and boxes set in carriageways the following condition standards apply. Manhole covers and boxes should be installed to a tolerance of +/-

5mm to the surrounding level. Gully frames and gratings should be installed level or not exceeding 10mm lower than the surrounding carriageway. When boxes, frames and covers are found to be greater than 20mm lower than the surrounding carriageway they should be re-set.

Drainage cleaning/cleansing comprises:
The testing, rodding and jetting of the highway drainage system. This includes drains, gullies, piped ditches, grips, carriageway drainage on structures and drainage of subways. The cleaning of drainage installed outside the highway boundary under licence or easement should be included. The cleaning of gullies and catchpits or manholes which are the responsibility of the highway authority. As a guide, this is all surface water drainage the sole purpose of which is to remove water from the highway; however, this is not always the case. If in addition the drainage system carries roof water or water from private properties, that system is the responsibility of other authorities. In these cases, the highway authority is responsible for the gully and gully connections only.

The maintenance of ditches and grips through the removal of silt, vegetation growth and damage to allow free passage of water from the highway. The maintenance should be confined to those ditches which are the responsibility of the highway authority (in the main, ditches are the responsibility of the adjoining landowner). Section 100 of the Highway Act 1980 empowers authorities to keep open ditches on land adjoining the highway.

The objectives of drainage cleaning/cleansing are to prevent water penetrating the foundations of carriageways and footways, to remove detritus from gullies or catchpits to ensure the rapid removal of water from the road surface, to maintain free flow conditions in all open channels and grips and to maintain self-cleansing flows in the drainage pipes, catchpits and outfalls.

The policy is to carry out the required amount of drainage cleansing and cleaning commensurate with the objectives and needs. They are assessed through routine highway inspections, awareness of frequent flooding at a particular location, reports of drainage defects from gully maintenance operatives and complaints of malfunction. Types of defects to be recorded and investigatory levels are included in the Highways Safety Inspection Manual.

Grip clearing should be commenced after the last grass cut of the year and completed if possible before the onset of winter. Kerb offlets can sometimes be neglected and should be jetted as necessary to ensure efficient working.

Areas at risk of flooding should be identified and recorded within the Highway Asset Management System. Inspection of these sites will form part of the safety inspection regime. Supplementary checks should be undertaken during periods of heavy rainfall as resources allow.

Gullies are cleansed according to their associated schedule, which is based on the age of the gully, the location. Non-functioning or damaged gullies are recorded by the contractor and reported to the client for further investigation and remedy.

Priority is given to inspecting and cleansing sections of system which pose a high risk of flooding or disruption to the network. During all drainage investigation records of the system must be compiled and added to the inventory.

Gullies should be over filled when emptied to ensure that they are clear. If not, the unit should be recorded for jetting. No more than 50mm of material should remain in the unit before it is recharged with clean water.

The frequency of cleansing of oil interceptors will depend on their design and location and will need particular consideration on a site specific basis. Material arising from all road drainage emptying and cleansing operations has potential implications for pollution and should be disposed of correctly in accordance with the Environment Agency requirements.

Appendix B

Initial equality impact assessment screening form

This form records an equality screening process to determine the relevance of equality to a proposal, and a decision whether or not a full EIA would be appropriate or proportionate.

Directorate	Environment
Service area	Highways and Transportation, Parking Services, Street Scene, Parks and Grounds – Highway Operations
Proposal being screened	Report on the progress and performance of North Yorkshire Council's / NY Highways' gully cleansing operation
Officer(s) carrying out screening	Nigel Smith – NYC Head of Highway Operations
What are you proposing to do?	To provide members with an update on the progress and performance of North Yorkshire Council's / NY Highways' gully cleansing operation
Why are you proposing this? What are the desired outcomes?	This report is an update for members on the progress of the above for the 2023/24 financial year. There are no outcomes other than ensuring that members are aware of how the Teckal company has performed.
Does the proposal involve a significant commitment or removal of resources? Please give details.	**No**

Impact on people with any of the following protected characteristics as defined by the Equality Act 2010, or NYC's additional agreed characteristics

As part of this assessment, please consider the following questions:

- To what extent is this service used by particular groups of people with protected characteristics?
- Does the proposal relate to functions that previous consultation has identified as important?
- Do different groups have different needs or experiences in the area the proposal relates to?

If for any characteristic it is considered that there is likely to be an adverse impact or you have ticked 'Don't know/no info available', then a full EIA should be carried out where this is proportionate. You are advised to speak to your Equality rep for advice if you are in any doubt.

Protected characteristic	**Potential for adverse impact**		**Don't know/No info available**
	Yes	**No**	
Age		✓	
Disability		✓	
Sex		✓	
Race		✓	
Sexual orientation		✓	
Gender reassignment		✓	
Religion or belief		✓	
Pregnancy or maternity		✓	

Marriage or civil partnership		✓		
NYC additional characteristics				
People in rural areas		✓		
People on a low income		✓		
Carer (unpaid family or friend)		✓		
Does the proposal relate to an area where there are known inequalities/probable impacts (e.g. disabled people's access to public transport)? Please give details.	This is a members report on the performance of NYHighways. There are no proposals that would impact on people with protected characteristics			
Will the proposal have a significant effect on how other organisations operate? (e.g. partners, funding criteria, etc.). Do any of these organisations support people with protected characteristics? Please explain why you have reached this conclusion.	No			
Decision (Please tick one option)	EIA not relevant or proportionate:	✓	Continue to full EIA:	
Reason for decision	This is a report for information. There are no adverse impact on any of the protected characteristics.			
Signed (Assistant Director or equivalent)	Barrie Mason			
Date	25 March 2024			

Appendix C

Climate change impact assessment

The purpose of this assessment is to help us understand the likely impacts of our decisions on the environment of North Yorkshire and on our aspiration to achieve net carbon neutrality by 2030, or as close to that date as possible. The intention is to mitigate negative effects and identify projects which will have positive effects.

This document should be completed in consultation with the supporting guidance. The final document will be published as part of the decision making process and should be written in Plain English.

If you have any additional queries which are not covered by the guidance please email climatechange@northyorks.gov.uk

Version 2: amended 11 August 2021

Please note: You may not need to undertake this assessment if your proposal will be subject to any of the following:
Planning Permission
Environmental Impact Assessment
Strategic Environmental Assessment

However, you will still need to summarise your findings in the summary section of the form below.

Please contact climatechange@northyorks.gov.uk for advice.

Title of proposal	Report on the progress and performance of North Yorkshire Council's / NY Highways' gully cleansing operation
Brief description of proposal	Update to TEEE Overview & Scrutiny Cttee on the above
Directorate	Environment
Service area	Highways and Transportation, Parking Services, Street Scene, Parks and Grounds – Highway Operations
Lead officer	Barrie Mason
Names and roles of other people involved in carrying out the impact assessment	Nigel Smith
Date impact assessment started	11 March 2024

Options appraisal
Were any other options considered in trying to achieve the aim of this project? If so, please give brief details and explain why alternative options were not progressed.

Other delivery options were included, however the Kaarbontech solution was deemed optimal based on optimisation of the gully cleansing service; Kaarbontech are an industry leader with over 50 local authorities having adopted their programme

What impact will this proposal have on council budgets? Will it be cost neutral, have increased cost or reduce costs?

Please explain briefly why this will be the result, detailing estimated savings or costs where this is possible.

By only attending those gullies that need cleaning based on data-led intelligence, and doing so in a programmed manner, costs should be kept to a minimum as opposed to the previous regime (i.e. pre-Kaarbontech) where all gullies were routinely attended

How will this proposal impact on the environment? **N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.**		**Positive impact** (Place a X in the box below where)	**No impact** (Place a X in the box below where)	**Negative impact** (Place a X in the box below where)	**Explain why will it have this effect and over what timescale?** **Where possible/relevant please include:** • **Changes over and above business as usual** • **Evidence or measurement of effect** • **Figures for CO_2e** • **Links to relevant documents**	**Explain how you plan to mitigate any negative impacts.**	**Explain how you plan to improve any positive outcomes as far as possible.**
Minimise **greenhouse gas emissions** e.g. reducing emissions from travel, increasing energy efficiencies etc.	Emissions from travel	√			Fewer unnecessary journeys		Ongoing update of system and minimising attendances to only those gullies that require attendance based on data collected
	Emissions from construction				N/A		
	Emissions from running of buildings				N/A		
	Emissions from data storage				N/A		
	Other						

How will this proposal impact on the environment? **N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.**	**Positive impact** (Place a X in the box below where	**No impact** (Place a X in the box below where	**Negative impact** (Place a X in the box below where	**Explain why will it have this effect and over what timescale?** **Where possible/relevant please include:** • **Changes over and above business as usual** • **Evidence or measurement of effect** • **Figures for CO_2e** • **Links to relevant documents**	**Explain how you plan to mitigate any negative impacts.**	**Explain how you plan to improve any positive outcomes as far as possible.**
Minimise **waste:** Reduce, reuse, recycle and compost e.g. reducing use of single use plastic						
Reduce **water** consumption	√			Reduces overall amount of water required to flush drainage systems by only doing those necessary		
Minimise **pollution** (including air, land, water, light and noise)	√					
Ensure **resilience** to the effects of climate change e.g. reducing flood risk, mitigating effects of drier, hotter summers	√			by maximising efficiency of drainage systems highway surface water flooding is reduced; this also helps minimise the impact of water damage on the fabric of the highway network		The gully schedule is updated on an evolving intelligence/data-led approach
Enhance **conservation** and wildlife				N/A		

How will this proposal impact on the environment? **N.B. There may be short term negative impact and longer term positive impact. Please include all potential impacts over the lifetime of a project and provide an explanation.**	**Positive impact** (Place a X in the box below where	**No impact** (Place a X in the box below where	**Negative impact** (Place a X in the box below where	**Explain why will it have this effect and over what timescale?** **Where possible/relevant please include:** • **Changes over and above business as usual** • **Evidence or measurement of effect** • **Figures for CO_2e** • **Links to relevant documents**	**Explain how you plan to mitigate any negative impacts.**	**Explain how you plan to improve any positive outcomes as far as possible.**
Safeguard the distinctive characteristics, features and special qualities of **North Yorkshire's landscape**						
Other (please state below)	√			Reduced surface and standing water reduces likelihood of accelerated deterioration of highway infrastructure		

Are there any recognised good practice environmental standards in relation to this proposal? If so, please detail how this proposal meets those standards.

Summary Summarise the findings of your impact assessment, including impacts, the recommendation in relation to addressing impacts, including any legal advice, and next steps. This summary should be used as part of the report to the decision maker.

By only attending those gullies that need cleaning, and doing so in a programmed manner, costs should be kept to a minimum.

Sign off section

This climate change impact assessment was completed by:

Name	Nigel Smith
Job title	Head of Highway Operations
Service area	Highways and Transportation, Parking Services, Street Scene, Parks and Grounds
Directorate	Environment
Signature	N Smith
Completion date	14 March 2024

Authorised by relevant Assistant Director (signature): Barrie Mason

Date: 25 March 2024