Review of National Highways Asset Information

National Highways | ORR

Client Project Reference: ORR/CT/24-35

10th January 2025

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ORR | National Highways

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Executive Summary

A review was undertaken of National Highways' ability to evidence its asset information management practice, in accordance with Licence Condition 5.9:

> **"The Licence holder must develop and maintain high quality and readily accessible information about the assets held, operated and managed by the Licence holder in line with, and as a function of, the Licence holder's legal duties as a highway authority, including its condition, capability, and capacity, as well as its performance, including against any expectations set out in a Road Investment Strategy."**

This review took the form of a questionnaire – distributed to various key stakeholders within the organisation. The questionnaire was structured based on asset information management best-practice – addressing six key parts:

- **Part 1** – Policy, Strategy, and Planning
- **Part 2** – Standards and Requirements
- **Part 3** – Processes
- **Part 4** – Systems
- **Part 5** – Roles and Responsibilities
- **Part 6** – Reporting

To maintain a clear and objective view of the organisation's asset information management practice, the questions were strongly evidence-based. The expected responses were the provision of evidence related to the topic or question – e.g. the upload of documents, links to standards, or links to other resources (e.g. SharePoint).

The approach and timescales were agreed by both National Highways and ORR throughout the review. However, it should be noted (as per section 1.3), that this project was undertaken on a reasonably compressed timeline; which had some impact on the company's ability to respond and engage with the review.

Responses were analysed based on an objective scorecard:

Score	Description
1	Sufficient evidence not provided.
2	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.
3	Some evidence provided | Conflict in information | Some lack of consistency across the company.
4	Credible evidence provided | Little / no conflict in information | Largely consistent across the company.
5	Sufficient evidence provided | Consistent across the company.

Table 1 - Analysis scorecard.

Individual commentary was provided against each question and answer, to give context on the scoring applied.

Responses from across the company were collated to create summary scores for each question – and total scores were calculated in context of the maximum achievable score.

All Parts: Total Collated Scores			
1	**Policy**	**65%**	Some evidence provided | Conflict in information | Some lack of consistency across the company.
2	**Standards and Requirements**	**68%**	Some evidence provided | Conflict in information | Some lack of consistency across the company.
3	**Processes**	**73%**	Credible evidence provided | Little/no conflict in information | Largely consistent across the company.
4	**Systems**	**38%**	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.
5	**Roles and Responsibilities**	**48%**	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.
6	**Reporting**	**40%**	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.

Table 2 – Summary of total collated scores for all review parts.

Summary findings are outlined below:

#	Finding	#	Recommendation
1.	Within the scope and duration of this review, National Highways did not demonstrate awareness across the breadth of the appropriate stakeholders of their self-reporting responsibility, and what enacting that requires.	1	National Highways to develop culture and communication to ensure key individuals across the organisation are aware of the responsibility – particularly those with the detailed technical expertise to provide the requisite knowledge and evidence of asset information management practice.
2.	Within the scope and duration of this review, National Highways did not demonstrate a clear and structured framework to enact their reporting obligation with respect to evidence of its asset information management practice.	2a	National Highways to develop a structured reporting framework, that develops and enacts a clear, repeatable methodology for development, collation, and communication of evidence of its information management practice.
		2b	ORR to align to National Highways development of this framework, agreeing the evidence, measures, metrics, etc. that sufficiently demonstrate asset information management practice to support compliance with Licence condition 5.9.
3.	National Highways have an existing process that reviews License compliance within each RIS period.	3.	National Highways to update and align any existing processes for License compliance review with the more detailed proposed approach outlined across the other recommendations.
4.	National Highways struggled with reporting current asset information management capability at a granularity that could differentiate individual asset classes.	4.	National Highways to develop their reporting practice – in line with other recommendations – to include sufficient detail and granularity to differentiate asset classes.
5.	National Highways evidence provided at this time is not sufficient to uniformly draw a conclusion on the quality or confidence of its asset information across the breadth of all asset classes or asset information types.	5.	National Highways to develop their reporting practice – in line with other recommendations – to include sufficient detail and technical information that evidence of good practice supports demonstration of good data (quality or confidence).

Table 3 - Summary findings and recommendations.

1   Introduction

ORR and National Highways are undertaking a joint task to review National Highways' capability to demonstrate compliance with its licence, specifically condition 5.9:

> *"The Licence holder must develop and maintain high quality and readily accessible information about the assets held, operated and managed by the Licence holder in line with, and as a function of, the Licence holder's legal duties as a highway authority, including its condition, capability, and capacity, as well as its performance, including against any expectations set out in a Road Investment Strategy."*

The approach to this review involves a collaborative effort to provide National Highways an opportunity to demonstrate its asset information management practice.

Specifically, in accordance with condition 5.9, this will emphasise practice regarding asset information directly related to the "**4Cs**":

- **Condition** – a record of the physical state of the asset.

- **Capability** – a record of the assets' ability to fulfil its purpose on the Strategic Road Network.

- **Capacity** – a record of the assets' remaining life (i.e. 100% is full design-life remaining, 0% is failure or at end-of-life).

- **Criticality** – a record of the assets' importance (i.e. the safety and performance implications on the Strategic Road Network should the asset fail).

1.1   Project Objectives

As per the task scope documentation:

1. review National Highways' compliance with Licence condition 5.9;

2. recommendations to improve National Highways' capability to develop and maintain high-quality and accessible asset information; and

3. recommendations to improve how ORR holds National Highways to account to meet its Licence conditions.

1.2   Review Goals

Accordingly, the overall goals of the review are to:

- Review National Highways ability to evidence its asset information management practice and identify areas for potential improvement.

- Understand the ORR ⟷ National Highways reporting interface for reporting against License requirement 5.9, and identify areas for potential improvement.

1.3 Limitations on the Review

It should be noted that this commission has been undertaken on a reasonably compressed timeline (approximately nine weeks in total).

All parties agreed to this timeline and scope – accordingly the methodology and task design, delivery, and reporting were developed and tailored to specifically meet the demanding timeline. Specifically, the approach chosen was designed to mitigate the risk of stakeholder availability by providing a highly structured approach to the review and giving senior stakeholders early warning to mobilise their teams for response.

Notwithstanding, it is recognised that there are areas where an extended review period – with more opportunity for direct stakeholder engagement to clarify information provided – could further enhance the approach and potentially derive further value and insight.

2 Review Methodology

The review into National Highways current asset information management practice was developed to enable them to demonstrate evidence of current practice and capability.

Information was provided by means of a questionnaire, covering a range of key asset information management areas designed to prompt National Highways responders to provide evidence related to the question topic.

2.1 Asset Information Management Best-Practice

The line of review was designed to seek evidence of best practice with respect to asset information management. Accordingly, the structure of the questionnaire and the content of the individual questions is directly distilled from industry standards and best practice – primarily ISOs 55000, 55013, and 8000.

It is recognised that National Highways are not necessarily committing to compliance or alignment with each of the above standards – and the review did not seek to establish this. However, this documented industry best practice was a suitable foundation to build the content of review from, as it broadly reflects the expected structure, scope, and content of asset information management practice within the organisation.

The provision of evidence of best practice serves as a suitable proxy for an overarching assessment of the quality of the underlying asset information. This is based on the principle that effectively evidencing good practice can be taken as indirect evidence that the outcomes of the practice are effective – i.e. good asset information management processes lead to good asset information.

2.2 Question Structure

Accordingly, the content of the standards was collated into an overview of the asset information management practice across the fundamental areas of capability, broken down into the following parts:

- **Part 1** – Policy, Strategy, and Planning

- **Part 2** – Standards and Requirements

- **Part 3** – Processes

- **Part 4** – Systems

- **Part 5** – Roles and Responsibilities

- **Part 6** – Reporting

Note: it is acknowledged that the same evidence may be provided to answer multiple questions, e.g. overarching policy documentation may be relevant to give support or context to answers within subsequent parts of the questionnaire. This was anticipated and encouraged; and repetition of the evidence / signposting was expected in the answers provided.

To assist responders following the line of questioning, each part was developed with a recurrent pattern that gives the questions context when answered in sequence, following a "Plan, Do, Check, Act" process, to build a narrative that demonstrates capability. An example is given below:

With respect to asset information management…		
Plan	"What"	What are National Highways intending to achieve?
	"Why"	Why is that the intention; how is it linked to the License obligation?
Do	"How"	How is this enacted?
	"Who"	Who is responsible for delivery?
	"Where"	Where (virtual or digital) does this happen?
	"When"	When or how frequently does delivery occur?
Check	"Monitor"	How does National Highways reflect on the efficacy?
Act	"Improve"	How does National Highways react to that reflection?

Table 4 - Example of Plan, Do, Check, Act concept, applied to the review.

2.3   Response Structure and Focus

To maintain a clear and objective view of the organisation's asset information management practice, the questions are strongly evidence-based.

The expected responses comprise the provision of evidence related to the topic or question – e.g. the upload of documents, links to standards, links to other resources (e.g. SharePoint).

Accompanied by free-text, allowing the responder to explain the evidence provided and any relevant context for it.

Many questions directed the responder to highlight the detail within the evidence that demonstrates the capability – e.g. directly reference and explain the specific document or source, and relevant page(s), section(s), or clause(s).

All questions were presented as mandatory, requiring a response – as even negative responses (such as "*not known*" or "*unable to evidence*") are valid and informative for the review.

Certain parts of the questionnaire requested that these elements were to be completed multiple times in parallel to account for different information for the different Asset Class areas:

- Pavements
- Structures
- Drainage
- Geotechnical
- Vehicle Restraint Systems
- Lighting
- Technology
- Environmental[1]
- Tunnels[1]
- Carriageway Control[1]
- Ancillary[1]

2.4   Full Questionnaire

Final questions were developed based on iterative feedback from both ORR and National Highways stakeholders.

A full copy of all parts and questions used during the review is included in the section Appendices: Full Questionnaire.

2.5   Distribution and Guidance

The questionnaire was distributed to all responders using an online platform (Microsoft Forms).

This was accompanied by provision of a SharePoint site, where supporting evidence could be directly uploaded.

As different subject areas are relevant for different responders, the questionnaire parts were constructed and distributed separately – each with an individual link or SharePoint page.

An accompanying guidance document was provided to support orientation of all stakeholder responders. This included key information, providing:

- Introduction to the context of the task and goals

- Detail on the structure of questions

- Explanation of the types of answers expected

- Full copy of all parts and questions

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[1] *Note:* responses for these additional asset classes were included as part of the review, as they are identified within National Highways – however they were not specifically identified in the works package scope.

- Instruction on the distribution and provision of responses, including clear deadlines

The accompanying document is included as part of the supporting deliverables.

2.6 Stakeholder Responders

During the development of the review, a comprehensive stakeholder list was established identifying nominated individuals across National Highways suited to providing focussed answers to the review questions.

This list covered both senior stakeholders anticipated to act as contact points and enablers; and technical stakeholders who would be suitably experienced and knowledgeable to provide detailed answers.

The proposed stakeholder list is included as part of the supporting deliverables.

Given the scale and the extensive number of stakeholders involved, National Highways elected to coordinate the distribution and collation of responders internally. This was done by using key stakeholders in various directorates or teams as touchpoints to distribute the questionnaire and manage the responses. This was centrally coordinated by the National Highways project manager and their team within the Performance and Regulatory Compliance group.

All senior project stakeholders were made aware of all questionnaire parts and had input on the distribution and assignment to responsible individuals or teams to respond.

Final distribution of the questionnaire is as follows:

Part	Organisation	Directorate	Group/Team	Role/Job Title
Part 1 – Policy	National Highways	SES	Asset Management Development Group	Head of Specialism
		Digital Services	Data and Information Governance Team	Acting Head of Data and Information Governance
Part 2 – Standards and Requirements		Digital Services	Data and Information Governance Team	Acting Head of Data and Information Governance
Part 3 – Processes		Operations	Planning and Performance Division	Operations Interface Team Lead
Part 4 – Systems		SES	Asset Management Development Group	Principal Advisor/Team Lead (Systems)
		Digital Services	Data and Information Governance Team	Acting Head of Data and Information Governance
Part 5 – Roles and Responsibilities		Digital Services	Data and Information Governance Team	Acting Head of Data and Information Governance
		Operations	Planning and Performance Division	Operations Interface Team Lead
Part 6 – Reporting	National Highways		Performance and Regulatory Compliance	Head of Regulatory Monitoring
	ORR			

Table 5 - Stakeholder distribution.

As noted, the supporting document also included all questions in full – this was provided with instruction that if an individual or team considered that they could provide answer to part of the questionnaire that they were not initially directed to, they could contact the project team to ensure they were added to the responders for that element.

Overall, this self-coordinating and self-identifying approach aligns to the understanding of National Highways' responsibility in regard to its License. This responsibility and approach for self-reporting will be expanded on in subsequence sections around reporting, findings, and recommendations.

2.7   Follow-up Engagement

Responses were reviewed as provided, giving an opportunity to directly engage stakeholders to clarify any answers and evidence provided. This was undertaken on a limited, exception-only basis – to address any major misunderstanding or issue attaining, referencing, or contextualising the evidence.

It is recognised that an extended "interview" period could be beneficial to enhance a similar review, and support the extraction and organisation of evidence, and the articulation of deeper detail.

2.8   Response Period

The questionnaire was provided to National Highways for onward distribution on Monday 18th November 2024.

The deadline for response was set as Friday 29th November 2024.

However, a significant portion of stakeholders gave forewarning of challenges in meeting the deadline; accordingly, it was agreed that the responses received after the original response deadline (up to Monday 9th December 2024) were still accepted and included in the analysis.

3   Responses

All responses from National Highways were uploaded to the National Highways SharePoint site.

These responses, and the significant content of evidence provided to support them, can be accessed there.

Due to the structure, organisation, and size of these files, they are not included as part of the package of deliverables.

Note: It was originally intended that the submitted responses would be presented in a summary spreadsheet, this was ultimately not possible as a significant portion of the responses provided were not through Microsoft Forms in the designated format; making it impossible to collate and present the written responses in a consistent manner.

4   Analysis

National Highways' ability to provide clear and appropriate evidence is largely what is being evaluated and analysed through this review. This evidence is intended to serve as indication of the presence and maturity of the asset information management practice within the organisation.

There was no opportunity to analyse the content of the evidence in depth, beyond a high-level review to ensure the evidence is indeed what it is stated to be. In addition, the review is not seeking to validate the detailed contents, quality, efficacy, cross-referential consistency of the evidence provided.

However, it is recognised that conceptually an exercise in evaluating the detail and implementation of the practice is entirely valid and recommended, which would be an effective way to expand on the approach undertaken here, given appropriate time and resources.

4.1 Scoring and Commentary

As a key foundation to the findings and recommendations that follow, the analysis scored the answers based on an objective scorecard that reflects the provision of evidence to support the question topic and detail:

Score	Description
1	Sufficient evidence not provided.
2	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.
3	Some evidence provided | Conflict in information | Some lack of consistency across the company.
4	Credible evidence provided | Little/no conflict in information | Largely consistent across the company.
5	Sufficient evidence provided | Consistent across the company.

Table 6 – Analysis scorecard.

All answers were also accompanied by a short commentary to articulate the rationale behind the scoring – particularly for intermediate scores where there was notable variance in the information or detail that was present or not present.

Where a questionnaire part was distributed to multiple parts of the company, these responses were each provided individual scores and commentary.

Aggregate score and commentary were then collated from the overlapping answers provided, applying the additional scorecard dimensions regarding intra-organisational action and consistency of information provided on the topic.

Finally, for each questionnaire part, a total score was calculated as a sum of the individual scores – both for individual responders and for the collated total.

Ultimately, this scoring serves as an indicator of the maturity of the organisation with respect to evidencing asset information management best-practice. The scoring is not definitive, nor an absolute measure – it is relative to the anticipated level of evidence expected to demonstrate the expected detail of asset information management.

Higher scores equate to a better ability to provide the appropriate evidence for each aspect of asset information management best practice – and therefore indicate the presence and maturity of the practice within the organisation, and suggest to the downstream efficacy of the policy, standards, processes, systems, and people on the development and maintenance of good data.

4.2 Scoring Based on Answers Received

It should be noted that all scores and commentary are applied at the time of the review, based on the responses that were provided.

Non-compliant responses were scored 1; this accounts for information that was uploaded or provided that did not follow the formal structure of the review and includes instances where information and evidence was

provided (that potentially support answers) but were not clearly signposted under the relevant question answer.

As previously stated, the agreed approach did not (and was not intended to) allow for the project team to dissect volumes of unstructured evidence and extract answers on National Highways' behalf.

A core principle of the review approach was to test and promote the ability of National Highways to self-identify, collate, and communicate evidence of its asset information management practice.

4.3 Graphic Presentation of Scores

From the aforementioned scores graphic presentations were developed to demonstrate distribution of responses and visually represent current maturity. Distributions show:

- The distribution of total collated scores as a histogram that shows the number of questions which scored each grade (1-5) within the part. This gives a view of the distribution of question scores that make up the total for the part. See below:
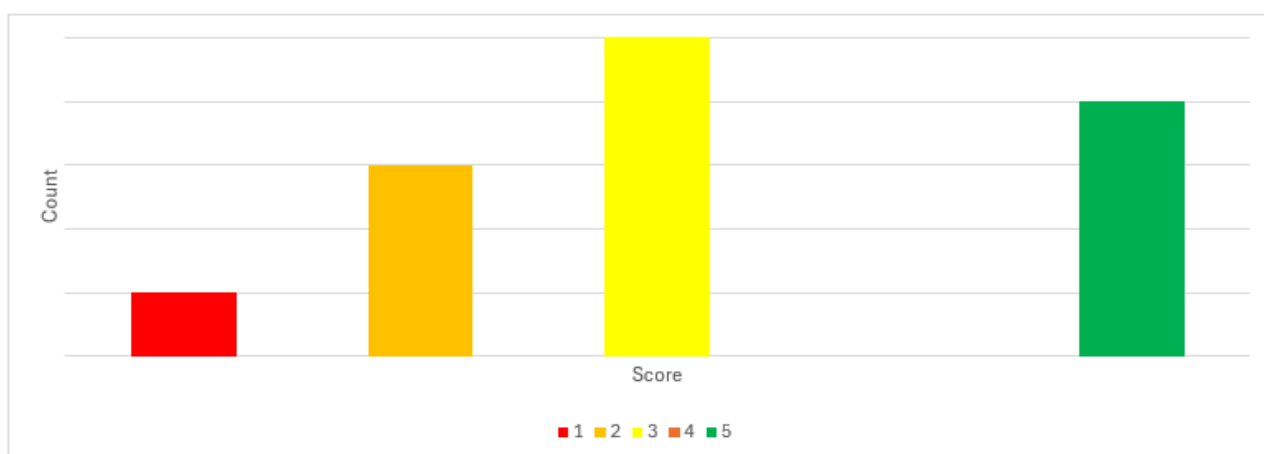
Figure 1 - Example total score distribution (mock data).

- The distribution of individual scores, broken down by responder or alternately by Asset Class (in **Part 4 – Systems**), as a stacked histogram, designed to show the distribution of responses from different parts of the organisation in a "heatmap" view. See below:
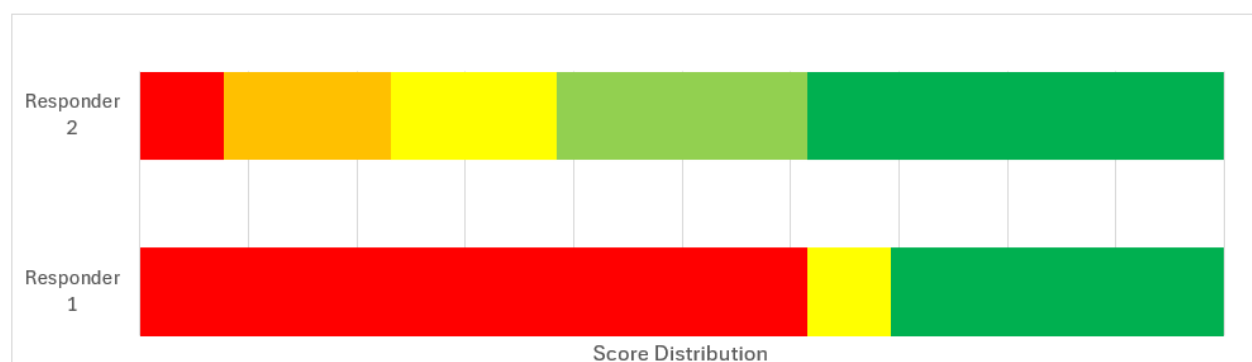
Figure 2 - Example responder score distribution "heatmap" (mock data).

The relevant graphics are embedded in this report, under the corresponding sub-section within section 5 - Results.

4.4   Analysis of "Part 6 – Reporting"

For consistency of approach, the reporting part of the questionnaire was structured similarly to the others focusing on evidence-based answers.

However, this part was less concerned with asset information management practice, and more concerned with understanding the current nature of the regulatory interface between ORR and National Highways.

Accordingly, while the responses have been given scores and commentary, these are more interpretative than parts 1-5.

The nature of the responses provided made individual scores and commentary against each question redundant, therefore a holistic score and commentary has been applied across all questions for the response.

4.5   Analysis Matrix

All scores, commentary, and graphics are collated in the accompanying deliverable analysis matrix.

5   Results

5.1   Detailed Results

The structure of the questions inherently highlights specific and individual aspects of asset information management practice. Therefore, each individual question scoring and commentary within the analysis matrix illustrates a finding.

Regarding specific recommendations for improvement, the commentary may include details of the shortfall. Fundamentally at a granular level, any clear recommendation to be given is an inverse of the question – if the response provided fails to give sufficient evidence for '*XYZ*' question topic, then the recommendation is that National Highways must develop greater capability in identifying and communicating that evidence; logically if the evidence is lacking because of actual lack of practice, it follows that practice should be developed and matured, in order to then be sufficiently evidenced.

With this consideration in mind, the analysis undertaken provides summarising commentary for each part of the questionnaire – outlined in the following sections.

5.2　Part 1 - Policy

Policy: Total Collated Score		
42/65	**65%**	Some evidence provided | Conflict in information | Some lack of consistency across the company.

Table 7 - Part 1 Policy: total collated score.
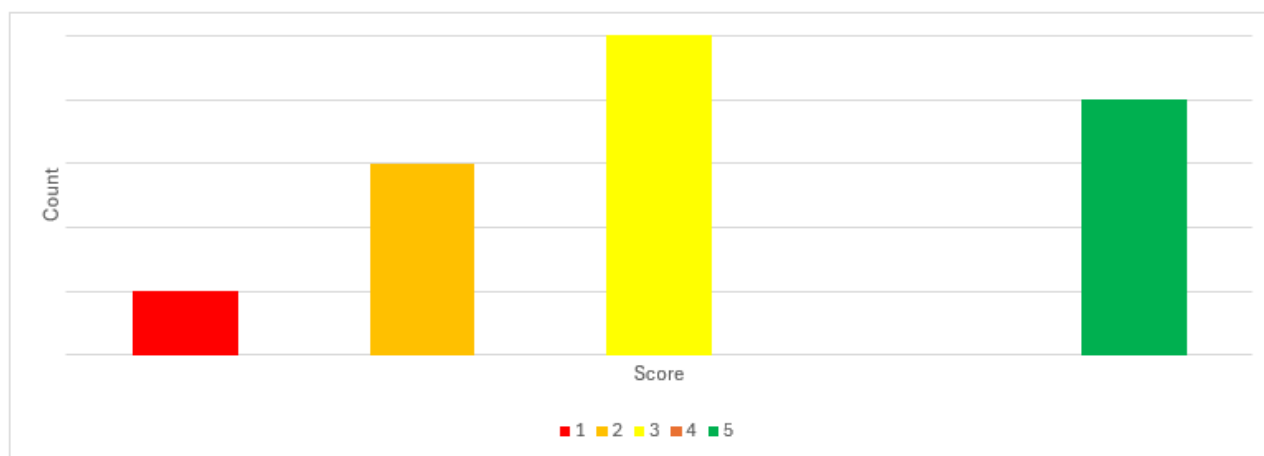
Figure 3 - Part 1 Policy: distribution of total scores.

Figure 4 - Part 1 Policy: distribution of responder scores.

National Highways demonstrated an ability to provide good evidence of overarching Policy and Strategy for asset information management. However, there was a lack of clear evidence provided centric to Planning - i.e. the high-level definition of activities to enable the implementation of the demonstrated Policy and Strategy.

Of particular note, there was a clear and consistent definition of roles and responsibilities around asset information.

Some evidence was provided to highlight detail within the Policy, Strategy, Plan; however, in general, the evidence provided lacked the clear signposting of the detail requested.

The separate responses provided, demonstrate inconsistency in understanding and knowledge across company areas. Critically, with respect to the improvement of asset information, SES were identified by Digital Services as owners of the "Asset Information Improvement Programme (AIIP)" – however SES did not self-evidence the existence of this activity in its answers.

Finally, while evidence provided to demonstrate the development and governance of Policy, Strategy, Planning was acknowledged as being lacking; there was an indication of ongoing action to develop and embed a formal structured approach.

5.3 Part 2 – Standards and Requirements

Standards and Requirements: Total Collated Score		
61/90	68%	Some evidence provided | Conflict in information | Some lack of consistency across the company.

Table 8 - Part 2 Standards and Requirements: total collated score.
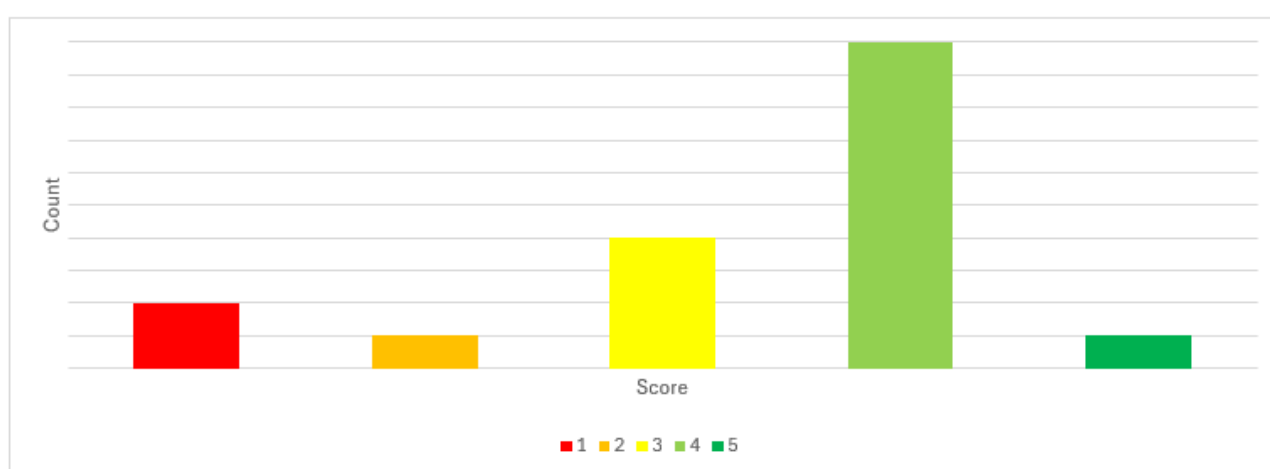
Figure 5 - Part 2 Standards and Requirements: distribution of total scores.

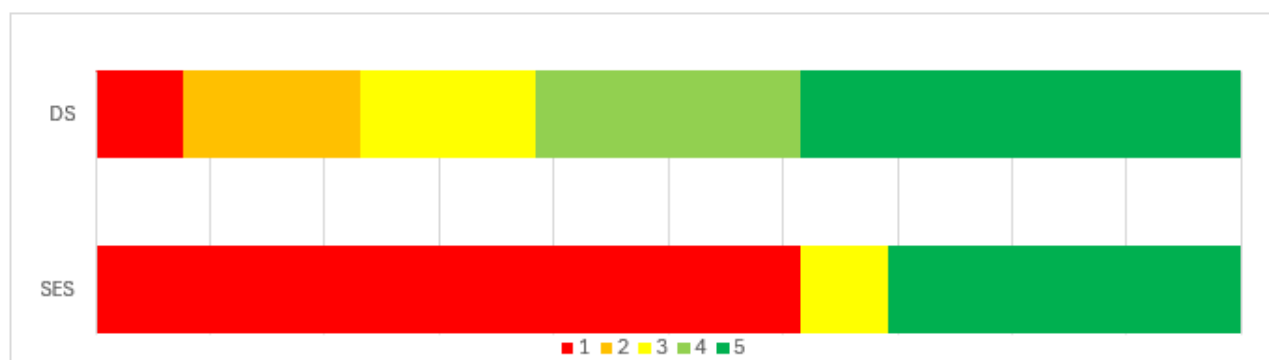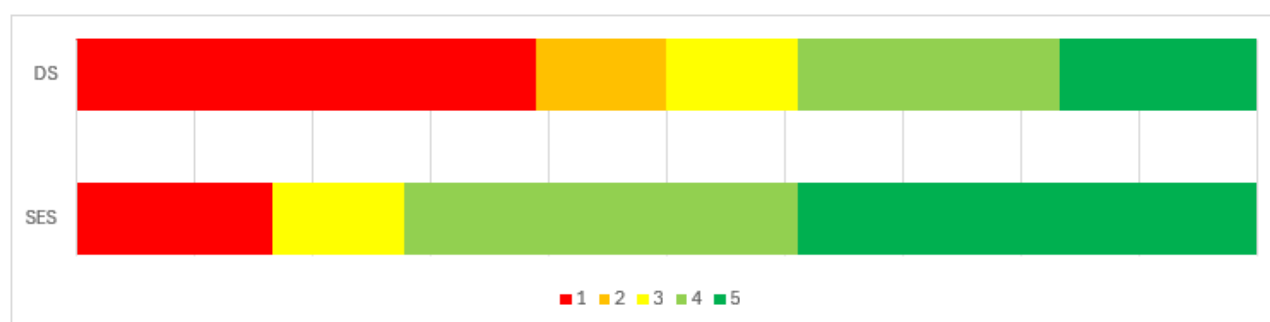Figure 6 - Part 2 Standards and Requirements: distribution of responder scores.

National Highways demonstrated an ability to provide good evidence of overarching data requirements, with strong consistency of information across the various responses. Different aspects of the company indicated slight variation in focus regarding the standards they are responsible for, but collectively they communicated a broadly complete picture of asset information requirements at the high-level.

Evidence of specific requirements varied. There was good evidence for asset information hierarchy, spatial requirements, and quality and condition requirements. The most notable shortcoming related to Criticality – where no evidence was provided of the underlying requirements to support assessment of this metric.

The separate responses provided, demonstrated significant inconsistencies in understanding and knowledge across company areas. There was a common pattern of either SES or Digital Services providing a clear answer to a specific question, and the other providing no evidence or answer despite the expectation of an answer from both quarters.

While this could be further indicative of divided responsibilities – it suggests a lack of a joined-up approach across the company, with respect to asset information standards and requirements.

Evidence of development and governance of standards and requirements was provided, but only partially covered the requirements identified; the Design Manual for Roads and Bridges (DMRB) and Asset Data Management Manual (ADMM) show clear and structured governance, however National Highways acknowledge that the Information Management System (IMS) is lacking a clear development and governance approach at this time.

Finally, regarding the communication, dissemination, and embedment of requirements, responses mirrored a similar inconsistency to governance – with DMRB and ADMM showing evidence of its embedment, while the IMS was lacking evidence of embedment.

5.4   Part 3 – Processes

Processes: Total Collated Score		
73/100	**73%**	Credible evidence provided | Little/no conflict in information | Largely consistent across the company.

Table 9 - Part 3 Processes: total collated score.
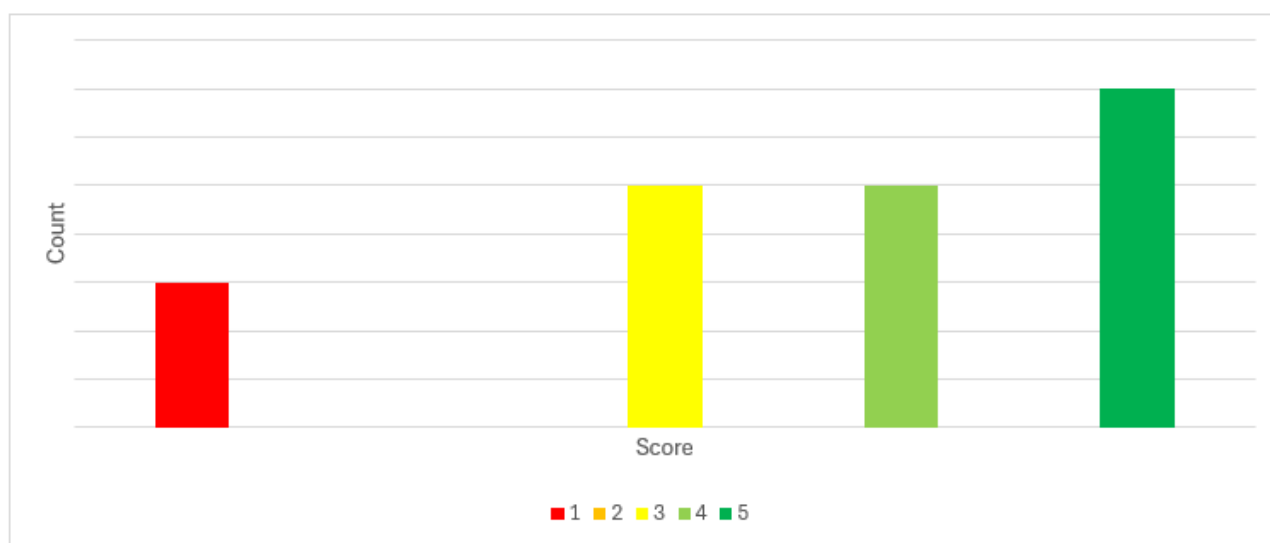
Figure 7 - Part 3 Processes: distribution of total scores.
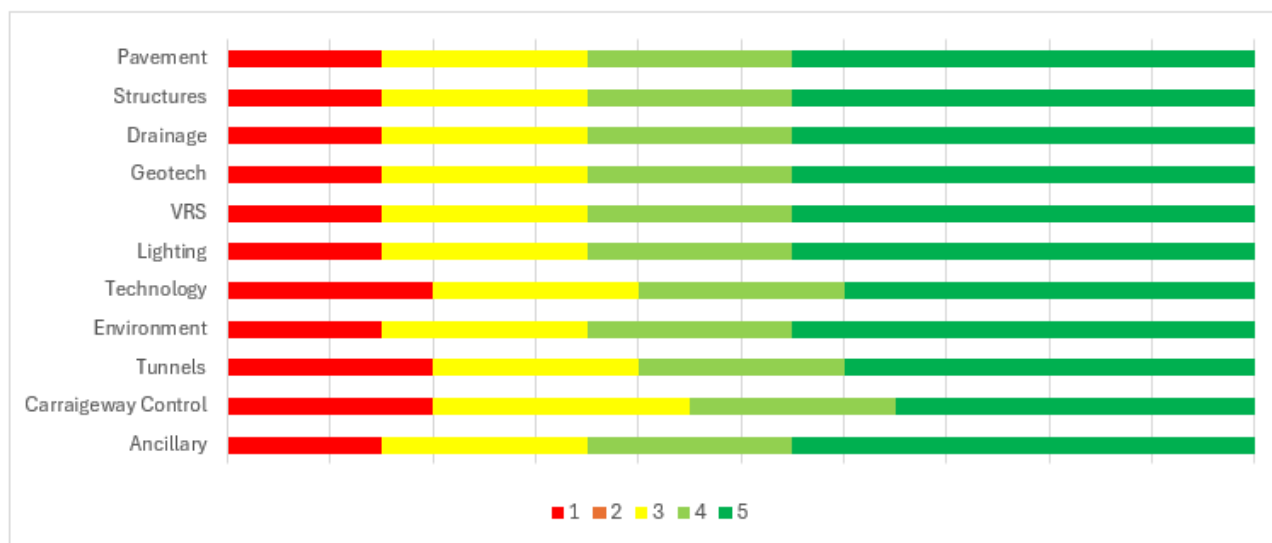
Figure 8 - Part 3 Processes: distribution of responders scores (by asset class).

National Highways demonstrated an ability to provide reasonable evidence of its asset information processes.

Responses were provided across the asset classes, with some evidence applying to all classes and some evidence corresponding to individual classes.

The approach to capturing, receiving, and storing data that supports the Licence was generally evidenced well – with a handful of specific exceptions for individual classes.

The approach to decision-making was only moderately evidenced across the board; with some formal process in place, but lack of significant detail to signpost the specific aspects that relate to the "4Cs".

The other notable shortfall was regarding evidence for the process of data condition and quality assessments. No clear evidence was provided from the Operations group. It should be noted, that other answers in the review (Part 1 – Policy and Part 2 - Standards) indicate that this knowledge exists within Digital Services, and it shows inconsistency in knowledge and understanding across the company that Operations did not signpost this centralised approach in its answer.

Finally, evidence provided to show the governance and embedment of processes was strong – with a clear formalised process managed by a central team.

5.5   Part 4 – Systems

Systems: Total Collated Score		
17/45	**38%**	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.

Table 10 - Part 4 Systems: total collated score.
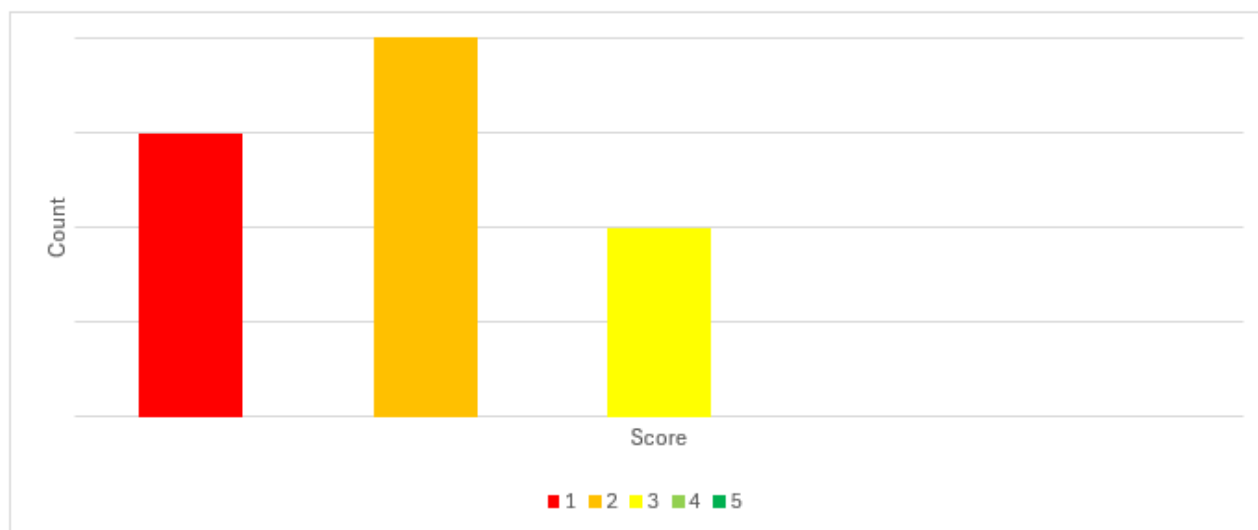


Figure 9 - Part 4 Systems: distribution of total scores.
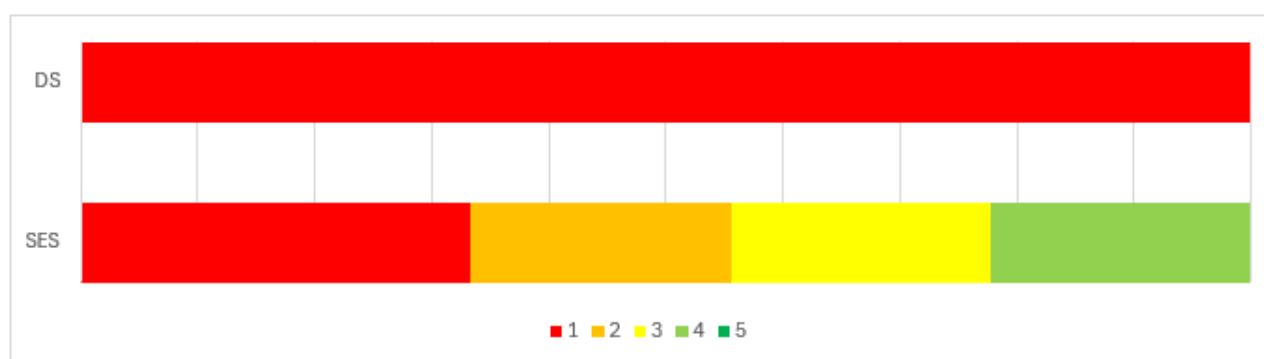
Figure 10 - Part 4 Systems: distribution of responder scores.

Concerning systems, responses were influenced by the fact that National Highways demonstrated a clear issue identifying the correct knowledge within the company, and directing the enquiry to the qualified individuals. SES and DS were proposed as the responders – however on initial distribution the questions were only directed to SES.

Digital Services were then included at a later stage – providing a package of evidence, but no context or answers to the individual questions asked.

Of the answers provided, National Highways struggled to demonstrate evidence of a consistent and clear approach to the management and implementation of its systems.

Foremost, clear identification of the key asset information systems was incomplete; SES were able to identify some key asset systems that they are responsible for: GDMS (Drainage and Geotechnical), P-AMS (Pavements) and IAM-IS (Structures and NOMS). However, this is not a complete picture of asset information management systems for all asset classes.

Finally, there was no evidence for the governance or management of the systems, despite this being referenced in the responses concerning Policy, Strategy, Planning.

5.6   Part 5 – Roles and Responsibilities

Roles and Responsibilities: Total Collated Score		
12/25	**48%**	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.

Table 11 - Part 5 Roles and Responsibilities: total collated score.
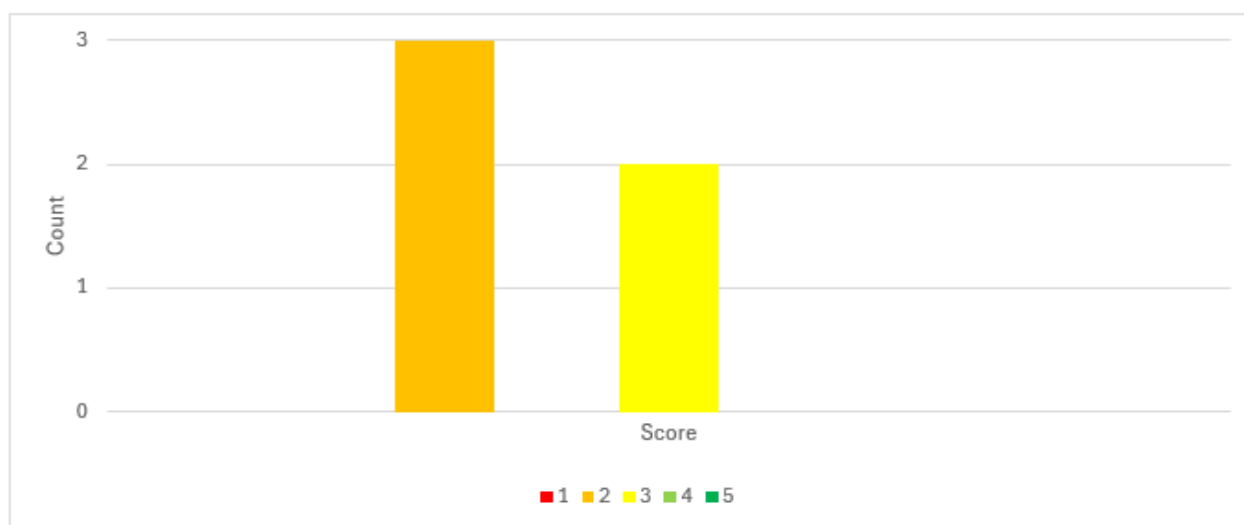

Figure 11 - Part 5 Roles and Responsibilities: distribution of total scores.
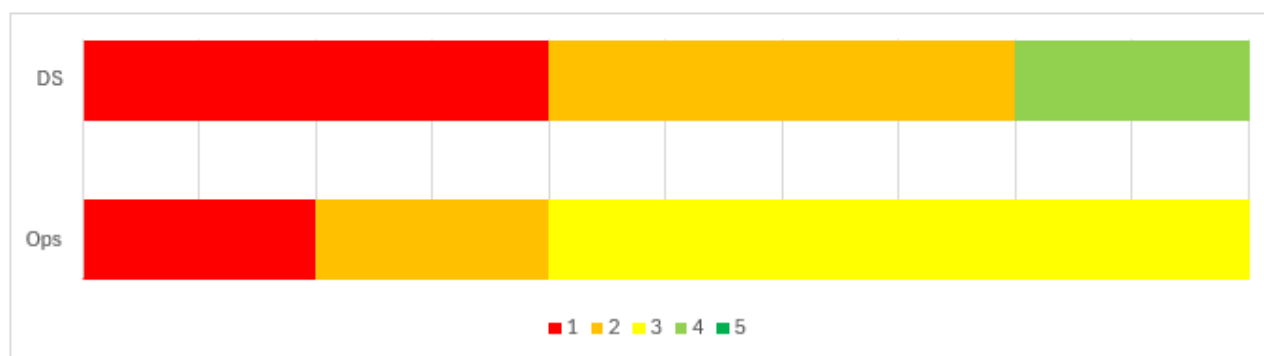
Figure 12 - Part 5 Roles and Responsibilities: distribution of responder scores.

As with **Part 4 – Systems**, responses were influenced by the fact that National Highways demonstrated difficulty in identifying and accessing the correct knowledge within the company.

Operations and Digital Services were the proposed responders. Digital Services completed the questionnaire as instructed. Operations did not complete the questionnaire to provide structured responses – instead providing a package of uncollated evidence or answers from multiple sources.

As observation, this inconsistent approach to providing evidence emphasised the minimal coordination in articulating the practice the company is undertaking. Clearly substantial knowledge and expertise exists, suggesting at the presence of effective practice, but its expression is not managed, reported or enabled in a consistent and effective way.

While the unstructured responses were reviewed, and some clear answers taken as given these non-compliant answers impacted the scoring.

Overall, there was minimal evidence for the detail of clear definition and fulfilment of roles and responsibilities for asset information management (despite these things being reasonably evidenced at a high-level in the Policy part of the review).

Finally, there was also minimal evidence for any formal governance of the roles and responsibilities, and the establishment of the needs for a role and the assignment and assessment (both initial and ongoing) of individuals with the appropriate experience or skills to fulfil them.

5.7   Part 6 – Reporting

Reporting: Total Collated Score		
16/40	40%	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.

Table 12 - Part 5 Reporting: total collated score.

Reporting has been judged with a more subjective and flexible approach to the other sections; the nature of the responses provided only partially answer the questions in terms of detail, however, give clear insight into the situation between the two organisations.

The interface between ORR and National Highways has a formal legislative foundation, outlined in an interrelated set of legislative and regulatory documents, that are published and publicly available. Both organisations provided consistent evidence that showed its understanding and acknowledgement of this relationship and the obligations within it.

The essence of the interface is that National Highways have an obligation to self-monitor. This includes the development of the structure, processes, metrics or measures, and interfaces for reporting evidence of its Licence compliance to ORR.

In the case of Licence Condition 5.9, National Highways is expected to develop the ability to clearly define the reporting benchmark and demonstrate its ability to meet it with respect to asset information management.

While the central team within the company responsible for the regulatory relationship fully acknowledged this, there is a lack of any evidence for the implementation of this responsibility.

5.8   All Parts – Summary

Collating the above analysis and scores, summary for all parts is as follows:

All Parts: Total Collated Scores			
1	Policy	65%	Some evidence provided | Conflict in information | Some lack of consistency across the company.
2	Standards and Requirements	68%	Some evidence provided | Conflict in information | Some lack of consistency across the company.
3	Processes	73%	Credible evidence provided | Little/no conflict in information | Largely consistent across the company.
4	Systems	38%	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.
5	Roles and Responsibilities	48%	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.
6	Reporting	40%	Minimal evidence provided | Significant conflict in information | Clear lack of consistency across the company.

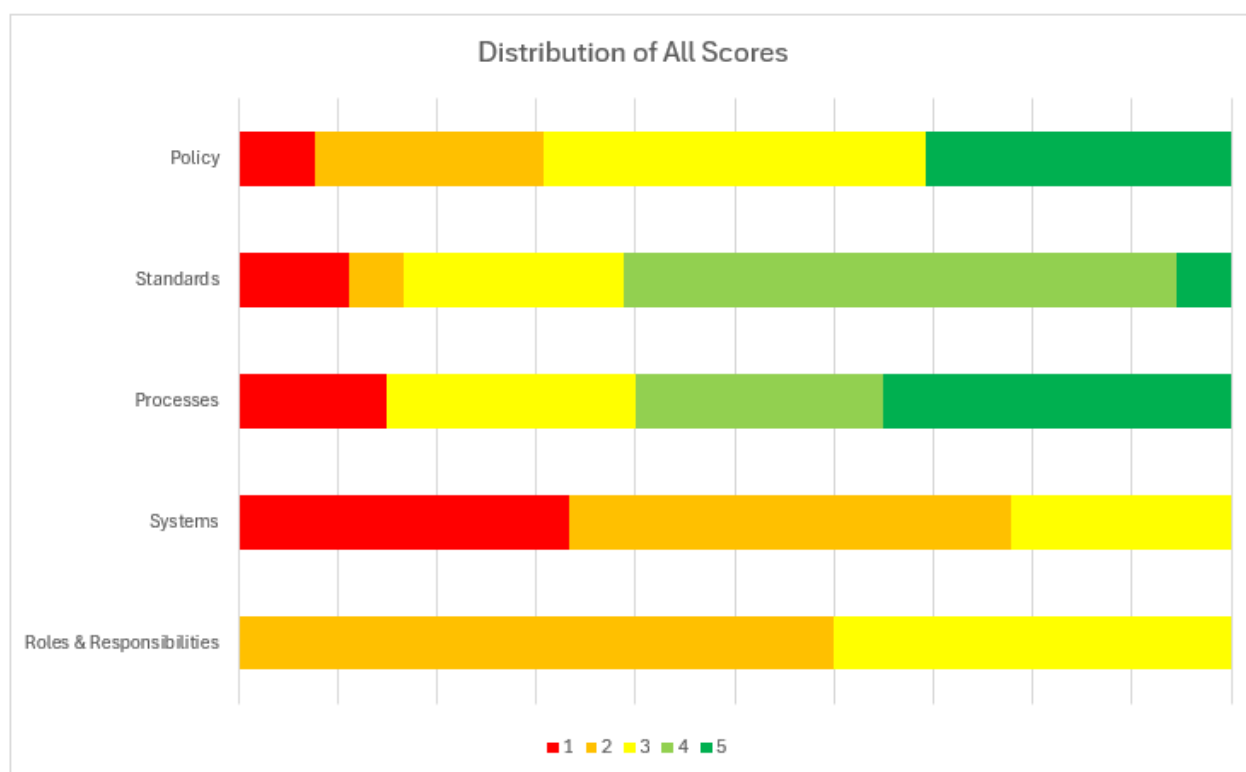*Table 13 – All Parts: summary of total collated scores.*

Figure 13 - All Parts: distribution of collated scores.

The "heatmap" shows the distributed strengths and weaknesses of the organisation's evidence-based reporting across the broad areas of asset information management.

6 Findings and Recommendations

As stated, individual topic-specific recommendations apply in the scores and commentary against each question response. However, it is acknowledged that the scope of this task and the information provided precluded a highly specific analysis and the review did not undertake a a deep-dive on the individual pieces evidence for National Highways asset information management practice.

What can be concluded is more with regard to a broad observation of National Highways' ability to evidence practice and its interface with the ORR. Based on the results of this review, and the lessons learned through its undertaking, a number of high-level observations are potentially more relevant at this time – providing insight into the current **reporting practice** within National Highways, and what both organisations could potentially do to improve the capability of National Highways to evidence its ability to meet the Licence requirements to the ORR.

The findings and recommendations below reflect this, and generally emphasise this more holistic view:

Finding 1 – National Highways' Awareness and Embedment of Reporting Obligations

The responses from both National Highways and ORR on **Part 6 Reporting** identified an overarching take-away that contextualise the remainder of the review findings and recommendations.

The information provided indicated that there is a clearly defined National Highways ↔ ORR relationship, in legislative and regulatory terms, that shows National Highways holds a responsibility to self-develop its reporting practice.

National Highways' central Performance and Regulatory Compliance team acknowledged this obligation, and fundamentally mirrored the information provided by ORR on the topic, indicating that they recognise the need for National Highways to self-report on its License.

However, at each step of undertaking this review – engaging and priming stakeholders, developing the framework for provision of evidence of asset information practice, and receiving responses – it is evident that this obligation is not effectively embedded within the organisation, with both a lack of understanding and subsequent reporting practice. This review has demonstrated that National Highways is largely unprepared for reviews of this nature having never been prompted to report on this Licence condition specifically.

While the organisation is centrally aware of the nature of the interface with the ORR, the regulatory relationship, and National Highways obligation to self-monitor – it is suggested that this is not widely understood across the company. This is especially important when considering that the individuals or teams that are necessarily knowledgeable and capable of providing explanation of National Highways' asset information management practice are not fully informed of its obligation, supported, and prepared to fulfil it.

Critically, while awareness may be present to some degree, the significance of enacting that responsibility to develop, collate, and provide evidence was lacking.

Recommendation 1 – Communication, Culture, and Ownership of Responsibility

Reflecting on this finding, it is recommended that National Highways review its organisation-wide understanding of this obligation to self-report.

This likely involves the communication and engagement with key stakeholders across the business – those individuals who possess the technical expertise to effectively articulate the compliance with Licence condition 5.9 (i.e. those who have responsibility and action with respect to the management of asset information). This applies across all elements of the asset information landscape, as per the review undertaken within this task:

- Policy, Strategy, and Planning

- Standards and Requirements

- Processes

- Systems

- Roles and Responsibilities

- Reporting

What should be established is a clear understanding and culture of the proactive need for National Highways to self-report, and their responsibility to develop the appropriate mechanisms to do so – without necessarily being subject to audit, review, or other prompting from the ORR.

Finding 2 – National Highways' Ability with respect to Provision of Evidence

As a natural consequence of Finding 1, this review has showed that National Highways demonstrates moderate to poor ability to provide evidence of its asset information management practice at this time. However, it is clear that a significant portion of the shortfall relates to its inability to respond to the reporting obligations. At this time, it is difficult to differentiate a lack of practice (and subsequent concern over Licence compliance) from an underdeveloped ability to evidence said practice.

It is suggested that National Highways are immature when it comes to developing and undertaking an approach to report on its asset information management activity.

There is a lack of a clear, structured, and coordinated approach to developing, collating, and communicating evidence to support the specific detail that would be expected when demonstrating Licence compliance. This would be expected to reflect and cover the breadth of the asset information management industry best practice – as per relevant standards (e.g. ISO documentation).

Recommendation 2a – Develop Framework to Facilitate Provision of Evidence for Asset Information Management Practice

In overview – as the most significant finding from this review – National Highways need to improve on how it demonstrates adherence to Licence condition 5.9. It is recommended that a more robust, structured approach could be taken, establishing and enacting a framework for the development, collation, and communication of evidence to demonstrate its effective asset information management practice.

The delivery and content of this works package – the development, undertaking, and coordination of a review into evidencing asset information management practice in line with Licence condition 5.9 – represents an example of the kind of activity that National Highways should be prepared for (and undertaking autonomously, without specific prompting from ORR).

It is suggested that National Highways could build upon the approach used in this review, making further refinements to ensure that the approach its fine-tuned for the organisation. Ultimately this would represent a reporting framework, specifically tailored to Licence condition 5.9, designed to address the specifics of asset information management.

This includes:

- Enact central ownership and roles and responsibilities for developing and delivering a reporting framework.

- Identifying all stakeholders related to asset information management, who provide the knowledge and experience to evidence practice.

- Developing communications and training to ensure all relevant stakeholders are knowledgeable of National Highways' reporting obligation, and its role within the reporting framework.

- Developing a structured approach to reporting on asset information management practice. Reflecting the approach used in this review, this distils standards and industry best-practice into individual evidence-based needs – that can then be fulfilled to demonstrate practice. Refinement of the granularity, terminology, etc. is recommended to ensure this is tailored to National Highways.

- Agreeing a reporting frequency and approach to undertaking successive reports.

- Developing a relationship with ORR to routinely communicate the framework and reporting approach, ideally in advance of providing reporting results for the period.

- Developing the relationship with ORR and agreeing the mechanism for reporting results to be provided.

This may supplement or align to other reporting methods, what is recommended is that this element is developed to ensure that the highly technical detail relevant to asset information management is effectively considered and represented in the reporting approach.

Recommendation 2b – Alignment and Interface with National Highways Reporting Framework

Assuming National Highways takes forward these recommendations (in part or full), ORR should continue to work with National Highways as it develops more a more robust, tailored, and technically specific approach to reporting on its asset information management practice.

This includes review and input on methods of communication and reporting; particularly when agreeing the technical aspects of what evidence is expected to demonstrate good practice for each aspect of asset information management, in line with industry best-practice.

It is recommended that this expands on the key principle outlined within this investigation; that evidence of practice is an appropriate proxy to measure the underlying result of that practice. In the case of asset information management, good practice inherently indicates good underlying data (quality, condition, and usability).

While not intended to fully replace traditional methods of evaluation – e.g. metrics and data quality evaluation – this is intended as a more efficient approach that can overlay and supplement reporting.

This approach would allow National Highways to be pre-emptively prepared with a consistent, repeatable, and technically specific method for evidencing its asset information management practice. Such a framework would ensure that the reporting responsibility is met on a routine basis.

Furthermore, establishing such a framework is a first step that would then offer a clear and structured basis to reflect on reporting and further refinements. It is recommended that this approach could be iterated on, integrating lessons learned from previous reporting, and ORR feedback, to tailor the wider governance and reporting of asset information management to address the needs of the company with respect to its asset management practice and overarching obligations to the monitor.

Finding 3 – National Highways License Self-Assurance Process

Subsequent to the review, in response to preview of the draft task findings within this report, National Highways indicated that they maintain and carry out a "licence self-assurance process".

This process is described as having regular review of each License clause and associated evidence for it – ensuring that the Licence compliance is reviewed within each RIS period.

It should be highlighted that this process was not clearly referred to prior to completion of the review activity within this project, during any of:

- The development of the task scope.

- Initiation with senior stakeholders, and agreement of the task activity and approach.

- Development and validation of the review approach, including validation of the questionnaire methodology and individual questions within it.

Accordingly, it is difficult to evaluate the influence that this existing process may have on the other findings and recommendations reported here, and the wider efficacy of National Highways ability to evidence compliance with specific License conditions.

What is observed is the conspicuous lack of acknowledgement of this process within the review – particularly from other areas of the company, outside the Performance and Regulatory Compliance team – this reinforces Findings 1 and 2; suggesting that awareness and embedment of the necessary self-reporting activity requires further maturation.

Recommendation 3 – Alignment and Enhancement of Existing Reporting Processes

National Highways existing approach to reporting should be reflected upon considering Recommendations 1 and 2a.

It is possible to adapt and align the existing reporting approach and processes to enhance the evidence provided, particularly with respect to the technically specific aspects related to asset information management and Licence condition 5.9.

Finding 4 – Maturity of Asset Class Asset Information to Support the 4Cs

With regard to commentary on the maturity and capability of each asset Class within National Highways in respect to asset information that supports the 4Cs, the methodology anticipated granular responses on a class-by-class basis for **Part 2 Requirements and Standards**, **Part 3 Systems**, and elements of **Part 4 Systems**.

Ultimately, National Highways responses differed from the level of granularity expected:

- **Part 2 Requirements and Standards** – responses provided were consolidated into a single set of answers to the questions, with no class-by-class differentiation. This section scored moderately, suggesting what can be concluded is a similar level of maturity across the classes.

- **Part 3 Processes** – responses provided did differentiate the asset classes. What can be concluded from that part is that evidence of processes is similar across the asset classes – showing credible evidence and little/no conflict for processes.

- **Part 4 Systems** – responses provided only identified specific asset information management systems for some of the asset classes. This clear gap in providing answers with regard to several asset information systems (that are known to exist for the respective classes) suggests the potential of significantly differing maturity for different systems across the company.

Overall, these observations should be caveated behind the more fundamental overarching finding that at this time National Highways struggled with its ability to identify, collate, and communicate the requisite evidence.

Recommendation 4 – Class-by-class Reporting Granularity

Based on the findings, it is recommended that any proposed refinements to reporting practice and/or development of improved reporting framework account for the requisite granularity of reporting suggested by ORR. This includes the provision of evidence that clearly demonstrates the relative maturity of the individual asset classes with respect to asset information management.

Accordingly, this may involve parallel streams of evidence, to address the same point for the various asset classes. Reporting structure and communication should be managed accordingly to clearly differentiate these streams and enable evaluation of each asset class separately or as a whole.

Parallel streams are likely required across:

- Standards and Requirements

- Processes

- Systems

- Roles and Responsibilities

Note, the Policy, Strategy, Planning and Reporting aspects of asset information management are generally more holistic and apply across the classes. However, where these significantly vary between classes further granularity can be shown if relevant.

Finding 5 – Asset Information Quality and Confidence

With regards to asset information quality and confidence, as stated the methodology intended that evidence of good practice was to be taken as a proxy for evidence of good data and/or confidence in the data held.

Based on the responses provided, the analysis struggled to make a clear statement on the quality and confidence of National Highways asset information. In principle, the lack of effective evidence of good practice was to be taken as evidence that there is a lack of data quality and confidence.

Again, this observation should be caveated behind the more fundamental overarching finding that at this time National Highways struggled with its ability to identify, collate, and communicate the requisite evidence.

What is clear is that National Highways have evidence of capability and activity to undertake measures of data quality, condition, health, or confidence. This aspect of its practice appears reasonably mature in isolation and is only undermined by the wider questions around the requisite landscape of supporting practice that would collectively indicate good data.

Recommendation 5 – Ensuring Information Quality and Confidence

As stated, the principle that evidence of good practice indicates good information quality and confidence is reasonable – and is upheld through the other recommendations provided.

However, to reiterate, any improvements National Highways makes to its reporting practice – e.g. development of a structured framework – should consider the through-line between demonstration of practice and the underlying data. This manifests as evidence for specific technical aspects of asset information management, such as individual requirements or processes related to key decision-making information that directly show quality.

Additionally, it is recommended that National Highways continue to use traditional methods to actually assess asset information datasets, using metrics and measures for data quality, condition, health, or confidence, as appropriate.

7 Deliverables Package

The deliverables for this works package include:

- Review report (this document):

  ORR_NH_Review_Report_v1.1_20250117

- Review analysis matrix:

  ORR_NH_Review_Analysis_Matrix_v0.1_20241212

- Review Guidance document:

  ORR_NH_Review_Stakeholder_Information_20241212

Additional:

- Review Responses SharePoint site (care of frances.stanley@nationalhighways.co.uk)

Appendices: Full Questionnaire

As stated, the full questionnaire is included below (parts 1-6). This is for visibility and information only, and does not reflect the responder experience; where all questions were presented and answered through the online web platform.

Appendix A.   Part 1 – Policy

This part of the review concerns the strategic aspects of National Highways asset information management. In accordance with industry best-practice, the expectation is a demonstration of the policy, strategy, and planning that underpins asset information management practice within the company; enabling compliance with Licence Condition.

Respondee Details

1. Enter your name

2. Directorate

   – SES

   – Operations

   – Digital Services

   – Major Projects

   – FBS

   – ORR

   – Other *[free text]*

3. Group / Team

4. Role / Job Title

Policy

For the following questions, please provide evidence in the form of uploaded documents or links to standards / resources / etc. accompanied by a short description of the evidence provided.

5. Evidence your Asset Information Policy

   Please include a description of your evidence. If you are not uploading evidence, please include any links to evidence within the text.

6. Upload evidence of your Asset information Policy *[file upload]*

Strategy

For the following questions, please provide evidence in the form of uploaded documents or links to standards / resources / etc. accompanied by a short description of the evidence provided.

7. Evidence your Asset Information Policy

Please include a description of your evidence. If you are not uploading evidence, please include any links to evidence within the text.

8. Upload evidence of your Asset information Policy *[file upload]*

Planning

For the following questions, please provide evidence in the form of uploaded documents or links to standards / resources / etc. accompanied by a short description of the evidence provided.

9. Evidence your Asset Information Planning

Please include a description of your evidence. If you are not uploading evidence, please include any links to evidence within the text.

10. Upload evidence of your Asset information Planning *[file upload]*

Detail within Policy / Strategy / Planning

With respect to the evidence provided in the previous sections, please provide detail as per the following questions. Detail should include some description and a specific reference to the evidence (e.g. document / page / section / clause / etc.)

Reminder when referring to the 4Cs, see the definitions below:

- **Condition** - *a record of the physical state of the asset.*

- **Capability** - *a record of the assets' ability to fulfil its purpose on the Strategic Road Network.*

- **Capacity** - *a record of the assets' remaining life (i.e. 100% is full design-life remaining, 0% is failure at end-of-life).*

- **Criticality** - *a record of the assets' importance (i.e. the safety and performance implications on the Strategic Road Network should the asset fail).*

11. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the identification of asset information needs that support the **4Cs**.

12. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the company' approach to gap analysis of the current information VS the need.

13. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the company' approach to cost-benefit of providing these needs.

14. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the definition of the accountabilities for asset information management.

15. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the definition of the responsibilities for asset information management.

16. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the definition of asset information system implementation policy / planning.

17. Specifically reference the detail within the Policy / Strategy / Planning that addresses: the definition of process for improvement of asset information.

18. Specifically reference the detail within the Policy / Strategy / Planning that addresses: description of the asset information improvement programme(s) which support and enact this improvement.

Development and Governance of the Policy / Strategy / Planning

With respect to the evidence provided in the previous sections, please provide detail on the way this is developed and subject to review / change / updates (including inputs / drivers, frequency of updates and responsible individuals, lessons learned / continuous improvement).

19. Evidence the approach to development and governance of the Policy / Strategy / Planning

20. Evidence the approach and/or actions undertaken to embed this Policy / Strategy / Planning within the company, i.e. communication, transfer of ownership to responsible individuals, performance management.

21. Upload any formal / structured evidence for the development, governance, and embedment. *[file upload]*

Appendix B.   Part 2 – Standards and Requirements

This part of the review concerns the documented standards and requirements that define National Highways asset information management practice.

In accordance with industry best-practice, the expectation is a demonstration of the relevant standards and requirements that the company uses and maintains; enabling compliance with Licence Condition 5.9.

Respondee Details

1. Enter your name

2. Directorate

   – SES

   – Operations

   – Digital Services

   – Major Projects

   – FBS

   – ORR

   – Other *[free text]*

3. Group / Team

4. Role / Job Title

Asset / Operational Focus

Throughout this part of the questionnaire, the questions have multiple parallel answers for different asset classes / operational specialisms. Please indicate up front which area is the focus of your answers. Note this part of the questionnaire may be repeated to cover all the options below.

5. Select relevant Asset Class / Operational Specialism

– Pavement

– Structures

– Drainage

– Geotechnical

– Vehicle Restraint Systems

– Lighting

– Technology

– Environmental

– Tunnels

– Carriageway Control

– Ancillary

– Other *[free text]*

Data Requirements

With respect to the stated Asset Class / Operational Specialism, for the following questions, please provide evidence in the form of uploaded documents or links to standards / resources / etc. accompanied by a description of the evidence provided.

6. Evidence your data requirements, e.g. data dictionaries / specifications

   Please include a description of your evidence. If you are not uploading evidence, please include any links to evidence within the text.

7. Upload evidence of your data requirements. *[file upload]*

Detail within the Data Requirements

With respect to the evidence provided in the previous sections, please provide detail as per the following questions. Detail should include some description and a specific reference to the evidence (e.g. document / page / section / clause / etc.)

Reminder when referring to the 4Cs, see the definitions below:

- **Condition** - *a record of the physical state of the asset.*

- **Capability** - *a record of the assets' ability to fulfil its purpose on the Strategic Road Network.*

- *Capacity* - a record of the assets' remaining life (i.e. 100% is full design-life remaining, 0% is failure at end-of-life).

- *Criticality* - a record of the assets' importance (i.e. the safety and performance implications on the Strategic Road Network should the asset fail).

8. Specifically reference detail within the requirements that addresses: the definition of Asset Hierarchy.

   e.g. the categorisation of assets by form / type / etc. and the physical relationships between assets / components.

9. Specifically reference detail within the requirements that addresses: approach for the geographic positioning of assets.

10. Specifically reference detail within the requirements that addresses: definition of the required attributes, acceptable values, and constraints.

11. Specifically reference detail within the requirements that addresses: specific entities / attributes that support **Condition** (**4Cs**)

12. Specifically reference detail within the requirements that addresses: specific entities / attributes that support **Capability** (**4Cs**)

13. Specifically reference detail within the requirements that addresses: specific entities / attributes that support **Capacity** (**4Cs**)

14. Specifically reference detail within the requirements that addresses: specific entities / attributes that support **Criticality** (**4Cs**)

15. Specifically reference detail within the requirements that addresses: the definition of the minimum frequency for data review and updates, to enable company decision-making.

16. Specifically reference detail within the requirements that addresses: the definition of data quality requirements.

17. Specifically reference detail within the requirements that addresses: the definition of data condition requirements.

18. Specifically reference detail within the requirements that addresses: the definition of the required metadata to accompany datasets – to support users in contextualising data for decision-making, understanding its derivation, and establishing trust in the data.

19. Specifically reference detail within the requirements that addresses: the definition of data primacy, i.e. which data in which system is prime, for each asset class.

20. Specifically reference detail within the requirements that addresses: the definition of data retention and disposal requirements.

21. Specifically reference detail within the requirements that addresses: the attaining of third-party data sources, including what metadata or supporting material is to be provided.

Development and Governance of Standards and Requirements

With respect to the evidence provided in the previous section, please provide detail on the way this is developed and subject to review / change / updates (including inputs / drivers, frequency of updates and responsible individuals, lessons learned / continuous improvement).

22. Evidence the approach to development and governance of the Standards and Requirements.

23. Evidence the approach to managing the interoperability of standards, e.g. relating and referencing the standards and requirements across different libraries.

24. Evidence the approach and/or action undertaken to embed and share these standards with the wider company and supply chain, e.g. publication / hosting / access / training / etc.

25. Upload any formal / structured evidence for the development, governance, and embedment. *[file upload]*

Appendix C.   Part 3 – Processes

This part of the review concerns the processes that enact National Highways asset information management practice.

In accordance with industry best-practice, the expectation is a demonstration of the relevant processes that the company uses and maintains; enabling compliance with Licence Condition 5.9.

Respondee Details

1. Enter your name

2. Directorate

   – SES

   – Operations

   – Digital Services

   – Major Projects

   – FBS

   – ORR

   – Other *[free text]*

3. Group / Team

4. Role / Job Title

Asset / Operational Focus

Throughout this part of the questionnaire, the questions have multiple parallel answers for different asset classes / operational specialisms. Please indicate up front which area is the focus of your answers. Note this part of the questionnaire may be repeated to cover all the options below.

5. Select relevant Asset Class / Operational Specialism

- Pavement

- Structures

- Drainage

- Geotechnical

- Vehicle Restraint Systems

- Lighting

- Technology

- Environmental

- Tunnels

- Carriageway Control

- Ancillary

- Other *[free text]*

Processes

With respect to your stated Asset Class / Operational Specialism, for the following questions, please provide evidence in the form of uploaded documents or links to standards / resources / etc. accompanied by a short description of the evidence provided.

6. Evidence your processes that enact policy and fulfil the company' data requirements

   Please include a description of your evidence. If you are not uploading evidence, please include any links to evidence within the text.

7. Upload evidence of your processes. *[file upload]*

Detail within the Processes

With respect to the evidence provided in the previous sections, please provide detail as per the following questions. Detail should include some description and a specific reference to the evidence (e.g. document / page / section / clause / etc.)

Reminder when referring to the 4Cs, see the definitions below:

- **Condition** - *a record of the physical state of the asset.*

- **Capability** - *a record of the assets' ability to fulfil its purpose on the Strategic Road Network.*

- **Capacity** - *a record of the assets' remaining life (i.e. 100% is full design-life remaining, 0% is failure at end-of-life).*

- *Criticality* - *a record of the assets' importance (i.e. the safety and performance implications on the Strategic Road Network should the asset fail).*

8. Specifically reference the detail within the processes that addresses: the approach to capturing data that supports **Condition** (**4Cs**).

9. Specifically reference the detail within the processes that addresses: the approach to capturing data that supports **Capability** (**4Cs**).

10. Specifically reference the detail within the processes that addresses: the approach to capturing data that supports **Capacity** (**4Cs**).

11. Specifically reference the detail within the processes that addresses: the approach to capturing data that supports **Criticality** (**4Cs**).

12. Specifically reference the detail within the processes that addresses: the approach to storing data that supports **Condition** (**4Cs**).

13. Specifically reference the detail within the processes that addresses: the approach to storing data that supports **Capability** (**4Cs**).

14. Specifically reference the detail within the processes that addresses: the approach to storing data that supports **Capacity** (**4Cs**).

15. Specifically reference the detail within the processes that addresses: the approach to storing data that supports **Criticality** (**4Cs**).

16. Specifically reference the detail within the processes that addresses: the approach to decision-making data that supports **Condition** (**4Cs**).

17. Specifically reference the detail within the processes that addresses: the approach to decision-making data that supports **Capability** (**4Cs**).

18. Specifically reference the detail within the processes that addresses: the approach to decision-making data that supports **Capacity** (**4Cs**).

19. Specifically reference the detail within the processes that addresses: the approach to decision-making data that supports **Criticality** (**4Cs**).

20. Specifically reference the detail within the processes that addresses: the approach to handover / receiving data from third parties and partners, e.g. suppliers / schemes / Major Projects / DBFOs.

21. Specifically reference the detail within the processes that addresses: the approach to migrating / sharing data within the company while maintaining primacy requirements, e.g. data roundtripping, provision of data cuts, and mirroring data in multiple systems simultaneously.

22. Specifically reference the detail within the processes that addresses: the sharing and round-tripping of data with third-parties, e.g. schemes and project suppliers.

23. Specifically reference the detail within the processes that addresses: the approach to assessing data quality.

24. Specifically reference the detail within the processes that addresses: the approach to assessing data condition.

Development and Governance of Processes

With respect to the evidence provided in the previous section, please provide detail on the way this is developed and subject to review / change / updates (including inputs / drivers, frequency of updates and responsible individuals, lessons learned / continuous improvement)

25. Evidence the approach to development and governance of the Processes.

26. Evidence the approach and/or action undertaken to implement, embed, and share these processes with the wider company and supply chain, e.g. communication / training / guidance / etc.

27. Upload any formal / structured evidence for the development, governance, and embedment. *[file upload]*

Appendix D.   Part 4 – Systems

This part of the review concerns the systems that enact National Highways asset information management practice.

In accordance with industry best-practice, the expectation is a demonstration of the relevant systems that the company uses and maintains; enabling compliance with Licence Condition 5.9.

Respondee Details

1. Enter your name

2. Directorate

   – SES

   – Operations

   – Digital Services

   – Major Projects

   – FBS

   – ORR

   – Other *[free text]*

3. Group / Team

4. Role / Job Title

Identification of Current Systems

5. Please list the systems that manage the asset data for each of the asset classes / operational specialisms.

Development and Governance of Systems

6. Evidence the process for system review and updates, please provide detail on the way these are developed and subject to review / change / updates e.g. including inputs / drivers, development of functional and technical requirements, frequency of updates and responsible individuals, lessons learned / continuous improvement.

7. Evidence the approach for undertaking cost/benefit analysis for the proposed system development or updates.

8. Evidence the approach for system contracting and procurement.

9. Upload any formal / structured evidence for system development and governance (questions 6-8). *[file upload]*

10. Evidence the general support for the system to maintain operation, e.g. data protection / security, availability, and technical support.

11. Evidence the approach to asset information system migration planning and implementation.

12. Evidence the approach to maintaining alignment between company' data needs (Logical data model) and the system configuration (Physical data model).

13. Evidence the current system-system interface capability between the company' asset data systems, highlighting any limitations that impact the transfer or use of data in different systems, e.g. APIs, data transfer scripts, manual data transfer / input.

14. Evidence the user management process / mechanism for the company' asset data systems, e.g. granting a new user access, ensuring the right permissions, removing users, etc.

15. Upload any formal / structured evidence for system management (questions 10-14). *[file upload]*

Appendix E.   Part 5 – Roles and Responsibilities

This part of the review concerns the roles and responsibilities that enact National Highways asset information management practice.

In accordance with industry best-practice, the expectation is a demonstration of the relevant roles and responsibilities that the company uses and maintains; enabling compliance with Licence Condition 5.9.

Respondee Details

1. Enter your name

2. Directorate

   – SES

   – Operations

   – Digital Services

   – Major Projects

   – FBS

–   ORR

–   Other *[free text]*

3. Group / Team

4. Role / Job Title

Identification of Roles and Responsibilities

5. Evidence identified roles and responsibilities for enacting asset information management, including agreement of named individuals to fulfil roles, e.g. responsible persons for owning and implementing data requirements, data management processes, and system configuration.

6. Upload evidence of identified roles and responsibilities. *[file upload]*

Development and Governance of Roles and Responsibilities

With respect to the evidence provided in the previous section, please provide detail on the way this is developed and subject to review / change / updates (including inputs / drivers, frequency of updates and responsible individuals, lessons learned / continuous improvement).

7. Evidence the approach to development and goverancne of these roles and responsibilities, including evaluation of the necessary skills and experience required.

8. Evidence the approach and/or action undertaken to embed and share these roles and responsibilities with the wider company, e.g. communication / agreement of accountability / training / guidance/ etc.

9. Evidence the approach / process for assessing the skills of the individuals fulfilling the roles and delivering any training or upskilling required.

10. Evidence the approach / process for performance monitoring and management of the individuals fulfilling the roles.

11. Upload any formal / structured evidence for roles and responsibilities development, governance, and embedment. [file upload]

Appendix F.   Part 6 – Reporting

This questionnaire section concerns the ORR - National Highways interface that enables monitoring and reporting.

In accordance with the Licence Condition 5.9, the expectation is demonstration of agreement and communication between the organisations, to ensure that there is a clear understanding reporting expectations and mechanisms.

Respondee Details

1. Enter your name

2. Organisation

–   National Highways

        – ORR

3. Group / Team

4. Role / Job Title

Definition of ORR - National Highways Interface

5. Evidence an agreed charter / ways of working / terms of reference that defines the structure, processes, and roles and responsibilities for the ORR – National Highways monitoring interface.

6. Upload evidence for an agreed definition of interface.

Detail of the ORR – National Highways Interface

With respect to the evidence provided in the previous section, please provide detail as per the following questions. Detail should include some description and a specific reference to the evidence (e.g. document / page / section / clause / etc.)

7. Specifically reference detail within the agreement that addresses: the interface / point of contact and mechanism for communication between ORR and National Highways (both within and outside formal review and audit)

8. Specifically reference detail within the agreement that addresses: key terms and definitions that pertain to the monitoring of asset information, e.g. "asset information" / "high quality" / "readily accessible" ./ etc.

9. Specifically reference detail within the agreement that addresses: the process for triggering an ORR review / audit, including cyclic VS ad-hoc approaches.

10. Specifically reference detail within the agreement that addresses: the process for undertaking an ORR review / audit, including what evidence / metrics / data are requested, and what measure or "scorecard" is applied in the assessment.

11. Specifically reference detail within the agreement that addresses: the process for National Highways to provide evidence / reporting, i.e. how is the evidence collated, validated, and communicated to the ORR?

12. Describe what, if any, narrative or supporting information does National Highways provide to communicate and contextualise the reported information / data.

Development and Governance of the ORR – National Highways Interface

With respect to the evidence provided in the previous section, please provide detail on the way this is developed and subject to review / change / updates (including inputs / drivers, frequency of updates and responsible individuals, lessons learned / continuous improvement)

*Reminder when referring to the **4Cs**, see the definitions below:*

- ***Condition** - a record of the physical state of the asset.*

- ***Capability** - a record of the assets' ability to fulfil its purpose on the Strategic Road Network.*

- *Capacity* - a record of the assets' remaining life (i.e. 100% is full design-life remaining, 0% is failure at end-of-life).

- *Criticality* - a record of the assets' importance (i.e. the safety and performance implications on the Strategic Road Network should the asset fail).

13. Evidence the approach to the development and governance of the agreed interface between ORR and National Highways, e.g. how are the applied reporting metrics / KPIs developed in relation to the 4Cs.

14. Upload any formal / structured evidence for the development and governance of the agreed interface.