



LONG TERM IMPACT INDICATORS PROJECT

ESS Theory of Change Review and Impact Assessment Case Study

Final Report

31 March 2026

Contents

1. Executive Summary	3
2. Project Overview	8
3. Impact Assessment – Qualitative Insight.....	13
4. Impact Assessment – Quantitative Analysis	26
5. Theory of Change Review & Light Touch Recommendations.....	38
5.1 Identify and Map Stakeholders (Recommended Step 5).....	44
5.2 Connect outcomes with stakeholders, strategic priorities and define timelines for success (Recommended Step 9)	51
5.3 Impact Assessment Framework (Recommended Step 12).....	53
5.4 Strategic Narrative (Recommended Step 14).....	58
5.5 Socialise the ToC and/or strategic change narrative with internal ESS teams and critical stakeholders (Recommended Step 16)	61
6. Final Recommendations	62
Annex A: Rapid Evidence Review Source Shortlist.....	63
Annex B: Category 1 Engagement Log	65
Annex C: Current and Proposed Future State ToC Approaches	66

1. Executive Summary

Environmental Standards Scotland (ESS) is an independent body monitoring, investigating, and scrutinising the compliance of public authorities with environmental law. By investigating the effectiveness of environmental practice and regulation in Scotland, it seeks to improve the behaviours and activities of public authorities and help achieve the highest environmental standards. Since its foundation, ESS has made considerable progress in meeting these goals, securing regulatory change across multiple environmental systems, and increasing accountability through its technical investigations and monitoring work. It is now in a position to build on this progress to date and is seeking to maximise long-term environmental impact and improve its performance. This project is designed to assist this process by:

- Assessing the fitness-for-purpose of existing ESS Theory of Change (ToC) methods against global best practice and providing 'light touch' recommendations for improvement.
- Measuring historical ESS impact against organisational goals through a chosen case study.
- Developing a repeatable methodology for conducting future case studies, including the creation of long-lasting evaluation metrics to measure the impact of its own work.

Project Approach

To meet these goals, this project was undertaken in a staged approach, with each stage delivering distinct outcomes that build upon each other:

- Pillar 1 – Scoping, SWOT Analysis & Case Study Selection: The first pillar established the focus of the impact assessment, identifying the Air Quality Investigation Improvement Report (AQIIR) as the suitable case study and created a repeatable, evidence-based selection process for future effort.
- Pillar 2 – Rapid Evidence Review (RER) & Assessment of Existing ToC Materials: The second pillar focused on reviewing ESS's existing ToC approach, benchmarking it against contemporary 'best practice'.
- Pillar 3 – Impact Assessment Design & Delivery: The third pillar centred on conducting the structured impact assessment, enabled through a rigorous

stakeholder consultation, quantitative data assessment, and development of an impact-measurement framework.

Key Findings

The qualitative consultation phase was designed to gather evidence of ESS impact from across a wide range of stakeholders. Through an extended consultation period, the following insight regarding ESS impact was recorded:

1. The majority of interviewed stakeholders regard ESS as a ‘trustworthy’

authority: Trust in ESS is linked to strong day-to-day working relationships and long-term engagement, transparent processes, clear methodologies, and regular explanations of ESS organisational priorities. Lower trust is often associated with stakeholder experience through representations or where there are perceived issues with the technical completeness of reporting. A consistent, transparent ToC process is essential to sustaining trust.

2. Greater upfront, and sustained, engagement from ESS throughout their investigations would improve the reach, reception, and influence of their work:

A lack of shared understanding between ESS and its stakeholders often leads to misaligned expectations from its investigations. Without sustained touch points, senior stakeholder buy-in and organisational trust is reduced. Stakeholders desire more specificity from ESS recommendations – to support action and remove perception that change may already be underway. This includes specifying the who, what, when, evidence required and expected organisational response in its recommendations.

3. Stakeholders view ESS as a ‘proactive’ focused presence in Scotland’s

regulatory landscape: ESS brings visibility to issues that were previously “wrapped in UK-wide reporting” and is seen by stakeholders to effectively “light a fire” under Scotland’s public authorities. Public perception of ESS work is stronger when ESS is closer to domestic issues, which gives these issues greater momentum. This increased local focus is not without drawbacks – some stakeholders feel requests are often resource-intensive. Engagement can be perceived as ‘extractive’ when not paired with support or clarity.

4. Stakeholders feel that ESS are effective at holding the Scottish Government to account but feel that ‘follow-through’ implementation could improve:

Non-compliance with ESS reporting arises where recommended activity is not sufficiently understood by those responsible for implementation i.e. a lack of guidance. This creates a split in perception as to ESS’ contribution which varied throughout consultation. Stakeholders consider the best recommendations to have clear timeframes, identified accountabilities and defined indicators of change – this also supports upstream governance (senior attention, escalation, resourcing, committee engagement).

5. Stakeholders feel that the AQIIR was a catalyst for Scottish public authorities continuing to focus and build momentum on air quality and emissions issues:

Local Authorities (LAs) cite the report as creating stronger expectations and clearer technical standards, kicking senior leadership “into action”—increased motivation to meet statutory obligations. For many stakeholders, the AQIIR created an authoritative reference that impacted Air Quality Action Plans (AQAP) publication timing and standards — ESS, through AQIIR, gave additional weight to arguments for action on air quality, supporting stakeholders that had struggled to persuade government groups.

6. Stakeholders broadly do not consider that the AQIIR has had a direct contributory impact to the realised changes in Scotland’s Air Quality:

A number of stakeholders felt that the recommendations in the AQIIR (in particular changes to reporting) were already in the process of being implemented —ESS impact to overall change was therefore considered to be contributory rather than transformative. Surveyed stakeholders were split, with half suggesting no impact on reduced exceedances and others suggesting the report’s impact had ‘a’ level of impact. Most stakeholders identify Low Emission Zone (LEZ) implementation as the biggest driver of NO₂ reductions

Light-Touch ToC Changes

Considering the outcomes from all three pillars, seven light touch changes have been identified for integration into ESS’ current ToC Standard Operating Procedure (SOP). Collectively, the inclusions address the most reoccurring elements of

stakeholder feedback, reflect identified best practice ToC process, and account for the needs articulated by ESS personnel interviewed as part of Pillar 2:

1. Identify and map stakeholders (sphere of influence)
2. Connect outcomes with stakeholders, strategic priorities and define timelines for success
3. Design and/or update a performance management framework with 'constant' and 'bespoke' impact metrics
4. Develop and share a 'strategic narrative' for the change with stakeholders
5. Socialise the ToC and/or strategic change narrative with internal ESS teams and critical stakeholders
6. Capture and record lessons learned and integrate into ToC where practicable
7. Approve the final Theory of Change

Recommendations

Given the outputs from each other the three pillars, we recommend the following set of steps for ESS to continue to refine its ToC approach:

1. Consider integrating proposed ToC changes into ESS documentation:

Recommended steps should be adapted into Standard Operating Procedure and training materials as necessary and iterated through ongoing implementation.

2. Design and formalise the Performance Framework according to

organisational priorities: Establish 'constant' impact metrics linked to ESS' long-term to strategic objectives, measuring impact across all elements of work. This should be supported by a repeatable measurement approach whereby 'bespoke' metrics are created for each project, supporting impact attribution across all forms of work.

3. Develop a ToC for the next major piece of work and set a '1 year review

point' to determine success of change: Set a formal review milestone to test plausibility, measure progress, and embed any lessons learned from the updated ToC materials.

4. Conduct a case study impact assessment using the refined ToC: Replicate this impact case study process within the next year on a chosen and significant program of work (identify and rectify future ToC 'growing pains' early within the process).

2. Project Overview

In practical terms, the outputs of this work are intended to help ESS better understand the effectiveness of its current approach, demonstrate its influence on shaping Scotland's environmental policy and legislative landscape, and refine its methods for evidencing impact. More broadly, the project outcomes support ESS' accountability as a public body, strengthen public trust in Scotland's system of environmental governance, and contribute to the credibility of the country's wider environmental and climate ambitions. This review reflects ESS' commitment to realising and measuring its impact.

The first two pillars of the project were designed to produce a number of clear outcomes:¹

- Systematically determine the best ESS investigation or report
- Develop a pipeline for future impact assessment case studies and develop a systematic process for assessment
- Understand the current best practice for Theory of Change thinking and methods
- Assess ESS's current ToC materials and better understand of ESS's ToC requirements and current state adoption

Pillar 1 – Scoping and Case Study Selection

Pillar 1 of the project was designed to select the case study for the initial impact assessment and create a repeatable method for that selection. To ensure a robust case study selection process, a SWOT analysis workshop² was held to analyse a shortlisted series of ESS reports. Through this process, the Air Quality Investigation Improvement Report (Case Reference: IESS.21.013³) emerged as the recommended case study. Across the assessment, several themes consistently emerged in the assessment of each report during the SWOT analysis workshop, notably the 'political profile' of the issue, the existing stakeholder network, the recency of publication, and ESS current operating context.

¹ The full outcomes of Pillars 1 and 2 are captured in the '*Long Term Impact Indicators Project - Theory of Change Independent Review Interim Report*' (Delivered to ESS on 8 January 2026).

² A two-hour hybrid SWOT analysis workshop was held on 19 November 2025.

³ [Air Quality Investigation - Improvement Report - Environmental Standards Scotland](#)

To replicate this impact assessment in the future, a formalised, repeatable SWOT analysis has been designed and can be conducted at the beginning of each 3-year case study review cycle:

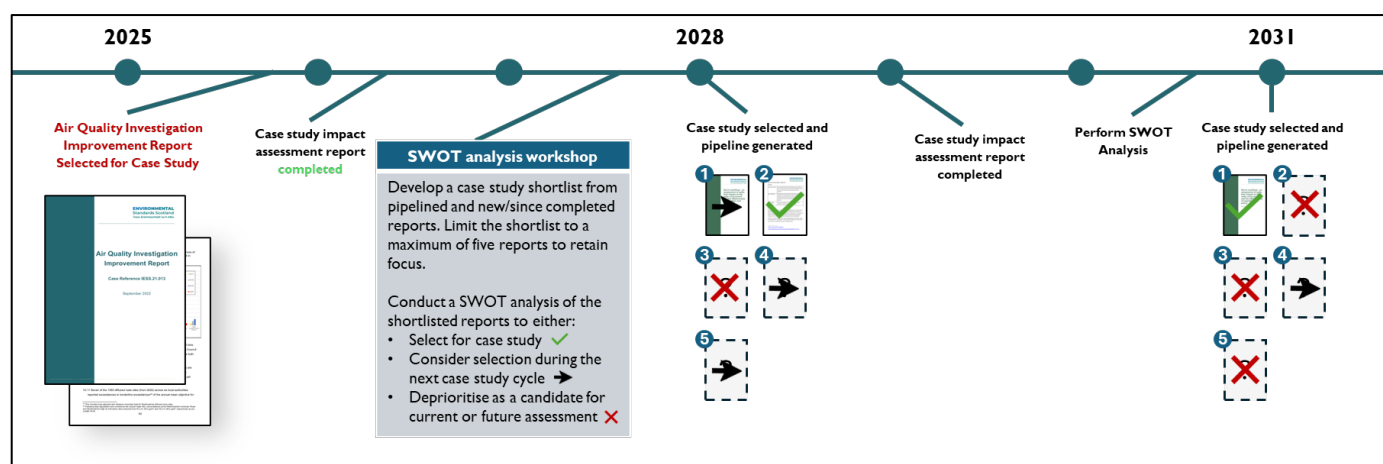


Figure 1: Capture of the assessment and selection for the current case study and the proposed process against the 3-year case study review cycle.

Pillar 2 – Theory of Change Review

Rapid Evidence Review

The Rapid Evidence Review examined contemporary best-practice Theory of Change methods by conducting a large literature search across government, academic and public authority sources. Through the RER, over 100 sources were assessed using three criteria: relevance to environmental policy, contribution to ToC best practice, and applicability within public-sector contexts. This resulted in a refined shortlist of the most relative material⁴ that helped to strike a ‘best practice’ baseline and support the comparative assessment of ESS ToC materials. Analysis of the shortlisted materials highlighted three core themes:

- **Necessity for a clear pathway of change:** Effective ToCs first define the ‘ultimate goal/impact’ of the work programme, then map backwards to identify the necessary preconditions, activities, assumptions, and indicators necessary for delivery.

⁴ The final shortlist of relevant articles is included at Annex A

- **Systematic and sustained stakeholder engagement:** Consistent engagement of both internal and external stakeholders early and throughout the ToC development cycle is critical to refine understanding of desired change and support accuracy of impact assessment.
- **The ToC should be designed with structural soundness and plausibility:** Ensure that the ToC has clear causal links, validated assumptions, measurable outcomes, and realistic pathways to achieving results.

Assessment of Existing ESS ToC Materials

A critical element of the interim review was to assess the fitness-for-purpose of ESS' existing ToC approach. The review was based on two internal documents provided by ESS:

- The 'ESS Theory of Change Standard Operating Procedure'
- 'Theory of Change - ESS Training Materials'

An assessment of both documents showed significant effort had gone into developing ESS' current ToC processes⁵, effort which has resulted in new standard operating and training materials that necessarily centralise ToC methods across all facets of its work. Across both documents, the benefits of having a mature, standardised approach were well articulated and there was a clearly established link between the need for an implementable ToC process and the realisation of ESS' core vision. Importantly, the SOP had already referenced a number of the best practice sources that were identified through the RER process. On review, there was a clear focus on building a robust logic model, in particular linking inputs to outcomes. This indicated that ESS's ToC model required refinement rather than redesign.

To build upon this matured foundation, a number of areas were identified for improvement:

- The need to build specific performance indicators that track realised change and contribution to environmental improvements. These indicators should be a mix of

⁵ Note: This approach and materials had not been in place at the time the AQIIR was being completed.

context specific metrics (e.g. reduced emissions in the case of the Air Quality Investigation), and broader indicators that reflect ESS' wider objectives with its core stakeholders and vision.

- Introduction of a simple narrative around complex areas of ESS work. This narrative should reflect the end-to-end process of the work in question, supporting engagement with stakeholders and evolving over the course of delivery. Effective narratives will blend and communicate both technically complex elements and layperson's understanding of the environmental challenge and change.
- Evolving the ToC SOP over time to draw on feedback and any emerging best practice.
- Emphasising continuous improvement by capturing lessons learnt through each ToC development process and refining materials as needed over time.

ESS Seven Questions Consultation

This consultation series was the third step of Pillar 2. Across the 9th and 10th of December 2025, five 45-minute Seven Question sessions were held. These sessions were comprised of two interviews with members of the ESS Board, and three focus groups, comprising between two and four ESS staff members. The sessions were framed around the Seven Questions interview technique and designed to gather opinion, strategic insight, and improvement opportunities.⁶ A Scoping Question was used to establish a framework for these questions:

Since publication, what impact has the Air Quality Improvement Investigation Report made in improving Scotland's environment, air quality, and its regulation?

Based on our chosen case study, Seven Questions⁷ were drafted with the aim of understanding:

⁶ [The Futures Toolkit HTML - GOV.UK](#). (The GO-Science Future's Toolkit provides a best practice overview of the Seven Questions method and other futures techniques).

⁷ Board members were presented with an alternative 'Question 3', altered to account for a flagged conflict of interest. This question was presented as 'What would you need to know to feel confident that ESS activity is resulting in meaningful change?', with responses summarised under Question 3.

- The effectiveness of existing processes and challenges with ESS' historical ToC approach⁸.
- What the ESS ToC process would look like in an ideal world.
- The consistency of ToC application across ESS work, specifically how it was/was not applied during the Air Quality Investigation.
- Current success/challenges with impact measurement.

Following the interviews, responses were analysed for predominant themes of which several emerged:

- It is a core focus to effectively define and measure impact consistently, and to be able to align impact to long-term environmental outcomes that enable ESS to establish a clear picture of contribution.
- Personnel considered that a highly impactful report should drive clear policy or legislative change, deliver measurable environmental improvements, and communicate a compelling, accessible narrative grounded in convincing evidence and specific, time-bound recommendations.
- Participants highlighted the importance of consistently applying the Theory of Change across projects, creating repeatable development processes, and embedding stronger narrative and communications practices
- Impact will implicitly vary between the distinct types of ESS work. Investigations carry formal legal weight but have long, technical delivery periods whereas monitoring and analysis work tends to achieve clearer public impact due to ongoing, more iterative engagement.
- Stakeholders want clearer definitions of success, full organisational adoption of ToC approaches, stronger data integration, better long-term monitoring, and more accessible, 'punchy' outputs. They emphasise consistent follow-up, improved internal alignment, and systematic processes that keep pace with ESS's growing workload.

Outcomes from this interview series directly informed the type of questions that were asked of external stakeholders throughout the consultation period in Pillar 3.

⁸ This category, and its related questions, were asked noting that ESS had just introduced a new ToC process. Questions are therefore framed at assessing practices prior to that introduction.

3. Impact Assessment – Qualitative Insight

A total of eighty-six stakeholders were identified for engagement through this phase of the project. This list was a combination of contacts provided by ESS and those found through independent research and/or recommendation by ForgeFront and the Edinburgh Climate Change Institute (ECCI). Qualitative consultation was held over the course of January and February 2026.

Method and Outcomes

To maximise outcomes from engagement, stakeholders were prioritised and categorised. The below table describes each category of prioritisation and the determined method of engagement:

Stakeholder Category		# of stakeholder s Identified
1	Pivotal Stakeholders: Engagement with these stakeholders was considered necessary for success of the project. Given their proximity to the AQIIR, or their involvement in the Air Quality Space generally, this category was expected to hold the most direct data/evidence regarding ESS influence. All Category 1 stakeholders were therefore invited for 1-on-1 engagement.	21
2	Complementary Stakeholders: Engagement with these stakeholders was considered important, but not critical, for project success. Any 1-on-1 engagement with this category was highly discretionary, with input sought from a targeted survey linked to impact measurement metrics.	47
3	Contributory Stakeholders: These stakeholders were identified by ESS as able to have relevant input into the project but were not essential for engagement. They were only contacted through survey invitation.	18
Total		86

Out of 21 identified 'Category 1' Stakeholders, 16 conversations were held⁹ (approximately 76% of the category). Of the remaining Category 1 stakeholders, 2 deferred participation in the consultation to their colleagues in the same organisation, 1 declined to participate due to conflict of interest, 1 was unable to find availability to participate and 1 did not respond to requests. Alongside Category 1 consultations, qualitative input was sought from all Category 2 and 3 stakeholders through survey. The survey returned a total response rate of 24%.

Across both formats, stakeholders were asked questions relating to their opinions of ESS, their perception of the trustworthiness and influence of ESS's work, and the impact of the Air Quality Investigation Improvement Report (AQIIR) as a contributing factor in any improvements in Scotland's current air quality. The following insights reflects the aggregate of qualitative input from across both the 1-on-1 interviews and received survey responses.

Qualitative Engagement – Key insights

1) The majority of stakeholders regard ESS as 'trustworthy'

Across both interviewed and surveyed stakeholders, there was immediate and considerable commentary on the positive day-to-day working relationships with ESS personnel. This commentary was paired with a clear sentiment of 'trustworthiness' in the role that ESS play. In recording and tallying responses across those interviewed and surveyed, approximately 75% of all stakeholders responded as 'trusting' or holding 'a level' of trust in ESS's work.

⁹ A complete list of Category 1 stakeholders consulted during this phase of the project is listed in Annex B.

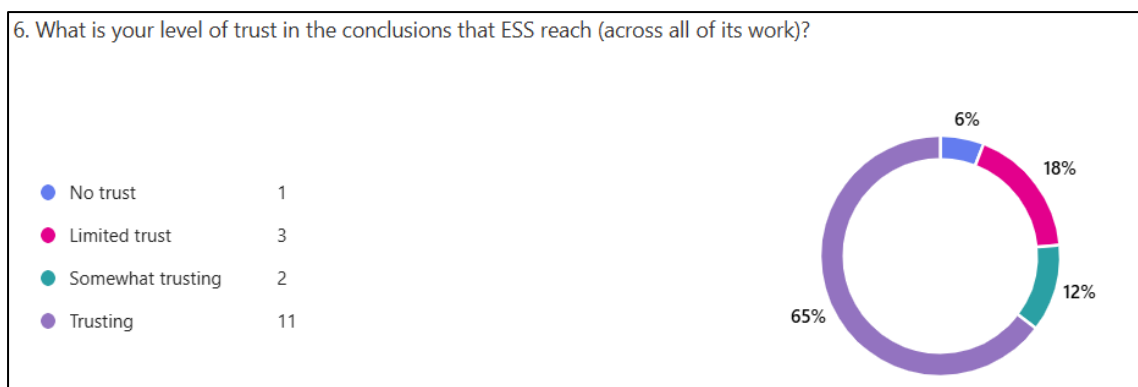


Figure 2 – Survey responses for Question 6. A similar level of ‘trusting’ sentiment was reflected in the Category 1 stakeholder interviews.

For those trusting ESS and their outcomes, several reasons consistently underpinned this response.

- Consistent and sustained working patterns:** Stakeholders who had grown their relationship or working patterns with ESS over longer periods of time (e.g. since the Air Quality Investigation) on average returned a higher level of trust in ESS. These stakeholders were also better able to articulate the value that ESS provides across all facets of its work. Notably, those stakeholders who had been engaged since the AQIIR, noticed an improvement over time in ESS working patterns and were more willing to articulate the value of ESS’ role within environmental governance. Across both response formats, stakeholders acknowledged that because the AQIIR was the first major investigation and interaction with ESS, it contextualises the feedback provided around ‘trustworthiness’, even where some stakeholders experienced ‘teething issues’ during their engagement on the AQIIR. To quote, *“it was initially quite tricky process because we didn’t know each other, we didn’t really understand what their role was...things have certainly improved over the last five years”*.

Stakeholders also valued early input from senior ESS personnel citing how effective it is when the respective chairs or chiefs’ executives would regularly engage regarding ESS objectives and explained their priorities. In their words this meant *“members on both sides were engaged and responded well to direct consultation. When people get to know them [ESS], they can gain traction.”* Conversely, stakeholders who primarily engaged with ESS through

representations, had, on average, lower trust. This in part is likely explained by the dynamic of the relationship, and correlates to the oversight, or lack thereof, that stakeholders have over ESS investigative handling of representations. To quote *"We remain concerned about the handling of representations by ESS and the utility of ESS's 'informal resolutions' with public authorities"*. This feedback is a stark contrast to those who felt regularly engaged on a working issue and had their expectations set throughout a process.

- **Stakeholders value any form of ESS work where the process and outcomes are transparent:** Based on responses, there is a clear correlation between the frequency of engagement and the trust built. To quote one stakeholder, they had trust because *"ESS publishes transparent analytical and monitoring work, supported by clear methodologies, evidence reviews, and responses to consultations. This consistent approach to gathering and assessing environmental information strengthens the credibility of its findings and recommendations"*. This sentiment of consistent and transparent engagement was echoed by another respondent, citing *"They take time to explain their focus, why it's important and share initial findings as part of the process"*.
- **Perceived strength of outcomes:** Stakeholders with a higher trust level described ESS reporting as 'authoritative' and 'well researched'. Stakeholders with a comparatively lower trust questioned how 'technically sound' ESS reporting was or reported feeling disaffected during engagement either because *"the data they were using was out of date"*, or because they felt reprimanded for things they were already trying to progress. In the case of the AQIIR, one stakeholder suggested that the report had *"inaccuracies in both the legislative understanding and the technical solutions"*. However real or perceived the technical completeness of ESS reporting is, the level of trust stakeholders can place in ESS inextricably stems from the 'stock' that they feel they can put into the reporting and outcomes. This emphasises the need for a consistent ToC approach that is transparent on how change is being affected.

2) Greater upfront, and sustained, engagement from ESS throughout their investigations would improve the reach, reception, and influence of their work

Stakeholders consistently cited challenges with understanding the broad focus or pipeline of ESS work (which they noted therefore affected how stakeholders engage and respond to ESS requests). In most instances, this lack of understanding directly correlates to the level of engagement that stakeholders experienced. For one stakeholder, *“once an information request from ESS has been responded to, it isn’t always clear what the timeline or next steps are”*. Similarly, stakeholders are sometimes unsure how, or if, their input is used. The broad consensus amongst those interviewed was that increased engagement around clearly communicated would remedy a number of experienced challenges:

- **Stakeholder Inability to understand ESS objectives or outcomes:** Multiple stakeholders expressed their inability to understand ESS priorities. This extended to circumstances where they expected greater ESS intervention and involvement in the area where stakeholders had made representations and felt they have been *“regularly mishandled”*. In several circumstances this can be attributed to how ESS has communicated their prioritisation or objectives in handling the case. Where stakeholders note a *“Lack of certainty around what the ‘end goals’ of ESS work are”* the impulse is to be more defensive. Most all stakeholders suggested that when engagement was lacking, it led to discrepancies between what stakeholders and ESS expect. To quote *“if you’re not starting from a shared understanding, it’s very difficult to come to a shared conclusion”*.

In terms of Air Quality, multiple stakeholders suggested ESS would have a key role to play in the development of policy after the expiration of Cleaner Air for Scotland 2 (CAFS2) but were unsure if they were planning to be involved in future consultation processes or whether this remained an organisational priority. In this instance they noted ESS could *“conduct deeper, recurring audits of local authority performance, produce national guidance on best practice AQAP design and delivery, map priority areas for new monitoring sites and strengthen public communication and transparency”*. Coupled with a perceived lack of updates since the AQIIR was published, another stakeholder suggested that ESS *“has too many priorities and not enough resources to deal with all of them”*. In this instance, they would be happy if ESS sacrificed the number of activities/works it sought to complete to prioritise and increase the depth in other investigations.

Based on feedback, there is a need for ESS to have a more pronounced public profile and an ability to deliver concise narratives on their objectives and impact.

- **Inability of stakeholders to sustain senior buy-in:** Stakeholders iterated the importance of early and sustained engagement from ESS to their senior stakeholders. In some instances, awareness of an issue would “*peak*” with an early or direct outreach in the process then “*fade from view*”. Repeated by several stakeholders, this narrative suggests a pattern where the organisation in question is ‘on the radar’ for the work briefly, then drops behind nearer-term operational pressures. Longer term, this organisational attention is critical for ESS’ reputation building. Similarly, sustained senior ‘buy-in’, is often the gateway to resource decisions and cross-departmental prioritisation and will likely impact how the work is received.

Based on feedback, it is necessary for ongoing consideration as to how effective the current ToC is at identifying who the specific stakeholders are (technical leads, corporate leadership, elected governance) and where the decision moments sit (budget cycles, plan refreshes, statutory reviews). This is also interlinked with the need for clear sphere of influence mapping. This feedback also implies that for concerned stakeholders, the most effective recommendations would name the accountable actor, the specific artefact or decision that must change, a time expectation, and the minimum evidence that would show adoption. This reduces the risk that recommendations mirror existing plans without changing anything observable.

3) Stakeholders view ESS as a ‘proactive’ focused presence in Scotland’s regulatory landscape

Stakeholders recognise that ESS is a continuously maturing organisation that was established to ‘fill’ the gap of the European Commission. The stark contrast in role and performance was the source of both positive and negative sentiment from those engaged.

- **Filling the gap of the European Commission:** Importantly, stakeholders cited that ESS’s proximity to domestic issues has allowed for greater granularity and

improved frequency in reporting on Scotland-specific challenges. To quote at length,

“ESS have certainly plugged a gap – while there were very few compliance problems with EU legislation the things that ESS did well through their investigation was they drilled down. It brought it down to a domestic Scottish compliance and the local aspect. The added level of detail has been beneficial”.

Similarly, several stakeholders perceived ESS as bringing a distinctly local lens that best reflected the particulars of Scotland’s challenges and brought depth to the technical reporting public authorities were required to answer to. To quote, *“previously the EU reporting was just wrapped into the UK entirety, so we didn’t have any of the more in-depth granularity in relation to each of the devolved administrations”*. In terms of air quality, this meant that *“devolved administration performance could be hidden or masked within the UK response as a whole”*. ESS have comparatively *“brought it down another level into within Scotland”* that enables better local engagement from across the spectrum of stakeholders.

In terms of holding public authority to account, *“ESS are good at lighting a fire under both the Scottish Government and SEPA”*. For another, this also translates to a better perception and awareness of environmental issues amongst the broader Scottish public, *“This is different to previous experience of oversight from the European Commission, and my suspicion is the public prefer this new arrangement”*.

Many stakeholders also noted the speed at which ESS move as being in balance against the ‘weight’ of their findings. In contrast, the *“EU Commission was very serious but occurred very rarely – so to some degree ESS doesn’t have that ultimate weight, but it can propel conversations along more quickly”*.

- **An increased local focus means stakeholders regularly feel that responding to ESS is resource-intensive:** The increased emphasis on Scottish environmental challenges has also undoubtedly increased the onus on local

public authorities to respond to scrutiny and oversight. Several stakeholders noted surprise at the timing and process for launching ESS work, citing concern with the resources required to respond against given timeframes. To quote, *“They give us maybe a day or two's warning before that letter or piece of correspondence comes in... it felt as if there is no real time to sort of prepare”*. Stakeholders suggested that responding to ESS is a time-consuming and resource-intensive process – *“it detracts from being able to do our core role”*.

While stakeholders acknowledge the need for scrutiny and the role that plays in managing public authority, effort to respond can appear low yield from an implementing authority's standpoint unless the intervention has helped them to resolve blockers, justify investment, or create clearer mandates i.e. support their implementation. To quote, *“We know what needs to be done and it's more about support doing it. Being told ‘you're not doing enough’ isn't helpful”*. In multiple instances, stakeholders distinguished between engagement they considered purely extractive oversight—lists to confirm, form returns to complete—with recommendations and engagement that distinctly helps a stakeholder to deliver under pressure. The implied risk is that cooperation with ESS becomes procedural rather than energised engagement.

4) Stakeholders feel that ESS are effective at holding the Scottish Government to account, but feel that ‘follow-through’ implementation could improve

Several recommendations emerged from stakeholders identifying how implementation could be strengthened, notably:

- **Ensuring that ESS investigations are best reflective of stakeholder understanding and enable them to undertake any required evolution:** For example, highlighting where non-compliance is being driven e.g. a lack of clarity in regulatory guidance, challenges with interpretation of relevant legislation, communication and awareness across key stakeholders (between those responsible, accountable and needing to be informed), and a lack of capacity amongst implementing or governing bodies to manage or deliver change. Stakeholders regularly noted the value they put in ESS guidance is clear in its requirements for change e.g. explicit about timeframes for change. This was

contextualised with an implicit understanding of ESS resourcing and their inability to be everywhere at once or ‘spoon feed’ solution. For those interviewed, the best recommendations reflect the underlying systemic issues and note how these should be addressed, rather than what some stakeholders perceived as “*just highlighting non-compliance*”.

- Developing suitable impact indicators:** Given ESS’ mandate and its levers of control, impact is most likely to extend beyond environmental outcomes to governance and capacity shifts. For one stakeholder this was defined as managing “*the mechanisms that sit upstream of environmental outcomes e.g. senior attention, internal escalation, committee governance, and resourcing decisions*”. Those mechanisms should also be explicitly anticipated in the engagement framing for ESS work, e.g. what they expect their engagement and work to lead to in terms of organisational response (e.g. new roles, committed funds, third-party referencing). In future, this influence can directly inform impact metrics and measurement. In other words, having ESS reporting be explicit on the ‘trigger’ for change will create the best returns. For example, stakeholders noted the importance of the report landing with senior officials and that being a strong guarantee of results – “*if the report lands with decision-makers it triggers internal escalation*”. Stakeholders suggest that at present, and in the case of the Air Quality Improvement Report, this reception is inconsistent. This is a likely driver for why stakeholders are split as to whether they find ESS to be a leading contributor in improving Scotland’s environment (see figure 3).

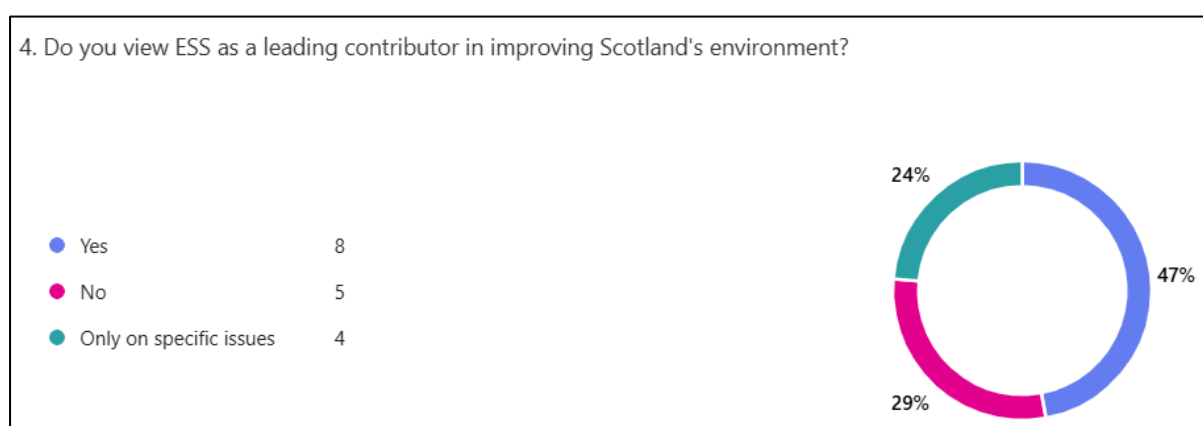


Figure 3 – Survey responses for Question 4

5) Stakeholders feel that the AQIIR was a catalyst for Scottish public authorities continuing to focus and build momentum on air quality and emissions issues

Approximately 63% of surveyed respondents indicated that the report has had 'some' level of impact on themselves and the execution of their regular roles and responsibilities. Responses suggest that there has been significant impact at the Local Authority level, who cite the technical findings and recommendations of the report for raised expectations amongst council leadership, increased accountability, and strengthened technical and administrative processes in their reporting and monitoring. This is corroborated by multiple interviewed stakeholders, within and outside Local Authorities, who noted that LAs had previously been "*slack producing Air Quality Action Plans even after the Management Areas had been declared*". Stakeholders viewed this attitude as changing after ESS published its investigation as "*the recommendation to tighten this up was incorporated into the statutory authorities with local guidance*". Regarding the follow up and engagement with LAs since publication, "*LAs were progressing (on their obligations) and it could be seen clearly that ESS had kicked LAs into action*".

This effect is reflected directly through several engaged LA stakeholders. To quote one stakeholder at length,

"The AQIIR strengthened the emphasis on systemic weaknesses in Local Air Quality Management, monitoring adequacy, and the absence of clear timescales for achieving compliance. This has sharpened the policy relevance of our work. By formally documenting persistent exceedances and gaps in oversight arrangements, the report provided an authoritative reference point when engaging in consultation responses, parliamentary correspondence, and professional advocacy on air quality".

In multiple other instances, the report was reference as helping to ensure Air Quality Action Plans (AQAP) were published within time, citing qualitative feedback that Councils subsequently "*ensured Local Air Quality Management (LAQM) duties were completed to a high standard*".

More broadly, stakeholders were willing to point to the AQIIR as contributing to the overall momentum of air quality discussion within the environmental agenda. To

quote, *“it may be that that improvement had already been set in motion and ESS came along and gave it the sort of final push to provide the impetus to the Scottish Government and all the various partners. So, there was definitely value in it.”*

Similarly, ESS were also considered to *“provide a good check on the level of ambition of the Scottish Government”*. For one stakeholder trying to lobby the Government on Air Quality, they had been unsuccessful in persuading the Government on the need for action. In their opinion, it wasn't until ESS got involved that *“the government thought it was a priority and it was pushed through”*.

Multiple stakeholders expressed willingness for continued ESS in this space and noted the need for ongoing scrutiny as the replacement policies for CAFS2 are developed. In the words of another, ESS can *“continue the good investigative work to help all stakeholders interested in air quality issues work better together to improve the overall LAQM system which will have a positive impact on public health”*.

6) Stakeholders broadly do not consider that the AQIIR has had a direct contributory impact to the realised changes in Scotland's Air Quality

Responses suggest that beyond the LA and NGO spheres, the impact of the AQIIR is significantly diminished. This is reflected in several overarching themes:

- **Stakeholders felt recommended changes were already ‘in the pipeline’:**

Most respondents considered that the recommendations made within the AQIIR were changes that were already being put in place by the Scottish Government. In impact terms, this implies the AQIIR may have been contributory but not instrumental. Better granularity on this matter could be understood if the report had *“shifted priorities, strengthened enforcement expectations, or changes how trade-offs are negotiated internally”*. For one interviewed stakeholder, ESS were primarily confirmation of what the authority *“already monitors and reports through its own governance channels”*. In these circumstances, the AQIIR was read as valuable independent corroboration, but not a lever that changes decisions, accelerates delivery, or unlocks political space. This sentiment is reflected in the split responses received to question 22 of the survey - *Compared with a scenario in which ESS did not exist, would you expect the number of exceedances to be higher/lower or no different?* Exactly half expected that there would be no difference at all, while the other half of respondents thought they may be either

higher or lower. Similarly, in Question 24 only one stakeholder considered that they/their understanding of air quality issues had been ‘significantly impacted’ by the findings in the report.

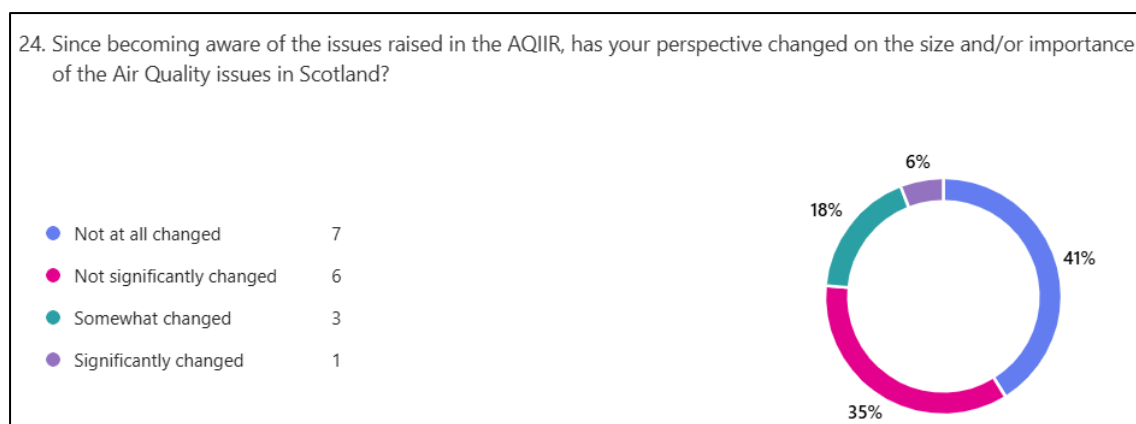


Figure 4 – Survey responses for Question 24

- Stakeholders attributed emissions and NO₂ change to other drivers:**
 Stakeholders overwhelmingly considered that the establishment of Scotland's LEZs and the change in vehicle fleet (transition to EVs) were the largest contributors in emission changes (see Figure 5). To quote, *“The low emission zone, certainly in Glasgow, the low emission zone has made a big difference in that it's now been fully compliant for the last couple of years”*. This was corroborated by another stakeholder who noted, *“LEZs have been extremely established to date. The data coming out of that suggests that's had a significant impact far outweighing any impacts of the improvement report”*.

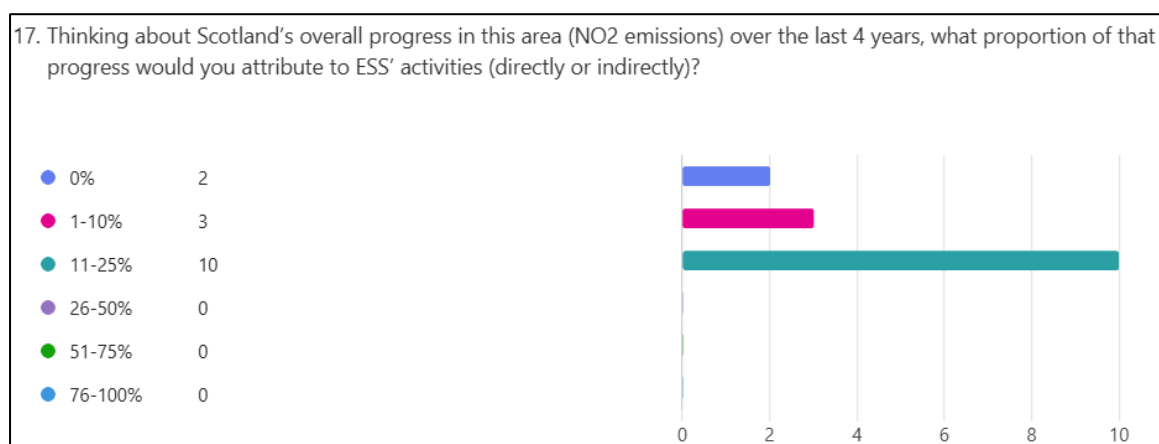


Figure 5 – Survey responses for question 17. Respondents attributed the introduction of LEZs and the Scottish Government transition to EV fleets as the main drivers of change.

For that stakeholder, the feedback wasn't intended to dismiss ESS' role in governance. In their words *"ESS has to make sure that Scottish Government then don't sit on their hands. They have a critical role in driving those developments forward. Right level of evidence is worked on"*.

4. Impact Assessment – Quantitative Analysis

Assessment Summary

Quantitative analysis was conducted on current air quality data as a way to both assess ESS impact in meeting its overall environmental objectives, and to independently challenge or corroborate stakeholder perception regarding the AQIIR contribution to Air Quality trends.

Based on the publicly available observational data, there is currently no discernible correlation between the publication of the AQIIR in 2022 and a reduction in NO₂ concentrations or the number of exceedances in NO₂ levels across Scotland. The picture is more mixed on a local authority level, with three local authorities (Glasgow City, East Lothian, and Highland) showing a strengthening of the downward trend in NO₂ in their respective AQMAs since the publication of the report. It is not possible to determine the exact cause of this change in trend, but the report may have been a factor. The seven others local authorities that contain AQMAs showed a weakening of the downward trajectory of NO₂ when compared to other observations in the region.

It is important to note that the length of time between the AQIIR publication and this analysis (three years) is relatively short when calculating robust trends. Similar analysis undertaken later (e.g. a decade after the publication of the AQIIR) may draw different conclusions. Where possible, it is recommended that ESS revisit available data at regular intervals to assess potential updates to impact.

Assessment Method and Findings

The current legal limit for NO₂ concentration in Scotland is an annual limit of 40 µg m⁻³ or a daily limit of 200 µg m⁻³ not to be exceeded more than 18 times per year. As the daily limit is never breached within Scotland, this analysis focuses on the annual legal limit. This analysis uses data from automatic NO₂ monitoring and NO₂ diffusion tubes.

- **Automatic monitoring:** Most commonly measured through chemiluminescent analysers which provide point source concentrations of NO₂ as hourly averages. These machines are large as well as costly to install and run and therefore limited

in quantity around Scotland. As of January 2026, there are 88 active automatic monitoring stations in Scotland, the majority of which are located in the central belt, particularly Glasgow, North Lanarkshire, and Edinburgh. 25 of these stations are situated within an AQMA, eight are within an LEZ and six are within both an LEZ and an AQMA.

- **NO₂ diffusion tubes:** Simple and inexpensive ways to measure ambient NO₂. They consist of a small acrylic tube containing triethanolamine which absorbs NO₂ from the surrounding air. After a period of time using chemical analysis, the total quantity of gas absorbed can be calculated and therefore a concentration in the surrounding atmosphere can be determined. The diffusion tubes are small, often attached to lampposts and do not need power or maintenance. However, they do need to be analysed in a laboratory and require extended periods of exposure to the ambient atmosphere. The resulting data is therefore only available as annual averages which take time to process, delaying access to recent data. The most recent data available for this analysis for 2024. There has been a marked increase in the use of diffusion tubes since 2000, with 1,052 tubes in use as of 2024, 489 of which are within AQMAs. All available diffusion tube site data over Scotland were aggregated into one database which required adjustments and data cleaning due to differences in naming conventions across different local authorities.

To determine if there is an impact on NO₂ concentration in different regions from the AQIIR, we can look at all this data from before and after the publication of the report in 2022, as well as concentration trends within and outwith AQMAs. Data for this analysis was taken from the Air Quality in Scotland website¹⁰. For a complete modelling of emissions data from every Local Authority, please see 'Attachment A' to this report.

Findings

Figure 6 shows the annual concentration of NO₂ across all automatic monitoring sites in Scotland since 2010 split by sites within or outwith an AQMA. There is a clear trend to decreasing NO₂ levels for the past 15 years, with a large drop in

¹⁰ <https://www.scottishairquality.scot>.

concentration in 2020 which can be attributed to the COVID-19 lockdowns. This trend is evident in both regions within and outwith an AQMA, with the levels of NO₂ within AQMAs remaining between 30% - 50% higher than the stations located outside AQMAs, although this difference is reducing. The mean trend over the past 15 years is a reduction in NO₂ of 0.9 µg m⁻³ per year, this trend is consistent with the rest of the UK and most of Europe¹¹.

The impact of this decreasing trend in NO₂ is reflected in figure 7, which shows the number of exceedances of the annual NO₂ limit per year across Scotland observed at automatic monitoring stations. There has been a marked decline in the number of exceedances since 2010, with only one occurring since 2020 (in 2021 in Glasgow). A first pass at this data does not show any obvious impact to attribute to the publication of the AQIIR.

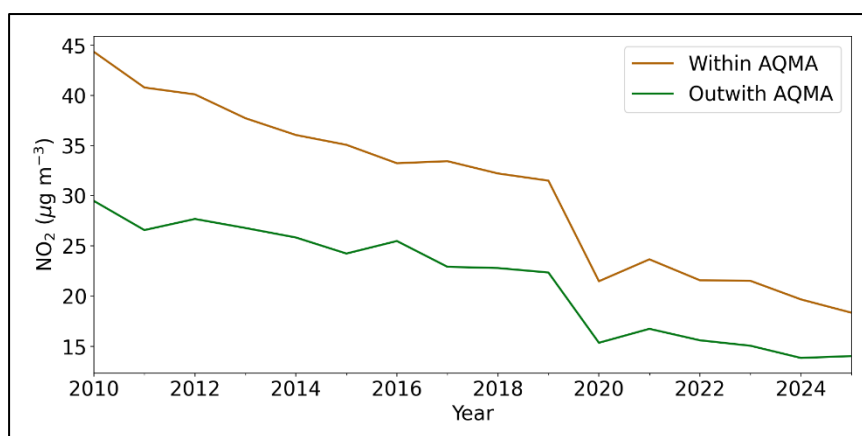


Figure 6 – Annual concentration of NO₂ for all automatic monitoring stations across Scotland both within (orange) and outwith (green) AQMAs.

¹¹ <https://atmosphere.copernicus.eu/2014-2024-decade-air-quality-improvements-europe>

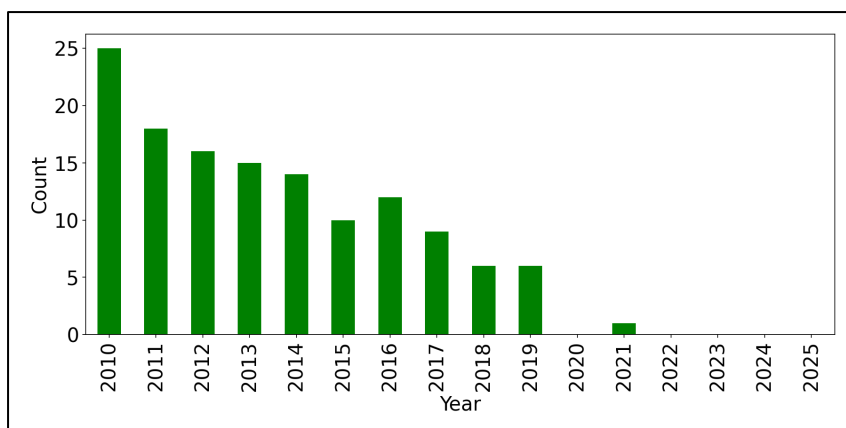


Figure 7 – Number of exceedances of the annual NO₂ limit across Scotland since 2010.

Figure 8 shows the annual concentration of NO₂ from each automatic monitoring station with an AQMA, split by local authority. The trend seen in the country average can still be seen in all local authority areas, with a step change seen in 2020 from the COVID-19 lockdowns and no obvious change since the publication of the AQIIR.

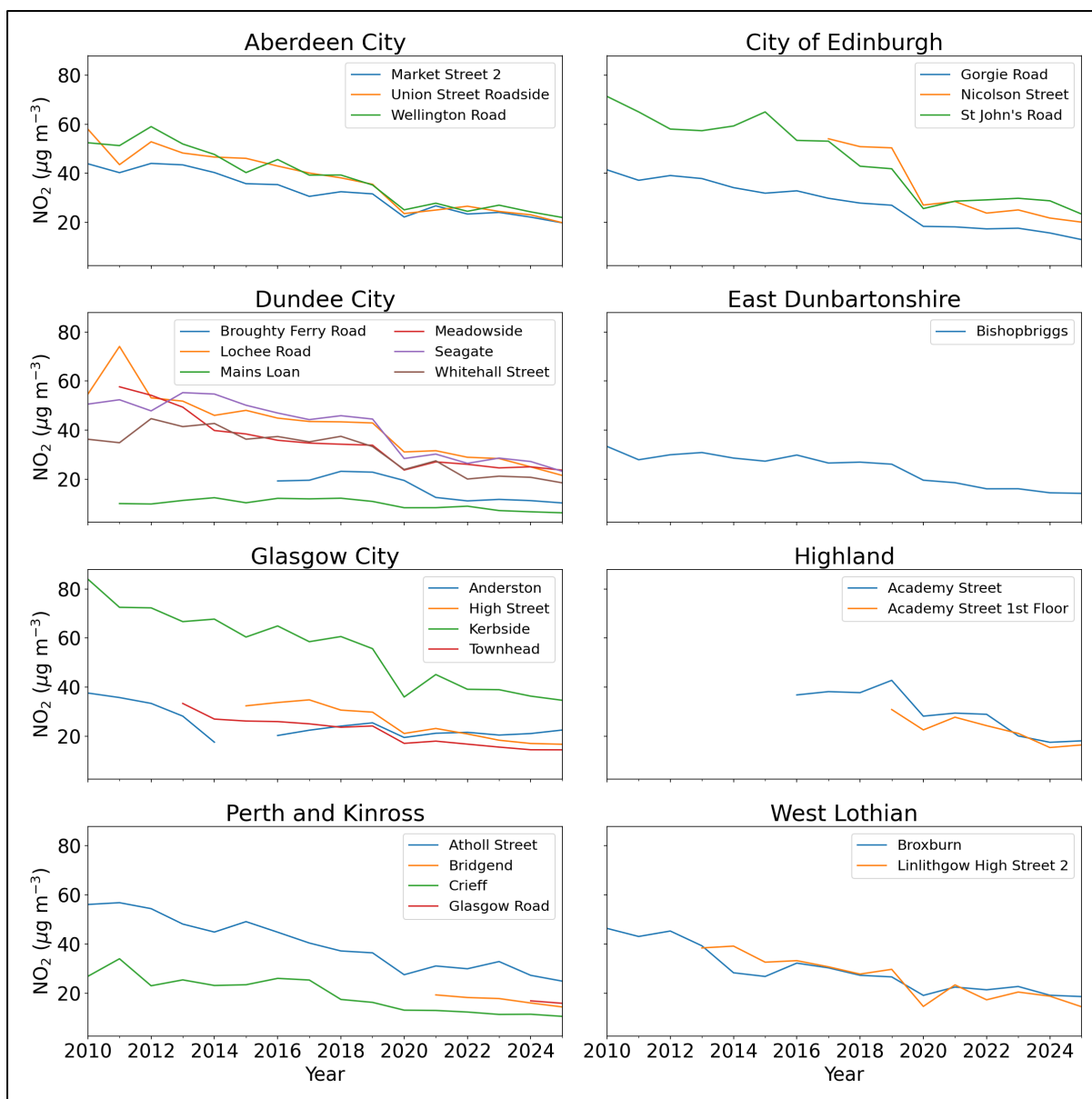


Figure 8 – Annual mean NO_2 from each automatic monitoring station within an AQMA.

The rate of change in NO_2 observed at automatic monitoring stations situated within an AQMA is shown in the table below. The mean trend for the AQMA along with the maximum trend is shown. The City of Edinburgh has shown the largest mean trend within its AQMAs with a decreased of $3.11 \mu\text{g m}^{-3}$ per year. The City of Edinburgh also holds the largest trend for any individual sensor (Nicolson Street) with a decrease of $4.31 \mu\text{g m}^{-3}$ per year. The Glasgow Kerbside site shows the second largest reduction observed ($3.29 \mu\text{g m}^{-3}$ per year) but, as of 2025, shows the largest

concentration of NO₂ with an annual mean of 34.65 µg m⁻³. Glasgow City also shows the largest mean concentration of all automatic monitoring sites, with an annual mean of 22.10 µg m⁻³ for 2025, followed by Aberdeen with an annual mean of 20.58 µg m⁻³. East Dunbartonshire has the lowest annual mean of 14.20 µg m⁻³.

Local Authority	Mean Trend (µg m ⁻³ yr ⁻¹)	Maximum Trend (µg m ⁻³ yr ⁻¹)	Monitor Station Name
Aberdeen City	-2.06	-2.54	Union Street Roadside
City of Edinburgh	-3.11	-4.24	Nicolson Street
Dundee City	-1.48	-2.42	Meadowside
East Dunbartonshire	-1.27	-1.27	Bishopbriggs
Glasgow City	-1.95	-3.29	Glasgow Kerbside
Highland	-2.24	-2.40	Inverness Academy Street
Perth and Kinross	-1.35	-2.08	Perth Atholl Street
West Lothian	-1.92	-1.99	Linlithgow High Street

Data from diffusion tubes tells a similar story to the automatic monitoring stations. However, with far more monitoring sites available, and more sites in AQMAs, more granular detail can be extracted. Figure 9 shows the number of diffusion tubes across Scotland since 2000 along with the number of exceedances detected with the diffusion tubes. There is not a clear long-term trend in the number of exceedances between 2010 and 2020 as the number of observations increased, this is likely due to a decrease in national NO₂ levels coinciding with an increase in the number of monitoring stations, making year to year comparisons across all of Scotland more challenging. However, there is a clear drop in 2020, again associated with the COVID-19 lockdowns, although the low levels have persisted in the following years with a small decrease since the publication of the AQIIR. In 2022 there were six exceedances, four in 2023 and one in 2024.

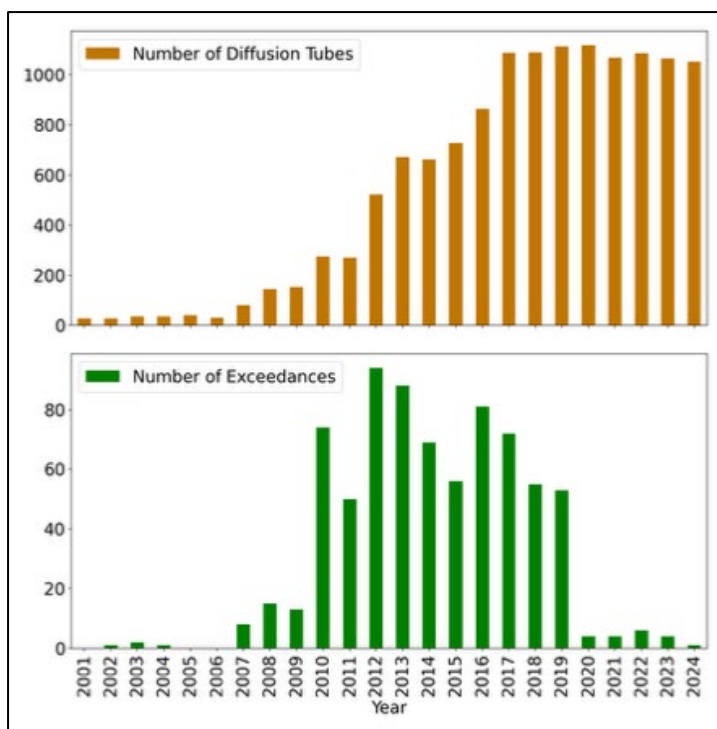


Figure 9 - Number of NO₂ diffusion tubes throughout Scotland (top) and the number of exceedances detected by the diffusion tubes (bottom).

The table below shows the number of diffusion tube sites for the 10 local authorities containing an AQMA as of 2024. There is a large discrepancy in both the total number of diffusion tube sites, and the locations within an AQMA or not. The extreme example being Dundee City where all 82 diffusion tubes sites are within the AQMA (due to the AQMA covering the entire region). These discrepancies highlight the caution needed when directly comparing local authorities. Some diffusion tubes sites have been grouped together if they share the same name and they are situated within 25 meters of one another.

Local Authority	Total Number of Diffusion Tube Sites	Sites within an AQMA	Sites outwith an AQMA
Aberdeen City	60	30	30
City of Edinburgh	126	67	59
Dundee City	82	82	0
East Dunbartonshire	30	7	23
East Lothian	25	8	17

Falkirk	60	14	46
Glasgow City	121	30	91
Highland	31	3	28
Perth and Kinross	72	65	7
West Lothian	24	7	17

Figure 10 shows the annual mean for diffusion tube data from Aberdeen City council between 2010 and 2024¹². In line with the trends across Scotland, annual mean NO₂ levels in Aberdeen are decreasing both within and outwith AQMAs, with the difference between the two reducing from 20 µg m⁻³ in 2010 to 10 µg m⁻³ in 2024 (middle plot). This is associated with a drop in the number of exceedances recorded in this local authority. In this case, the levels of NO₂ appears to have plateaued since 2022 and no detectable changes can be associated with the publication of the AQIIR.

¹² The same analysis plots for the 10 local authorities containing an AQMA are provided in Attachment A to this report.

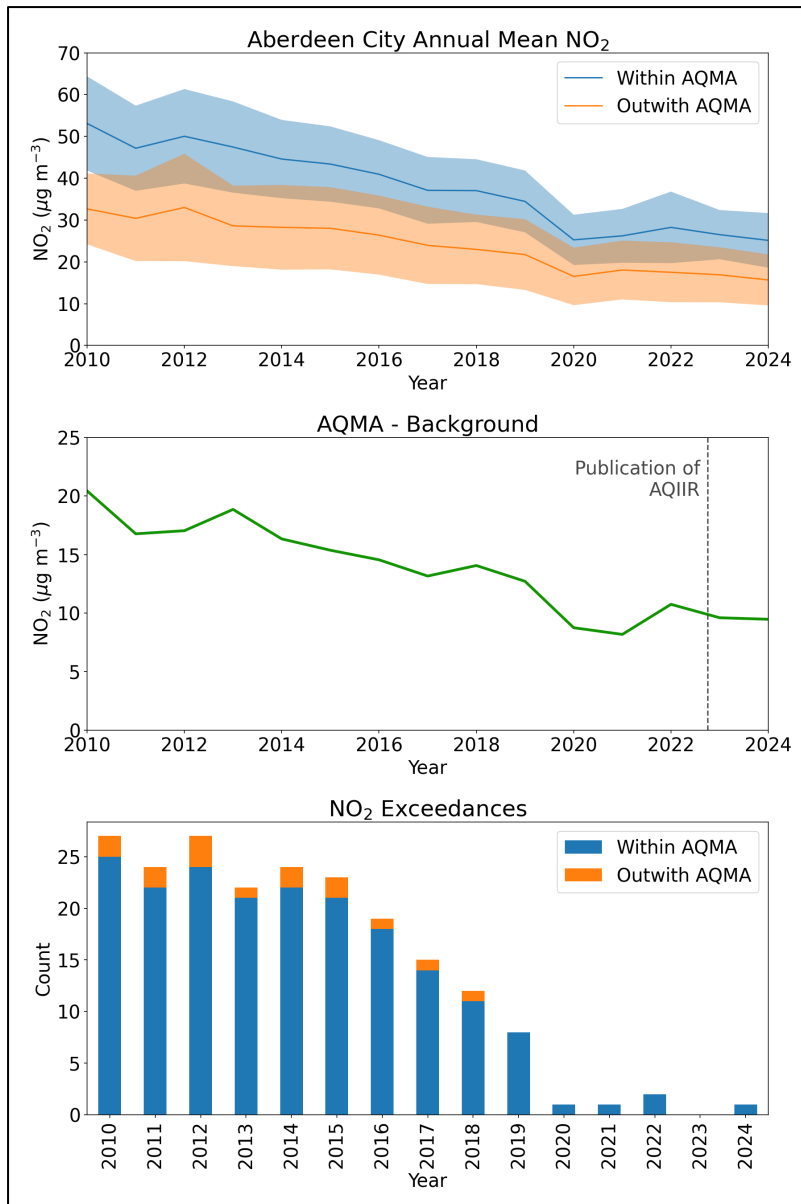


Figure 10 – Annual mean NO₂ in Aberdeen from diffusion tubes within (blue) and outwith (orange) the local AQMAs. The shaded area shows the standard deviation of the diffusion sites (top) the mean difference between sites within and outwith the AQMAs (middle) and the number of exceedances detected by the diffusion tubes from sites within (blue) and outwith (orange) the local AQMAs(bottom).

The next table shows the mean trend in NO₂ levels for nine local authorities with AQMAs both within and outwith the AQMAs for pre and post the publication of the AQIIR (in 2022). Any positive change in the trend indicates an increase in the reduction of NO₂ after the publication of the report. Comparisons within and outwith

the AQMAs give context to whether the change in trend was mostly seen in the AQMA or more broadly in the local authority. These data points are taken from the diffusion tube observations. Dundee City has not been included as there are no diffusion tube observations outwith the AQMA for comparison.

Local Authority	Within AQMA			Outwith AQMA		
	Pre-2020 ($\mu\text{g m}^{-3}\text{yr}^{-1}$)	Post-2022 ($\mu\text{g m}^{-3}\text{yr}^{-1}$)	Change	Pre-2020 ($\mu\text{g m}^{-3}\text{yr}^{-1}$)	Post-2022 ($\mu\text{g m}^{-3}\text{yr}^{-1}$)	Change
Aberdeen City	-2.1	-0.4	-1.7	-1.2	-0.8	-0.4
City of Edinburgh	-1.2	-0.9	-0.3	-0.9	-1.0	0.2
East Dunbartonshire	-0.9	-1.8	0.9	-0.8	-2.3	1.5
East Lothian	0.2	-1.9	2.1	-1.3	-1.7	0.5
Falkirk	-0.9	-0.8	-0.1	-0.5	-1.2	0.7
Glasgow City	-2.1	-2.3	0.2	-0.9	-1.0	0.1
Highland	0.4	-3.1	3.5	-0.5	-1.1	0.6
Perth and Kinross	-1.5	-1.5	0.0	-1.4	-0.5	-0.9
West Lothian	-2.1	-1.2	-0.9	-1.7	-1.1	-0.6

Three local authorities; East Lothian, Glasgow City and Highland, all exhibit a larger increase in the trend after the publication of the AQIIR within an AQMA when compared to elsewhere in the region. Of particulate note are East Lothian and Highland where a large positive change in the trend (0.2 to $-1.9 \mu\text{g m}^{-3}\text{yr}^{-1}$ and 0.4 to $-3.1 \mu\text{g m}^{-3}\text{yr}^{-1}$, respectively) is observed after the publication of the AQIIR. Although this cannot be directly attributed to the recommendations set out in the report in this analysis it does suggest there may have been an influence in these local authorities.

The area covered by the AQMAs in each local authority and the population density within have a direct impact on the degree to which reductions in NO_2 will impact human health as well as the effectiveness of emission controls. Dundee is the

largest AQMA with an area of 63 km² and a population within the AQMA of approximately 152,000 whereas the AQMAs in the Highland local authority (all situated within Inverness) cover 0.01 km² and contain approximately 300 people. It is important to take these factors into account when interpreting the results presented here and the impact the AQIIR will have on the general population. The table below shows the size and estimated population of the local authorities containing AQMAs, as of 2024, listed in descending order of area (population data taken from the 2011 Census, ONS).

Local Authority	Total area of AQMA (km ²)	Approximate Population within AQMA
Dundee City	63.55	152,000
Perth and Kinross	25.85	50,000
West Lothian	5.41	15,800
Glasgow City	3.96	24,700
City of Edinburgh	2.17	46,800
Aberdeen City	0.92	21,600
East Dunbartonshire	0.36	4,800
East Lothian	0.03	800
Falkirk	0.01	400
Highland	0.01	280

Impact of Low Emissions Zones on NO₂ Concentration

Four cities introduced and enforced Low Emission Zones in 2023 to tackle emissions from transport. These confound analysis into the effectiveness of AQMAs there is often a large geographical and regulatory overlap in both. Assessing the impact of the LEZ is also limited by the length of dataset but we can compare the difference in mean NO₂ of the surrounding years (2022 vs 2024). The table below summaries these differences for observations from both within and outwith the LEZ.

City	Within LEZ			Outwith LEZ		
	2022 ($\mu\text{g m}^{-3}$)	2024 ($\mu\text{g m}^{-3}$)	Difference ($\mu\text{g m}^{-3}$) (%)	2022 ($\mu\text{g m}^{-3}$)	2024 ($\mu\text{g m}^{-3}$)	Difference ($\mu\text{g m}^{-3}$) (%)
Aberdeen	33.2	24.1	-4.8 (- 14.4%)	19.6	17.2	-2.4 (- 12.1%)
Edinburgh	24.2	23.6	-0.8 (- 3.3%)	21.3	19.2	-2.1 (- 10.0%)
Dundee	21.6	22.3	0.7 (3.2%)	21.6	20.7	-1.2 (- 5.5%)
Glasgow	32.1	20.6	-11.6 (- 36.0%)	18.3	14.1	-4.2 (- 22.7%)

The Glasgow LEZ shows the largest difference, with a reduction of between 2022 and 2024 within the LEZ, compared to a reduction of 22.7% elsewhere in Glasgow. Aberdeen is the only other city that exhibits a larger decrease of NO₂ within the LEZ compared to elsewhere. Dundee shows a very slight increase in NO₂ while Edinburgh shows a larger decrease outside the LEZ than within.

As there is only one full year of data available from the diffusion tubes since the implementation of the LEZs, results should be taken with a degree of caution. These results indicate that the continued reduction in these local authorities cannot be solely attributed to the introduction of LEZs.

Future NO₂ Regulation in Scotland

Asthma and Lung UK Scotland have called for updated air quality standards to in line with new WHO guidance¹³. For NO₂ the WHO recommend limits of a 24-hour average not to exceed 25 $\mu\text{g m}^{-3}$ and an annual average not to exceed 10 $\mu\text{g m}^{-3}$. If

¹³ <https://www.parliament.scot/-/media/files/committees/citizen-participation-and-public-petitions-committee/correspondence/2024/pe2123/spice-briefing-for-petition-pe2123.pdf>

these standards were applied to automatic monitoring data from 2025, 83 of the 120 sites (69%) would have exceeded the daily limit of $25 \mu\text{g m}^{-3}$ with central Glasgow exceeding the limit 254 days of the year. 77 (64%) of the sites would have exceeded the annual limit of $10 \mu\text{g m}^{-3}$. If the recommended annual limit were applied to the diffusion tube data from 2024, 810 of the 1052 (77%) sites would observe and exceedance.

5. Theory of Change Review & Light Touch Recommendations

Central to the impact review was to assess the fitness-for-purpose of ESS' existing ToC processes. The current state SOP has been visualised below.

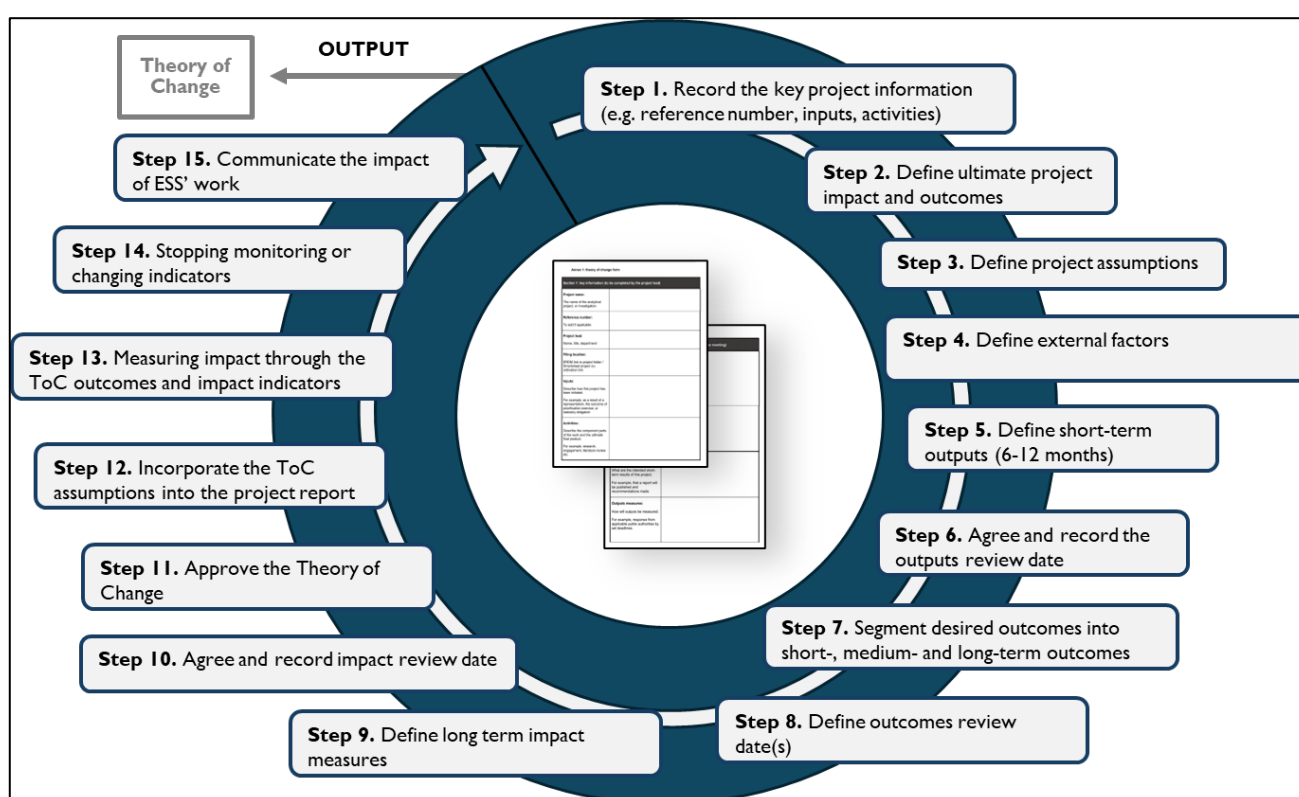


Figure 11 – ESS Theory of Change – Current State¹⁴

Since completing the stakeholder engagement portion of this project, recommendations made within Pillar 2 have been expanded to address the full suite of feedback, best practice and organisational requirements identified. Because of the mature foundation that already exists, recommendations to improve ESS' ToC

¹⁴ Full page visualisations of both the current state and proposed future state ToC approach are provided in Annex C of this report.

process have therefore been focused on enhancing the existing SOPs, supporting the speed and ease of adoption.

Light touch recommendations

A two-phase approach is recommended for the ToC development cycle, allowing development to be segmented into distinct 'Design' and a 'Iterate' phases:

Phase 1 – Design and Develop the ToC	This phase of the process develops an internal first draft of the ToC with key inputs, assumptions, and outcomes – what 'good looks like' – for the pathway to change properly defined. Four new steps are recommended for integration into this phase. During Phase 1 a first draft of the ToC map is the key output. Outcomes • Draft of the ToC • Internal alignment, draft sign off and strategic direction
Phase 2 – Socialise, refine, and strengthen the ToC	This phase reviews the ToC with stakeholders (internal and/or external) to iterate, test assumptions and incorporate unidentified understanding. Three new steps are recommended for integration in this phase. At the end of Phase 2 a ToC Strategic Narrative, influence map, and clear metrics for impact on the pathway of change have been developed. Outcomes • A refined ToC has been developed reflective of all the information that has emerged across the two phases • Alignment on project intent with key external stakeholders

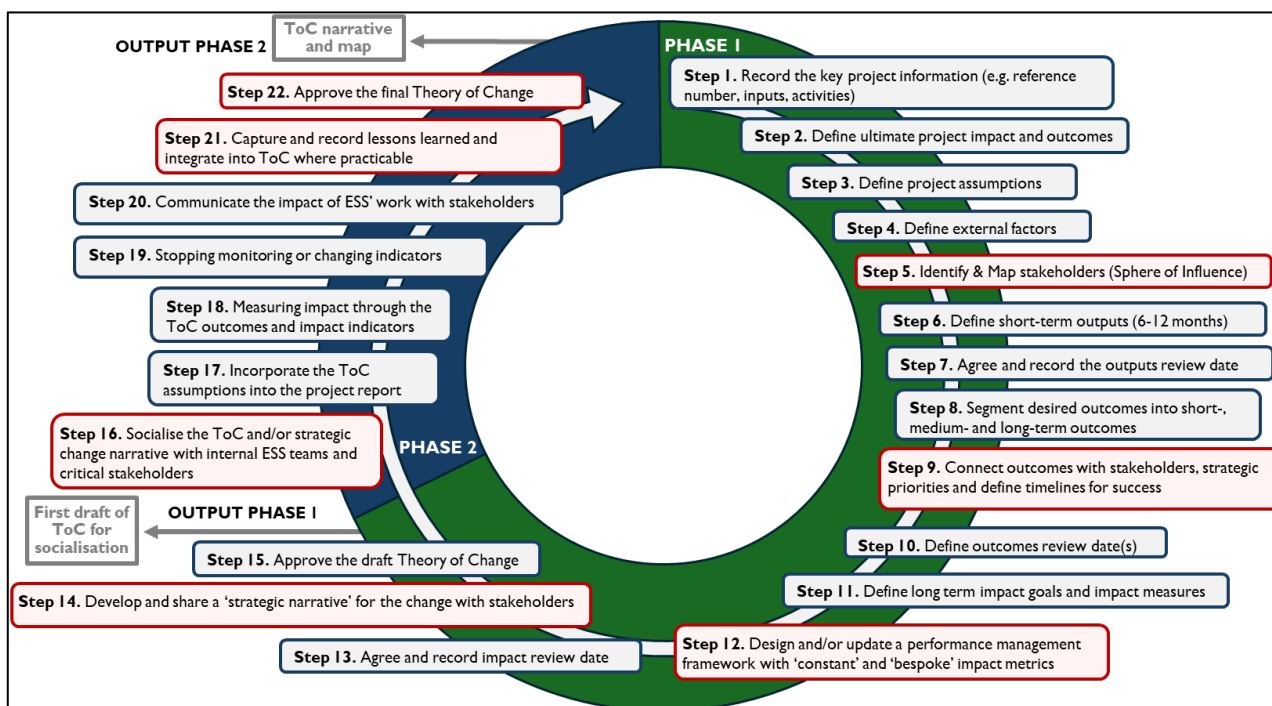


Figure 12 – ESS Theory of Change – Proposed Future State

Introducing a separate iteration phase into the development cycle, is a deliberate response to stakeholder feedback for ESS to have earlier and more sustained engagement. Overall, seven additional steps are recommended for integration into ESS' SOP, with the purpose and expected outcome for each explored below.

Recommended Step	Purpose for inclusion	Expected Outcome
Step 5. Identify & Map stakeholders (Sphere of Influence)	- Systematically understand ESS' key project-specific stakeholders to support outcome mapping - A comprehensive, categorised stakeholder map that clarifies roles,	Clear visibility of where ESS has direct control, influence or indirect interest, enabling more targeted recommendations and better attribution in the impact assessment.

	influence pathways, and engagement priorities. • Mapped stakeholders with defined levels of trust, relational power, and leverage so the ToC/work can reflect realistic pathways of change. • To ensure assumptions, risks and enablers associated with stakeholders are explicitly captured early in the process.	• An evidence-based foundation for designing targeted engagement and defining realistic success indicators.
Step 9. Connect outcomes with stakeholders, strategic priorities and define timelines for success	• Formalise the action to link ToC outcomes to stakeholders responsible for enabling them • Create specificity in change, enabling stakeholders to understand the time horizons and causal chains for when outcomes are expected	• A ToC map where each outcome is linked to strategic objectives • Improved mapping of impact against key stakeholders

Step 12. Design and/or update a performance management framework with ‘constant’ and ‘bespoke’ impact metrics	• To create a structured way to track progress and measure ESS’s impact against project-specific and longer-term organisational outcomes/goals. • Create a repeatable method that can be consistently applied across future investigations/work programs while remaining adaptable to specific investigations.	• Internal impact framework that links the ESS project to overall organisational objectives (e.g., air quality, biodiversity, climate) and tracks the implementation and impact of activity. • Greater post-publication direction – where ESS can direct future engagement effort
Step 14. Develop and share a ‘strategic narrative’ for the change with stakeholders	• Aligns understanding and sets expectations between internally and between ESS and external stakeholders • Consistency in communications and stakeholder buy-in • Connects activities to impact (engagement/work purpose, information needed, desired outcomes and the value of input/stakeholder engagement	• A clear, simple, and repeatable strategic narrative that anchors any stakeholder engagement.

Step 16. Socialise the ToC and/or strategic change narrative with internal ESS teams and critical stakeholders	Builds shared ownership of the ToC and strategic narrative; tests assumptions and refines context through structured feedback; ensures teams and stakeholders are aligned before finalisation.	- Strengthened clarity on roles, expectations, and contribution to change - A ToC and narrative validated by those delivering and impacted by delivery - improved readiness for implementation and future engagement.
Step 21. Capture and record lessons learned and integrate into ToC where practicable	- Systematically identifies insights from development and engagement; ensures learning directly informs future iterations of the ToC - Embeds continuous improvement into ESS's ToC approach and support long-term stakeholder buy-in.	A more robust and plausible ToC; clear record of assumptions, risks, and enablers to inform future work; stronger internal capability and more consistent ToC development.
Step 22. Approve the final Theory of Change	Confirms that the ToC reflects ESS priorities, stakeholder insight, and evidence to date	A final, agreed ToC ready for implementation and performance tracking

For steps 5, 9, 12, 14 and 16, specific methods and/or frameworks are recommended to support ongoing replication and are therefore discussed in further detail below.

5.1 Identify and Map Stakeholders (Recommended Step 5)

Defining a sphere of influence is about deliberately building the conditions that support the organisation to be a central, credible, and necessary actor in its domain. Here, ESS can define itself against other actors it impacts and is impacted by or necessarily monitors for stakeholder input. In general, an independent public body's sphere of influence is the set of actors, arenas, and decisions it can shape through its legal mandate, resources, and expertise. That sphere frames which policy programmes it can realistically review, steer, and sustain, and how it must organise itself and its networks over time. The relationship runs in both directions: the existing sphere constrains what programmes are feasible, and successful programmes can consolidate or expand that sphere. For ESS, the sphere of influence is shaped by a series of contextual factors:

- Legal mandate and formal autonomy: What the organisation may deliver on, and how insulated they are from government direction i.e. functional/organisational autonomy.
- Resource control: Budgets, suitably qualified and experienced personnel, data systems, licensing, or sanctioning powers that others depend on.
- Epistemic authority: Capacity to define sound standards, risk assessments, performance indicators, and interpretations of law.
- Network position: How central they are in policy and enforcement networks that link ministries, industry, civil society, and international peers.

Mapping and maintaining the sphere of influence over time is an important activity that can underpin the design of a Theory of Change and allow ESS to align its desired impact and measurement criteria against the areas and stakeholders most influential to change (e.g. mapping the influence to steer government reviews, parliamentary inquiries, independent research and the priorities of other regulators).

An organisation's sphere of influence is mapped by systematically identifying who it can shape, on what issues, and through which levers, and then by visualising those relationships. Even where some of the following steps may already be completed through regular BAU practice, they have been mapped in detail to systematise the process and better support integration into ESS updated theory of change.

Mapping a sphere of influence

1. Deliberately define influence within the context of the desired change/area:

- Formal power: legal authority, budget control, statutory duties.
- Resource leverage: data, expertise, approval or veto rights, funding streams.
- Relational power: reputation, trust, soft power in professional networks.
- Agenda-setting power: ability to define problems, set standards, or frame evidence.

2. Identify the key domains and actors:

- Domains: e.g. policy design, implementation/enforcement, scrutiny/oversight, public communication, international liaison.
- Actors: ministries, agencies, local authorities, regulators, NGOs, industry bodies, courts, parliaments, media, public groups.

3. Map control, influence and concern:

- Sphere of control: what the organisation directly controls (its own strategy, staff, budget allocation, internal procedures, its own programmes).
- Sphere of influence: the behaviour, decisions, and outcomes it can shape but not command (partner agencies, regulated bodies, professional norms, public debate).
- Sphere of concern: issues it cares about but can only affect indirectly or minimally (global trends, macro-politics, wider economic conditions).

4. Draw the influence relationships (some of which may be static given legal authority e.g. the Scottish Government):

- For each actor, ask: “How much can we influence them, and how much can they influence us?”. Direction of influence could be represented with arrows (one-way or two-way) and strength could be represented line thickness or colour.

5. Link to programmes and levers overlayed with policy programmes and tools:

- For each major programme, highlight which actors and domains are crucial for success of the current work/environmental investigation.

- Mark which levers you have with each actor (e.g. where scrutiny can be applied, data you have access to e.g. public air quality figures, standards, legal powers, convening).
- Note where influence is currently weak but strategically important – these become priorities for relationship-building or mandate change.

6. Use and update the map at an agreed cadence.

- Set an agreed period for review – key stakeholders and levers are likely to change over time as ESS, the issues it focuses on, or its legal mandate evolves.

The importance of mapping the sphere of influence

Spheres of influence mapping is important for several reasons, not least because it can support ESS to demonstrate how its scrutiny work has impacted compliance with, or the effectiveness of, Scotland's environmental law. These reasons include:

- **For identifying Levers for Systemic Change:** Unlike narrow scope or single-issue reporting that focuses on a single entity's direct footprint, sphere of influence mapping identifies broader levers—such as policy advocacy, financial flows, and product innovation—that can accelerate and better contribute to national net-zero and biodiversity goals.
- **Effective Stakeholder Prioritisation:** ESS can use this framework to map individuals and institutions relevant to the investigation at hand. This will help to align engagement with the groups that have the greatest reach, knowledge, or relevance to the investigation at hand, improving the allocation of ESS resources and the accuracy of its impact measurement.
- **Clarifying Complex Interdependencies:** Mapping reveals the entire system of interdependencies between local authorities, public bodies, and private land managers, ensuring that ESS' recommendations target the right decision-makers.
- **Improving Transparency and Trust:** By documenting the roles and influence of various actors, ESS can provide a more transparent and justifiable basis for its investigations and findings. This helps with downstream communication of outcomes or throughout regular stakeholder engagement.
- **Informing Strategic Interventions:** For specific environmental risks, such as soil health or air pollution, mapping helps ESS understand the specific actors with the

power to effect change and which influence channels are most effective for communication.

Our mapping method

The aim of this work is to produce an updated and durable sphere-of-influence model that ESS can maintain and apply over time. The following approach has therefore been developed:

1. Identify key drivers of change in the environmental governance sector, focusing on:
 - a. Government reviews
 - b. Parliamentary inquiries
 - c. Independent academic or sector research
 - d. Activities of other regulators
2. Map ESS's outputs and activities against these drivers;
3. Categorise ESS's influence using a three-tier model outlined below:
 - a. Pivotal – ESS is the main or primary driver of change
 - b. Complementary – ESS is one of several major influences
 - c. Contributory – ESS reinforces broader trends but is not a decisive driver
4. Translate this into an accessible visual or strategy map, showing strong, moderate, and weak influence links.

To support this mapping, we have used the internal conceptual model already in practice (as illustrated in ESS training materials) as a reference point. Using the three-tier model, ESS's sphere of influence therefore includes:

1. Pivotal (Main or primary driver of change)

- Post-Brexit Environmental Governance Gap: ESS is the direct, statutory replacement for the European Commission¹⁵ and Court of Justice in Scotland. It

¹⁵ Stakeholders commented on the difference between ESS and the EU, in terms of how ESS has inherited some of the influence the EU had, and some of the challenges that come with that.

is the sole independent body tasked with ensuring public authorities comply with environmental law.

- Systemic Failures in Public Bodies: ESS is the primary driver when it issues Improvement Reports or takes action on systemic failures by public authorities to alter how they implement environmental law.
- Setting the Agenda for Action: Through its investigations and analytical work, ESS acts as the principal driver forcing policy change and action on long-standing environmental issues.

2. Complementary (One of several major influences)

- Climate Change & Nature Policies: While ESS acts as a watchdog to ensure compliance, the overall direction for Net Zero and biodiversity is set by the Scottish Government and Parliament. ESS acts as a key, autonomous influencer that complements broader legislated targets.
- Environmental Law Development: ESS identifies where laws are ineffective and makes recommendations for improvement, but the formal legislative change is driven by the Scottish Parliament and Scottish Ministers.
- Partnership Working: ESS often works with other regulators (SEPA, NatureScot) and NGOs to resolve issues informally, acting as one of several major influences in bringing about changes in regulatory practices.

3. Contributory (Reinforces broader trends)

- Public Awareness of Environmental Rights: ESS works to increase awareness and confidence in raising environmental concerns, reinforcing the broader societal trend towards greater environmental transparency and accountability, but not driving this societal shift alone.
- Supporting International Standards: By monitoring international obligations and best practices, ESS reinforces the broader aim of Scotland maintaining high environmental standards compared to the rest of the world.

Air Quality Investigation Improvement Report Application

Utilising the above mapping method we have applied this to the AQIIR and produced the following breakdown according to the three-tier model:

1. Pivotal

Stakeholders against which ESS can be the primary driver of change.

- The Scottish Government: Because the ESS used its statutory powers to issue an Improvement Report, the Scottish Government was legally compelled to develop and lay a formal Improvement plan before Parliament. Without ESS's intervention, this specific policy correction process would not have been triggered.
- Scottish Parliament: ESS acts as the direct eyes and ears for Parliament on environmental governance. ESS is the primary driver in providing the evidence-based scrutiny required for MSPs to hold the government accountable for air quality failings.

2. Complementary

Instances where ESS is one of several major influences.

- Local Authorities: While ESS recommendations directly influence how councils manage Air Quality Management Areas (AQMAs), local authorities are also heavily driven by SEPA technical guidance and direct funding constraints from the Scottish Government.
- SEPA (Scottish Environment Protection Agency): SEPA is already a major technical driver of air quality standards. ESS acts as a watchdog over the regulator, ensuring SEPA's monitoring and enforcement frameworks are robust, but SEPA remains an influential driver in its own right.

3. Contributory

ESS reinforces broader trends with these stakeholders but is not a decisive driver.

- Public Bodies & Advocacy Groups (e.g., RTPi, ERCS): These groups are driven by broader trends in planning, human rights, and climate change. ESS reinforces their positions by providing high-level evidence, but these organisations operate under their own independent mandates and professional standards.
- General Public: ESS reinforces the public's right to clean air and transparent data. However, public behaviour and community activism are driven by local

health concerns and national environmental trends rather than the specific administrative actions of ESS.

ESS Sphere of Influence Map

In this section we have we have produced a diagrammatic representation (Figure 13) of the AQIIR Spheres of Influence outlined in our three-tier model in the previous section.

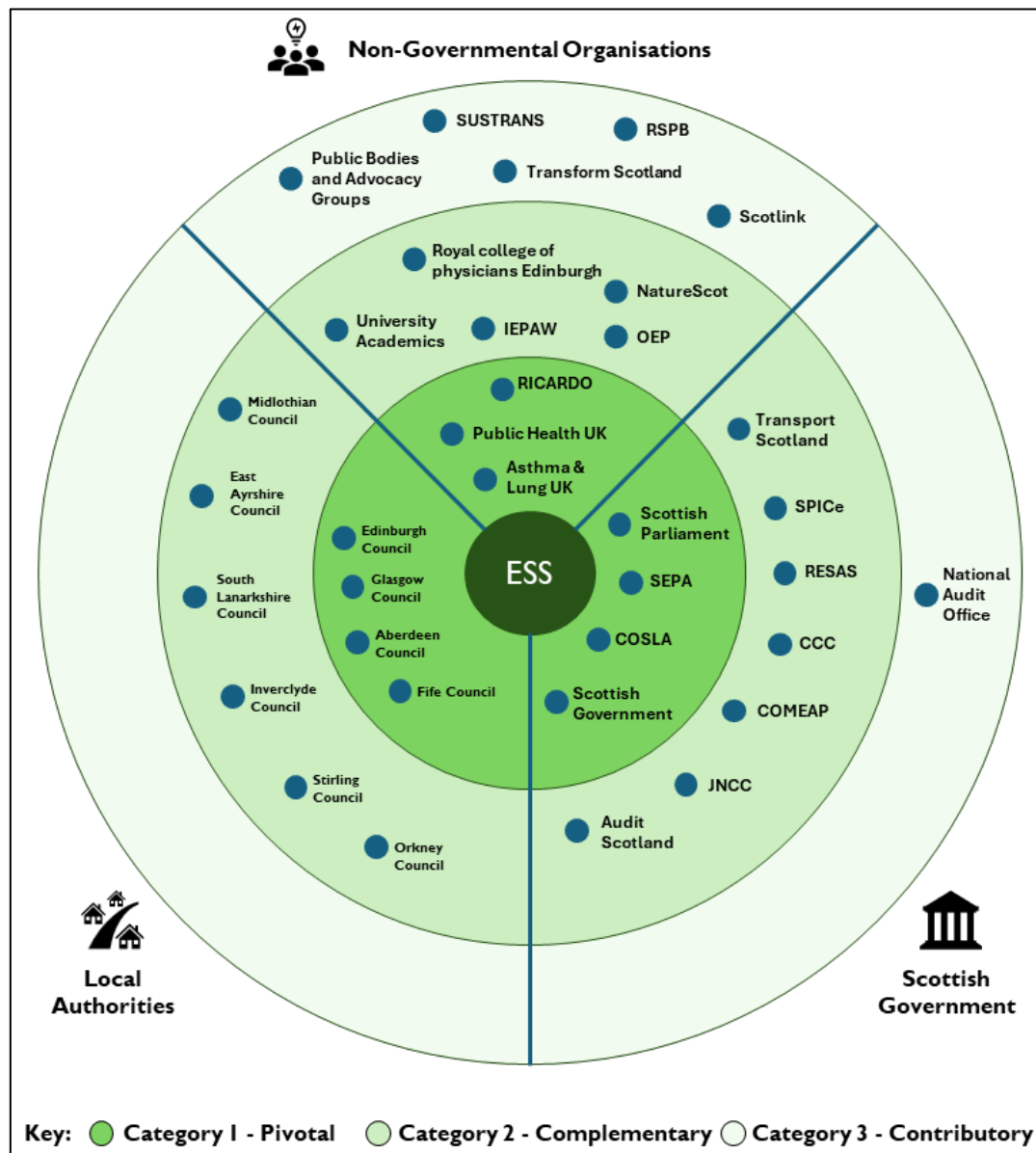


Figure 13 – The sphere of influence mapped for the AQIIR Impact Assessment Case Study

As the mapped sphere for this assessment, figure 13 reflects the prioritisation mapping completed prior to the stakeholder consultation conducted as part of Pillar 3. Those stakeholders identified within Category 1 were considered to have pivotal qualitative input and were all sought for direct engagement.

5.2 Connect outcomes with stakeholders, strategic priorities and define timelines for success (Recommended Step 9)

Linking outcomes to stakeholders creates a more measurable pathway of change and increases the chances that activity leads to the ultimate goal. Having identified the short-, medium- and long-term outcomes earlier in the development cycle, systematically working backwards to connect the mapped stakeholders will lead to a more robust, structurally sound ToC. As per best practice, stakeholders should be prioritised for engagement relative to the desirability of the outcome to which they are related. The below table provides a simple framework for this connection, demonstrating how priority of stakeholders can be mapped to desired change, the recommended frequency of interaction and the type of metrics which are likely to inform change. Mapping for every future ToC will necessarily be bespoke to the work in question and should occur early in the ToC development cycle.

	Level of relational power/trust	Levers of change and outcomes	Frequency of Interaction	Indicator of Impact (Metric) / desired outcomes
Category 1	Important to generate high average trust with Pivotal stakeholders. Most critical but most frequently engaged	Policy and strategy review, legislative scrutiny	Operational/Daily engagement under specific conditions or for key objectives	Statutory adoption and/or increased political discussion on topic in question
Category 2	Medium trust amongst Complementary stakeholders	Direct action and implementation as well as technical regulation and evidence	High/operation, Strategic/technical	On the ground compliance, improved data integrity, and/or regulatory stringency
Category 3	Baseline trust amongst Contributory stakeholders	Legitimacy and expert advocacy. Public opinion and behavioural change	Specific project-based interaction – likely ad hoc engagement	Agenda setting and policy reflection alongside enhanced public awareness and health outcomes

5.3 Impact Assessment Framework (Recommended Step 12)

In order to measure the impact of the AQIIR, a Performance Measurement Framework (PMF) was designed. This framework sought to measure causal contribution between ESS reporting and realised impact. The PMF was therefore designed with Key Performance Indicators (KPIs) that measured both the tangible (e.g. improved planning standards) and intangible forms of impact (e.g. improved public awareness) often associated with the activity of public authorities. Where possible, a baseline should be set against the current state, enabling measurement and assisting with the attribution of impact. For the AQIIR Case Study, these KPIs were sorted into 'Constant' and 'Bespoke' metrics:

'Constant' impact metrics

- **Social and Public impact:** This is evidenced where the research and recommendations of ESS reporting have resulted in stakeholders and community creating the conditions and discourse that enable or reflect change. In some instances, other stakeholders may now influence conversation on the topic in question e.g. academic journals or news reports.
- **Public Authority commitment to change:** Here impact is measured systemically, seeking to measure the funds, workforces and supply chains that may have been altered. It may be demonstrated by public commitment, alliances, or behaviours between and within stakeholders e.g. NGOs or industry participants.

Air Quality investigation case study metrics

- **Policy impact:** This impact is easiest to evidence. It is seen where policy, governance or legislation have been altered as a result of reporting. In these instances, stakeholders have made systemic or strategic and political change or are advocating for new policy and processes.
- **Environmental impact:** Realising improvements in the environment and its management is the ultimate end-goal of ESS activity. Where data is available, this impact would be measured by the real changes in the environment e.g. NO₂ reduction. These metrics may need to be tweaked further according to the data available. They are not intended to be discussed directly with stakeholders i.e. framed as questions.

Each impact area was comprised of individual scoring metrics that, where possible, were mapped to the recommendations and strategic objectives of the AQIIR. These are represented by the number at the end of each metric e.g. (1) 'Introduce the requirement for local authorities to complete and publish AQAPs within a specified target date following the declaration of an AQMA, which must be within as short a time as possible'. A number of these metrics have been assessed through desktop validation and quantitative analysis.¹⁶

A key feature of this framework is that it can be adapted over time and support legacy assessment. Individual metrics can be quickly tailored and created to align with a report in question, supporting a flexible impact assessment across multiple areas. For the next impact case study assessment, the 'Constant' impact metrics should be reused or iterated where required, then measured in order to assess general progress or regression in key areas. For future impact assessments, the measurement framework should be designed early in the ToC cycle and tied directly to the overall outcomes sought from the programme. Similarly, the 'measurability' of these metrics should be considered in consultation with key stakeholders whose input will support capture and measurement.

¹⁶ Metrics 3, 9, 10

AQIIR – Impact Measurement Framework

	Impact	Measurement Metrics	Evidence
Constant (applicable to all forms of ESS work)	Social and Public Impact	1. Evidence of stakeholder recognition of ESS activity	✓
		2. Improved stakeholder awareness of environmental challenges	✓
		3. Evidence of engagement articles and/or journals generated following publication (1)	✓
		4. Receipt of related representations and/or enquiries since publication (1)	-
	Public Authority Commitment to change	5. Formal responses to the investigation from public authorities (1)	✓
		6. Evidence of public authority commitment to change	✓
		7. Number of workforce positions created by stakeholders to address and/or deliver change (1-6)	-
		8. GBP spent or committed to actioning change (1-6)	-
		9. Number of public statements and press releases made by target stakeholders (1-6)	✓
		10. Evidence of parliamentary questions and/or debates regarding the topic (5, 6)	✓
		11. Change and/or monitoring programs being appropriately funded (1-6)	-
Air Quality specific metrics of	Policy Impact	12. References within the CAFS2 Progress Reports e.g. Changes in language, inclusion of time scales and standards (5, 6)	-
		13. Incorporation of ESS principles and recommendations within policy (1)	✓
		14. Establishment of a monitoring body with appropriate remit (4)	-
		15. Evidence of investigations completed by monitoring bodies (4)	-

		16. Creation of Air Quality Management Areas ('AQMA's') (1)	✓
		17. Regular development and submission of Air Quality Action Plans ('AQAPs') (2)	✓
		18. Evidence of AQMA's meeting AQAP objectives within target dates (2)	✓
		19. Evidence of AQAPs updated since AQIIR publication (3)	✓
		20. Evidence of AQMA's providing regular NO ₂ reporting (2, 3)	✓
		21. AQIIR references within official government reporting (5, 6)	-
	Environmental Impact	22. Total reduction in NO ₂ from 2022 levels (1-6)	✓
		23. Reduction in NO ₂ emissions across local authority management areas	✓
		24. Reduction in annual mean NO ₂ at named traffic and background sites in priority AQMA's (observed monitoring)	✓
		25. Change in the upper percentile of NO ₂ concentrations at traffic sites (hotspot persistence)	✓
		26. Length of road predicted to exceed limit value and WHO guideline	-
		27. Population living within modelled exceedance corridors	-
		28. Population weighted mean NO ₂ concentration by local authority and deprivation quintile	✓
Key	Evidence of metric ✓	No evidence of metric gathered ¹⁷ -	

¹⁷ **Note:** For the purposes of this assessment, 'no evidence of metric gathered' does not equate to that metric not having been satisfied. Due to constraints around project schedule and stakeholder availability there may be instances where metrics may have been satisfied, but evidence was unable to be gathered.

Social and public impact

Stakeholders clearly recognised ESS as a trustworthy and credible oversight body, with a number noting that the AQIIR had directly improved their understanding and awareness on Scotland's air quality challenges. There was also evidence that ESS reporting had strengthened public understanding through the report, with a number noting that the AQIIR provided a technically authoritative reference point that supported the execution of their regular responsibilities. While contrasting opinions were noted, impact in this area was evidenced by the majority of stakeholders who agreed that ESS has played a contributory role in shaping public attention, supporting more informed debate, and reinforcing the public governance around air quality standards in Scotland.

Public authority commitment to change

While some metrics of impact—such as the creation of new workforce roles or improved levels of funding—were not evidenced within the project window, qualitative feedback indicates that ESS's scrutiny was a prompt for several stakeholders to address air quality with their respective senior organisational members. In effect, this led to enhanced reporting standards, demonstrating a tangible shift in behaviour and prioritisation across multiple public bodies (as evidenced by public authority statements issued in response).

Policy impact

In terms of policy impact, evidence suggests that the AQIIR had a tangible effect on the policy and governance processes of LAs. Several LA stakeholders highlighted that the report was the contributing action for their council to refine administrative processes in the development and delivery of AQAPs. Interviewees also noted that the investigation provided an authoritative reference point that influenced consultation responses, parliamentary correspondence, and broader policy discussions, helping to sharpen the relevance of air quality within national environmental priorities. Beyond the LAs, effect on public authority policy appears to be limited, with a number of stakeholders suggesting that recommended changes to air quality legislation were already in the underway.

Environmental impact

While several stakeholders opined that the AQIIR was a catalyst for maintaining public authority action and momentum on Air Quality, the majority of stakeholders perceived the direct impact on measured air quality outcomes to be limited. This sentiment is corroborated through the quantitative analysis of NO₂ data across Scotland which, while showing a long-term downward trend in concentrations consistent with UK and European patterns, does not demonstrate a direct national level impact attributable to the publication of the Improvement Report. It is worth noting that irrespective of the level of contributory impact, assessed metrics suggest that ESS's environmental objectives in this space are being met.

5.4 Strategic Narrative (Recommended Step 14)

The introduction of a strategic narrative template has been recommended as a direct result of two separate phases of stakeholder engagement in this project. Firstly, ESS colleagues interviewed during Pillar 2 indicated the need for greater alignment between internal delivery and communications personnel, in particular, ensure that the communications team have a commensurate technical understanding and are aligned on the core issue and desired outcomes and impact from work programmes. These templates should therefore be deliberately crafted together, between the two teams, as a pre-requisite before any external stakeholder engagement occurs.¹⁸

Secondly, interviewed, and surveyed stakeholders regularly noted a misalignment in expectations between ESS and themselves. In their opinion, this led to differences in technical understanding of the subject, difficulties in understanding ESS objectives and priorities, and when outcomes could be expected.

The primary outcome of developing a structured strategic narrative alongside the ToC is to support broad alignment internally at ESS and amongst its most important external stakeholders. It should be developed by directly using the inputs of earlier ToC steps e.g. outcome, impact, and measurement metric design.

¹⁸ **Note:** Templates should be adapted as required and developed in consultation between communications and delivery teams throughout development of the initial ToC draft. The level of detail required should be dictated by the time of engagement, category of stakeholders within the sphere of influence and the needs of ESS.

Strategic Narrative – Pre-Engagement Template

The pre-engagement template should be developed at the end of Phase 1, prior to any external engagement, and used to support initial socialisation of the draft ToC. It is recommended that the strategic narrative contain specific elements:

Pre-engagement strategic narrative	
Situation	• Convey the objectively true contextual elements behind the work e.g. current exceedance levels. The context and situation should not contain any subjective information that could be disputed by stakeholders e.g. the priority of an environmental issue for Scotland. Containing this to objective facts will ensure alignment in understanding between ESS and external stakeholders and support buy-in around the purpose and work objectives.
Problem Summary	• Convey the overarching challenge that ESS is trying to solve in this work. Where possible this should be limited to one overarching singular problem statement (of which there can be multiple elements).
Purpose of work & main Objectives	• Communicate the key change ESS is trying to affect through this investigation/analytical work e.g. what does it expect its efforts to result in • The genesis of the work, why this is a priority e.g. has the issue arisen through representation or independent investigation
Desired outcomes & Timelines for change (what ‘good’ looks like)	• The ultimate desired outcome from this work (e.g. a reduction in NO₂ levels) • The specific measures that ESS wants to realise and measure (this may extend to sharing specific KPIs) • When change is expected – communicate the horizons for impact and what good looks like at the short, medium, and long-term stages of the program of work

Purpose and expected levels of engagement	• How the engagement being undertaken supports ESS to affect change/realise outcomes • How much the stakeholder can expect to be contacted and when they can expect updates • Communicate the importance of stakeholder input and the type of data/qualitative input needed to support outcomes
Summary of evidence that supports the ToC	• Any existing data sources and quantitative insight (technical basis of the reporting) or feedback / representations that have been received on the issue. • Previous results of work within the patch e.g. prior investigations and their outcomes

A similar template can be used to support post-engagement communications, focusing in particular on the status of the investigation/program, and sharing the outcomes of work with stakeholders.

Post-engagement strategic narrative	
Work status	• Where the project is at and when stakeholders can expect to be informed of results/see outcomes
Outcomes of stakeholder engagement	• How did the stakeholder's input support the project e.g. data used, reflection of qualitative input • Expectations for any future engagement
Impact of work	• Provide detailed reporting on the metrics – where impact is being registered and how it is contributing to the broader organisational objectives
Next steps	• Reference to any follow-on work and areas of future interest • How future work aligns to existing priorities and resources

5.5 Socialise the ToC and/or strategic change narrative with internal ESS teams and critical stakeholders (Recommended Step 16)

This step formalises ToC-centric engagement with stakeholders early in the development cycle. It aims to capture their input to refine the ToC, support 'buy-in' during longer-term engagement and set expectations with stakeholders critical to the process. This process should include both internal and external stakeholders, with activities ranging from sharing and getting feedback on the design of the ToC, through to testing assumptions about the pre-conditions of success.

The most plausible ToCs are those where early and thorough validation has occurred, where assumptions are well developed for each causal link and risks are mitigated where possible. This socialisation step can be fluid and should be tailored according to the time and resource constraints of the delivery team. It can range from a request for comment from critical stakeholders, through to a dedicated engagement period as was conducted for during Pillar 3 of this work. Emphasis from engagement should include:

- Testing ToC assumptions and logic
- Have the correct stakeholders necessary for driving change been identified?
- Are the metrics of impact adequately defined?
- Uncovering unknown dependencies or risks that might impact the work
- Where practicable, capturing, recording, and sharing stakeholder feedback and the lessons learned from development (as per Recommended step 21).

6. Final Recommendations

The findings of this assessment demonstrate that ESS is making a broad impact through its investigative reporting and that it has matured its ToC approach since delivery of the AQIIR. Building on the insight gathered, the following recommendations are designed to ensure ESS can more systematically evidence its influence and consolidate its role within the environmental governance landscape as it undertakes other pieces of work. Together, these recommendations provide a pathway for embedding more systematic stakeholder engagement, building robust theories of change and supporting future programmes of work with a more robust and transparent impact framework:

- 1. Consider integrating proposed changes into ToC documentation and training materials:** If accepted, recommended steps should be adapted into the ESS SOP and training materials and be considered 'BAU' as part of the next major ToC development cycle. Where necessary, these steps should be iterated through implementation and 'continuous improvement'.
- 2. Design and formalise the Performance Framework according to organisation priorities:** Establish 'constant' impact metrics linked to ESS' long-term to strategic objectives and measure impact across all elements of work. Create a repeatable measurement structure that supports attribution and evidences ESS contribution for 'bespoke' projects.
- 3. Develop a ToC for the next major piece of work and use in tandem with the ToC '1 year review point':** Set a formal review milestone to test plausibility, measure progress, and embed lessons learned.
- 4. Conduct a case study impact assessment using the refined ToC:** Replicate this impact case study process within the next year on a chosen and significant program of work to identify and rectify any ToC development 'growing pains' still remaining within the process.

Annex A: Rapid Evidence Review Source Shortlist

The following is a shortlist of sources identified and assessed against the RER filtering criteria. Sources listed here are a sample of the ‘most relevant’ for this project, with a more complete list provided in the Impact Assessment Interim Report.

No	Title of article	Authors	Year
1	A robust Theory of Change framework enhances the development of effective conservation pathways by clearly defining goals resource allocation and expected outcomes.	Wayne Stanley Rice, Merle Sowman, Maarten Bavinck	2020
2	The Theory of Change is viewed as a more effective alternative to the Logical Framework Approach particularly in capturing social change in development programs.	Lisa Ringhofer, Karin Kohlweg	2019
3	Best practice in Theory of Change involves a robust analysis to inform intervention design and evaluation.	John Mayne	2017
4	Utilize the Theory of Constraints to identify and manage key limitations within an organization for sustained improvement.	Margarida Gaspar, Luis Cristovão, Alexandra Tenera	2019
5	The best practice for Theory of Change involves clear reporting and adherence to a proposed checklist to strengthen documentation and understanding of its application in public health interventions.	Erica Breuer, Lucy Lee, Mary De Silva, Crick Lund	2015
6	The theory of change process enhances understanding of diverse actor’s assumptions and causal	Derek Armitage, Julia Arends, Natasha L. Barlow, Alana Closs, Geneva A. Cloutis, Matthew Cowley,	2019

	linkages while promoting a systems perspective in sustainability education.	Christina Davis, Sheralyn D. Dunlop, Sara Ganowski, Charlotte Hings, Lesley Chepkemai Rotich, Kyle Schang, Stephen R. J. Tsuji, Cassandra Wiens	
7	Community Theories of Change: Linking Environmental Justice to Sustainability through Stakeholder Perceptions in Milwaukee (WI, USA)	Kaitlyn Hornik, Bethany B. Cutts, Andrew J. Greenlee	2016
8	Transparency in Environmental and Resource Governance: Theories of Change for the EITI	Philippe Le Billon, Päivi Lujala, Siri Aas Rustad	2021
9	A theory of practice for environmental assessment	Glenn W. Suter, Susan M. Cormier	2008
10	How to develop an evidence-informed theory of change for health: WHO technical guidance	WHO	2025
12	The Theory of Change Process – Guidance for Outcome Delivery Plans	Government Analysis Function	2025
13	The practice of climate change policy evaluations in the European Union and its member states: results from a meta-analysis	Noriko Fujiwara, Harro van Asselt, Stefan Bößner, Sebastian Voigt, Niki-Artemis Spyridaki, Alexandros Flamos, Émilie Alberola, Keith Williges, Andreas Türk, M. ten Donkelaar	2019
14	Theory of Change approach to climate change adaptation programming	Bours, McGinn, and Pringle	2014

Annex B: Category 1 Engagement Log

The following is a register of the Category 1 engagement that occurred during Pillar 3:

#	Stakeholder
1	Scottish Government
2	COSLA
3	SEPA
4	Scottish Government
5	Dundee LA
6	Aberdeen LA
7	Scottish Government
8	SEPA
9	SEPA
10	Fife LA
11	Asthma and Lung UK
12	RICARDO
13	Aberdeenshire
14	Glasgow
15	Edinburgh LA
16	Public Health Scotland

Annex C: Current and Proposed Future State ToC Approaches

