

# Final Report Improving performance through diversity and inclusion in National Highways' supply chain

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# Contents

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<b>Foreword</b>	<b>4</b>
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<b>Executive summary</b>	<b>6</b>
The D&I intervention	8
Evidence on the relationship between D&I and performance	8

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<b>Background</b>	<b>10</b>
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<b>D&amp;I interventions – a system-based approach</b>	<b>13</b>
D&I scoping, leadership, engagement and communication	18
D&I training and development (on-site)	18
Establishment of D&I ambassadors	19
Career intentions, progression and development planning, exit interviews and retention strategies	20
Evaluation and reflection	21

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<b>Reflections on D&amp;I interventions employed</b>	<b>22</b>
--	-----------

---

<b>Evaluating the effect of D&amp;I on performance</b>	<b>25</b>
Descriptive analysis: employee perceptions of D&I	26
Descriptive analysis: Work-life balance, job satisfaction and intention to leave	29
Estimating the effect of D&I on employee outcomes and performance	33

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<b>Conclusions and next steps</b>	<b>38</b>
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<b>Appendices</b>	<b>40</b>
Appendix I: Data and methods	41
Appendix II: Roadmap	44
Appendix III: Further reading	45

# Foreword

The UK's infrastructure - our **roads, bridges and transport networks** - are a crucial part of connecting the country. From family holidays and enabling emergency vehicle response, to keeping industry running and the economy growing, **the infrastructure is about much more than steel and concrete.**



**Phil Procter**

Head of Research, National Highways.

**This report, a collaboration between Leeds University Business School and National Highways**, examines and analyses an essential question for a vital part of our infrastructure – roads. Through a four-year study on the A428, M25 Junction 10 and A1 Birtley to Coalhouse, three of our major highways’ projects, the research asked an essential question: how can diversity and inclusion within supply chains, crucial for generating opportunities for under-represented groups and providing a road network that is accessible for all, enhance performance across road projects?

From September 2021 to March 2025, the research team undertook a study into the role of diversity and inclusion initiatives in enhancing performance within National Highways’ supply chain. By analysing practices, gathering insights, and tracking the impacts of diversity and inclusion initiatives, this study demonstrates that putting diversity and inclusion at the heart of decision-making is not just a moral or legal duty. It is a strategic enabler of innovation, resilience, retention of skilled staff and delivery excellence.

As we navigate increasingly complex challenges, such as rising inflation, net-zero targets, and a rapidly evolving technological landscape, it is vital that we foster supply chains that are reflective of the communities they serve. Only then will we have the right mix of people to understand road users’ needs and secure continuous improvement and growth.

This report provides not only evidence of the tangible benefits of considering diversity and inclusion in the right way at the right time, but also a call to action for industry leaders, policymakers, and supply chain partners to embed inclusive values at every level of project delivery.

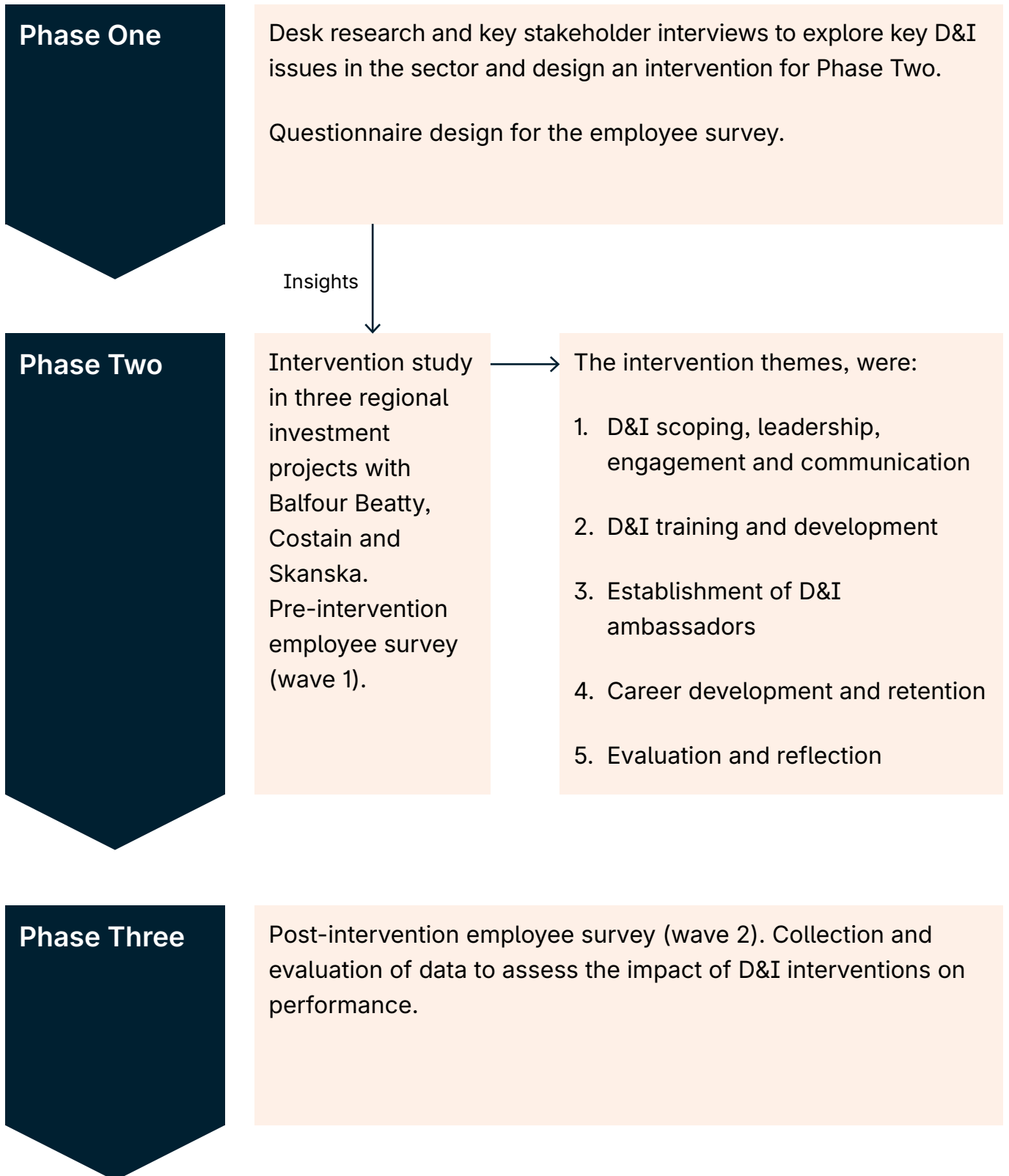
We commend the authors for their thought-provoking work and hope it serves as a foundation for continued progress in creating fairer, more effective road infrastructure systems.

# Executive summary

## Study overview and approach

In 2021, National Highways commissioned the University of Leeds to undertake an **extensive research project** focused on enhancing Diversity and Inclusion (D&I) throughout the highways' construction supply chain. This investment aimed to generate **evidence-based recommendations** to support National Highways' existing D&I activity and to assess whether strengthened D&I initiatives within National Highways' Regional Investment Programmes could **yield measurable performance benefits** across the supply chain.

Figure 1: Project design



## The D&I intervention

The team created five integrated modules of D&I activities (Figure 1), which together formed the intervention strategy. Grounded in academic and practitioner evidence, and with insight from the infrastructure projects through Phase One, the interventions were implemented across three major highways construction schemes in England, together representing over £1 billion in public investment: A1 Birtley to Coal House (Costain), M25 Junction 10 (Balfour Beatty), and A428 Black Cat to Caxton Gibbet (Skanska). D&I interventions were designed to:

- support and enhance ongoing site-level and supply chain diversity and inclusion initiatives on construction projects
- align with the lifecycle of a road project, i.e. tailored to early, mid and mature/end stages of projects
- be tailored to the construction sector and in particular site-based work environments

The intervention plan developed also relied on insights from academic and practitioner evidence on ‘what works’ in terms of embedding D&I into workplace cultures.

**Figure 2: Underlying principles on which the project is based**

### Key principles

The key principles of the interventions were that D&I initiatives work best when they seek to change organisational systems and processes rather than individuals, and when they:

- Have buy-in from leadership teams
- Dedicated personnel to deliver initiatives
- A focus on an integrated bundle of activities
- Seek problem solving and engagement from the workforce, addressing issues that matter to them

## Evidence on the relationship between D&I and performance

To generate robust evidence on the relationship between D&I and performance the research team used a quasi-experimental design where an original employee survey was conducted before and after the interventions and linked to performance data from the Collaborative Performance Framework (CPF), supplied by National Highways.

Initial data analysis revealed that while employees are generally satisfied with their jobs and support D&I, they also felt that senior management teams still lack gender and ethnic diversity:

- One in five respondents viewed senior management teams as highly diverse in terms of gender
- 15% thought that senior management is highly diverse in terms of ethnicity

As a result, women and minority ethnic employees were less confident in employers’ commitment to diversity, equal opportunity and improving employees’ wellbeing.

Despite an overall positive working environment, employees found **some aspects of work challenging**:

- Work-life balance was still considered to be an issue as time and travel commitments continue to affect life outside of work and, consequently, career progression (particularly for women and minority ethnic employees)
- Compared to other attributes (e.g., job security), employees (notably women) were less likely to feel that their voice is heard and opinions matter

In part because of these challenges, **employee turnover remains a major issue**. A quarter of employees surveyed were considering quitting their jobs. This is double for minority ethnic employees - nearly 50%



The study shows that focused and evidenced based **D&I interventions can effectively address these challenges**. Following the implementation of the interventions, employees noted:

- Significant changes to the workplace culture: Inclusion was more visible, language more respectful and employees reported a better understanding of D&I, and the benefits of D&I
- Through the intervention study, D&I Ambassadors were able to dedicate time and resources to support their learning and development, and their colleagues in relation to D&I matters on site. Ambassadors supported and championed the implementation of the D&I initiatives, and enhanced ongoing work in relation to Fairness, Inclusion and Respect (FIR)
- The D&I Ambassador roles facilitated policy and strategy development as well as providing a structure for responsibility and accountability. Ambassadors felt more confident in their roles and passionate about taking on the challenges of D&I and FIR compliance
- Overall, D&I interventions were positively received, with 85% of women and 68% of men reporting that they placed greater importance on having a diverse workforce. Two-thirds of women and one in four men observed improvements in their working environment (Figure 13)

D&I contributed to **measurable improvements in the working environment and employees' sense of wellbeing**. Statistical analysis suggests that D&I interventions could improve employee experiences.

Key findings include

- up to 60% increase in employees' sense of a positive working environment that is more equal, diverse and provides managerial support (Figure 14)

- up to 42% improvement in job satisfaction (Figure 15)
- a 21% reduction in turnover intention, through enhanced D&I (Figure 15)

Further causal analysis demonstrates that through these positive outcomes **D&I can lead to better organisational performance by:**

- Lowering recruitment and replacement costs for skilled construction workers estimated at approximately £236,000 per annum for a typical major infrastructure project
- Improving the Predictability Factor (a key CPF indicator measuring the ability to deliver an infrastructure project on time and to budget) by up to 16% (Figure 17)
- Improving 'Understanding Key Messages' by up to 35% (understanding the project's brand, key messages and narratives among suppliers) (Figure 18)

Prior to this research, no studies of this scale had focused on the relationship between D&I, workforce experience, and performance in the highways construction sector. This programme of research formed the basis of the *Diversity and Inclusion Roadmap* for National Highways' supply chain. The Roadmap is a practical tool for all National Highways supply chain partners to use to enhance workplace (D&I) and ultimately, culture and performance. It complements ongoing Fairness, Inclusion and Respect (FIR) initiatives, and provides useful guidance and resources to support clients who are committed to embedding D&I in a systematic and evidence based way.

It can be viewed here:

[Diversity and Inclusion Roadmap →](#)

<https://learn.supplychainschool.co.uk/local/coursebuilder/rule/scsslearningpath/view.php?id=2621>



Photograph: National Highways

# Background

**In recent decades, there has been a substantial body of academic research and practitioner debate on workforce Diversity and Inclusion (D&I).** This literature has explored the challenges faced by underrepresented groups in the labour market and the struggles of certain industries to attract, promote and retain diverse talent, notably women and minorities. Although the direct link between diversity and performance remains complex and at times inconclusive, there are clear strategic advantages to expanding the sector's talent pool and harnessing diverse skills and experiences. Industry leaders have increasingly sought to reform recruitment, retention, and development practices — both to access these benefits and to contribute to a fairer, more inclusive society, aligned with a strong commitment to generating social value.

In the UK construction sector, the focus on D&I has been vital but there remains much work to do. The Farmer Review (2016), commissioned by the Construction Leadership Council, highlighted critical issues facing the sector, including declining productivity, an ageing workforce, and a lack of new entrants. With its headline '*Modernise or Die*', the review outlined the urgent labour shortages in construction — driven not only by demographic shifts but also by outdated industry practices.

Achieving a diverse and inclusive workforce that is representative of the communities it serves is a complex challenge. In the highways sector progress has been slow. As a result, the sector continues to lag behind others and is failing to fully benefit from the current and future talent pool. The construction industry faces reputational issues that hinder recruitment. It is often perceived as demanding long hours, offering poor work environments, and fostering high-stress conditions (Keepmoat, 2017). For many women, construction has been associated with a masculine culture, physical strength, exposure to harsh weather, and tolerance of banter and language that may not be inclusive or respectful (Kelly et al., 2015). These perceptions, combined with different experience in terms of career progression opportunities, discourage applicants — even as more women and individuals from minority

ethnic backgrounds gain relevant qualifications and experience.

Some employers continue to rely on dated employment practices, creating additional barriers for those with caring responsibilities or disabilities. Recruitment methods such as 'word of mouth' perpetuate insular hiring networks, excluding individuals outside the traditional workforce. Concerns from trade bodies about bias in the recruitment process highlight the need to reframe hiring practices, use data to uncover unintentional barriers, and build inclusive systems.

Young people increasingly seek employers whose values align with their own. Given the construction sector's perceived shortcomings in D&I and in relation to climate change and sustainability, it is not typically a first-choice destination for socially conscious candidates. Moreover, careers education at school and university often focuses on other industries, leaving many young people unaware of the range of highly skilled occupations and professional roles available in construction, which carry significant pay progression and career prospects. While initiatives such as Go Construct's Female Firsts in Construction and the Women's Engineering Society have begun to shift perceptions, more is needed to inspire young women to enter and succeed in male-concentrated fields.

Beyond recruitment, working practices in construction present practical barriers to inclusion. The requirement for on-site presence presents greater challenges for individuals with certain health conditions, disabilities or caring responsibilities. In the past, a lack of appropriate facilities (e.g., properly sized PPE, prayer rooms, and accessible toilets) further disadvantaged women and other underrepresented groups. Rigid shift patterns, the necessity for geographical mobility, and insufficient flexible working and parental leave policies contribute to a lack of fit with the industry among women and other minority employees.

While industry leaders increasingly recognise the importance of modern, innovative, and inclusive practices to address skills shortages and ensure long-term sustainability, the business case for D&I remains unconvincing for some. Many find it difficult to consistently adopt and crucially maintain commitment to D&I within the sector, and skepticism persists, notably in male-concentrated workforces where such initiatives can be met with resistance.

In this context, National Highways commissioned this research to deliver an ambitious programme of D&I interventions and assess whether enhanced D&I activity within National Highways' Regional Investment Programmes could generate measurable performance improvements across the supply chain. This research was undertaken with full awareness that the findings might not reveal a positive relationship between D&I and performance, given that past academic research is inconclusive.

The research was conducted in collaboration with National Highways' Tier 1 suppliers across three major infrastructure projects: Balfour Beatty (M25 Junction 10), Costain (A1 Birtley to Coal House), and Skanska (A428 Black Cat to Caxton Gibbet). At each site, tailored D&I interventions were developed and implemented as integrated bundles of activity, drawing on academic evidence and co-designed with National Highways and its partners.

The programme of research was designed over three phases and involved extensive collaboration with Tier 1 and Tier 2 suppliers. Phases One and Two (linked in separate reports) focused on background research and analysis of key stakeholder interviews (Phase One report), and Phase Two focused on the design and implementation of targeted interventions. Phase Three focused on results and evaluation, and is presented in the body of this Final report.

Phase One consisted of a literature review, exploratory qualitative data collection and compilation and curation of extensive secondary data from National Highways and the supply chain partners. The research aims were to:

- Review existing research on D&I broadly, including a range of sectors and countries and more specifically within the construction sector in the UK
- Explore the experience of D&I within National Highways and its supply chain and reflect on opportunities to advance D&I policy and practice
- Undertake an initial analysis of industry D&I, performance and workforce data
- Agree on an implementation plan (outlined below), with project partners and other key stakeholders, to adopt in Phase Two

Phase Two consisted of two distinct elements: firstly, the implementation of our D&I interventions within the supply chain in the three major infrastructure projects, and secondly, data collection and employee engagement elements consisting of qualitative research on career intentions, retention and exit and a quantitative survey with supply chain employees working on the projects. In the Phase Two Report, we discussed our approach to implementation across the two projects and reported on progress on implementation of the D&I initiatives (i.e. the intervention) and findings from the first wave of the employee survey.

Phase Three, which is the primary focus of this final report, provides robust evidence of the relationship between D&I and performance, evaluating the effects of interventions on both employee experience and organisational outcomes, and sets out a roadmap for embedding D&I within National Highways and its wider supply chain.



Photograph: National Highways

# D&I interventions – a system-based approach

**Our strategy to improve D&I was guided by research and practical insights specific to the highways construction sector.** Implementing D&I varies by context and is often debated. There is limited evidence on what truly works, as outcomes depend on economic, demographic and environmental factors. Many organisations have adopted a wide range of interventions, some without evidence of their effectiveness. Popular methods like unconscious bias training are widely used but often ineffective. By focusing solely on changing the behaviours of individuals, there is a risk of resistance against inclusion efforts if personal beliefs and autonomy are challenged.

This doesn't mean companies are deliberately choosing ineffective D&I strategies. The challenge is that it is hard to give advice that fits all businesses, since factors like company size, sector, location, and composition of the workforce can all impact effectiveness and the goals of D&I efforts vary. As a result, many organisations tend to follow what others are doing – assuming this is best practice – rather than relying on evidence tailored to their specific context.

Considering these challenges, large scale research, spanning various sectors and organisational forms, finds that the most effective D&I strategies generally follow a similar pattern:

- they have buy-in from leadership teams
- they focus on a range of integrated activities
- they work to change systems, rather than behaviours
- they are more effective when not imposed and reflect engagement with employees and managers who are bought into problem-solving and decision-making connected to D&I priorities and challenges

Based on academic research, evidence and insight from partners at National Highways, Costain, Balfour Beatty and Skanska, we designed a set of

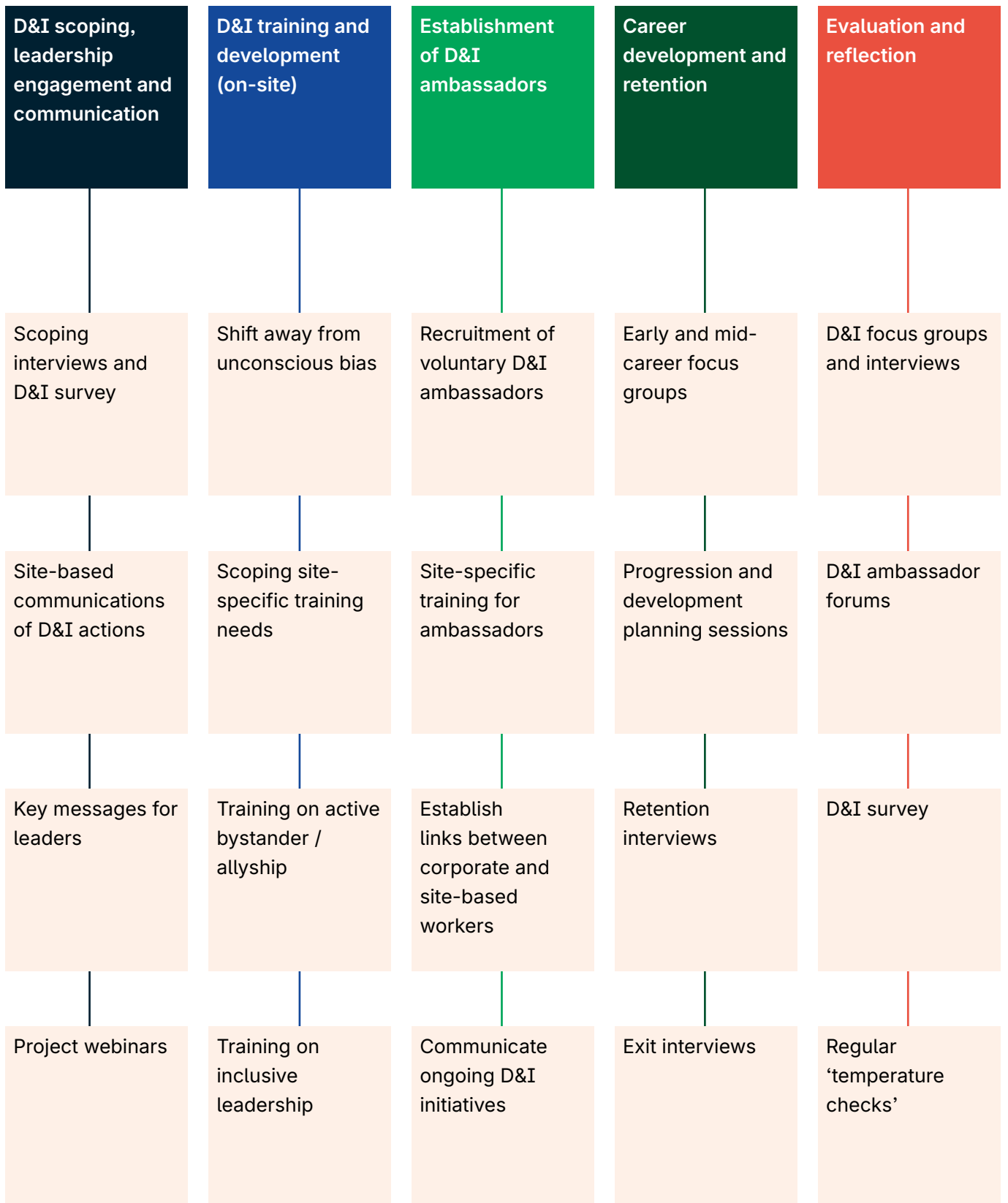
connected modules tailored to the specific needs of the highways sector. These modules form a D&I roadmap and outline actions that can be taken at different stages throughout the delivery of a scheme. Figure 3 shows the intervention design, and Table 1 provides brief examples of the supporting academic research. It is important to note that different modules were emphasised more depending on the stage of the project and the specific priorities at each site.

Figure 3 illustrates these intervention modules with the caveat that some modules were given greater weighting on different projects in line with their delivery stage in the lifecycle and priorities on-site.



Photograph: National Highways

**Figure 3: Intervention design**



**Table 1: Research-backed diversity and inclusion initiatives**

<b>Intervention approach</b>	<b>Supporting evidence</b>	<b>Summary</b>
D&I scoping, leadership engagement and communication	<a href="#"><u>Dobbin et al., 2015</u></a>	Shows that involving managers in designing and delivering diversity policies leads to better outcomes by helping them internalise inclusion goals. The article supports transparent reforms that hold managers accountable for driving progress in diversity and inclusion.
D&I scoping, leadership engagement and communication	<a href="#"><u>Gifford et al., 2019</u></a>	Industry report that demonstrates how leaders and managers must be engaged with inclusion efforts through consistent and simplified messages that resonate across all levels of a firm.
On-site D&I training and development	<a href="#"><u>Paluck &amp; Green, 2009</u></a>	Foundational study that demonstrates how one-off diversity training has little to no effect on reducing discriminatory beliefs. In fact, they may make biases more visible and any positive effects are short lived.
On-site D&I training and development	<a href="#"><u>Powell, 2014</u></a>	Advocates for bystander intervention to empower people to speak up in the presence of wrongdoing. Shows how active bystander training helps give people the confidence to intervene when they witness actions that are not appropriate, discriminatory or constitute bullying or harassment.
Establishment of D&I ambassadors	<a href="#"><u>Dobbin et al., 2014</u></a>	Diversity taskforces are an effective means of promoting diversity by assigning responsibility to monitors, ensuring oversight and engagement with new strategies and supporting the diffusion of new information.
Establishment of D&I ambassadors	<a href="#"><u>The Behavioural Insights Team, 2021</u></a>	Stresses the importance of forming teams with senior leaders, managers, and employees to lead inclusion efforts. Highlights how leadership support for diversity taskforces brings varied perspectives that help build more inclusive workplace cultures.
Career development and retention	<a href="#"><u>Pace &amp; Kisamore, 2017</u></a>	Demonstrates how employees leaving a firm reveal underlying conditions and incidents related to careers can help inform action plans and strategic decision-making.
Career development and retention	<a href="#"><u>Felaco et al., 2023</u></a>	Through interviews and focus groups on career choices, this study shows how students from different backgrounds interpret and understand opportunities and constraints.



Intervention approach	Supporting evidence	Summary
Evaluation and reflection	<u><a href="#">Oswick &amp; Noon, 2014</a></u>	Critical of unconscious bias D&I initiatives. Recommends shifting to transformative strategies that tackle systemic inequalities. This article demonstrates how successful interventions rely on monitoring data, adapting actions (reflection) and active participation.
Evaluation and reflection	<u><a href="#">Dobbin &amp; Kalev, 2022</a></u>	Highlights the problems with mandatory diversity training and recommends voluntary based participation with active engagement, bringing workers into discussions to focusing inclusion efforts on organisational values. Emphasises the importance of ongoing evaluation using both quantitative and qualitative data to ensure continuous improvement and alignment with internal goals.

The integrated modules of activities were implemented on three major infrastructure projects:

Contractor	Project name	Completion date	Key Features
<b>Balfour Beatty</b>	M25 Junction 10	Spring 2026	Reduces congestion, improves traffic flow and safety. Includes environmental upgrades: heathland restoration, tree planting, low-noise surfacing, pollution control, and new bridges connecting all quadrants.
<b>Costain</b>	A1 Birtley to Coal House	Late 2024	Widening of ~4 miles of A1 between junctions 65–67. Junction modifications and replacement of the Allerdene railway bridge to improve traffic management and infrastructure resilience.
<b>Skanska</b>	A428 Black Cat to Caxton Gibbet	2027	£627M project delivering a 10-mile dual carriageway. Enhances connectivity between M11 and M1. Strong stakeholder engagement aims to bring lasting regional benefits.

Next, we outline the modules in the implementation plan and their focus.



### D&I scoping, leadership, engagement and communication

**What it is:** Conducted at the start of a project to understand its D&I needs. Involves interviews with key stakeholders, informative materials for staff, leadership messaging, and seminars to share ongoing initiatives.

**Benefits:** Creates consistent messaging, captures buy-in from senior leaders and stimulates engagement from all employees across a project.

The first module is a scoping exercise aimed at gaining a clearer understanding of the project to promote the importance of D&I and the project’s overall goals. The module is carried out at the beginning of the project’s lifecycle.

To support this, we conducted interviews with key informants to explore how D&I was approached within the company and specifically within the project. These interviews focused on staffing, workforce demographics, and the characteristics of the local economy where the project operates. We spoke to a range of people occupying operational and strategic manager roles alongside directors responsible for diversity and inclusion, recruitment and selection, human resources, social value and skills.

Next, we developed a set of one-page Information Sheets for stakeholders across all participating projects. These messages explained the rationale behind the project and each company’s commitment to it, allowing leaders to consistently communicate the importance of D&I across sites and the supply chain. These covered the project’s objectives and linked them to four key areas: Culture and Reputation, Recruitment and Selection, D&I Training, and Progression, Retention and Exit.

We also delivered targeted seminars to inform site-based employees about current and upcoming

initiatives, gather feedback, and raise awareness of the project. In addition, project-based workshops were held to encourage participation in a workforce survey. This survey aimed to establish a baseline of employee and contractor views on various D&I-related topics. These activities were designed to engage employees meaningfully, fostering buy-in rather than imposing interventions that could lead to resistance (Dobbin et al., 2015; Knight et al., 2022).



### D&I training and development (on-site)

**What it is:** Focuses on data-driven training to address challenging behaviours and boost inclusion. Prioritises active bystander and allyship training for all staff, while tailoring additional sessions to each project’s needs.

**Benefits:** When done through a learning and development professional, training is effective and relatively low-cost, shows promise in improving overall culture and can support the retention and representation of minority groups.

One of the key innovations in our intervention plan was the decision to move away from unconscious bias training and instead focus on active bystander and allyship training. This change was based on evidence showing that while unconscious bias training may raise awareness, it does not significantly reduce bias, change behaviour, improve workplace culture, or increase diversity in leadership roles.

In contrast, there is now growing support for active bystander and allyship training, which focuses on changing the environment rather than individuals, emphasising the role and responsibilities of community members. These types of training engage and empower colleagues to challenge behaviours that are not aligned with the values of the organisation or deemed inappropriate in the

workplace. The implementation of training on active bystander and allyship showed promising signs for tackling the culture of banter in the construction industry, which is harmful to an inclusive culture.

Our recommendation to prioritise active bystander and allyship training over unconscious bias training has been adopted across all three projects. The rationale and supporting evidence were shared through D&I Ambassador groups. As part of this process, we reviewed the Supply Chain Sustainability School's free resources, which offer consistent and effective messaging on Fairness, Inclusion and Respect (FIR) and broader D&I topics. However, we identified access barriers for site-based employees as a concern.

To address this, we collaborated with the projects and the Supply Chain Sustainability School to arrange on-site training. As a result, Balfour Beatty introduced a "Leading Inclusively" module for senior leaders and supervisors. Costain delivered four training sessions focused on allyship and inclusion, reaching over 100 site-based employees from 18 different companies, as well as 30 office-based staff. These sessions were supported by in-depth D&I Ambassador training and plans to incorporate FIR Toolbox Talk videos into pre-shift safety briefings.

The third module consists of the establishment of D&I ambassadors on projects. Having dedicated D&I teams and task forces can help to enhance diversity in a company. Therefore, this module establishes a voluntary group of employees who both support the implementation of other modules whilst providing feedback on any improvements or potential issues. Ambassadors differ from dedicated D&I professionals, acting in a voluntary function to help create a positive and inclusive work environment by acting as role models for D&I, and a voice mechanism through which workers can share their views about what is working and what might require change.

The module aims to recruit ambassadors from different types of roles across sites, including both on-site and office-based employees, early career employees and senior leaders. As part of the module, dedicated sessions for ambassadors are scheduled to provide feedback on what is working on the projects related to D&I and any challenges faced. This acts as an important link between corporate D&I strategy and more non-corporate working locations, such as the construction site; ambassadors act as a vital feedback mechanism to embed D&I strategy on-site and provide feedback on any difficulties and opportunities.

We recruited 12 voluntary D&I ambassadors across the three sites: Costain A1, Balfour Beatty M25 and Skanska A428 projects. Although ambassadors are mostly early-career employees, senior leaders have offered to act as ambassadors to emphasise leadership buy-in into D&I and the wider project. Over the course of the project D&I ambassadors helped to create a positive and inclusive work environment by acting as role models for D&I, taking any action when appropriate and challenging behaviours when necessary. Although the roles are loosely defined and largely shaped by the ambassador groups themselves, they were given an outline of their responsibilities: to raise awareness of the benefits of an inclusive, positive, and respectful work environment; be a point of contact to signpost on matters relating to D&I; recognise and promote to others that D&I are



## Establishment of D&I ambassadors

**What it is:** A team of volunteer ambassadors from across the project meet regularly to discuss challenges, share knowledge, and explore training and networking opportunities.

**Benefits:** Supports the implementation of interventions through disseminating information across the entire project, setting standards of behaviours, whilst providing continuous feedback on any challenges and opportunities.

key to the success and performance of National Highways; help create a positive and inclusive work environment by treating all others with dignity and respect; speak up about barriers that may stop D&I being successful.

## Career intentions, progression and development planning, exit interviews and retention strategies

**What it is:** Using multiple tools to engage with workers at various stages of their careers, such as interviews and focus groups.

**Benefits:** Allows a scheme to better understand career intentions and perceptions of progression within the sector, and why people may leave a scheme before its end. Provides insight into the support needed to ensure equal career opportunities alongside any issues related to the retention of women and ethnic minority employees.

The next modules address a key challenge in the highways sector: career orientation, progression and retention. The sector faces a labour shortage, with a workforce that is predominantly older, white and male. At the same time, some companies report struggling to attract younger employees. Another key concern is the retention of women and minority employees in management roles, as data shows they are more likely to leave positions sooner than white men.

To explore these challenges, we engaged individuals at various stages of their careers through interviews and focus groups. These discussions aimed to better understand career intentions and perceptions of progression within both the organisation and the wider sector. The focus was particularly on supporting the career development and retention of underrepresented groups and

individuals with protected characteristics, such as race, gender, ethnicity, and disability.

Several research activities were undertaken as part of this module. These included a survey of further education students conducted with Balfour Beatty, early career focus groups across all schemes, interviews and focus groups on career retention, and exit interviews. The student survey revealed that construction careers are not necessarily unattractive to young people - 40% of respondents viewed them positively, compared to 26% who did not. High pay and opportunities for professional development were cited as key attractions. However, fewer than half of respondents believed construction offered a good work-life balance, highlighting a major challenge for the sector in building a sustainable workforce.

Early career interviews and focus groups explored these issues in more depth. Participants cited family influence, dissatisfaction with previous jobs, and attractive salaries as reasons for entering the sector. Over time, learning opportunities and career development became more important, particularly for apprentices. Many expressed being interested in working overseas, though concerns about future family responsibilities were noted. Participants appreciated the diversity of backgrounds and nationalities in office roles, though site-based teams remained largely male. Language barriers were raised as a concern, especially in relation to safety and job instructions.

Respect in the workplace was seen as essential, with its absence being a key reason some considered leaving. Recruitment processes were generally viewed positively. Apprenticeship and site-based learning were valued for providing better industry insight than university alone. Supervisors were praised for their support, feedback, and mentorship. Female participants reported occasional experiences of gender bias but also noted improvements in conditions for women. While many had ambitions for career advancement, work-life balance and role suitability were equally important. Some recognised that senior roles could

bring added stress and longer hours. Although many felt a sense of belonging within their organisations, this did not always translate into long-term loyalty.

Based on the findings from this module, we developed further system-level interventions to support employees throughout their careers in the highways sector, starting from recruitment. Towards the end of each scheme's lifecycle, we conducted exit interviews to understand why employees leave—particularly those who exit before project completion. These interviews provided valuable insights into the events and environmental factors that influenced their decisions to seek alternative employment.

Exit data, which is rarely collected systematically, offered important information about employees' sense of inclusion, perceptions of cultural fit and fairness, wellbeing, and belonging. It also highlighted areas where changes may be needed to improve retention and support a more inclusive and sustainable workforce.



## Evaluation and reflection

**What it is:** Regular focus groups and staff surveys aimed to gain continuous feedback and insight into perceptions of inclusion on a scheme.

**Benefits:** Helps to keep all staff across the scheme engaged with inclusion efforts. Further enables buy-in by empowering employees to have a voice within ongoing inclusion strategies, providing live feedback on interventions to identify challenges and opportunities.

The final module focused on ensuring that the evaluation of D&I interventions was data-driven, helping to maintain employee and managerial engagement with the strategy and its effectiveness.

We used regular evaluation and reflection sessions to give employees and managers a voice in shaping D&I actions—identifying what was working well, what needed improvement, and what alternative approaches might be more effective.

This ongoing evaluation process empowered those working on the schemes to raise concerns, refocus attention, and suggest new ideas. It helped keep the conversation around D&I active and responsive, with visible and sustained commitment. Engagement was further supported through focus groups and interviews held throughout the lifecycle of the schemes, involving junior and mid-level employees. These sessions provided insight into how interventions were being received on-site, highlighted areas for improvement, and identified emerging challenges.

D&I Ambassadors played a key role in this module by participating in regular discussion forums. They acted as a vital feedback link between the research team, site-based employees, and corporate staff, helping to assess the effectiveness of ongoing interventions. We also conducted employee surveys to measure changes in perceptions and commitment to D&I among those working on-site. These surveys were used not only to track engagement but also to estimate the impact of D&I initiatives on overall performance.

Through these measures, we were able to identify how and why employee commitment to D&I was evolving, while also uncovering any difficulties in further embedding an inclusive culture. This approach ensured that the strategy remained relevant, responsive, and grounded in the lived experiences of those working within the schemes.



Photograph: National Highways

# Reflections on D&I interventions employed

**A central part of the research was ongoing reflection and evaluation of the interventions employed to refine and reflect upon their success.**

As noted above, this was achieved informally by regular meetings with D&I Ambassadors across each scheme and formally through employee surveys and specific interviews with key stakeholders at the end of a scheme. Reflective interviews allowed us to understand how interventions impacted specific employees, what they had learned from taking part in the research and how they would apply experiences in their future careers.

Employees noted substantive changes to the culture and structural conditions of their schemes due to the interventions employed. The heightened visibility of inclusion captured buy-in from employees across all levels of the scheme to support the ongoing success of existing and new D&I initiatives arising from the research. Particularly, in a sector once stereotyped as a highly masculine culture, key stakeholders noted a significant change to a more inclusive culture.

**“There is less banter – and I use the word in the wrong way, maybe. There’s less of those negative comments than there ever used to be. Everything is improving, culture is improving.”**

**“It’s more than just box ticking; there’s a genuine understanding [of D&I].”**

Employees discussed the challenges of effectively implementing D&I strategies across schemes due to time and resource constraints. Having dedicated resources as part of the research, therefore, allowed learning and development that went beyond what was available in their day-to-day work. As a result, key stakeholders – ranging from senior managers to early career employees involved in the Ambassador schemes – noted personal benefits from taking on the role as it gave them greater exposure to discussions around inclusion within the highways sector.

**“I’ve done things like Fairness, Inclusion and Respect training in the past. But with the Ambassador group, we learned to implement that a lot more. By having monthly meetings, we would think about anything that happened in the past month and discuss how to address that more openly. Having that additional training and being a part of the group to discuss what is going on, what’s cropped up, what we need to change, what we can improve – it gave us different topics that we’d never talk about.”**

**“The EDI stuff from the project has done more things we’ve never had as mandatory and official, which we are now moving to because of the research. It’s the working on the training and working with you that has helped in formulating the thinking and the essential nature of making it clear from the outset what the expectations are.”**

Furthermore, having dedicated time and space for Ambassadors to engage with and understand inclusion in the context of the day-to-day work on schemes created new policies for companies. It provided responsibility and accountability for actions and greater space to support colleagues and embedded greater expectations of what inclusion means to everyone on a highways scheme.

**“We never had a flag-raising system, a system where people can raise EDI issues or observations, challenges or whatever. The Ambassadors is one way to get that, and there’s been a lot of informal discussions that have come from that.”**



Photograph: National Highways

Employees reflected on how their involvement in the research has directly influenced their transition into new roles. They noted how their companies could benefit from the learnings gained and emphasised how the Ambassador roles boosted their confidence and deepened their commitment to implementing D&I principles in the workplace. More broadly, reflections on their participation demonstrated a strong desire to apply project experiences to drive meaningful change in their future roles and schemes.

“**If I didn’t take on this specific D&I role and if I didn’t have these sessions, I would be a lot more worried to take on my current role. I think being an Ambassador gives you confidence that – you may not know everything and you might not be 100% knowledgeable on every single part of EDI, but I want to implement this in the workplace. It’s made me more passionate about D&I and FIR compliance.”**

“**Having worked with you for three years now, to actually be able to understand the analysis**

**and understand more to take forward the implementation side of things. For me, moving into my new scheme, where I’m having to write the strategy for the next ten years, I’m excited about being able to pool experiences and take those forward to see how we can really improve on that.”**

Interviews gave insight into a culture of reflection, learning, and practical implementation that significantly shaped both individual development and organisational change. Through dedicated time, structured support, and Ambassador-led initiatives, employees gained deeper insight into D&I practices and developed the confidence to enact meaningful change. The interventions not only improved workplace culture - making inclusion more visible and actionable - but also laid the groundwork for long-term strategic thinking across the sector. As participants move into new roles, they carry forward the lessons learned, embedding inclusive values into future schemes and helping to redefine industry norms.





# Evaluating the effect of D&I on performance

**The central aim of the study was to determine whether enhanced D&I activities (as outlined above) on National Highways' Regional Investment Programmes can bring about measurable performance benefits.** Quantitative data to estimate these effects came from an original employee survey across the three Tier 1 suppliers and quarterly administrative performance data collected as part of National Highways' Collaborative Performance Framework (CPF). The survey waves were conducted before and after implementation of the intervention programme thereby creating a quasi-experimental condition that enables more confident claims of causality. Detailed information on the sample size, measurements and underlying methods is provided in Appendix I.

The data were analysed in two stages. First, a descriptive analysis of the survey data was undertaken to map the patterns of D&I perceptions and attitudes among employees against the established diversity and recruitment challenges in the sector. Second, a causal analysis was undertaken to establish a link between D&I, employee outcomes and performance.

### **Descriptive analysis: employee perceptions of D&I**

The survey revealed positive employee perceptions with the overall high levels of job satisfaction, a positive sense of wellbeing and favourable attitudes towards D&I. In this section, we report descriptive results from both waves of the survey focusing on how employees view D&I and their working environment. However, there were differences in employee perceptions notably in terms of how diverse new hires and senior management teams are. Figure 4 shows that one in five respondents said that senior management teams were not gender diverse and a third of respondents pointed out a lack of ethnic diversity (Figure 5).

These differences impacted on how employees view organisational commitment to D&I and whether they think they have a voice at work (Figures 6 and 7).

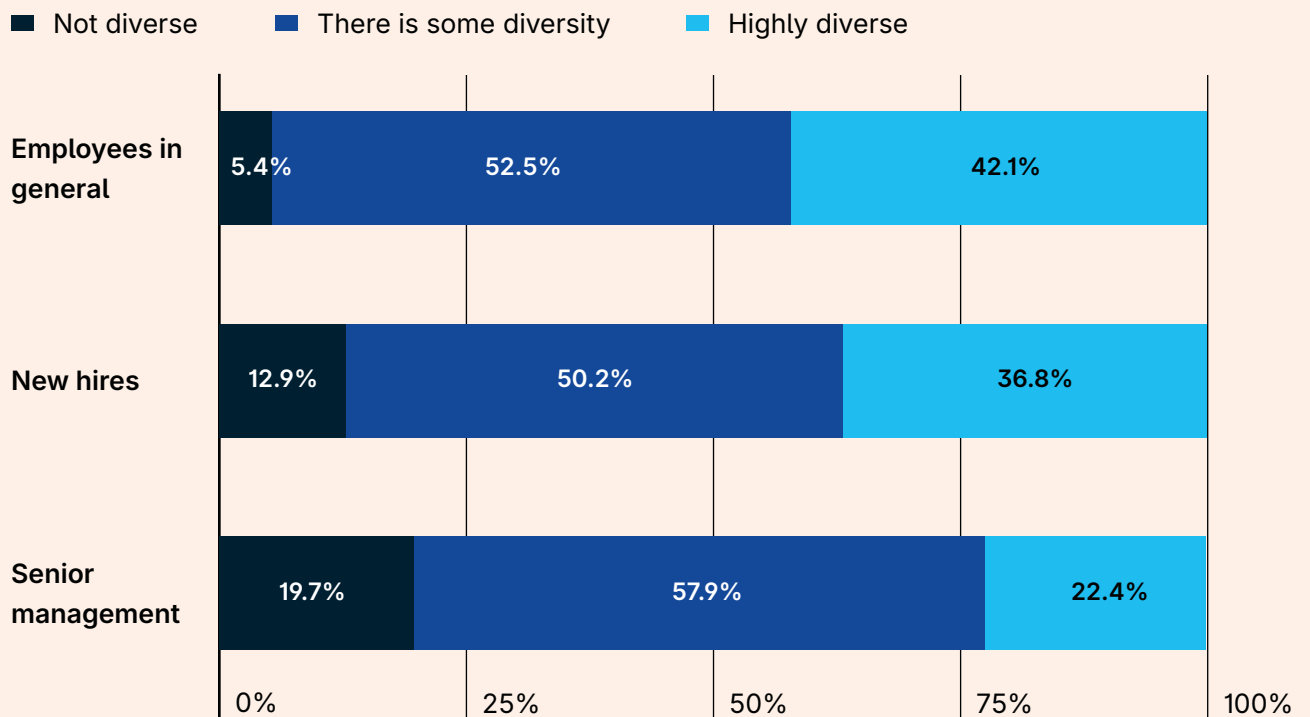
Measured on a 100-point scale, both graphs indicate overall positive perceptions (above 50%), but with visible gender and ethnic differences. Women were less positive than men in their views on whether their employer is committed to equal opportunities, values diversity and aims to become more diverse. The gap is even wider between employees with a white ethnic background and those who identify as minority ethnic (Figure 7). Across all demographic groups, perceptions of the extent to which employees think their opinions matter at work were more critical compared to their views on D&I.

Overall, women and ethnic minorities felt greater constraint in their ability to exercise their own initiative and to influence decisions in the workplace. They were also less likely to think that their workplaces were committed to equal opportunities and promoting D&I.

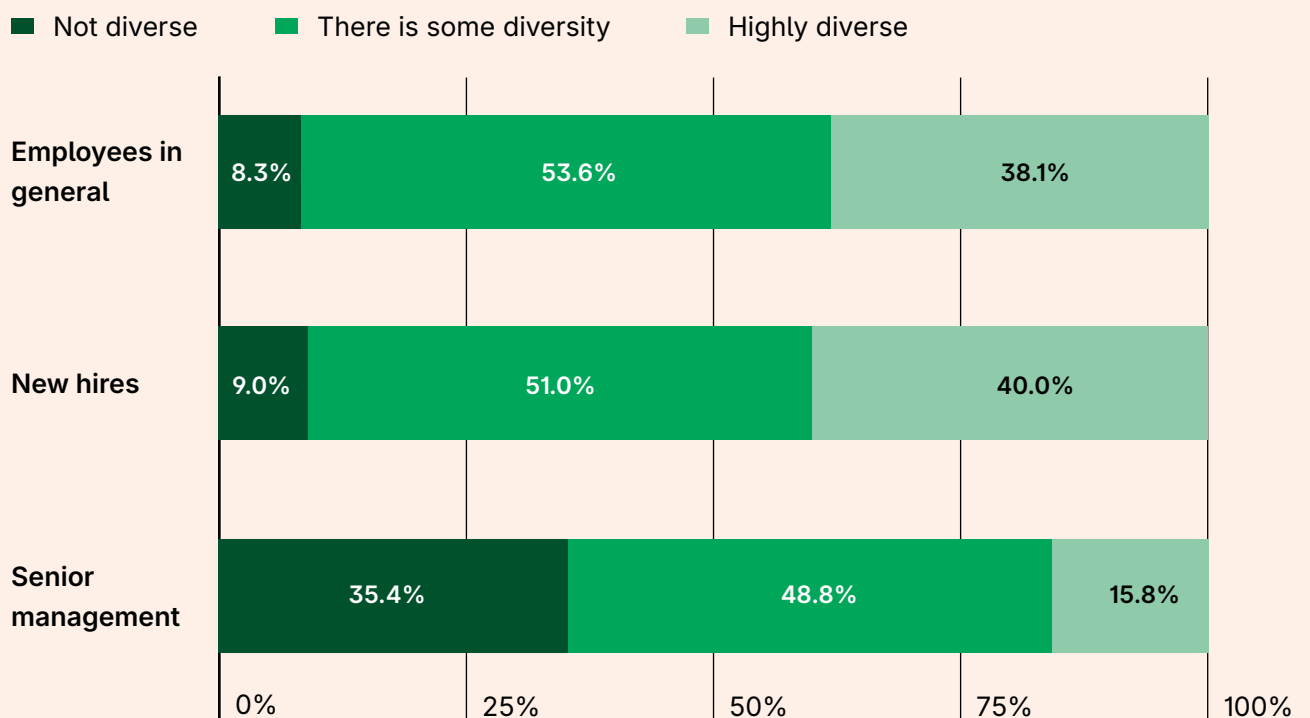


**I remember someone asking, well, what is the directive from our firm? Does our firm actually believe in all this [D&I]? Because I feel like it's something we just say because we need to. I don't think they are really looking wider than they need to. That needs to change. They need to change the way they look at inclusion."**

**Figure 4: Employee views on gender diversity**  
(Percent)



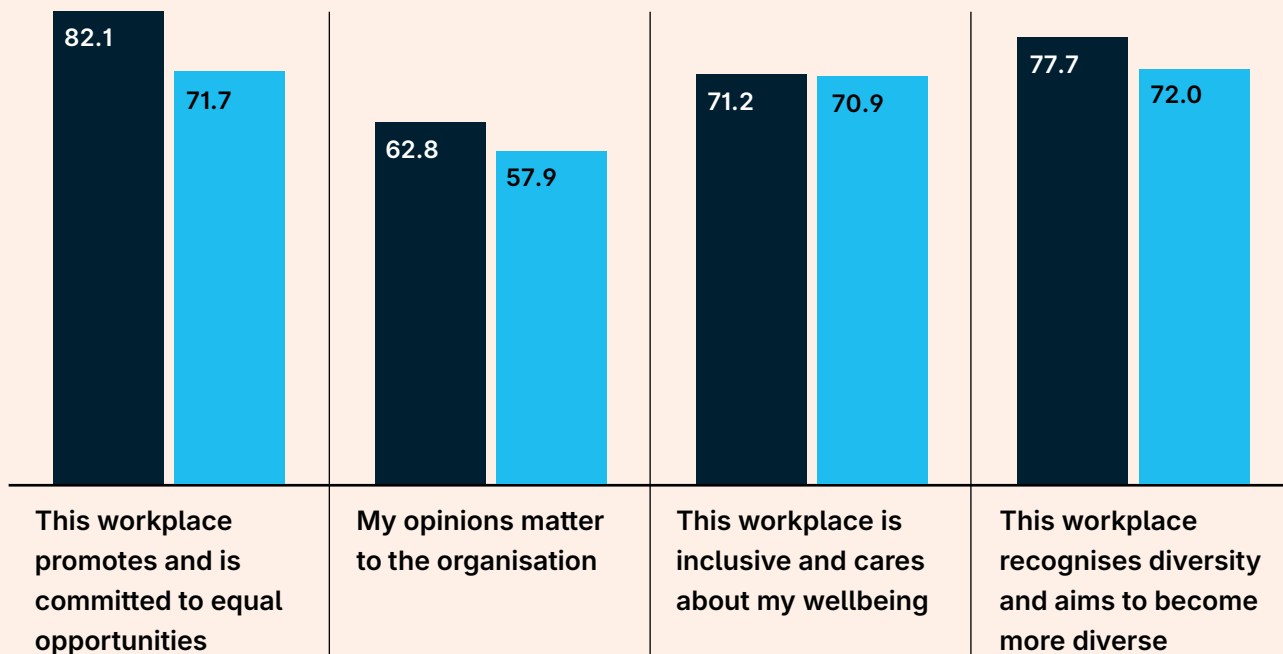
**Figure 5: Employee views on ethnic diversity**  
(Percent)



**Figure 6: Employee views on D&I commitment and voice (by gender)**

(0-100 scale; 100 = completely agree)

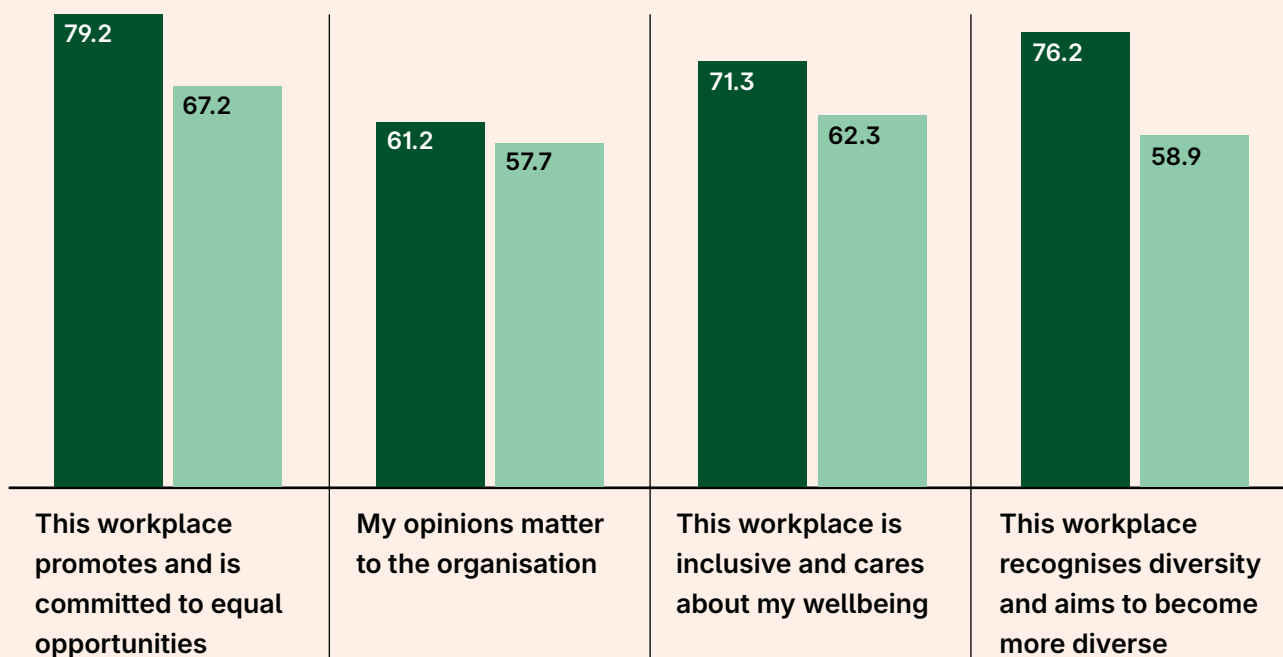
■ Men    ■ Women



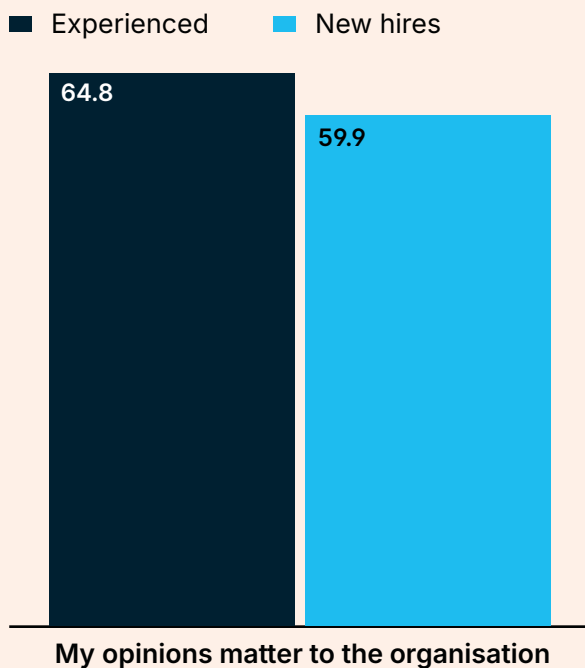
**Figure 7: Employee views on D&I commitment and voice (by ethnicity)**

(0-100 scale; 100 = completely agree)

■ Majority (white)    ■ Minority (Ethnic)



**Figure 8: Employee perceptions of voice (by work experience)**  
(0-100 scale; 100 = completely agree)



Importantly, qualitative and quantitative data showed that new hires (with less than two years of work experience) were more concerned than experienced employees with the extent to which their opinions matter for the organisation (Figure 8); they expressed concerns regarding voicing their opinions and respect at work:

“I had a new line manager, but from day one, something wasn’t right. There were issues with how he spoke to me, the way he responded to me, the way he would answer questions I asked, and he would give me comments in front of others. I started feeling like I was stupid, that something was wrong with me.”

**Descriptive analysis: Work-life balance, job satisfaction and intention to leave**

Turning to employee outcomes, work-life balance was one area of focus, given the industry-specific

issues with long working hours and work location. Women reported the need to work longer hours for career progression, while ethnic minorities found it more difficult to fulfil commitments outside work and were more concerned with the time and travel-demanding nature of their jobs (Figure 9).

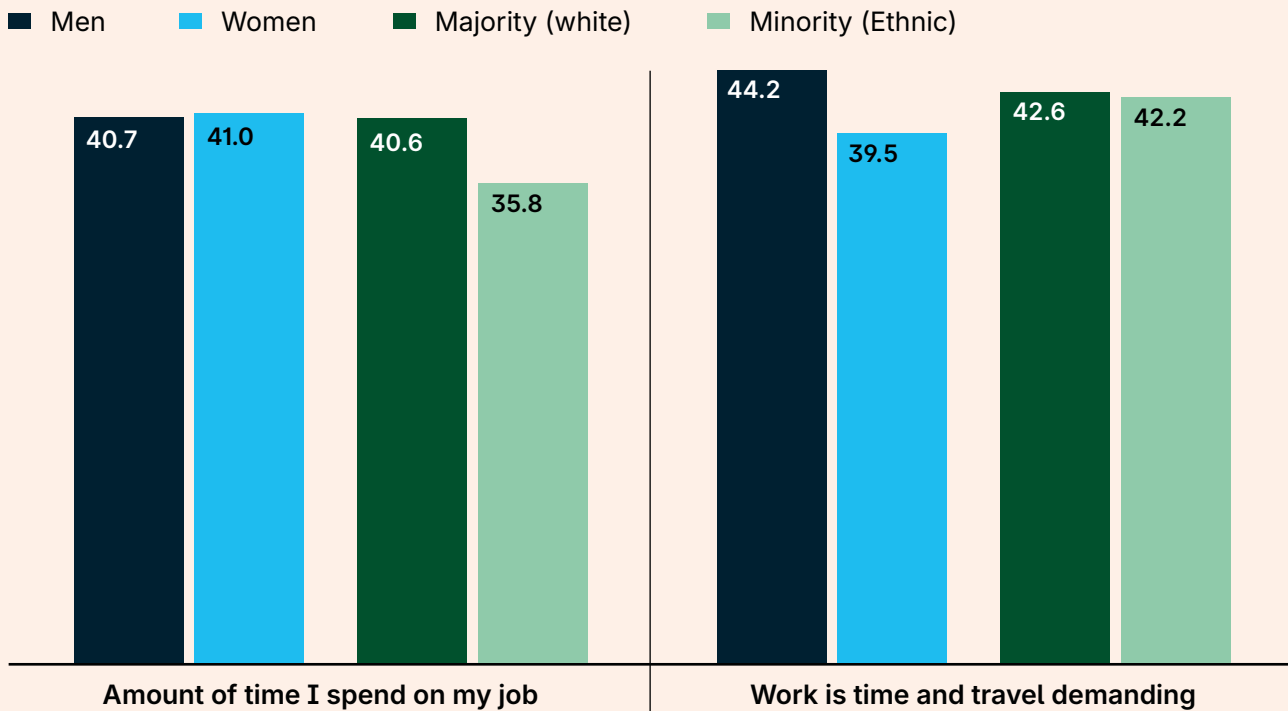
“I think you’ve got to push for what you believe in or push for the path that you want to take. It’s not going to be given to you easily, and you’ve also got to rely on yourself to get there, which I know it’s always the case anyway, but you’ve got to be driven. If you haven’t, if you’re not driven, it’d be very difficult. We work long hours, so your day job and your work life is a balance anyway. So you’re going to put in extra training or you’re going to put in extra schooling or a master’s or anything of that sort of level.”

A better work-life balance can have a significant impact on workers’ wellbeing and experience at work. This was a very common theme in our discussions across the three schemes and in the early career focus groups as younger workers thought about their likelihood of remaining with their employer and in the sector in the years ahead.

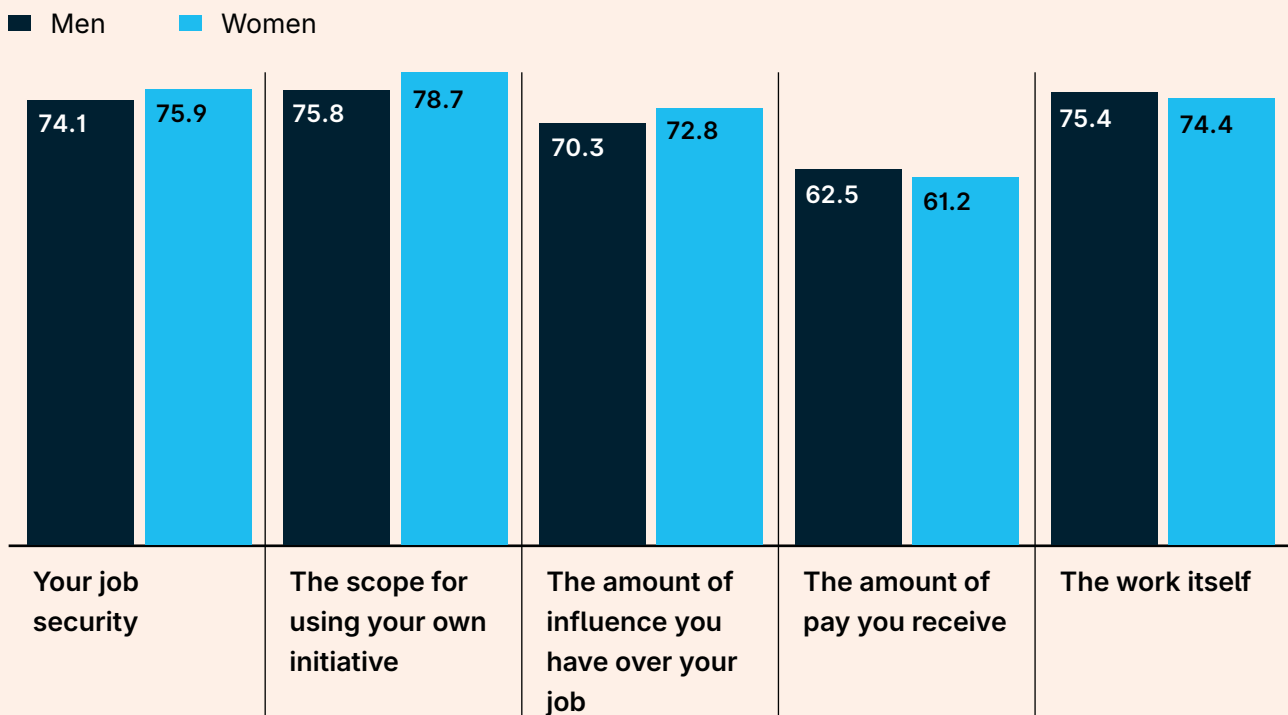
“Preferably, I would like to be working at home rather than staying overnight, to be able to see my family. That would be a big factor for me. It’s not necessarily the money. It’s more about the work-life balance. That is more important to me.”

The overall level of job satisfaction was high except satisfaction with pay, which was (although generally positive) lower than satisfaction with less tangible aspects of work (e.g., sense of job security, scope of using initiative). There were no significant gender differences, but minority ethnic employees were less satisfied with their jobs, notably with the level of pay (Figure 11).

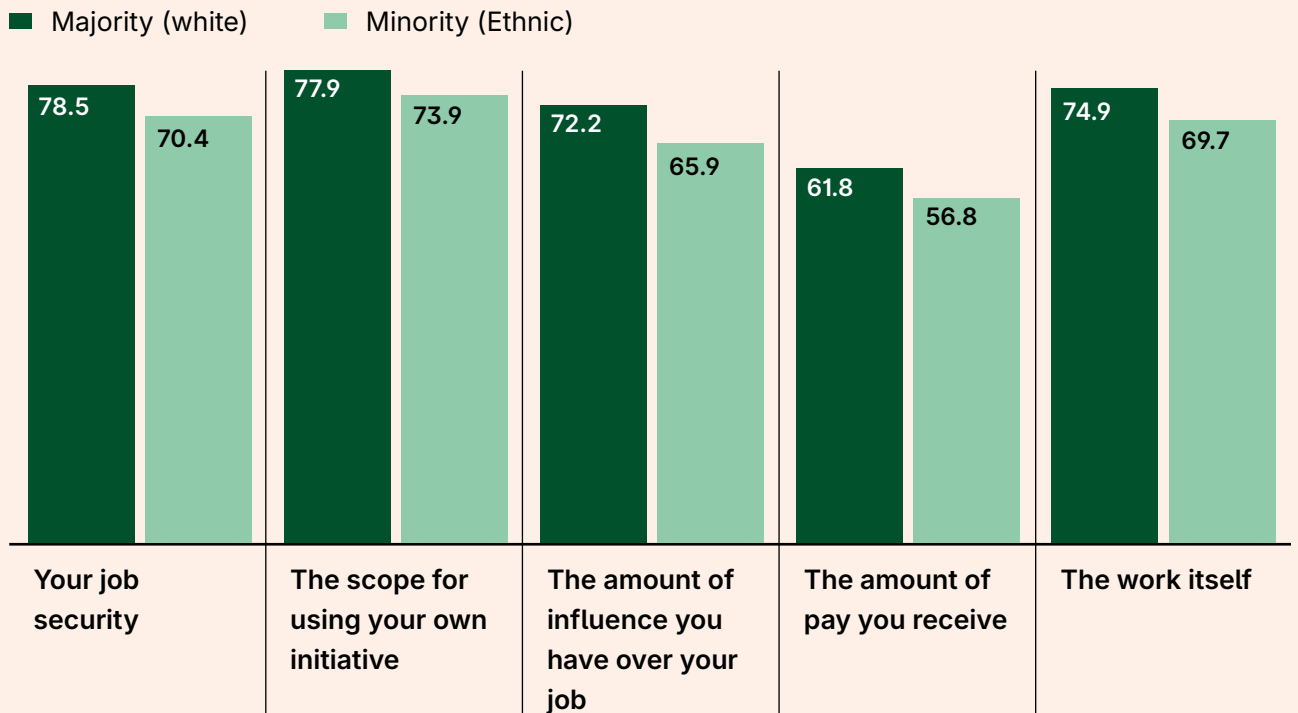
**Figure 9: Employee sense of work-life balance (by gender and ethnicity)**  
 (0-100 scale; 100 = completely agree)



**Figure 10: Job satisfaction by gender**  
 (0-100 scale; 100 = completely satisfied)



**Figure 11: Job satisfaction by ethnicity**  
(0-100 scale; 100 = completely satisfied)



The self-reported turnover intention was high, with the risk of losing a quarter of the workforce in six months. In the first wave of the survey, workplaces are at a slightly greater risk of losing women, but that improved in wave two following D&I interventions. Ethnic disparities persisted throughout the study, with close to half of minority ethnic employees considering leaving (Figure 12). This aligns with sector-wide data showing that women and minorities are more likely to leave the construction industry, and National Highways' own data on retention, which was also reported as a major concern for the future of the industry, as reported in our Phase One report:

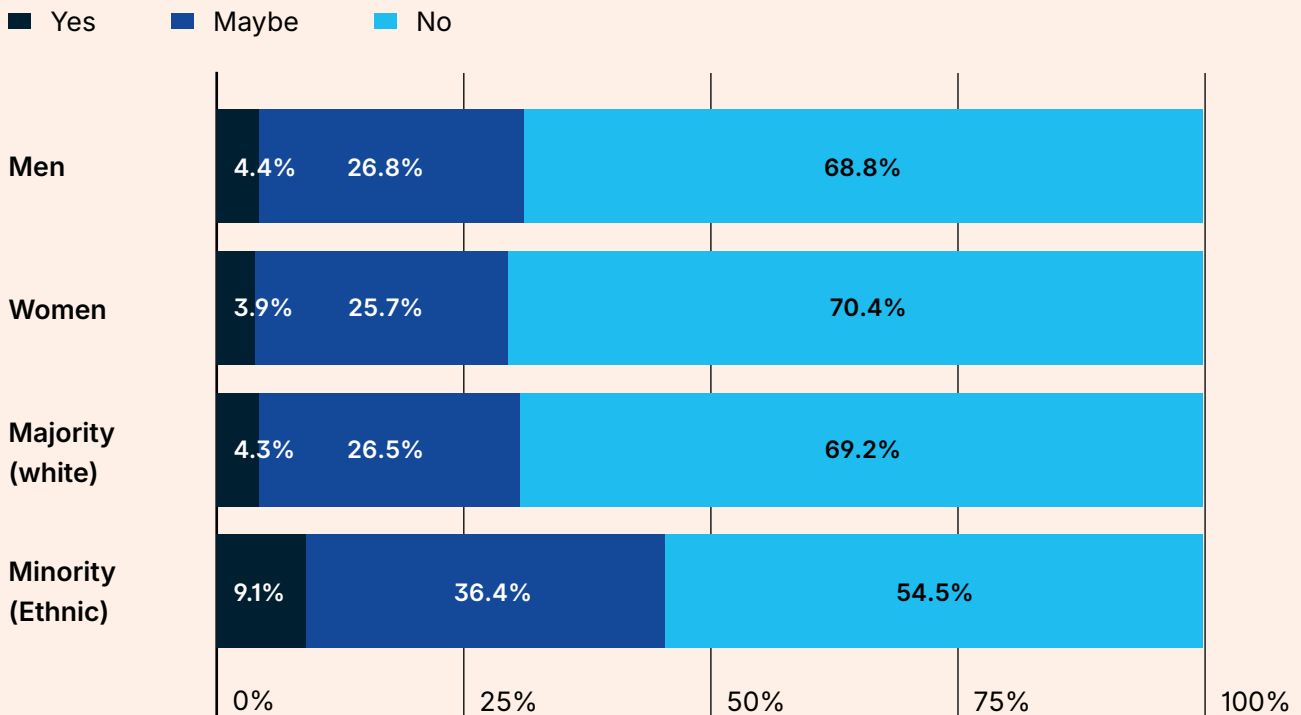
“

We could be spending a lot of time and effort recruiting more diverse talent, but we need to make sure that we retain them, and they grow and they thrive in the business, ... I think there were about 20 senior female hires that we brought into the business in the last three years, and about 25% of them have already left the business, so that's quite a shocking statistic. A lot of them left from a particular part of the business.’

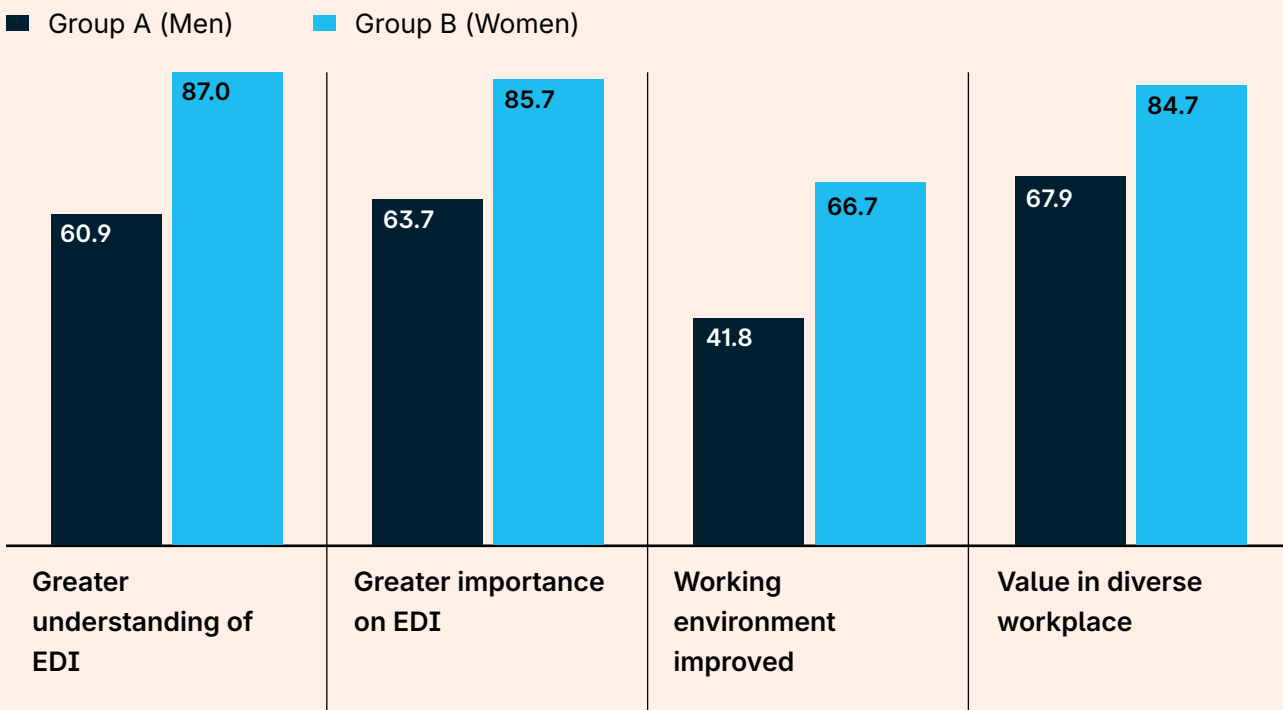
“

If we look at our graduates, whilst it's more male-heavy, we tend to have a fairly even split female/male in the graduate scheme. But, as people progress through their career, we tend to lose the women, and it tends to be the men that continue to grow.’

**Figure 12: Turnover intention by gender and ethnicity**  
(Percent)



**Figure 13: Employee views on the effectiveness of D&I interventions**  
(EDI improvement (Wave 2): group A (male) vs group B (female))





While some reported quality career conversations and mentoring, others, often women and ethnic minorities, did not, which impacts their perceived fit and future prospects in the sector or organisation where they work:

“

**Career progression, I don't really know right now. I just want to enjoy my job. There are obviously stages you go up, but I'm not looking too far into the future. Just see what comes and learn a bit more. There's so much to construction, I don't know where I fit in.”**

Overall, descriptive findings from the employee survey revealed significant differences in perceptions of D&I between men, women and minority ethnic employees but also indicated potential pathways for a positive impact of D&I on performance through employee outcomes: work-life balance, job satisfaction and intention to stay.

### Estimating the effect of D&I on employee outcomes and performance

The intervention-based study increased confidence in the causal nature of established empirical associations between the key variables of interest. It allowed control for the core factors and alternative scenarios, which would not be possible in a conventional cross-sectional study. Turning to employee views on whether the D&I intervention plan was successful, an overwhelming majority of respondents in wave two said that they had a greater understanding of D&I, placed greater importance on D&I and valued a diverse workplace (relative to the period before the interventions). Figure 13 shows that while gender differences persist, perceptions were positive among most men as well as women. A smaller but nonetheless significant proportion of respondents indicated that their working environment improved because of interventions (66.7% of women and 41.8% men).

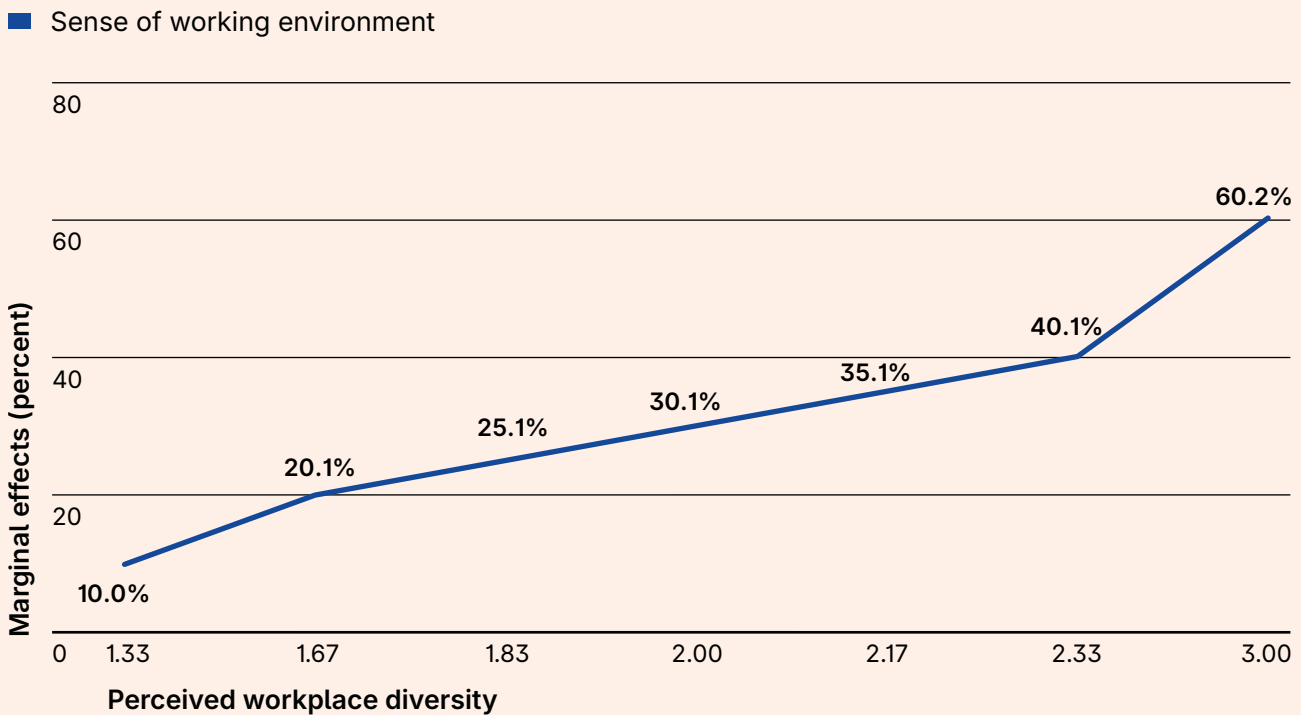
Statistical modelling largely confirmed these patterns, revealing a significant and sizeable association between D&I and employee outcomes: sense of work-life balance, job satisfaction and intention to stay. The analysis uncovered a causal chain through which D&I can improve employee outcomes (regression specification and outputs are reported in Appendix 1).

The first core element of the causal chain is the link between workplace diversity and employees' overall sense of working environment (their perceptions of how well managers share information, whether their voice is heard and if the workplace is committed to diversity and inclusion). Figure 14 illustrates marginal effects (average estimates of how an increase in perceived diversity affects employee sense of working environment), demonstrating the potential for an up to 60% improvement in working environment in a highly diverse workplace relative to the workplace that employees do not see as gender and ethnically diverse.

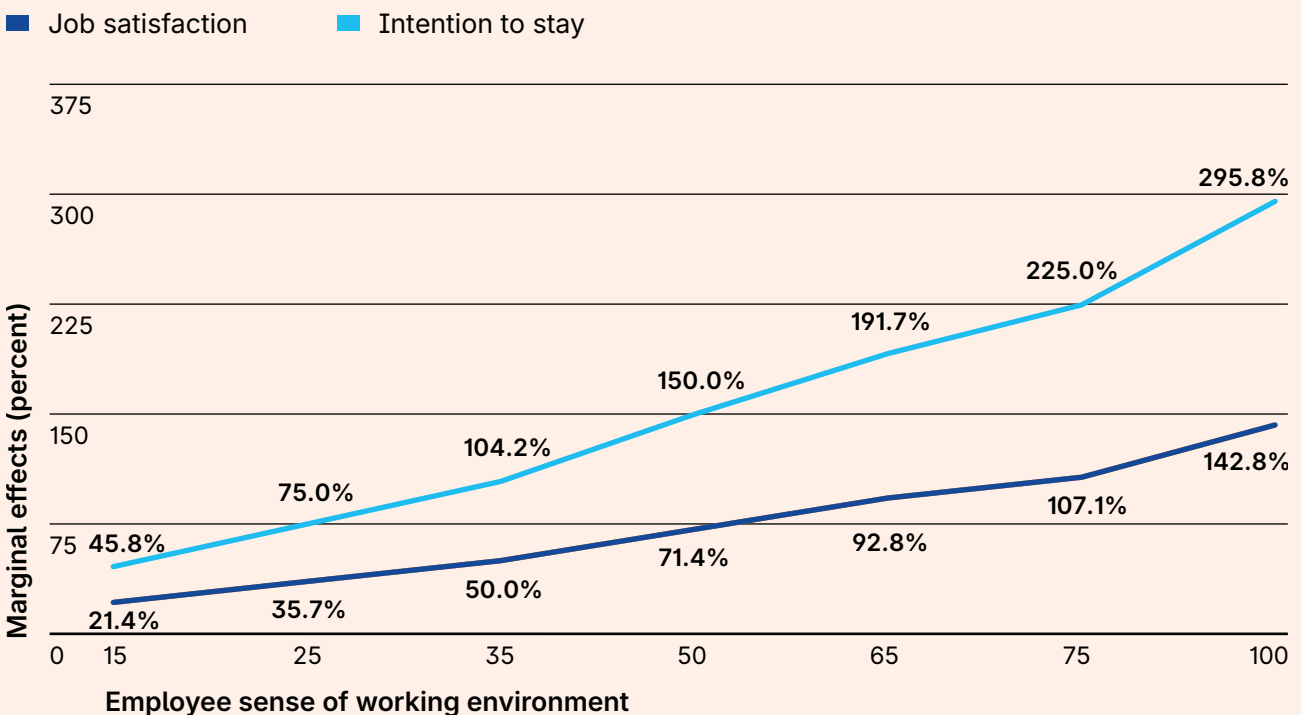


Photograph: National Highways

**Figure 14: Estimated effect of perceived workplace diversity on employees' sense of working environment**



**Figure 15: Estimated effects of employees' sense of working environment on job satisfaction and intention to stay**



Second, the analysis shows that a positive working environment is key to increasing job satisfaction and tackling employee turnover. Figure 15 demonstrates that as the working environment improves, employees' sense of job satisfaction and intention to stay increase substantially. A shift from a neutral working environment (score 50 on the X-axis) to a highly positive environment (score 100 on the X-axis) could lead to a twofold increase in job satisfaction and employees' intention to stay in the highways sector. Figure 16 illustrates a similar size effect of the working environment on reductions in perceived work-life conflict.

Overall, statistical modelling revealed a strong and positive effect of D&I on employee outcomes. This was also reflected in insights from qualitative data, which revealed a consistent and compelling theme: inclusion is central to how individuals experience their workplace and shape their career aspirations. Across focus groups and interviews, participants reflected on how inclusive practices — both within formal schemes and broader organisational culture — have influenced their decisions to remain with their current organisations and how they will evaluate future career opportunities.

For many participants, inclusion was not merely a corporate initiative but a lived experience that fostered loyalty and long-term commitment. The presence of a visible commitment to inclusion created a sense of belonging and purpose, often cited as more fulfilling than traditional markers of career progression. As such, participants felt more committed to a scheme and thus less likely to look to move to alternative firms or exit the sector entirely.

**“It’s heartening for me because of the whole EDI strategy we have on. I’ve now come to believe in how inclusive we are and what we do. It makes me want to stay here.”**

**“I guess it’s more to show that a culture of inclusion is being practised. For some individuals like myself, I am more than happy to do my job for the next however many years I have to do this rather than be chasing promotions. Doing this job is much more fulfilling than being able to chase a certain position. But having the culture, especially coming from under- represented groups and stuff – having that EDI stuff working alongside that helps me achieve that fulfilment.”**

Whilst a visible commitment to inclusion encouraged retention within a scheme, it also shapes how colleagues evaluate future career opportunities. A heightened awareness of what inclusion can be is increasingly a critical factor in job searches when schemes end. Colleagues argued that an absence of a visible commitment to D&I would make them apprehensive about working for that organisation.

**“I think that now I’ve seen what inclusion can be... if I went somewhere that didn’t mention it or have anything on inclusion, I’d think, ‘okay, why not? Why are you lagging behind?’ It would be a problem.”**

**“[Does commitment to ED&I shape your future career intention?] “Oh yes. Oh, yes, yes, 100%. Ultimately, when you get invited to an interview, you are super excited. You’ve already done your research on the company, but I’d never looked at those things before. That’s another factor now. It’s important to me. I want to see what is there for future generations like me. It’s the first thing I would look at now.”**

**“I’ve become really aware of it because of my family... I want to know that, however capable they are, she can do whatever role she wants... If I see a firm that doesn’t do it, all the ambition is lost.”**

Figure 16: Estimated effects of employees' sense of working environment on work-life conflict

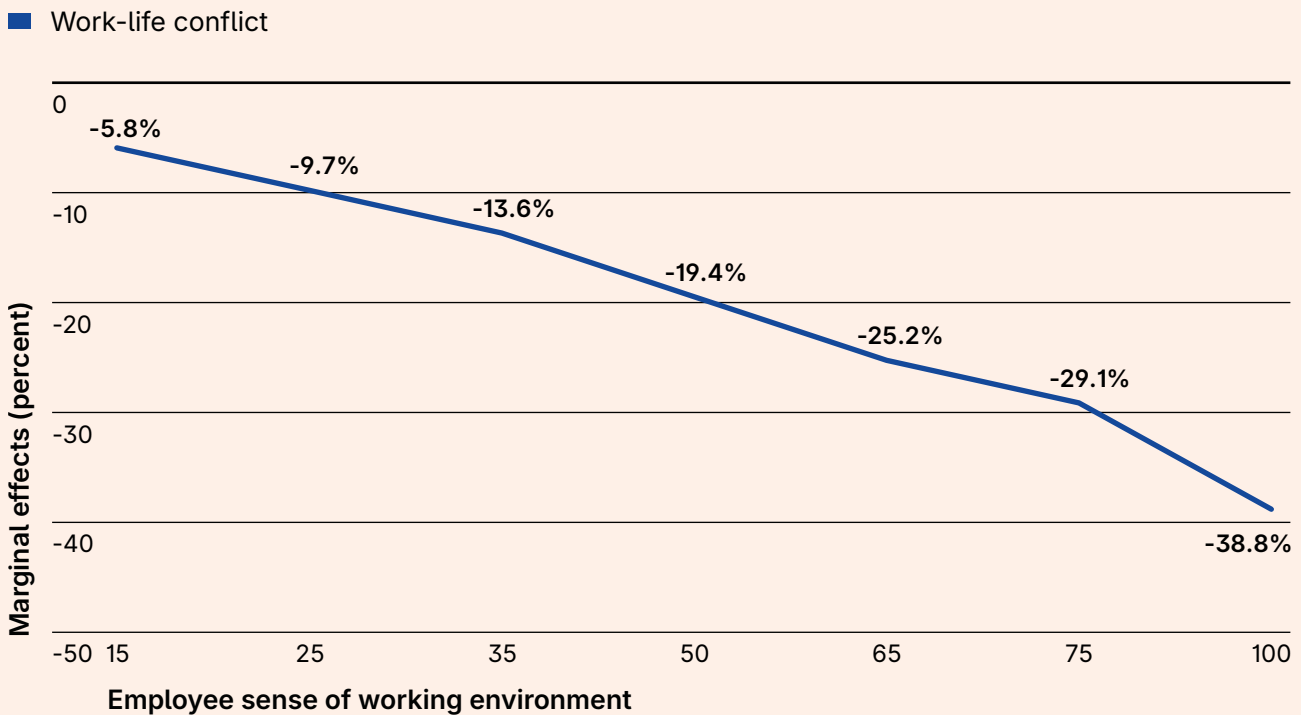
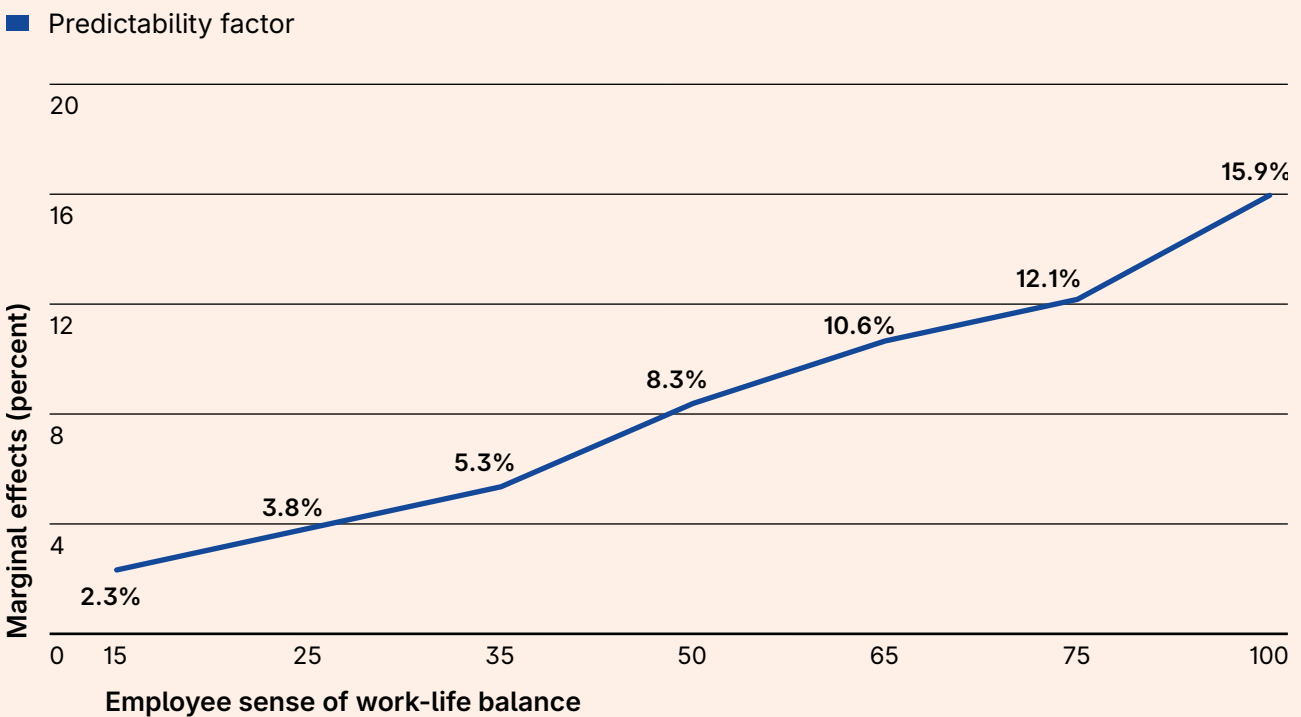


Figure 17: Estimated effects of work-life balance on predictability factor



Building upon the theme of retention, colleagues emphasised that inclusion is not solely defined by formal policies or strategic frameworks — it is deeply rooted in the everyday culture of the workplace. A welcoming and respectful environment, shaped by interpersonal relationships, daily interactions, and equitable treatment, emerged as a critical factor in shaping career intentions.

“

“If they don’t respect you, you’ve got little respect for them as well... I’d probably say the culture’s got to be good in a company, people have got to be nice to work with.”

“

“I started at the same time as a colleague. We both worked up the same way, and are both still in the same industry. She’s happy, I’m happy. You can see just from my side that women are treated the same, given the same opportunities, same training, which is a big thing for me. If that wasn’t happening, I don’t think I’d probably still be here, because I can’t see one person being treated better than others.”

Increasingly, inclusion shapes not just where people work but what they seek in their future careers. Inclusion on schemes fosters respect, representation and psychological safety for colleagues throughout the highways sector; it helps to drive retention and can be a source of advantage in the labour market, building a workforce that is committed to their scheme.

The impact on turnover intention is particularly important as it can accrue direct financial benefits to supply chain organisations. Using the up-to-date staffing data and an established median cost of replacing a qualified construction worker (accounting for direct and indirect costs of recruitment and the financial loss associated with the negative effect of turnover on performance), we estimated that an average major infrastructure project could save around £236,000 per annum.

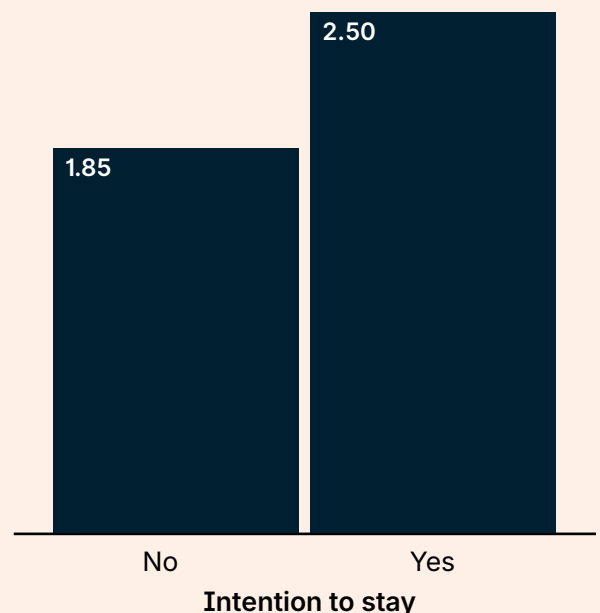
The final step in the analysis was to estimate the potential effect of D&I on organisational performance. While positive D&I perceptions can be beneficial for employees’ sense of working environment, work-life balance and job satisfaction, a key question is whether that translates into better organisational performance.

Regression analysis revealed positive effects of D&I through improvements in the working environment and employee outcomes on two CPF indicators:

- **Predictability Factor:** Supplier’s ability to deliver a scheme to budget and on time
- **Understanding Key Messages:** A metric reflecting understanding of the project’s brand, key messages and narrative among suppliers

Figure 17 shows that through a positive impact on work-life balance, D&I can elevate Predictability Factor by up to 16%. Figure 18 demonstrates further that employees’ intention to stay leads to an improvement (by 35%, on average) in Understanding Key Messages.

**Figure 18: Estimated effects of intention to stay on understanding key messages (Marginal effects)**





Photograph: National Highways

# Conclusions and next steps

# This report demonstrates that embedding Diversity and Inclusion (D&I) throughout the National Highways supply chain moves beyond a moral and legal imperative to a strategic lever to enhance organisational performance.

Through a rigorous, multi-phase research programme spanning four years and three major infrastructure schemes, we have shown that D&I interventions, when thoughtfully designed and contextually implemented, can lead to measurable improvements in employee experience, retention and scheme-level performance.

The findings reveal a clear causal pathway: inclusive practices foster a positive working environment, which in turn enhances job satisfaction, work-life balance and intention to stay. These improvements translate into tangible performance gains, including reduced turnover costs and enhanced delivery metrics. Importantly, the research highlights that inclusion is not a static policy but a lived experience that shapes career aspirations and organisational loyalty.

As the sector continues to face challenges such as labour shortages, demographic shifts, and evolving social expectations, the adoption of the D&I roadmap developed through this research offers a practical and evidence-based strategy for long-term transformation. The roadmap provides a scalable framework for embedding inclusive practices across the lifecycle of infrastructure projects, ensuring that the highways sector becomes more representative, resilient and responsive to the communities it serves.

Building on the findings of this report, the next phase of the work focuses on scaling impact and embedding inclusive practices across the wider construction sector. The D&I Roadmap and Toolkit will be made available to the construction sector through the Supply Chain Sustainability School. Furthermore, a Management Knowledge Transfer Partnership (MKTP) commenced in September 2025 and will last twenty months. The MKTP seeks to deepen the integration of the D&I roadmap across National Highways' supply chain, to:



**Facilitate the transfer of academic expertise into operational practice across Tier 1, Tier 2 and Tier 3 suppliers.**



**Support the development of tailored implementation of D&I strategies aligned with scheme lifecycles.**



**Build industry capacity for inclusive leadership, employee engagement and performance monitoring.**

Together, these steps hope to ensure the long-term sustainability of inclusive practices, strengthen organisational cultures and enhance performance across the sector.

# Appendices



## Appendix I: Data and methods

### Qualitative data

Qualitative data collection took place between November 2021 and May 2025. A total of 137 employees participated in interviews and focus groups, segmented into four distinct categories – detailed below. Interviews and focus groups were conducted either in person or remotely using Microsoft Teams. All sessions were audio-recorded with participant consent and transcribed verbatim. Semi-structured interview guides and focus group prompts were developed by the research team and utilised to maintain consistency whilst allowing participants to elaborate on issues most important to their own experiences.

**Scoping/key stakeholder interviews (n=54):** initial interviews were conducted with key stakeholders at each scheme and based at National Highways. Interviews explored the breadth of D&I practices across the highway sector, identifying key challenges and opportunities.

**Career intention interviews (n=34):** conducted with individuals at various career stages across each participating scheme. These interviews examined how D&I policies shape career aspirations, development opportunities and retention. They provided insight into personal experiences and perceptions of inclusivity in the sector.

**Focus groups (n=42 participants across multiple sessions):** group discussions explored collective attitudes towards D&I initiatives and their perceived impact on team dynamics, performance and

organisational culture. The format encouraged dialogue and reflection amongst peers.

**Exit interviews (n=4):** Although a large number of exit interviews were originally envisioned, the timescale of the research meant only a small subset of participants left their role prior to the end of their related scheme. Exit interviews offered valuable insight into retention issues in the highways trades and allowed us to understand the value of organisational D&I commitment for future roles. Furthermore, they allowed participants the opportunity to reflect on their engagement with the research, discussed below. Two exit interviews with director-level participants also had reflective elements built in as we reflected on the duration of the project.

**Reflective interviews (n=2):** A small number of dedicated reflective interviews were conducted at the end of the research project and aimed to explore how employees' engagement with the research influenced their personal and professional development. They focused on what individuals had learned through their involvement, any challenges they encountered, and the benefits they perceived from participating. Whilst we aimed to conduct a larger number of reflective interviews, we were limited by the timing of the end of the schemes. However, all qualitative data collection sought to gain continuous reflections on engagement with the research project. Exit and career intention interviews, for example, reflected on how participants engaged with the research at multiple stages.

Full details of the qualitative data can be found in the table below:

**Figure 19: Summary of qualitative data collection**

Company	Scoping	Career intention	Exit & reflection	Focus Groups
National Highways	16			
Balfour Beatty	16	6		7
Costain	12	9	6	10
Skanska	10	20	0	25
<b>Total</b>	<b>54</b>	<b>35</b>	<b>6</b>	<b>42</b>
				137

### Quantitative data

The employee survey was designed to capture employees' perceptions of D&I and experiences of working on their schemes and in relation to their employer. The first wave of the survey was conducted between March and June 2023 among Balfour and Costain-led projects and between September and November 2023 among Skanska-led projects. The survey was repeated across the same suppliers one year later, following the

implementation phase. Combined, the two waves of the survey returned 979 employee responses. CPF performance data includes three main indicators at the scheme level: understanding key messages (suppliers' understanding of the scheme brand, its key messages and narrative); average delay in work (delays experienced by customers through roadwork schemes); predictability factor (ability to maintain an effect cost to schedule ratio).

### Regression outputs

Table 1: Estimated marginal effects of perceived diversity on working environment

Perceived diversity (1 - no diversity; 2 - some diversity; 3 - highly diverse)	Predicted working environment (0 - highly negative; 50 - neutral; 100 - highly positive)	95% confidence interval (Lower Limit)	95% confidence interval (Upper Limit)
1.00	53.89	49.01	58.77
1.33	59.30	54.91	63.68
1.67	64.70	60.68	68.72
1.83	67.41	63.51	71.31
2.00	70.11	66.29	73.94
2.17	72.81	69.01	76.62
2.33	75.52	71.69	79.35
3.00	86.33	81.94	90.72

**Table 2: Estimated marginal effects of working environment on job satisfaction, work-life balance and intention to stay**

Working environment	Job satisfaction			Work-life balance			Intention to stay		
	Average prediction	95 % Confidence Intervals (Lower Limit)	95 % Confidence Intervals (Upper Limit)	Average prediction	95 % Confidence Intervals (Lower Limit)	95 % Confidence Intervals (Upper Limit)	Average prediction	95 % Confidence Intervals (Lower Limit)	95 % Confidence Intervals (Upper Limit)
0	37.67	34.21	41.13	53.98	46.17	61.78	0.24	0.11	0.37
15	45.74	42.67	48.81	50.84	43.92	57.76	0.35	0.23	0.46
25	51.12	48.28	53.95	48.75	42.35	55.14	0.42	0.31	0.53
35	56.49	53.86	59.12	46.65	40.72	52.58	0.49	0.39	0.59
50	64.56	62.17	66.95	43.51	38.12	48.91	0.60	0.51	0.69
65	72.63	70.36	74.89	40.38	35.27	45.48	0.70	0.62	0.79
75	78.00	75.76	80.25	38.28	33.22	43.35	0.78	0.69	0.86
100	91.45	89.00	93.90	33.05	27.52	38.58	0.95	0.86	1.05

**Table 3: Estimated marginal effects of work-life balance on predictability factor**

Work-life balance	Predictability factor	95 % Confidence Intervals (Lower Limit)	95 % Confidence Intervals (Upper Limit)
0	1.32	1.32	1.26
15	1.35	1.35	1.30
25	1.37	1.37	1.33
35	1.39	1.39	1.36
50	1.43	1.43	1.40
65	1.46	1.46	1.42
75	1.48	1.48	1.43
100	1.53	1.53	1.46

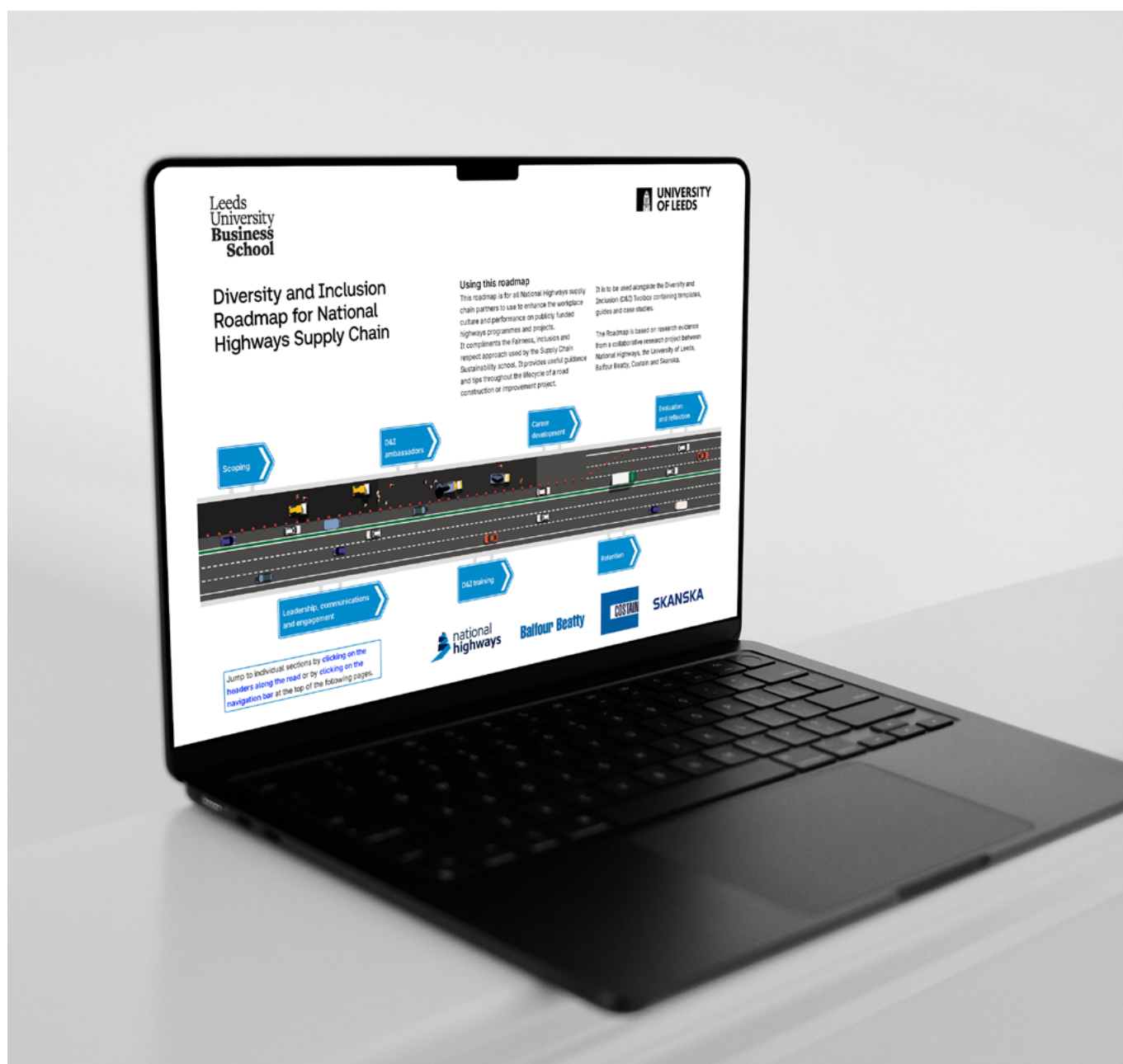
**Table 4: Estimated marginal effects of intention to stay on Understanding Key Messages**

Intention to stay	Understanding Key Messages	95 % Confidence Intervals (Lower Limit)	95 % Confidence Intervals (Upper Limit)
0	1.85	1.84	1.87
1	2.50	2.35	2.65

## Appendix II: Roadmap

The Roadmap is for all National Highways supply chain partners to use to enhance the workplace culture and performance on publicly funded highways programmes and projects. It complements the strategy of Fairness, Inclusion and Respect (FIR). It provides useful guidance and tips throughout the lifecycle of a road construction or improvement project. The Roadmap is based on research evidence from a collaborative research project between

National Highways, University of Leeds, Balfour Beatty, Costain and Skanska. It is expected that Highways' construction supply chain partners will use it in conjunction with their existing initiatives, some of which will be specific to each company. In addition to the Roadmap, there is a Toolbox of useful templates, guides and case studies that represent best practice across the industry.



### Appendix III: Further reading

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## About CERIC

The Centre for Employment Relations, Innovation and Change (CERIC) is home to researchers who contribute through high quality research, teaching and knowledge transfer to contemporary national and international debates around the changing dynamics and future of work, employment and labour markets.

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## Find out more

If you have found this report useful or would like further information about the collaborative project between University of Leeds and National Highways, then please contact Professor Jennifer Tomlinson:

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