



APPROVED: HOW AI AND DATA CAN TRANSFORM AUSTRALIA'S ENVIRONMENTAL APPROVALS

2026

IN PARTNERSHIP WITH **technology1**

ABOUT THIS PUBLICATION

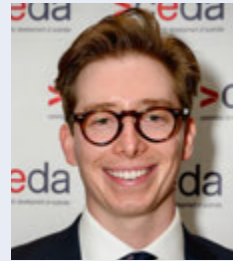
APPROVED: HOW AI AND DATA CAN TRANSFORM AUSTRALIA'S ENVIRONMENTAL APPROVALS

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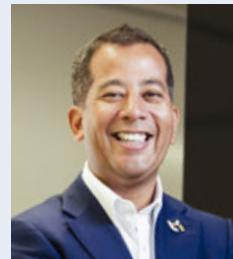
ABOUT CEDA

The Committee for Economic Development of Australia (CEDA) is an independent, membership-based think tank. CEDA's members span industry, government, community and academia.

Our research, advocacy and events are centred on our Progress 2050 vision to achieve sustainable, long-term prosperity for all Australians through a strong economy and strong social compact.

CEDA was founded in 1960 by leading economist Sir Douglas Copland.

IN PARTNERSHIP WITH TECHNOLOGYONE



Ed Chung is the CEO and Managing Director at TechnologyOne.

"Australia is at a turning point. The shift from IT to AI is the most significant economic transformation of our lifetime, and the decisions governments make now about where their technology comes from will determine whether Australia shapes its own future or has it shaped by others."

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APPROVED: HOW AI AND DATA CAN TRANSFORM AUSTRALIA'S ENVIRONMENTAL APPROVALS



Approvals sit at the centre of Australia's economy

 **\$278 billion** in construction pipeline

Efficient approvals

- ✓ Safeguard the environment
- ✓ Are guided by community
- ✓ Support economic growth

The approvals process is complex and costly

Referrals we analysed had

Up to
8500
pages of
documentation

32
technical
annexes

4300
public
submissions

26
legislative
instruments

More than \$250,000
time cost for one referral review

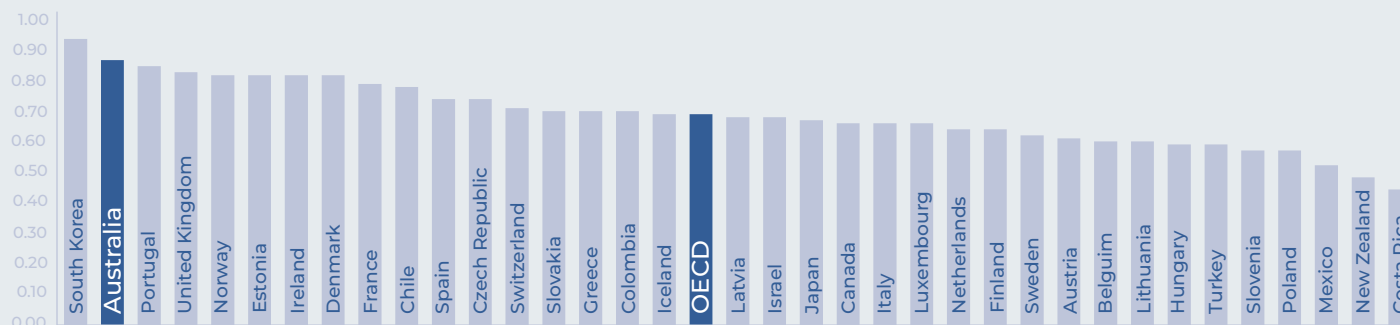
How AI and data are helping globally

66%
improvement
in comment
processing time

15%
reduction
in technical
survey costs

\$80 million in time
savings
annually

Australia is well-placed for broader adoption of AI in government



OECD Digital Government Index

CEDA's recommendations for how Federal Government can support AI-enabled approvals



Establish an environmental approvals innovation taskforce



Ensure data and information standards mandate information sharing from private parties

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EXECUTIVE SUMMARY

As governments across Australia show increasing appetite to revisit and reform our environmental and planning regimes, there is a rare opportunity to seize this moment of change and leverage new technologies to accelerate progress even further.

New tools powered by artificial intelligence are demonstrating huge potential both at home and abroad. Heightened access to information and AI support for government officials is generating millions of dollars in savings annually. At the same time, new technology is redefining how the public can engage with and understand the impacts that development has on them and their environment, supporting deeper transparency and participation.

But the pace of change and breadth of options available to policymakers and agencies is overwhelming. And while there is no shortage of general advice on technology adoption or artificial intelligence, there is little guidance that considers the sensitivities unique to the approvals process, much less so in an Australian context.

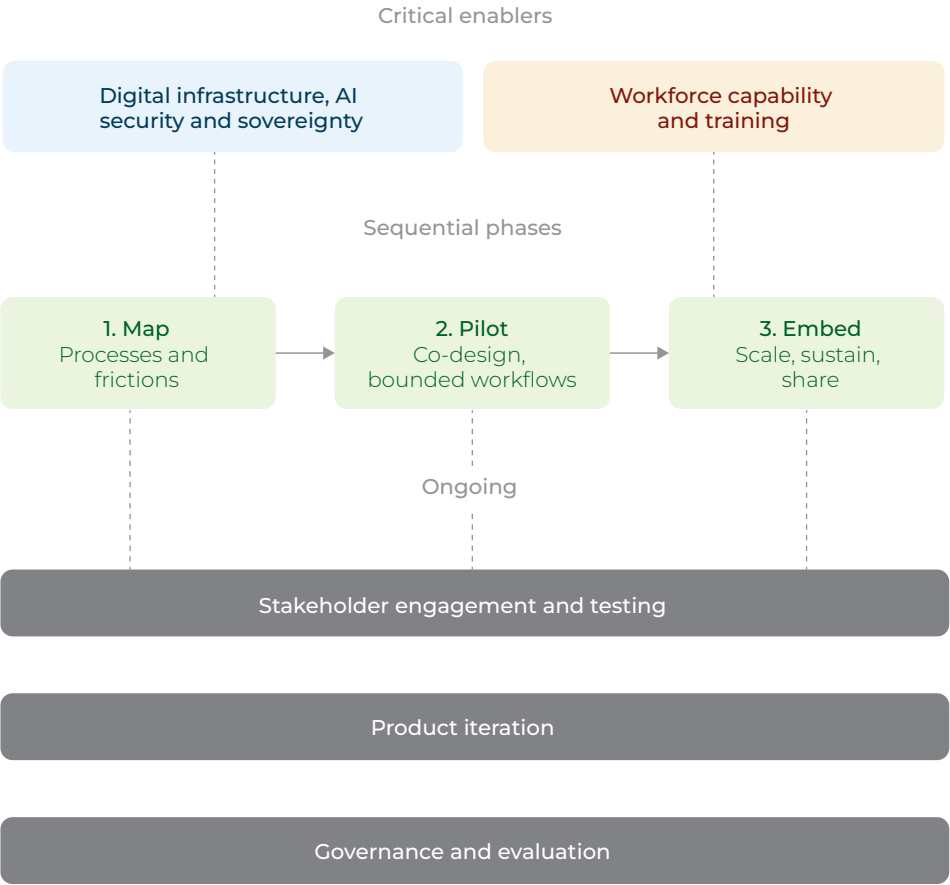
This report fills that gap, tailoring advice specifically to approvals use cases. It identifies what's possible, what's emerging and what to do about it.

Technology moves fast. Implemented well, it can help our approvals system move faster too.



RECOMMENDATIONS

A BLUEPRINT FOR REGULATORS AND AGENCIES



HOW FEDERAL GOVERNMENT CAN SUPPORT AI-ENABLED APPROVALS



Establish an environmental approvals innovation taskforce

A dedicated taskforce can provide guidance that is tailored to the unique demands and sensitivities faced by approvals teams, reduce duplication of efforts and support greater harmonisation of processes and capabilities across jurisdictions.

The tenure of the taskforce could be time-limited, providing guidance to agencies and regulators at the beginning of their AI journeys and winding down as they become more mature.

The taskforce should sit within the Digital Transformation Agency.



Ensure data and information standards mandate information sharing from private parties

The data and information standards currently being drafted as part of the overhaul of federal legislation should establish public sharing of baseline environmental information as the default. Information should be provided in standardised, reusable formats to enable greatest compatibility with AI applications.

Legislative changes should allow flexibility for exceptions in special circumstances. These could include instances where making environmental information public could cause harm to certain species, create risks to safety or cultural heritage.

WHY THE TIME IS RIGHT TO EMBRACE TECHNOLOGY IN ENVIRONMENTAL APPROVALS

In an environment of geopolitical instability abroad and heightened scrutiny on fiscal sustainability at home, productivity is squarely back in focus at all levels of government.

Meanwhile, the breadth of compounding challenges outlined in the recent *National Climate Risk Assessment* underscore that improvements in economic performance can no longer come at the expense of the natural systems on which we all rely.

In this context, revisiting the tools, technology and systems we use to understand the impacts of development offers the potential to support productivity growth while building a deeper understanding of how economic activity impacts our environment.

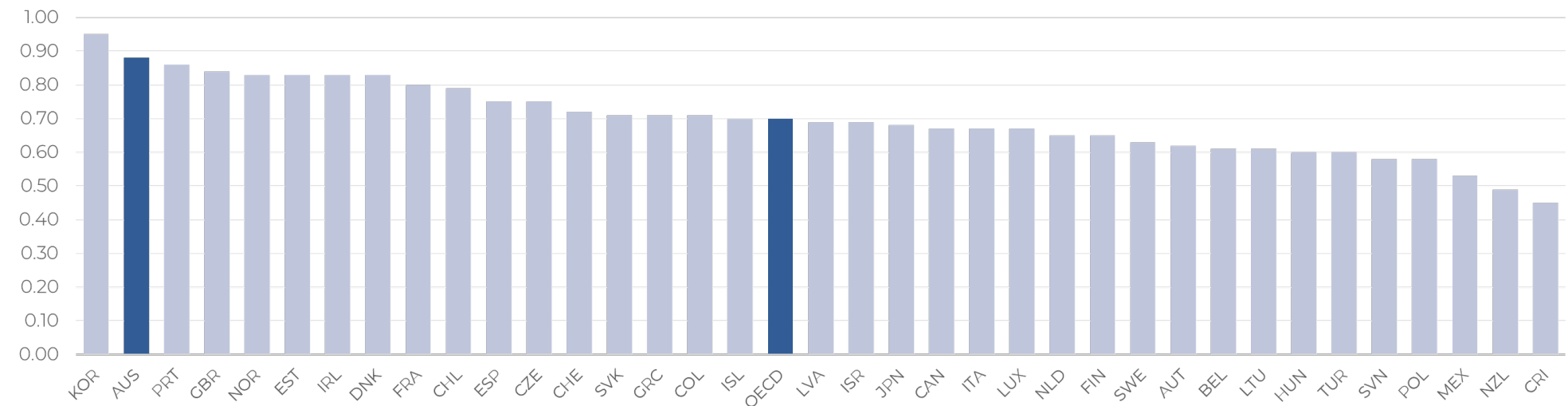
Getting this right means faster delivery of affordable housing, generating clean energy and building the transmission to deliver it, tapping into the

economic opportunity of critical minerals and enhancing our ability to sustainably build the data centres that can give us an edge in the age of AI.

And with around \$278 billion of construction work in the pipeline, all of which will have interacted with planning and approvals at one level or another, the productivity dividends of even small improvements are substantial.

Australian governments and agencies are well-placed to seize the opportunities brought by emerging technologies. In the OECD's recently released Digital Government Index, which evaluates governments' digital capabilities across several domains, Australia ranked second in the world (Figure 1).¹ These scores reflect strong fundamentals that can be built on to accelerate further change.

Figure 1 OECD Digital Government Index



COMPLEXITY AND RESOURCING CONSTRAINTS ARE MUTUALLY REINFORCING CHALLENGES THAT NEED TO BE ADDRESSED

The economic and environmental significance of the approvals system has been a key driver of the push to reform the *Environmental Protection and Biodiversity Conservation Act*, as well as changes to other regulatory regimes at subnational levels.²

While changes to legislation are expected to address some of the challenges that have become a hallmark of environmental approvals in recent years, not all the causes of delay relate to regulatory and legislative frictions.

Construction activity has varied and complex impacts on and interactions with the surrounding environment and communities. Identifying these impacts and, where appropriate, safeguarding against them is a feature of our system, not a bug. Doing so helps to protect the things we value, from Australia's rich biodiversity to indigenous heritage.

But natural systems are inherently complex. Capturing and understanding these complexities requires proponents to conduct multidisciplinary scientific studies, collate information on species distributions and biodiversity profiles, navigate dozens of pieces of legislation and seek community input. The sum of these activities is laid out in environmental impact statements.³

The documentation collating this information can be voluminous. One mining application reportedly ran to 8,500 pages and weighed 43 kilograms when printed.⁴ CEDA's own analysis of applications identified one project that listed 26 separate pieces of legislation it needed to comply with.⁵ Another was supported by 32 separate technical annexes.⁶

This complexity is reflected in the public resources required to assess applications. Evaluating just a single complex referral can involve a time cost of a quarter of a million dollars for officials.⁷

And just as many jurisdictions report increasing complexity and volume of referrals, they also document severe internal resourcing constraints.⁸

A recent review into WA's environmental regulator noted a 20-30 per cent loss of staff, with the situation so dire that compliance officers were required to be moved into approvals functions.⁹ Similarly, Jobs and Skills Australia analysis shows that environmental scientists, key to providing expert feedback on referrals, are in shortage across every state and territory in the country.¹⁰

These factors coalesce and compound to exacerbate backlogs, add pressure on officials and, at times, deliver outcomes out of step with community expectations.

Multiple reviews of approvals processes have identified that uplifting the technical foundations of the system can play a role in alleviating some of these pressures and help to deliver better outcomes for all stakeholders.¹¹ Unfortunately, these same reviews have also consistently highlighted that existing tools and systems are not fit for purpose. The most influential of these, Graeme Samuel's 2020 review of the EPBC Act, called for a "quantum" leap forward.¹²

With economic, social and environmental pressures mounting, the time to take that leap is now.

AI'S POTENTIAL TO ENHANCE OUTCOMES IN ENVIRONMENTAL APPROVALS

Improving outcomes doesn't just mean helping projects get approved faster. We take a broader view of the potential offered by AI and data to not just improve efficiency, but to support public engagement in review processes, enhance transparency, and build a deeper understanding of environmental impacts and how to manage them.

Technology isn't a panacea. It can't, and shouldn't, replace the human judgement or interaction that informs assessment of projects that carry significant impacts on the environment or community. Nor can it address regulatory or legislative shortcomings that set the parameters within which it operates.

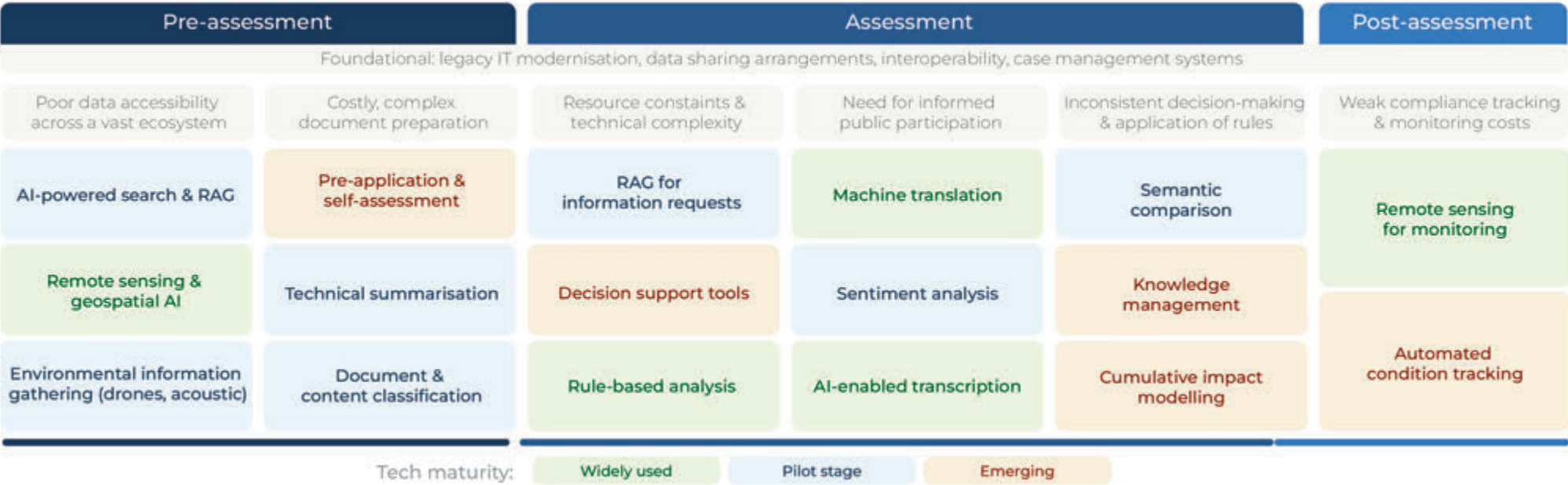
And there are real risks that can result from poor implementation of technological solutions, with harms potentially heightened by the outsized role governments play in decisions about our environment and economy.

But there is risk in maintaining the status quo, too. While it is right to be clear-eyed about the shortcomings of new AI tools, it would be wrong to assume existing systems and tools are immune to making mistakes. And delaying the adoption of powerful new approaches can bring its own costs, from diminished security capabilities through to missed opportunities for efficiency gains.

Acknowledging these important caveats, CEDA analysis has identified multiple areas where certain tools and methods show significant promise in meeting challenges and accelerating progress across the environmental approvals lifecycle (Figure 2).

Among these, three areas of heightened opportunity stand out and are discussed in turn below. Other technologies and applicable case studies are expanded on further in Appendix B.

Figure 2 Where AI and technology can address challenges in environmental approvals



HIGH-QUALITY INFORMATION FOR HIGH-QUALITY REFERRALS

Accessibility of high-quality environmental data and clear guidance about when and how to use it can support better outcomes at the start of the approvals lifecycle, reducing the number of review cycles and saving time and money for both proponents and decision-makers.¹³

Proponents outlined to CEDA that environmental information and procedural guidance critical to their applications is currently difficult to access, adding to costs and delays. Regulators highlight that gaps in information in the referrals they receive lead to costly back and forth with developers.

These factors have led to “sub-optimal decision-making, inefficiency and additional cost for business, and poor transparency for the community.”¹⁴

The ambition for a federated data platform with high-quality information managed by the newly established Environment Information Australia is a welcome step in addressing this challenge. Centralising searchable environmental data, previous project outcomes and procedural guidance enables stakeholders to understand the environmental assessments, analyses and decisions that shape projects.¹⁵

However, there is opportunity to use emerging AI tools to go further than aggregating environmental information and guidance alone. Indeed, international experience suggests that this may not just be beneficial, but necessary.

Similar to Environment Information Australia, Canada established a national Open Science and Data platform, leveraging data from and built in collaboration with multiple agencies and departments across different levels of government.¹⁶

The value of the project was limited, however, because the volume and complexity of the data meant proponents struggled to access what they

needed with keyword searches alone.¹⁷ Canadian authorities are turning to new AI tools to address the problem and enhance searchability.

The success of such approaches, which leverage the increasing sophistication of retrieval-augmented generation, is already being observed in Australia.

The Geological Survey of Queensland’s Open Data Portal holds over 70TB of highly complex geological data, spanning borehole logs, geochemical records, geophysical surveys and exploration reports. But stakeholders found it difficult to extract usable insights from this volume of material. The Digital Librarian proof-of-concept used large language models and retrieval-augmented generation to let external users ask plain-language questions across thousands of reports, surfacing patterns and insights that keyword search alone could not provide.¹⁸

Ease of accessing information can bring substantial economic benefits. Initiatives to freely share data and ecological information in the Pilbara have been estimated to unlock \$1.4 billion economic value, driven in part by a 15 per cent reduction in survey costs.¹⁹

IMPACTFUL ASSESSMENTS

For departments and agencies, the assessment stage is often where complexity and resource constraints are most acutely felt. Assessment officers must work through voluminous documentation, cross-reference it against regulatory requirements, identify information gaps and coordinate with other agencies to prepare recommendations that are legally defensible, transparent and consistent. These demands are growing against a backdrop of increasing referral volumes and workforce constraints.

This is also where the potential for AI-supported tools to improve outcomes is arguably greatest. A growing body of international research and practice is demonstrating that emerging technologies, particularly large language models and natural language processing, can meaningfully assist at multiple stages of the assessment lifecycle while complementing the human judgement that must remain at its core.²⁰

Pre-screening and application quality

One of the most promising near-term applications lies in enabling proponents to pre-screen their own applications before they are formally submitted. AI tools designed for pre-application processes can help address the cascading problems brought by poor referral quality at the outset of the process, guiding applicants through information requirements, identifying missing documentation and flagging potential compliance issues before an application reaches an assessment officer's desk.

The New South Wales Government is pursuing this approach directly. As part of its ambition to use AI to support faster assessment of state-significant housing developments, it has launched a tender for a system that would conduct an intelligent review of documentation before lodgement and assess applications against key criteria.²¹ Delivered effectively, such tools could significantly reduce the time assessment officers currently spend on requests for further information, a process that multiple stakeholders told CEDA was a major source of delays.

Internationally, researchers in South Africa have tested a customised large language model as an impact assessment screening tool, evaluating its ability to determine whether proposed developments trigger assessment requirements under legislation.²² Using 20 real-world cases, the research found that even without access to internal regulator resources, iterative refinement and domain-specific training enabled a 78 per cent success rate in identifying applicable regulatory triggers.

Despite this success, however, performance was weaker for large-scale developments involving multiple overlapping requirements. The findings highlight both the potential of AI screening tools and the importance of continued human oversight, particularly for complex proposals.

Navigating complexity within assessments

Beyond the initial screening stage, a range of AI applications are showing promise in supporting assessment officers as they work through the substance of referrals.

Large language models paired with retrieval-augmented generation can make the technical content of environmental impact statements searchable in plain language, allowing officers to query complex documentation rather than manually navigating hundreds or thousands of pages.²³

AI is also increasingly being used to compare project documentation against performance standards and environmental guidelines, automatically surfacing discrepancies that might otherwise be missed or identified only after extended manual review.²⁴

For tasks that are highly structured and repetitive, the case for AI assistance is particularly strong. Information requests to other agencies, an important step that allows assessment officers to access the technical expertise within other departments, is an area prone to ambiguous requests that can lead to delays and confusion, a problem exacerbated by an increasing share of inexperienced staff.²⁵ AI-supported drafting tools developed and verified with input from domain experts can help address such challenges.

Similar tools can be applied to internal knowledge. Ready access to previous decisions, process maps, guidance documents and contacts from partner agencies can help regulators draw on institutional expertise more efficiently while minimising some of the challenges brought by

high staffing shortages. Such approaches also support consistency among applications and assessment officers, a key pain point repeatedly identified in consultation undertaken for this research.

These methods have led to substantial efficiency gains abroad.

Launched in 2023, Denmark's EA Hub is a national repository of over 2,500 environmental assessment reports, enriched with structured metadata and supported by an AI-powered search function that allows users to query the full body of reports using natural language.²⁶ Performance evaluations have estimated that the platform can reduce the time required for environmental assessments by between two and 13 months, translating into projected annual savings of up to 525 million Danish kroner, approximately \$80 million.²⁷

In France, substantial investments in aggregating ecological information for officials were undermined because the data was difficult to navigate and in turn being underutilised internally. In response, the government developed a bespoke AI chatbot to help officials more readily access the data they needed.²⁸

STRENGTHENING PUBLIC ENGAGEMENT

The highly localised impacts of development mean that public engagement throughout environmental assessment processes is essential to achieving outcomes in line with community expectations.

Done well, public engagement can capture knowledge that technical studies alone may miss and strengthen the social license needed to see projects through to delivery.

Reviews of current approaches, however, document persistent shortcomings in engagement processes.²⁹ Systems that are designed to promote transparency paradoxically result in the process becoming more opaque, with the sheer volume and technical complexity of referrals making genuine public engagement challenging.

Regulators face their own challenges in sifting through public comments.

Strong levels of public interest in projects can generate high volumes of submissions, all of which must be analysed and meaningfully incorporated into assessment processes. One Australian project generated 4,300 responses in a 10-day submission window.³⁰ Processing these is resource-intensive and can exacerbate assessment delays, in turn leading to frustration among affected communities who await visibility on how new construction will affect them.

In response, emerging technologies are already changing how people engage with complex project information.

In Australia, virtual engagement rooms and digital EIS platforms are presenting complex environmental information through interactive 3D models, integrated mapping and multimedia content.³¹ These platforms, which have been deployed on projects like Sydney Metro West allow communities to explore proposed projects visually, understand potential impacts in a spatial context and provide feedback through new channels.³² Similar approaches are gaining traction internationally, with US agencies reporting that web-based environmental documents with navigable interfaces and in-document commenting functions are significantly improving accessibility and participation compared with static PDF formats.³³

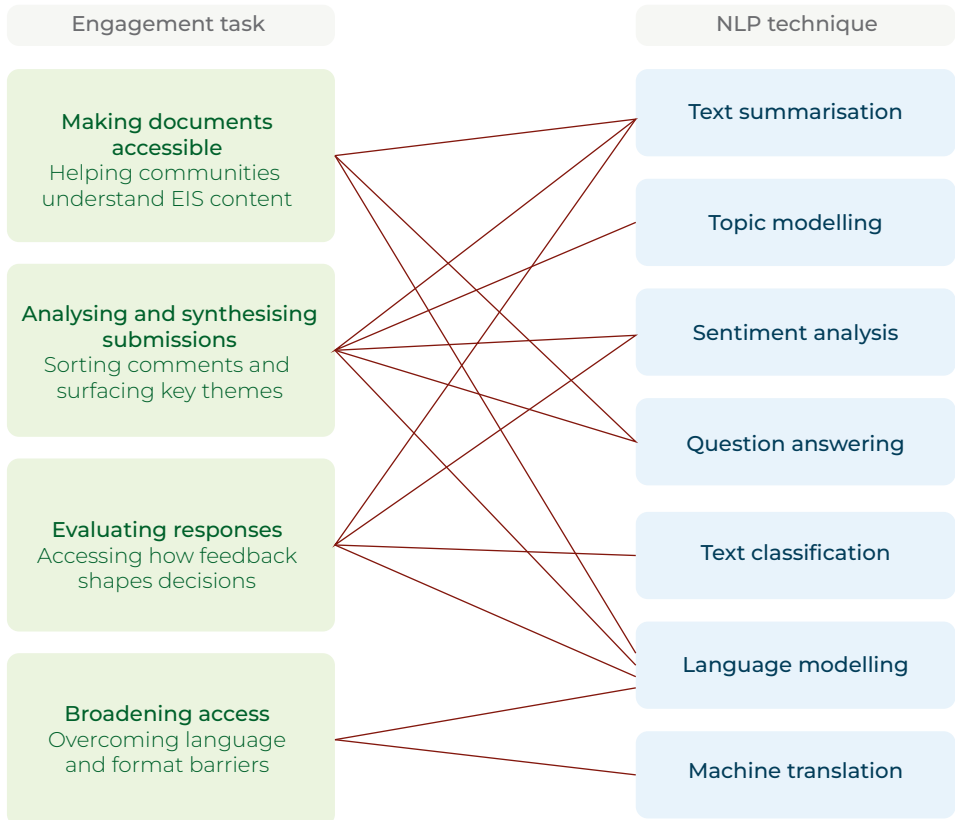
As AI capabilities advance, these digital formats present significant opportunities to go further. Tools like chatbot-style question answering and automated summarisation are enabling members of the public to interrogate project documentation in plain language rather than navigating technical reports unaided.³⁴ Increasingly reliable machine translation capabilities can also help open participation to community members who might otherwise be excluded from processes conducted primarily in English.³⁵

For approvals teams, natural language processing tools are showing strong results in managing the burden of analysing public submissions. These tools can sort and categorise large volumes of comments, surface key themes and patterns of concern, and flag areas of consensus or disagreement for human reviewers (Figure 3).

A pilot by three English councils tested such tools in their joint local plan consultation and found that AI-assisted tagging and summarisation delivered a 66 per cent improvement in processing time, saving assessment officers up to 10 minutes per response.³⁶

While these techniques offer much promise, nearly all evaluations emphasise that the sensitive nature of community engagement means that they cannot replace professional judgement or traditional outreach programs.³⁷ Careful implementation must also be undertaken to avoid marginalising groups who have limited access to digital tools.

Figure 3 Natural language processing applications in public engagement



Adapted from Gupta, Moser and Singh (2025)

A BLUEPRINT FOR AGENCIES AND REGULATORS TO REALISE THE OPPORTUNITIES OF AI AND DATA

In the Australian context, approvals processes can sit across multiple jurisdictions, involve overlapping legislative regimes and require agencies to balance efficiency, environmental protection, public trust and legal defensibility.

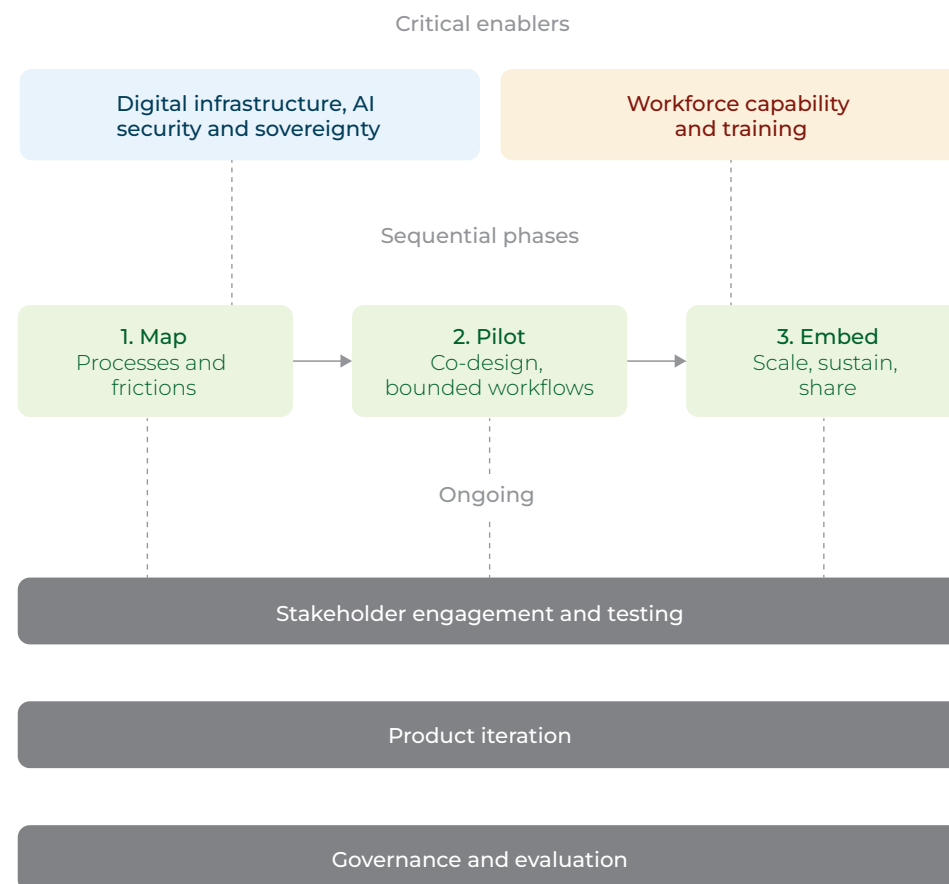
That makes the challenge more complex than simply introducing a new digital tool. It requires a deliberate blueprint that identifies where technology can remove friction and where human judgement must remain central.³⁸

A successful approach should therefore begin with unpacking the approval process itself. Agencies should first understand where time, cost and uncertainty are being created, which parts of the process are genuinely labour-intensive and which are simply slowed by outdated systems or inconsistent practices. Only then can they determine whether AI or other digital tools are appropriate, and at what point in the approvals lifecycle they should be introduced.

There are many useful frameworks and guidance documents to support AI implementation and some of these are compiled in Appendix A. However, a crucial drawback is that these are often highly generalised. In response, CEDA has synthesised and drawn on the best available research and expert advice to craft a blueprint that factors in the unique demands, frictions and opportunities within approvals processes (Figure 4).

This staged approach is especially important in approvals, where failure carries not only environmental costs but also regulatory, reputational and community risks. The following section sets out what that approach looks like in practice.

Figure 4 A blueprint for regulators and agencies



CRITICAL ENABLERS

Before any AI implementations are undertaken, agencies and governments must address existing challenges in two critical enablers of change: digital infrastructure and sovereignty, and workforce capability and training.

Digital infrastructure, AI security and sovereignty

The value of investing in digital infrastructure and systems cannot be overstated or overlooked as a prerequisite to realising the benefits of the AI applications outlined above.

CEDA's consultations with stakeholders highlighted that current application portals can feel like a "black box" that offers little visibility of the status of projects. We also heard instances of developers needing to 'split' their referrals into multiple separate uploads to circumvent file size and word count limits. In addition to offering a poor user experience, these technical constraints create risks to transparency and file management that can undermine the approvals process.

Indeed, the Australian National Audit Office emphasises that this is a nationwide challenge, with 48 per cent of all governance issues identified in annual auditing relating to IT controls and environments.³⁹ In an approvals context, poor file management practices and systems have already seen decisions challenged and overturned in the legal system.⁴⁰

Shortcomings in data stewardship and management are yet more acute when considering their role in training large language models.⁴¹ While governments possess vast amounts of data, this information was not collected with the intention for being used in AI applications. Deliberate policy and technical steps must be taken to ensure we can unlock the greatest value from our digital assets.

Part of this is already underway as the federal government drafts its national data standard under reforms to the *Environmental Protection and Biodiversity Conservation Act*. This will help with accessibility and

interoperability of data in the future. But technical approaches are also needed to leverage data that already exists.

For existing data, the critical first step is auditing what agencies already hold, where it sits and its format. From there, automated tools, including AI itself, can be used to extract and standardise information from legacy documents.

CSIRO's Data61 has already piloted this approach in an Australian environmental context, using natural language processing to convert unstructured PDF conservation documents into structured, searchable formats.⁴²

There is also a strong case to develop tools domestically and build sovereign capability within this critical area.

Research consistently shows that AI models that are applied to approvals processes perform significantly better when provided with local context and domain-specific knowledge.⁴³ Systems trained on data from other countries face significant challenges in factoring in local ecological and weather conditions necessary for fully understanding environmental impacts.⁴⁴ Locally trained models and tools also offer greater capacity to account for underrepresented groups.

Outside of performance, regulators that engaged with CEDA highlighted that procurement restrictions prevent them from adopting AI tools that are trained offshore or do not store information locally. This has prevented regulators from being able to experiment with cutting-edge tools that may exist abroad.

And while there is substantial value that can come from tools at the frontier, multiple industry and technical experts emphasised that improvements in back-end processes and structures should be the priority for government. Success here will enable greater flexibility to successfully adopt new technologies as they continue to emerge.

Finally, approvals processes absorb vast amounts of sensitive information, including plans for strategically important national projects. Mitigating the vulnerabilities of legacy systems that handle these applications is yet more reason to spur technology investment — but modernisation efforts should take care not to trade old risks for new ones. Procurement of digital infrastructure and AI tools alike must demand robust supply chain security standards so that the systems entrusted with sovereign data are resilient by design.

Workforce training and capability

Perhaps the most critical enabler of technology uplift initiatives lies in supporting employees across all levels of organisations to help guide its development, implementation and adoption.

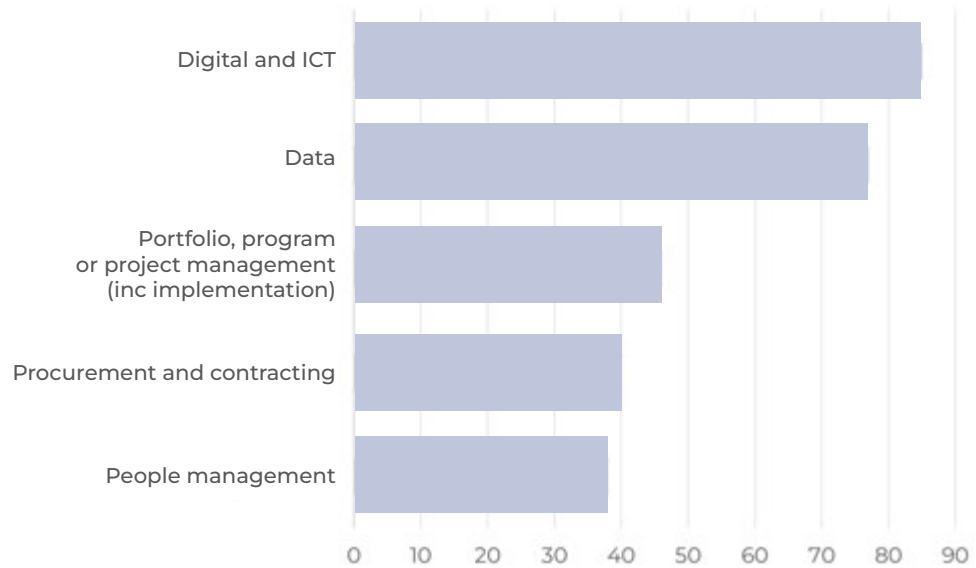
But the level of internal technical capability remains an ongoing challenge for all organisations seeking to introduce new digital tools, and government agencies are no exception.

The Australian Public Service Commission has since 2020 identified digital and IT skills as being in critical shortage across 85 per cent of reporting government agencies.⁴⁵ Similarly, the Digital Transformation Agency warns that 71 per cent of agencies reporting on digital projects identified a lack of talent as a key risk to project delivery.⁴⁶

For front-line government staff, any potential benefits offered by emerging AI tools are being curtailed by a lack of support. A recent survey of 2,000 government workers found only 16 per cent felt equipped to use AI in the workplace, while just 12 per cent said they were using it to support their work.⁴⁷

These obstacles have far-reaching implications for the success of technology uplift initiatives. A lack of skills and understanding about both the capabilities and shortcomings of new tools poses risks ranging from procurement missteps and underestimating security risks all

Figure 5 Digital and data skills are the most critical shortage areas among government agencies



Note: Shows proportion of government agencies reporting specific critical skills shortages.

the way through to low adoption among front-line users due to poor understanding of how, when and where to use new tools.⁴⁸

To address this, departments must continue to provide training that is both general and tailored to specific role requirements across all levels of seniority.⁴⁹

Front-line staff, such as assessment officers, need practical guidance on when and how to use AI tools, and critically, when not to. Senior leaders need a strategic understanding of what technology can and cannot do so that they can make sound investment and risk management decisions. And procurement and project staff need enough technical literacy to negotiate effectively with AI vendors and hold them to account.⁵⁰

Evaluation of the government's recent generative AI trial reinforces the benefits that training can provide. Staff who received three or more forms of training were 28 percentage points more confident in using AI than those who received only one.⁵¹

MAPPING PROCESSES AND IDENTIFYING OPPORTUNITIES

Before moving ahead with any technology uplift programs, approvals functions should carefully analyse their underlying processes and infrastructure, drawing on the insights of staff and external stakeholders who engage with their systems. This step is important in any change exercise but takes on a heightened significance in the deeply complex and context-dependent approvals landscape.

The exercise is essential in distinguishing administrative bottlenecks that technology can address from structural issues that require legislative or resourcing responses. In the age of AI, investing in this process also safeguards against automating existing inefficiencies.⁵²

To do so, techniques like value-stream mapping can help determine which points in the process, if improved, would have the largest effect on overall performance.⁵³ This can be further supplemented by building detailed process maps within and across agencies and developing user

journeys for different participants, from applicants and assessment officers to public commenters.

Different stages of the process are likely to require different data and tools and there is significant value in outlining these at the outset of any change project. Australian experience with Microsoft's Co-Pilot highlighted that a 'one-size fits all' approach, where one tool is used for multiple workflows, may not always deliver the best results.⁵⁴

When considering AI applications, this exercise should also establish where in the assessment lifecycle such tools are appropriate and, crucially, where they are not.⁵⁵ Data analysis and entry, knowledge management and structured, repetitive tasks are well-suited for AI or technical support.⁵⁶ Cultural heritage evaluation and participatory processes meanwhile involve deeply normative judgements, local context and insight, and are areas where human accountability must remain central.⁵⁷

Mapping exercises should also establish the data foundations that any future solution will require. That includes understanding what information exists, where it sits, how reliable it is, what format it is in, who owns it, and whether it can be lawfully used.

In the Australian context, this is especially important because approvals often depend on information held across Commonwealth, state and territory systems, as well as data held by proponents or consultants. A credible digital strategy must therefore include a plan for interoperability, data standards and access to authoritative environmental information.

MOVING BEYOND PILOT PURGATORY

Initial mapping will identify where opportunities exist and how to prioritise them. To move technologies forward to full business integration and avoid "pilot purgatory", agencies should ensure that any pilots are governed by a framework that includes a clear problem statement, a defined user group, a bounded workflow and success measures agreed in advance.

For a pilot to succeed, it should be designed with the whole operating environment in mind. That means identifying key stakeholders early, segmenting and prioritising them based on their role in the approvals lifecycle and their level of influence, impact and readiness for change and tailoring engagement accordingly.

Agencies should be clear on who needs to be actively involved in co-design, who needs to endorse or govern the pilot, and who needs to be informed to maintain transparency and trust. This targeted approach ensures the pilot is grounded in real user needs, surfaces risks early, and builds the sponsorship and alignment required to move from pilot to scaled adoption.

The pilot stage should also include an exit criterion and success measures from the outset. If the tool meets agreed thresholds for accuracy, usability, security and value, there should be a clear pathway to scale. If it does not, agencies should be willing to stop, learn and redesign, ensuring that scarce public resources are used most effectively.

EMBEDDING AND SCALING

Embedding and scaling require more than technical deployment. They require changes to policy, process, training, assurance and governance so that any new tools become a reliable part of the approvals ecosystem.

The first step is to integrate the tool into the business process itself. That may mean redesigning workflows, updating standard operating procedures, clarifying accountabilities and usage. Without this step, even a strong pilot can fail because staff revert to old habits or use new tools inconsistently or incorrectly. Expert insights from CEDA's AI Community of Best Practice consistently emphasise that AI implementations should be treated as an organisational change exercise as much as a technology task.

Effective communication and engagement are central to successful adoption. Agencies need to clearly articulate a compelling vision

for change and communication should be continuous and two-way, providing staff and external stakeholders with opportunities to ask questions and forums to shape how the tools are implemented in practice. By engaging early and consistently, agencies can build understanding, alignment and a shared sense of ownership, which are critical to embedding new ways of working and sustaining change.

Capability is equally important. Staff should be supported through practical training, not just system instructions. They need to understand what a tool does, what it does not do, where the risks sit and how to challenge outputs that do not make sense. Leaders also need to model the change by using the tools themselves where appropriate, reinforcing their purpose and demonstrating that technology is there to support, not replace, professional judgement.

Governance should mature alongside adoption. Agencies should establish clear performance metrics, such as time saved, reduction in rework, improved consistency, user satisfaction and impact on decision quality. Regular review points should be used to ensure tools' performance, risks and benefits are monitored over time.

Scaling should also be strategic across government. This includes identifying which parts of the approvals process are most suitable to scale first, confirming that enabling elements such as data quality, integration, and risk controls are sufficiently mature, and aligning stakeholders around clear success measures and accountabilities.

For external-facing tools, agencies should experiment with regulatory sandboxes. These enable supervised innovation testing under controlled conditions and are particularly valuable in deeply complex and sensitive areas like environmental approvals.⁵⁸ When applied to live cases, sandboxes can give highly valuable insights into where systems are working well and where further development is required before scaling further.

HOW THE FEDERAL GOVERNMENT CAN SUPPORT AI-ENABLED APPROVALS

For the promise of new AI tools to be realised, there are two areas where the federal government can play a critical leadership role.

Establish an environmental approvals innovation taskforce

It is unrealistic to expect that departments and agencies already under immense strain keeping up with current workflows will have the bandwidth to undertake the rigorous organisational analysis, stakeholder engagement and technology mapping exercises necessary to realise the benefits of a rapidly changing technology landscape.

The federal government can provide support by establishing a national environmental approvals innovation taskforce. This function would most logically sit within the Digital Transformation Agency, which is already playing a leading role in distributing AI guidance within the public sector.

Establishing a dedicated taskforce recognises the economic significance of approvals processes and that generalised advice about AI adoption is necessary but not sufficient to achieve the step-change needed within our approvals system.

A dedicated resource can provide guidance that is tailored to the unique demands and sensitivities faced by approvals teams, minimise the need to engage external consultants, reduce duplication of efforts and support greater harmonisation of processes and capabilities across jurisdictions.

The tenure of the taskforce could be time-limited, providing guidance to agencies and regulators at the beginning of their AI journeys and winding down as they become more mature.

This approach has been adopted in the US, with its own permitting innovation centre bringing together agencies across all levels of government to raise awareness of innovative approaches, share lessons learned and help spread successful strategies for digital transformation within an environmental approvals context.⁵⁹ The initiative also helps agencies to jointly develop tools, collaborate on codebases, share procurement best practice, and save money by utilising shared services.

In France, the Ministry of Ecological Transition's dedicated public innovation lab (Fabrique à projets) recently launched Sofia, a conversational agent that streamlines access to the organisation's scientific and technical knowledge.⁶⁰ The lab's integration within the ministry enabled a deeper understanding of constraints specific to ecological information accessibility and led to a tool specifically tailored to meet these challenges.

Ensure that the new data and information standard mandates information sharing from private parties

Robust, accessible and interoperable data is essential both for the performance of new AI tools and more broadly, a deeper understanding of our natural environment.

But CEDA repeatedly heard that costly analysis is duplicated and development timelines are extended because information about our environment is withheld due to commercial arrangements. These arrangements benefit the few at the expense of the many by obscuring our understanding of natural systems, delaying productivity-enhancing investments, and increasingly, curtailing our ability to leverage emerging AI applications.

The data and information standards currently being drafted as part of the overhaul of federal legislation should establish public sharing of baseline environmental information as the default. This includes information on areas like biodiversity, water quality, soil status, habitat condition and vegetation. Information should be provided in standardised, reusable formats to enable greatest compatibility with AI applications.

Legislative changes should allow flexibility for exceptions in special circumstances. These could include instances where making environmental information public could cause harm to certain species, create risks to safety or cultural heritage.

CONCLUSION

Governments at all levels are currently grappling with the need to reform approvals processes to deliver on a wide range of policy goals, from affordable housing to energy. Separately, there is a growing desire among policymakers to seize the exciting possibilities brought by artificial intelligence and other emerging technologies.

Yet today these efforts remain largely siloed. Bringing them together offers a rare chance to make approvals not just faster, but fundamentally better for communities, developers and the environment.

Across the approvals lifecycle, a growing body of evidence makes clear that targeted technology adoption can deliver meaningful gains in efficiency, consistency and transparency. From helping proponents access the information they need when they need it, supporting assessment officers navigating thousands of pages of technical documentation, to enabling more inclusive public engagement, small changes can add up to sizeable productivity gains in this critical area.

But realising these benefits will be no small feat. Departments and agencies must address foundational gaps in digital infrastructure and workforce capability before pursuing more advanced applications, carefully map where technology can genuinely add value, and design pilots with clear pathways to scale.

These teams cannot achieve success alone. Government support has a critical role to play in delivering this transition, through dedicated institutional support and stronger data-sharing requirements.

Technology moves fast. Implemented well, it can help our approvals system move faster too.

APPENDIX A: SELECT FRAMEWORKS AND GUIDANCE FOR AI ADOPTION IN THE PUBLIC SECTOR

Title	Publisher	Description
<u>Governing with Artificial Intelligence</u>	OECD	OECD governance model mapping AI value, risks, adoption barriers and public-sector enablers to help governments scale trustworthy AI across operations and services.
<u>Building an AI-ready public workforce</u>	OECD	Public-sector workforce framework for building in-house AI capability through role-specific training, talent pipelines, leadership support and learning systems that keep AI adoption accountable and sustainable.
<u>Guidance for AI proof of concept to scale</u>	Australian Government Digital Transformation Agency (DTA)	Practical scaling guide for government agencies moving AI programs from isolated pilots to production, including how to overcome common challenges to scale.
<u>Governance in the Age of AI</u>	Geological Survey of Queensland (GSQ)	AI-readiness and capability framework for assessing and strengthening organisational capability to deploy AI-enabled services in complex data intensive domains such as resource exploration.
<u>Technical standard for government's use of artificial intelligence</u>	Australian Government Digital Transformation Agency (DTA)	Practical guidance for technical specialists and business owners embedding AI in government systems, enabling agencies to confidently experiment with and develop AI use cases.
<u>NSW AI Assessment Framework</u>	Digital NSW	Self-assessment framework to help technical leads and executive sponsors within agencies ensure responsible design, development, deployment, procurement and use of AI technologies.
<u>Algorithmic Transparency Recording Standard</u>	UK Government Digital Service	Guidance for public sector organisations on providing clear information about how and why they are using algorithmic tools. The guidance was underpinned by extensive consultation and piloted across a number of public sector organisations.
<u>Licence to build</u>	Ada Lovelace Institute	Lessons about expectations of AI in the UK public sector drawn from engagement with 16,000 people in four nationwide surveys.
<u>Automated Decision Making - Better Practice Guide</u>	Commonwealth Ombudsman	Guiding principles for assessing the suitability of automated government systems and processes, taking into account administrative law and privacy requirements.
<u>AI Data Security</u>	Australian Signals Directorate, Australian Cyber Security Centre, UK National Cyber Security Centre, US National Security Agency, Cybersecurity and Infrastructure Security Agency, National Cyber Security Centre	An overview of the AI system lifecycle and general best practices to secure data used during the development, testing, and operation of AI-based systems.
<u>Permitting Technology Action Plan</u>	U.S. Council on Environmental Quality, Permitting Innovation Center	Approvals (permitting) modernisation roadmap that links digital service standards, shared tools, implementation sequencing and cross-agency governance to faster, more transparent environmental reviews.
<u>NEPA and Permitting Data and Technology Standard</u>	U.S. Council on Environmental Quality, Permitting Innovation Center	Interoperability blueprint for environmental approvals, defining common data structures, shared terminology and exchange patterns so permitting systems and documents work across agencies.
<u>Learn fast and build things</u>	Ada Lovelace Institute	Research synthesis of 30 reports and research publications focused on lessons from the UK's adoption and implementation of AI in policymaking and public services.

APPENDIX B: SELECT CASE STUDIES OF AI IN ENVIRONMENTAL PLANNING, APPROVALS, IMPACT ASSESSMENT AND ADJACENT CONTEXTS

Case study	Description
SearchNEPA	Searches NEPA records and answers document-grounded questions, helping reviewers locate relevant environmental assessment material more quickly.
Humphrey – Consult	UK Government AI tool ‘Consult’ being used to speed up analysis of public and expert consultation processes. The project aims to address the 75,000 days of manual analysis which occur annually, with potential cost savings of £20m.
CommentNEPA	Extracts, groups and summarises public comments, separating substantive comments from correspondence to support review teams.
EA-Hub	Centralises environmental assessment documents and uses AI-assisted search to help authorities retrieve relevant studies and supporting material more efficiently.
SofIA	A conversational agent that facilitates access to France’s Ministry of Ecological Transition’s scientific and technical knowledge.
NSW Smart Planning Approvals	Screens planning applications against rules, flags likely non-compliance, and gives applicants early feedback before lodgement.
AI.gov.UK -Extract	Converts planning maps and legacy documents into structured digital planning data, including geospatial features, for reuse in planning systems.
IdentiFlight	Sensors placed near wind farms scan for flying objects and apply machine learning techniques to reduce bird-strike.
GSQ Digital Librarian	Uses RAG over geoscience reports to help find information across large archives.
Polis	Used in government consultations to cluster similar opinions, identify areas of agreement and disagreement, and help officials interpret large volumes of public input.
Humphrey - Minute	Secure AI tool trialled by UK councils to transcribe meetings and draft minutes.
eTranslation	Secure neural machine translation service used by European public administrations to translate multilingual government documents and consultation materials across official EU languages.

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