Environment Protection Authority

Sustainable Construction Protection of the Environment Policy

Impact Statement Report

December 2024

NSW GOVERNMENT

Acknowledgement of Country

The NSW Environment Protection Authority acknowledges the Traditional Custodians of the land on which we live and work, honours the ancestors and the Elders both past and present and extends that respect to all Aboriginal people.

We recognise Aboriginal peoples' spiritual and cultural connection and inherent right to protect the land, waters, skies and natural resources of NSW. This connection goes deep and has since the Dreaming.

We also acknowledge our Aboriginal and Torres Strait Islander employees who are an integral part of our diverse workforce and recognise the knowledge embedded forever in Aboriginal and Torres Strait Islander custodianship of Country and culture.

Aboriginal artwork by Worimi artist Gerard Black

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1 Introduction

The NSW Environment Protection Authority (EPA) is proposing to make a Sustainable Construction Protection of the Environment Policy (PEP) under the NSW *Protection of the Environment Operations Act 1997* (the Act).

The proposed PEP will require NSW Government agencies to:

- consider and report the 'upfront carbon' impacts of public infrastructure projects
- preference the use of recycled materials on an 'if not, why not' basis and report on the use of recycled materials in public infrastructure projects at multiple stages of the project lifecycle.

The proposed PEP will apply to public sector building projects over $50 million, and for all other public infrastructure projects over $100 million.

The EPA has prepared this impact statement to inform public consultation on the draft PEP ('the policy').

As required under the Act, this impact statement includes:

- the desired environmental outcomes of the proposed policy
- the reasons for the policy
- a statement of the alternative methods of achieving the desired environmental outcomes and the reasons why those alternatives have not been adopted,
- an identification and assessment of the economic and social impact on the community (including industry) of making the policy, and the environmental impact of not making the policy
- a statement of the manner in which any regional environmental differences in NSW have been addressed in the development of the policy
- the intended date for the making of the policy
- the timetable (if any) for the implementation of the policy
- the transitional arrangements (if any) in relation to the policy.

The EPA commissioned the Centre for International Economics (CIE) to carry out a cost–benefit analysis to support the preparation of this impact statement. The CIE report is on the Have Your Say website.

2 Desired environmental outcomes

The PEP objectives are to minimise the carbon impacts from public infrastructure projects and support NSW's transition to a circular economy by increasing the use of recycled materials in public infrastructure projects. Section 3, *Reasons for the policy*, explains the desired outcomes in more detail.

3 Reasons for the policy

3.1 Reducing upfront carbon in infrastructure delivery

The PEP aims to support the NSW Government to reduce its carbon footprint and to contribute to achieving the State's emission reduction targets by minimising greenhouse gas emissions ('emissions' in this document) in public infrastructure delivery.

The *Climate Change (Net Zero Future) Act 2023* legislates emissions reduction targets for NSW of a 50% reduction on 2005 levels by 2030, a 70% reduction on 2005 levels by 2035, and net zero by 2050. Reducing the upfront carbon associated with public infrastructure delivery will help to achieve these targets.

Upfront carbon refers to the emissions generated during the production of materials and the construction of infrastructure assets. The production of construction materials such as concrete, steel and asphalt can involve significant emissions due to the energy use and chemical processes involved. Upfront carbon associated with construction materials has been estimated to be the equivalent of between 5% and 10% of Australia's total emissions.[1,2]

The upfront carbon associated with the construction of public infrastructure can be reduced in a number of ways. For example, government agencies can design projects to minimise the use of material. Projects can use materials that were produced with renewable energy, or that have lower upfront carbon because they incorporate recycled content.

As a major procurer of construction services, the NSW Government is in a position to lead by example by reducing upfront carbon in its infrastructure pipeline, and to use its purchasing power to signal to the market that low-carbon, circular construction methods are in demand.

The PEP builds on the NSW Decarbonising Infrastructure Delivery Policy[3] (DID Policy), which was released by Infrastructure NSW in April 2024. The DID Policy aims to ensure that upfront carbon is considered and measured consistently on NSW Government infrastructure projects. This is intended to lead to reduced upfront carbon and reduced greenhouse gas emissions in NSW and in jurisdictions from which we import construction materials.

The PEP provides for the EPA to take on the role of monitoring compliance with the DID Policy. The PEP provides that the EPA will report publicly on levels of PEP compliance and upfront carbon in public infrastructure projects.

[1] Clean Energy Finance Corporation (2021), *Australian buildings and infrastructure: Opportunities for cutting embodied carbon*, p. 8

[2] Infrastructure Partnerships Australia (2022), *Decarbonising Construction: Putting carbon in the business case*, p. 4

[3] NSW Government (2024), *Decarbonising Infrastructure Delivery Policy: Reducing Upfront Carbon in Infrastructure*

3.2 Promoting a circular economy

The PEP aims to encourage NSW Government agencies to support the transition to a circular economy by increasing the use of recycled materials in construction projects.

By supporting the use of recycled materials in construction projects, the PEP is intended to support progress towards the *NSW Waste and Sustainable Materials Strategy 2041*[4] (WaSM) targets, including an 80% average recovery rate from all waste streams by 2030. The benefits of resource recovery include conserving natural resources, increased resource productivity and avoided negative environmental impacts from disposal of waste.

There is already significant use of recycled materials in construction projects: for example, there is already a strong market for recycled steel for use in construction, as using recycled steel reduces cost. However, there is a lack of data on levels of recycled content in many major construction material product categories. There is likely room to have more recycled content across a range of product categories, such as concrete and asphalt.

As a major procurer of construction services, the NSW Government is in a position to lead by example. It can do this both by increasing the use of recycled materials in its infrastructure pipeline and by using its purchasing power to signal to the market that construction materials with recycled content are in demand.

The WaSM includes a statement of intent that government agencies would be required 'to preference products that contain recycled content, including building materials and office fit outs and supplies, on an 'if not, why not' basis.' The WaSM also states that the need to preference recycled content is subject to there being no significant additional cost or negative impacts on performance and the environment. This statement of intent has not previously been translated into clear policy and reporting requirements.

The PEP provides clear requirements and a reporting framework for agency preferencing of recycled materials in public infrastructure projects. In this way the PEP will operationalise the WaSM's general statement of intent.

3.3 Providing a centralised dataset to support further policy and program development

Reporting to the EPA under the PEP will build a dataset that can support further policy and program development. The NSW Government may in future consider setting carbon reduction targets for public infrastructure projects, or strengthening recycled content requirements along the lines of Victoria's *Recycled First* Policy. Victoria's policy requires that transport infrastructure projects procure recycled content up to levels set in technical specifications for construction materials. If NSW considers policies along these lines in future, it would be helpful to have good information about trends in use of low-carbon and recycled materials in public infrastructure projects, and about the costs and benefits of meeting stricter standards.

Collating a centralised dataset under the PEP will also make it easier to analyse barriers and opportunities that could lead to targeted support programs. Such programs could include improved

[4] NSW Government (2021), *Waste and Sustainable Materials Strategy 2041 – Stage 1: 2021-2027*

capacity building for agencies or designated funding for agencies to procure higher-cost construction materials with environmental benefits.

3.4 The relationship between the environmental objectives of the PEP

In many cases the objectives of the PEP are expected to be complementary. Increasing recycling rates, and prolonging the lifespan of materials within the economy, can also significantly reduce carbon emissions arising from the extraction of raw materials and emissions-intensive manufacturing processes (such as cement-making). An example is the use of fly ash, a byproduct of coal-burning, as a partial replacement for cement in concrete. Recycling fly ash in this way both reduces the amount of waste that needs to be disposed of and abates the carbon emissions from cement production.

In some instances, however, the use of recycled materials may increase the emissions intensity of construction – for example, where recycled materials need to be transported a long distance to facilitate their reuse.

Under the PEP, public infrastructure agencies have the flexibility to weigh trade-offs and to use building materials that provide the best overall environmental and service delivery outcomes for their project.

4 Alternative approaches considered

The CIE carried out an analysis of a range of approaches for the PEP to promote environmentally sustainable public infrastructure construction practices. Specifically, it considered a range of cost thresholds for applicable projects:

- Option 1: projects with an estimated development cost (EDC) over $30 m
- Option 2: projects with EDC over $50 m
- Option 3: building sector projects with an EDC over $50 m, and other infrastructure projects with an EDC over $100 m.

The PEP proposal aligns with Option 3, which has the highest net benefit and the strongest benefit–cost ratio of the three options analysed. The total environmental benefits are higher for Options 1 and 2 than Option 3 as they provide for broader coverage of the PEP. However, these increased environmental benefits are outweighed by increased costs of assessment and reporting as a result of including smaller infrastructure projects within the PEP's scope.

5 Impact assessment

5.1 Economic, social and environmental impact of making the policy

The CIE analysed the benefits and costs of the proposed PEP, and found that under a moderate impact scenario, the proposed policy would deliver a net benefit of $98.3 million with a benefit–cost ratio of 3.2.

The CIE found that there is uncertainty about the impacts of the PEP, because they depend on the extent to which infrastructure decision-makers act on the information generated through the PEP requirements to make more efficient project decisions and better policies. The CIE identified three clear channels through which PEP information could lead to improved performance — increased compliance with DID Policy, improved project-level environmental performance and improved longer-term policies. Despite uncertainty around the impacts of the PEP, the CIE found that 'given the magnitude of the environmental impacts of infrastructure, even slight improvements in performance would outweigh the costs of the PEP'.

In evaluating the costs and benefits of the PEP, the CIE modelled the base case of not making the PEP and identified several significant risks, including:

- maintaining the existing approach where projects continue to overlook environmental impacts, resulting in no changes to project design or construction related to recycled materials
- no reporting requirements to improve compliance with the DID Policy, resulting in no changes to project design or construction related to upfront carbon
- no centralised information or public disclosure, leading to no development of improved policies or practices, no increase in public awareness, no learning from best practice, no support for fundamental research, and no setting of targets in the longer term.

The categories of potential costs and benefits that were evaluated by the CIE are summarised in Table 1, below.

Table 1 Summary of types of potential costs and benefits from the PEP options

Item	Description
EPA monitoring and reporting	Cost to develop and maintain reporting systems Compliance costs for the EPA, to ensure compliance with PEP Cost to the EPA to aggregate data and publish information
Infrastructure agency compliance cost	The cost to an infrastructure agency (and their delivery partners) of meeting PEP requirements to report to the EPA
Infrastructure agency project cost	Costs for infrastructure agencies to assess and measure upfront carbon and recycled content as inputs to PEP reporting
Change in cost to infrastructure agency of delivering infrastructure project	A change in project cost, which could be positive or negative, as a result of a change to design or delivery of infrastructure project. For example, there could be a cost reduction from using less material in construction or reusing materials, or a cost increase from material substitution.

Item	Description
Change in benefit of delivering infrastructure project (excluding environmental impacts)	A change in project benefits (excluding environmental), which could be positive or negative, as a result of a change to design or delivery of infrastructure project. For example, a project may have a longer or shorter economic life.
Change in circular economy impacts from material use of project	Reduced raw material extraction and reduced disposal to landfill, and the costs associated with this, as a result of the PEP impacting on project decisions and increasing demand for reused or recycled materials
Change in carbon impacts from project	Reduced greenhouse gas (GHG) emissions
Costs and benefits from changes to policies for infrastructure delivery from use of information from PEP	Costs and benefits from changes to policies for infrastructure delivery from use of information from PEP. For example, the PEP may lead to a change in the standard for concrete.

As mentioned in the previous section, the CIE modelled three distinct policy options. These options were modelled across three scenarios, each with a different level of impact of the PEP on reducing upfront carbon and increasing the use of recycled materials in public infrastructure projects. Option 3, which reflects the parameters of the proposed PEP, delivers a net benefit across all three scenarios.

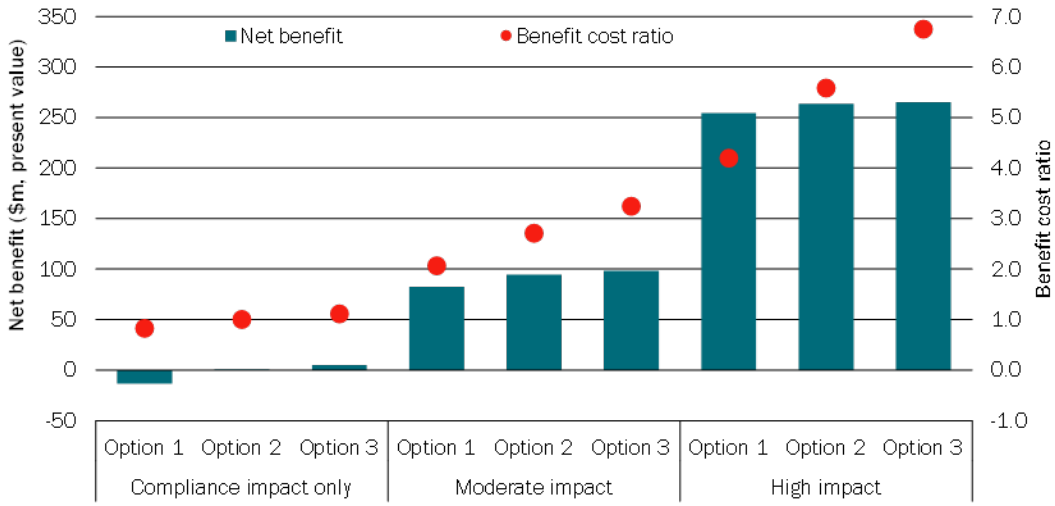
Table 2 and Figure 1 provide an overview of the estimated costs and benefits, including the net benefit and the benefit–cost ratio, for the three policy options. Costs and benefits are measured over a 20-year time period using a 5% discount rate.

Table 2 Costs and benefits for each scenario

Scenario	Parameter	Option 1 ($m, PV)	Option 2 ($m, PV)	Option 3 ($m, PV)
Scenario 1 (Compliance impact only)	Total costs	77.2	55.2	43.7
	Total benefits	64.0	55.3	48.7
	Net benefit	-13.2	0.2	5.0
	Benefit–cost ratio	0.8	1.0	1.1
	GHG emissions avoided (20 years, MT)	0.7	0.6	0.5
	Landfill avoided (20 years, MT)	0.0	0.0	0.0
Scenario 2 (Moderate impact)	Total costs	77.2	55.2	43.7
	Total benefits	159.8	149.7	142.0
	Net benefit	82.6	94.6	98.3
	Benefit–cost ratio	2.1	2.7	3.2
	GHG emissions avoided (20 years, MT)	1.2	1.1	1.0
	Landfill avoided (20 years, MT)	2.0	2.0	2.0

Scenario	Parameter	Option 1 ($m, PV)	Option 2 ($m, PV)	Option 3 ($m, PV)
Scenario 3 (High impact)	Total costs	79.6	57.5	46.1
	Total benefits	334.2	321.2	311.3
	Net benefit	254.6	263.7	265.2
	Benefit–cost ratio	4.2	5.6	6.8
	GHG emissions avoided (20 years, MT)	2.6	2.5	2.4
	Landfill avoided (20 years, MT)	4.0	4.0	4.0

Figure 1 Net benefit and benefit–cost ratio of options, by scenario



5.2 Any regional environmental differences in NSW addressed in the development of the policy

The CIE indicated that the benefits of the proposed PEP are predominantly global (GHG emissions) or very local (within the vicinity of landfills). There may be differences in the extent to which upfront carbon can be reduced for projects in different regions, depending on availability of low-carbon material substitutes. There may also be differences in the uptake of recycled materials for projects undertaken in different regions, determined by the availability of recycled materials.

6 Timeline

6.1 Intended date of making the policy

It is intended the PEP will be made in mid 2025.

6.2 Timetable for implementation of the policy

It is proposed that the PEP will commence three months from the day that it is made. The PEP requirements will apply to public infrastructure projects that register with the NSW Assurance Portal on or after the date of PEP commencement. Agencies are encouraged to comply with the PEP for projects that register with the NSW Assurance Portal before this date.

To prepare for reporting under the PEP, the EPA is developing detailed technical guidance and templates.

6.3 Transitional arrangements in relation to the policy

To provide time for agencies to prepare for meeting the PEP requirements, the policy applies to public infrastructure projects as they enter the early planning stages. Public infrastructure projects which have already passed this point before the commencement of PEP are not required to comply with the PEP.

There will be a range of ways that agencies are supported to comply with the PEP:

- The EPA will provide technical guidance and support to agencies on meeting the reporting requirements under the PEP.
- Infrastructure NSW is developing a capacity building program to support agencies to consider and quantify upfront carbon.
- The NSW Department of Climate Change, Environment, Energy and Water is developing a number of measures to make it easier for government agencies to procure recycled materials. It is also rolling out a $3.6 million Choose Circular fund that aims to support NSW Government agencies in sourcing and using recycled materials. It can be used for a broad range of activities such as action plans, feasibility studies and developing specifications.

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