土木工程拓展署
Civil Engineering and Development Department

A GUIDE TO SOCIAL VALUE IN HONG KONG'S MAJOR INFRASTRUCTURE DEVELOPMENTS



While we have always strived for human-centric development in our completed projects, the Kwu Tung North and Fanling North New Development Areas project allowed us to showcase this commitment even better. It inspired us to compile this guide, embedding social value across every stage of our major developments.

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Preface

We build to make Hong Kong a world-class sustainable and resilient city for living, working, and playing



Mr. FONG Hok-shing, Michael, JP.
Director of Civil Engineering and Development

The Civil Engineering and Development Department (CEDD) is steadily realising its vision of "We build to make Hong Kong a world-class sustainable and resilient city for living, working, and playing". As we shape the next generation of our urban landscape – spearheaded by landmark mega-developments such as the Northern Metropolis – the role of public infrastructure should not focus solely on technical excellence. More importantly, it can serve as a vital catalyst for social cohesion, community well-being, and long-term socio-economic vitality.

Social value encompasses enhancing quality of life, creating local economic opportunities, fostering inclusive spaces, and strengthening neighbourhood networks. Across our major developments over the years, CEDD has accumulated rich experience in generating positive social impact during project implementation by integrating social, economic, and environmental considerations throughout the entire project lifecycle. In line with our mission to champion smart, green, and resilient strategies, we have already published major guidelines, including the *Hong Kong Nature-based Solutions Design Guidelines* and *Shoreline Management Guideline for Coastal Development*. Building on this momentum, this new publication marks another vital step in consolidating our experiences into a structured framework for creating social value across major developments in Hong Kong.

The impact stories featured here are not exhaustive and only reflect a part of our journey. Every development possesses its own uniqueness, and project proponents are welcome to self-evaluate the merits of driving social value within their particular project context.

We would like to express our sincere appreciation to the **Planning Department (PlanD)** for their invaluable insights on the social dimension of the built environment during the planning stage of Hong Kong's major developments. As a collaborative client, we know that meaningful social value cannot be created alone. We wish to express our deepest gratitude to PlanD and all contributing experts, advisors, and partners whose insights have made this Guide possible. It is my sincere hope that this Guide inspires project teams to view infrastructure through a human-centric lens, ensuring Hong Kong's future growth leaves a lasting, vibrant, and harmonious legacy.

Foreword

The value of infrastructure is measured not only by what is built, but by the positive and enduring changes it enables



This Guide represents an important and timely new contribution to our understanding of the relationship between the built environment and social value – particularly in terms of how infrastructure developments and social well-being are increasingly interlinked in assessing public investment in modern urban planning. Conventionally, the success – or failure – of major development projects has been assessed primarily in terms of costs, technical quality, and statutory compliance. While these remain important measures of overall performance and effective project delivery, they often provide an incomplete account of the wider benefits that new infrastructure can generate for society. This Guide explores how major infrastructure developments have the potential to do considerably more than just create built capital, particularly in a rapidly evolving, high-density urban environment such as Hong Kong. Specifically, it suggests that developments designed and delivered in co-ordination with local communities can generate additional financial, social, and environmental capital by expanding economic opportunities, enhancing environmental resilience, and improving the well-being of residents.

Drawing on international research, industry guidance, and case examples from Hong Kong's innovative public works programmes, the Guide translates the concept of social value into principles, actions, and measurement approaches that can be applied in practice. The central proposition is that infrastructure should be understood not simply as a physical investment, but as an opportunity to generate additional and enduring benefits for people, communities, and the natural environment.

In common with other 'multiple' analyses of social value, the Guide adopts a broad understanding of the topic, encompassing three interrelated 'pillars': economic value, environmental value, and community well-being.

The Guide also highlights the importance of collaboration between government, construction and engineering professionals, businesses, community organisations, non-governmental organisations and residents. Such collaboration should help ensure that the benefits of public investment are more inclusive, locally relevant and sustainable.

Ultimately, the Guide offers a powerful combination of clear and actionable frameworks and a rich set of examples. It proposes that by embedding social value within mainstream project planning and delivery, Hong Kong can strengthen the relationship between infrastructure investment, environmental sustainability and community well-being. The Guide eloquently articulates an overarching ambition to support developments that are technically excellent while also creating lasting public benefit, ensuring that the value of infrastructure is measured not only by what is built, but by the positive and enduring changes it enables.

Professor Alex Nicholls
Saïd Business School
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城市是人類文明的載體，
也是人民美好生活的空間
依託。



過去數十年，中國內地經歷了世界歷史上規模最大、速度最快的城鎮化進程，城鎮化率已接近**70%**。當城市發展的主題從「有沒有」轉向「好不好」，從增量擴張轉向存量更新，一個根本性問題日益凸顯：公共投資建成的基礎設施，除了工程本身的功能之外，究竟為市民創造了多少可感知、可衡量的社會價值？

本指南的發佈，恰逢其時。本指南以「驅動因數—戰略行動—物理產出—社會結果—系統性影響」的完整因果鏈，將社會價值的理念轉化為可規劃、可執行、可核查的技術框架，這不僅借鑒了國際社會價值(**Social Value**)研究的前沿成果，也為高密度城市公共決策提供了新的評估尺規。當前，中國內地正處於「十五五」規劃的開局階段，堅持以人民為中心、推動城市高品質發展和城市更新行動、強化政府投資績效問責等政策導向，與本指南所宣導的「投資問效」、社會價值前置的理念高度契合。

香港與內地在超高密度建設、複雜地質條件、精細化治理場景等方面具有高度的相似性。香港這套經實踐檢驗的方法體系，對內地城市更新、片區開發和基礎設施投資決策具有重要的參考價值；而內地在超大尺度城市實踐、數位化治理和學界研究方面的積累，也可為導則的持續完善提供支撐。

期待以本指南發佈為契機，香港與內地學界、業界建立常態化協作機制，共同完善指標體系、互鑒專案案例、聯合開展研究，推動「社會價值導向的發展模式(**SVOD**)」在粵港澳大灣區乃至全國落地生根，讓每一項公共投資都更好地回應人民對美好生活的嚮往。

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Academics

- The Chinese University of Hong Kong
- The Hong Kong Polytechnic University
- The University of Oxford

Industry Bodies

- Construction Industry Council
- Hong Kong Construction Association
- Hong Kong Green Building Council
- The Hong Kong Council of Social Service

Professional Organisations

- The Hong Kong Institute of Architects
- The Hong Kong Institution of Engineers
- The Hong Kong Institute of Landscape Architects
- The Hong Kong Institute of Planners
- The Hong Kong Institute of Urban Design
- The Institute of Management Consultants Hong Kong
- Urban-Rural Planning & Design Institute, Zhejiang University

We also extend our appreciation to the appointed social value consultants, **AECOM Asia Company Limited** and **Fullness Social Enterprises Society**, for their professional input and effort. Their expertise has been instrumental in shaping the content and structure of this Guide.

Chapter 1

Strategic Context



- Background
- Purpose of this Guide
- Defining Social Value in Major Developments
- Scope of Application
- How to Use this Guide



Trans-disciplinary and multi-sectoral collaboration is the key to success.

Background



堅持人民至上。尊重人民主體地位，緊緊依靠人民，維護人民根本利益，促進社會公平正義，讓現代化建設成果更多更公平惠及全體人民。

——「十五五」規劃綱要

"堅持以民生為本，切實排解民生憂難。聚焦市民最關心、最直接、最現實的問題，加大民生投入，優先解決房屋、醫療、教育、就業、安老等深層次民生訴求，不斷提升市民獲得感、幸福感、安全感。"

——香港五年規劃

Hong Kong's First Five-Year Plan ("The Plan") identifies enhancing social well-being as a major objective, with the vision of creating a green and liveable city and strengthening the community's sense of fulfilment, happiness, and security. The development of the Northern Metropolis, as the flagship development in Hong Kong, will be guided by the principles of "planning-oriented, infrastructure-led, industry-driven and people-oriented". The Plan provides important direction in which people's well-being and social value can be better integrated into the planning and development process of ongoing and future developments in Hong Kong.

At present, the importance of the social dimension of the built environment is well recognised in the Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030 ("Hong Kong 2030+") which provides the broad territorial planning framework for strategic infrastructure provision. Its overarching goal is



to champion sustainable development by meeting the present and future social, environmental and economic needs of the community. Its three interconnected building blocks — enhancing liveability, embracing new economic opportunities and challenges, and creating capacity for sustainable growth — provide a basis for integrating social, economic and environmental dimensions into the planning and development process.

The CEDD, meanwhile, has accumulated substantial experience in putting social considerations into practice, which warrants sharing with the industry project teams as references to enrich the best practices for future major developments in Hong Kong. CEDD is delighted to provide principles on social value creation and to showcasing some of the completed projects over the past decade.

This is also consistent with the growing international emphasis on environmental, social and governance (ESG) considerations.

In Hong Kong, social considerations are already embedded in the planning, design and implementation of major public built environment projects such as New Development Areas (NDAs) and strategic infrastructure. These projects offer valuable lessons on how social value can be created throughout the project lifecycle and provide references for future public and private sector developments.

This Guide provides a practical framework for social value creation for major developments in Hong Kong. It is not intended to be exhaustive, but highlights some practical approaches and local examples to help project teams embed social value considerations into their projects.

Purpose of this Guide

Encourage social value creation in major developments

Enhance social benefits to society

Facilitate cross-sector collaboration in the industry

Provide practical advice and examples on planning, designing and implementing social value initiatives

Share local experiences and good practices primarily in major developments





Defining Social Value in Major Developments

We need a definition of social value that suits the Hong Kong context as well as aligns with international practices.

There are numerous reference materials on social value around the world, including peer-reviewed academic publications, international industry guidelines and measurement frameworks. A review of these documents is conducted to identify those most relevant to the Hong Kong context. From the long list, a total of 11 academic journals and 11 industry publications are selected for a more detailed review.

Academic Journals

- Social value in the built environment: the legal framework in the UK. (Allaway, B., Brown, M., & Solicitors, A. C., 2018)
- Defining social value in the UK construction industry. (Cartigny, T., & Lord, W., 2017)
- Development of a Sustainable Built Environment Strategic Framework for Hong Kong. (Cheung, A., et al., 2024 June)
- Community engagement and social licence to operate. (Dare, M., Schirmer, J., & Vanclay, F., 2014)
- Co-designing collaborative economies in design and placemaking. (De Sousa, S., 2021)
- A framework for measuring social value in infrastructure and built environment projects: an industry perspective. (Fujiwara, D., et al., 2021)
- Social Value Trends in Construction Research: A Bibliometric Review of the Past Decade. (Gyadu-Asiedu, N. A., 2024)
- Using urban blue spaces to benefit population health and well-being. (Hall, K., et al., 2020)
- Social capital and the built environment: the importance of walkable neighborhoods. (Leyden, K. M., 2003)
- Walking towards a happy city. (Loo, B. P., 2021)
- Rethinking public participation in infrastructure projects. (Ng, S. T., et al., 2012, June)

Industry Publications

- Measuring Social Value in Infrastructure Projects: Insights from the Public Sector. Royal Institution of Chartered Surveyors. (RICS, 2020)
- A guide to social return on investment. (Nicholls, J., et al., 2012)
- SDG indicators: Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda. (United Nations, 2026)
- Framework for defining social value. (UK Green Building Council, 2021)
- Social impact across the built environment: Prioritising people throughout the building life cycle. (World Green Building Council, 2023)
- Hong Kong nature-based solutions design guidelines. (Civil Engineering and Development Department & Agriculture, Fisheries and Conservation Department, 2026)
- Guidebook for sustainable built environment. (Hong Kong Green Building Council, 2025)
- Well-being design guide. Housing Bureau. (Hong Kong Housing Authority, 2024)
- The National TOMs 2022 framework for social value measurement: Guidance. (National Social Value Taskforce, 2022)
- Hong Kong 2030+: Towards a planning vision and strategy transcending 2030: Final recommendations. (Planning Department and Development Bureau, HKSAR, 2021)
- RIBA social value toolkit for architecture. (Samuel, F., 2020)

The detailed review uncovered several key components that facilitate implementation of the social value creation process in major development projects. The key components include:

- A well-defined social value
- A set of common metrics or taxonomies that standardises what to measure, e.g. Impact Reporting & Investment Standard, National Themes, Outcomes and Measures (TOMs) or Sustainable Development Goal (SDG) indicators libraries
- A disclosure standard that facilitates reporting of social value, e.g. Global Reporting Initiative, Sustainability Accounting Standards Board Standard or Envision in USA
- A valuation tool for social outcome or value, e.g. Social Return on Investment (SROI)

This Guide is an initial attempt to respond to the above and addresses chiefly the social value definition and how social value could be created from infrastructure projects, with examples to demonstrate how it can be measured and reported, and possible pathways to social valuation.

Social Value Definition

"Relative importance that people place on the changes they experience in their lives." *(Nicholls et al., 2012)*

The debate on a unified definition of social value has continued for years. While many agree that social value is contextual and should allow room for bespoke definitions depending on the industry, organisation, or community needs at a particular time and place (Raiden & King, 2021), a more rigorous consensus, nevertheless, has emerged. Broadly speaking, social value is defined as the relative importance that people place on the changes they experience in their lives that cannot always be captured by market prices (Nicholls et al., 2012; Raiden et al., 2018; UKGBC, 2021).



Social Value in the Built Environment

From a global definition to a working definition at industry level, a recent bibliometric review by Gyadu-Asiedu et al. (2024) reveals that social value fundamentally centres on positive impacts on society, communities, and the environment, and extends well beyond mere financial gains. In this regard, the social value in the built environment is defined as:

"The positive impacts and additional value that a construction project brings to society, communities, and the environment extend beyond its baseline financial performance and standard statutory compliance." *Gyadu-Asiedu et al. (2024)*



Social Value in Hong Kong's Major Developments

In the Hong Kong context, a successful development project does more than meet its specification and budget. It also considers creating additional value, such as inclusive public spaces, accessibility for all, local economic opportunities, richer biodiversity, cultural heritage preservation, human-nature coexistence, and/or better physical and mental health for communities, etc.

In this Guide, we use the term "social value" in a broader sense to mean the benefits that accrue to society, including the natural environment, people and community well-being, and economic benefits. More precisely, the framework and the cases in this Guide focus on major developments, such as mega-projects and NDAs, etc.

Social Value encompasses Economic, Environmental and Community & Well-being of Hong Kong.



Scope of Application

This Guide intends to facilitate social value creation in major infrastructure developments. During the creation process, a cross-sector collaboration mindset is encouraged, in which the Government, the project teams, businesses, local communities, and non-governmental organisations (NGOs) could work together for the common good.



This Guide provides:

1. Strategy for social value creation

7 Principles for social value creation, e.g. people-oriented, inclusive design, nature-human coexistence, lifecycle consideration, etc.

3 Social Value Pillars, i.e. economic, environmental, and community & well-being.

6 Social Value Drivers, e.g. Community Building & Engagement, Embracing Nature & Sustainable Growth, Holistic Accessibility, etc.

2. Good practice with examples for planning, design and implementation

Show examples of how social value could be created under the 6 Social Value Drivers.

Impact stories that show how multiple social impacts could be incorporated in a project.

3. Suggested roles for stakeholders, data collection principles and their documentation

How relevant parties could participate throughout the project lifecycle from planning, design, construction to operation & management.

What and how social value data could be collected, measured and documented.

Applicable projects

This Guide is written primarily for major infrastructure developments in Hong Kong, but its principles, pillars and social value drivers are equally applicable to other public works projects or private-sector built environment projects.



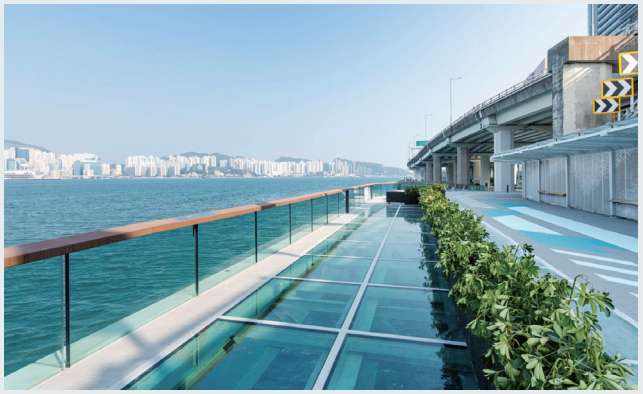
Mega-projects and NDAs

Large-scale site formation and infrastructure projects, such as the Northern Metropolis and the Anderson Road Quarry Development, where there is room for long-term community growth, local employment and economic renewal.



Transport and Connectivity

New roads, footbridges, cycle tracks and public transport interchanges, where social value lies in accessibility, inclusive design and active travel.



Community Facilities and Public Open Spaces

Waterfront promenades, town plazas and recreation grounds that support public health, gathering and everyday well-being.



Environmental and Resilience Works:

Landslip prevention and mitigation, flood alleviation, drainage and eco-shorelines — which safeguard the communities and provide more climate-resilience and add to urban biodiversity.

How to Use this Guide

This Guide provides principles, drivers and cases on how social value could be created in major development projects.

- **Chapter 2** sets out the core principles and social value pillars which provide the overall framework for social value creation.
- **Chapter 3** translates the framework into practice through social value drivers and corresponding actions, providing practical entry points for incorporating social value in projects.
- **Chapter 4** provides a value chain to explain the value creation process, suggests roles for different stakeholders to co-create social value along the project lifecycle, as well as the principles for measuring and reporting social value.
- **Chapter 5** presents selected cases and examples that demonstrate how social value is created in practice; semi-colon nevertheless, these examples are not meant to be exhaustive but serve as stimuli for creative ideas to enhance social benefits.

The recommendations in this Guide are for guidance only and should not be taken as mandatory. Compliance with these recommendations does not confer immunity from relevant statutory and legal requirements. Because of the unique social context of individual development projects, the creation of social value relies on sound professional judgement, meaningful stakeholder engagement, and contextual understanding. Project teams should be aware of the limitations of the recommendations and should use them as references while adapting strategies to suit area-specific needs and evolving community expectations. Since social value creation is an evolving field, project teams are encouraged to explore innovative approaches to suit specific project conditions as new local data, research, and best practices emerge.



Chapter 2

Guiding Principles



- Guiding Principles for Social Value Creation
- The Social Value Pillars
- Social Value Pillars in the Hong Kong Context



Social value creation is multi-dimensional, and should be viewed as a system, not simply as an individual project

Guiding Principles for Social Value Creation



Creating social value means changing how major developments are conceived, planned and delivered. This section sets out the mindset that takes a project beyond a conventional delivery model towards "a project with purpose".

Conventionally, major developments, infrastructure and public works have primarily been judged by the quality of what they do: connectivity, safe utilities, reliable engineering that closes regional gaps and meets basic urban needs. That infrastructure-oriented model still matters.

A social value len does not replace that model. It wraps around it. It asks whether the same works also serve human–nature coexistence and community well-being, and it measures success by the legacy left with people — a more sustainable and people-oriented setting and better quality of life.

The more sophisticated projects embrace both goals: excellent infrastructure and localised, community-driven improvements in well-being and liveability. From a wide reading of international practices — including frameworks from the UK Cabinet Office, the UK Green Building Council, the Green Building Council of Australia and the Royal Institution of Chartered Surveyors, guidelines from China International Contractors Association and Hong Kong Green Building Council, as well as experiences gained from successful public works projects in Hong Kong — we have consolidated and developed a practical reference for Hong Kong. The seven principles below guide project teams to think through the social value lens and embrace a new mindset.



1 People-oriented Engagement and Collaboration

Social value has to be designed around the people a project will touch — their needs, their experience, their aspirations. This principle is about co-creation: project teams and stakeholders work together to identify social needs and to generate benefits the community itself recognises, so that professional judgement and local knowledge both shape the result.

In practice, this means:

- Identify key stakeholder groups at an early stage, and bring them into the definition of priorities and options.
- Use what engagement yields to shape briefs, designs and construction methods — not merely to "inform" those affected.

2 Place-based and Context-sensitive Approach

A "place-based" approach starts with the fact that social value varies by location. Development is desirably responsive to its context – the people, history, culture, economy, and environment of the site – rather than a generic template applied everywhere.

In practice, this means:

- Use local data and stakeholder insights to establish the baseline, and articulate what "social value" actually means for that district or neighbourhood.
- Shape social value commitments around local priorities — such as housing, ageing, liveability, community infrastructure, and local identity — to serve wider public.

3 Inclusive, Safe and Equitable Design and Delivery

Planning and delivering projects with added attention to vulnerable or overlooked groups, so development enables people of all ages and abilities to reach their full potential under fair and safe conditions.

In practice, this means:

- Assess how proposals land on different groups — elderly, children, youth, persons with disabilities, low-income households, ethnic minorities, etc. — and adapt design or mitigation measures accordingly.
- Use design, procurement and hiring to lower barriers to taking part and getting on — not to lock in the inequalities already there.

4 Nature-based Design and Urban-Rural Integration

Environmental quality, health, and community well-being are tightly bound. Green and blue infrastructure gently enriches a project's social value, bridging dense cityscapes with rural fringes while respecting natural habitats and supporting harmonious co-existence.

In practice, this means:

- Consider incorporating greenery, shade, ventilation, water management, and other nature-based solutions to create more comfortable, healthier, and more resilient spaces, while bridging the gap between urban and rural areas.
- Explore how these environmental measures (such as cleaner air and a kinder microclimate) become direct benefits for people.

5 Lifecycle Consideration of Social Value

Social value has the greatest impact when introduced from the outset and maintained through planning, design, construction, and operation. Early design decisions gently guide and shape the social value for a project which will deliver throughout its life.

In practice, this means:

- Incorporate social value objectives into business cases, project briefs, approvals and contracts.
- Review social value risks and opportunities at each major stage, and adjust actions and targets to address changing circumstances.

6 Outcome-focused

Plan and manage social value as outcomes — the real change in people's lives — not as outputs, such as how many events are held or how much is spent. Ten community workshops are an output; People gaining skills that lead to work is an outcome. Teams are encouraged to set out a simple theory of change: how this action is expected to produce that result. Every initiative then has a purpose and a measurable end, rather than being a one-off activity.

In practice, this means:

- Identifying a few clear, measurable social outcomes from the start — for example, local employment, access to services, or sense of belonging.
- Aligning project actions with outcomes provides a helpful framework for observing how social value unfolds over time.

7 Evidence-led, Transparent Evaluation and Accountability

Claims of social value have to rest on evidence that will stand up, and on methods that can be examined in public. A well-being baseline, struck before works begin, is what makes "additionality" — the net positive change — measurable.

In practice, this means:

- Establish the baseline, choose the right indicators, and collect data during and after delivery so that actual outcomes — including harm — can be seen.
- Be open about methods, assumptions and limits. Do not overclaim. Use what is learned to improve the next project.

The Social Value Pillars

As Chapter 1 sets out, social value is the good a project does for society, communities and the environment — beyond its direct financial return. The UK's Public Services (Social Value) Act 2012, for instance, requires public money to be used in ways that improve the "economic, social and environmental well-being" of the local area. The same logic now runs through frameworks in Europe, North America and the Asia-Pacific.

This Guide therefore works with three pillars: **Economic**, **Environmental**, and **Community & Well-being**. They give project teams a way to organise effort and to keep the benefits in balance over time.

Economic



Major development projects, such as NDAs, bring considerable benefits to the economy and employment driven by newly planned land and infrastructure. Economic impact goes beyond construction costs and financial returns. It is the projects' power to spark local growth and make that growth more resilient.

What a project spends, whom it buys from, and how it operates over the years can open up work for local small and medium-sized enterprises (SMEs) and social enterprises (SEs) that put value back into the community. Social procurement spreads wealth more fairly and puts financial benefit in the hands of people who live and work beside the site.

Targeted apprenticeships and training turn a few years of project spend into skills, jobs and careers that remain after the last crane comes down.

Environmental

This pillar is about how major development projects meet the living world. The older task was mitigation: doing less harm in construction operations. Social value asks more — active repair and long-term care of the environment.

That means planning, designing, and implementing works so they cut carbon and spare finite resources — materials, water, energy — and enhance biodiversity. Where possible, projects could use nature-based solutions: wetlands, urban trees, and green roofs that hold rainwater, cool streets, and clean the air. They can also help communities to become more resilient to climate change. The aim is not merely to do less damage, but to leave nature better than we found it.



Community & Well-being



This pillar is about how people feel, meet and live in the places a project makes.

Planning, design and construction of major developments shape social life, public health and the ordinary day. A major development project that serves well is functional, safe, accessible and welcoming — to children, elderly and persons with disabilities, and among others.

A project will deliver more value when it draws people together and eases exclusion: a community facility that is easy to access, a public space that invites lingering, a walking or cycling route that feels safe, construction that keeps disruption to neighbours in check.

In the end, the task is to make places people belong to — that honour local identity and heritage, and that help residents live healthier, have higher quality and more connected lives.

Social Value

Economic	Environmental	Community & Well-being
• Jobs for Local People	• Enhancing Biodiversity	• Healthier Community
• Jobs for Disadvantaged People	• Reducing Carbon Emissions	• Better Quality of Life and Well-being
• Improved Skills for Local People	• Improving Air Ventilation and Quality	• Strengthening Community–Project Collaboration
• Improved Employability of Youth	• Reducing Noise Pollution	• Community Cohesion and Inclusion
• More Opportunities for Local SMEs	• Reducing Urban Heat Island Effect	• Safety of the Neighbourhood
• More Opportunities for SEs	• Reducing Waste Diverted to Landfill	• Enhancing Accessibility of Facilities for All
		• Local Identity and Sense of Belonging

The infographic above gathers typical outcomes from international practices, so project teams can see what success would look like. No projects will deliver every line. Scope, scale and local population differ. Choose what is relevant, feasible and in proportion to the project's scope.

Social Value Pillars in the Hong Kong Context



The previous section equips project teams with a social value-oriented mindset and a general understanding of social value. Social value creation, though, is always local. Hong Kong is a hyper-dense, vertical city short of land, with an ageing population and a rising need for climate resilience and sustainable planning. Here, the form of a major development project has an immediate and tangible influence on everyday life and community well-being. A new footbridge, a reworked waterfront or an upgraded drain can affect hundreds or thousands of people within a small community. A new development project, which will affect both existing and future residents, warrants careful planning, engineering and implementation to enhance overall liveability.

From Pillars to Practice: The Role of "Drivers"

The three pillars — Economic, Environmental, and Community & Well-being — name the kinds of value a project can create. To act on them, project teams need tools. Those tools are the Drivers.

Drivers turn a major development into a generator of social value, transforming ordinary engineering outputs into social outcomes that deliver value in multiple ways. In a city where space is scarce, a road, a drain or a public space cannot afford a single purpose. Project teams can combine multiple drivers to serve local needs and aspirations at once.

The Six Social Value Drivers for Hong Kong's Major Developments

To meet Hong Kong's most pressing challenges, this Guide sets out six Social Value Drivers under three themes. They are the working kit for project teams to incorporate social value into major developments.

Theme I: People & Local Economy



Driver 1 —
Community Building and Engagement:
Inclusive engagement, and the keeping of local identity, where neighbourhoods are being remade.



Driver 2 —
Inclusive Employment and Supply Chain:
Fair routes into work, and support for SMEs and SEs.

Theme II: Design for Social Good & Environmental Resilience



Driver 3 —
Embracing Nature and Sustainable Growth:
Green and blue infrastructure that deepens well-being and biodiversity.



Driver 4 —
Climate Resilience:
A community better able to live with extreme weather and a changing climate.

Theme III: Connected Communities & Construction Innovation



Driver 5 —
Holistic Accessibility:
Safe, barrier-free movement across a dense, multi-level city.



Driver 6 —
Technology Innovation:
Safer, greener and more inclusive construction, and the talent that will carry it.

The pillars say what kinds of value are at stake. Chapter 3 shows how each Driver works in practice — through actions and examples that project teams can draw on at every stage of a major development project.



Cross-disciplinary collaborations, creating impactful values for people & environment.

Chapter 3

Value Drivers

- **Driver 1:** Community Building and Engagement
- **Driver 2:** Inclusive Employment and Supply Chain
- **Driver 3:** Embracing Nature and Sustainable Growth
- **Driver 4:** Climate Resilience
- **Driver 5:** Holistic Accessibility
- **Driver 6:** Technology Innovation

Well-designed major developments create a liveable environment via a balanced mix of housing, jobs, community facilities, open space, retail, recreational, transport and supporting infrastructure. This lays the foundation for "people-oriented" initiatives, such as 15-minute living circle, home-job balance, and human-nature coexistence. Beyond thoughtful planning, infrastructure provisions create places where people interact, enable an active lifestyle, and facilitate inclusion for all ages and abilities.

In Chapter 3, we propose 6 social value drivers across three main themes. The first is People & Local Economy, which is community-based; the second is Design for Social Good & Environmental Resilience, which focuses on human-nature coexistence; and the third is Connected Communities & Construction Innovation, which addresses connectivity and how technology helps.

These drivers are followed by 38 suggested actions backed by living proofs from Hong Kong— from Northern Metropolis, East Kowloon, to Lantau's coastline— turning high-level aspirations into operational activities. While non-exhaustive, the actions in this Guide serve as stimuli for promoting social values in future projects.



Social Value Driver 1

Community Building and Engagement



Building with the community for a liveable environment

In the past, community engagement is more on informing people of what has been done. However, a better approach is to build trust through early collaboration, which responds to evolving needs and aspirations.

We emphasise the adoption of a more human-centric approach. By inviting the community into conversation from the first spark of an idea, we raise residents from passive observers to genuine partners, empowering them to contribute meaningfully to shaping the vision, priorities and outcomes. Together, we co-create a more liveable environment for living, working and playing.

Through people-centred community building, we address concerns early and strengthen bonds with stakeholders — so the implementation becomes a shared journey of neighbourhood enhancement.

Enhance well-being.
Build trust.
Share decisions.
Grow together.

4 Dimensions | 7 Actions | One Shared Future

Developments do not create social value on its own — they are shaped through how people experience, use, adapt, and interact in their daily lives. People who trust the process will meaningfully engage to shape design decisions, to provide positive feedback, and share decision. Genuine listening will produce lasting benefits that people will value over time.

1 Connect | *Building Relationships and Trust*

Communities could be engaged before planning begins. Early engagement, active listening, and inclusion of local knowledge build genuine trust.

A1 Community Partnership and Engagement

Build trust and foster community connection by proactively communicating with the neighbourhood. Ensure the project team is present, transparent, and responsive so various stakeholders remain engaged throughout development.

2 Co-Create | *Building Shared Meaning and Vision*

Design decisions gain meaning when residents participate. Co-creation turns residents into active contributors rather than passive stakeholders.

A2 Participatory Design for Public Space

Engage residents in public space design to create people-focused environments that reflect the community's aspirations and strengthen local identity.

A3 Urban-Rural Connectivity and Heritage Integration

Maintain physical and visual connections between urban and rural areas by carefully incorporating traditional rural culture and heritage into new developments. Preserving this collective memory helps local identity to adapt and endure as urban areas expand.

3 Activate | *Bringing Spaces and Community Life Together*

Infrastructure creates value as soon as communities can use it. Activation opens sites and spaces to residents early, empowering the community to generate social benefit before completion.

A4 Inclusive Infrastructure and Intergenerational Cohesion

Develop community spaces that bring together people of all ages and backgrounds to meet, interact, and form lasting and supportive connections.

A5 Implementing "Multiple" and "Meanwhile Uses" (Phased Activation)

Encourage co-location of different uses to create active clusters and multi-functional facilities. Utilise temporary sites, phased works, and interim spaces to deliver community benefits and facilities before permanent projects are completed.

4 Inspire | *Cultivating Talent and Industry Innovation*

The infrastructure built today shapes the profession of tomorrow. Investing in people compounds social value beyond project delivery.

A6 Empowering Youth through STEAM Education

Introduce city-building concepts in classrooms and community hubs to empower youth through early exposure to Science, Technology, Engineering, the Arts, and Mathematics (STEAM), sustainability, and urban planning.

A7 Growing Next-Generation Engineers and "Enginpreneurs"

Nurture an "enginpreneurial" mindset by connecting academic theory with real project experience. Encourage students, interns, and young professionals to take ownership of community challenges as creative problem-solvers.

Living Proof 1 — Opening project boundaries to daily neighbourhood life

Community Liaison Centres in New Development Areas



Mega-scale infrastructure is fundamental to a city's development, but it can feel imposing. Construction sites are often ringed by high hoardings that create physical and psychological barriers between the project team and local residents. For grassroots communities, getting updates or raising everyday concerns can be a daunting task. The new approach shall move from a closed construction site to an open, transparent presence.

CEDD has established Community Liaison Centres (CLCs) in the heart of NDAs, including Tung Chung, Kwu Tung North/Fanling North and Hung Shui Kiu/Ha Tsuen. These are not sterile site offices but welcoming community hubs, with upcycled wood, natural light and public amenities — reading corners or mini-skateparks — that bring the project to the neighbourhood's doorstep. Beyond static displays, CLCs host creative initiatives, such as co-creating community murals with local elders, youth and students, turning project hubs into spaces of care and expression. Dedicated Community Liaison Teams staff the centres, offering a friendly, accessible face to explain blueprints and listen to local feedback.

This removes informational barriers and makes dialogue straightforward. **CLCs are platforms for ongoing connection**. Through interactive exhibitions, co-design workshops, festive gatherings, and outreach to schools, NGOs and nearby communities, engineering teams could help residents visualise their neighbourhood's future. An accessible physical presence, combined with open, face-to-face dialogue, addresses concerns early and builds deeper trust — turning residents from bystanders into partners in city-building.

Living Proof 2 — Linking modern infrastructure with the community's traditions

Preserving Heritage through Cultural Mapping and Tours

When mega-projects transform the New Territories, they meet centuries-old rural villages. For indigenous communities, rapid urbanisation can feel like an erasure of cultural heritage and traditional ways of life. The task is to ensure that modern infrastructure does not pave over history, but respects and weaves the existing rural fabric into the new urban landscape.









To bridge that divide, the CEDD project team in Fanling North launched cultural preservation initiatives. Working with local historians and residents, they co-created the Fanling Urban–Rural Community Map to document village stories and historical assets. They then organised the "Fanling Moments: Urban–Rural Symphony" Guided Tour, bringing the public into rural neighbourhoods to see traditional architecture alongside the careful integration of new infrastructure — turning local history into a lived, shared experience.

To promote these practices, the Development Bureau is developing an urban-rural integration guideline for the Northern Metropolis. This upcoming guideline supports cultural preservation initiatives now being extended to other major developments, such as the Yuen Long South and Hung Shui Kiu/Ha Tsuen NDAs. **By weaving existing heritage trails and traditional village alignments into modern master plans, project teams lower cultural barriers between established villagers and incoming residents**. This approach safeguards indigenous voices and cultivates a shared district identity — showing that new development and rural heritage can thrive together as a continuous legacy.

Living Proof 3 — Turning barriers into shared assets through participatory design

East Coast Boardwalk Community Engagement

With fragmented developments and the Island Eastern Corridor along the shoreline, public access to the harbour can blocked in North Point. The task is to convert these inaccessible spaces into a new waterfront that is very welcomed by the residents.

The CEDD project team for the East Coast Boardwalk launched a comprehensive participatory design programme. Rather than presenting finalised blueprints, the team invited the public to the drafting table early in planning. Through interactive community workshops, roving exhibitions and focus groups, the public took part in developing the design. Local feedback shaped everything from the boardwalk's alignment and viewing platforms to pet-friendly zones and shared-use paths, so the final design responds well to neighbourhood needs and fits people's daily habits.

This removed the usual divide between infrastructure planners and the public and made co-creation genuine. More than a pedestrian link, **the engagement turned a restrictive urban barrier into a highly anticipated community asset**. Technical engineering, combined with open, face-to-face dialogue, secured public support and gave residents a real sense of ownership and pride in their future waterfront.





Living Proof 4 — Bridging theory and tangible community impact

The Engineer Summer Internship Programme





Academic training gives engineering students core technical knowledge, but classroom theory and live construction often remain far apart. For young professionals, moving from textbooks to the site can be daunting, and standard internships too often confine them to routine administrative work. The task is to offer meaningful, hands-on experience that builds technical competence, instils civic responsibility and a sense of community ownership.

CEDD recast its Summer Internship Programme as an immersive, "enginpreneurial" experience. One of the initiatives is the youth-led rebuilding of the pavilion along the Lantau Trail. Instead of keeping students in the office, CEDD entrusted interns with genuine, on-the-ground project responsibilities. Guided by senior mentors, they took on the full lifecycle of the pavilion's reconstruction — from site surveying and sustainable material selection to logistics for physical rebuilding on challenging rural terrain.

This bridged the gap between academic learning and practice, and gave the next generation of engineers a direct, hands-on environment. More than a summer placement, the interns delivered a lasting resting place for hikers and the local community. Rigorous engineering challenges, paired with community-focused outcomes, accelerated students' career readiness and cultivated a shared sense of pride and a lasting commitment to public service.

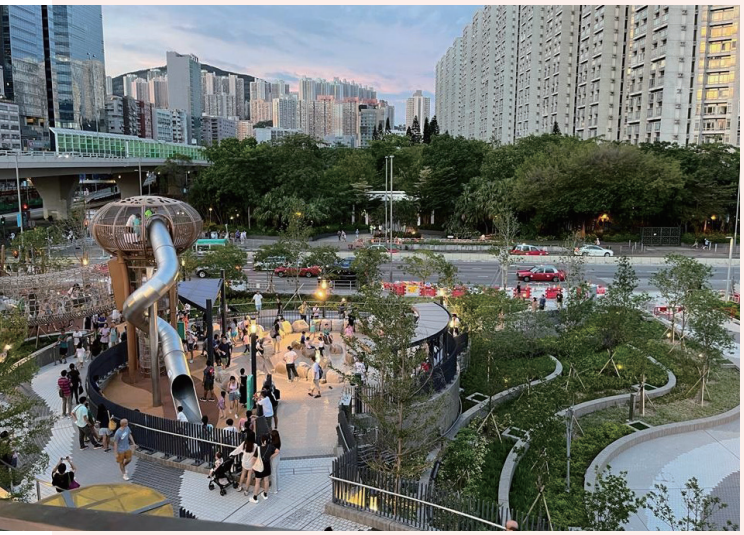
Living Proof 5 — Holding open space together beyond the green

Revision of Hong Kong Planning Standards and Guidelines - Recreation, Open Space and Greening

Open space is a key component in uplifting our liveability under the high-density context of Hong Kong. Well-planned, well-designed, appropriately-located, and effectively-managed open spaces serve as extensions of personal space, fostering social interaction, promoting health and well-being, and enhancing quality of life.

In response to the public aspirations for more and better-quality open space, Hong Kong 2030+ recommends enhancing the open space provision standard from not less than $2m^2$ to $3.5m^2$ per person. The Hong Kong Planning Standards and Guidelines for open space development have also been revamped to guide the planning and design of open space in the development areas. Open spaces are holistically planned to form a comprehensive public space network of the city, connected by pedestrian links and streets to destinations and activity nodes, thereby providing accessible and diverse spaces for recreation and community life.





The enhanced open space provision standard has been adopted in the planning of NDAs, including those in the Northern Metropolis. The enhanced open spaces not only provide venues for outdoor recreation and leisure, but also offer significant opportunities for extensive greening, integration into the blue-green network, and functioning as ventilation corridors, thereby contributing to a more comfortable, pleasant, and sustainable living environment. This demonstrates how integrated land-use planning can transform open space into a shared public asset that strengthens community well-being and supports sustainable urban development.



Social Value Driver 2

Inclusive Employment and Supply Chain



Catalysing the local economy with major developments and infrastructure projects

The Northern Metropolis adopts an **"industry-driven, infrastructure-led and people-oriented" approach** which promotes local & inclusive employment and improves home-job balance in the locality, strengthening neighbourhood vitality and reducing daily commutes.

Major development projects are more than public spending; they are also anchors of community wealth. Every public purchase carries a multiplier effect where the capital spent flows back into the neighbourhood by providing economic and employment opportunities for locals. Beyond physical structures, our projects also catalyse local economic development.

Create home-job balance.
Buy local.
Open recruitment doors.
Advance careers.

3 Dimensions | 6 Actions | One Inclusive Economy

Beyond physical structures, an infrastructure project can act as a catalyst for community growth. It attracts investment, enables business growth, acts as an anchor that retains wealth and opportunity within the local community and creates diverse job opportunities. This Driver works on three dimensions: how opportunities are created, who gets hired, and what people learn.

1 Anchoring Local & Social Enterprise | *The Opportunity Rooted in Place*

Investing in infrastructure delivers greater local impact and provides a platform and opportunity for small and medium-sized enterprises (SMEs) and social enterprises that hire, train, and reinvest in the community.

A8 Encouraging participation of SMEs and Social Enterprises

Consider broader social value by encouraging more participation from local SMEs and social enterprises.

A9 Sourcing Locally & Raising Supplier ESG Standards

Encourage project teams to take into consideration the benefits of local sourcing (e.g., lower embodied carbon) and offer guidance to help vendors meet safety and ESG standards.

2 Cultivating Inclusive Careers | *Workforce Drawn from the Neighbourhood*

Communities hosting infrastructure projects are often the last to benefit. This can be reversed through home-job balance, recruitment initiatives, inclusive careers, and training platforms for the neighbourhood.

A10 Inclusive Careers & Training Platforms

Leverage industry training platforms to address labour market concerns, and to provide on-the-job training and employment opportunities.

A11 Community Recruitment

Engage community partners to recruit domestic skilled workers through their networks. Organise mobile recruitment booths and offer commuting assistance to workers to reduce travel barriers and improve workforce retention.

3 Upskilling for Tomorrow | *Skills Carried Beyond the Project*

A construction site provides valuable learning opportunities and upskilling for the workforce grows alongside the project.

A12 Apprenticeship & Mentorship Opportunities

Collaborate with other professional institutions on apprenticeship schemes that build diverse skills, and offer mentoring support for mentees covering their holistic lifelong needs and future career planning.

A13 Future-Ready Skills & Aspiration Management

Encourage workers to embrace technologies with advancement from manual to automation roles, by providing training in Construction Technology and green modules such as BIM operation, drone surveying, and sustainable materials.

Living Proof 1 — Bridging the gap between infrastructure and the local workforce

The North District Recruitment and Training Expo



Major infrastructure promises growth, yet grassroots communities often feel left behind. In the Kwu Tung North and Fanling North New Development Area, the project team set out to close that divide — not only with concrete, but with genuine human connection.

Partnering with local NGOs at the North District Recruitment Expo, they brought opportunities to the neighbourhood's doorstep. Through face-to-face dialogue and on-the-spot interviews, the initiative opened direct career paths for residents, hiring people for positions including site workers, foremen as well as engineers. The contractor also launched dedicated shuttle services linking the site to transit hubs such as Sheung Shui and Sha Tin. This practical support eased the daily commute and honoured a genuine home-job balance.

The impact covered both the human and constructional aspects. Workers could spend more time with family, boosting morale and strengthening loyalty to the job. A locally anchored workforce also proved its worth: when extreme weather struck, nearby team members could be mobilised quickly and safely to safeguard the site. By recruiting locally, construction work becomes more efficient, cost-effective, and more resilient. More importantly, a more loyal and stable workforce is secured.

Living Proof 2 — Creating social value through engaging social enterprises in supply chain

Social Procurement

Feeding hundreds of construction workers in a tight one-hour lunch break is a demanding site challenge. While major projects often employ large commercial caterers, one of the major contractors took a different path by using social procurement that transforms daily catering into community empowerment.

Partnering with Gingko House, a social enterprise championing senior employment, the team brought genuine care to worker welfare. Elderly staff prepared customised, MSG-free meals using organic vegetables, along with traditional Chinese herbal drinks to help workers brave through severe summer heat.

The partnership delivered a powerful double benefit. Workers gained nutritious meals and proper rest, lifting morale and health. At the same time, the project directed HKD 3.3 million annually in catering expenditure into a social enterprise that provides stable, dignified employment for senior citizens. By looking at the social impact in the supply chain, the initiative proved **that strategic social procurement can meet rigorous operational demands while nourishing both a hard-working workforce and a wider beneficiary group in the community.**



Living Proof 3 — Building infrastructure by building the people behind it

The Engineers Academy





Hong Kong's infrastructure is becoming more complex, digital and sustainability-driven, yet engineering capability cannot be renewed through individual projects alone. Without a structured pathway for professional growth, valuable project knowledge risks remain fragmented rather than become lasting institutional capability.

Established in October 2024, CEDD's Engineers Academy turns professional development into a career-long pathway. Its flagship programmes begin with induction training covering the complete public-works cycle, government procurement, contract management, site safety, innovation and environmental procedures. They progress through core-competency and advanced-capability programmes that address professional skills, resource management, leadership, financial control, public engagement and technological innovation. Staff exchanges, cross-departmental Engineer Talks, national studies and overseas professional training further connect officers with industry partners, professional bodies and engineering practice beyond Hong Kong.

The Academy shows that public-works assets can build both human capital and physical capital — turning project experience into shared training and future-ready expertise, and building a stronger knowledge-based engineering community, that better prepares professionals to deliver safe, sustainable and high-quality public services.

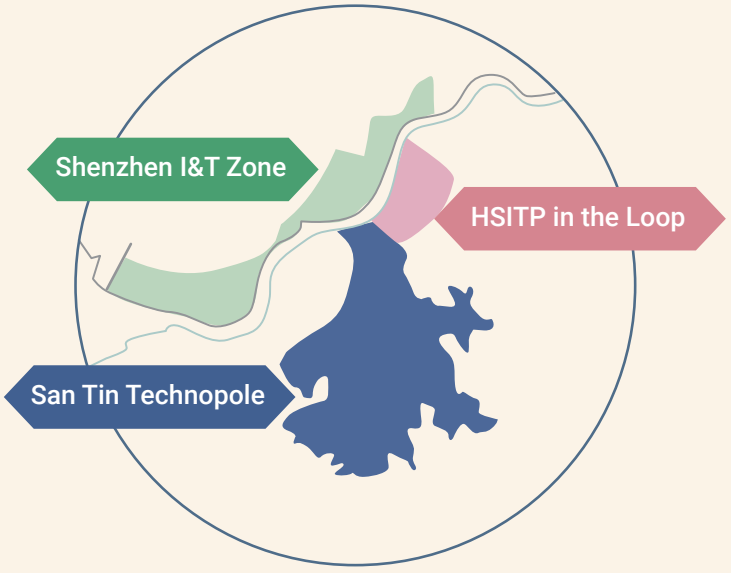




Living Proof 4 — Reaching jobs by living where they work in San Tin

San Tin Technopole





Strategic location of San Tin Technopole

To diversify industry development and promote better home-job balance, the Hong Kong 2030+ establishes a "South-North dual engine" spatial development strategy. By anchoring innovation and technology (I&T) development in the North through an "industry-driven and infrastructure-led" approach, approximately 500,000 new jobs will be created in the New Territories to reduce cross-district commuting while bringing new economic activities and enhancing the community vitality for the region.

Within this regional framework, San Tin Technopole (STT), together with the Hong Kong Park of the Hetao Shenzhen-Hong Kong Science and Technology Innovation Co-operation Zone (i.e. Hong Kong-Shenzhen Innovation and Technology Park (HSITP)), is planned to be a major I&T hub at the heart of the Northern Metropolis, strengthening collaboration and synergies with Shenzhen. To maximise its development potential, the I&T land is strategically arranged around the Loop, supported by flexible land use zoning to accommodate a diverse range of industries and foster a more complete I&T ecosystem. Moreover, the San Tin University Town is planned to its south **to facilitate I&T research and development and provide talent support at the "research, academic and industry" front, further creating diverse job opportunities.**

STT's planning has embedded considerations for better work-life balance and enhanced local community well-being from an early stage. Most residential sites in the San Tin Town Centre are planned within a 500-metre walking distance of San Tin Station, alongside an integrated mix of public open spaces and community facilities, and supported by a pedestrian and cycling network and transport infrastructure. This well-planned living community complements and fosters the continued growth and development of I&T Park to the north. This conscious spatial integration aligns employment opportunities with housing and supporting facilities from the outset, aiming to foster a more balanced, connected and vibrant community where residents can live, work and thrive.



Social Value Driver 3

Embracing Nature and Sustainable Growth



Fostering sustainable growth through nature stewardship

Hong Kong 2030+ recognises the intrinsic value of our natural environment and biodiversity to "the community" well-being and quality of life, advocating that these assets be respected and enhanced throughout planning and development. To achieve sustainable growth where nature and people thrive together, our goal is to enhance the environmental capacity of natural systems to support city development.

Beyond solving environmental challenges, Nature-based Solutions (NbS) serve as a powerful social asset and catalyst for sustainable communities when woven into urban planning, design, and public works. They generate social value by fostering human interaction, strengthening community ties, building trust, and nurturing a shared identity around green and blue spaces. Nature also serves as an agency that stimulates further opportunities: driving local employment in stewardship and maintenance, preserving heritage tied to cultural landscapes, encouraging resident participation, and delivering equitable outdoor access across all ages, incomes, and abilities.

The objective is to maximise community benefits on every hectare of blue-green investment and pave the way toward a replicable, evidence-based standard for measuring the social value of NbS—ensuring nature-based infrastructure to deliver tangible benefits, designing for people to reach, benefit from, and help to shape sustainable growth.

Grow together with nature.
Nature for all.
Lasting community value.

2 Dimensions | 6 Actions | One Living Bond

Nature generates social value and supports sustainable growth when integrated into the spatial structure of a city as a shared community asset. NbS creates social value through two pathways: 1) nature as an asset, providing fair access, health, quality spaces, and stronger communities through being in nature; and 2) nature as a platform, creating opportunities for jobs, cultural and heritage appreciation, and environmental stewardship.

1 Nature as an Asset | *What Nature Gives When Everyone Can Reach It*

Nature belongs to everyone and conserving it is desirable within major development to ensure natural systems can regenerate for future generations. It is directly accessible—requiring no mediation, admission, or expertise to benefit from. Its social value is generated through our everyday contact with green and blue features and spaces. These are not add-ons to projects, but valuable public goods delivering health, equity, and cohesion to the people who live with them.

A14 Accessible Nature for All

Promote convenient access to quality blue-green space within a short walk under the 15-minute neighbourhood principle. By integrating biophilic design, physical connectivity, and an interconnected blue-green network—incorporating river channels, retention ponds, wetlands, open spaces, and knolls—we protect high-value ecological assets while embedding nature into daily urban life.

A15 Well-being in Nature

Design NbS to deliver measurable physical and mental health gains, including chronic disease prevention, stress restoration, and improved life satisfaction through nature exposure and active use of public spaces.

A16 Social Cohesion in Nature

Configure green and blue spaces as neutral, safe meeting grounds that generate everyday encounters, trust, and belonging across communities—forming the foundation for strong social connectivity.

2 Nature as a Platform | *Jobs, Heritage and Care — All in One Landscape*

Nature also serves as a platform for shared production, identity, and stewardship. When communities participate in building, maintaining, and monitoring nature-based solutions, they generate more than ecological outcomes — they build local livelihoods, protect cultural landscapes that carry intergenerational memory, and develop the civic capacity that turns residents from passive beneficiaries into active stewards.

A17 Green Economy with Nature

Support local, decent green livelihoods through construction, maintenance, aquaculture, eco-tourism, green education, and green-tech roles. Globally, over 60 million people already work in NbS, and targeted investment could add another 32 million jobs by 2030.[1]

A18 Place Identity & Heritage

Reinforce local identity, belonging, and intergenerational memory through cultural-ecosystem-service (CES). This action protects and interprets Hong Kong's distinctive cultural landscapes, including fishponds (gei wai), feng shui woods, walled villages, oyster beds, etc.

A19 Operational Governance

Involve residents, villagers, and NGOs in co-designing, managing, and monitoring NbS (community gardens, tree-planting, "place-keeping", citizen science), building durable civic capacity and shared ownership.

[1] Source: *Decent Work in Nature-based Solutions 2024 (ILO, UNEP and IUCN).*

Living Proof 1 — A framework that turns ecosystems into enabling infrastructure

Hong Kong Nature-based Solutions Design Guidelines



The Hong Kong Nature-based Solutions Design Guidelines, jointly launched by CEDD and Agriculture, Fisheries and Conservation Department, provides a local framework for integrating NbS into infrastructure and development projects. The three core principles — **ecosystem diversity at multiple scales, human-nature coexistence for mutual benefits,** and **resilience through NbS** — are operationalised through a five-year roadmap that positions high-integrity NbS as integrated ecological, social, and economic interventions requiring community participation, monitoring, adaptive management, and long-term stewardship.

This case is the methodological proof for the social capital in NbS framework. It directly supports "accessibility & equity to nature" by requiring locally relevant planning and design guidance for accessible blue-green infrastructure; "well-being in nature" by linking NbS to well-being and livability; "social cohesion in nature" by recognising human-nature coexistence and public benefits; and green economy by including socio-economic sustainability, cultural ecosystem services, and local case studies as part of performance evaluation. It also provides the policy bridge between natural capital measurement and a future Social Capital Index.





Scan for the Hong Kong Nature-based Solutions Design Guidelines

Living Proof 2 — Where wetland conservation becomes a shared civic platform

Sam Po Shue Wetland Conservation Park



Sam Po Shue Wetland Conservation Park (the Park) is planned as Hong Kong's first wetland park under the Northern Metropolis Wetland Conservation Parks System. Covering about 348 hectares, the Park ensures no net loss of ecological function or fisheries resources to support the development of San Tin Technopole. Under the theme of "Biodiversity and Aquaculture in Harmony", the Park will not only enhance ecological function and biodiversity of the areas, but also promote modernised aquaculture and boost eco-education and eco-tourism. The Park will become Hong Kong's largest nature-based infrastructure project delivering transformative ecological, economic and societal benefits.

Aligning with Hong Kong 2030+, statutory planning serves as the backbone for this initiative. "Conservation Area" and "Other Specified Uses (Wetland Conservation Park)" zonings constrain development with preservation, supported by upcoming site works — including pond reprofiling, gei wai and fishponds enhancement.

The Park serves as a place-based pilot for wetland NbS, driving five actions: "accessibility & equity to nature", "well-being in nature", "social cohesion in nature", "green economy with nature", and cultural heritage preservation. The proposed use of camera traps, bioacoustics, environmental DNA, Artificial Intelligence (AI) and Internet of Things (IoT) monitoring makes it a strong pilot for integrated ecological and social monitoring.

Living Proof 3 — Greening as governance, not just gardening

Greening Master Plan

CEDD's Greening Master Plans (GMPs) provide a long-running public-works model for district-scale greening. Since 2004, CEDD has developed and implemented GMPs to define district greening frameworks, guide planning, design and implementation, identify planting locations, establish greening themes, and propose suitable planting species. The GMP process also includes public participation through District Participation Groups, community planting ceremonies and school talks, aiming to draw on local knowledge and build public ownership.

The GMP supports "accessibility & equity to nature" action by expanding green provision at district scale; "well-being in nature" by improving urban environmental quality and everyday well-being; "social cohesion in nature" through public participation and community ownership of vegetation; "green economy with nature" through landscape, horticulture, maintenance and public-works employment; and promoting cultural heritage by using district characteristics, greening themes and locally suitable species to reinforce sense of place. **It demonstrates that social-capital metrics can be attached to established public-works programs rather than treated them as separate research-only indicators**.



Living Proof 4 — Where biodiversity integrates into development

The Loop



The Loop, about 87 hectares, once a natural habitat for birds and terrestrial wildlife, is now where the HSITP is located. In planning and implementing this key I&T hub for Hong Kong, striking a balance between development and conservation has remained a central principle.

An Ecological Area of about 12.8 hectares has been established in the southeastern part of the Loop. It conserves or compensates habitats of high conservation value, such as the reed marsh. The recreated reedbed helps preserve existing bird flight paths and the terrestrial wildlife corridor connecting the Loop with the adjacent rural habitats. In addition to compensating for the reedbed affected by the development and preserving biodiversity, the Ecological Area provides a buffer that facilitates a transition between the developments in the Loop and the surrounding rural landscape to the south. During wet seasons, it also functions as a flood retention pond.

To ensure a smooth transition to the rural backdrop of Lok Ma Chau and minimise any potential impact on the birds' flight paths, a gradated building height profile is adopted. A low-density, low-rise building buffer zone 50 metres wide has been placed next to the Ecological Area to further safeguard it and the birds' flight paths. In essence, the Ecological Area of the Loop demonstrates how nature can be integrated into development, balancing growth with conservation to create a sustainable and liveable environment for all.



Social Value Driver 4

Climate Resilience



Safeguarding Hong Kong in a changing climate

Under the vision of "Zero-carbon Emissions · Liveable City · Sustainable Development", Hong Kong's Climate Action Plan 2050 provides a framework for addressing climate change through integrated mitigation and adaptation. Hong Kong 2030+ also advocates mainstreaming climate change, biodiversity and other environmental considerations into the planning and development process, and adopts a comprehensive planning approach integrated with smart, green and resilient concepts to help relieve increasing pressure on the environment. Guided by these strategies, **Hong Kong is embedding climate considerations into infrastructure planning, design and operation** — strengthening resilience to climate risks and safeguarding communities in a changing climate.

The Climate Change Working Group on Infrastructure was also established in 2016 to coordinate the efforts of the works departments in addressing climate-change risks.

Cut carbon.
Absorb shocks.
Keep life moving.

2 Dimensions | 6 Actions | One Resilient System

Climate resilience is a key dimension of sustainable planning, enabling communities, places, infrastructure and urban systems to remain safe and functional under changing climate conditions. It strengthens the ability of urban systems to manage climate-related challenges, protect essential services and support sustainable development.

Effective climate resilience is best supported by a dual strategy: coupling mitigation via decarbonization with robust adaptation measures to safeguard public health, lives, and property from extreme weather. This means bringing together decarbonisation, climate-adaptive planning, nature-based solutions and resilient infrastructure to build a safer, more adaptable and climate-ready Hong Kong.

1 Climate Mitigation | *Decarbonising Infrastructure for a Sustainable Future*

Future climate risks pose escalating challenges for cities. Climate mitigation therefore needs to be embedded across the planning and development process. These approaches can reduce carbon emissions at source, not only containing the severity of future climate impacts, but also underpinning more sustainable, resilient urban development.

A20 Embedding Low-carbon Lifestyle

Enable carbon emission reduction throughout the full infrastructure lifecycle, including low-carbon design optimisation, adoption of low-carbon materials, construction electrification, renewable energy integration, and smart asset management to minimise both embodied and operational carbon emissions.

A21 Carbon Sequestration and Capture

Incorporate both engineered and nature-based carbon removal solutions into public works, including carbon-locking materials, carbon capture technologies, urban forestry, wetland restoration and blue-carbon ecosystems.

A22 Resource Circularity Optimisation

Promote circular resource use across the supply chain by prioritising the reuse of local excavated materials, diverting hard-to-recycle construction waste from landfills, and forming localised circular resource partnerships.

2 Climate Adaptation | *Building Capacity to Withstand Climate Risks*

Adapt urban forms, building layouts, and infrastructure to climate conditions by responding to prevailing winds, solar exposure, and microclimates. Enhancing natural ventilation and environmental comfort mitigates extreme weather threats, secures essential services, and enables communities better withstand and recover from climate change.

A23 Coastal Wave Attenuation

Deploy hard engineering interventions, such as wave-return profiles on seawalls, submerged breakwaters, and tidal gates, to absorb wave energy and safeguard coastal infrastructure from storm surges.

A24 Inland Hydrological Control

Implement flood-control infrastructure, including underground concrete stormwater storage tanks, deep drainage tunnels, and porous pavements, to optimise hydrological buffering and eliminate urban waterlogging.

A25 Urban Heat Stress Mitigation

Reduce localised heat accumulation through geometric urban ventilation planning, and high-albedo cool materials on buildings and pavements to lower anthropogenic heat rejection.

Living Proof 1 — A holistic approach to climate-resilient urban development

The Blue-Green Network in San Tin Technopole



San Tin Technopole (STT), a flagship development in the Northern Metropolis, is envisioned as a sustainable, nature-based I&T hub with Smart, Green, and Resilient initiatives embedded from the outset. Located in a low-lying landscape with existing river channels and wetlands, STT adopts a climate-responsive spatial framework to manage water risks while supporting innovation-led growth.

Urban breezeways and air paths align with major roads and open space corridors, complemented by stepped building height profiles and non-building areas to optimise pedestrian wind environments. Integrated blue-green infrastructure—anchored by the Sam Po Shue Wetland Conservation Park—features retention ponds with 279,000 m³ capacity to store extreme stormwater.

Combined with extensive greening, heat accumulation is significantly reduced. **These interventions show how future districts can be developed with climate resilience and low-carbon infrastructure, weaving** resilience directly into daily urban life. The blue-green assets serve dual functions: delivering flood risk management while offering accessible leisure and recreational spaces for the community.

Living Proof 2 — Healing a scarred landscape into a climate haven

Anderson Road Quarry Site Redevelopment

The development of the Anderson Road Quarry site aims to transform a 40-hectare abandoned quarry in East Kowloon into a new community housing 30,000 people. The site faces dual challenges: peak stormwater runoff posed flood risks to downhill communities, while steep topography threatened to isolate the new development.

To resolve these, the development implements a multi-tiered water-safety network. At its heart lies a 2.8-hectare artificial attenuation lake, working with sub-surface stormwater storage tanks, biofiltration zones and porous pavements to intercept peak runoff at the source. This gravity-driven approach pairs low-impact development features with smart pedestrian corridors and vertical transit links, bridging the topography and turning an engineering necessity into a community asset.

The integrated infrastructure delivers climate resilience that supports daily life — stormwater retention protects downstream communities, while the attenuation lake, greywater recycling plant and smart water network drive local water circularity and reduce the carbon footprint, creating a safer, more sustainable living environment.



Living Proof 3 — Low-carbon and flood resilience into the fabric of a new town

Hung Shui Kiu/Ha Tsuen New Development Area

Hung Shui Kiu/Ha Tsuen NDA is planned as a low-carbon green transport hub anchored by the future MTR Hung Shui Kiu Station. A dedicated Green Transit Corridor seamlessly integrates rail links with extensive pedestrian walkways and cycle tracks, encouraging sustainable mobility and low-carbon lifestyles across the community.



For inland hydrological control, the NDA—planned for approximately 226,000 residents—addresses climate challenges through adaptive urban design. **Rather than relying solely on conventional drainage, the development integrates flood storage, river revitalisation, and public open space into a coordinated blue-green system.**

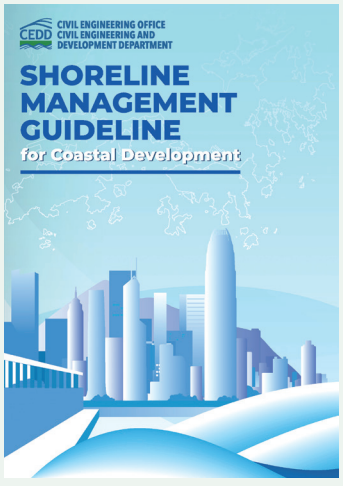
Its core is a 12-hectare regional park featuring multifunctional flood-storage lakes and 8.8 hectares of floodable sports fields operating under the principle of “single site, multiple use"—supporting everyday recreation during normal conditions while accommodating excess runoff during intense storms.

Once completed, this integrated network safeguards the district during heavy rainfall while preserving parklands as vibrant everyday amenities—transforming stormwater infrastructure into a lasting social asset.

Living Proof 4 — Beyond the seawall: Hong Kong's shoreline resilience framework

Shoreline Management Guideline

With over 1,100 kilometres of coastline, Hong Kong faces growing risks from sea-level rise, storm surges and increasingly intense tropical cyclones. Protecting the city requires a long-term framework that integrates climate adaptation, ecological enhancement and sustainable waterfront development.



CEDD developed the Shoreline Management Guideline (SMG), building on the 2021 Coastal Hazards Study and the 2024 Shoreline Management Study. Now incorporated into the Port Works Design Manual, the guideline adopts an Adaptation–Resilience–Management (ARM) approach. It promotes coastal wave attenuation through nature-based shorelines and wave-dissipating forms; strengthens flood resilience through multi-layered protection, flood storage and buffer zones; and integrates nature-based solutions to enhance biodiversity and the waterfront experience. Complemented by the Progressive Adaptive Approach (PAA), the guideline enables coastal infrastructure to adapt to evolving sea-level rise over time.

By embedding these strategies in engineering standards, **the SMG establishes a consistent blueprint for future coastal developments — balancing public safety, ecological resilience and waterfront accessibility, and creating a lasting institutional legacy for Hong Kong's coastline**.

Social Value Driver 5

Holistic Accessibility



Building a liveable and people-oriented city

Hong Kong's First Five-Year Plan echoes the National 15th Five-Year Plan, recognising the "15-minute neighbourhood" as a key driver for liveability and quality of life—a practical standard where a short walk or cycling takes you to a school, a clinic, a park, and a shop. Building on Hong Kong 2030+ towards a liveable high-density city where seven million people share a compact landscape, this people-oriented planning approach is adopted in the planning of NDAs to **deepen the relationship between people and urban space.**

Roads and bridges alone will not achieve that; physical connectivity becomes meaningful only when infrastructure enables people to access destinations efficiently, pleasantly, and openly. More than physical movement, seamless connectivity serves to enhance overall accessibility—enabling residents to meet their daily needs within a short distance while supporting active lifestyles, community interaction, and a stronger sense of belonging. In this way, accessibility becomes the ultimate driver of social value, empowering people to live, work, play, and enjoy community, nature, culture, and opportunity.

Near everything.
Easy for everyone.
A city for the people.

4 Dimensions | 8 Actions | One Connected City

Infrastructure connects people to places seamlessly, enjoyably, and inclusively. When supported by people-oriented land use planning, comprehensive physical linkages, quality public spaces, and blue-green networks, Holistic Accessibility turns physical links into stronger relationships between people and urban space.

1 Connecting People with Places | *Destination within Reach*

Enable everyone to get to the destination easily and seamlessly.

A26 Road Network Optimisation

Extend road networks to connect previously separated districts — by optimising road alignment to cut detours, eliminating cross-district bottlenecks, and easing peak-hour congestion. Promote a better home-job balance to reduce residents' need for long-distance commuting.

A27 Last-mile Connectivity and Multi-modal Interchange

Extend connectivity from trunk roads to final destinations through feeder networks and integrated interchanges that facilitate seamless transfers between bus, rail, cycling, and walking.

2 Enriching Journeys | *Creating Active and Walkable Communities*

Shape the major development to make walking and cycling a convenient, comfortable and enjoyable journey, promoting a healthy lifestyle and activating public life.

A28 Multi-functional Infrastructure

Design infrastructure as multi-functional assets by integrating shared utilities, activating under-flyover spaces, and layering transport facilities with community functions. Embed active design features into site layouts to encourage walking, cycling, and other physical activities in daily life.

A29 Journey Experience Design

Design walking and cycling routes as experiences, using shade, greenery seating, activity spaces, lighting, art, and signage to create comfortable, distinctive, interesting all-season journeys, while minimising adverse impact even during construction.

3 Ensuring Inclusive Mobility | *A City for Everyone*

Inclusiveness means designing infrastructure for all ages and abilities, ensuring even the least mobile and most vulnerable can move safely and independently.

A30 Barrier-free System Design

Design accessibility across the full journey chain, using continuous tactile paths, ramps, lifts, and wheelchair-friendly spaces so everyone can travel independently from door to destination.

A31 Intergenerational Harmony

Create safe and comfortable walking routes for different ages and abilities, with regular resting points, shaded seating, traffic calming, and safe-route-to-school, supporting independent mobility and intergenerational interaction.

4 Creating Capacity for the Future | *A Promise to Tomorrow*

Create development capacity to prepare for changes and strengthen resilience, ensuring today's land and infrastructure remain adaptable to future growth, technologies, and needs.

A32 Future-ready Land Reservation

Adopt a capacity-creating approach that safeguards sufficient land and corridor reserves for open space, GIC facilities, and transport expansion. Reserving this capacity early meets evolving public needs while avoiding costly retrofits as development intensifies.

A33 Smart and Adaptive Infrastructure

Embed sensors, predictive maintenance, and dynamic traffic management into infrastructure, enabling smart and green transit systems that improve connectivity while remaining adaptable to future mobility needs.

Living Proof 1 — 6 stops, 1 district, no more gaps

Kai Tak Smart and Green Mass Transit System



Smart and Green Mass Transit System in Kai Tak is approximately 3.5-kilometre long with six stations. The termini will be connected to the Kai Tak Cruise Terminal and the MTR Kai Tak Station respectively. It will provide a convenient feeder transport service connecting the former runway area of Kai Tak to the MTR Kai Tak Station to strengthen connectivity among residential and commercial developments, tourism, culture and recreation, sports and community facilities within the area.

By providing a dedicated transit corridor, the System will offer residents a green, reliable and efficient means of travel, helping to improve mobility and air quality in long term. Such improved mobility will not only streamline daily commutes but also support sustainable urban development by encouraging a shift from road traffic to mass transit system - fostering a healthier, more connected, and more livable environment.

Living Proof 2 — Completion of a 60 km backbone

New Territories Cycle Track Network

For many years, cycle tracks in the New Territories were spread out across different districts. Now, after being opened in stages, the New Territories Cycle Track Network stretches about 60 kilometres from Tuen Mun in the west to Ma On Shan in the east. In September 2020, an 11-kilometre section from Yuen Long to Sheung Shui connected the earlier parts into one continuous route. The track was built with safety and landscaping in mind. Entry and exit points, along with resting stations, make it easy for riders to start, take a break, or finish their journey anywhere along the way.

The route goes along rivers, wetlands, and waterfronts, and passes by clan villages and heritage trails. This brings both natural and cultural sights closer to the new towns. Rather than a special trip, the ride becomes a way to explore and enjoy the scenery.

With the 60-kilometre backbone complete, people can use this continuous, low-carbon path to travel between communities in the New Territories, whether for daily commute or recreation.



Living Proof 3 — From remote landing points to lifelines for island communities

Pier Improvement Programme

Across Hong Kong's outlying islands and remote coastlines, many villages and natural attractions can only be reached by sea. Yet some public piers have been operated for decades with ageing structures, shallow water and narrow access. Low utilisation often delays their improvements, even though residents and fishermen depend on them daily.



Launched in 2017, the Pier Improvement Programme has reframed these small facilities as important last-mile connectors. Rather than assessing piers by usage alone, it considers public safety, access to natural and cultural destinations, local needs, environmental constraints, and technical feasibility. The strategy improves the entire arrival experience: deeper water and additional berths make vessel access safer; side-on berthing and floating platforms respond to changing tides; ramps and barrier-free routes support passengers with mobility needs; while roofs, seating, drinking water, charging facilities, Wi-Fi and information displays make waiting more comfortable. Local cultural references are also incorporated so each pier becomes part of the place's identity. Furthermore, the project team collaborates with villagers to create distinctive murals, showcasing traditional fishing village culture.

Meanwhile, the Ma Liu Shui New Ferry Pier introduces Hong Kong's first large-scale floating platform and link span system. This innovative design addresses complex sea conditions, ensuring a stable and barrier-free boarding experience for passengers across all tidal levels."

By February 2026, 10 of 23 piers have been reconstructed or expanded — showing how **modest marine infrastructure can strengthen everyday mobility, support communities and open more inclusive access to Hong Kong's ecological and cultural landscapes**.



Living Proof 4 – A people-oriented vision for San Tin Technopole

"15-minute Neighbourhood"





San Tin Technopole is planned with a people-oriented approach at its core, placing the daily experiences and social well-being of its future residents and workers at the forefront of urban design. A key expression of this vision is the adoption of the "15–minute neighbourhood" concept, which aims to create a highly liveable and vibrant community where all daily needs are within easy reach. The development of San Tin Technopole is also taking forward Hong Kong 2030+'s vision to promote liveability and vibrancy of the Northern Metropolis. The people-oriented approach prioritises walking and cycling as everyday commuting options, which enable the residents/surrounding villagers to reach GIC facilities, open space, daily necessities and major public transport facilities within 15 minutes.

Well-developed connectivity is also stressed as a key guiding principle for San Tin Technopole. As the project spans about 626 hectares, it is important to strengthen connectivity between different parts of San Tin Technopole, especially in linking up key public transport nodes (such as the proposed railway stations and the proposed public transport interchanges) with surrounding uses, providing more convenient connections across San Tin Highway/Fanling Highway, and connecting San Tin Technopole to the wider surrounding areas.

With the general footpaths along carriageways as the basis for pedestrian movement, additional pedestrian components are integrated to form a more comprehensive and attractive circulation network. These components include:

- pedestrian-friendly area along the Living Avenue in San Tin Town Centre;
- an iconic landscape deck across San Tin Highway;
- integrated open space network as circulation routes; and
- other grade-separated features (including footbridges and underpasses);

The above measures support a well-connected, multi-functional, people-oriented urban form, creating a quality living environment that encourages healthier lifestyles and promotes walkability.

Living Proof 5 – Promoting active and healthy lifestyles

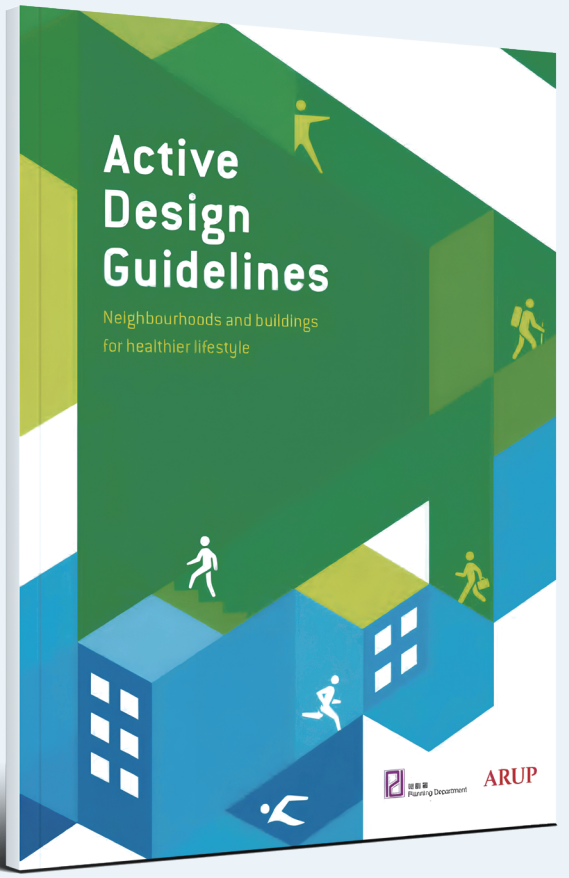
Active Design Guidelines

One of the strategic directions of Hong Kong 2030+ for promoting liveability is to embrace the concept of active design in the planning and design of the built environment to promote an active city and active people. As a follow-up initiative, PlanD formulated the Active Design Guidelines, which provide a set of guidelines to promote and raise awareness of the active design concept in Hong Kong. The essence of the Active Design Guidelines has been incorporated into the relevant sections of the Urban Design Guidelines, Chapter 11 of the Hong Kong Planning Standards and Guidelines in 2025.

Active Design Guidelines were put into practice in the open space development in Tung Chung East New Town Extension, demonstrating a forward-looking approach of integrating active design principles into a new works project right from its early planning and design stages.

At the project's design stage, CEDD partners with PlanD to incorporate active design objectives into the design of the open space. Key principles outlined in the Guidelines are embodied in the project, for example, the children's play areas, waterfront promenade, iconic viewing pavilions, activity lawns and easily accessible eco-shorelines, which will encourage park users to enjoy physical exercise along the promenade and across the extensive park network. These features visualise active design elements in the vibrant and connected open space network, encouraging public enjoyment of the waterfront promenade and green space in the Tung Chung East community.





Social Value Driver 6

Technology Innovation



Advancing technology for human care

Hong Kong is building at a scale it has not attempted in decades. The Northern Metropolis pushes development beyond the saturated urban core, but the construction environment is harsh — sites sit metres from homes and schools, with little room for buffer zones. Conventional methods mean bulkier structures, heavier temporary works, longer schedules, and more risk to workers.

The Innovation and Technology Development Blueprint asks Hong Kong to become a hub for applied innovation. Every site is a test: can we build what people need without making them suffer through it? **This Driver targets three things at once — less time and resources, near-zero casualties, and minimal disruption to the community**.

Build smarter.
Remove risk.
On a lighter footprint.

4 Dimensions | 5 Actions | One Genuine Commitment

This Driver pursues a triple effect: shorter duration, lower resource consumption, near-zero harm to workers, and minimal disturbance to the community. Every action serves at least one of these goals; together, they set the standard for modern delivery.

1 Solving from the Source | *Less material, more work*

Map site-specific constraints first, then apply ultra-high-performance new materials to overcome engineering limits, improve structural performance, and reduce material use.

A34 Project-Tailored High-Performance Materials

Match materials to each project's constraints. Pioneer ultra-high-strength steel through industry-academia collaboration where physical limits would otherwise make construction impossible and codify practices in Practice Notes for industry advancement.

2 Seeing Before Building | *Foresight over hindsight*

The most expensive problems on a site are discovered too late. Predictive intelligence and real-time oversight catch problems before they materialise.

A35 Predictive Smart Monitoring System

Anticipate risks through digital twins, real-time sensing, and analytics, using 4D BIM, IoT monitoring, and DWSS-integrated dashboards for early warning and preventive intervention.

3 Removing People from Harm | *Let machines take the risk*

Remove risk through automation and spatial substitution, keeping dangerous tasks and high-risk operations away from workers and communities.

A36 Construction Automation & Robotic Substitution

Deploy robotic systems, drones, and autonomous machinery for high-risk operations, while formulating technical guidance for robotic welding on high-strength steel and advancing off-site prefabrication practice.

A37 Risk-Isolation and Danger Zone Relocation

Shift high-risk construction away from the public through off-site fabrication and spatial substitution like the horizontal bridge rotation method, then codify proven methods for safe, low-impact delivery.

4 Building Lightly on the Land | *Reduce disruption through design*

Minimise noise, dust, vibration, and traffic impacts, making delivery as quiet, clean, and unobtrusive as possible

A38 Low-Impact Construction Methods

Cut environmental and social footprint across the construction cycle – with strategic siting for conservation, optimised layouts that skip river excavation and pier construction in ecological zones, and intelligent sequencing that avoids peak traffic and community rest periods.

Living Proof 1 — The evolution of steel on two bridges — from S690 to S960

New Materials in Cross Bay Link and Fanling Footbridge

Hong Kong's most constrained sites demand structures that are both slender and exceptionally strong. At Tseung Kwan O's Cross Bay Link and Fanling's footbridge, conventional solutions would have required bulkier structures, heavier temporary works, longer programmes, and greater worker exposure.

The solution lay in advanced materials. Cross Bay Link pioneers the use of S690QL steel in Hong Kong bridge construction, halving material use and establishing a welding protocol with a 99.5% pass rate. Fanling goes further with the world's first structural application of S960 steel, cutting the footbridge superstructure weight by 90%. These breakthroughs are captured in technical guidance.

The benefits extended beyond structural efficiency. Cross Bay Link saves 7,176 tonnes of steel, 25% of rebar and 15% of concrete, reducing embodied carbon by around 20%; Fanling's footbridge achieves a 65% carbon reduction. By codifying these innovations into practice notes and sharing them with industry professionals, CEDD is turning project-specific breakthroughs into a higher industry baseline.





Living Proof 2 — Machine goes first

Trunk Road T2 and Cha Kwo Ling Tunnel

Route 6's middle section requires 2.4 kilometres of twin-bore tunnel beneath Victoria Harbour. Inside a working tunnel, inspection and drilling have always meant crews working at height in confined, dust-filled space.

This project sent machines first. Two 4,000-tonne Tunnel Boring Machines (TBM) mined beneath the harbour, leaving the surface untouched. To keep workers out of danger, CEDD worked with the Hong Kong Productivity Council to develop the world's first Autonomous Air–Ground Cooperative Tunnel Inspector (Tunnel Inspector). The system pairs a drone with a ground rover and can detect millimetre-scale defects even where satellite signals cannot reach.

Furthermore, an automated drilling robot handled drilling and boring; a robotic arm built corbels; MiMEP modules and service-gallery components were factory-prefabricated. Behind them, a digital system kept every stage of construction visible in real time: DWSS, GNSS monitoring accurate to two millimetres, distributed fibre-optic sensing, and 360-degree smart cameras.

The results: **works inspection now runs 23 times faster with half the cost – with no inspector leaving the ground**. The invention of the Tunnel Inspector won Silver at the 2024 Geneva International Exhibition of Inventions and Gold at the 2025 Edison Awards, its digital records becoming the benchmark for smart asset management.



Living Proof 3 — A highway without scarring

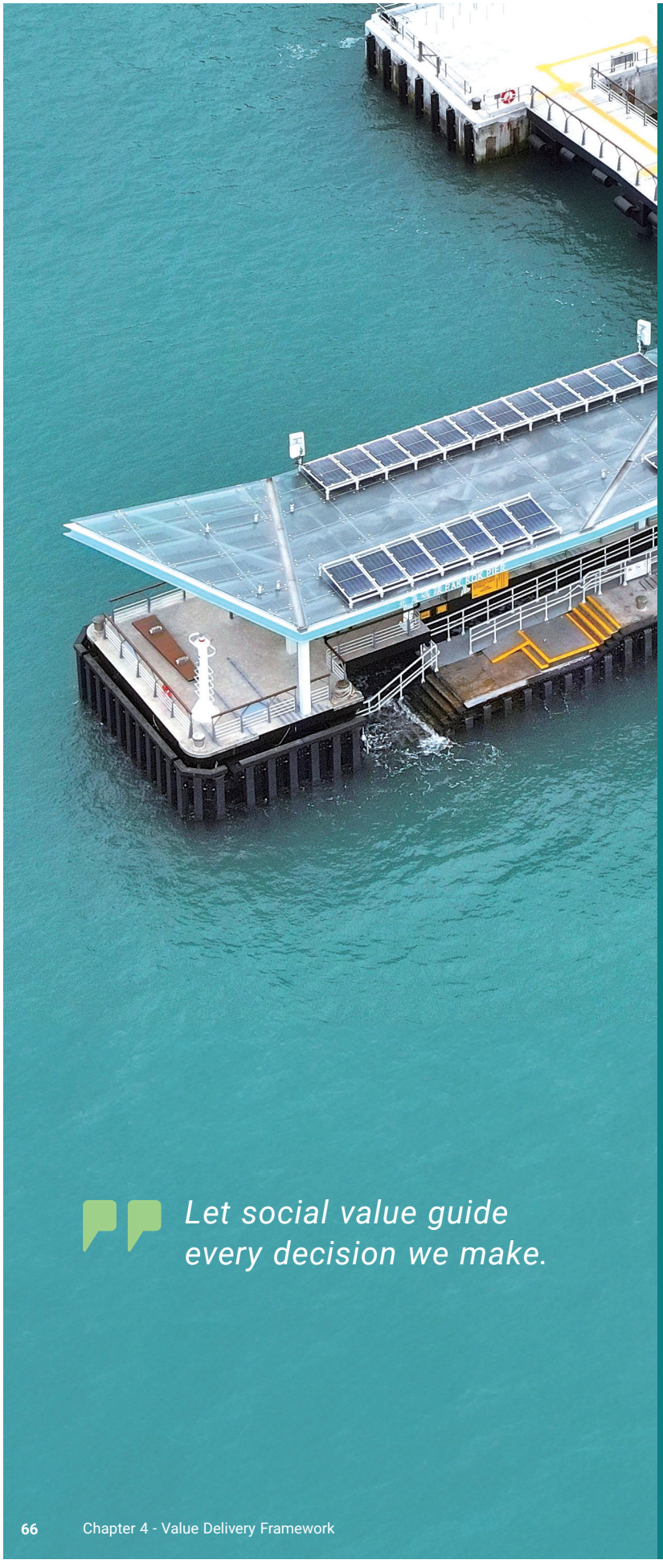
Sha Tin Trunk Road T4



The Sha Tin Trunk Road T4 is a 2.3-kilometre bypass serving 660,000 people. The alignment crosses the Shing Mun River and threads through heritage trees, an egret colony, heritage villages, active MTR viaducts and residential towers within metres. Conventional construction would mean years of disruption for a community at breaking point.

CEDD chose to build without scarring the city. A naturally ventilated underground carriageway replaced the viaduct, eliminating the need for ventilation buildings. Trenchless methods drove 900 metres beneath busy roads and a live railway with no open excavation. Design for Manufacture and Assembly prefabrication that lifts segments into place, cutting thousands of high-altitude working hours. The Smart Site Safety System and DWSS systems replace paper records with real-time monitoring.

Thanks to these innovations, the community is spared from prolonged lane closures, utility strikes, and scaffolding over live traffic. Heritage trees and egrets are also protected throughout. **Every innovation is a choice to build infrastructure that serves without scarring**. What threads through Sha Tin is not merely a road, but a promise that a city can grow without disturbing the community.



Chapter 4

Value Delivery Framework

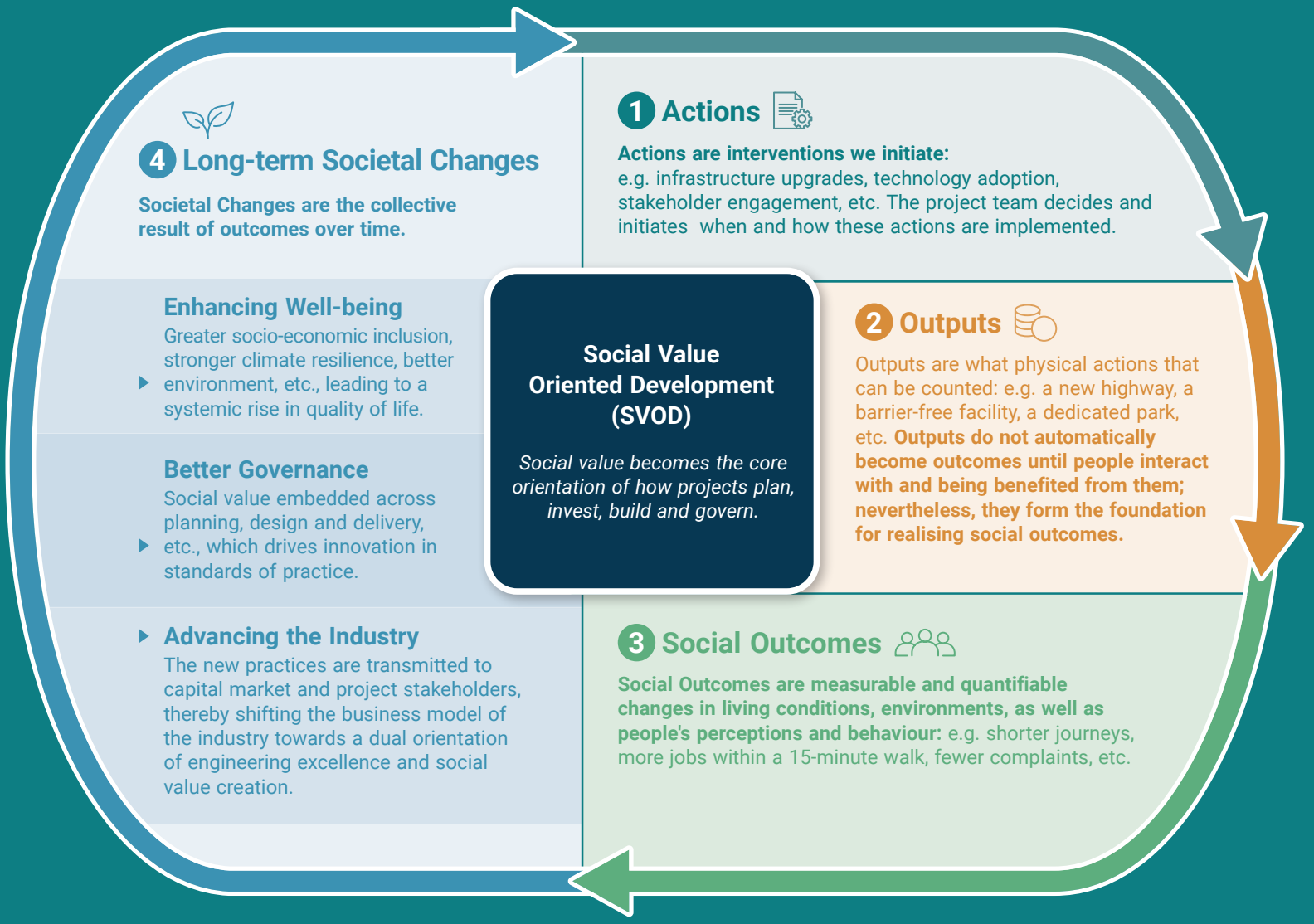
Let social value guide every decision we make.

- The Value Chain
- Social Value Across the Project Lifecycle
- Roles and Responsibilities
- The Principles of Measuring Social Value
- Monitoring and Reporting
- Building Your Measurement Specification

While Chapter 3 sets out the six Social Value Drivers and their suggested actions for value creation, Chapter 4, The Value Delivery Framework covers four parts, the first is the value chain to explain how actions can create long-term societal changes; the second is the suggested roles of different stakeholders along the project lifecycle; the third is on the principles of measuring social value; and the fourth is on suggested best practices in monitoring and reporting of social value.

The Value Chain

The Value Chain is a logical process showing how actions create long-term societal changes, it is adapted from the well-known Logic Model published by W.K. Kellogg Foundation in 2004. While the Logic Model depicts that there are five typical steps in creating impacts, namely from input, activities, output, outcome to impact, the Value Chain here simplifies the process and suggests how social value can typically be created in infrastructure projects in Hong Kong.



The above four-step process forms a feedback cycle, which leads to continuous social value enhancement over time. This is a paradigm shift in which social value becomes the key element in how we plan, design, and deliver our major developments. In other words, social value becomes the core orientation of how projects plan, invest, build and govern.

Social Value Across the Project Lifecycle

"Early Decisions Have the Greatest Impact"

Understanding that delivering social value is a collaborative effort, requiring contributions from a wide variety of practitioners and stakeholders, and the range of stakeholders involved is varied for different project types such as building, infrastructure, landscaping, or marine works, etc. The following section aims to provide examples and suggestions on the possible roles and responsibilities of different project stakeholders who might contribute in the value creation process. Thus, the contents are suggestive rather than imperative in nature. Nevertheless, readers could find useful references and gain insights that are relevant to their context.

A typical project moves through four broad stages: Planning, Design, Construction, and Operation & Maintenance. Social value can be created at every stage, but **the opportunity to shape social outcomes is usually greatest at the beginning of the project.**

Decisions made during project planning — such as project scope, community engagement approaches, and success criteria — set the ceiling for how much social value a project can ultimately deliver. By the time construction begins, most of the major choices have already been made, and the focus shifts from creating opportunity to delivering it well.

This is the practical meaning of Guiding Principle 5 in Chapter 2: Lifecycle Integration of Social Value. With a view to maximising the value created, social value is best considered and embedded at the earliest stage and carried through the lifecycle to the operation and maintenance stage.

Drivers Across the Lifecycle

The six Drivers are not phase-specific. Each one runs through the entire life of a project — but the way it shows up changes as the project matures. For example, a Driver is shaped early through vision and design intent; later, it is locked in through procurement, delivered through construction, and sustained through operation.

As a project advances, abstract social goals are converted into tangible work requirements and operational routines. The adjacent Lifecycle Roadmap illustrates this progression, showing how each Driver evolves from high-level intent into tangible delivery across every stage.

Using the Lifecycle Roadmap

A consistent approach across handovers: Early planning establishes direction, but maintaining social value matters throughout each transition. As projects progress and flexibility declines, the roadmap helps ensure that initial design commitments are incorporated into contract specifications and site practices.

Illustrative, not exhaustive: The roadmap offers a range of options rather than a fixed checklist. Each project can select relevant elements based on its scale, site constraints, community priorities, and contract types.

A planning tool, not a compliance exercise: Use the roadmap at key project milestones and reviews to address the following:

- Which Drivers are most relevant at this stage?
- What specific requirements could be embedded in the upcoming activities?
- Who needs to be involved to ensure intended outcomes are delivered?

Knowing when to act is part of the equation; equally important is knowing who could contribute to social value creation throughout the project lifecycle.

> *The process of properly designing infrastructure itself can enhance the **capabilities of individuals** in social value creation.*

Social Value Lifecycle Roadmap – How each strategic Action (***A#***, as numbered in Chapter 3) can be put into practice at each stage of the project lifecycle

Action	Milestone	Planning	Design	Construction	Operation & Maintenance	
	Driver 1 Community Building and Engagement	*A1* Community Partnership and Engagement *A3* Urban-Rural Connectivity and Heritage Integration	*A2* Participatory Design for Public Space *A4* Inclusive Infrastructure and Intergenerational Cohesion	*A1* Sustain ongoing community engagement on site *A5* Implement "Meanwhile Uses" during Construction *A6* Empowering Youth through STEAM Education *A7* Growing Next-Generation Engineers and "Enginpreneurs"	*A1* Maintain long-term community partnership *A4* Run intergenerational engagement programmes	People & Economy
	Driver 2 Inclusive Employment & Supply Chain	*A8* Encourage participation of SMEs and Social Enterprises	*A9* Sourcing Locally & Raising Supplier ESG Standards	*A10* Inclusive Careers & Training Platforms *A11* Community Recruitment Drives *A12* Apprenticeship & Mentorship Opportunities *A13* Future-Ready Skills & Aspiration Management	*A10* Inclusive Careers & Training Platforms *A13* Future-Ready Skills & Aspiration Management	
	Driver 3 Embracing Nature & Social Capital	*A14* Accessibility & Equity to Nature *A18* Place Identity & Heritage	*A14* Accessibility & Equity to Nature *A15* Well-being in Nature *A18* Place Identity & Heritage	*A17* Green Economy with Nature	*A16* Social Cohesion in Nature *A17* Green Economy with Nature *A19* Operational Governance	Design for Social Good & Environmental Resilience
	Driver 4 Climate Resilience	*A20* Embedding Whole-Life Decarbonisation *A21* Carbon Sequestration and Capture *A22* Resource Circularity Optimisation *A23* Coastal Wave Attenuation *A24* Inland Hydrological Control	*A20* Embedding Whole-Life Decarbonisation *A22* Resource Circularity Optimisation *A23* Coastal Wave Attenuation *A24* Inland Hydrological Control *A25* Urban Heat Stress Mitigation	*A20* Embedding Whole-Life Decarbonisation *A21* Carbon Sequestration and Capture *A22* Resource Circularity Optimisation *A23* Coastal Wave Attenuation *A24* Inland Hydrological Control	*A21* Carbon Sequestration and Capture *A23* Coastal Wave Attenuation *A24* Inland Hydrological Control *A25* Urban Heat Stress Mitigation	
	Driver 5 Holistic Accessibility	*A26* Road Network Optimisation *A32* Future-ready Land Reservation	*A27* Last-mile Connectivity and Multi-modal Interchange *A28* Infrastructure as Multi-Layered Asset *A29* Journey Experience Design *A30* Barrier-free System Design	*A29* Journey Experience Design *A30* Barrier-free System Design	*A31* Intergenerational Harmony *A33* Smart and Digital Infrastructure	Connected Communities & Construction Innovation
	Driver 6 Technology Innovation	*A34* Project-Tailored High-Performance Materials *A36* Construction Automation & Robotic Substitution *A38* Low-Impact Construction Methods	*A34* Project-Tailored High-Performance Materials *A37* Risk-Isolation and Danger Zone Relocation	*A35* Predictive Smart Monitoring System *A36* Construction Automation & Robotic Substitution *A38* Low-Impact Construction Methods	*A35* Predictive Smart Monitoring System *A38* Low-Impact Construction Methods	

Adapted from the Royal Institute of British Architects Plan of Work 2020 and the UK Green Building Council's lifecycle framing for social value.

Roles and Responsibilities

"An Act of Kindness Flourishes Hearts of People in Community"

Throughout the typical project lifecycle, various parties, such as project managers, engineers, consultants, villagers, residents, community partners, design professionals, and builders, may be involved in social value creation.

For example, if a village plans to celebrate its tradition at a specific period of time and in a specific area to cherish its history, project teams or contractors can show respect by providing certain conveniences, such as flexible construction scheduling, cleaning the neighbourhood area, etc. Rather than treat the tradition festival as an encumbrance, the project teams can actively participate, e.g. by contributing their latest technology to blend with tradition to celebrate the festival with the community, bringing volunteers to help or attracting people from other places to join the festival, etc. Such acts of kindness will be greatly appreciated by the community. From a project perspective, having community support smooths future construction work. On the other hand, from the community perspective, people will be proud of the project and create a sense of belonging to their own places as well as to the new infrastructure.



The wisdom of this act is turning a typical construction request into a win-win situation that creates positive social value. By recognising people in the community as an asset of wisdom throughout the project lifecycle, the project teams can learn more about the local needs, and create a supportive network for infrastructure projects.

To facilitate the "win-win" culture, we encourage all relevant parties, from project teams, contractors to local community partners, to be more collaborative for social good and to proactively share certain roles and responsibilities to foster a people-oriented environment for social value creation. On one hand, we recognise that specific actions that could be done for social good are contextual in nature, on the other hand, a "first things first" attitude will greatly enhance the planting of the seeds of kindness proactively. For example, design consultants could plan opportunities at the design stage to conceive social activities in certain places on the site; local community partners could collect opinions in advance from residents and keep more frequent dialogue with the construction teams on key dates, events, cultures, and the traditions in the locality; construction managers could seek out NGOs or learn the population profile earlier with a view to facilitating more local or inclusive employments; NGOs could proactively enrich people-skill of various professionals and contribute good social ideas for the projects; and project managers may reach out to social enterprises to enrich the diversity of the provision of goods and services in the supply chain of the projects, etc. Last but not least, all people involved could listen and learn from each event's feedback and grow trust together. Trust takes time to build, earlier engagement and transparency show respect, and in many situations lower transaction costs for all.

Social value, after all, is co-created and co-owned by all parties. "No man is an island" and people do not thrive in isolation. Together, we strengthen not only the projects but also the social ties and long-term community value.

Suggested Roles Across the Project Lifecycle

Role	Planning	Design	Construction	Operation & Maintenance
 Project Manager	**Explores social value possibilities** by aligning project vision with local community insights.	**Collaborates with design teams** to translate social goals and community feedback into cross-disciplinary actions.	**Promotes social value creation** through open communication alongside core delivery timelines and budgets.	**Encourages lasting outcomes** by capturing engagement learnings to inform future projects.
 Design Consultant	**Advises on early opportunities** from public insights to support local well-being through spatial and technical concepts.	**Shapes responsive solutions** that consider physical accessibility, community input, and local use.	**Supports design intent** by helping contractors resolve challenges while preserving social value features.	**Evaluates space performance** to understand long-term community usability and inform future design approaches.
 Main Contractor	-	-	**Fosters relationships** through active community liaison, local hiring, and minimized site disruption, while **identifying practical** supply chain routes for diverse suppliers, such as local SMEs and SEs.	**Assists operational handovers** by sharing engagement insights with facilities management teams.
 Subcontractors, & Supply Chain	-	-	**Demonstrates local presence** through site activities and community-focused work, while **exploring ways** to align services with local employment and supply chain opportunities.	**Remains open** to future community-oriented support during routine operations.
 NGOs & Community Partners	**Shares local knowledge** on community priorities and ideas to inform early direction.	**Participates in engagement initiatives** to share ideas and co-create community-friendly spaces and features.	**Collaborates on local initiatives** and maintains open dialogue to help communicate ongoing construction works.	**Enjoys completed spaces** and provides constructive feedback to help sustain long-term value.

The Principles of Measuring Social Value

Measuring social value in development projects requires a balanced approach that captures both objective, quantifiable impacts and stakeholders' subjective experiences.

Two ideas guide this section. First, measurement and assessment work together. Some outcomes are best expressed with numbers, while others are captured through lived experience, narrative, and evidence of change. Neither approach is superior. Second, it is desirable to integrate social value measurement continuously from project inception to completion.

Core Principles

To ensure consistency and credibility, the measurement methodology is underpinned by established core principles[1] and industry best practices:

1. **Involve stakeholders:** Engage those who experience the change to understand what value means to them.
2. **Understand what changes:** Articulate how activities create outcomes.
3. **Only include what is material:** Focus on information and evidence that give a true and fair picture of the impact.
4. **Be transparent:** Openly report on data sources, assumptions, and methodologies.
5. **Verify the result:** Seek independent assurance to validate the findings.

The Process

Measuring social value in practice follows a structured, iterative five-step process. Selecting the right metrics ideally relies on deliberate selection rather than guesswork. For meaningful measurement, developing a project-specific logic model serves teams well as a practical guide throughout these steps.

Step 1 - Planning and programme development

Define the project's social value purpose, identify priority stakeholders, and conduct a Local Needs Analysis to understand the community priorities.

Step 2 – Map the logic

Trace how each planned activity is expected to lead to an outcome. Project teams can use a diagram to illustrate the "cause-and-effect" pathway of project activities before selecting any metrics. This is often called a Theory of Change or logic model.

Step 3 - Selecting the metrics

Once outcomes are clearly defined at the end of the value chain, it is suggested that the team develop a suitable measurement framework to collect credible evidence of that change. This involves several actions:

- **Differentiate Output metrics from Outcome metrics:** Output metrics (e.g., Number of workshops held) are helpful for project management, telling us that an event happened. Outcome metrics (e.g., Percentage of participants reporting a stronger sense of belonging) measure the actual impact on stakeholders.
- **Select the Right Outcome Metrics:** Combine **quantitative measures** (standardised surveys such as The World Health Organization-Five Well-being Index, or well-recognised financial proxies such as National TOMs) with **qualitative measures** (e.g. targeted surveys, structured testimonials). Set baselines and targets.

1 Adapted from Social Value International's (SVI) core principles. SVI publishes seven principles in total; the two relating specifically to SROI calculation are not covered here.

Step 4 – Deliver and collect data
Assign ownership of each initiative. Collect a mix of secondary data (demographics, employment rates) and primary data (surveys, focus groups, observation) throughout delivery, and reallocate effort where results underperform.

Step 5 – Report and learn
Evaluate against targets, report honestly with accessible formats. Identify learning points to refine the approach, improve future delivery, and foster a culture of continuous improvement.

Monitoring and Reporting

Effective monitoring and reporting ensure that social value commitments are actively managed and delivered throughout the project lifecycle.

Best Practices for Tracking Delivery

Establish a Monitoring Plan:

Create a live tracking document that outlines review timelines, roles, and responsibilities for gathering specific metrics at regular intervals.

Integrate into Core Project Management:

It is desirable to track social value with the same rigour as time, cost, quality, and safety. Leveraging digital dashboards and project management tools to provide real-time visibility of social value KPIs to the project board.

Maintain a Social Value Action Register:

Document any variables in social value delivery, such as schedule changes, and assign clear proactive strategies to ensure smooth execution.

Proportionality:

The time and resources spent on data collection are best kept proportionate to the size and scale of the project.

Best Practices for Data Collection and Reporting

Mixed-Methods Reporting:

Reports are most comprehensive when complementing headline figures with qualitative narratives, case studies, and testimonials that articulate the lived experience of beneficiaries.

Transparent Communication:

Documenting outcome delivery progress is encouraged. Ideally, these reports are clear and practical, offering a balanced view of performance and outlining any necessary adjustments.

Long-Term Tracking:

Recognise that many social value outcomes (such as career progression for apprentices or long-term community health improvements) materialise years after a project's completion. Where possible, establish mechanisms for post-occupancy evaluation and long-term community feedback loops.

The above best practices and principles are informed by the UK Green Building Council's Delivering Social Value: Measurement guidance, Social Value International's Principles of Social Value, and HM Treasury's Magenta Book. The five-step sequence was adapted to reflect Hong Kong's built environment context.

Building Your Measurement Specification

The five steps in the previous section describe how to plan and conduct a social value measurement. Turning that thinking into consistent, comparable evidence across projects or organisations over time requires a reliable and standardised structure — a **measurement specification** that defines what will be measured and how. Without one, reporting formats vary between projects, making it difficult to capture comparable, high-value data for meaningful analysis and decision-making.

Project teams are encouraged to develop the measurement specification early — ideally before the project starts — and revisit it at regular intervals. Each metric should link to an outcome, define the indicator and unit, identify data sources and collection methods, then assign responsibility for tracking delivery against the goal. Over time, these specifications accumulate into a wider measurement system that supports multiple projects within a portfolio.

Example of a Measurement Specification Template

Below is an example of a measurement specification of one of the outcome measures in our metric library.

EXAMPLE OF MAJOR DEVELOPMENT PROJECTS SOCIAL VALUE METRIC - Measuring What Matters		
OUTCOME MEASURE:	**OM-37 (D3-OM-3)**	**HABITAT COMPLEXITY DELIVERED**
Social Value Driver:	3	Embracing Nature and Sustainable Growth
Outcome Category:	OC-17 (D3-OC-1)	Enriching urban biodiversity for the community
Suggested basic Measurement Unit:	• Number of distinct habitat typologies established per km or other suitable units	
	• Total species richness count	
Optional Metrics (Subject to site context):	• Seasonal migratory species counts and percentage increase	
	• Population counts of specific species	
	• Recorded counts of regional first- or second-sighting species	
Related Action:	A-15 (D3A2)	Well-being in Nature
	A-18 (D3A5)	Place Identity & Heritage
Related Output(s):	OP-48 (D3-OP-4)	Integrated eco-purification & water quality management measures (natural reed beds, gravel filtration ponds, etc)
	OP-49 (D3-OP-5)	Eco-construction methods and habitat-friendly technologies used (manually laid stone channels, Geo-fencing, etc.)
	OP-50 (D3-OP-6)	Volume and size of natural habitat restored or retained
	OP-55 (D3-OP-11)	Conserved local landscape cultural heritage features within green space

Definition of Measure:	This outcome measures the structural diversity of ecological habitats created or restored along developments, as well as the rate and richness with which native taxa colonise these spaces. The social value lies in ecological resilience and community well-being. Complex, multi-layered habitats support richer biodiversity, improve natural water purification, and buffer urban areas against environmental stress. Access to thriving natural habitats enhances local identity, provides restorative green spaces for public enjoyment, and preserves ecological heritage for future generations.
Measuring Guidance:	**Goal:** Measure the development of habitat typologies and monitor the rate of ecological colonisation by target species over time. **Method:** Multiple seasons of field ecological surveys, remote sensing, and biodiversity logging. 1. **Map habitat typologies** — document the coverage and types of habitats installed per km (e.g., rocky, mangrove, and vertical eco-shoreline typologies). 2. **Establish pre-construction ecological baseline** — conduct pre-construction field surveys to document existing species richness, soil/water quality, and seasonal bird counts. 3. **Track target & threatened species, if any** — identify and record specific species of conservation concern, tracking population trends across migration periods. 4. **Conduct post-construction monitoring** — perform quarterly surveys covering target taxa. 5. **Evaluate colonisation speed & diversity** — compare post-construction species counts against control sites or pre-construction baselines to determine biodiversity uplift.
Outlined Data Acquisition Method:	**Data sources:** ✓ Ecological baseline and post-construction survey reports showing habitat typologies delivered along the designated area ✓ Certified species logs confirming species richness and colonisation compared to conventional shorelines ✓ Avian survey reports documenting seasonal migratory bird counts during autumn/winter compared to baseline ✓ Species population records showing targeted ecological recovery ✓ Official ornithological and biodiversity records verifying rare observations **Remarks:** To enhance data quality, – Ecological monitoring to be conducted for multiple seasons spanning before and after construction periods – Involve qualified ecologists or environmental monitoring consultants as necessary – Species counts to be distinguished among resident, migratory, and target species of conservation concern

Scan for relevant publications.

Chapter 5

Impact Stories

- **Story 1:** Kwu Tung North and Fanling North New Development Area
- **Story 2:** Tung Chung New Town Extension
- **Story 3:** Yuen Long South New Development Area
- **Story 4:** Cross Bay Link
- **Story 5:** East Coast Boardwalk
- **Story 6:** Expansion of Aberdeen Typhoon Shelter
- **Story 7:** Landslip Prevention and Mitigation Programme





Cross-sector collaboration and understanding is crucial in developing a liveable and loveable city.

The Kwu Tung North and Fanling North New Development Area

Kwu Tung North and Fanling North (KTN/FLN) are among the first New Development Areas (NDAs) to break ground in the Northern Metropolis — Hong Kong's most important growth engine for the decades ahead. As anchor projects at the very start of this strategy, they do more than deliver land and infrastructure: they set the benchmark for how every project that follows will be planned, built and judged.

The four project evaluations in this case bundle span roads, technology, engagement and resilience. But none of these works is merely what it appears on the surface. A transportation bypass is also a restored playground and a footbridge that stitches old villages into a new town. A nature park is also a working farm, a flood buffer and a classroom. A small piece of woodland is also a replicable template for a citywide ecological network. In each, social value was considered from the first design decision, not added at the end.

Read together with Chapters 3 and 4, these evaluations show the framework in action: **how the Social Value Drivers translate into concrete strategic actions in real projects, and how those actions produce social outcomes that can be measured, compared and replicated.**





Project D:

Urban Mini-Forest

Established along the Ng Tung River, the Urban Mini-Forest employs dense clusters of native saplings to restore indigenous ecology within the urban landscape.

Project C:

Fanling North Community Liaison Centre

Opened in 2023, the CLC uses diverse audio-visual displays to show Fanling's past and future growth, while also providing a new community landmark and public gathering space.

Project A:

The Fanling Bypass

(Eastern Section)

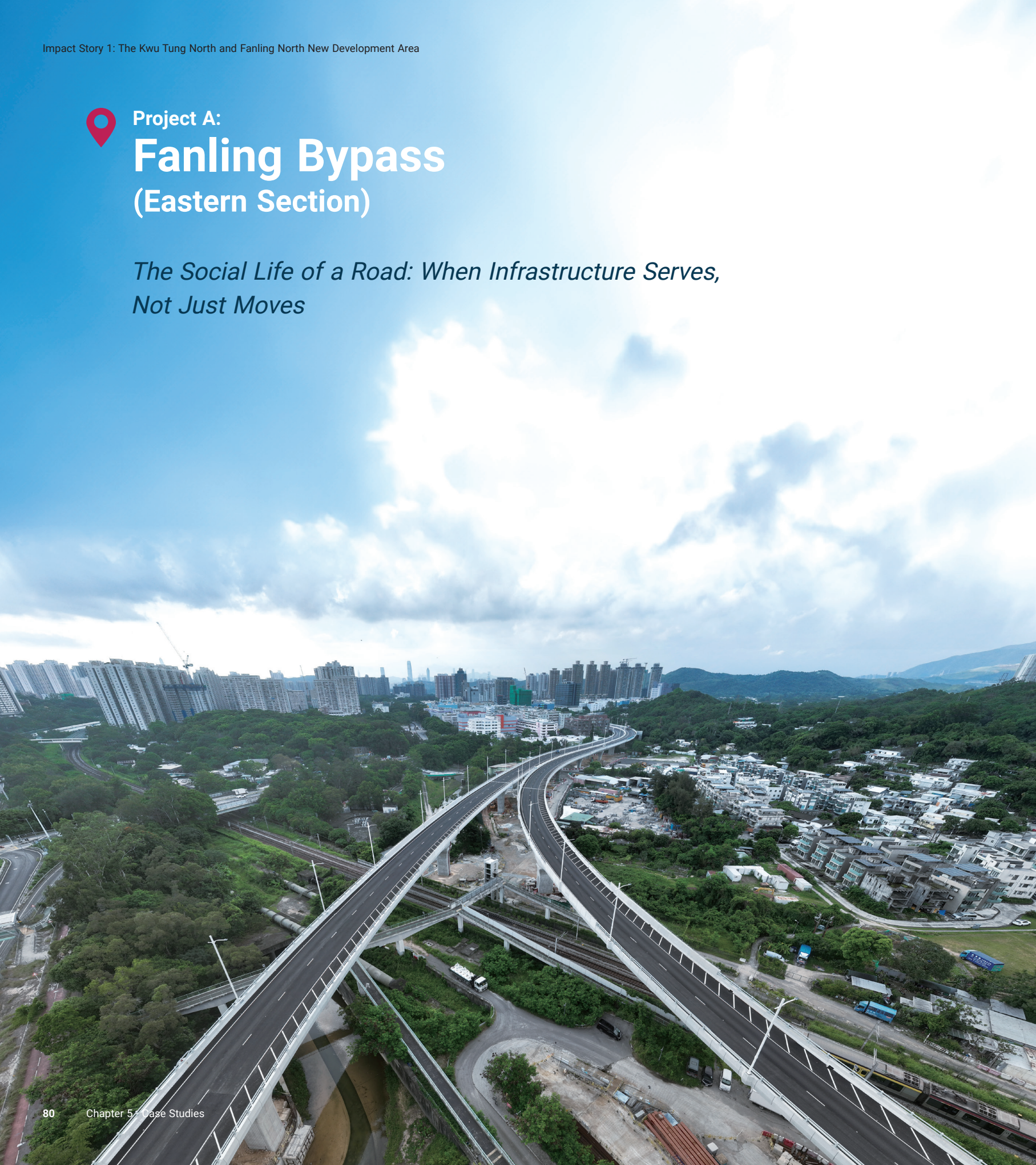
The Fanling Bypass, approximately 4 kilometres in length, provides a convenient route for the Fanling North New Development Area to access the urban centre, while also alleviating the existing traffic congestion in downtown Fanling.

When a road is built, is it just to move cars faster? When abandoned farmland is restored, who is it for? When a forest is planted in the city, is it just to paint a patch of green? And when we call this the benchmark for the Northern Metropolis, what new thinking should it bring?

Project A:

Fanling Bypass (Eastern Section)

The Social Life of a Road: When Infrastructure Serves, Not Just Moves



The Fanling Bypass is one of the first large-scale transport infrastructure projects built under the Northern Metropolis. When the rest of the strategy is still moving from planning into delivery, this 4-kilometre road is already carrying traffic.

The project set a benchmark for how infrastructure in the Northern Metropolis is built. A road can do more than moving people from point A to point B, construction can keep its disruption to itself, materials can do more with less. These are not ambitions specific to Fanling – they are principles that travel. The projects that follow in other regions take them up.

Drivers	Key Outputs	Key Outcomes
Driver 4	Applied S960 steel and **reduced superstructure weight by 90%**	**Prevents 2,400 tonnes of CO_2 emissions,** ensuring cleaner air for local communities. Reduces carbon emission equivalent to **1000 cars off the road annually**
Driver 5	Constructed **4km** of highway linking Fanling North NDA to Fanling Highway Dual two-lane carriageways (80km/h, **3,400 vehicle per hour per direction**) Relocated & expanded On Lok Mun St Playground by **70%**	**Saves commuters ~10 minutes** per peak-hour trip to Kowloon Offers locals **~28% smoother peak-hour travel experience** compared to the Hong Kong average (traffic-to-capacity ratio (V/C) 0.54, HK avg 0.75) Eliminates severe overcrowding at Po Shek Wu roundabout, **easing congestion by 20%** for daily drivers (peak design flow capacity drops from 0.95 to 0.77) **Diverts 5000+ cars/day away** from Fanling Highway, reducing noise and traffic stress for nearby residents Provides a 4,500 m² **pet park for 1,200+ nearby residents** to enjoy daily. Fosters **community connection for 1,000+ residents** via an all-age shared space (50k-90k visits/year)

Drivers

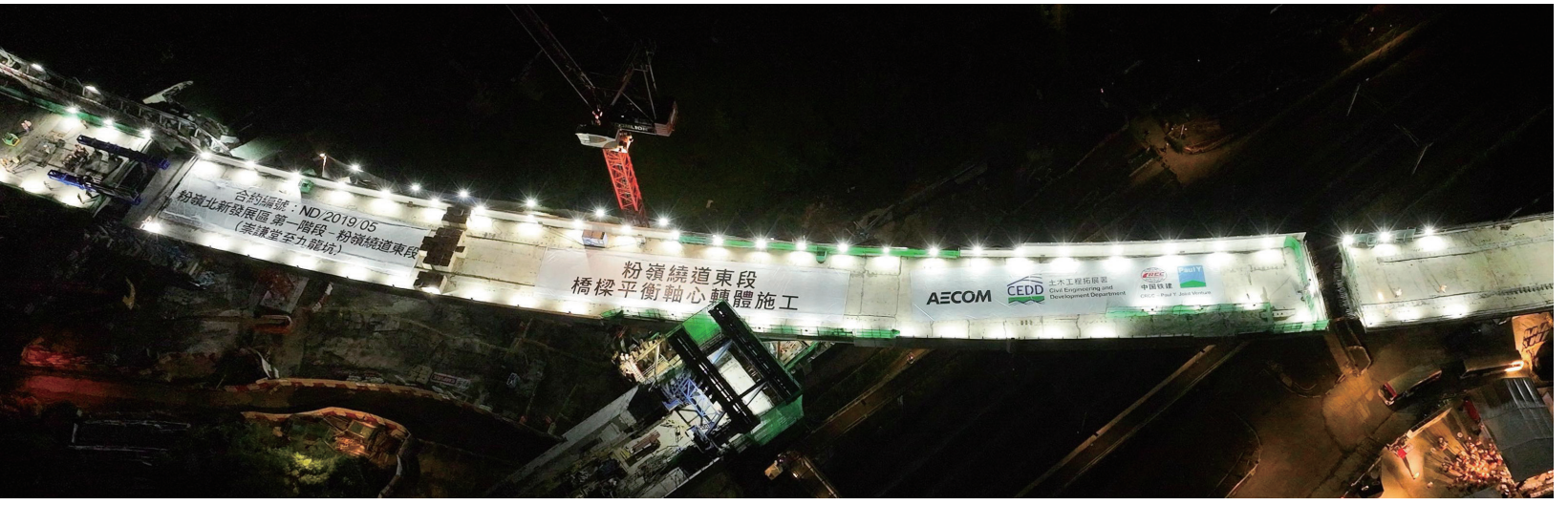
Driver 6

Key Outputs

- **First use of Horizontal Bridge Rotation Method** (HBRM) in HK
- Cast two **7,000 tonnes, 140m** segments on the ground beside the tracks.
- Rotated segments (33° and 62°) into place via hydraulics **within 2 nights**
- Site-wide sensor network

Key Outcomes

- Gives the public **12 months of early access** to the Bypass and **3 months of early access** to new footbridges
- Guarantees **zero disruption to the daily commutes of 500,000 MTR passengers** throughout the construction - reserving their time and eliminating commute uncertainty.
- Protects workers by **cutting 99% of dangerous working hours**
- Saves public funds of **HK$150 million+** through HBRM adoption
- **Reduces schedule-delay risk by 70%**, ensuring greater reliability for public works
- **Zero collision** during road transport, safeguarding frontline workers



Built to Keep the Northern Metropolis Flowing

Fanling North will eventually house 95,000 people. Without a bypass, heavy traffic funnels through Fanling town centre — the same narrow roads that villagers in Shek Wu San Tsuen and Lung Yeuk Tau have used for decades.



Capacity built for decades

At 80km/h with two lanes each way, it can carry up to 3,400 vehicles per hour per direction at Fanling NDA's full build-out by 2036, the bypass is expected to carry barely half its maximum capacity – a traffic-to-capacity ratio (V/C) of just 0.54, well below the 0.75 level where things start to slow noticeably. The road is built to absorb growth without ever needing to be widened.

Time reclaimed from the road

With the bypass, **peak-hour travel to Kowloon has dropped by roughly 10 minutes**. The Po Shek Wu roundabout's design flow capacity (DFC) falls from nearly saturated down to well below Hong Kong's standard – **a 20% congestion relief. The bypass now also diverts over 5,000 vehicles a day from the current Fanling Road – a number expected to double in the long term**. Physical separation means fewer vehicles clogging the local roads, and commuters, parents and villagers no longer competing for time on the same road.

Keep the Rail on Track

The bypass crosses the East Rail Line, which carries 500,000 passengers a day, while threading through soft ground and a dense web of underground utilities. Conventional methods would have pushed the risk onto the operating railway and the surrounding community. The team chose to absorb every difficulty within the site boundary instead.

Before Rotation





After Rotation



Zero disruption to the MTR

The team never planned to work above a live railway. They built the two bridge segments — each 7,000 tonnes, 140 metres long — on the ground beside the tracks during normal daytime hours. When the railway shut down at night, a hydraulic system rotated both pieces 33 degrees and 62 degrees into position, within just two nights, two rotations. The team moved the heavy deck construction away from the operating railway, so they could work round-the-clock in a safe environment instead of snatching short windows between train services. **Across the entire construction period, no train ran late. The bridge entered service a year ahead of the standard schedule.**

First viaduct rotation swings world's most curved swivel bridge

The Fanling Bypass (Eastern Section) project introduced the "Horizontal Bridge Rotation Method" for the first time in Hong Kong to construct a viaduct spanning the MTR East Rail Line.

The project comprises two sections of the viaduct crossing the East Rail Line, including the swivel bridge with the largest curvature in the world. Each section is approximately 140 metres long and weighs over 7,000 tonnes (equivalent to the total weight of about 400 fully loaded double-decker buses). Two T-shaped bridge sections were first assembled adjacent to the railway track, and then the team completed the rotation of both sections over two midnights of September and November 2024 respectively, setting a new world record for the swivel bridge with the greatest curvature. This technique reduced the construction period by approximately one year, as well as minimised safety risks and the impact on railway operations.

Unlimited possibilities within limited space

The bridge rotation method compressed what would otherwise be two years of high-risk work above railway tracks into two overnight operations, effectively safeguarding railway safety and public mobility.

This first-of-its-kind application in Hong Kong not only reduces construction risks but also expedites infrastructure delivery. It allows citizens to enjoy the enhanced transportation network much sooner, reflecting the engineering philosophy of "people-oriented, safety-first". Highly commended by the industry, the project received the Gold Award of the Hong Kong Institution of Engineers Design for Safety Excellence Award 2025.

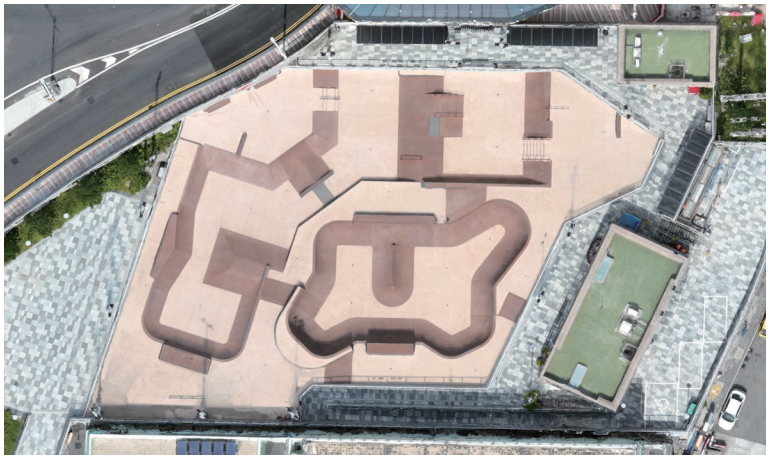
A Road That Gives Space Back

The bypass is not just a corridor for vehicles. Under the Social Value Oriented Development (SVOD) framework, infrastructure aims to serve the people living alongside it – not just move them through at speed but draw them to feel the pull of community.



A footbridge that links old and new

A 40-meter diameter circular footbridge at Lung Yeuk Tau Interchange — 7.8 metres wide, with segregated walking and cycling decks — connects the old villages to the new development. Village input shaped the details: noting that residents had to cycle and push handcarts to Luen Wo Hui for groceries, the team installed large footbridge lifts to carry cyclists, carts, and wheelchairs all together. Lifts ensure elderly residents, wheelchair users, and families with strollers cross a major interchange without encountering vehicular traffic. From that footbridge, a continuous cycling and walking network reaches Lung Yeuk Tau, Tong Hang, and Shek Wu San Tsuen. Schools, parks, wet markets, bus stops — **all within a 15-minute** living circle. The infrastructure links the rural fabric into the new town.

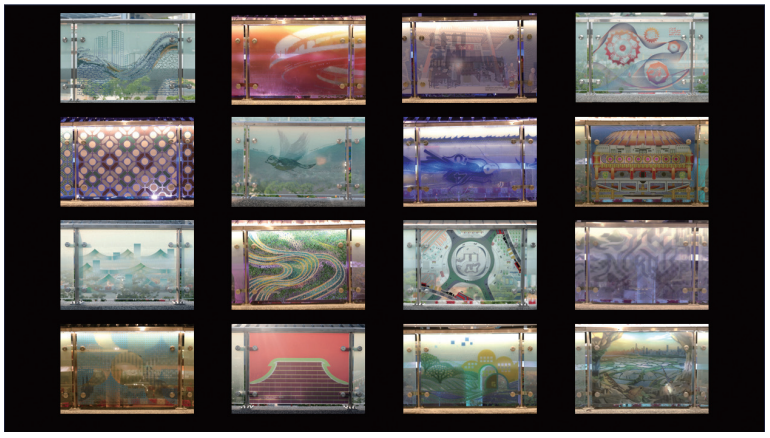


Public space reclaimed under the viaduct

At Tong Hang, about 4,500 square metres of undercroft space is planned for conversion into a pet-friendly park. Above: vehicles at 80km/h. Below: open space for the community. One structure serving two purposes.

Compensation that became a destination

The bypass pushed the On Lok Mun Street Playground off its original site. CEDD rebuilt it as Hong Kong's first World Skate-certified extreme sports facility, with bowl and street sections for all skill levels, and it can host regional opens, Hong Kong championships, and international exchanges. A statutory requirement became a community landmark that draws young people across districts.



Art in engineering

Featuring LED light strips, the circular deck's glass balustrade became a dynamic canvas for the "Glow in the Art" design competition. Organised with professional institutions, the competition invited creative proposals from the public and professionals, receiving 34 entries focused on local themes such as urban-rural integration, steel innovation, and heritage. A panel selected 16 winning entries, which were displayed upon Footbridge's commissioning, transforming the "Floating Light Ring" into a community-owned public art corridor.

Stronger Structure, Lighter Footprint

Much of this work happened out of public sight. But from the start — material selection, construction methods — the project worked to cut its footprint on the environment and the community.

Less steel, less carbon

The project used ultra-high-strength S960 steel in bridge structures for the first time globally. At 960 MPa yield strength – nearly triple the conventional 355 MPa – the same span requires a fraction of the material. The Lung Yeuk Tau Interchange **footbridge dropped from over 5,000 tonnes to under 600 tonnes. Embodied carbon fell by roughly 2,400 tonnes across the material lifecycle.** On-site erection time also shortened by three months, bringing the bridge into service much sooner for the people who need it. The Ng Tung River footbridge, using S960 as well, delivered a cascading ecological benefit by removing the need for extensive falsework in the river during construction, preserving the waterway's ecological corridor. A CEDD–PolyU joint study produced technical guidelines to support wider adoption of high-strength steel across Hong Kong's construction sector.

Low-disturbance construction

Along the bypass alignment, 2.4 kilometres of new noise barriers and 400 metres of relocated existing barriers shield residential buildings from traffic noise. A consolidated utility corridor bundles stormwater, sewage, power, and telecom in a single trench, cutting future road re-excavation by over 70%. Residents would not be living with repeatedly dug-up streets for decades to come.

Incident-free module transport

Forty bridge modules came from mainland factories — too large to cast on site in the congested corridor. Custom trailers carried them at night along the highway route mapped in advance with 3D swept-path analysis, navigating every turn and gradient. **Twelve trips. Zero incidents.** Again, the danger stayed in the factory, not on the city's roads.

Robotic welding systems handled the high-temperature, fume-heavy joints, moving workers from confined spaces into operator roles monitoring automated equipment. Productivity doubled, with every weld passing non-destructive testing on the first attempt.



Ten years from now, the people of Fanling North may not notice this road — it does its job quietly. But the people who build the Northern Metropolis will. The methods, the standards, the principle that a road should give more than it takes — they started here.



Project B:

Long Valley Nature Park

Harmony by Design: Integrating Biodiversity with Climate-Resilient Infrastructure



Long Valley is one of the largest remaining stretches of contiguous freshwater wetland in Hong Kong — 37 hectares of wetland between the Sheung Yue River and the Shek Sheung River, right in the heart of the Northern Metropolis. A natural asset of real value. But the land had degraded over decades — farming shrank, fields went idle, and the ecology thinned out.

Long Valley sits at its centre, and the project has turned this land around — **make it useful again for wildlife and for people, make it strong enough to withstand the climate risks Hong Kong faces every year, and do all of this without disrupting the natural systems**. Three things had to happen, and they did.

Drivers

Driver 3

Key Outputs

- Expanded wetland habitat by **57%** (14 to 22 hectares)
- Transformed **37 hectares** of degraded land into accessible eco-spaces
- Adopted low-impact **eco-construction**
- Built Nature Centre, boardwalks, bird hides & viewing platforms
- Reclaimed **11 hectares** of eco-agricultural land

Key Outcomes

- Revitalises local ecology, **boosting bird numbers by 20% to 40%**
- **Brings critically endangered Yellow-breasted Bunting populations back from the brink**, while restoring Black-faced Spoonbill numbers.
- Welcomes over **76,000 visitors** annually (2025) to connect with nature
- Saves public funds of **HK$1.5 million+** through optimised low-impact water management
- Donates **~15,500 kg of fresh crops** to charities, supporting vulnerable communities
- Sustains the livelihoods of **35+ local farming families**

Drivers

Driver 4

Key Outputs

- Used **127 tonnes** of Fill Bank recycled rock for gabions
- Integrated natural attenuation & bio-retention basins
- Built rainwater harvesting & recycling facilities in Nature Centre

Key Outcomes

Diverts 127 tonnes of construction waste from landfills, reducing environmental burden

Collects 110,000+ litres of rainwater yearly for Long Valley Nature Centre's water needs

30%+ energy use cut annually, for the Nature Centre providing a sustainable environment for visitors



Making the Land Work Again for Wildlife, for People

The land has to work again. Wetlands have to come back, and fields have to be farmed — both at the same time, in the same 37 hectares.

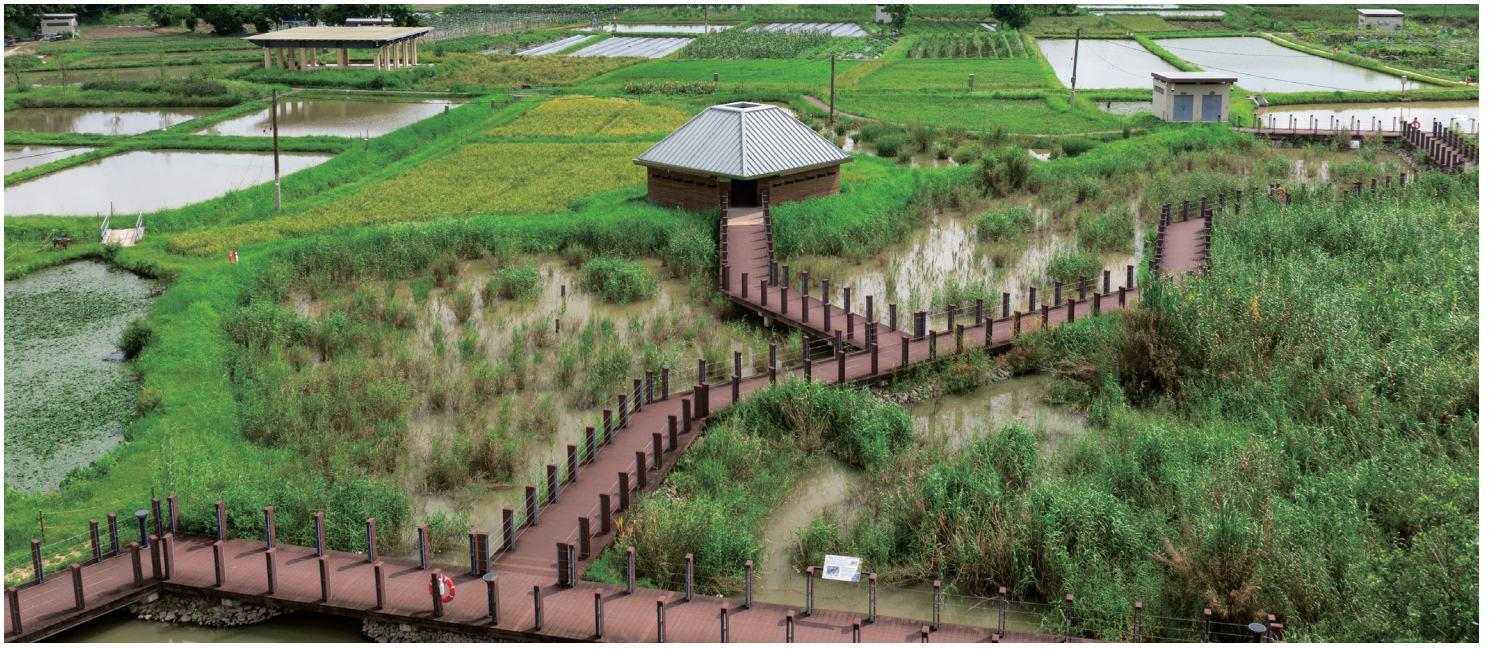
Wetlands grew, birds returned

The wetland has once shrunk and thinned. The project expanded it from 14 hectares to over 22 hectares — more than 50% gain. The team built a mosaic of shallow ponds, marshes, and eco-paddy fields, each holding water at different depths for different species. **The birds came back. Counts rose by 40% in autumn and 20% in winter** (HKBWS data). **The critically endangered Yellow-breasted Bunting and the endangered Black-faced Spoonbill returned to forage and roost in the Park.** Black-winged Stilts bred here for the first time in 2021. Latham's Snipe appeared for the first time in 2023.



Farms that feed the neighbourhood

The farmland has gone idle. **The project brought 11 hectares back into production and restored 31 paddy fields** (~22,500 m²). Thirty-nine tenant farmers returned to work the land under the first five-year agreement. About 1,500 villagers live within a 15-minute walk. Over 3,000 people joined educational activities in 2025. One season's harvest yielded nearly 16 tonnes of crops (~15,500 kg), donated to 12 local charities.



Standing Up to the Climate Challenge

Hong Kong takes typhoons and heavy rain every year. The land has to be strong enough to take what the climate throws at it — and keep the water from reaching the villages nearby.





Cleaning water without concrete

River water entering the park carries silt and nutrients. The conventional fix is a concrete drainage channel, which destroys habitat. The team replaced it **with reed beds, gravel filters, and 1.9 km of stone-lined eco-ditches**. Reed beds and gravel filters absorb suspended solids and nutrients before the water reaches open ponds. Water clarity improved. The aquatic habitat stayed intact.

Holding the flood, saving the rain

The 37-hectare wetland network and retention basins absorb stormwater during heavy rain and release it slowly during dry months. Nearby villages are better protected from flooding in typhoon season. A rainwater harvesting system at the Long Valley Nature Centre collects over 110,000 litres a year, meeting 7.5% of the Centre's water needs. Water levels stay stable year-round for farming and wildlife.

Leaving No Trace to The Environment

All of this — the wetlands, the farms, the flood control — are built without breaking what have already been here. The approach is light: nature-based solutions, apply carefully, solving problems without creating new ones.

Keeping machinery out of sensitive zones

Construction across 37 hectares of sensitive wetland risked machinery crossing into habitats. The team used digital modelling and virtual boundary tracking (Geo-fencing) to manage the site. Machinery stayed out of sensitive zones — zero unauthorised intrusion throughout construction. Engineers simplified the irrigation piping and removed unnecessary impermeable liners. This avoided deep excavation, saved more than HK$1.8 million, and minimised ground disruption. Off-site prefabricated units (Modular Integrated Construction, MiC) moved noisy and dusty work away from the site. On-site noise, dust, and concrete waste dropped sharply. Zero eco-incidents occurred throughout the entire construction period.

A building that pays its own energy bill

The Long Valley Nature Centre uses low window-to-wall ratios and external shading to cut cooling demand. 105 solar panels on the roof generate about 50,000 kWh of electricity a year. High-efficiency cooling and low-power lighting round out the system. The facility earned a BEAM Plus Provisional Platinum rating. Annual energy consumption fell by more than 30%.

Using materials that already existed

Across 39 park facilities — storage sheds, bird hides, viewing pavilions, and boardwalks — the project used materials that already existed. MiC and precast concrete blocks cut on-site concrete works by 985 m^3. The team used 127 tonnes of recycled stone from public fill bank and 2,020 m^2 of recycled timber for façades, visitor amenities, and gabion riverbanks.

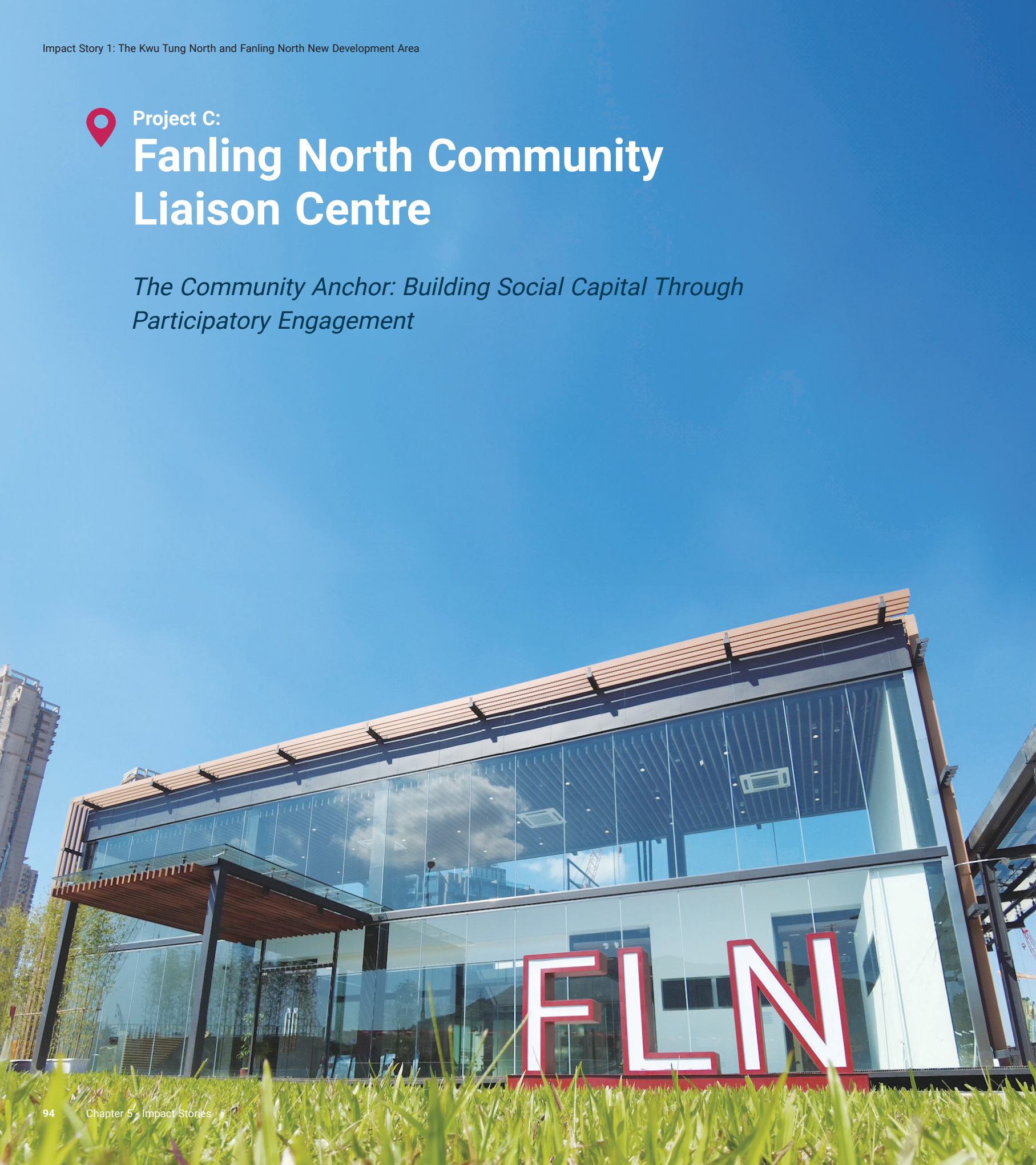


The 37 hectares now do three jobs at once: they carry floodwater, grow food, and shelter wildlife. All of these were done without disrupting the natural systems already in place. When the Northern Metropolis grows into a vibrant city around it, Long Valley is already there – a vast, living natural system, ready to embrace the people on their way.

Project C:

Fanling North Community Liaison Centre

The Community Anchor: Building Social Capital Through Participatory Engagement



Situated along the Ma Wat River and next to the Lung Yeuk Tau Interchange—the Fanling North Community Liaison Centre (FLNCLC) serves as the primary bridge between the project teams and the local community. Moving far beyond its baseline function as a standard, one-way government information office, the centre intentionally leverages its physical facility and operational budget to generate lasting social capital. By establishing cross-sector partnerships with social enterprises (SEs) and NGOs, **the FLNCLC transforms basic public outreach into an active, community-owned engine for urban-rural integration, heritage preservation, youth STEAM education, and inclusive local employment**.

Drivers	Key Outputs	Key Outcomes
Driver 1	**200+** events organised and supported, including guided tours, interactive workshops, site visits, career sharing, volunteering, etc.	**92%** of participants express a **stronger bonding** with North District
	133,000+ stakeholders engaged through community events and stakeholder engagement meetings	**75%** of participants are happy to see **rural culture and historical buildings preserved**
	100+ community partners collaborated, including villages, NGOs, government departments, and district bodies	**94%** of participants find the STEAM facilities highly effective in **presenting engineering** complexity
	1,800+ students and young engineers from schools and professional bodies on knowledge exchanges	**88%** of participants report an increased interest in pursuing engineering-related disciplines
	10 heritage assets in the area, such as ancestral halls, temples, old market, etc., were documented	
Driver 2	**~5 social enterprises** provided employment and economic support to disadvantaged groups	Generates **~320** inclusive **employment opportunities** for local residents, elderly and Special Educational Needs (SEN) individuals

"Local residents and villagers no longer see us as outsiders; they truly feel the project belongs to the whole community. Instead of lodging complaints, they sit down with us to find solutions together. That is the real essence of mutual trust and co-creation between project team and the community. Enhanced community trust reduced friction which cut over 50% of liaison time and saved over 60% of staff man-hours" – *engineer*

Bridging Urban-Rural Identity and Heritage

Rapid urban development often risks tearing apart the delicate social fabric of established rural neighbourhoods. When major infrastructure projects move in, long-time villagers frequently worry that modern town planning will erase their centuries-old culture and shared history.

Urban-rural cultural integration

Partnering with the social enterprise Kaifong Tour (街坊帶路), the FLNCLC launched the "Fanling Moments: Urban-Rural Symphony" guided tours. The tours seamlessly linked new NDA highlights, such as the relocated On Lok Mun Street Playground, with historical landmarks, like the Lung Yeuk Tau Archway. Participants received a co-created "Fanling Urban-Rural Community Map," turning the FLNCLC into a gateway for exploring shared local history.

90%
of visitors understood how infrastructure can protect and conserve **natural and heritage assets**

75%
of respondents were happy to see **rural culture** and **historical buildings preserved**



Co-creating public art on-site boundaries

Rather than installing generic corporate branding, the FLNCLC transformed its boundary walls into a shared neighbourhood canvas. Partnering with social enterprise wePaint, the FLNCLC hosted integrated workshops bringing SEN youth, primary students, and indigenous elders together to paint the mural "A Journey Through Fanling's Development". Involving Lung Yeuk Tau (龍躍頭) village chiefs in the Finishing Touch Ceremony built deep early trust between indigenous inhabitants and planning teams.

4.56 / 5.00
rating for **building cross-sector social networks**

4.50 / 5.00
rating for **strengthening local identity**



"We used to think engineers were cold, rigid, and only cared about concrete and specifications. Seeing the engineers paint murals alongside our SEN kids completely changed our view—they were actually human, warm, and genuinely cared about our community." —quote from local residents

Activating Spaces and Empowering Future Generations

Long construction timelines frequently disrupt local recreational spots, leaving a temporary vacuum in neighbourhood social life. At the same time, massive engineering works can feel distant, noisy, and intimidating to local children and young families.



Interim "Meanwhile Use" public spaces

When the original On Lok Mun Street Playground, a prominent landmark for local skateboarders in the North District, was temporarily closed in 2023 for the construction of the Fanling Bypass (Eastern Section), the project team established a temporary mini-skatepark directly within the FLNCLC grounds. Featuring multi-height ramps for all skill levels and shaded resting areas, this "Meanwhile Use" strategy provided continuous, safe recreational access for local youth throughout the construction phase.

Interactive STEAM education & talent pipeline

Operating as a living laboratory, the FLNCLC demystifies civil engineering for local youth through hands-on STEAM exhibitions. Interactive models and virtual simulations explain complex bridge rotation and steel engineering in accessible terms.

94%

of visitors found the STEAM facilities highly effective in **presenting engineering** complexity.

88%

reported an increased interest in **pursuing engineering-related disciplines**, proving that the FLNCLC successfully sparks long-term career aspirations and builds a future-ready talent pipeline for the industry.

Driving Inclusive Procurement and Local Employment

Standard infrastructure project operations rarely connect directly with grassroots social organisations or local job seekers facing employment barriers. Consequently, daily site operational spending often misses the opportunity to generate immediate, tangible economic benefits for nearby vulnerable communities.



"Best value" social enterprise sourcing

The FLNCLC embedded local social enterprises directly into its core supply chain—procuring professional murals (wePaint), heritage tours (Kaifong Tour), multimedia production (DECT Production), and site catering (Gingko House). Shifting from one-off donations to multi-year procurement contracts provided the local social enterprises with the commercial stability required to expand their operations.

Inclusive employment

Partnering with the Hong Chi Association, the FLNCLC delivered structured 8-hour training programs to upskill young adults with SEN. These individuals were subsequently employed as official FLNCLC Community Ambassadors. Replacing standard corporate docents with community-led representation directly fostered economic inclusion and self-dignity.



"Partnering with a social enterprise allowed us to boost on-site productivity while giving back to the community. Bringing in Gingko House to provide lunches for our site workers not only resolved their dining constraints, but it also proved to be a vital productivity enhancement scheme that created a genuine win-win." – *contractor*



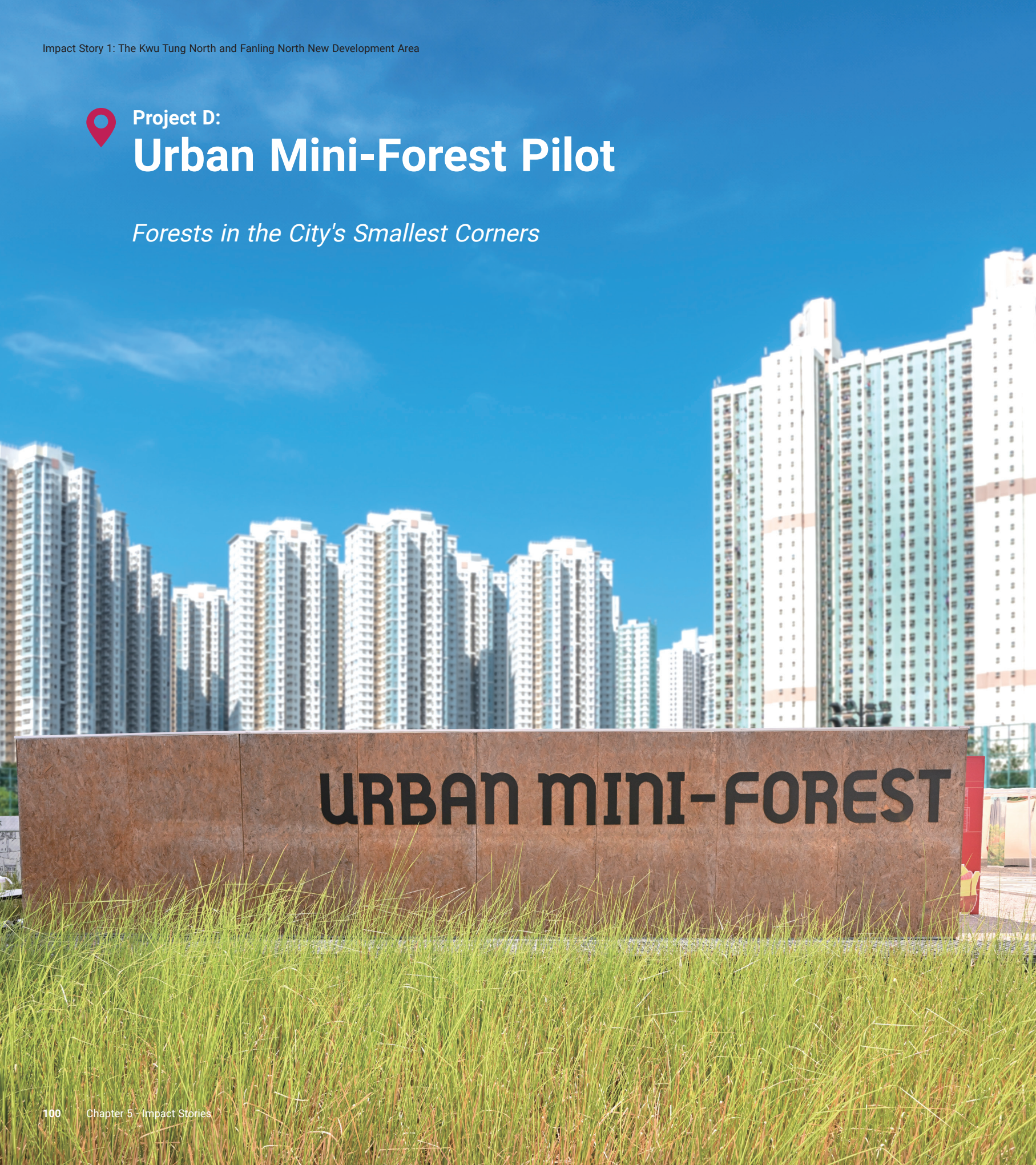
A Lasting Foundation of Social Value

The true value of the FLNCLC is not defined by its physical walls, but by the community it supports. By embedding participatory art, rural heritage preservation, phased activation, and inclusive procurement into its core operations, the centre proves that infrastructure facilities can be powerful catalysts for generating lasting social value. It stands as living proof of a world-class, resilient city built on a foundation of trust, shared pride, and inclusive growth.

Project D:

Urban Mini-Forest Pilot

Forests in the City's Smallest Corners



At Fanling North, while the new town is still under construction, a small piece of land located within a future open space area — no bigger than a typical Hong Kong flat — becomes a dense thicket of native seedlings. Not a garden but a forest. The first of its kind in public works of Hong Kong. Hong Kong has little land to spare for large parks. This pilot tests a different question: can a city grow forests without finding land for them — small enough to fit where infrastructure leaves gaps, self-sustaining enough to need no maintenance? The answer reaches every district, every road, every corner the city forgot.

Drivers	Key Outputs	Key Outcomes
Driver 3	Trees grow **4–5× faster** than typical urban trees (0.8–1 m/year)	Saves public funds on long-term maintenance by becoming **self-sustained after the 3rd year** **Particulate matter down by 10%,** improving local air quality Boosts local biodiversity, creating a **habitat 20x richer in species** than non-native planting
Driver 4	Planted at high density (**400 seedlings/ 100 m²**, 20× of conventional greening) Established rapidly on urban sites Used dense canopy shading & transpiration for dual cooling	Traps **10x more carbon per unit area** than conventional street trees Enhances ground **water absorption (32% faster)** and reduces **soil compaction (38% lower)**, lowering local flood risk Creates a comfortable microclimate for nearby residents: **5°C cooler in daytime and 2°C warmer at night**

A Forest That Fits in a Flat

The system is inspired by Miyawaki's Afforestation Method, its starting point is to make the most of very small space. No large open land is needed: one working unit fits on an idle plot the size of a single housing unit.

Space efficiency: 10 times the biomass per plot

Planted at 3–5 native seedlings per square metre, a plot of a hundred square metres carries up to 400 seedlings, while conventional greening of the same area typically accommodates only 4 - 5 trees. The biomass base is more than ten times larger from day one.



Time efficiency: 10 times faster to a mature forest

A natural forest grows in four layers — canopy, sub-canopy, shrub, and ground cover. The team copied that structure, mixing over 25 native Hong Kong species at random (including *Castanopsis, Pterospermum, Myrica*, Machilus and *Schima*). Trees grow at 1 metre per year, five times the 0.2 m/year of typical urban planting. Natural succession takes 150–200 years; it is expected that the Urban Mini-Forest gets there in 15–20 years. And with native species living 80–90 years, each unit keeps delivering across generations.

Green Space That Grows with the Construction

The second key is timing. The Urban Mini-Forest is planted early, while construction is still underway — it is an ecological infrastructure that matures with the works, not landscaping switched later on.

The forest was ready before the residents arrived

The trees went in while the ground was still being levelled, so the forest was ready before the residents arrived. Because the method is highly standardized, the unit can be repeated quickly on vacant corners, hardened lots and the edges of works sites across the city.



Self-sustained after the 3rd year

Once established, the unit runs on its own. Fallen leaves compost at where they drop, nutrients cycle within the plot, and natural succession keeps the woodland stable. **After year three, the forest needs no pruning, fertilising, or spraying**, while standard landscaping needs irrigation, trimming, and replanting regularly. On scattered plots whereever land is available, the mini-forest requires no land resumption and no planning changes.

A Distributed Ecological Network

Each unit is a micro-node in the city's ecological network. Minimal land, concentrated function — complementing large-scale natural spaces such as Long Valley Nature Park, filling the gaps in between, and making the whole network more resilient.



Biodiversity stepping stones

Exotic fast-growing species crowd out native plants and support neither local insects nor birds. The mini-forest plants only native species in a multi-layered structure, with **species richness projected at 20 times that of standard green space**. Each unit feeds pollinators, shelters native birds and frogs, and links into the city's larger ecological corridor.

A canopy brings microclimate comfort

The dense canopy **cools the air by 3–6°C** during the day, then holds ground warmth at night so temperatures swing less. The soil stays loose — 38% less compacted than bare ground — so **rainwater soaks in 32% faster**. Fallen leaves trap another 15–25% of rainfall and filter out pollutants, easing local flooding. Year-round foliage cuts local dust by up to 10% and absorbs nitrogen oxides, while deep interlocked roots hold firm in typhoons.

Ultra dense carbon sinks

Multi-layer vegetation on improved soil forms a composite carbon sink, sequestering 10 times more carbon per unit area than lawns or single-row street trees. These units add climate mitigation without taking extra land. Carbon stock grows exponentially as the trees age, and upkeep is near zero — a low-cost, long-acting carbon store for dense urban community.



Nature within 15 Minutes, Built by the Community

A forest that no one visits or tends is just a green patch. This one was built to be enjoyed — and to be built by the people who enjoy it.

Participation builds attachment

With professional institutes, the project has set up long-term citizen-science monitoring and opened volunteering channels for planting and observation. It is foreseeable that, in the future, when the community and the forest get mature, children can crouch down to watch insects; elderly residents can record tree growth; neighbours can stop to talk about nature. The Earthwatch Institute's research on Tiny Forests finds that hands-on participation in conservation drives public environmental awareness significantly more effectively than one-way outreach.

Nature embedded in daily routes

Urban Mini-Forest units sit within 15-minute walking circles, linking homes, village houses, schools and footpaths. The elderly on morning walks, children coming home from school, workers on their evening commute — all pass through this greenery. Nature at the doorstep becomes an everyday reality. As units roll out across the entire city, all Hong Kong residents will gain equal access to nature.





> *The pilot shows it works — densely planted native species, layered like a natural forest, grow into self-sustaining woodland within a few years. The parameters are simple enough to repeat on any small corner in any high-density city. Under flyovers, beside drainage channels, between buildings — every piece of land that infrastructure leaves behind can hold one. Linked by birds, insects, and wind, these small plots stitch into the city's larger ecological network — Long Valley, country parks, and the spaces in between.*


FOREST
EDD

Tung Chung New Town Extension

Tung Chung New Town Extension is one of the Government's major development projects to increase land and housing supply. On the east side of the existing town, new development areas are taking shape on land formed by reclamation, planned for about 147,000 residents. The extension is significant for social value in a particular way: unlike retrofitting an old district, every street, park and shoreline here could be planned and built with social value designed in from day one. **It showcases what a new town looks like when connectivity, ecology and community are treated as core infrastructure**, not afterthoughts.

Each work in this case bundle carries more value than its engineering function. The cycle track forms the spine of a 15-minute living circle, connecting every neighbourhood to all kinds of service amenities and giving every resident the same mobility. The seawall's eco-shoreline design turns a concrete edge into a habitat for some 250 species, enhancing the marine biodiversity. Through the Tung Chung Community Liaison Centre, with its immersive exhibits and digital-twin displays, residents can have a glimpse of the planning of their home.





Project C:

Tung Chung Community Liaison Centre

The Community Liaison Centre and the continuing conversation between a project and its people

Project B:

Tung Chung Cycle Track, Promenade and Open Space System

Beyond a waterfront bike path or park, the Tung Chung Cycle Track, Promenade and Open Space System weaves an integrated public realm that enriches district-wide connectivity. This network links seamlessly within neighbourhoods and outward to broader cycling and natural corridors.

Project A:

Tung Chung Eco-Shoreline

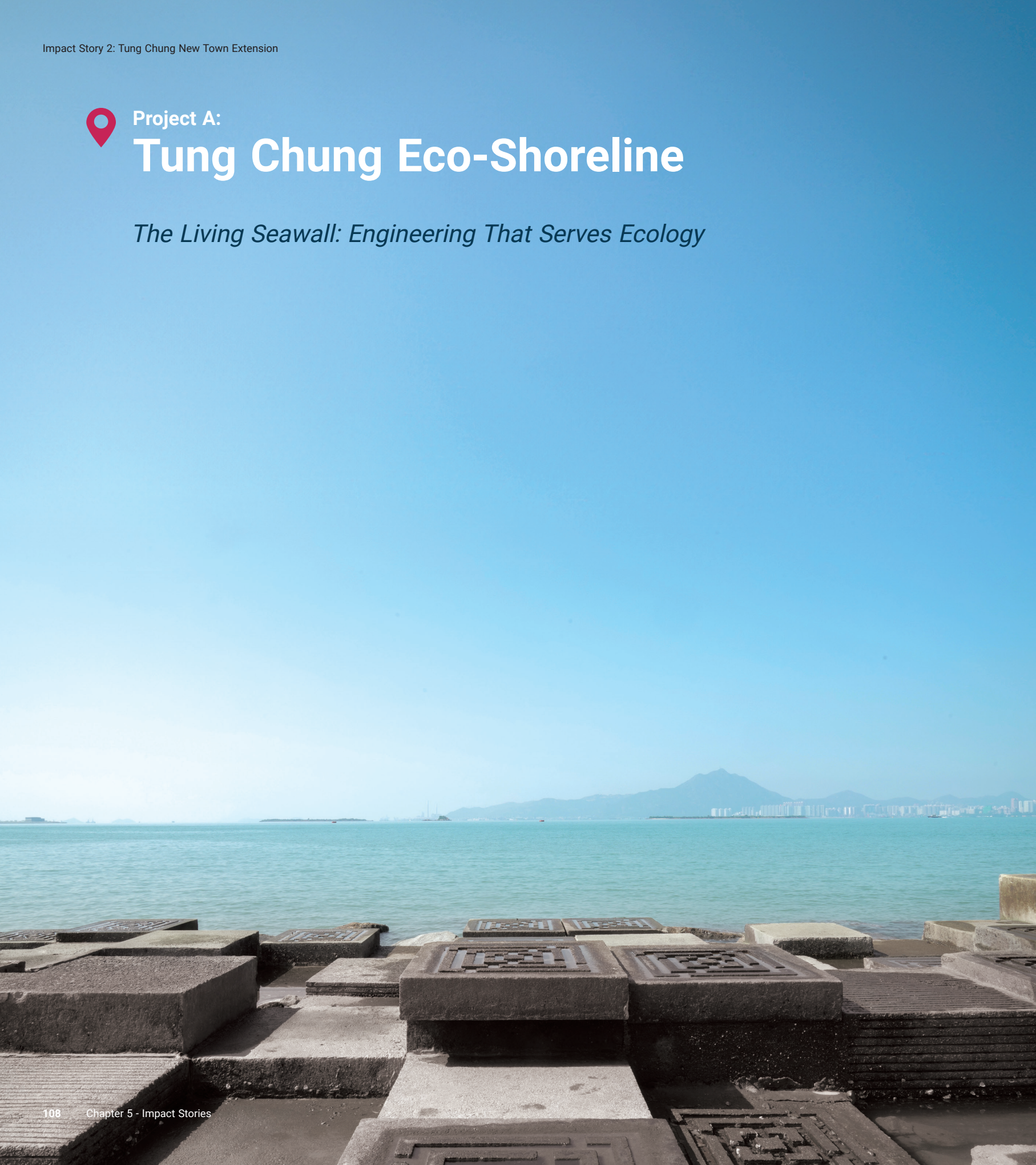
The Tung Chung Eco-Shoreline replaces a hard concrete edge with a living coastal system. By letting tidal ecosystems thrive instead of sealing the waterfront, it delivers safer protection, richer biodiversity, carbon storage and a more accessible natural shoreline for the community.

> *A visionary leap in sustainable urban planning. By seamlessly blending smart-city infrastructure with reclaimed land and green corridors, it expands living space while preserving Lantau Island's ecology — serving as a model blueprint for balancing critical economic growth with environmental harmony.*

Project A:

Tung Chung Eco-Shoreline

The Living Seawall: Engineering That Serves Ecology



Hong Kong has been building seawalls for decades. Concrete stops erosion and absorbs storm surges – that has never been a problem. The problem is what the concrete leaves behind: a "hard border" between the city and the sea. Nothing crosses it, nothing grows on it, nothing lives near it. Where the land used to meet the water through tidal flats and mangroves, a concrete wall cut that line dead.

Across 3.8 kilometres shoreline of newly reclaimed land in Tung Chung East, a new seawall has been built, the city has built a new seawall. This seawall still holds back the sea – that has not changed. What changed is how it defends, what lives beneath it, and how carefully it has been built – three things that turn a hard border into a living edge.

Drivers	Key Outputs	Key Outcomes
Driver 3	Built 1.8 km **vertical**, 1.2 km **mangrove**, & 0.8 km **rocky** eco-shoreline	**Enriches 3.8 km of coastal habitat**, creating a diverse natural home for local wildlife
	Deployed **12 cameras** & **a underwater drone** for ecological monitoring	**Marine biodiversity doubled,** recording over **100 species** in the first year to revitalise the local ecosystem
		Provides a safe haven for **7 bird species** of conservation concern
		Continues to thrive with over **250 marine species, 5x** the biodiversity of conventional seawalls
Driver 4	Seawall designed for **100-year** extreme wave return period	Protects **147,000 residents** from coastal flooding
	Substituted high-carbon cement with **Portland Blast Furnace Cement (PBFC)**	Deep Cement Mixing (DCM) works avoid **~600,000 tonnes CO_2** emissions
		Eliminates 100% destructive seabed dredging by replacing marine sand with manufactured sand

Drivers

Driver 6

Key Outputs

- Applied dredge-free DCM technology with PBFC binder
- Built rocky eco-shoreline using modular precast bio-blocks

Key Outcomes

- Reduces fill material demand by **6 million tonnes**, conserving natural resources
- Delivers the project **6 months ahead of schedule**, bringing community benefits sooner



A Different Way to Defend

Concrete stops waves. But this wall does more than defend – it uses nature to hold the line, and it cuts carbon while it stands.



Strong defence with natural methods

The seawall is designed for 100-year extreme sea conditions. It protects 130 hectares of reclaimed land and 147,000 future residents through typhoon seasons. The habitats themselves help absorb wave energy. Mangroves and rocky shores buffer wave energy. Bio-concrete tidal pools hold seawater at low tide, cutting erosion and temperature swings. The structures that stop the waves are themselves habitats.

Defending while cutting carbon

Construction work generates carbon emission, but this project cut it at every step. The project used PBFC blend of 60% slag and 40% ordinary cement. This reduced binder consumption by 20% and avoided about 600,000 tonnes of CO_2 emission. A new retaining wall system saved 6,000 tonnes of embodied carbon. The 13-metre-wide mangrove belt is the solid carbon store. Over 100 years, each hectare will sequester more than 5,000 tonnes of CO_2.

Below the Waterline

The wall above the waterline does its job. The question was what to do below it — where a flat concrete face gives nothing for marine life to hold onto. The team built habitat where there had been none before.

Three habitats stacked at the shoreline

A conventional seawall is a flat wall. Tung Chung East built three layers of habitat at the shoreline instead. Here, the team built three micro-habitats at the waterline: 1.8 km of vertical eco-wall, 1.2 km of mangrove belt, and 0.8 km of rocky shore. **While a conventional concrete seawall hosts only around 50 marine species, the eco-shoreline here doubled the species after a year. Three years on, it reached 250 species – from 50 to 250**. Algae, crabs, gastropods, bivalves and fish each settled at different tidal levels. Seven protected bird species now forage along the intertidal zone.

Monitoring without disturbing

Twelve cameras and one underwater drone replaced the old method – divers surveying section by section. An AI model detects, tracks and counts organisms in enhanced footage. Intermittent sampling became a continuous record. The team could track ecological change in real time without setting foot in the water.

Building Lightly on the Sea

Building an eco-shoreline is best achieved without compromising the sea. The construction itself has to be light – less material, less waste, less disruption to the seabed, the neighbourhood, and the workers.

Made from what the city thrown away

Reclamation needs fill — millions of tonnes of it. **This project used 17 million tonnes of construction and demolition materials** from public fill banks. Concrete, rubble, and soil from other building sites, sorted and reused. That made up over 70% of all fill material. The rest came from manufactured sand — a quarry by-product. No marine sand, no dredging.

DCM kept the seabed intact

The conventional way to reclaim land is to dredge marine sand and soft seabed, then refill. The DCM technology treated the soft seabed in place — no dredging, no churning. The seabed stayed intact. Throughout construction, the dolphin observation protocol and environmental monitoring recorded zero triggering events. DCM also reduced fill demand by about 6 million tonnes, thereby reducing 3,000 vessel trips and their air and noise impacts.



The seawall still stands. It now buffers waves, grows life, stores carbon, and was built without taking more from the ocean than it gave back. One day, Hong Kong's coastline will no longer feel like a wall. It will be a living edge where the city and the sea meet — full of life, full of nature, and at ease with each other.



Project B:

Tung Chung Cycle Track, Promenade and The Open Space System

A New Town for Riding, Gathering, and Belonging



The eastern section of the Tung Chung New Town Extension will house 147,000 new residents on reclaimed land on the northern coast of Lantau. How to turn a new town into a place people want to live, not just a place they are housed. The answer here is not a single facility but a system – 12 kilometres of cycle track and 5 kilometres of waterfront promenade, threaded through 28 hectares of open space. From day one, it gives residents a car-free way to move through daily life, a shared waterfront that works as a common room, and a coastline designed for every age and ability.

Drivers

Driver 5

Key Outputs

- Built **12 km** of combined promenade and cycle network
- Added **2 pedestrian-cycle bridges**
- Constructed **4 cycle subways**
- Cycle network connecting Tung Chung East and MTR stations
- Created **28 hectares** of open space
- Built 3 children's play areas
- Installed 8 fitness stations along the promenade

Key Outcomes

- Connects Tung Chung East to the town centre, providing safe, seamless **active mobility for 147,000 future residents**
- Improves 147,000 new residents' daily commuting and quality of life with easy access to a 15-minute living circle
- **Eliminates ≈50 hazardous intersections** between cars and bicycles, making daily commutes safer for the community
- Brings nature into daily life by linking country parks to the town, extending green benefits to **147,000** residents and workers across **530,000 m²** of planned commercial space
- Offers vital outdoor play space for the local community

Life on the Cycle Track

The cycle network is a daily infrastructure — a fair, low-carbon way to move around that gives everyone the same access to the city.

Every household within reach

The network threads through Tung Chung East, putting every household within a "15-minute living circle" to shopping space and Tung Chung East MTR Station. For a district of this size, residents will move in and use the network on day one — the commute, the shops, the waterfront all within a short ride in the neighbourhood.

Above and below the carriageways

From above, two four-span pedestrian-cycle bridges with lifts at two junctions namely Ying Hei Road / Ying Tung Road and Tung Chung Waterfront Road / Yi Tung Road junctions will be constructed. Cyclists no longer need to dismount, no more detour, while the junction traffic capacity will be enhanced. In below, four cycle subways provide through access across two cross-junctions and two T-junctions, greatly improving safety.

A corridor out to the coast

The cycle network will extend to the north Lantau coast, linking Tung Chung to Siu Ho Wan and connecting the new town to a wider recreational corridor, providing an alternative cycling experience along the coast.





The Coast Is a Common Room

One continuous public realm – a place to ride, walk, rest, meet, and watch the sea.



Green network at scale

Tung Chung East delivers 28 hectares of open space – roughly one and a half times the size of Victoria Park. It will run through the district core, reaching the waterfront to the north and the MTR station to the south. For residents, this will be a daily, reachable waterfront common room – the kind of space that turns a new town into a homeland.

Five kilometres of shoreline for living

The promenade will run 5 kilometres along the reclamation coastline, connecting Tung Chung to Siu Ho Wan. Some stretches are for walking, some for exercise, some for shops and cafés. The waterfront will be the core destination of Tung Chung East.

Shoppers on the open space

The open space system will connect over 100,000 m^2 of waterfront commercial space along the shore. Proximity to high-quality open space gives these shoppers a character they would not have on their own – indoor and outdoor environments blending, pedestrian friendly settings that draw foot traffic from the promenade. By giving the public a more distinctive service experience, these commercial spaces will also increase their own asset value.

Built Together, Open to All

New towns tend to build public space from a catalogue — standard playgrounds, standard benches, standard paths. Tung Chung East did not go standard. It lets residents decide what they want.

The community that designs its own coast

CEDD ran a public engagement in October 2022 –"Exploring Future Play Spaces" and a community co-creation workshop in November 2023, bringing in extreme sports communities, schools, and sports associations which shaped the design. Children's play areas introduced climbing, water play, and swings – all the facilities the community wanted.

A coastline for every group

The open space system combines static facilities and active amenities. Eight themed fitness stations along the promenade as well as the skate park near Siu Ho Wan provide for different needs and interests of the users as well as fostering healthy lifestyles.

> *12 kilometres of cycle track, 28 hectares of open space, a 5km shoreline promenade – the numbers are straightforward. What matters is what is happening to them: daily rides that replace car trips, a waterfront that draws people out of their condos and into shared space, commercial assets that gain value from public realm, and a lively coast that the community enjoys.*





Project C:

Tung Chung Community Liaison Centre

The Civic Frontline:
Where Infrastructure Planning Meets Community Life



Situated along the Tung Chung waterfront, the Tung Chung Community Liaison Centre (TCCLC) serves as a vital civic gateway for the Tung Chung New Town Extension and Lantau's broader sustainable development. Far more than a static project office or display hall, the centre reimagines public liaison by turning major infrastructure consultation into an active, inclusive community asset. Beyond its primary planning function, TCCLC generates rich social value by breathing new life into decommissioned site structures, providing free venue space for local neighbourhood life, and fostering continuous, informal dialogue between engineers and residents.

Drivers

Driver 1

Key Outputs

112,300+ visitors over five years, attracting residents in Tung Chung, as well as citizens from other districts

300+ Guided Tours conducted on the exhibits about the development and conservation works of Lantau Island

280+ events supported with community partners, such as NGOs, schools, airport authority, etc

39,000+ people, including students, elderly and non-Chinese communities, benefitted through venue borrowing

4 exhibitions sponsored, covering cultural and biodiversity conservation

Key Outcomes

93% gained a clearer **understanding** of Lantau's future development

Achieved **85%** participant **satisfaction** across guided tours

Provided educational opportunities covering **~15,000 local students**

+1,300 open days facilitated informal dialogue between project team and the public

Provided free space for **80+ NGOs,** benefiting **200,000+ residents**

"Infrastructure is built for the benefit of the community. In the past, we simply built things behind the scenes without active outreach. The Community Liaison Centre provides a vital bridge—allowing us to communicate earlier, help residents to understand our work, and to address temporary construction impacts proactively before they become complaints." – *project team*

Pioneering Public Engagement: A New Standard for Infrastructure Dialogue

Major infrastructure developments often feel distant and opaque to local residents, with public outreach traditionally restricted to formal notices or passive information boards. Tung Chung broke this mold by reinventing the community liaison centre as an active, inviting hub for continuous dialogue. It turned project planning into a shared neighbourhood experience rather than a one-way government announcement.

A paradigm shift in public liaison

Established in late 2021, the TCCLC has served as the pioneer and operational blueprint for modern CLCs across Hong Kong. It has moved public engagement away from passive display panels toward proactive, multi-sensory community interaction.

Interactive urban planning technology

The TCCLC is equipped with immersive tools—including a 3D CAVE (Cave Automatic Virtual Environment) system, projection animations, and interactive city-building games—making complex engineering concepts accessible to adults, children, and diverse ethnic groups.

High public approval

Through continuous feedback collection, over 93% of visitors reported being deeply impressed by the information provided, establishing a new trust-building benchmark for major development projects.



The Civic Living Room: Sharing Space for Community & Inclusion

A growing new town needs more than just housing and roads; it needs welcoming spaces where neighbours can meet, play, and celebrate together.



Direct connection to Tung Chung East Promenade

Integrated seamlessly with the adjoining coastal park, the TCCLC transformed the former construction site into an accessible public destination where residents can pop in while strolling, exercising, or walking pets along the seafront.

Fostering social inclusion across cultural backgrounds

The TCCLC has proactively adapted its programming to serve the district's diverse demographics, ensuring that new public housing tenants and ethnic minority groups feel fully welcome.

SHORT STORY:

ADAPTING TRADITIONS FOR ALL

During the annual Mid-Autumn Lantern Festival, the CLC team noticed a growing number of ethnic minority families attending. To foster true inclusion, traditional lantern riddles were adapted into English and graphics, enabling visitors of all backgrounds to celebrate together.



The Engineer-Citizen Interface: Closing the Distance Between Planning & People

Very often, engineers who plan a new town and citizens who live in it operate in separate worlds. When project teams work behind closed doors, local concerns can go unheard until problems arise on the ground. Co-locating project staff directly above a public hall breaks down those barriers, turning formal consultations into everyday conversations.

Co-located project team upstairs

By placing the project office directly above the ground-floor exhibition space, CEDD engineers and community liaison teams worked under the same roof as the public they serve.



From town halls to daily neighbourhood chitchat

Residents visiting along the promenade regularly walk in to enquire about construction timelines, road openings, or upcoming pedestrian connections. **Over 50% of community interactions are now engaged directly through frontline touchpoints,** enabling responsive two-way dialogue alongside established public channels.

Real-time feedback loop

Rather than waiting for public consultation periods, engineers receive immediate feedback on district needs, allowing community concerns to be resolved quickly during construction.

> *For the residents of Tung Chung, the true value of the Community Liaison Centre is not found merely in its exhibition models or architectural awards. It is found in having a welcoming space along the seafront where citizens of all ages and backgrounds can gather, learn, and directly shape the future of their neighbourhood alongside the engineers building it. As a pioneering liaison model, the TCCLC successfully bridges the gap between infrastructure delivery and daily community life.*

Yuen Long South New Development Area

Yuen Long South will bring 98,700 residents to a corridor already occupied by a live highway, a 1960s drainage channel, dense villages and utilities that cannot be moved. Fitting 32,900 homes and 13,700 jobs into that space means engineering almost every metre of usable land — without shutting down the road, without breaking the drainage, and without pushing the existing community aside.

This is a case about working under significant site constraints. The project team magnified the creation of social values through the deployment of innovative technology, the application of a people-oriented design philosophy and the extension of compassionate care to the existing community. The interchange improvement turns a failing junction into a gateway, but the harder part was building it beside live traffic, above unmovable utilities and next to homes that could not be disturbed — a rectangular Tunnel Boring Machine (RTBM) and a 130-tonne precast pier moved risk from the public into the factory. The nullah project decks over a drainage channel to release land for roads, but the harder part was maintaining flood protection while building above it, cutting carbon by 73%, and turning a corridor that faced away from the community into one that draws people in. **Challenges posed by the site constraints were embraced with firm and unwavering will to find solutions with quantifiable benefits to the project and existing community.**

Yuen Long South's experience is replicable, extendable and scalable — where there's a will, there's a way.





Project A:

Tong Yan San Tsuen Interchange

The interchange is a vital gateway that unlocks massive opportunities for Yuen Long South.

Project B:

Decking of Yuen Long Nullah and Revitalisation

Through high-difficulty innovations in a cramped site, the Yuen Long nullah is transformed from a shunned community nuisance into a vibrant community façade that integrates traffic, public spaces, and nature contacts

Project C:

Community Liaison Service Team

Pioneer a mobile-first liaison model to drive Urban-Rural Integration

An interchange with no room to operate, traffic already gridlocked — how do you untangle the mess with the least disturbance, and turn an overloaded interchange into a gateway the community welcomes? A drainage channel everyone sees as a nuisance — how do you, with the same light touch, flip it into a public front people walk towards?

Project A:

Tong Yan San Tsuen Interchange

Unlocking the Gateway Through Interchange Improvement



For the new residents who will move into Yuen Long South, **Tong Yan San Tsuen Interchange** on Yuen Long Highway will shape their daily commute and their quality of life in the new development area. With the upcoming population intake, the interchange would be overloaded. **The challenge: fix overloaded interchange and turn it into a gateway.**

Drivers	Key Outputs	Key Outcomes
Driver 5	Improved interchange with new slip roads commissioned before relevant population intake years Constructed new road networks to connect regional transport hubs	Slash interchange **congestion by 50%**, relieving daily traffic burden Secure robust future mobility, allowing **thousands of vehicles hourly** access to and from Yuen Long Highway upon full development of Yuen Long South Unlock **30-min multimodal transport access for new populations and employees**, boosting local livelihoods
Driver 6	Built 45m underpass using 4.38×9.4m Rectangular Tunnel Boring Machine (RTBM) Lifted 130t precast pier 0.5m over live highway in 6 hours	**Slash traffic disruption to Yuen Long Highway & connecting slip roads,** minimizing commuter inconvenience **Cut construction spoil nearly half** via circular TBM, minimising environmental footprint Removes **high-risk site tasks** for workers Ensure **zero neighbourhood complaints** and **zero highway disturbance**, respecting community peace **Eliminate 100% of open excavation** near utilities, guaranteeing public safety Complete work in **40 days** for RTBM and **1 night** for precast pier

Laying the groundwork for a gateway

An Interchange is not just a coalition of roads. It is more than means of moving traffic. It forms the arterials for community interaction and gateway to a vibrant place of life.

Clearing the bottleneck

In recent years, Tong Yan San Tsuen Interchange is at or near saturation at peak hours. New improvements have eased conditions. But pressures are still building: Yuen Long South NDA will bring tens of thousands of new residents, and Yuen Long Highway will be expanded to four lanes in each direction by 2033, which will funnel additional cars through the interchange – a volume comparable to Hong Kong's busiest highways. To accommodate this demand, more slip roads will be widened, with their capacity doubled in subsequent phases. The goal is to cut the predicted congestion by half for Tong Yan San Tsuen interchange, and have the gateway ready before the new residents arrive.

Linking homes and jobs

Two interchanges are key nodes of the northwest New Territories, serving as part of the crucial road networks that shortens commutes and lifts regional efficiency. They underpin the new population intake and creation of job opportunities, tying residential, commercial, and community facilities into one connected whole. The benefits extend beyond the new development area itself to the existing Yuen Long Town – improved road networks give village communities direct access to Yuen Long Highway, narrowing the long-standing gap between rural and urban travel.



Strengthen The District Link

Cars, buses, rail, walking, cycling — the interchange is no longer the boundary between these choices, but the knot that ties them together.



Bringing rail transit closer to home

The road improvement works do not leave non-drivers behind, with the regional road network upgraded and connected to MTR stations, while the planned public transport interchange gathers minibuses, feeder buses, and long-distance buses, connecting Hung Shui Kiu/Ha Tsuen, and Yuen Long South. The connectivity will also be magnified by the planned Smart and Green Transit System, forming a 30-minute multimodal commute catchment, in which future residents can reach public transit without relying on private cars.

Active travel that embraces everyone

The same principle extends to those on foot and on bicycles. Pedestrian and cycle networks built alongside the interchange connect the planned neighbourhoods to the existing footpath and cycling systems beyond Yuen Long South, forming a cross-district active mobility network. The result is a safer, more inclusive environment for the elderly, children, and cyclists alike.

Building Without Breaking the City

All of this was delivered beside live traffic and dense communities. The project relied on technical means to keep disruption to a minimum, without compromising safety or efficiency.

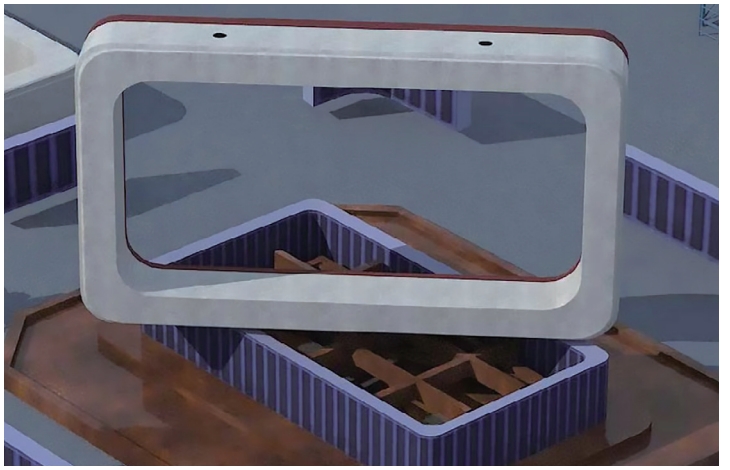
New methods that cut disruption at the source

In this particular area, conventional construction would have meant deep excavation, heavy temporary works, and months of traffic diversions. Three innovations changed that. First, **Ultra-High-Performance Concrete permanent formwork** was used for a pier of the new "Bridge B" at Tong Yan San Tsuen interchange: reducing the footprint required for conventional temporary formwork, minimising the disturbance to surrounding traffic and saving around two weeks of erection time. Second, a 130-tonne precast pier was installed at the Tong Yan San Tsuen flyover, just 0.5 metres from the highway edge, in only six hours; factory precasting eliminated the high-risk on-site works and avoided around two months of traffic disruption. Third, where a considerable amount of utilities (sewage, gas mains, power cables) ruled out open excavation, a **single-pile, no-cap foundation** removed the risk of service disruption.

Replacing open-cut with a rectangular TBM

The 45-metre underpass at Tong Yan San Tsuen's reconstruction runs beneath Yuen Long Highway with only 5 metres of cover – directly under live traffic. The team used a **RTBM** made of six modules that could be assembled and disassembled within narrow shafts. Running 24-hour operation, the RTBM completed the tunnel structure in only 40 days, while the open-cut method would have taken over a year. With its precise excavation profile, the RTBM generated only around half of the spoil volume produced by conventional circular machine and considerably less than that of open-cut, substantially reducing the environmental impact associated with spoil disposal and off site haul away. Meanwhile, a smart power system (Smart System in Mobile Electricity, SSME) halved diesel use. **All-electric tunnelling** eliminated underground emissions from machinery and cut noise significantly. Throughout the drive, the highway above saw no traffic disruption and zero complaints from neighbourhoods. The Hong Kong Institution of Engineers recognised the project with the 2026 Safety Design Excellence Silver Award – the modular RTBM method is now a new industry benchmark for safe, responsible construction.



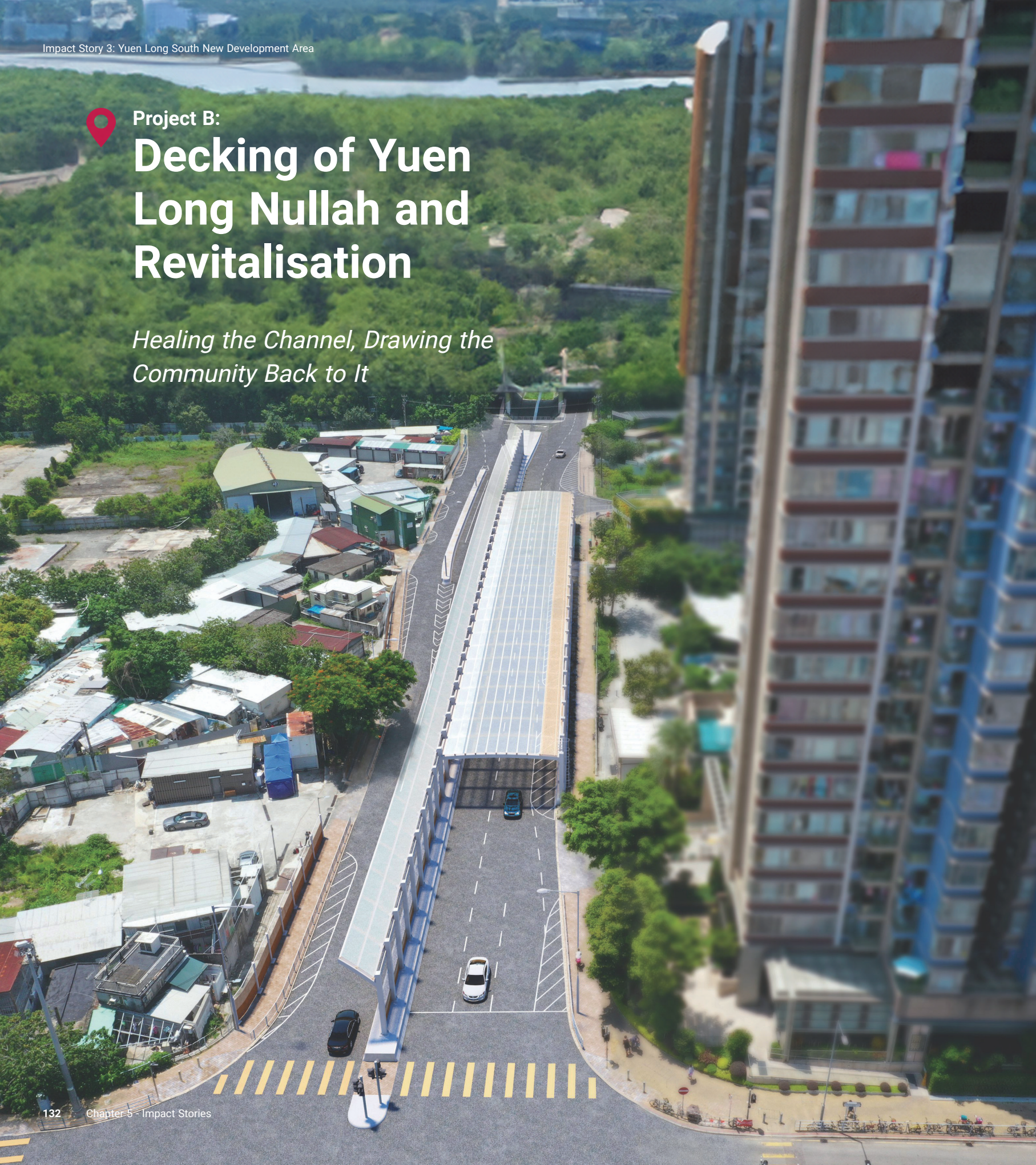


Digital monitoring across the full chain

None of this relied on luck. The RTBM carried automated deformation monitoring (2D settlement), ground-penetrating radar (3D void detection), and distributed fibre-optic acoustic sensing (4D ground-state tracking), paired with a digital twin; the automated piling platform integrated with cameras, inclinometers, GNSS positioning, solar power, and wireless communication. Working beneath a live highway, the system tracked ground, equipment, and structure conditions in real time, preventing settlement risk to the drivers above – while building a solid engineering case library for future projects.



More than an interchange upgrade. The junction now does more than moving vehicles. They carry homes, jobs, and daily routines. They give a new town a working gateway, and give the people who use it a quieter, safer, shorter journey. That is what infrastructure is for.



Project B:

Decking of Yuen Long Nullah and Revitalisation

Healing the Channel, Drawing the Community Back to It

In the 1960s, engineers straightened the Shan Pui River into a concrete nullah — a channel that carried floods out to sea but left a cost along its banks. It sliced through one of the densest corridors in the northwest New Territories. The two roads beside it, Kung Um Road and Kiu Hing Road, were so narrow that junctions exceeded capacity. In the dry season, water quality dropped, and odour kept people away. The nullah became the back of the city — everyone depended on it, but no one wanted to be near it.

Nearly 100,000 new residents are coming to Yuen Long South. Traffic, runoff, and the need to connect both banks will all multiply. The project seeks to address three problems in the same strip of land: relieve congestion, maintain the flood path, and build in a corridor too tight for open-cut, too sensitive ecologically to ignore, too close to families to disturb. The goal: **a brand new public realm people walk towards, not a concrete ditch they turn away from.**

Drivers	Key Outputs	Key Outcomes
Driver 3	Retained & revitalised 2.5km Yuen Long Nullah (not enclosed) Conducted >9 months of ecological & verification surveys Delivered blue-green network: 575 m river corridor, 0.6ha lake, 4ha reedbed-pond, 12ha woodland	Daily nutrient pollution **cut by up to 367kg** (185kg TN, 84kg TP, 98kg NH3-N), ensuring cleaner water for the community Protects **44 local species** (24 birds, 11 butterflies, 9 aquatic fauna), enriching nature contact for residents
Driver 4	Constructed around 2,500 m box culvert for flood conveyance Delivered flood attenuation network	Nearly **28,000 m³ flood storage capacity** delivered across the development area, securing homes and daily safety

Drivers	Key Outputs	Key Outcomes
Driver 5	Decked part of nullah to release land for road upgrades Upgraded Kung Um & Kiu Hing Roads to dual-lane one-way	Transforms congested junction into a **smooth flow with 33%-58% reserve capacity**, drastically cutting commuter delays
Driver 6	Deployed World's First UTBM to construct around 900 m box culvert.	Construction **shortened by 2 dry seasons**, minimising public nuisance **30% on-site labour reduction**, improving efficiency of public spending Reduced **73%** carbon emission



Making Room for Mobility without Compromising Flood Protection

Decking over the nullah creates room for wider roads, but every metre of cover eats into the channel's flood capacity. The two have to coexist — cars above, water below — and both have to work.

Relieving a long-standing traffic bottleneck

Kung Um Road and Kiu Hing Road run along both banks of the nullah, pinned narrow by the channel for decades. The Shap Pat Heung Road junction where they meet was very congested. Widening the roads is the obvious fix, but there is no land to widen into. The solution is to deck over part of the nullah and build the new lanes on top, so cars travel above while stormwater flows beneath. After upgrading, the **same junction has over a third of the road to spare**.

Holding the flood path open beneath the deck

But decking over the nullah takes away part of its flood channel. To compensate, the team built about 900 m of box culvert parallel to the channel, restoring the conveyance area the decking had removed. The corridor still meets relevant flood standards. Meanwhile, the project is revitalising about 2.5 km of the nullah within the development area through landscape, greening and habitat measures. The nullah still carries floodwater. But now it is also greener and cleaner.





Constrained Space, Excellent Delivery

The team was not working on a blank sheet. The site set its own limits, and the engineering had to work within them.



Putting the construction site inside a machine

Constructing the approximately 900-metre-long box culvert along Kung Um Road would conventionally involve five separate processes: earth support, excavation, bedding preparation, segment installation and backfilling. With open excavation, these would be spread across a large works area. Within the narrow Kung Um Road corridor, which had to remain open to traffic, but space was not available. The project team therefore deployed a pioneering UTBM, named “Bauhinia”, which integrated all five processes into a single unit, with precast segments assembled on site for a fully mechanised construction process. Workers never entered the excavation face, eliminating risks of collapse, flooding, and lifting accidents. Demand for on-site labour was significantly reduced by 30%. The project timeline shortened by two dry seasons, cutting the period of disruption nearly in half. Carbon emissions fell by 73% (310.5 tonnes CO_2). Construction no longer contributed to the problem it was solving. Noise and vibration levels dropped sharply. In 2025, the machine won the New Civil Engineer Tunnelling Innovation Award for Design and Construction. The method can be applied to any constrained urban corridor facing the similar limitations.

Not Making the Neighbourhood Pay the Price

The project cleared the traffic congestion and overcame the site's tightest constraint. The project was difficult enough — but the community and the environment around the nullah were not asked to share that burden. The project took two steps to make sure of that.

Survey first, build later

Before any construction began, the project **spent over nine months on ecological field surveys,** with follow-up verifications between 2013 and 2016. Sensitive habitats were mapped and used to shape the design. Major woodland areas were retained. A stream supporting an endemic freshwater crab (Somanniathelphusa zanklon) was preserved, with a 15 m ecological buffer zone along its banks. The project offset habitat losses with approximately 12 hectares of compensatory woodland, a 0.6 hectares retention lake, and a 4 hectares reedbed-pond system that also feeds waterbirds. Surveys recorded protected species of plants, birds, and butterflies throughout the corridor. The result: construction came and went, and the ecology remained intact.

From the back of the city to the front of the community

For decades, residents turned their backs on the nullah — a concrete channel with no public space value. Three new footbridges now link both banks directly, connecting residential neighbourhoods to local facilities. Landscaped walkways and open spaces line the revitalised corridor, giving people a route to walk along the water rather than away from it. The nullah is no longer back-of-house drainage. **It is a public realm people can use and enjoy — a community asset, not just a drain.**



If the nullah were seen merely as a ditch, it would be remembered only under raining and forgotten the rest of the time — tolerated, even resented. Today it carries floodwater, supports traffic, holds ecological habitat, and draws the community back to its banks. This is infrastructure where nature and people are stitched together.

Project C:

Community Liaison Service Team

The Mobile Conduit: Driving Urban-Rural Integration Through Responsive Engineering



Spanning 185 hectares in Hong Kong's Northwest New Territories, the Yuen Long South New Development Area is one of the major strategic growth nodes under the Northern Metropolis, designed to transform underutilised rural land and inefficient brownfield land into a vibrant, sustainable urban community. Yet, transformation to a modern new town directly alongside centuries-old indigenous villages requires far more than standard civil engineering. Beyond delivering roads, flood protection facilities, and housing supplies, the Project embeds social value into every phase of construction. The project team pioneered a mobile-first liaison model that converts local community feedback into a world-class engineering project, to safeguard deep-rooted ancestral heritage, while not compromising the needs of the nearby stakeholders—proving that a major infrastructure can adapt to human needs.

Drivers

Driver 1

Key Outputs

60+ events organised and supported, including village cultural activities, site visits, volunteering, etc.

63,000+ people reached, including local residents, villagers, students and elderly

14,000+ villagers from ~30 villages were engaged from festival events and volunteering works

50+ partners from different sectors collaborated, such as local schools, NGOs, Government departments, professional bodies, etc.

Key Outcomes

Educated **530+ students and engineering professionals** with innovative engineering solutions

Established wider stakeholders' support, covering 7 local villages

Received **over 90 recognition letters** from community stakeholders

Mobilised **~1,080 volunteers** in community engagement

85%+ adoption rate of practical community suggestions into site planning and execution

~60% reduction in enquiry handling time and consultation cycles, achieved through proactive engagement

"Infrastructure is ultimately about people's daily lives. When project leadership genuinely listens to our voice, construction becomes a real opportunity to upgrade our neighbourhood for a better environment. They didn't just come to build; they also immersed themselves in our village's identity. By respecting our traditions, they have turned engineering into a shared achievement we are genuinely proud of." — *village representative*

The Conduit: Mobile Engagement Without Boundaries

In many major developments, engineers work in the back of the house while residents are left wondering how the developments will influence their daily lives. But for this project, the project team keeps the community stakeholders informed and reassured by meeting the locals where they live and gather.

Plain-language technical translation

The team uses accessible layman's terms in lieu of complex civil engineering jargons and technical drawings to ensure the community stakeholders, such as the residents and village elders, fully understand the upcoming construction activities.



Continuous bilateral communication channel

By establishing direct communication channels between the Project team and the community stakeholders, community's concerns are relayed directly to the project team prior to the commencement of works.

Deep-rooted cultural immersion

Through active participation in traditional Poon Choi feasts, Tin Hau Festival parades, and daily site walks, the project team has developed deep bonding, cultivated trust with the local community.

Volunteer service beyond site boundaries

The CEDD Volunteer Team's commitment goes well beyond engineering. By joining village elders in Lunar New Year paper-cutting and calligraphy, distributing festive gift bags, delivering Flower Show plants directly to local villages, and organising NGO community visits, team members have built genuine personal connections. These heartfelt efforts show deep respect for local heritage and foster genuine, long-term trust.



The Guardian: Preserving Rural Cultural Roots and Safeguarding Villages

Bringing modern town planning into long-established rural settlements can easily feel like erasure rather than integration if historical cultural roots are ignored. Protecting ancient shrines and low-lying homes from sudden storms requires listening to villagers long before heavy machinery arrives.

Yuen Long South New Development Area blends modern development with deep rural cultural roots, framing the project as urban–rural integration rather than replacement.

Proactive ancestral and heritage preservation

Prior to any works near ancestral shrines, the project team would conduct face-to-face briefings with villagers and arrange traditional rituals subsequently.

Swift response during emergency and pre-adverse weather outreach

During extreme weather and typhoon warnings, the project team initiates pre-adverse weather outreach via WhatsApp and phone calls, deploying emergency response teams directly to low-lying villages to safeguard the safety of the residents and accelerate community recovery.



The Horizon: Preparing for a Permanent Neighbourhood Hub

While outreach activities bring the project team into the neighbourhood, long-term trust depends on continuous communication and understanding between the project team and nearby community stakeholders. A dedicated community hub preserving strong human connection during the construction stage will become a lasting civic asset.

Cross Bay Link

Bridging Communities: Multi-Modal Green Mobility for Tseung Kwan O

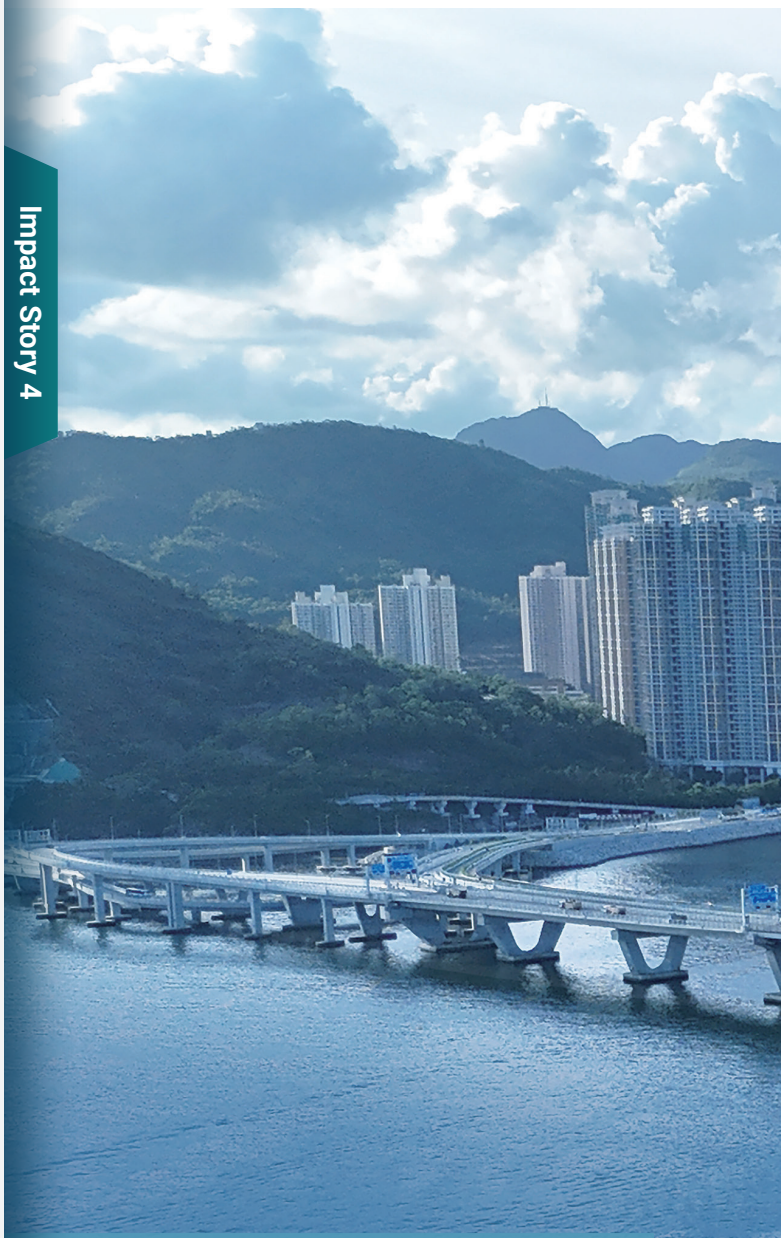
For over two decades, Tseung Kwan O's rapid expansion from 40,000 to over 420,000 residents strained local transport networks, leaving the waterfront divided and forcing long, circuitous commutes. The commissioning of the iconic Cross Bay Link transformed this landscape, introducing Hong Kong's first landmark multipurpose marine viaduct that integrates carriageways, a dedicated cycle track, and a pedestrian walkway within a single structure.

At its heart lies the "Eternity Arch" design concept. Featuring two outwardly leaning arches and tapering piers that converge into interconnected rings, the structure gracefully forms the mathematical symbol of infinity (∞), symbolising the continuous vitality of Tseung Kwan O.

Spanning 1.8 km across Junk Bay to connect Southeast Tseung Kwan O with the Tseung Kwan O–Lam Tin Tunnel, the Cross Bay Link reduces peak morning travel between LOHAS Park and Kwun Tong by up to 20 minutes. Beyond relieving vehicular congestion, the Cross Bay Link completes a 5-kilometre coastal walking and cycling loop.

Complemented by the Tseung Kwan O Promenade Southern Bridge, this integrated network seamlessly blends active, low-carbon mobility with scenic recreational spaces.

By prioritising green commuting, social connectivity, and environmental stewardship, the Cross Bay Link and Southern Bridge create lasting social value while significantly enhancing daily community well-being across Tseung Kwan O.



40% tunnel traffic shifted
journey time cut by 20+min for 420,000 residents

20% carbon cut
with new steel material adoption

1.8 km connector
for cars, bikes and pedestrians



True infrastructure comprises more than just brick and mortar, and moves people. It connects live stories and elevates communities. When designing the Cross Bay Link, the core commitment was to look beyond traditional traffic engineering and deliver holistic social value. By integrating carriageways, cycling tracks, and pedestrian walkways onto a single landmark arch, it has proved that major marine infrastructure can simultaneously serve strategic transport needs, foster green, low-carbon lifestyles, and enhance everyday community well-being. The Cross Bay Link stands as a symbol of engineering resilience and a blueprint for Hong Kong's future human-centric developments.

The Community and Bay Connected

The bay itself sat empty between the two sides – no crossing, no path, no reason to go near the water. Morning traffic backed up on the one road out, and residents on either side drove long detours to reach each other.



Cross the bay, share the way – connecting drivers, cyclists, and walkers

The 1.8-kilometre bridge carries dual carriageways through its centre, with a 4-metre cycle track and a 3.5-metre footway on either side. A glass balustrade separates them from vehicles, cutting wind without blocking the view. The cycle track connects into a 5-kilometre coastal loop linking LOHAS Park, the town centre, industrial parks, and recreational facilities; cyclists ride at grade past the waterfront, never dismounting for a junction. Three viewing platforms, each cantilevered over the water, invite pedestrians to pause. The "Eternity Arch" – two steel curves forming an infinity symbol against the skyline – rises at the viaduct's midpoint and is lit after dark, creating a landmark that announces the district's arrival from the water.

New routes, new routines

Nearly 40% of tunnel traffic has shifted to the new link, and peak-hour journeys are cut by more than 20 minutes. But the bigger change is in how 420,000 people now inhabit their district: a family cycles from LOHAS Park to the town centre for lunch – a trip that once required a car. An elderly resident watches fishing boats from a viewing platform that did not exist a few years ago. A teenager completes the 5-kilometre coastal loop at sunset, crossing the bridge on foot for the first time. Two communities that moved in parallel now share the same waterfront.



Scenic shortcut, shared celebration

Echoing the iconic infinity arch of the Cross Bay Link, the Southern Bridge spans the Eastern Channel as a footbridge designed specifically for community connection. Since its opening, it has provided a scenic shortcut between LOHAS Park and Tseung Kwan O Town Centre, completing with a western observation deck framing picturesque vistas of Junk Bay and vibrant waterfront sports. Beyond saving travel time and reducing vehicular reliance, the bridge acts as an active catalyst for local commerce, channelling steady pedestrian traffic to waterfront dining and recreational hubs. During seasonal festivals, the bridge transforms into a bustling public realm—a tangible landmark of civic pride, shared joy, and sustainable urban living.

The Tough Part: 10,000 Tonnes Over The Water

Building a landmark in a dense coastal corridor meant three challenges: typhoon wind loads, a 10,000-tonne marine float-over, and a neighbourhood too full to absorb more construction risk.

Advanced materials redefined what was possible

The "Eternity Arch" had to be slim – and still hold against a super typhoon. Standard steel could not do both. S690QL, with yield strength nearly double standard steel, halved arch material usage. **That saved over 7,000 tonnes of steel, cut rebar by a quarter, and concrete by 15%. The bridge's embodied carbon dropped by about 20%** – equivalent to 30,000 tonnes of CO_2 emission. Over 80 tensile tests confirmed the welding protocol with 99.5% pass rate, and the breakthrough has since been adopted in over 10 subsequent Hong Kong projects.

Digital foresight eliminated surprises

International wind tunnel tests guided refinements – sealed deck cantilevers, tuned mass dampers. The bridge holds steady in winds up to 350 km/h. Digital Twin technology rehearsed the entire float-over operation virtually, modelling tides, currents, and ballasting to de-risk the marine lift.

Automation replaced human exposure

In mainland fabrication yards, robotic plasma cutters and automated welding arms shaped the steel bridge, achieving precision beyond manual capability. The team prefabricated over 90% components off-site; a crane barge lifted 18 concrete spans whole, cutting thousands of hours of high-altitude works – zero accidents, from fabrication to erection.

The float-over: 10,000 tonnes in five hours

The 10,000-tonne double-arch — the weight of fifty Boeing 747s — travelled 900 nautical miles from Nantong. Tugs manoeuvred it between the piers during a chosen tidal window, and 3D jacking systems lowered it onto temporary supports. The entire operation took within five hours. The final position came within 30 mm of target — the tightest margin ever in Hong Kong marine construction.

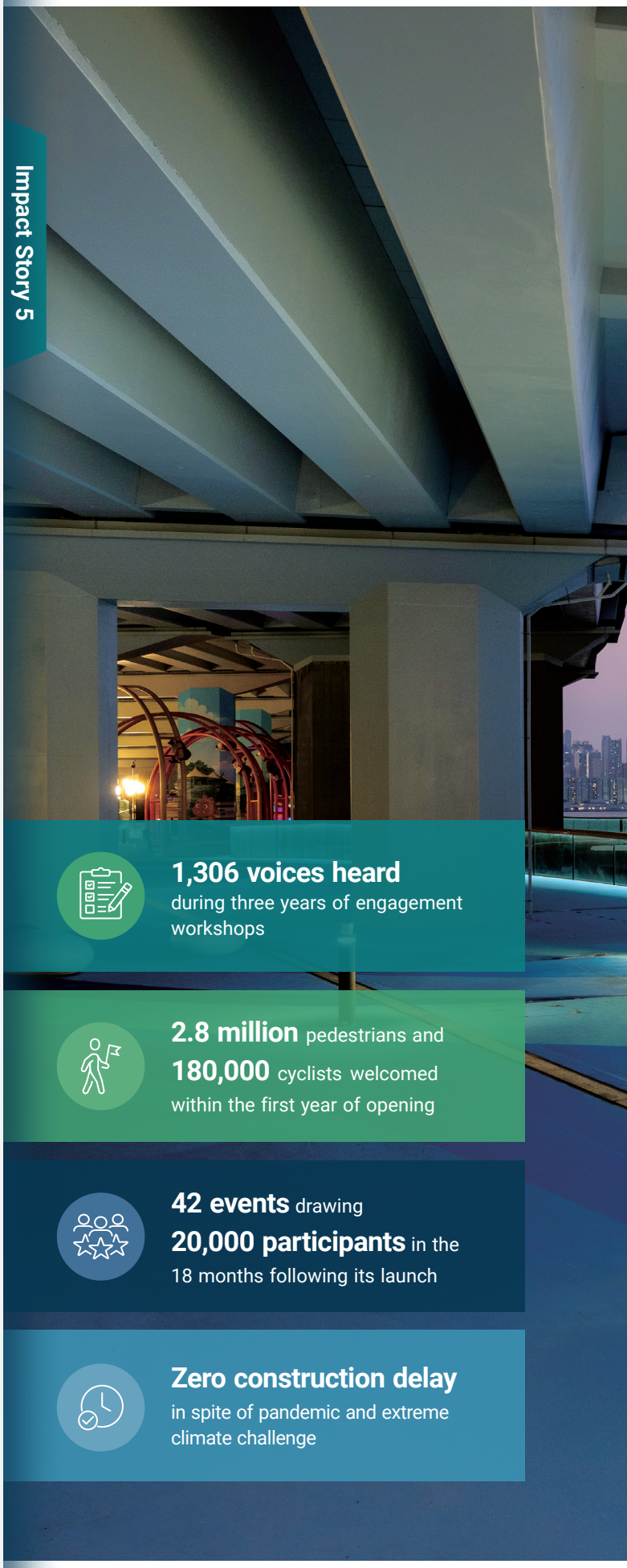




East Coast Boardwalk

From A Neglected Space Under Highway to A Quality Public Open Space

The Island Eastern Corridor handles traffic efficiently, but it also left North Point cut off from its own waterfront, leaving a strip of harbour visible yet unreachable, hidden behind a forest of concrete pillars. The eastern and western harbourfronts were developed as separate fragments, and the final kilometre of a 13-kilometre vision — a continuous promenade from Kennedy Town to Shau Kei Wan — remained incomplete until the Development Bureau, CEDD and with support of the Harbourfront Commission, threaded a 2.2-kilometre boardwalk through the gap.





A boardwalk is more than infrastructure that spans a distance—it bridges a community. By listening closely, thinking innovatively, and keeping people at the heart of design, a neglected space under highway can be transformed into a continuous quality living space that brings Victoria Harbour neighbourhoods together.

Deliver What the Community Asked For

The boardwalk's design began with residents. From the first planning study in 2009 through years of public consultations, the project and design team listened before it drew – and what it drew reflected what the community said it needed.

1,306 public views were carefully considered



The project underwent three rounds of community engagement spanning three years. The boardwalk's alignment sparked the fiercest debate, with residents and waterfront users holding competing preferences on route alignment, before stakeholders finally reached consensus. **A questionnaire completed by 1,306 residents directly informed design decisions:** over 90% backed an uninterrupted waterfront passage; around 80% and 70% supported pedestrian and cycling facilities respectively; there were also views demanding more access points and a wider boardwalk for more amenity space[1]. These inputs shaped the 2.2 km alignment, the 10 metre width, access points linking surrounding streets, and the decision to keep the boardwalk open 24 hours a day.

The anglers stayed. The pier stayed

The waterfront already had a life before the boardwalk arrived. The project team produced a dedicated fishing platform for local anglers who had long used this waterfront prior to construction. The Tong Shui Road Public Pier stayed – preserved and revitalised, not demolished. Rather than displacing pre-existing informal waterfront users, the design embedded their established practices within the new public realm, demonstrating an inclusive approach to harbourfront renewal.

Innovation Beneath the Traffic

Building a boardwalk beneath an active major highway left no room for conventional solutions. Every engineering and design decision had to solve two problems at once: keep the traffic above undisturbed, and open the harbour below.

Shared waterway for pedestrians and vessels

To let working boats pass without interrupting the walkway, the team installed two movable bascule bridges and a movable swing bridge. The bascule bridges lift on demand to let vessels into inner coastal waters for emergency rescue and routine maintenance. Under normal conditions, all bridges stay closed and pedestrian flow runs uninterrupted. Two uses – an uninterrupted waterway and a public walkway – share the same strip of water.

Built off-site, delivered on time through the disruptions

Nobody expected a pandemic. Then came the typhoons. COVID-19 froze supply chains and scattered labour crews across borders; typhoon seasons repeatedly shut down the waterborne transport the project relied on, leaving barges stranded and schedules at severe risk of delay. Moreover, since the boardwalk is built underneath the Island Eastern Corridor with live traffic and height restrictions, the team moved production off-site – fabricating deck segments and movable bridges on the mainland, then hoisting them into place from below during narrow weather windows. They resequenced deliveries around tidal patterns and kept the traffic above untouched throughout. The western section opened on 26 January 2025, the eastern section opened on 29 December 2025 – both on the dates promised to the public.

[1] Civil Engineering and Development Department, Proposed Boardwalk underneath the Island Eastern Corridor (IEC): The Latest Scheme, Eastern District Council Planning, Works and Housing Committee, Paper No 2/19, February 2019.

A Quality Public Open Space Underneath the Highway

Beneath the concrete of the Island Eastern Corridor lay a vast stretch of once-overlooked space. The boardwalk has turned it into somewhere people choose to stay.



Eight zones, each with its own pull

The 2.2-kilometre boardwalk is designed into eight themed zones. The western section carries Sun Wave for sunset watching, Play Wave for children, Fish Wave for anglers, and Gather Wave for events. The eastern section adds Pet Wave for leashed pets, Sky Wave with its glass observatory deck, Art Wave where local artists have painted marine life and the Eastern District mascot "Dong Dong" on the bridge piers, and Wave Hub as a community anchor. The project invited artists in; the bridge piers became gallery walls.

A space that communities claimed as their own

Now, the boardwalk has evolved into a self-organised venue for local people. According to statistics collected by the Harbour Office of the Development Bureau, **within its first year of opening, it welcomed over 2.8 million pedestrians and 180,000 cyclists. In the 18 months following its launch, government departments and local organisations hosted 42 community events in this new public realm, drawing more than 20,000 runners, dancers, students, dog owners and artists** to a waterfront area that was inaccessible only a few years ago. Located within a 15-minute walking radius of some of Hong Kong Island's most densely populated neighbourhoods, the boardwalk serves surrounding residents as a regular leisure destination. The harbourfront economy is also beginning to pick up.

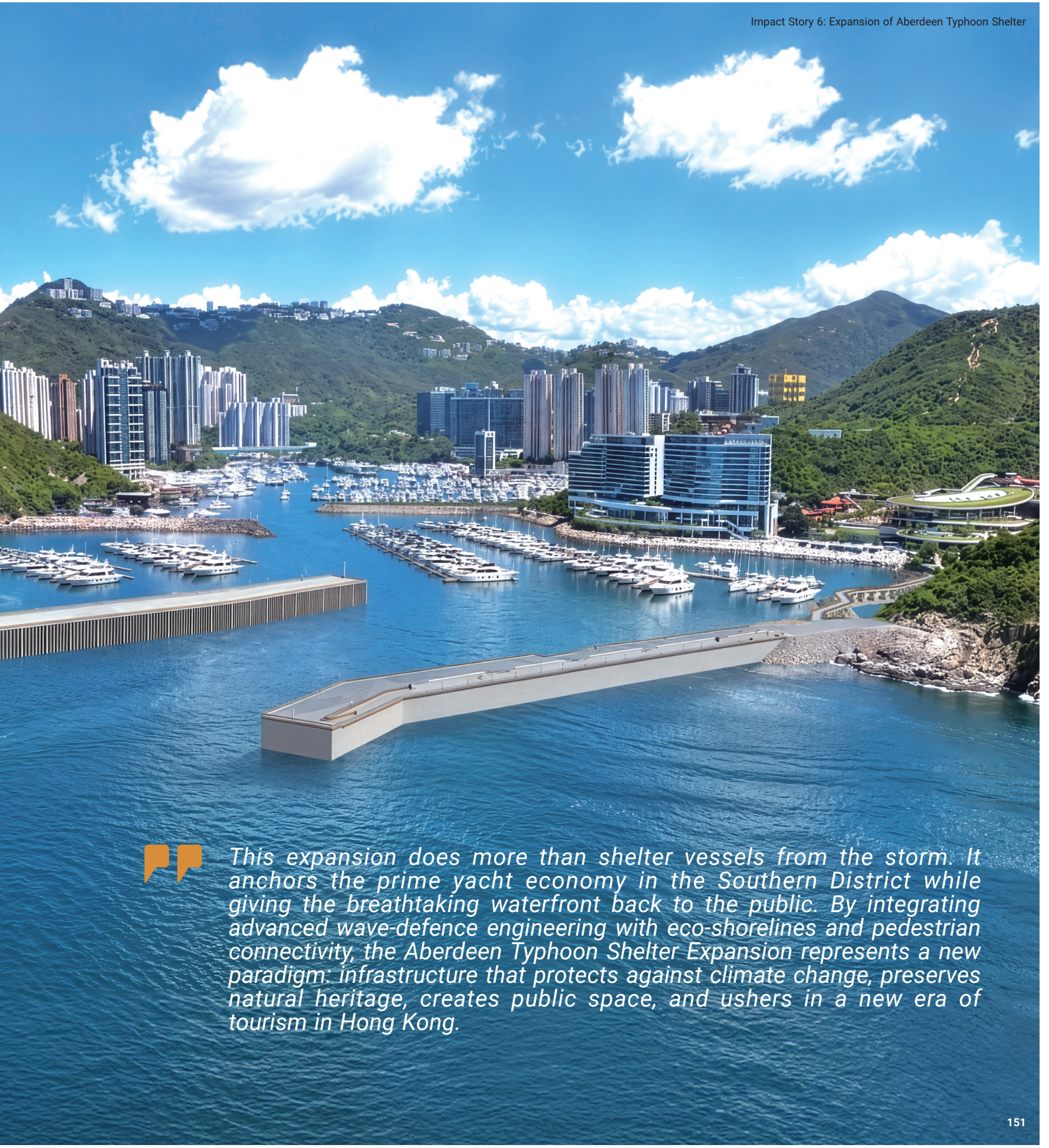
The 13-kilometre harbourfront from Kennedy Town to Shau Kei Wan is now complete. What started as a gap beneath a highway has become the link that makes the waterfront feel whole. Its value lies in what people now do there.

Expansion of Aberdeen Typhoon Shelter

Beyond the Wave Wall: Reimagining Coastal Defence for Community and Commerce

Located off the southern coast of Hong Kong Island, the Expansion of the Aberdeen Typhoon Shelter represents a flagship coastal infrastructure initiative under the government's "Invigorating Island South" strategy. Expanding the sheltered water area by 24 hectares, the project provides vital harbour protection for local fishing fleets, working vessels, and leisure craft. Moving far beyond the conventional role of a breakwater as a passive, utilitarian barrier, the project redefines coastal defence by integrating sustainable civil engineering, public waterfront connectivity, marine ecology, and economic revitalisation. With accessible promenade designs, the expansion safeguards Aberdeen's maritime heritage while unlocking new opportunities for transforming and upgrading Hong Kong's high-value nautical tourism.





This expansion does more than shelter vessels from the storm. It anchors the prime yacht economy in the Southern District while giving the breathtaking waterfront back to the public. By integrating advanced wave-defence engineering with eco-shorelines and pedestrian connectivity, the Aberdeen Typhoon Shelter Expansion represents a new paradigm: infrastructure that protects against climate change, preserves natural heritage, creates public space, and ushers in a new era of tourism in Hong Kong.

Climate Resilience Built on Precision Engineering

The Aberdeen Channel is vulnerable to waves from the south and the southeast. Without adequate defensive measures, extreme weather can devastate coastal facilities. Rising sea levels, wind speed and storm surge from climate change pose a long-standing threat to the safety of the shelter.

Adaptive climate defense

Incorporating lessons from Super Typhoon Ragasa in 2025, the dual main breakwaters feature a multi-layered hydrodynamic defence system with built-in wave absorption chambers. The project's marine defense design was validated through 3D physical model testing and optimised in accordance with the latest Port Works Design Manual standards. Built with a "Progressive Adaptive Approach", the structures accommodate future wave wall rise to combat more extreme waves.

Circular materials

Precast caissons will be filled with inert construction materials, such as dolosse and rockfill, sourced from modifying the two existing breakwaters, thereby optimising resource circularity and reducing reliance on public fill. Recycled and recyclable inert construction waste will be used, with materials other than timber for formwork. These engineering measures improve climate resilience while minimising waste, hence promoting a sustainable future in Aberdeen.

Engineering for Living Shorelines

Traditional marine construction often relies on heavy seabed dredging and underwater excavation, which can stir up toxic sediment and harm local marine life. When major coastal defences are built, nearby residents and ocean ecosystems usually bear the brunt of underwater noise, turbidity, and environmental disruption. Without intentional ecological design, concrete structures replace dynamic marine environments with sterile, artificial surfaces

Seabed stabilisation

Operating in sensitive marine waters, engineers will utilise DCM technology to solidify soft seabed sediment and marine deposits for the foundation of vertical concrete caissons. Because the seabed is strengthened in-situ, the project has minimised the adoption of traditional large-scale dredging, keeping underwater disturbance and water pollution to an absolute minimum.

Safeguarding natural coastal features

To mitigate incoming western waves without permanent occupation of the seabed, an innovative 80-metre wave wall in the form of a floating breakwater will be deployed to preserve the tombolo between Yuk Kwai Shan and Ap Lei Pai. Secured by concrete sinkers and heavy anchoring chains, this solution can attenuate waves while eliminating the need for any kind of seabed stabilisation works. The marine engineering alignment is deliberately adjusted to avoid and safeguard natural landforms. The natural ecological corridor, the sea caves, and the tombolo will remain untouched. As a rare coastal landform, the tombolo is both a conservation priority and a tourist attraction. The engineering measures help retain key characteristics in the Southern District.

Integrating micro-habitats into concrete infrastructure

To encourage marine life colonisation, various eco-shoreline features, such as eco-tiles and tidal pools, will be integrated into the breakwaters, pedestrian walkways, and Vessel Impact Protection System. These features create micro-habitats that actively enrich local marine biodiversity, improve ecological functionality, and enhance environmental education. This demonstrates that heavy civil engineering can coexist with, and even nurture, nature. The marine environment and natural capital of Aberdeen can be protected for current and future generations to enjoy.

Reclaiming Offshore Defences as Public Ocean Space

Coastal breakwaters are typically built as closed, utilitarian rubble-mound structures that sever the connection between residents and the ocean. Without intentional public access, marine defences shield the land from waves but deprive local neighbourhoods of access to their own coastlines.

Barrier-free ocean walkway

A 240-metre barrier-free pedestrian walkway, built with an integrated Vessel Impact Protection System, directly connects the new Eastern Breakwater to Ocean Drive near Tai Shue Wan. Engineered as an offshore structure to avoid encroaching on the Coastal Protection Area, the walkway allows visitors to walk safely while admiring natural sea caves along the coastline.

Multi-layer breakwater promenade

The top of the new 340-metre Eastern Breakwater is designed as an open public area, featuring waterfront steps, viewing platforms, public landing facilities and photo spots. This allows the breakwater to serve two important functions at once. Above the water, it provides a safe and inviting walkway for the community to enjoy the astonishing view of the coastline. Below the water, its structural design absorbs wave energy, protecting the harbour during severe storms. Ultimately, a single structure delivers vital coastal protection while creating a vibrant new public space that synergises with other local attractions, appealing to both locals and overseas visitors.

Revitalizing older infrastructure

The existing Po Chong Wan breakwater will not be left behind; it will be modified into a public promenade that seamlessly connects to adjacent waterfront dining facilities. A functional maritime structure becomes a community landmark that invites the public to embrace maritime life.



Anchoring Livelihoods While Powering the Maritime Economy

Severe harbour congestion creates persistent friction between traditional fishing fleets and modern commercial or leisure craft. Without balanced spatial planning, crowded waters threaten traditional maritime livelihoods and limit future tourism growth.

Unlocking the high-value marina economy

The project expands the sheltered water area by 24 hectares. Crucially, 10 hectares are dedicated to the private market development of a premium marina. Providing approximately 200 berths capable of accommodating superyachts up to 50 metres in length, this dedicated zone elevates Hong Kong's status as a premier Asian yachting hub, driving high-value nautical tourism, yacht maintenance, and consumption spending. The expansion makes use of the district's plentiful blue and green resources to generate substantial land value, which then transforms the surrounding area into a new tourist attraction.

Livelihoods secured and optimised

Alongside the premium marina, 11 hectares are allocated for a Marine Department-managed Public Mooring Area. This expansion effectively alleviates congestion for local working and leisure boats, safeguarding the livelihoods of traditional fishing fleets. Physical reorganization means fewer vessels competing for the same constrained waters, ensuring that the district's traditional maritime roots remain strong as its economy upgrades.





Landslip Prevention and Mitigation Programme

Keeping Hong Kong Safe on Steep Grounds

In June 1972, two catastrophic landslides struck Hong Kong on a single day. At Sau Mau Ping, a mud avalanche engulfed a squatter settlement, causing 71 fatalities; at Po Shan Road, another landslide containing a huge mass of debris that swept away a 6-storey building and completely destroyed the 12-storey Kotewall Court, killing 67 people. When a further major landslide hit Sau Mau Ping in August 1976 and killed 18 people, the case for systemic reform became undeniable. In 1977, the government established the Geotechnical Control Office, later renamed the Geotechnical Engineering Office (GEO), to build a systematic, territory-wide approach to slope safety.

Fifty years on, Hong Kong still has an exceptionally dense concentration of man-made slopes. Urban development has moved closer to steep natural terrain, while intense rainfall continues to test the city's slope-safety system. The rolling Landslip Prevention and Mitigation Programme (LPMitP) systematically deals with the landslide risk associated with both man-made slopes and natural hillside. With its remarkable achievements over five decades, the Hong Kong Slope Safety System received the HKIE 50th Anniversary Legacy Grand Award (Innovation Category) in 2025.





By integrating robust nature-based solutions with climate-resilient landscaping, our slope enhancement works do more than prevent landslides. We transform potentially hazardous terrains into safe, green, and accessible public spaces, seamlessly blending safety infrastructure with community life to foster a truly human-centric, sustainable city.

One System for Every Slope

Every slope has a condition to track, a risk level to rank, and an owner to hold accountable. Each calls for a different response – recording, prioritising, enforcing. Managing all three under one system is what makes it work.





Registered slopes brought into one territory-wide Slope Information System

Before GEO built the Catalogue of Slopes, no one could see all of Hong Kong's slopes in one place. **The Catalogue now records about 61,000 man-made slopes** – 39,000 government, about 16,000 private, and roughly 6,000 mixed. The public Slope Information System keeps those records open. Owners, engineers, and officials look up any slope's status from inspection to upgrade using the same evidence. A common information base helps different parties identify responsibilities, review slope conditions and follow the history of investigation or upgrading works.

Direct resources according to a risk-based system

The New Priority Ranking Systems are risk-based ranking systems that consider both the likelihood and consequence of slope failures. The systems, developed for individual feature types including soil cut slopes, rock cut slopes, fill slopes and retaining walls, allow priority ranking of man-made slope features under LPMitP.

The Catalogue of Slopes provides a territory-wide record of about 61,000 registered man-made slopes. It records and maps key information for each registered slope, while the public Slope Information System makes relevant records accessible to owners, engineers and government departments.

Bringing private slopes into the safety screening study programme

While there is a policy for all government slopes to be maintained by government departments, private slope safety relies heavily on voluntary slope maintenance by private owners.

To align with the approach for government slopes selected for upgrading, private man-made slopes are also selected for safety screening studies under the LPMitP. Where there is prima facie evidence that a private slope is dangerous or liable to become dangerous, GEO will recommend the Buildings Department to a statutory Dangerous Hillside Order on the private owners. The Order requires the owners to carry out investigation and any necessary remedial or preventive works to the slope. By the end of 2025, around 3,300 private slopes had been subject to Dangerous Hillside Orders served on private owners.

A System That Keeps Refining

The system was built, but never meant to stay still. The city changes, technology moves, and the knowledge of work improves. The programme has to evolve to keep its value to society high.

Enhanced slope selection mechanism to mitigate social impact

During the September 2023 rainstorm, a landslide blocked Shek O Road – the only access to Shek O and Tai Long Wan – for more than a day. A whole community cut off for that long is no doubt a disaster. But under the old criteria, a slope like this ranked low because the risk causing direct casualty is relatively low. Thus, LPMitP now will give attention to man-made slopes that have a greater potential social impact on people's daily living and travelling, especially those abutting the sole vehicular access to highly populated residential areas.

AI supports more timely Landslip Warning decisions

Over 120 automatic rain gauges feed real-time rainfall data into into forecasts that support landslip warning and emergency deployment. The AI-Landslip Warning System (AI-LWS) improves estimates of the number of reported landslides under different rainfall conditions. Leveraging this capacity, AI-LWS strengthens the Government's early warning capacity, supports more timely and informed Landslip Warning decisions, helps the public prepare for periods of elevated landslide risk, and optimises Government departments' deployment of landslide-related resources.

Making slope works lighter on the environment

Slope works also carry an environmental footprint through construction energy and material use. LPMitP is exploring lower-carbon construction methods and materials while maintaining the required safety performance. Lithium-battery power has been introduced for selected soil-nailing works in place of diesel generators. GEO is also trialling Ground Granulated Blast-Furnace Slag (GGBS) grout for soil nails and concrete containing GGBS for skin walls. Programme-wide carbon savings are still being assessed, so these measures represent an emerging direction in greener slope works rather than a quantified programme-wide outcome.



Upgraded **7,000** **government slopes** over 50 years

6,700 **private slopes** safety-screened over 50 years

Treated **550** **catchments** over 50 years

Backed by **HK$30+** **billion** investment over 50 years

The payoff: for nearly three decades, engineered slopes have consistently performed above GEO's pledged safety benchmarks. Hong Kong continues to face an ageing slope stock, dense urban development and more extreme rainfall events, with landslides still occurring every year. Against that changing risk, the slope safety system has maintained exceptionally high performance since systematic records began in 1997. Fifty years of sustained investment have turned slope safety into an enduring public service — protecting the homes, roads and daily life below Hong Kong's steep terrain.



Excited to apply the pioneering social value framework for Hong Kong

Chapter 6

The Way Forward

- Institutionalising the Value Triangle
- The Research-Practice Cycle
- From Hong Kong to the Region and Beyond

The preceding chapters have provided a framework for social value creation in major developments (Chapter 3), a methodology for value delivery (Chapter 4), as well as an array of social value examples demonstrated in CEDD projects (Chapter 5). As Peter Drucker once said, "the best way to predict the future is to create it", in this chapter, we paint our future by emphasising three important aspects of the Value Triangle, encouraging a research-practice cycle for continuous improvement, and showing our aspiration to extend the application of this Guide to other places and to cover the built environment sector and other industries.

Institutionalising the Value Triangle



This Guide could serve as a starting point towards the people-oriented approach in future developments.

The Research-Practice Cycle

Looking ahead, apart from major developments, our built environment can be planned and managed as part of the social and ecological systems that sustain daily life. Future research can refine and test the six Social Value Drivers across different project types and communities, using practical indicators to understand how community engagement, ecological investment, and construction innovations affect access, well-being, social cohesion, livelihoods, heritage and stewardship. Continuous collaboration among government, academia, industry and communities can then turn evidence from projects into better design guidance, delivery standards and long-term governance. Through this research-practice cycle, learnings can be accumulated, applied and re-learned to refine future practices, with a view that future infrastructure can support better ecological recovery, and provide holistic accessibility while building stronger, healthier and more connected communities.



From Hong Kong to the Region and Beyond

Under the National 15th Five-Year Plan, Hong Kong is strategically positioned as a Super-Connector that leverages on its international connectivity, and established financial and professional services with a deep understanding of the Chinese Mainland context. On one hand, this Guide is grounded in internationally recognised principles and on the other hand, the principles are translated into practices in the Hong Kong context. Such experience could provide practical guidance for other places on how adaptation could be done.

Furthermore, this Guide mainly makes reference to public infrastructure projects. In future, this Guide could be expanded for wider perspectives. For example, the social value outcomes in this Guide could strengthen the disclosures under the Hong Kong Exchanges and Clearing Limited ESG Reporting Code, such as by shifting the focus from inputs to measurable outcomes. This Guide also complements BEAM Plus by demonstrating how infrastructures could benefit people and communities, supports eligibility and reporting for social and sustainability loans, and informs KPIs for sustainability-linked financing. To complement this Guide, Hong Kong PolyU Jockey Club Design Institute for Social Innovation has developed the PolyU "All-age Inclusive Community Assessment Indicators", a systematic and comparable community assessment tool, which could serve as a reference for the government, developers and financiers to have a common standard to assess and to report social value created in Hong Kong's built environment.

For thousands of years, civilisations built cities to move goods, demonstrate power, and concentrate wealth – and judged their success by how much they built. The cities being planned today will long outlast the planners, the budgets, and the political cycles that authorised them. They will be measured by what they give back to the people who live in them.

To conclude, this Guide serves as an initial attempt to cultivate and foster a people-oriented philosophy in major developments in Hong Kong. Looking ahead, the Hong Kong Government will continue to actively support actions that create social value.

Through education, co-creation, community engagement, financing, management, monitoring, and maintenance, we aim to build a resilient community and sustainable future.

We would like to extend our heartfelt gratitude to all stakeholders, practitioners, and community members for their invaluable support and contributions to writing this Guide. We commit to continuously improving the quality of life in Hong Kong, where nature and people can co-exist harmoniously, and to enhance the societal well-being for generations to come.

The successful implementation of this Guide requires a collaborative and inclusive approach that addresses local development needs and considers the diverse opinions of various stakeholders. We hope that this Guide promotes the widespread adoption of social value creation in Hong Kong.



Glossary

Additionality	A net positive change arising from an intervention that would not have occurred had the intervention not taken place.
Civic capacity	The capability of neighbourhoods and communities to plan, learn and act together to solve problems in the public interest.
Climate resilience	The ability of a system (such as a bridge, highway, building, or utility network) to anticipate, prepare for, respond to, and recover from adverse climate-related events.
Experiential education	Learning through experience and through reflection on doing.
First- and last-mile connectivity	The first and last leg of a journey that comprises the movement of passengers and goods from a transportation hub to a final destination.
Inclusiveness	The concept of actively promoting the participation and representation of diverse individuals, regardless of their backgrounds or identities.
Meanwhile use	The short-term use of temporarily empty buildings such as shops until they can be brought back into commercial use.
Nature-based solutions	Actions or measures inspired by, supported by, or copied from nature.
Participatory design	A collaborative design approach that involves end-users in the design process.
Resource circularity	Practices that keep resources in use as long as possible by promoting renewable energy, reducing waste, and minimising non-renewable resource use.
Sense of belonging	The feeling of deep connection with social groups, physical places, and individual and collective experiences.
Sense-of-place	How someone perceives and experiences a place or environment.
Social as local	The concept of tailoring projects to specific characteristics and priorities of a certain place rather than applying a "one-size-fits-all" solution.
Social equity	The fair distribution of resources within a society regardless of one's individual background.
Stewardship	A practice committed to ethical values that embodies the responsible planning and management of resources.
Theory of change	An explicit theory of how and why it is thought that a social policy or program activities lead to outcomes and impacts.
Urban biodiversity	The variety of living organisms and the multiplicity of habitats in human settlements.

List of Abbreviations

The following table lists the abbreviations for expressions adopted in this Report:

Abbreviation	Full Form
AI	Artificial Intelligence
BEAM	Building Environmental Assessment Method
BIM	Building Information Modelling
DCM	Deep Cement Mixing
DFC	Design flow capacity
DWSS	Digital Works Supervision System
ESG	Environmental, Social, and Governance
GIC	Government, Institution and Community
GNSS	Global Navigation Satellite System
HBRM	Horizontal Bridge Rotation Method
HKBWS	Hong Kong Bird Watching Society
HSITP	Hong Kong-Shenzhen Innovation and Technology Park
I&T	Innovation and Technology
IoT	Internet of Things
KPI	Key Performance Indicator
LPMitP	The rolling Landslip Prevention and Mitigation Programme
MiMEP	Multi-trade integrated Mechanical, Electrical and Plumbing
MTR	Mass Transit Railway

Abbreviation	Full Form
NbS	Nature-based Solutions
NDA	New Development Area
NGO	Non-governmental Organisation
O&M	Operation and Maintenance
PBFC	Portland Blast Furnace Cement
RIBA	Royal Institute of British Architects
RTBM	Rectangular Tunnel Boring Machine
SDG	Sustainable Development Goal
SE	Social enterprises
SEN	Special Educational Needs
SME	Small and medium-sized enterprises
STEAM	Science, Technology, Engineering, Arts, and Mathematics
STT	San Tin Technopole
TBM	Tunnel Boring Machine
TOM	Themes, Outcomes, and Measures
UTBM	U-shaped Tunnel Boring Machine
V/C	Traffic-to-capacity ratio

References

1. Agriculture, Fisheries and Conservation Department,& Civil Engineering and Development Department. (2026). Hong Kong Nature-based Solutions design guidelines. https://www.afcd.gov.hk/tc_chi/conservation/Con_hkbsap/bsap_resources_references/files/HKNbSDG.pdf

2 Allaway, B., Brown, M., & Solicitors, A. C. (2018). Social value in the built environment: The legal framework in the UK. In Social value in construction (pp. 39–59). Routledge.

3 Asian Development Bank. (2017). Guidelines for the economic analysis of projects. Asian Development Bank. https://doi.org/10.22617/TIM178607-2

4 Cabinet Office. (2020). Procurement Policy Note 06/20: Taking account of social value in the award of central government contracts. UK Government. https://www.gov.uk/government/publications/procurement-policy-note-0620-taking-account-of-social-value-in-the-award-of-central-government-contracts

5 Caro, C., Pinto, R., & Marques, J. C. (2018). Use and usefulness of open-source spatial databases for the assessment and management of European coastal and marine ecosystem services. Ecological Indicators, 95, 41–52. https://doi.org/10.1016/j.ecolind.2018.06.070

6 Carson, R. T., & Hanemann, W. M. (2005). Contingent valuation. In Handbook of environmental economics (Vol. 2, pp. 821–936). Elsevier.

7 Cartigny, T., & Lord, W. (2016). Defining social value in the UK construction industry. Proceedings of the Institution of Civil Engineers - Management, Procurement and Law, 170(3), 107–114. https://doi.org/10.1680/jmapl.15.00056

8 Cavallaro, P. A. R., & Villa, V. (2025). The essential role of social value in construction. In M. A. Bragadin, K. Kähkönen, & E. Witt (Eds.), New frontiers of construction management. Springer. https://doi.org/10.1007/978-3-031-87224-2_36

9 Cavallaro, P. A. R., & Villa, V. (2025). The essential role of social value in construction. In M. A. Bragadin, K. Kähkönen, & E. Witt (Eds.), New frontiers of construction management. Springer. https://doi.org/10.1007/978-3-031-87224-2_36

10 Choi, K., & Cheung, R. W. (2013). Landslide disaster prevention and mitigation through works in Hong Kong. Journal of Rock Mechanics and Geotechnical Engineering, 5(5), 354–365. https://doi.org/10.1016/j.jrmge.2013.07.007

11 Çıdık, M. S. (2020). Project managing the social value of built assets: A call for a focus on value manifestation. In L. Scott & C. J. Neilson (Eds.), Proceedings of the 36th Annual ARCOM Conference (pp. 35–44). Association of Researchers in Construction Management.

12 Çıdık, M. S. (2023). Politics of social value in the built environment. Buildings and Cities, 4(1), 475–487. https://doi.org/10.5334/bc.334

13 Civil Engineering and Development Department. (2026). Shore management guideline. https://www.cedd.gov.hk/filemanager/eng/content_96/39/Annex%201b%20-%20Proposed%20Appendix%20E%20-%20SMGRev13.4.pdf

14 Construction Innovation Hub. (2020). An introduction to the Value Toolkit. Construction Innovation Hub.

15 Daniel, E. I., & Pasquire, C. (2019). Creating social value within the delivery of construction projects: The role of lean approach. Engineering, Construction and Architectural Management, 26(6), 1105–1128. https://doi.org/10.1108/ECAM-06-2017-0096

16 Dare, M., Schirmer, J., & Vanclay, F. (2014). Community engagement and social licence to operate. Impact Assessment and Project Appraisal, 32(3), 188–197. https://doi.org/10.1080/14615517.2014.927108

17 Das, M. (2024). Green and blue infrastructure in high-density megacities of global south: A critical evaluation of benefits and obstacles for enhancing the well-being of Hong Kong's aging population. Developments in Environmental Science, 15, 575–594.

18 de Sousa, S. (2021). Co-designing collaborative economies in design and placemaking. In Social value in practice (pp. 193–213). Routledge.

19 Department of Treasury and Finance, State of Victoria. (2018). Victoria's social procurement framework: Buyer guidance — Guide to planning requirements. Victorian Government Department of Treasury and Finance

20 Development Bureau, & Planning Department. (2021). Towards a planning vision and strategy transcending 2030. https://www.pland.gov.hk/file/planning_studies/comp_s/hk2030plus/document/2030+_booklet.pdf

21 European Commission: Directorate-General for Research and Innovation. (2021). Evaluating the impact of nature-based solutions : a summary for policy makers. Publications Office. https://data.europa.eu/doi/10.2777/521937.

22 Fang, Y. (2024). 从公共资产视角看公共空间营造：浅谈城市公共空间的运营与投资评估机制 Creating public space from a public asset perspective: On the operation and investment evaluation mechanisms of urban public space Lecture. AECOM University, Course: Enhancing social value in urban development projects using Social Return on Investment. AECOM.

23 Fang, Y., Guo, X., Liang, Q., & Lin, S. (2025). 以综合社会价值的货币化评估指导公园规划与投资决策 Using monetized assessment of comprehensive social value to guide park planning and investment decisions Internal report. AECOM.

24 Fujiwara, D., & Dass, D. (2020). Measuring social value in infrastructure projects: Insights from the public sector. Royal Institution of Chartered Surveyors (RICS). https://majorprojects.org/wp-content/uploads/2024/10/measuring-social-value_1st-edition.pdf

25 Fujiwara, D., Dass, D., King, E., Vriend, M., Houston, R., & Keohane, K. (2021). A framework for measuring social value in infrastructure and built environment projects: An industry perspective. Proceedings of the Institution of Civil Engineers - Engineering Sustainability, 175(4), 175–185. https://doi.org/10.1680/jensu.21.00029

26 Gehl, J. (2011). Cities for people. In Planning News, 37(4), p. 6. https://um.dk/da/~/media/Graekenland/Documents/News/Invitationer/Invitation%20to%20event%20Cities%20for%20People%20Thessaloniki%2028%20April%202013.pdf

27 Government of the Hong Kong Special Administrative Region. (2026). The first five-year plan for economic and social development of the Hong Kong Special Administrative Region (2026-2030).

28 Green Building Council of Australia, & Hassell. (2024). Social value in the built environment. Green Building Council of Australia. https://gbca-web.s3.amazonaws.com/media/documents/socialvaluediscussionpaper-gbca-hassell-feb24.pdf

29 Grellier, J., White, M. P., Albin, M., Bell, S., Elliott, L. R., Gascón, M., Gualdi, S., Mancini, L., Nieuwenhuijsen, M. J., Sarigiannis, D. A., Van Den Bosch, M., Wolf, T., Wuijts, S., & Fleming, L. E. (2017). BlueHealth: A study programme protocol for mapping and quantifying the potential benefits to public health and well-being from Europe's blue spaces. BMJ Open, 7(6), e016188. https://doi.org/10.1136/bmjopen-2017-016188

30 Gyadu-Asiedu, N. A. A., Aigbavboa, C., & Ametepey, S. O. (2024). Social value trends in construction research: A bibliometric

31 Hall, K., Garrett, J. K., White, M. P., Grellier, J., Wuijts, S., & Fleming, L. E. (2020). Using urban blue spaces to benefit population health and well-being. BlueHealth. https://bluehealth2020.eu/wp/wp-content/uploads/2020/11/Read-about-the-benefits-of-blue-spaces_BlueHealth-Project_Horizon-2020.pdf

32 HM Treasury. (2026). The Magenta Book: Central government guidance on evaluation. GOV.UK. https://www.gov.uk/government/publications/the-magenta-book

33 Hong Kong Green Building Council. (2025). Guidebook for sustainable built environment. https://general.hkgbc.org.hk/download/sbe/index.php

34 Hong Kong Housing Authority. (2024). Design guide for well-being. https://housingwellbeing.hk/wp-content/uploads/2025/04/Well-Being_ConceptGuide_en.pdf

35 Hong Kong Special Administrative Region Government. (2026). Hong Kong Special Administrative Region First Five-Year Plan (2026–2030). https://www.hk5yplan.gov.hk/consultation/public/pdf/home/doc_consultation_en.pdf

36 Huang, S. L., He, Y. X., Yang, Z., Ju, P. J., Yang, X. C., Wang, K. L., Feng, Y., Chen, H., & Wu, N. (2022). Construction of an ecosystem service value evaluation system for the Longquan Mountain Forest Park in Chengdu City based on the analytic hierarchy process. Chinese Journal of Applied and Environmental Biology, 28(6), 1635–1645.

37 International Labour Organization, United Nations Environment Programme, & International Union for Conservation of Nature. (2024). Decent work in nature-based solutions 2024: Unlocking jobs through investment in skills and nature-based infrastructure. International Labour Office; International Union for Conservation of Nature.

38 International Organization for Standardization. (2020). Project, programme and portfolio management — Guidance on project management (ISO Standard No. 21502:2020). https://www.iso.org

39 IUCN. (2020). Global standard for nature-based solutions: A user-friendly framework for the verification, design and scaling up of NbS. https://doi.org/10.2305/IUCN.CH.2020.08.en

40 Jiang, Q., Wang, G., & Li, J. (2022). Public perception of cultural ecosystem services in urban parks: A case study of urban parks of Jinan City Proper. Landscape Architecture, 29(2), 127–133. https://doi.org/10.14085/j.fjyl.2022.02.0127.07

41 Kellogg, W. K. (2004). Logic Model Development Guide. Kellogg Foundation.

42 Kiss, B., Sekulova, F., Hörschelmann, K., Salk, C. F., Takahashi, W., & Wamsler, C. (2022). Citizen participation in the governance of nature-based solutions. Environmental Policy and Governance, 32(3), 247–272. https://doi.org/10.1002/eet.1987

43 Lawson, R. M., Ogden, R. G., & Bergin, R. (2012). Application of modular construction in high-rise buildings. Journal of Architectural Engineering, 18(2), 148–154. https://doi.org/10.1061/(ASCE)AE.1943-5568.0000057

44 LePage, D., & Renaerts, E. (2023). Achieving the UN SDGs through the integration of social procurement in construction projects. In Sustainable development goals series (pp. 129–147). https://doi.org/10.1007/978-3-031-28739-8_7

45 Leyden, K. M. (2003). Social capital and the built environment: The importance of walkable neighborhoods. American Journal of Public Health, 93(9), 1546–1551. https://doi.org/10.2105/AJPH.93.9.1546

46 Li, X., Yi, W., Chi, H. L., Wang, X., & Chan, A. P. (2018). A critical review of virtual and augmented reality (VR/AR) applications in construction safety. Automation in Construction, 86, 150–162.

47 Loo, B. P. (2021). Walking towards a happy city. Journal of Transport Geography, 93, Article 103078. https://doi.org/10.1016/j.jtrangeo.2021.103078

48 Ma, X., Zeng, B., & He, R. (2021). The theory and practice of the value accounting of natural resource asset: Based on the extension of Marxist value theory. Ecological Economy, 37(5), 208–213. https://doi.org/10.31497/zrzyxb.20201212

49 Maas, J., Van Dillen, S. M., Verheij, R. A., & Groenewegen, P. P. (2008). Social contacts as a possible mechanism behind the relation between green space and health. Health & Place, 15(2), 586–595. https://doi.org/10.1016/j.healthplace.2008.09.006

50 Manu, E., Ankrah, N., & Bentrar, J. (2021). Delivering social value throughout the supply chain. In Social value in practice (chap. 7, pp. 115–135). Routledge

51 Manzo, L. C., & Perkins, D. D. (2006). Finding common ground: The importance of place attachment to community participation and planning. Journal of Planning Literature, 20(4), 335–350. https://doi.org/10.1177/0885412205286160

52 Mao, X., Song, J., Feng, H., et al. (2013). Residents' recreation satisfaction index of Beijing city parks based on SEM. Geographical Research, 32(1), 166–178. https://doi.org/10.11821/yj2013010017

53 Mayer, M., & Woltering, M. (2018). Assessing and valuing the recreational ecosystem services of Germany's national parks using travel cost models. Ecosystem Services, 31, 371–386.

54 Moreno, C., Allam, Z., Chabaud, D., Gall, C., & Pratlong, F. (2021). Introducing the "15-minute city": Sustainability, resilience and place identity in future post-pandemic cities. Smart Cities, 4(1), 93–111. https://doi.org/10.3390/smartcities4010006

55 National Development and Reform Commission, & National Bureau of Statistics. (2022). Guidelines for the accounting of total value of ecosystem products. People's Publishing House

56 National Social Value Taskforce, & Social Value Portal. (n.d.). Social value roadmap: Delivering a social value economy. Social Value Portal.

57 Nicholls, J., Lawlor, E., Neitzert, E., & Goodspeed, T. (2012). A guide to social return on investment (2nd ed.). Liverpool, UK: The Cabinet Office.

58 Nissim, R., & Chen, N. (2025). The placemakers of Hong Kong. Hong Kong University Press.

59 O'Donnell, E., Thorne, C., Ahilan, S., Arthur, S., Birkinshaw, S., Butler, D., Dawson, D., Everett, G., Fenner, R., Glenis, V., Kapetas, L., Kilsby, C., Krivtsov, V., Lamond, J., Maskrey, S., O'Donnell, G., Potter, K., Vercruysse, K., Vilcan, T., & Wright, N. (2019). The blue-green path to urban flood resilience. Blue-Green Systems, 2(1), 28–45. https://doi.org/10.2166/bgs.2019.199

60 Project Management Institute. (2025). A guide to the project management body of knowledge (PMBOK guide) (8th ed.). Project Management Institute.

61 Pucher, J., & Buehler, R. (2008). Making cycling irresistible: Lessons from The Netherlands, Denmark and Germany. Transport Reviews, 28(4), 495–528. https://doi.org/10.1080/01441640701806612

62 Puskás, N., Abunnasr, Y., & Naalbandian, S. (2021). Assessing deeper levels of participation in nature-based solutions in urban landscapes: A literature review of real-world cases. Landscape and Urban Planning, 210, Article 104065. https://doi.org/10.1016/j.landurbplan.2021.104065

63 Raiden, A., Loosemore, M., King, A., & Gorse, C. (2018). Creating social value within and between organisations. In Social value in construction (pp. 69–92). Routledge.

64 Raiden, A., & King, A. (Eds.). (2021). Social value in practice. Routledge.

65 Raymond, C. M., Frantzeskaki, N., Kabisch, N., Berry, P., Breil, M., Nita, M. R., Geneletti, D., & Calfapietra, C. (2017). A framework for assessing and implementing the co-benefits of nature-based solutions in urban areas. Environmental Science & Policy, 77, 15–24. https://doi.org/10.1016/j.envsci.2017.07.008

66 Rey, F., Bifulco, C., Bischetti, G. B., Bourrier, F., De Cesare, G., Florineth, F., Graf, F., Marden, M., Mickovski, S. B., Phillips, C., Peklo, K., Poesen, J., Polster, D., Preti, F., Rauch, H. P., Raymond, P., Sangalli, A., Tardio, G., & Stokes, A. (2019). Soil and water bioengineering: Practice and research needs for reconciling natural hazard control and ecological restoration. Science of the Total Environment, 648, 1210–1218.

67 Royal Institute of British Architects. (2020). RIBA plan of work 2020 overview. Royal Institute of British Architects. https://www.riba.org/work/insights-and-resources/riba-plan-of-work/

68 Ruangpan, L., Vojinovic, Z., Di Sabatino, S., Leo, L. S., Capobianco, V., Oen, A. M., McClain, M. E., & Lopez-Gunn, E. (2020). Nature-based solutions for hydro-meteorological risk reduction: A state-of-the-art review of the research area. Natural Hazards and Earth System Sciences, 20(1), 243–270.

69 Samuel, F. (2020). RIBA social value toolkit for architecture. Royal Institute of British Architects.

70 Samuel, F., & Watson, K. (2023). Social value of the built environment. Buildings and Cities, 4(1), 938–947. https://doi.org/10.5334/bc.399

71 Shang, Z., Zhang, S., Yue, C., et al. (2019). Research on the value-added measurement of land surrounding the newly-built urban park: A case study of Jinlong Lake Park in Xuzhou City. Science & Technology Bulletin, 35(1), 260–264. https://doi.org/10.16178/j.issn.0528-9017.20180749

72 Sherrouse, B. C., Clement, J. M., & Semmens, D. J. (2011). A GIS application for assessing, mapping, and quantifying the social values of ecosystem services. Applied Geography, 31(2), 748–760.

73 Social Enterprise UK. (n.d.) Social Value 2032: Creating a social value economy.

74 Social Value International. (n.d.). Social Value International. https://www.socialvalueint.org/

75 Sykes, J., & Dobson, J. (2020). Maximising social value from infrastructure projects. Institution of Civil Engineers and Useful Projects.

76 Tencent Research Institute, & Menglang Research Institute. (2022). 价值共创：社会价值投资研究报告2022 Value co-creation: Social value investment report 2022. Tencent Research Institute.

77 The Trust for Public Land, Center for City Park Excellence. (2008). How much value does the City of Philadelphia receive from its park and recreation system?. The Trust for Public Land.

78 Tong, L., Wei, X., Song, X., Mao, X., Jin, X., Jin, Y., Ji, H., & Tang, W. (2022). Research on the value of urban wetland ecosystem services and influencing factors in Xining based on the hedonic price and structural equation dual models. Acta Ecologica Sinica, 42(11), 4630–4639. https://doi.org/10.5846/stcb202108042132

79 UK Green Building Council. (2021). Framework for defining social value. UK Green Building Council.

80 United Nations. (2015). Transforming our world: The 2030 Agenda for Sustainable Development. https://sdgs.un.org/2030agenda

81 Wang, Y., Yu, H., Wang, C., et al. (2019). Ecological asset accounting and ecological compensation mechanism. Chinese Journal of Environmental Management, 11(3), 31–35, 13. https://doi.org/10.3969/j.issn.1002-2104.2014.11.010

82 Wang, Y., Yu, H., Wang, C., et al. (2019). Ecological asset accounting and ecological compensation mechanism. Chinese Journal of Environmental Management, 11(3), 31–35, 13. https://doi.org/10.3969/j.issn.1002-2104.2014.11.010

83 Watts, G., & Challender, J. (2026). Achieving total value in the built environment. John Wiley & Sons.

84 White, M. P., Elliott, L. R., Gascon, M., Roberts, B., & Fleming, L. E. (2020). Blue space, health and well-being: A narrative overview and synthesis of potential benefits. Environmental Research, 191, Article 110169.

85 White, P., Hodges, A., & Greenslade, M. (2013). Guidance on measuring and maximising value for money in social transfer programmes: Toolkit and explanatory text (2nd ed.). UKAID (Department for International Development).

86 World Bank. (2022). Republic of Cameroon: Douala Urban Mobility Project (Project Appraisal Document No. PAD4560). World Bank.

87 World Health Organization. (2025). Implementing the Global Framework on Well-being at country level. https://iris.who.int/server/api/core/bitstreams/faae37e0-74d0-4fd6-b2d0-cd4bff5b9bb9/content

88 Xi, J. (2025). Speech at the symposium on economic and social development during the 15th Five-Year Plan period. Xinhua. https://www.gov.cn/yaowen/liebiao/202504/content_7018041.html

89 Xie, H. L., & Chen, Q. R. (2022). The connotation, goal, and mode of ecological product value realization. Economic Geography, 42(9), 147–154. https://doi.org/10.15957/j.cnki.jjdl.2022.09.017

90 Zhang, Y., Zhang, H., Yu, H., et al. (2020). Social value assessment of ecosystem services based on tourist perception: A case study of Qianjiangyuan National Park. Tourism Science, 34(6), 66–85. https://doi.org/10.16323/j.cnki.lykx.2020.06.006

91 Zhu, Y. X., & Yao, S. B. (2021). Research on the coordinated development of environment and economy based on the change of ecosystem service value: A case study of Shaanxi Province. Acta Ecologica Sinica, 41(9), 3331–3342. https://doi.org/10.5846/stxb201911292592

Our Impact Stories

Story 1: Kwu Tung North and Fanling North New Development Area

Story 2: Tung Chung New Town Extension (East)

Story 3: Yuen Long South New Development Area

Story 4: Cross Bay Link

Story 5: East Coast Boardwalk

Story 6: Expansion of Aberdeen Typhoon Shelter

Story 7: Landslip Prevention and Mitigation Programme

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