

MEMORANDUM

To:	Brighton City Council and Department of State Growth
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RE: DIGITAL INFRASTRUCTURE AND SMART LOGISTICS OPPORTUNITIES IN BRIGHTON HUB

A digitally enabled industrial precinct is one where data is used as core infrastructure to coordinate operations, optimise resource use, and improve decision-making across tenants and systems. Rather than operating as a collection of independent users, the precinct functions as a connected system, where infrastructure, logistics and industrial processes are actively coordinated through a continuous cycle of tracking, optimising and adapting to support greater efficiency, resilience and long-term performance. In practical terms, this means the precinct can track freight, materials and energy flows in real time, enable dynamic scheduling and logistics coordination, support data sharing between tenants and operators, and leverage predictive insights to continuously improve performance.

While digital enablement is largely driven by infrastructure and operations, planning policy and controls play a critical role in encouraging readiness for emerging technologies and ensuring early decisions do not constrain future digital capability. Rather than prescribing how and when digital and smart logistics solutions should be implemented, the focus at the structure planning stage is to establish the conditions for scalable, staged implementation as the precinct develops and demand evolves. This approach helps avoid over-investment upfront while maintaining flexibility to integrate new technologies over time.

This memorandum clarifies the relationship between digital infrastructure and smart logistics and the precinct's broader strategic objectives; examines relevant national and international case studies to identify key success factors and transferable learnings; and outlines key opportunities for the Brighton Hub.

1.1 Existing Digital Connectivity

Telecommunications infrastructure planning has been considered through engagement with NBN and other industry stakeholders. Existing fibre infrastructure is available within and surrounding the precinct, with multiple businesses already connected to fibre services and other telecommunications technologies, including Straight Link, SRT Logistics and OneTrack.

Unlike traditional utility infrastructure such as water, sewerage and electricity networks, telecommunications infrastructure can generally be expanded incrementally in response to demand. As the Statutory

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Infrastructure Provider, NBN has an obligation to provide access to telecommunications services and can facilitate network extensions or upgrades where required.

Mobile telecommunications infrastructure will also play an important role in supporting future industrial, logistics and digital operations within the precinct. While specific tower locations, small cell infrastructure and future network upgrades are typically determined in response to customer demand and development patterns, engagement with Mobile Network Operators (MNOs) and Mobile Network Infrastructure Providers (MNIPs) should continue as the precinct develops to ensure future coverage and capacity requirements can be accommodated.

Telecommunications infrastructure in Australia is primarily regulated under the *Telecommunications Act 1997* (Cth) and associated legislation, which grants carriers certain rights to inspect land, install low-impact facilities and maintain infrastructure — in some cases without requiring state or local planning approval. The *Telecommunications (Low-impact Facilities) Determination 2018* sets out the categories of infrastructure that can be installed as of right, including small cells, conduits and certain antenna structures. This creates an important interface with Tasmania's *Land Use Planning and Approvals Act 1993* and the relevant planning scheme: while carriers may exercise federal rights for low-impact works, more substantial infrastructure, including towers and equipment shelters, will generally require planning approval at the local level.

Understanding this legislative boundary is useful at the Structure Plan stage. Identifying preferred locations for future telecommunications infrastructure within the precinct, including equipment shelter sites and tower envelopes, can reduce conflict between carrier rights and local amenity expectations, and provide greater certainty for both developers and network operators as the precinct grows.

At the Structure Plan stage, the priority is to ensure future development does not constrain the delivery of additional telecommunications infrastructure where required, particularly as freight, logistics, automation and data-intensive industrial uses continue to grow.

The spatial implications of digital infrastructure provision should be considered early in the precinct design process. Conduit routes and pit networks identified at the subdivision stage avoid costly retrofitting and allow fibre to be extended efficiently as lots develop. Where possible, telecommunications conduit should be co-located with other utility corridors to minimise ground disturbance. Road reserve widths, building setbacks and the placement of shared facilities should account for equipment shelters, network nodes and small cell infrastructure on light poles or similar structures.

For freight, logistics and data-intensive uses, internal road layouts and lot configurations should support private fibre networks and on-site connectivity, particularly where automation or real-time tracking is likely. Internal conduit connecting warehouses, gatehouse facilities and perimeter infrastructure is best considered at the site design stage rather than retrofitted.

1.2 Role of Digital Enablement in Precinct Performance

The performance of modern industrial precincts is increasingly defined not only by the quality of their physical infrastructure, but by their ability to efficiently collect, share and utilise data across operations, assets and

supply chains. In this context, digital systems act as critical enabling infrastructure, supporting more productive, efficient and resilient industrial ecosystems. Importantly, digital enablement provides a mechanism to maximise the value of existing and planned infrastructure, improving utilisation and operational performance rather than relying solely on physical expansion.

For freight and logistics precincts in particular, digital technologies are increasingly transforming how goods, vehicles and infrastructure are coordinated. This includes the use of artificial intelligence (AI) and near-real-time location intelligence to optimise freight movements, improve scheduling and routing, reduce congestion and support more efficient use of transport infrastructure. Cloud-based logistics platforms are also enabling greater visibility across supply chains by connecting freight operators, warehouse facilities, carriers, customers and regulatory systems through integrated digital networks.

Digital enablement is also becoming increasingly important within industrial operations. Industrial Internet of Things (IIoT) sensors can provide real-time information on asset performance, freight movements, environmental conditions and operational efficiency, while supporting improved safety, security and asset management. Advances in warehouse automation, including autonomous mobile robots (AMRs), automated storage and retrieval systems, and advanced sorting technologies, are further improving productivity and competitiveness across freight and logistics industries. These trends align with broader national initiatives, including the Australian Government's National Robotics Strategy and associated funding programs aimed at accelerating industrial innovation and automation.

This enabling role is also critical in translating broader sustainability objectives into operational outcomes. Circular economy opportunities, for example, rely on the ability to identify, match and optimise resource exchanges between tenants. While co-location creates the potential for industrial symbiosis, these opportunities depend on real-time visibility of material flows. Digital platforms and material flow analysis tools therefore become essential in supporting ongoing optimisation of materials, water and waste streams across the precinct.

A similar dynamic applies to energy systems. Electrification, renewable energy integration and alternative fuels introduce both opportunity and complexity, increasing variability in supply and demand. Digitally enabled energy systems support real-time balancing and coordination across tenants, helping to improve efficiency, reduce peak demand pressures and maximise utilisation of shared energy infrastructure.

Beyond operational performance, digital enablement can also strengthen how the precinct is planned and managed over time. Data-driven tools—including GIS platforms, digital twins and material flow analysis—can support more informed spatial decision-making by identifying opportunities to optimise land use, infrastructure investment and tenant clustering. This enables planning decisions to evolve as new information becomes available and supports more efficient long-term development outcomes.

This capacity to monitor, predict and respond is equally important in the context of climate resilience. Digital infrastructure and smart logistics systems support real-time monitoring, predictive modelling and coordinated operations, enabling a shift from reactive responses to more proactive and adaptive approaches to climate risk. This includes responding to disruptions such as extreme weather events, flooding or supply chain interruptions while maintaining operational continuity. As industrial systems become increasingly connected,

cybersecurity will also become an important consideration, requiring appropriate governance, interoperability standards and protection of operational technology, logistics systems and critical infrastructure.

Taken together, these capabilities strengthen the precinct's ability to improve productivity, attract investment, support innovation, enhance resilience and adapt to changing technologies and market conditions over time, reinforcing Brighton HUB's role as a future-ready industrial and logistics precinct.

1.3 CASE STUDIES AND TRANSFERABLE SUCCESS FACTORS

1.3.1 Port of Rotterdam Digital Port Ecosystem (Netherlands)

The Port of Rotterdam (Netherlands) is one of the world's most advanced digitally enabled industrial and logistics ecosystems, demonstrating how integrated data platforms and real-time monitoring can optimise freight flows, infrastructure performance and industrial operations at scale. As Europe's largest port, Rotterdam operates as a highly coordinated system, where digital tools are used to manage vessel movements, cargo handling and hinterland logistics across a complex, multi-tenant environment.

A key innovation is the development of a precinct-wide digital twin, which integrates real-time data on weather, tides, infrastructure and logistics movements to support predictive decision-making. This is complemented by the Port Community System (PCS), a shared data platform that enables seamless information exchange between shipping companies, terminal operators, logistics providers and government agencies. Together, these systems enable dynamic scheduling, improved asset utilisation and reduced congestion across the port.

Importantly, these digital systems also support climate resilience and energy optimisation, enabling the port to model and respond to risks such as sea level rise, extreme weather and changing operating conditions. By integrating environmental data with logistics and infrastructure systems, Rotterdam can anticipate disruptions and maintain operational continuity, while also improving the efficiency of energy use across port operations.

A critical success factor has been the strong role of the Port Authority as a central coordinating entity, establishing data-sharing standards and ensuring broad participation across stakeholders. This governance model has enabled interoperability between systems (i.e. the ability of two or more systems to work together), reduced fragmentation, and supported continuous optimisation of port operations without requiring significant physical expansion.

For the Brighton Hub Industrial Precinct, Rotterdam provides several directly relevant insights:

- The value of establishing a coordinating entity and centralised digital platform to manage freight flows and precinct performance.
- The importance of real-time data sharing to enable efficient logistics, energy coordination and system-wide optimisation across multiple tenants.
- The opportunity to enhance climate resilience and operational continuity through predictive modelling and integrated environmental monitoring.

- The role of digital systems in supporting long-term scalability, allowing operational improvements without reliance on major physical expansion.

1.3.2 Port of Hamburg SmartPORT (Germany)

The Port of Hamburg (Germany) is a leading example of how digital technologies can be applied incrementally to optimise freight movement and infrastructure performance within a complex, operational port environment. Through its SmartPORT initiative, Hamburg has transformed traditional logistics operations into a more coordinated and data-driven system, demonstrating how targeted digital interventions can improve efficiency without requiring large-scale physical expansion.

A key feature of the SmartPORT program is the deployment of real-time traffic and logistics management systems, supported by a network of sensors across roads, bridges and port infrastructure. These systems collect and analyse data on freight movements, congestion and infrastructure conditions, enabling dynamic routing, improved scheduling and better coordination between port users. Information is shared with logistics operators through digital platforms, allowing them to respond in real time to changing conditions and optimise their operations accordingly.

Beyond efficiency gains, these systems enhance climate resilience and operational adaptability, improving the port's ability to respond to disruptions such as extreme weather events, flooding or changing freight conditions. Real-time visibility and coordination allow logistics operators to adjust routing and scheduling dynamically, supporting continuity of operations under variable and uncertain conditions.

A critical success factor has been the staged and collaborative implementation approach, with digital solutions introduced progressively and in close partnership with logistics operators and technology providers. This has supported industry uptake, reduced implementation risks, and allowed systems to evolve in response to operational needs rather than being over-specified upfront.

Hamburg highlights how digital enablement can enhance the performance of existing infrastructure by improving visibility, coordination and responsiveness, particularly in environments where freight flows are complex and highly variable.

For the Brighton Hub Industrial Precinct, Hamburg provides several directly relevant insights:

- The value of a staged, scalable approach to digital implementation, allowing systems to evolve alongside precinct development.
- The importance of improving real-time visibility of freight movements to reduce congestion and improve reliability.
- The opportunity to enhance existing infrastructure performance and climate resilience through data-driven coordination, rather than relying solely on physical upgrades.
- The role of industry collaboration and user-focused design in ensuring successful adoption of digital systems.

1.3.3 Port of Brisbane / Australia TradeCoast (Australia)

The Port of Brisbane and the broader Australia TradeCoast (Queensland) represent a major national logistics and industrial precinct, illustrating how digital systems and coordinated infrastructure can enhance freight efficiency, tenant attraction and supply chain performance within an Australian context. As a key gateway for trade, the precinct integrates port operations, warehousing, transport and industrial activities within a highly connected freight network.

Digital enablement within the precinct includes the use of freight tracking systems, supply chain integration platforms and smart logistics infrastructure, enabling improved visibility and coordination across freight movements. These systems support real-time information exchange between port operators, logistics providers and tenants, improving scheduling, reducing delays and enhancing reliability.

While less centralised than international examples, these systems support incremental optimisation of logistics, energy use and operational performance, enabling tenants to respond more effectively to changing demand and operating conditions. This contributes to improved supply chain resilience, particularly in the face of disruptions affecting freight flows or infrastructure capacity.

A key success factor has been the strong alignment between infrastructure investment and tenant demand, particularly from major logistics operators requiring efficient, predictable freight movements. The precinct benefits from its integration with road, rail and port networks, with digital systems enhancing the performance of this physical infrastructure rather than replacing it.

The precinct also demonstrates how digital systems can support pragmatic, staged implementation, building capability over time while maintaining flexibility and avoiding unnecessary upfront investment.

For the Brighton Hub Industrial Precinct, the Port of Brisbane provides several directly relevant insights:

- The importance of aligning digital systems with core freight and logistics functions, rather than treating them as standalone initiatives.
- The value of improving supply chain visibility and coordination to enhance reliability and tenant outcomes.
- The opportunity to attract logistics and industrial tenants through efficient, digitally supported freight operations.
- The relevance of a staged and pragmatic approach to digital adoption, building on existing infrastructure and scaling over time.

1.3.4 Industrial Precinct in Portes du Tarn, Toulouse, France

The Portes du Tarn Industrial Park (Toulouse, France) is a contemporary eco-industrial precinct demonstrating how digital tools, governance and tenant curation can support industrial symbiosis and long-term precinct optimisation. Developed since 2012 through a public development agency (SPLA81), the precinct supports key industries including aeronautics and space, pharmaceuticals, chemicals and food production, and is explicitly based on industrial ecology principles, with a strong focus on data-driven planning and staged development.

A key innovation is the use of integrated digital platforms and real-time monitoring systems to track precinct performance and identify optimisation opportunities across materials, energy, equipment and services. Tools

such as the COPRIE platform analyse tenant inputs and outputs to identify potential synergies and resource-sharing opportunities, while also enabling the simulation of future industrial scenarios. This is complemented by Web GIS technology, which supports data-driven spatial decision-making, enabling optimal tenant placement based on infrastructure capacity, logistics efficiency and opportunities for resource exchange, while also supporting adaptive planning as the precinct evolves.

Importantly, tenant selection is highly curated, with detailed information collected upfront on built form, energy use, materials, waste and transport requirements. Proposals are assessed against criteria including industrial synergies, environmental impacts, waste and water management, and mobility, ensuring each new tenant contributes to a more efficient and integrated precinct. In parallel, the precinct deploys sensor networks to monitor environmental indicators such as air, water and noise, enabling ongoing performance tracking and adaptive management.

For the Brighton Hub Industrial Precinct, Portes du Tarn highlights several transferable success factors:

- The value of digital enablement to support material flow analysis and precinct optimisation
- The role of a governance entity in tenant curation and performance management
- The importance of data-driven planning and staging to align land use, infrastructure and industrial synergies over time.

Together, these approaches support a more efficient, coordinated and low-impact industrial ecosystem.

1.4 OPPORTUNITIES FOR BRIGHTON HUB

The following table outlines key opportunities to embed digital enablement within the Brighton Hub Industrial Precinct, translating strategic objectives into practical implications for the structure plan. These opportunities focus on establishing the foundational infrastructure, systems and governance required to support efficient logistics, resource optimisation and long-term resilience. Importantly, they prioritise scalable and staged implementation, ensuring early planning decisions enable future capability without requiring significant upfront investment or constraining emerging technologies.

Opportunity	Implication for Precinct Structure Plan
High-speed connectivity (fibre-ready / 5G-ready precinct) – Provide the digital backbone required to support real-time data exchange, automation and future technologies	Spatial: Safeguard corridors/easements for digital infrastructure to avoid retrofit constraints Infrastructure: Provide fibre backbone and enable future 5G deployment across the precinct
Central precinct coordination entity / operating model – Establish a dedicated body to manage shared systems, coordinate tenants and optimise precinct performance over time	Governance / operations: Establish a coordinating body responsible for managing digital systems, data governance and ongoing optimisation

Opportunity	Implication for Precinct Structure Plan
Staged digital infrastructure and scalability framework – Plan for progressive deployment of digital systems, ensuring early infrastructure enables future upgrades without over-investment	Governance / operations: Establish mechanisms to review, upgrade and scale systems over time
Climate and environmental monitoring systems – Deploy sensor networks to monitor environmental conditions (e.g. flooding, temperature, air and water quality) to support adaptive management and resilience	Governance / operations: Integrate monitoring into precinct-wide platforms to support real-time response and long-term adaptation planning Infrastructure: Install environmental sensors and monitoring systems across key assets and risk areas (e.g. drainage, low-lying land, transport corridors)
Precinct-wide digital platform (GIS / digital twin over time) – Establish a shared digital platform to integrate spatial, infrastructure and operational data for planning and ongoing optimisation	Governance / operations: Establish a data governance framework, with baseline data requirements and nominated precinct-level platform for owners/operators
Real-time freight tracking and scheduling – Implement systems to track freight movements and coordinate arrivals, departures and loading activities to reduce delays and improve intermodal efficiency	Governance / operations: Enable a shared logistics coordination platform to support real-time scheduling and data exchange Infrastructure: Install sensors, tracking systems and integration with freight platforms
Smart gate and yard management – Automate site access and manage vehicle queuing and circulation to optimise throughput and minimise congestion	Spatial: Allocate space for smart gates and on-site queuing to avoid spillback onto external roads Infrastructure: Install automated gate systems, sensors and communications infrastructure
Data-enabled energy and infrastructure optimisation – Use real-time data to monitor and balance energy demand, improve efficiency and support shared or renewable energy systems	Governance / operations: Support data-sharing protocols and potential shared energy management models Infrastructure: Install smart metering, monitoring systems across shared energy infrastructure
Material and resource flow tracking (supporting circular economy) – Implement systems to track material flows, waste streams and resource use to support optimisation, reporting and continuous improvement	Governance / operations: Require tenant-level data inputs (e.g. waste, materials, water) to support future material flow analysis + Enable mechanisms for data sharing and facilitation of resource exchange between tenants

Opportunity	Implication for Precinct Structure Plan
Data-informed spatial planning and tenant clustering – Use data (logistics flows, infrastructure capacity, resource use) to inform tenant mix, co-location, and land use planning over time (such as future precinct expansion)	Governance / operations: Establish data inputs and analytical tools (e.g. GIS, flow analysis) to inform ongoing spatial decision-making and support clustering of complementary industries