HYNDS LC®

Sustainable Strength

Lower Carbon Range

What is the HyndsLC® range?

The HyndsLC® range of reinforced concrete pipes and precast concrete products combines Hynds Pipe Systems industry-leading product ranges with industry-proven carbon reduction technology to deliver the same level of quality and performance with a lower carbon footprint.

The HyndsLC® range enables contractors to meet project sustainability requirements without having to compromise on quality, durability, time and cost. By using the same joint profiles, dimensions and lifting anchors, the products can be installed in the exact same way as Hynds standard product ranges, making it easier for contractors.

Hynds have also committed to keeping this range cost competitive to support the infrastructure industries decarbonisation goals. The range can be tailored to meet specific project requirements and embodied carbon reduction targets.

What's special about the HyndsLC® range?

The HyndsLC® range covers precast concrete products and concrete pipes manufactured by Hynds in New Zealand. This includes, but is not limited to, pipes (including jacking and lined pipes), manholes, drainage pits and channels, box culverts and custom precast products. The concrete components of stormwater treatment devices, tanks and troughs can also be included. There are some limitations with this range, such as small diameter concrete pipes in the North Island, which we are continually working to improve.

Hynds can achieve these carbon reductions within the bounds of existing standards and approved materials through:

- Reducing the amount of cement in the concrete using increased SCM substitutions (e.g. fly ash and blast furnace slag) which have a lower carbon footprint. An additional benefit is that SCM's have been shown to improve the durability of concrete.
- Selectively procure components that have lower carbon footprints, while still meeting our strict quality requirements, from our diverse supply chain.
- Modify the design of the products to optimize the carbon footprint based on the specific requirements of the project.

These changes cannot be implemented in Hynds standard product ranges due to SCMs delaying the concrete setting time and limitations in the cost and availability of low carbon components. For this reason, the HyndsLC® range was developed to support projects and customers for which sustainable procurement is considered.

All HyndsLC® products conform to the same engineering Standards as our standard range products with the same (or improved) level of performance or durability.

How large are the carbon reductions?

The carbon reduction of a HyndsLC® product is compared to the standard Hynds offering of the same product from the same factory. In this way we are reporting a real carbon reduction, as opposed to being based on an industry benchmark. Because we do this comparison on a product-by-product basis, the level of carbon reduction varies significantly depending on the steel to concrete ratio, the available technology at each site and any specific product limitations.

The HyndsLC® range is available in a set of standard reductions:

LC25: Our lower carbon concrete and raw materials option to provide an average manufactured product carbon reduction of 25%. We have delivered LC25 products with carbon reductions ranging from 16% to 34%.

LC25+: Our lower carbon concrete and raw materials option, combined with optimized design based on the specifics of the project. Carbon reductions vary depending on project limitations.

Hynds have developed life cycle analysis (LCA) tools in collaboration with thinkstep-ANZ which have been third party reviewed to conform to the EN 15804+A2 Standard, as required for Environmental Product Declarations (EPDs). These LCA tools are used to calculate the carbon footprint of all standard and HyndsLC® products.

The values used to compare between the standard and HyndsLC products cover cradle-to-gate only (EPD modules A1-A3) and do not include transport, installation and end-of-life scenarios. vvv

High strength jacking pipe

Following the major Auckland floods in January 2023, the Greville Road Stormwater Culvert Upgrade project in Albany was identified as an emergency works project by Auckland Council's Healthy Waters.

The existing Greville Road culvert consists of a 1,950 mm diameter corrugated steel pipe that conveys flow from an inlet located within a basin north of Greville Road. The pipe stretches across a key arterial road (Greville Road), that connects to the Northern Motorway and Albany Expressway, and under Rosedale Landfill where it connects into a 1,950 mm concrete pipe. The culvert had failed at the inlet on the northern side of Greville Road.

Although the initial scope was to excavate and remove the collapsed culvert and replace it with a temporary shaft, the decision was made by Auckland Council and McConnell Dowell to design and construct the shaft to accommodate the permanent inlet at the same time. This was to avoid any reworking later in the project, saving time in the construction programme.

After a joint workshop between Hynds, Healthy Waters and McConnell Dowell, it was decided to proceed with HyndsLC® 2100mm diameter Hyforce® Butt Joint Concrete Jacking Pipes with a fixed stainless steel jacking band.

Karun Kumar, Tunnels Project Engineer for McConnell Dowell, says it was important that the design of the jacking pipes allowed for the push of 1,400 tonnes which also coincides with the maximum thrust force of the jacking frame.

The first phase of the project to unblock the culvert began in March 2023. At the beginning of this year, the project team mobilised the landfill site which accommodates the launch shaft for the Micro-Tunnel Boring Machine (mTBM). The mTBM will install a 2100 mm ID stormwater pipeline in two tunnelling drives – 220 m in the first drive and 50 m in the second drive.

Hynds was able to deliver the HyndsLC® pipes in the same timeframe and meeting the same engineering specifications as the standard offering, making life easy for the project team on-site. By conforming to the same engineering specifications, the low carbon pipes have the same durability and design life as the standard options, meeting Healthy Waters' long-term sustainability goals.

"We were able to deliver the lowest carbon option that met the project requirements for the material strength, programme and cost. The 92 Hynds pipes will save approximately 62 tonnes of CO2 emissions which is a 16% reduction in the standard pipe range."

Gerhard Van Rooyen, Project Manager for Healthy Waters, emphasised Auckland Council's commitment to sustainability.

"We are actively seeking opportunities to incorporate low carbon products into our projects. By closely collaborating with our supply chain and project teams, we can deliver sustainable stormwater infrastructure that enhances Auckland's resilience," says Gerhard.

Todd Randell, Trenchless and Pipelines Specialist for Hynds Pipe Systems, says being able to offer a bespoke solution was a game changer for the project.

"The jacking pipe used in this project is actually a lower carbon than we would normally produce. To meet the specifications, we substituted raw materials – concrete, cement and steel – and worked with the lowest carbon producers to get the right outcome, without compromising quality or durability," says Todd.

This collaborative approach with the client, consultants and designers made a positive impact on the overall programme and provided a cost-effective solution.

HyndsLC® manholes reduce embodied carbon for KiwiRail's Drury Station Project

HEB Construction and Hynds have come together to support KiwiRail's transition to net zero carbon by 2050 through the first use of lower carbon manholes in KiwiRail's network.

KiwiRail is currently working with partner agencies Auckland Transport and Waka Kotahi to create a cohesive transport network in South Auckland. Over the next 30 years, an extra 130,000 people are expected to call South Auckland home. To prepare for that future growth, the government has provided funding for three new railway stations between Papakura and Pukekohe.

As part of KiwiRail's drive to reduce the embodied carbon of their capital projects, they challenged contractors working on the Drury Train Station to incorporate lower carbon solutions. HEB Construction saw this as the perfect opportunity to utilise the lower carbon precast concrete range from Hynds Pipe Systems.

"We are thrilled to be the first site to implement Hynds lower carbon manholes in a KiwiRail project, marking a significant step towards increased sustainability. This innovative solution not only benefits the environment but also aligns with our customers' goals. Together, we are paving the way for a greener future" says Francois van Rooyen, HEB Construction Project Manager.

The HyndsLC® range of lower carbon precast concrete products enables contractors and asset owners to meet their sustainability requirements without having to compromise on quality and durability. The embodied carbon reductions are achieved through increased use of cement replacements (using fly ash and ground granulated blast furnace slag) and substituting high carbon components with lower carbon suppliers.

"While the HyndsLC® range does cost us more to manufacture, due to the cost of materials and increased manufacturing time, we are committed to supporting our customers sustainability targets and have supplied the lower carbon manholes at no additional cost" says Ben Scott, Hynds Senior Account Manager.

The HyndsLC® range was only used for the manholes in the Drury Train Station, with future projects planning to use lower carbon concrete pipes as well. A key feature of these products is that the installation and handling processes are identical to Hynds standard products, allowing contractors to easily adopt these products.

The successful use of the HyndsLC® range in this project has shown the value of suppliers, contractors and asset owners partnering together to achieve the most sustainable outcomes.

"At KiwiRail, we're upgrading and building infrastructure across New Zealand with a strong focus on sustainability. The Drury Station project marked a significant milestone as our first to incorporate low carbon pre-cast concrete onsite. This innovation represents a major step forward—not just for this project, but for embedding low-carbon construction practices into the future of KiwiRail's developments" says Marco Dumas, Programme Manager, Auckland Metro Programme.

"If lower carbon precast concrete products had been used for the full range of pipe and manholes at Drury Train Station, the project would have avoided over 3 tons of carbon emissions. If you expand that over all of HEB Constructions' KiwiRail projects nationally, this represents a huge opportunity for us to collectively deliver consistent, meaningful carbon reductions" adds Ben Scott.

The Drury Railway Station is expected to be operational in 2026, alongside the Ngākōroa Railway Station and Paerātā Railway Station. Combined with the electrification of the KiwiRail network from Papakura to Pukekohe, the three new stations will make travelling by train more accessible and appealing to those living and working in the area.

"The feedback from our drainlayers is that it is no different to the standard concrete manholes so it's good all-round. Moving forward, we will be favouring the lower carbon options over standard concrete products"
Francois van Rooyen.

Bespoke Low Carbon Solution for Mercury's Ngā Tamariki Power Station Expansion

Initially, Mercury Energy requested products from our standard precast range, intending to carry out modifications onsite. This approach posed logistical and time constraints, as onsite alterations are often labour-intensive and less efficient.

To overcome this, Hynds mobilised our engineering and technical teams from to provide a tailored, cost-effective alternative. We proposed a bespoke solution using modified moulds – eliminating the need for onsite adjustments while maintaining high-quality standards.

Additionally, we introduced our Low Carbon Concrete range, aligning with Mercury's commitment to reducing carbon emissions. A certified low-carbon material option was supplied to further support their sustainability goals.

This project featured 13 distinct types of 1.5mW x1.7m H x 1.8m Long & 0.75mW x 0.70mH x 1.5m Long precast concrete channels, all crafted from our innovative low-carbon concrete range. Each bespoke channel was meticulously designed by our skilled technical design team to meet the specific needs of the site.

The project involved high-traffic areas with heavy crane movement, which was a key factor in the design process. Our team tailored the design to segregate these units from other areas, ensuring lighter traffic footprints meet to their specific design requirements and ultimately reducing costs for the client.

To further streamline the process, Hynds fabricated bends for quicker and easier installation, eliminating the need for in-situ work. This not only saved significant time on-site but also improved overall efficiency for the contractor.

The quality of both the products and the workmanship from our Pōkeno factory team was exceptional, with zero defects and all units delivered on time. The client couldn't be more satisfied with the results.

Project Wins

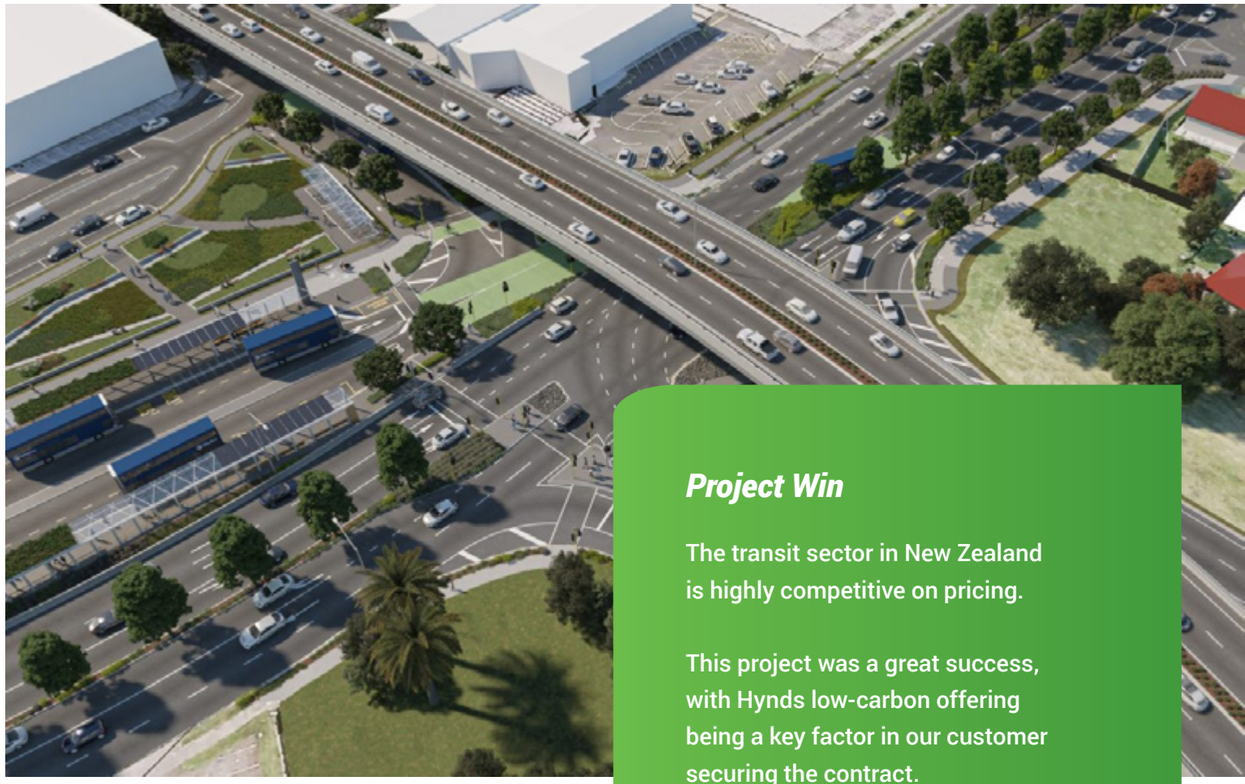
- ✓ ***Avoided 40.9 t CO2e emissions through the use of low carbon concrete and efficient product design***
- ✓ ***Achieved 15% overall project cost savings***
- ✓ ***Length increased from 1.5m to 1.8m (~8%) for efficiency in production and installation***
- ✓ ***Customised precast solution developed to meet client needs***
- ✓ ***Enhanced trust and loyalty – client has named Hynds as their preferred supplier***

Lower Carbon for Ti Rakau Drive – Eastern Busway

The Ti Rakau Drive Eastern Busway is a key infrastructure project aimed at improving travel options between Pakuranga and Botany. It features a 5 km busway separate from other traffic and 12 km of walking and cycling lanes. Troy Wheeler Contracting (TWC) had already completed an earlier phase and was eager to secure a new contract. They successfully won the EBA Central and Full East Bond section, a notable achievement in a highly competitive transit market.

A critical factor in the tender for the EBA4 section was its 15% weighting on sustainability and carbon reduction. We helped TWC win this tender by presenting our HyndsLC® lower carbon product range. We provided preliminary data showing the significant carbon savings they could achieve with these products. This unique offering gave TWC a decisive competitive edge, as no other company bidding for the contract proposed a similar sustainable solution. Our team then successfully managed the project's execution, including manufacturing the products on time and navigating site access challenges.

"Supporting TWC in winning this key section of the Eastern Busway was rewarding. Particularly because our HyndsLC® products didn't just tick the sustainability box - they set their bid apart by driving genuine carbon reductions, and ultimately contributing to more sustainable infrastructure." Dylan Rayner, Hynds Account Manager



Project Win

The transit sector in New Zealand is highly competitive on pricing.

This project was a great success, with Hynds low-carbon offering being a key factor in our customer securing the contract.

This project demonstrates how offering more sustainable solutions can be a crucial differentiator in a competitive market.

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