To research emerging sustainable manufacturing techniques in the vinyl record pressing industry.

REPORT BY NEIL WILSON, CHURCHILL FELLOW

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Report by Neil Wilson, Churchill Fellow, Researching Emerging Sustainable Manufacturing Techniques in the Vinyl Record Pressing Industry

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Itinerary

The following table details the meetings, site visits and interviews conducted during the Fellowship study tour, which took place across the United Kingdom, Sweden, Czech Republic, Germany and the Netherlands between 9 December 2025 and 15 January 2026.

Date	City / Country	Organisation	Type	Person / Role
9 Dec 2025	London, UK	Beggars Group	Record label	Ian Stanton, Head of Sustainability
10 Dec 2025	Bristol, UK	Optimum Mastering	Mastering and lacquer cutting	Cameron MacPhail, Manager
11 Dec 2025	Sheffield, UK	Stamper Discs	Stamper manufacturing	Martin Frings, Owner
11 Dec 2025	Sheffield, UK	VRMA	Industry association	Peter Frings, Head of Sustainability
12 Dec 2025	Middlesbrough, UK	Press On Vinyl	Vinyl record manufacturing	David Todd, Director
15 Dec 2025	Edinburgh, UK	Seabass Vinyl	Vinyl record manufacturing	David Harvey and Dominique Harvey, Owners
17 Dec 2025	Mjölby, Sweden	Hemp Records	Packaging supplier	Minja Hebib, Owner
17 Dec 2025	Mjölby, Sweden	Pitch Beats	Vinyl record manufacturing	Albert Avramovic, Owner
19 Dec 2025	Märsta, Sweden	Pheenix Alpha	Equipment manufacturer	Andreas Runsten, Director
5 Jan 2026	Prague, Czech Republic	GZ Media	Vinyl record manufacturing	Vladimír Víšek, Head of Sustainability
7 Jan 2026	Via video conference	Sonopress	Vinyl record manufacturing	Sven Deutschmann, CEO
9 Jan 2026	Eindhoven, Netherlands	Green Vinyl	Vinyl record manufacturing	Harm Theunisse, CEO
12 Jan 2026	Haarlem, Netherlands	Record Industry	Vinyl record manufacturing	Ton Vermeulen, Director
13 Jan 2026	Hardenberg, Netherlands	Plastchem	Vinyl compound manufacturer	John Wardle, Technical Sales Manager
15 Jan 2026	London, UK	Evolution Music	Vinyl compound manufacturer	Simon Green, Sales Director

Acknowledgements

I would like to thank the Winston Churchill Trust for the opportunity to undertake this Fellowship and to learn from leading practitioners and organisations across Europe. The Fellowship provided an invaluable opportunity to investigate how a re-emerging Australian manufacturing sector can rebuild capability while responding to the environmental challenges facing the vinyl record industry.

I am deeply grateful to the many individuals and organisations who generously shared their time, expertise and facilities during the study tour. In particular, I would like to thank Ian Stanton at Beggars Group; Cameron MacPhail at Optimum Mastering; Martin Frings at Stamper Discs; Peter Frings at VRMA; David Todd at Press On Vinyl; David Harvey and Dominique Harvey at Seabass Vinyl; Minja Hebib at Hemp Records; Albert Avramovic at Pitch Beats; Andreas Runsten at Pheenix Alpha; Vladimír Víšek at GZ Media; Sven Deutschmann and Jörg Pollmeyer at Sonopress; Harm Theunisse and Pieter Ettro at Green Vinyl; Ton Vermeulen at Record Industry; John Wardle and Hugo Salomons at Plastchem; and Simon Green at Evolution Music.

I am also grateful to those in Australia who supported my Fellowship, shared ideas before and during the study tour, and helped make the research possible. I would especially like to acknowledge Mellisa Carroll, Operations Director for Universal Music Australia, and Ann-Marie Willet, Director of Strategic Partnerships for UAP for their support in my application, and encouragement in undertaking the fellowship.

Finally, I would like to thank my wife and business partner, Kathy Wilson, for her support throughout the Fellowship and for sharing the study journey with me. Her contribution to Suitcase Records, and to the thinking behind this report, has been significant.

Executive Summary

Project Introduction, Description and Purpose

This report presents the findings of a Churchill Fellowship investigating emerging sustainable manufacturing techniques in the vinyl record pressing industry. I undertook this research at a time when vinyl records have re-emerged strongly in Australia and internationally, with the local Australian manufacturing sector continuing to grow after more than 30 years of dormancy. During that period, much of the technical knowledge and practical capability required to produce high-quality records was lost. The purpose of this Fellowship was therefore not only to study sustainability in isolation, but to understand how Australia can rebuild world-standard vinyl manufacturing capability using contemporary, more sustainable approaches.

My research examined how leading European pressing plants, compound manufacturers, equipment suppliers, record labels, packaging innovators and industry bodies are responding to environmental challenges in record production, including the use of PVC compounds, energy-intensive pressing processes, manufacturing waste, dead stock, packaging impacts and freight. The study focused on Europe because it remains one of the strongest centres of active vinyl manufacturing knowledge and innovation.

Intended Audience

This report is intended for Australian record manufacturers, record labels, distributors, packaging and compound suppliers, industry organisations and others with an interest in strengthening local manufacturing capability and improving sustainability outcomes in the music supply chain.

Highlights

The study involved fifteen meetings and site visits in the United Kingdom, Sweden, the Czech Republic, Germany and the Netherlands. These included large and small pressing plants, mastering and lacquer cutting specialists, compound manufacturers, packaging suppliers, equipment manufacturers and sustainability leaders working within the music sector. This broad approach reflected the finding that the environmental performance of a record cannot be understood at the pressing stage alone — it is shaped across the full production system.

Key Findings

- Sustainability in vinyl manufacturing is a whole-of-system issue. No single material, machine or process change can by itself solve the environmental challenges of the sector.
- Sustainability and manufacturing quality are closely linked. High-quality record production reduces waste, improves yields and makes it easier to adopt new materials. Rebuilding Australian manufacturing capability is itself a sustainability strategy.
- Many practical opportunities are already available. Gains in thermal efficiency, boiler management, heat recovery, cooling optimisation, renewable electricity and reduced reject rates are often more immediately transferable than waiting for a breakthrough material or technology.

- Circularity offers one of the most credible short-term pathways. In-process regrind and recovery of dead stock records are practical near-term opportunities. Plastchem's government-supported circular recycling facility and Press On Vinyl's collaboration with Murmur on a dead stock recovery model provide useful models.
- Carbon accounting methodologies remain contested. Claims around lower-carbon compounds require careful interpretation. The Murmur-funded Climate Partner study found that PET-based injection moulded records are approximately 45 per cent less carbon intensive cradle-to-gate than traditionally pressed virgin PVC records — a more moderate figure than some early marketing claims. Without including biogenic carbon removals, the fossil-based saving from bio-attributed PVC compounds is approximately four per cent of the compound footprint.
- Injection moulding and PET-based records represent a serious area of innovation, but not a simple replacement for traditional pressing. Sonopress reported measuring 85 to 90 per cent reductions in electricity and gas use compared with traditional pressing. However, the installed global capacity remains overwhelmingly traditional, and the capital and technical barriers to transition are significant.
- In the Australian context, local pressing can be especially significant. Because so many records sold in Australia are manufactured overseas and imported by air, freight can materially increase the environmental footprint of a record — in some cases more than doubling it. For many releases, local manufacture may deliver greater sustainability benefit than smaller gains achieved through material substitution alone.

Conclusions and Recommendations

From my research I believe that Australia has an opportunity to develop its vinyl manufacturing sector in a way that is both technically stronger and more environmentally responsible than before. This will require a focus on manufacturing discipline, practical efficiency measures, careful evaluation of new materials and technologies, and better coordination across the supply chain.

The key recommendations arising from my research are:

- Use forums such as Green Music Australia’s Music Stewardship program to engage with pressing plants, labels, distributors and industry organisations to agree shared priorities covering energy, waste, freight and environmental claims.
- Complete plant-level reviews of energy use, thermal systems and reject rates, and act on practical efficiency improvements — including expanded use of in-process regrind and renewable electricity where viable.
- Pilot a recovery pathway for dead stock and in-process waste, and develop shared guidance on environmental terminology and carbon claims to support more accurate communication across the sector.
- Encourage labels and distributors to prioritise local pressing for Australian market releases, particularly for Australian artists, where local manufacture is likely to deliver greater environmental benefit than marginal material changes.
- Continue structured testing of emerging compounds and alternative manufacturing systems, guided by quality, compatibility, cost and independently supported evidence rather than claims alone.

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Introduction and Objectives

Vinyl records have re-emerged over the past decade as a preferred format for many artists and music audiences. In Australia, however, this resurgence has followed more than 30 years in which local record manufacturing was largely dormant. When the original industry declined in the late 1980s, much of the practical knowledge, operator skill and manufacturing capability required to produce high-quality records was lost.

I am co-owner of Suitcase Records, one of only three active vinyl record manufacturers in Australia. My own background is not in traditional record manufacturing. Like many people involved in rebuilding the Australian sector, I came to this industry from a different professional field and have had to learn through direct experience, trial, error and persistence. That experience has made clear to me that record pressing is a highly specialised form of manufacturing. Rebuilding it in Australia is not simply a matter of acquiring machinery. It requires the rebuilding of knowledge, judgement and confidence across the entire production process.

Coming from an architectural background in which sustainability had already become an important part of professional thinking, I also became increasingly aware of the contradiction of helping build a business around a product whose environmental implications are often overlooked or simplified. Records are not single-use products. They are kept, collected and often valued for decades. Even so, they are made from PVC, they require significant heat and energy, and they sit within a broader production chain that includes compounds, metalwork, packaging and freight. As our business developed, I became more convinced that if vinyl manufacturing in Australia is to remain viable in the long term, it cannot rely on reproducing older methods without question. It must learn how to make records well, but also how to make them more responsibly.

That concern was a major motivation for this Fellowship. Australia's vinyl industry is still relatively small, geographically remote and heavily dependent on imported equipment, materials and supply chain inputs. At the same time, that relative newness presents an opportunity. Because the local industry is being rebuilt rather than simply maintained, there is scope to adopt better systems, stronger quality control and more sustainable practices as it develops.

The purpose of this Churchill Fellowship was to investigate how leading European manufacturers, suppliers and industry organisations are approaching sustainable vinyl record production, and to identify practical lessons that can help strengthen the quality, sustainability and long-term viability of the Australian record manufacturing industry. Europe was selected because it remains one of the most active centres of vinyl manufacturing knowledge and innovation, with a concentration of experienced pressing plants, specialist suppliers and emerging alternative technologies.

The objectives of the Fellowship were:

- To study world-standard vinyl pressing techniques and quality systems used by leading European manufacturers.
- To investigate emerging sustainable materials and manufacturing processes relevant to vinyl record production.
- To understand how pressing plants and suppliers are reducing waste, improving energy efficiency and evaluating environmental performance.
- To assess emerging alternatives to traditional PVC pressing, including new compounds and injection moulding technologies.
- To identify practical recommendations that can assist the Australian industry to produce high-quality records more sustainably and strengthen its long-term capability.

Keywords

Vinyl record manufacturing; sustainability; record pressing; PVC; circular manufacturing; energy efficiency; recycling; injection moulding; Australian manufacturing; music industry

Australian Context and Study Approach

Australia's vinyl record manufacturing sector is rebuilding after more than three decades of dormancy. While demand for vinyl has grown strongly over the past decade, the local industry did not experience the same continuity as parts of Europe. Much of the practical knowledge, technical skill and operational capability that supported the earlier Australian pressing industry was lost during the long period in which local manufacturing had largely ceased.

Although Australia now has three active pressing plants, the sector is still young and uneven in its development. The three plants have been operating for markedly different lengths of time, with one in operation for more than 20 years, one for approximately seven years, and Suitcase Records for four years. This matters because the Australian industry is not rebuilding from a common base. Different plants are at different stages of technical maturity, capital investment and operational experience. Even so, the local sector remains small by international standards, and all three plants operate within a market that is still heavily influenced by imported product.

Vinyl record production is not a simple process that can be restarted from manuals alone. It relies on a combination of machinery, materials, process control, maintenance, operator judgement and quality assurance. In practice, much of this knowledge is tacit — learned through experience, retained within plants and passed between technicians and operators over time. In Australia, the need to rebuild this capability has coincided with a different set of expectations to those that shaped the original industry. Today, local pressing plants are expected not only to produce records of reliable quality, but to do so in a way that responds to growing scrutiny of environmental impact.

These challenges are amplified by Australia's geography. The local market is comparatively small, the number of active pressing plants is limited, and much of the equipment, specialist parts, stampers, compounds and associated inputs still depend on international supply chains. At the same time, a large proportion of the records sold in Australia continue to be manufactured offshore and imported — with almost all international titles imported, and a significant proportion of Australian artists' releases also pressed overseas. This creates a distinctive tension for the Australian sector. Local production offers cultural, strategic and environmental benefits, but imported product often remains commercially attractive for major labels because of established global production arrangements and existing distribution practices.

I designed the study tour in response to this context. My purpose was not simply to identify a single material or technology solution, but to understand how leading European manufacturers and associated suppliers are approaching sustainability across the whole production system. This included the manufacture of compounds, the performance of pressing plants, the role of mastering and metalwork, packaging innovation, carbon accounting, recycling pathways and emerging alternatives to traditional pressing.

Europe was selected because it remains one of the strongest centres of active vinyl manufacturing knowledge and experimentation. It contains a concentration of established pressing plants, specialist suppliers, equipment manufacturers, sustainability practitioners and industry organisations. It is also the region in which many of the most significant current developments are taking place, including lower-impact compounds, plant-level energy efficiency programs, dead stock recycling models and new injection moulding approaches to record manufacture.

The study involved a combination of site visits, plant tours, interviews and technical discussions across the vinyl value chain. Meetings were conducted with record labels, industry associations, mastering and lacquer cutting specialists, stamper manufacturers, pressing plants, equipment manufacturers, compound manufacturers and packaging innovators. This broad approach was important because it became clear early in my visits that sustainability in vinyl manufacturing cannot be understood by looking at the pressing stage alone. Decisions made upstream and downstream of the press also shape the environmental profile of the finished product.

A further reason for taking this whole-of-system approach was that the vinyl sector does not yet have a settled consensus about sustainability. Across the interviews, there was broad agreement that change is necessary, but much less agreement about where the greatest gains lie, how impacts should be measured, and which innovations are genuinely transformative rather than commercially or rhetorically attractive. This made comparison particularly important. Rather than accepting any single industry narrative, I sought to compare competing perspectives and identify the most credible lessons for Australia.

Findings: Manufacturing Capability and Quality Systems

A consistent finding of my research was that sustainable record manufacturing cannot be separated from manufacturing competence. Across the plants and suppliers visited, the strongest operations were not those relying on a single environmental claim, but those combining technical discipline, process stability, careful maintenance and a commitment to continuous improvement. In practice, these qualities affect both record quality and environmental performance. Better processes reduce rejects, lower waste and make it easier to introduce new materials or systems successfully.

Rebuilding Technical Capability

One of the clearest lessons I took from my visits was that record pressing remains a highly specialised form of manufacturing in which practical knowledge matters enormously. This was evident not only in pressing plants, but also in mastering, metalwork, compounding and equipment design. At Optimum Mastering and Stamper Discs, for example, it was clear that the technical quality of lacquer cutting and stamper production has a direct effect on downstream pressing outcomes. Groove geometry, lacquer quality and stamper consistency all influence whether a record can be pressed cleanly and consistently.

This relationship was reinforced in discussions with pressing plants. At Seabass Vinyl, examples were given of defects that could not be understood solely as pressing problems, but had to be traced back through cuts, stampers, materials and process settings. David Harvey described situations where groove depth — with the standard being 70 microns for the run-in groove — directly influenced pressing behaviour, with shallower or deeper grooves from different cutting houses producing different results at the press. Similar themes arose in discussion with Sonopress and Green Vinyl, both of which stressed the importance of highly accurate stampers and precise upstream preparation, particularly where newer manufacturing systems are being used.

The visit to Pheenix Alpha also highlighted how much of the industry still operates within design parameters established decades ago. Andreas Runsten noted that mould designs date from the 1970s and that, while incremental improvements are possible, many systems remain dependent on machine concepts and process assumptions that are now over 50 years old. This places even greater importance on the skills of operators and technicians who understand how to tune, maintain and adapt them.

For Australia, this makes knowledge transfer and practical learning especially important. There is no inherited community of practice to draw on. Operators must develop their understanding through direct experience, which takes time and involves a significant period of learning by doing.

Process Control, Quality and Waste

Several manufacturers emphasised that waste reduction begins with process control. Better records are usually more efficient records. Where pressing conditions are stable, upstream materials are reliable, and staff understand how to respond to variation, reject rates fall and output becomes more consistent.

This was particularly clear in the contrast between traditional pressing and some of the newer injection moulding operations. At Green Vinyl, Harm Theunisse repeatedly stressed the importance of measuring every stage of production rather than relying on assumption. Material drying, dye dosing, mould conditions and shot consistency are all closely monitored — with dye metered by automated scale on every individual shot. Theunisse summarised this philosophy as: measure everything, do not guess. While traditional pressing often retains an element of craft and operator feel, Green Vinyl demonstrated a more explicitly measurement-led production culture. That approach has clear sustainability implications because it is designed to minimise variability and reduce reject rates.

At Record Industry and GZ Media, the same principle appeared in a different form. Both demonstrated that large-scale manufacturing depends on repeatability, process discipline and rigorous control of variables. At the same time, these visits showed that different parts of the industry define acceptable quality differently. Ton Vermeulen at Record Industry was clear that some products promoted as sustainable alternatives would not meet the quality threshold required in his plant. Whatever one's view of that conclusion, it highlights an important reality: sustainability initiatives that do not meet acceptable quality standards are unlikely to gain broad industry adoption.

Waste reduction was also discussed in relation to regrind, dead stock and reject management. Press On Vinyl, Seabass Vinyl and Record Industry all demonstrated that in-process waste can be reduced or recovered when systems are designed around it. Pheenix Alpha's growing demand for inline grinders, punches and simple waste-handling systems suggests that the industry increasingly recognises waste reduction as both an economic and environmental priority.

Plant Design, Maintenance and Efficiency

I also found that a significant part of sustainable manufacturing lies in the physical design and maintenance of the plant itself. In traditional pressing, thermal systems are especially important. Steam generation, condensate return, feed water management, cooling loops and insulation all influence energy use, reliability and output quality.

This became especially clear at Seabass Vinyl and in discussions with equipment and compound suppliers. Seabass has invested heavily in plant infrastructure, not as a separate environmental exercise, but as part of a broader commitment to doing the job properly. Their

facility incorporates an exhaust economiser that recovers heat from boiler flue gases — reducing the exhaust temperature from approximately 200 degrees Celsius down to around 120 degrees Celsius — and returns that heat to the hot well tank, reducing the energy required to heat feed water. Steam is also used to maintain feed water temperature, helping avoid unnecessary losses associated with feeding cold water into the boiler. Pipework, valves and tanks are insulated throughout, both for thermal retention and for operator safety, including fabric valve covers throughout the plant.

Cooling systems were another important area. Seabass has designed its process to operate with cooling water at a higher temperature where possible — around 24 degrees Celsius — reducing the amount of energy that must be removed from the system. An ambient air blast cooler is used in preference to the chiller, and David Harvey noted that the chiller is not typically needed in normal operation. At Plastchem, similar thinking was applied at a different scale in compound manufacture, with solar generation, battery storage and process heat recovery already contributing significantly to electricity demand and overall plant efficiency.

Case Example: Seabass Vinyl

Seabass Vinyl stood out as one of the clearest examples of a pressing plant attempting to integrate sustainability into both infrastructure and culture. While Seabass remains a relatively small manufacturer by global standards, the plant demonstrated how sustainability can be approached as an operational philosophy rather than a marketing exercise.

From an energy perspective, Seabass has implemented a practical range of efficiency measures. These include 110 kilowatts of rooftop solar generation, battery storage, wind generation, a highly insulated steam and water system, an exhaust heat recovery system connected to the boiler, and careful management of feed water and cooling water temperatures. The overall design reflects a conscious attempt to reduce unnecessary thermal losses throughout the pressing process.

In relation to waste, Seabass has developed systems to minimise landfill and maximise recovery. Regrind is segregated and returned for recompounding rather than being discarded — with the material sent back to the Netherlands, where compound manufacturers require a percentage of recycled PVC content and purchase it back from the plant. David Harvey reported producing only one small bin of landfill waste per week, with the remainder of material streams handled through recycling or recovery routes.

Just as important was the cultural approach taken by the business. At Seabass, sustainability is not presented as a separate department or a promotional slogan. It sits alongside quality, engineering and operations as part of how the business is run. That was evident both in the physical design of the plant and in the openness with which the owners discussed what had been achieved and what still required further optimisation. This was one of the most useful lessons I took away: good practice is not about claiming to have solved every problem, but about building a plant culture that continually looks for ways to reduce waste, improve efficiency and maintain quality.

For the Australian context, Seabass is relevant not because its exact model can be copied directly, but because it shows what is possible when sustainability is treated as part of serious manufacturing practice. Some of its investments may not be immediately realistic for every Australian plant, but the underlying principles are highly transferable: insulate properly, recover heat where possible, understand the behaviour of water and steam systems, reduce waste systematically, and treat sustainability as an operational discipline.

Lessons for Australia

For Australia, the most important lesson from this section is that capability-building remains central. Sustainable manufacturing begins with making good records consistently, understanding where waste is generated, and improving the systems that support production. My research suggests that the Australian sector would benefit from greater emphasis on process documentation, training, maintenance, reject analysis and plant efficiency.

It also suggests that examples such as Seabass Vinyl are especially valuable because they show how smaller plants can pursue meaningful improvements. The Australian industry does not need to wait for large-scale technological disruption in order to improve. Many gains are already available through better process control, stronger plant engineering and a more deliberate manufacturing culture.

Findings: Carbon Accounting, Methodologies and Industry Claims

One of the clearest things I found was that the vinyl record industry is still struggling to establish a common language and methodology for measuring environmental performance. While there is growing recognition that this performance needs to be understood more rigorously, there is much less agreement about how it should be measured, how results should be compared, and how claims should be communicated. This is creating confusion across the sector and, in some cases, appears to be encouraging inflated or selectively framed sustainability claims.

Different Approaches to Measurement

A recurring issue throughout my visits was the distinction between different forms of carbon assessment. Some organisations are using broad organisational carbon footprinting and attributing those results to a product level. Others are attempting product-specific life cycle assessment, usually on a cradle-to-gate basis. These approaches are not equivalent. Organisational assessments can be useful for understanding the profile of a business, but they are often too approximate to support precise product claims. Product-level life cycle assessment can be more informative, but only if the system boundaries, data inputs and assumptions are robust and clearly stated.

This issue was discussed directly with a number of stakeholders, including Beggars Group, GZ Media, the VRMA and others involved in the current debate. Ian Stanton and Vladimír Víšek both emphasised the importance of independently validated product-level assessment in building a more credible industry benchmark. Their view was that the purpose of this work should not be to prove that one company is better than another, but to create a sufficiently consistent basis for identifying the major contributors to impact and the most meaningful areas for improvement.

At the same time, other interviewees raised concerns about the quality, independence or usefulness of some existing studies. Peter Frings from the VRMA was critical of approaches that, in his view, reduce carbon accounting to a paper exercise or rely too heavily on broad assumptions that are of limited operational value. Others expressed concerns about the VRMA methodology itself, arguing that greater independence, anonymised multi-party data and more consistent system boundaries are needed if the results are to be widely trusted. GZ Media noted that the Murmur-funded Climate Partner study — involving GZ Media, Optimal, NPO, Sonopress, Green Vinyl, and others — was a more solid and science-based approach because it applied a consistent methodology across multiple plants and was independently calculated. These differing perspectives show that the industry has not yet settled on a shared framework.

It is also worth noting that the cost to undertake the two different types of studies are vastly different, with costs to undertake a product-specific life cycle assessment significantly more than an organisational assessment. The companies who provided data to the VRMA reports are all small compared to those who contributed to the VA report, and it would be commercially challenging for them to undertake a product-specific assessment. For this reason, organisational assessments should not be discounted as they can provide accurate benchmark data for smaller plants to use in developing their own sustainability aims.

Bio-attributed Compounds and Biogenic Carbon

A major source of confusion lies in the treatment of bio-attributed compounds and biogenic carbon. Compounds such as those offered by Plastchem and others are often produced through a mass balance system, in which bio-based feedstock is introduced into the wider chemical production system and allocated through certified accounting rather than physical segregation. This is a recognised and legitimate mechanism, but it is not intuitively understood by many labels, artists or consumers. Several interviewees described situations in which customers believed they were using a physically distinct plant-based product, when the claim related to a mass balance allocation within a larger system.

The treatment of biogenic carbon removals adds a further layer of complexity. Some methodologies allow these removals to be integrated more directly into product carbon figures, while others require them to be reported separately. This distinction can produce very different headline results. Vladimír Víšek at GZ Media noted that when looking only at the fossil-based fraction — as required under the Greenhouse Gas Protocol — the saving from bio-attributed compound is approximately four per cent of the compound's footprint. When biogenic carbon removals are included under ISO accounting, the apparent saving becomes much larger, which is where some of the larger percentage claims originate. Two organisations can therefore be discussing the same material and reporting significantly different carbon benefits, each based on technically defensible but differently framed assumptions.

How Competing Methodologies Affect Industry Claims

I found that these methodological differences are not well understood outside specialist technical or sustainability circles. This creates a risk that carbon figures are used more as marketing devices than as tools for informed decision-making. A number of interviewees expressed frustration that environmental claims are sometimes built around the most favourable part of a process while omitting less favourable elements, or that they rely on numbers that are technically true within a narrow boundary but misleading when presented more broadly. Ian Stanton at Beggars Group noted that figures claiming 90 per cent carbon reductions from bio-attributed compounds are not supported by the independent calculations that Beggars Group has conducted. In the European context, some stakeholders noted that this increasingly risks falling into the category of greenwashing, especially where claims are consumer-facing and not clearly substantiated.

This confusion is not limited to compounds. Similar issues arise in the comparison of traditional pressing and injection moulding. Some early claims around injection moulding focused heavily on reductions in energy use during the pressing phase, creating the impression of dramatically lower overall impact. The independently conducted Climate Partner study suggested a more moderate but still significant benefit of approximately 45 per cent lower carbon intensity cradle-to-gate when comparing injection moulded records with traditionally pressed virgin PVC records. The lesson is not that the technology lacks merit, but that the way it is measured and described matters greatly.

Why This Matters in Practice

For the Australian context, this lack of methodological clarity has practical consequences. If pressing plants, labels and industry bodies are drawing on different studies, using different boundaries, or repeating different headline figures, it becomes difficult to have a coherent conversation about priorities. It also makes it harder for smaller manufacturers to know which claims they can credibly make and where they should focus limited resources.

The most useful conclusion I drew from this part of my research is a cautious one. Carbon accounting and life cycle assessment are necessary and valuable, but they are not ends in themselves. They are only useful if they are transparent, methodologically clear and connected to practical action. For the industry, the goal should not be to produce the most favourable number. It should be to establish a credible baseline, use it to identify the largest contributors to impact, and communicate any resulting claims honestly and proportionately. GZ Media's approach of publishing a sustainability page that explicitly acknowledges complexity and avoids simplistic claims provides a useful model.

Findings: Sustainable Materials, Energy and Circular Manufacturing

The most important technical finding of my research was that sustainable record manufacturing is shaped by a combination of material choices, energy systems, waste handling, plant efficiency and supply chain decisions. While much of the public discussion in the sector focuses on compounds or highly visible packaging issues, I found that meaningful improvement depends on a broader combination of practical measures. Across the manufacturers and suppliers visited, these ranged from lower-impact compounds and new packaging systems through to thermal efficiency, waste recovery and circular material flows.

PVC Compounds and Emerging Alternatives

Traditional PVC remains the dominant material for record pressing. It is proven, widely understood, and embedded in the global installed base of presses, tooling and operator knowledge. At the same time, it is the focus of much of the industry's current sustainability debate.

Plastchem provided one of the clearest examples of how the existing PVC-based system is being adapted rather than abandoned. The company has invested in lower-impact, bio-attributed compounds, detailed product carbon footprinting and the development of hybrid compounds that combine virgin and recycled content. Their facility — the newest PVC compound production plant in the world, opened in 2021 — is designed around process efficiency, material traceability and future circularity. Plastchem has achieved ISCC certification for its bio-attributed compounds and can provide product carbon footprints for every formulation, including full scope one, two and three calculations covering incoming logistics. Their approach was notable for its emphasis on evidence and process discipline rather than broad marketing claims alone. Plastchem's data showed a fossil-based footprint of 1.96 kg CO2e per kilogram of bio-attributed compound versus 2.06 kg CO2e for standard compound — a difference of approximately five to seven per cent without including biogenic carbon removals.

I also came away with a clearer sense of the limits of bio-attributed compounds as a complete answer. Their cost remains higher than standard PVC, and their value depends on both customer uptake and the clarity with which they are explained. Several interviewees saw these compounds as a worthwhile transitional pathway, but not as a reason to ignore the wider issues of plant efficiency, freight and waste.

A more radical material alternative was presented by Evolution Music, which is developing a fully plant-based record compound derived primarily from sugar cane or sugar beet. This work stood out because it was not simply a variant of mass balance PVC, but an attempt to create a genuinely different record material from the ground up. Simon Green described a development process involving over 52 iterations of the compound since work began, with the most recent formulation having been tested on a range of manual and automatic. Evolution Music are currently undertaking an independently peer-reviewed life cycle assessment. At this stage, the most balanced conclusion is that plant-based compounds are promising and technically serious but still emerging and not yet an immediate industry-wide replacement.

Energy Use and Plant Efficiency

Traditional pressing remains energy intensive primarily because of its thermal system. Steam generation, repeated heating and cooling cycles, boiler losses, water management and temperature control all contribute significantly to the footprint of production. One of the strongest things I found was that substantial gains remain available within this conventional process, even without changing the core manufacturing method.

These gains include improved boiler design, better insulation of tanks and pipework, feed water pre-heating, recovery of waste heat from exhaust systems, optimisation of cooling loops and greater use of renewable electricity. Seabass Vinyl provided one of the clearest practical examples, combining renewable electricity, on-site generation, exhaust heat recovery and careful water system design to improve efficiency. Plastchem demonstrated similar principles in compound manufacture through solar generation — achieving 100 per cent renewable electricity on sunny summer days and approximately 40 per cent over the full year — and a systems-based approach to plant performance.

Ian Stanton at Beggars Group noted that the Climate Partner study found that of seven traditional pressing suppliers participating in the study, only one was using renewable electricity — representing a significant area of low-hanging fruit for the industry. He also noted that within traditional pressing, efficiency gains of 40 to 60 per cent are potentially achievable through a combination of measures: material improvements, increasing recycled content (offering around a 10 to 20 per cent reduction), moving to renewable electricity (around 10 per cent), and transitioning away from gas-fired boilers (the largest single potential gain). Steam and boiler systems were consistently identified across interviews as the major energy challenge in traditional pressing — with Andreas Runsten at Pheenix Alpha noting that steam represents the dominant energy use on a pressing machine.

At the same time, my visits highlighted the difficulty of complete longer-term transitions such as replacing gas-fired steam systems entirely with electric systems. Moving to an electric boiler may require doubling the electrical supply capacity of a plant, which in Australia involves significant infrastructure costs and network charges beyond the boiler itself. The most realistic near-term path therefore appears to be staged improvement: reducing losses, improving thermal efficiency and making better use of existing systems before attempting complete electrification.

Recycling, Dead Stock and Circularity

Circularity emerged as one of the most practical short-term opportunities in the sector. This was discussed by multiple plants and suppliers. The strongest opportunities appear to lie not in end-consumer recycling of records, but in recovering in-process waste and unsold stock.

This distinction is important. A vinyl record is not a single-use plastic product. In most cases it is purchased to be retained, collected and replayed over many years. Vladimír Víšek at GZ Media made this point directly: records kept for 100 years should not be compared with single-use plastics, and the environmental argument for urgency around record recyclability is much weaker than it might initially appear. By contrast, dead stock held by labels, distributors and warehouses is a much more realistic circular feedstock. It exists at scale, it can be collected in a more controlled way, and it is already treated as a disposal problem by many parts of the industry.

Plastchem's circular recycling facility — Plastchem Circular — was one of the most significant examples of this approach encountered during the Fellowship. The facility, which officially opened in 2024, has been designed to recover and reprocess PVC waste including material that can be brought back into higher-value applications rather than simply downcycled into low-grade products. Plastchem uses ionisation separation technology to sort different plastic types — separating PVC from PET, glass and metal — and XRF testing to detect lead and other contaminants in recycled material. The facility cost approximately 10 to 12 million euros to build, with government grant funding contributing significantly to that investment — underscoring that circular manufacturing infrastructure may not emerge through market forces alone.

Press On Vinyl provided another important example through its work with Murmur to explore a recycling plant for waste records and dead stock. The concept involves granulating records and returning the recycled PVC to the compounding process for re-use in new record material. Ian Stanton at Beggars Group described working with Press On Vinyl to establish this as a UK-wide dead stock recovery hub — not just for one plant, but as a service to the wider industry, with granulated material returned to Plastchem to be blended into new compound. He also noted that regional recycling hubs are being explored for North America and mainland Europe, and that Australia could potentially be included in such a model.

There are still technical challenges. Centre labels — physically melted into the record rather than simply glued — remain the biggest unsolved problem in PVC recycling. John Wardle at Plastchem noted that removing centre labels without losing significant material is an ongoing engineering challenge. Even so, the overall lesson remains strong: circularity in the vinyl sector is most likely to progress through controlled, industry-led systems rather than through generic municipal recycling pathways.

Injection Moulding and PET-based Records

I also examined injection moulding as an emerging alternative to traditional record pressing. Sonopress and Green Vinyl are currently the only companies using this manufacturing process. Although often presented as novel, Sven Deutschmann at Sonopress noted that injection moulding for records has historical precedents dating back to 1952 in the United States, where seven-inch singles were produced by injection moulding using polystyrene in large volumes. What is new is its current repositioning as a lower-energy alternative for LP production using PET rather than PVC.

The sustainability case for injection moulding rests on process architecture as much as material. Unlike traditional pressing, which relies on repeated heating and cooling of moulds using steam and water — cycling from ambient up to 150 degrees Celsius and back — injection moulding operates with a different thermal profile. The mould is maintained at a stable temperature of approximately 50 degrees Celsius rather than being repeatedly cycled. Sonopress reported measuring 85 to 90 per cent reductions in electricity and gas use compared with traditional pressing. The independently conducted Climate Partner study estimated approximately 45 per cent lower carbon intensity cradle-to-gate for injection moulded records. Both Sonopress and Green Vinyl also identified potential advantages in stamper longevity — with Sonopress able to run 3,000 to 6,000 pressings per stamper set compared with 500 to 1,000 in traditional pressing — and in colour inventory management, with colour change achievable in under 10 minutes using only two base materials.

Ian Stanton highlighted the particularly promising aspect of PET: because PET is widely used for food-grade packaging, post-consumer recycled PET is more readily available than post-consumer PVC from comparable sources. Sonopress has been using chemically recycled PET, with supplier-verified data showing significant carbon reduction even from recycled feedstock.

For all its promise, injection moulding is not an easy solution for the broader industry. Existing global record manufacturing capacity is overwhelmingly built around traditional pressing. Equipment manufacturers such as Pheenix Alpha confirmed that even retrofitting significant energy-saving changes into existing presses is difficult, and the sunk cost of installed presses, tooling and operator knowledge is substantial. In this context, injection moulding is best understood as a serious complementary pathway rather than an imminent wholesale replacement for conventional pressing.

Packaging and Associated Materials

While disc manufacture dominates the footprint discussion, packaging is still relevant. I identified useful developments in this area, particularly through the work of Hemp Records in Sweden. Hemp Records has developed stitched, glue-free sleeves and centre labels using 100 per cent hemp-based paper and vegetable inks. A notable aspect of this system is the use of labels that do not require baking in the same way as conventional labels, offering a modest but practical reduction in energy use and fumes at that stage of production. The

collaboration between Hemp Records and Pitch Beats — where packaging and manufacturing choices are considered together rather than separately — also demonstrated the value of integrated supplier relationships.

At the same time, I was consistently reminded of the need to keep packaging in proportion. Elements such as shrink wrap attract considerable consumer attention because they are visibly disposable, but they are often only a small part of the total footprint. Vladimír Víšek at GZ Media noted that shrink wrap represents less than one per cent of a record's carbon footprint. This does not mean it is irrelevant — in Australia, where soft-plastic recycling infrastructure is weak, single-use plastics that are not being recycled represent a genuine disposal problem even if their carbon contribution is modest. But it does mean that packaging concerns should not distract from the larger impacts associated with materials, energy and transport.

Findings: Implications for Australian Industry Development

The international observations from the Fellowship do not suggest that Australia should attempt to replicate European plants directly. The scale, geography, labour market and supply chain conditions are too different. However, my research makes clear that many of the underlying principles are transferable. In some respects, Australia may even be better placed to move quickly on selected changes because of the small number of active pressing plants and the relative agility of smaller operators.

Immediate Opportunities

The most immediate opportunities for Australia lie in areas that do not require radical technological transformation. These include stronger process control, better documentation of production settings, operator training, reduced waste, greater use of in-process regrind where appropriate, improved energy monitoring, heat recovery, feed water optimisation and consideration of renewable electricity and solar generation where viable. These are practical measures that can improve both quality and sustainability without relying on unresolved industry debates.

Solar generation in particular emerged as especially relevant for Australia. David Harvey at Seabass Vinyl noted that in Scottish conditions — considerably less favourable than much of Australia — 110 kilowatts of rooftop solar is making a material contribution to the plant's energy needs. The potential for Australian plants to draw significantly on solar generation for much of the year is substantial and may represent one of the more accessible near-term efficiency improvements available.

Process efficiency also offers immediate gains. As noted during the Fellowship, compounds that behave differently in the press can directly affect energy use. At Suitcase Records, we have found that different compounds require a shorter steam cycle — with some reducing the heat cycle by approximately two seconds per pressing. At a production run of 1,000 records per day, this represents a meaningful reduction in steam demand. Small compound and process choices therefore have cumulative energy effects that are worth tracking.

Circularity in an Australian Context

Australia's scale may make targeted circular systems more achievable in some respects. If dead stock from a relatively small number of major warehouses can be recovered in a controlled way, there may be genuine potential to create a local recycling loop for record material. Several interviewees indicated that this type of system is more meaningful than focusing on hypothetical end-consumer recycling, and I believe this could be a particularly valuable area for future Australian collaboration between manufacturers, distributors and compound suppliers.

One particularly interesting possibility raised during discussions with Vladimír Víšek at GZ Media was the potential for the Australian vinyl industry to move collectively toward biocompound. If this could be achieved, Australia could become the only market in which all locally pressed records are manufactured using lower-carbon compound. This would require industry coordination and a willingness to absorb or share modest additional cost, but the structural conditions for it appear to exist.

Local Production and Freight

In the Australian market, freight can materially outweigh smaller gains achieved in manufacturing. Ian Stanton at Beggars Group noted that for Australian and New Zealand labels, shipping and distribution represent the most significant part of their carbon footprint — more significant than physical manufacture. When a record is air-freighted from Europe or North America to Australia, its carbon footprint can more than double. This means that pressing records in Australia, especially for the domestic market, may offer one of the clearest sustainability benefits available.

The challenge is that this depends not only on manufacturers, but also on labels and distributors being willing to change established offshore production habits. Sustainability cannot be treated as the responsibility of pressing plants alone when upstream and downstream decisions may have even greater impact. My research makes a strong case for a broader industry conversation — one that includes labels and distributors, not only manufacturers.

Demand-side Behaviour and the Role of Artists

This was one of the clearest strategic findings of my research: demand-side behaviour matters. Labels frequently express support for sustainability, but often resist additional cost, complexity or decentralised production. Vladimír Víšek at GZ Media described labels asking pressing plants to remove shrink wrap or use biocompound, then choosing the cheapest option when the quote arrives. Ton Vermeulen at Record Industry described running test pressings on virgin vinyl, bio vinyl and regrind with identical material but different labels — and having artists claim to hear differences that could not exist. Both observations reflect a gap between stated sustainability intentions and actual purchasing behaviour.

Consumers generally appear to like the idea of sustainability, but it is not yet a strong direct purchasing driver in the vinyl market. Artists, by contrast, appear to be one of the most effective catalysts for change. This was a repeated theme across interviews with labels, plants and suppliers. Ian Stanton described Murmur's approach of working with artists directly — particularly those who are quietly concerned about sustainability but not yet vocal — to help them raise the issue with their labels and management teams. For Australia, this suggests that future progress may depend on engaging not only manufacturers, but also artists, label operations teams and distributors in a more coordinated conversation.

A Cautious Stance on Emerging Alternatives

I'd also suggest that Australia should remain open, but cautious, in relation to emerging alternatives. It would be unwise to ignore developments in plant-based compounds, recycled-content compounds or injection moulding, particularly as these may become more viable over time. Equally, it would be unwise to assume that any of these is already the answer. For a smaller, resource-constrained market, the most sensible approach is ongoing monitoring, selective testing and evidence-based adoption rather than chasing every new claim.

Evolution Music's Evo compound, for example, is genuinely different from mass balance PVC and warrants attention — but it is yet to be fully tested with all types of presses, and a peer-reviewed life cycle assessment is still in progress. Injection moulding offers real efficiency advantages but requires significant capital and a different production model. The appropriate response to both is continued engagement rather than either dismissal or premature adoption.

Communication, Claims and Shared Language

A further implication is the need for more shared language and more disciplined communication. One of the clearest risks in the current environment is confusion caused by inconsistent terms and over-simplified claims. Words such as bio, green, low carbon, recycled and sustainable are used in ways that are not always technically or legally precise. This creates risk not only for consumer trust, but for the industry itself. Australia would benefit from clearer shared guidance on what can be claimed, what can be substantiated, and how environmental improvements should be communicated honestly. The distinction between bio-attributed compound and a fully plant-derived compound such as Evo is significant, and labels and consumers deserve to understand the difference.

Industry Maturity and Uneven Starting Points

My visits also reinforced that Australian industry capability is uneven and still developing. The three existing pressing plants have been operating for markedly different periods of time, and this affects their technical maturity, infrastructure and capacity to invest. A realistic approach to Australian industry development therefore needs to recognise different starting points while still encouraging shared progress. Some measures may be immediately achievable in one facility and longer-term in another — but the direction of travel can be consistent even if the pace differs.

At a broader level, my research reinforces that rebuilding the Australian industry is not only a commercial or technical issue, but a capability and public benefit issue. A stronger local pressing sector supports Australian music, local manufacturing skill, specialist employment and cultural production. If that sector can be rebuilt using better process control, lower waste, stronger environmental discipline and more localised production where possible, the benefit extends beyond any one business.

In this respect, the Australian opportunity is not to become a smaller copy of Europe. It is to use the fact of rebuilding as an advantage. Australia still has the chance to shape its re-developing vinyl manufacturing sector intentionally, with a clearer understanding of what quality, sustainability and long-term viability should look like together.

Conclusion

This research confirmed that the future of vinyl record manufacturing in Australia will depend on more than access to machinery or materials. The most important lesson from the study was that sustainable record production is a whole-of-system challenge. Materials, energy, process control, quality systems, waste, logistics and customer behaviour all contribute to the final environmental outcome. No single change — whether a new compound, a new machine or a new label claim — will be enough on its own.

I also confirmed for myself that sustainability and manufacturing quality are closely linked. Plants that are more disciplined, consistent and technically capable are generally better placed to reduce waste, improve yields and adopt new materials successfully. In that sense, developing Australian vinyl manufacturing capability is itself a sustainability task. Stronger operator knowledge, better process control and more systematic quality assurance can improve both environmental performance and product quality at the same time.

A further lesson was that many of the most practical opportunities available now are not necessarily the most visible. Operational improvements such as better thermal efficiency, improved cooling and feed water systems, increased use of controlled regrind, recovery of dead stock and greater use of renewable electricity appear to offer realistic near-term benefits. These are often more immediately transferable than waiting for a single breakthrough material or technology.

At the same time, my visits demonstrated that important innovation is taking place internationally. Lower-impact compounds, recycled-content pathways, plant-based alternatives, injection moulding and new packaging systems all warrant close attention. However, most are still accompanied by technical, commercial or methodological uncertainty. For Australia, the most sensible response is neither to dismiss these developments nor to accept them uncritically, but to remain engaged, test carefully and adopt what can be substantiated.

The Fellowship achieved what I set out to do — it gave me direct access to leading European manufacturers, suppliers and industry stakeholders and by enabling comparison across a wide range of practices and perspectives. It provided a clearer understanding of where environmental impacts occur, where the most credible opportunities lie, and how these might be applied within the Australian context. Just as importantly, it confirmed that Australia's re-record manufacturing sector has an opportunity not simply to increase capacity, but to rebuild it in a more thoughtful, efficient and sustainable way.

The findings are directly applicable in Australia. They suggest that the long-term viability of the local sector will depend on four things in particular: rebuilding technical capability; improving plant-level efficiency and waste reduction; developing more coordinated approaches to lower-impact materials and circularity; and encouraging labels and distributors to support local production wherever possible. If these issues are addressed collaboratively, Australia can strengthen both the sustainability and the resilience of its vinyl manufacturing industry.

Recommendations

1. Undertake plant-level energy and process efficiency reviews

Within 18 months, each Australian pressing plant should complete a documented review of its energy use, thermal systems, cooling systems, insulation, feed water management and reject rates. The review should identify practical low-cost and medium-cost actions that can reduce waste, improve consistency and lower energy demand without compromising record quality. Results should be shared in principle — if not in detail — with industry.

2. Develop clear Australian guidance on environmental terminology and claims

Within 12 months, the Australian sector should prepare a short guidance on the use of terms such as bio-based, bio-attributed, recycled, regrind, low carbon and sustainable, together with clearer guidance on how carbon figures and life cycle assessments should be interpreted and communicated. The aim should be to reduce confusion, support accurate environmental communication and avoid overstated or unclear claims. This guidance should draw on the methodological lessons from the Fellowship, including the distinction between fossil-based and biogenic carbon savings.

3. Encourage labels and distributors to prioritise local pressing for Australian market releases

Over the next two years, major labels, independent labels and distributors operating in Australia should assess whether releases intended primarily for the Australian market can be manufactured locally rather than imported. For many projects — particularly Australian artists and region-specific releases — local manufacture is likely to deliver greater environmental benefit than smaller marginal changes in manufacturing inputs alone. Labels should also assess the feasibility of coordinating production across regions for international releases.

4. Continue to work with Green Music Australia's Music Stewardship program

Australian pressing plants, key labels, distributors and relevant industry organisations should continue to work together to improve sustainability not only in local record manufacturing, but in the full supply chain for physical music products. The purpose should be to improve shared understanding of waste, materials, freight and environmental claims, and to identify areas where collaboration would benefit the broader industry.

5. Pilot a dead stock and production waste recycling pathway

Within 24 months, Australian manufacturers, distributors and relevant supply chain partners should investigate a pilot program to recover dead stock records and suitable in-process waste for reprocessing into new PVC-based products or record compounds. The pilot should test the commercial, logistical and technical feasibility of a local circular model for record material recovery, with a particular focus on whether the major distributors — who operate shared warehouse facilities in Australia — can provide a reliable and controlled dead stock feedstock.

6. Expand the controlled use of in-process regrind

Within 12 months, Australian pressing plants should review where regrind can be used more consistently without affecting acceptable product quality, particularly in black compounds and selected specialty applications. The aim should be to reduce unnecessary virgin material use and landfill disposal while maintaining confidence in finished product quality. While all Australian plants currently use regrind, performance over time should be monitored and documented to build an evidence base to be shared with the industry.

7. Continue structured testing of emerging compounds and alternative manufacturing systems

Over the next two to three years, Australian manufacturers should remain engaged with developments in lower-impact compounds, recycled-content blends, plant-based alternatives and non-traditional manufacturing systems such as injection moulding. Adoption should be guided by product quality, technical compatibility, cost and independently supported evidence rather than claims alone. In particular, Australian plants should monitor Evolution Music's ongoing life cycle assessment and machine compatibility program and assess the feasibility of testing Evo compound on their specific press types.

8. Build and share technical capability across the local sector

Over the next two years, the local sector should create at least one practical mechanism for non-proprietary technical knowledge sharing. This could include an industry workshop, a technical note series or a peer exchange focused on quality control, waste reduction and plant efficiency. Given the long dormancy of record manufacturing in Australia, building a shared knowledge base — even informally — could meaningfully accelerate the rebuilding of local technical capability.

9. Use environmental measurement as a tool for improvement, not comparison

Any Australian manufacturer that undertakes carbon footprinting or related assessment should use the results primarily to establish baselines and identify practical next steps. The emphasis should be on internal improvement over time, rather than public comparison or simplified claims about being better than other manufacturers. The Fellowship strongly suggests that carbon figures used for marketing purposes rather than operational improvement risk misleading consumers and undermining industry credibility.

Dissemination and Implementation

I will share the findings of this research directly with the people and organisations most likely to act on them. The primary audience is the Australian record manufacturing sector, including pressing plants, labels, distributors and relevant industry bodies. The report will be shared with these stakeholders as the first step, with follow-up conversations where there is interest in specific findings or recommendations.

As co-owner of Suitcase Records, I am well placed to move from research to practice. A number of the findings are directly applicable to our own operations, particularly in relation to process efficiency, thermal system management, regrind use, packaging choices and the way we communicate environmental claims. The intention is to use the report as a working document for internal improvement, not only as a publication. Where results from that work are useful to others, they will be shared.

Direct conversations between the Australian pressing plants about the findings of this study would be beneficial for the industry, with a particular focus on areas where shared action would be more effective than individual effort. The most obvious of these is the dead stock recycling pilot, which will require collaboration between manufacturers, distributors and potentially compound suppliers to be viable. In addition, discussion with the Australian PVC compound manufacturer about the feasibility of moving collectively to a bio compound formulation across all three plants would be a significant step.

I also intend to engage with Australian labels and distributors, particularly around the finding that local pressing can deliver greater environmental benefit than many marginal material changes. This will require a different kind of conversation to those typically held with labels — one focused on supply chain decisions rather than product specifications alone. Where artists are engaged and interested, they are likely to be the most effective entry point for that discussion, as the Fellowship consistently showed.

Where opportunities arise, I will seek to present or discuss the findings in relevant industry forums, music sector events or sustainability-focused gatherings. The goal is not simply to publish the report but to use it as a starting point for a more coordinated Australian conversation about what sustainable local record manufacturing should look like.

The most significant barriers to implementation are likely to be commercial rather than technical. Cost sensitivity, the small scale of the local sector, established offshore production habits and fragmented demand all create friction. For that reason, implementation will need to be framed around practical business benefit as well as environmental benefit. Efficiency gains, waste reduction, quality improvement and stronger local manufacturing capability are all arguments that are likely to gain more traction than sustainability rhetoric alone.

In the longer term, three areas will need further work beyond this Fellowship: improved local data on production volumes and freight impacts; a pilot circular model for dead stock and in-process waste recovery; and continued testing of lower-impact compounds and alternative manufacturing systems as they develop. This report provides a foundation for those next steps. The most important immediate task is to ensure that the knowledge gained is shared, tested and used.

Contact Details

I can be contacted via my page on the Winston Churchill Trust website here:

https://www.churchilltrust.com.au/fellow/neil-wilson-qld-2024/

Glossary of Abbreviations and Technical Terms

The following terms are used throughout this report. Brief definitions are provided to assist readers who are not specialists in vinyl record manufacturing or environmental assessment.

Bio-attributed compound

A PVC compound in which a portion of the fossil-based feedstock has been substituted with bio-based feedstock through a certified mass balance system. The material may be physically identical to standard PVC; the bio-based content is tracked through accounting rather than physical segregation.

Biogenic carbon

Carbon that originates from biological sources such as plants or trees. The treatment of biogenic carbon in carbon footprinting is contested: some methodologies allow biogenic carbon removals to be credited against emissions, while others require them to be reported separately.

Cradle-to-gate

A life cycle assessment boundary that covers environmental impacts from raw material extraction up to the point a product leaves the factory gate. It does not include impacts from transport to the customer, use of the product or end-of-life treatment.

DMM (Direct Metal Mastering)

A mastering process in which the audio signal is cut directly into a copper disc rather than first cutting a lacquer. DMM stampers tend to have a more consistent groove depth than lacquer-cut stampers.

Greenhouse Gas Protocol

A widely used international standard for measuring and reporting greenhouse gas emissions. The Protocol generally requires biogenic carbon removals to be reported separately from fossil-based emissions, rather than being integrated into a single net figure.

ISCC (International Sustainability and Carbon Certification)

A globally recognised certification system for bio-based and circular materials, including bio-attributed PVC compounds. ISCC certification involves annual audits and requires full traceability of feedstock through the supply chain.

ISO standard (for carbon accounting)

The International Organisation for Standardisation publishes standards for carbon footprinting and life cycle assessment. Under some ISO approaches, biogenic carbon removals can be integrated into product carbon figures, producing different results from the Greenhouse Gas Protocol approach.

LCA (Life Cycle Assessment)

A method for evaluating the environmental impacts of a product, process or service across its full life cycle — from raw material extraction through manufacture, use and end-of-life treatment. LCAs vary significantly depending on the system boundaries and databases used.

Mass balance

An accounting mechanism used to allocate bio-based feedstock within a mixed production system. A producer introduces bio-based materials into a shared supply chain and allocates the bio-based content to specific products through certified accounting, rather than physically segregating the bio-based stream.

PCF (Product Carbon Footprint)

The carbon emissions associated with a specific product, calculated on a cradle-to-gate or cradle-to-grave basis. A PCF includes scope 1, 2 and 3 emissions relevant to that product.

PET (Polyethylene terephthalate)

A plastic used in injection moulded record systems as an alternative to PVC. PET is widely used for food-grade packaging and bottles, and post-consumer recycled PET is more readily available than post-consumer recycled PVC.

PVC (Polyvinyl chloride)

The dominant material used for record pressing since vinyl records were introduced commercially. PVC is a durable, well-understood material that is embedded in the global installed base of record pressing equipment.

Regrind

In-process production waste — including flash, pucks and rejected records — that is granulated and returned to the pressing process for reuse. Regrind can perform well technically under controlled conditions and is already used by most pressing plants.

Stamper

A nickel metal disc bearing a negative impression of the groove structure of a record, used to press the grooves into the vinyl or PET material during manufacture. Stamper quality directly affects pressing outcomes.