Ministry for the Environment
Manatū Mō Te Taiao

Assessment coversheet

- *A generic tool for CRRF; WMF; PIF.*
- *This tool is a summary of the project's assessment and approvals through all life-cycle phases, including variations. It replaces a detailed Memo to Approve for both a Deed of Funding and any subsequent Annual Plan Updates (circa 2020 Deed of Funding) and Deeds of Variation.*

User notes

- *Update the document heading if to be used for a Deed of Variation Approval: Variation Assessment coversheet.*
- *Where waste fund processes differ use n/a where the field is not applicable.*
- *For EOIs only update where applicable including Section 3 (subsequent sections are for the Application assessment/project plan/approvals phase).*
- *Sections 4 and 9 must be completed by the Lead Investment Manager when preparing your approval analysis for DFA execution of the Deed of Funding (replaces the Memo to Approve).*
- *Delete Sections 10 and 11 if the coversheet is not being used for an Annual Plan Update or Deed of Variation DFA approval.*

Section 1: Project Details

CRRF; WMF; PIF

Project identifier:	PJ-0003060	
Project Round:	PIF 2021 Round 1	
Organisation name:	LICELLA NZ LIMITED	
Project Name:	Project Aranga (Resurrection) – ka taea te porohita kirihou; enabling plastic circularity	
Project Description:	All plastics have a finite lifespan due to either single use requirements for the products they contain/convey, reduced performance (quality) over iterations of mechanical recycling, or contamination. Conventional options for end of life waste plastic comprise landfilling or incineration (waste to energy) epitomizing the "take-make-dispose" system which prevails in New Zealand. Licella's patent protected award winning Catalytic Hydrothermal Reactor (Cat-HTR) eco-technology is the future of the low carbon circular economy. Cat-HTR uses supercritical water to affect the depolymerization of plastic polymers to produce a plasticrude, with a high conversion yield (plasticrude recovery of ~80-85% from feedstock). Plasticrude is available for conventional refinery upgrading to create resin monomers for manufacturing recycled polymers thereby enabling true plastics circularity. Cat-HTR is plastic agnostic and can convert contaminated and hard to recycle plastics to plasticrude. This proposal has been developed in partnership with local organizations and Licella to outline the market viability activities needed to be considered when determining the economic feasibility of establishing end of life waste plastic chemical recycling facilities in New Zealand. The most advantageous location for such facilities will be determined. Additional core document provided – detailed business case link here	
Waste Fund:	Plastics Innovation Fund	
Lead Investment Manager	Khan Aronsen	
Funding information	Organisation's (Funding Recipient) cash contribution to the project	-
	3rd party Co-investors funding sources	$250,294

	MfE contribution	$200,000.00
	Total cost of project (A+B+C)	$450,294.00
	MfE share of costs (office use only)	44%

Section 2: Expression of Interest – SME Advice

Primarily PIF. Use N/A where not applicable

SME # 1 Name ***State if partial/informal or a full assessment***	Richard Jorgensen - Informal
SME # 1 Comments made	Spoke to Richard (SME) about this project at a high level. He sees the feasibility study as important and required, but his feeling was "what's the rush?". His attitude was that the longer we wait, the more Licella will learn from their Australian expansion and the less we might need to invest. On the other hand, this is feasibility which is needed to best understand whether the business model will work in NZ at all, and if it did work, where it would sit and what would its feedstock be. On balance, the company are keen to earmark funds for NZ contextual studies alongside a raft of other international projects, and right now NZ is placed approximately 7th in the queue for investment. If we decide to delay this study, Licella will focus their efforts on more 'shovel ready' projects and NZ will slip down the queue of investment priorities. Much has been gained from the Australian example, and knowing how important localised feasibility is, much is to be gained by this study. (For example, other technology that was proven in Japan failed to operate in Sri Lanka, due to the higher water content of the feedstock. Localised feasibility is crucial to understand the likelihood of success, and the overseas operation of such technology will only be useful to a point.) For these reasons it is recommended to act now - that waiting will not provide additional benefits to this proposal. Further to this advice, we have reduced the amount of funding from $250,000 to $200,000, which has been accepted by the applicants.
SME # 2 Name • ***State if partial/informal or a full assessment***	
SME # 2 Comments made	

Section 3: Expression of Interest: Expert / Panel Assessment and/or Moderation

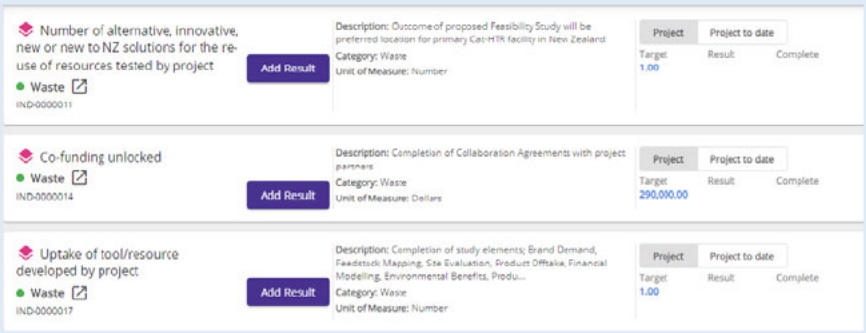
CRRF; WMF; PIF. Insert N/A if not applicable

Assessment /Moderation Panel	Lara Cowen, Khan Aronsen, Michelle Kazor
Total Assessment score ***Insert score range to provide context***	117/175 reduced to 112/175
EOI Moderation comment (*if applicable*)	Reduced score accordingly (lost 5 points). Additional conditions: Ministry Approval required for feasibility study scope, info on how a plant would be funded, LCA to include shipping, How formal are the partners?
EOI External Communications	Discussed the above elements with the applicants – agreed. Regarding formality of partners, these are formal partners who are contributing cash funding to enable the project. Remaining element to complete is discussed in the recommendation – including a commercialisation plan as a deliverable post Feasibility study, with stage gate should the results be negative.
Moderation recommendation *Delete options not applicable*	Reccomended to enter pool.

Recommended	

Section 4: Investment Manager's assessment against key project indicators

CRRF; WMF; PIF. Completed by the Investment Manager (PIF: this section is required in advance of the APPLICATION phase Moderation)

Project objectives	
Objective #	**Objective**
1	Feasibility - to determine the commercial viability of a Cat-HTR project for the chemical recycling of end of life waste plastics in NZ by studying the following tasks: Brand Demand and Government Policy; Feedstock Mapping; Site Evaluation; Product Offtake; Financial Modelling; Environmental Benefits (LCA); Product Provenance. This Feasibility Study will inform 1. future detailed engineering to establish a new facility in New Zealand and 2. future project ownership.
Project Outcomes/Results indicators and measures.	 These are sensible and encompassing indicators – one innovative solution tested, unlocking co-funding, and uptake (commercialisation) is a key risk factor to be tested.
IM is confident that the project will support the key fund outcomes / investment signals	**Investment Signal – Feasibility and R&D** This is a feasibility study to reduce plastic waste and therefore aligns to the investment signal for round 1. **Fund outcome - Innovation** This demonstrates a new to New Zealand technology that has the potential to positively disrupt the recycling industry in New Zealand, therefore aligns to Innovation requirements for the fund. **Fund outcome – Promote the reduction of plastic waste** While the feasibility study is not going to significantly reduce plastic waste on its own, the resulting plant would reduce significant quantities of hard to recycle, degraded and contaminated soft plastics. Therefore this feasibility study promotes the reduction of plastic waste. **Fund outcome – Protect the environment from harm** Including an LCA as part of the project reduces the risk of adverse outcomes and minimises the risk to the environment, including shipping constraints/efficiency.
Budget reviewed ***Cost comparison to original application*** *Example: consider Project Costs against stated Outcomes / Results*	Originally the applicants applied for $250,000 in funding, which was reduced to an offer of $200,000 at Pool Draw stage. In response, the amount of funding provided by co-investors has also been modified to the following: final overall budget of $450,294. s 9(2)(b)(ii) The PIF contribution will be 44% of the total budget. There is an additional in-kind contribution by Licella which is not to be included in this project budget.

Funding information	Total	Year One
A. Organisation's (Funding Recipient) cash contribution to the project	-	-

B. 3rd Party Co-investor funding sources	$250,294	$250,294
C. MfE contribution (approved amount)	$200,000	$200,000
Total cost of project *(A+B+C)*	$450,294	$450,294
MfE share of costs *(for office use only)*	44%	44%

Ability to deliver ***Capacity and Capability***	Proven ability to deliver pilot plants, scaled plants and commercial trials in Australia. Motivated applicants to enter the NZ market with broad commercial partnerships.
Ability to Fund	Partners have confirmed they will split the costs of the Feasibility study – no concerns around ability to fund.
Governance and oversight ***Is MfE representation required?***	Beyond typical project management, and the conditions as suggested, no additional representation by MfE is required for this project. The Project Manager is an experienced Director, with an international support team, professional partners and proven ability to deliver in Australia to acceptable standards.
Beyond BAU ***Timing of proposal against BAU planning. Would this have proceeded without funding?***	Licella currently actively operate in Australia – this project is to bring the technology to New Zealand, which is within the remit of the Plastics Innovation Fund, and is therefore not considered BAU.
Due Diligence ***Comment/summarise 3rd party recommendations where required*** *Insert due diligence doc links*	Due Diligence beyond public internet searches will be carried out externally by Grant Thornton post approval. No concerns at this stage.
Risks and mitigation summary *1.Identify COVID-19 risks, scope and mitigation (mandatory)* *2.Identify other risks, scope and mitigation* *(e.g., consent, political, impacts, conflicts of interest, financial risks)*	As the COVID pandemic becomes endemic, COVID risks are negligible outside minor delays to the timeline. Core risks have been identified and are to be mitigated through deed stage gates: 1. Scope of the Feasibility study to be signed off by MfE – to ensure that it covers environmental, socio economic and economic benefits. a. This should include information about any by-products, waste streams, and information about any fuels the plant might produce. 2. LCA to include shipping costs/impacts. 3. Should it be deemed required, a commercialisation plan to be produced post completion of the feasibility study.
Conflicts of Interest *Insert description if applicable*	No interests or conflicts identified at this time.
Analysis of Progress *Delete options not applicable*	This project will be monitored by: o Monthly progress reports submitted by the project management o Milestone reports submitted by the project management

Section 6: APPLICATION phase - SME Advice

Primarily for PIF process. Use N/A where not applicable

SME # 1 Name ***State if a partial/informal or a full assessment***	Harry Livesey - informal
SME # 1 Comments made	I am supportive of where Licella are going and it seems to be technology with more going for it than many 'partially burn it' chemical recycling options. So these questions are the few that I noted as I went through: - What are the waste by-products? They mention 'high conversion yield (plasticrude recovery of ~80-85% from feedstock)'. What happens to the other 20% to 15% and waste water? These have been the downfall of many chemical recycling projects. - They might get to this later on page 15 which has a diagram showing 15% as gas burnt to heat the process. May want to ask about carbon emissions associated with the process. Also if another fuel/heat source was available what could be done with the gas (condensed and sent for refining or is it always destined to be a fuel). The diagram also shows heavy residue of 13%, leaving 72% plasticrude less than they state earlier. Even later they note they note some of the gas is light olefins and could be refined into new plastic feedstock. Maybe a slightly larger question about how much of what they produce is likely to go back into plastics (and how much do we care if it displaces other fossil hydrocarbons waxes, bitumen, diesel? We don't want it made into crude just to burn it, but no process is perfect – what assurances can they give us that this project will be more about returning polymer to long lived products rather than fuels?) - I note an LCA is costed they will have to consider carefully the boundaries as emissions reductions will largely be around oil extraction, refining, and polymerisation eg all outside of NZ (but the climate doesn't care where they are as long as they are real) Okay that was all. Seems good and I think they covered most of my questions above or indicated that they would be looking for answers in the feasibility work. They mention the Mura plant in the UK as intending to be operational in Q3 2022. I couldn't find any announcements online but I am curious if it is up and running. They've got some solid backers and have been working on CatHTR for at least a decade, seem to be making progress. Overall I think it is a promising technology that is looking in the right direction.
SME # 2 Name ***State if a partial/informal or a full assessment***	
SME # 2 Comments made	

Section 7: Conclusion of the Waste Team's internal assessment

Primarily for PIF process. IM Lead conclusion; Peer review summary; Waste Manager summary; Draft recommendation for DFA Moderation)

Lead *conclusion of above assessment*	This is a proposal that sits at the forefront of plastic recycling technology, with a feasibility study set to exemplify the benefits of embracing new systems and processes to better deal with hard to recycle plastics. The systems have been developed using Australian government funding and broader investment into their infrastructure, including pilots, scale plants and re-polymerisation plants with sufficient scale to reprocess both NZ and Australian plasticrude. Because of the developments across the Tasman, this project does not rely on major changes to NZ infrastructure, and the science element has been largely de-risked. There is little doubt that advanced recycling is required in NZ to deal with contaminated soft plastics and residuals from traditional mechanical recycling. Licella are leaders in the space and bring a set of commercial partners, contributing funding to the costs associated with this project and further de risking the project outputs. In considering alternative advanced recycling technologies, this is attractive, as alternatives tend towards converting plastics to fuel for burning, or utilise a higher risk combustion type process (EG Gasification). There are compounding risks when

	considering plastics to fuel, including carbon emissions, lack of circularity, not sustainable and processing risks like PFAS accumulation. This process instead processes plastic to a precursor mix of short polymer chains - which is suitable for processing back into virgin quality plastics. The process has been tried at commercial scale (in partnership with Nestle, packaging KitKats) and was a success at the hard-to-achieve food grade level. The core residual risk does not relate to the delivery of this project specifically, rather the next step on the pathway to commercialisation. While the overall cost of a full scale plant is not discussed in this application, it is certainly beyond the scope of the Plastics Innovation Fund to fund such a project. There is no real commercialisation plan as part of the project and no indication of how that might happen. Recognising that some of these elements will be decided during the feasibility study, and private partnership likely relies on feedstock supply, the applicants need to consider how they will deliver the whole project - not just the feasibility study. When it comes to benefits to NZ - all stakeholders including the government and private sector, will require this feasibility study to decide on the best course of action in futureproofing NZ's recycling infrastructure. Licella require the feasibility study to identify feedstocks, locations and then partners to assist the commercialsiation stage. In conclusion, there is no way to guarantee a full scale plant is built at the end of this study, but to this end I recommend a condition that a simple commercialisation plan is included as a final deliverable, once the feasibility study is complete. Including this within the scope of this project will contribute to the likelihood of eventual commercialisation of the project and will encourage Licella to engage with the market at the most appropriate time. Initially Licella had applied for $250,000 in funding and this has been reduced to $200,000. Including this element may increase the overall funding total, though it appears equitable to contribute to such a deliverable. Otherwise, there is contingency as part of the budget which could be applied to a commercialisation plan. Overall this is a sensible project that will contribute to a cleaner, greener future NZ, promoting the most innovative recycling technology on the market internationally. **UPDATE:** Lara Cowen and Khan Aronsen met with the Licella team to discuss mixed messaging in the market. Co-funder OJI Fibre Solutions mentioned their intention to fuel paper mills using plastic feedstock, which is opposed to the preferred plastic to plastic recycling approach. The Licella team clarified, that they only process plastics back into plastics, and organic waste into fuels. It is possible that some time in the future, a party could licence Licella technology and use it for their own purposes, however this is not the intention, and plastic to fuel will not be part of this feasibility study. Also clarified, OJI Fibre Solutions do have a significant plastic waste stream of 6000 tonne per year, which could be recycled using the Licella technology. This justifies OJI's co-funding contribution. Further to this, Licella have agreed to produce a summary report for public release, which means the benefits/learnings will be shared, adding to the public benefit factor. Licella are not currently processing plastics in Australia, as they are building their full scale facility there, expected to be complete at the end of this calendar year. Also checked with the Legal team, who confirmed that this is low risk – in that the Ministry only funds what is within scope of the feasibility study, and there is no implied interest beyond that. Overall, there is potential for this technology, however no specific position has been formed on whether it is supported or not. This feasibility study provides a detailed look into what the application of this technology looks like in New Zealand, and will provide the required information to allow a position to be formed. Therefore, it is logical to support this feasibility study to provide a real picture of its appropriateness in the New Zealand setting. Concerns have been alleviated and the recommendation stands to fund the project under the conditions below.
Peer Reviewer	Kirsteen Pitkin-Douglas 1 February 2023

Peer Reviewer *comments made*	Some minor tweaks recommended and considerations for project planning noted. Additionally, consider if general IP clause should be swapped out to allow the report potential wider Government use, as well as considering that the 'plan' is acceptable for both MPI and MBIE etc. re 'one Government', as noted in the additional business case provided, section 6.
Fund Manager *name*	Lara Cowen
Fund Manager *summary*	There is value to the Ministry (and wider Government) to support this feasibility study to understand potential market dynamics for chemical recycling applied to the New Zealand market. Our requirement to sign off on the scope of the study allows us to insure information important to us will be secured. Co-funding has been confirmed through heads of agreement with Oji Fibre Solutions, Silver Fern Farms, Plasback, Countdown and Convex.
Fund Team's *recommendation* **to DFA Moderation (to proceed to Stage II)**	**Recommended with conditons** Core risks have been identified and are to be mitigated through deed stage gates: 1. Scope of the Feasibility study to be signed off by MfE – to ensure that it covers environmental, socio economic and economic benefits. a. This should include information about any by-products, waste streams, and information about any fuels the plant might produce. 2. LCA to include shipping costs/impacts. 3. Should it be deemed required, a commercialisation plan to be produced post completion of the feasibility study. 4. Contingency costs are either applied towards the commercialisation plan, or are spread evenly across existing deliverables. 5. Prepare and publicly release a summary report of the feasibility study.

Section 8: MODERATION – decision for Stage II Go/No Go

CRRF; WMF; PIF. To capture Stage II moderation outcomes following the moderation briefings / meetings with DFAs

DFA – Fund Manager	Lara Cowen – met with Licella and spoke with internal SMEs to satisfy concerns. Confirmed intent to focus on plastics to plastics. Included additional condition on public report. Recommend approval. 31 March 2023
DFA - Director	Michelle Kazor – have discussed with the team the outcome of their meeting with Licella about ensuring it is 'plastics to plastic' and with the above conditions. Recommend approval. 31 March 2023
DFA - Deputy Secretary	Sam Buckle – approved. Appreciate the work done to confirm the scope of the feasibility study (ie plastic to plastic), to understand Oji interest and also the additional condition around the provision of a public facing summary. 31 March 2023
Application document: *FMS Doc ID# & FMS links*	
Detailed budget: *FMS Doc ID# & FMS links*	
Conditions of Funding *Any conditions of funding set by via the Moderation or Approval process*	
Optional	

Other supporting documents for Moderation: FMS Doc ID#	

Section 9: Stage II REVIEW - Deed of Funding and Project plan

CRRF; WMF; PIF.

Project Plan *FMS Doc ID # & FMS links*	
Deed of Funding *Doc ID # & FMS links*	
Lead review summary *Confirmation statement by the Lead that all preceding sections have been robustly addressed during the Stage II negotiations including how any conditions of funding have been satisfied*	
Special Terms *Insert special terms that are required or n/a*	[IM inserts special term commentary including Stage Gates]
Peer Review	Name: Date: Comments:
Legal Review	Name: Date:
APPROVALS	**DEED of FUNDING** **Next steps** The Ministry for the Environment is now required to sign this Deed of Funding. [insert recipient org name] will then be asked to sign this Deed of Funding to complete this agreement.
DFA - Manager	Name: Date: Position / title: Comments: **Signature**:
DFA – Director	Name: Date: Position / title: Comments: **Signature**:
DFA – Deputy Secretary	Name: Date: Position / title: Comments: **Signature**:

FMS Document IDs and FMS document link	Deed of Funding DOC-00***** FMS Link Project Plan DOC-00***** FMS link

Section 10: Annual Plan Update

CRRF; WMF; PIF.

Annual (project) Plan *FMS Doc ID # & FMS link* **Detailed budget** *FMS Doc ID # & FMS link*	

Funding information	Total	Year One	Year Two	Year Three
A. Organisation's (Funding Recipient) cash contribution to the project				
B. 3rd Party Co-investor funding sources				
C. MfE contribution (approved amount)				
Total cost of project *(A+B+C)*				
MfE share of costs *(for office use only)*				

Lead review summary *Confirmation statement by the Lead that either:* • *the annual plan is complete and ready for peer and Manager review OR* • *the changes to the annual plan have resulted in a Deed of Variation (refer to Section 11).*	
Peer Review	Name: Date: Comments:
Manager Review	Name: Date: Comments:

Section 11: Deed of Variation #[Enter #]

CRRF; WMF; PIF

Previous Project Variation/s and date of execution	No details No details

Type	No details No details
Variation reason	No details No details
Variation Summary *Current variation only*	**Current Variation -#[Enter#]** **[delete example content]** **Reason** The purpose of the Variation is to adjust the Milestone delivery dates to accurately reflect the now confirmed project plan dates. The initial deed and project plan provided preliminary dates which have now been finalised. **Current Project Status** The first three milestone reports have been submitted: • Fibre Upgrade RFP • Award contract and order equipment • Optical sorters manufactured and shipped The remaining 3 milestones are: • Optical sorters on site • Plant assembly and integration • Monitoring operations and reporting The delivery and Installation dates have now been finalised and experienced some minor delays due to COVID. There is no change to Activities, Budget, Deliverables, Outcomes, Objectives or expiry date. **Details of variation** This variation is required to extend the Milestone due dates for Milestones 4, 5 and 6. 'Variation summary' field from Contract Variations card.
List Key impact(s) to the Project *(where applicable)* *1.Changes to milestone schedule* *2.Risks*	[delete example content] **Finalisation of Milestone dates is outlined below. Expiry date of 02 February 2023 remains unchanged.** —

ACC Fibre	Milestone	Initial date	Revised date	
	Milestone 1	Feb-21		Submitted
	Milestone 2	Apr-21		Submitted
	Milestone 3	Oct-21		Submitted
	Milestone 4	Dec-21	Jun-22	
	Milestone 5	May-22	Aug-22	
	Milestone 6	Aug-22	Dec-22	

Additional comments RISKS	Risk analysis (including COVID-19 impact against delivery of project objectives and mitigations) This variation seeks to formalise and agree the Milestone delivery dates for Milestones 4, 5 and 6. The Recipient has been delivering the Project in accordance with the Deed of Funding, including the Project Plan. The project is currently on track to achieve all of its objectives. The Deed of Funding was executed in January 2021, after the COVID-19 pandemic began. Despite Government restrictions imposed in response to COVID-19, the project has continued to plan.

	The next phase of the project is reliant on the delivery of the optical sorter from overseas, a planned shut-down and installation. COVID has meant delays in deliveries. The adjusted milestone dates reflect the current planned arrival dates and corresponding installation. **Ongoing Covid Risks** The recipient will: • Follow government directives currently outlined at covid19/govt.nz/assets/resources/tables/COVID-19-alert-levels-detailed.pdf to ensure our health and safety protocol for Covid19 is best practice. • Design the fit out of our workshop to allow social distancing protocols to be met. • Regularly review our Health and Safety Plan and Covid19 Safety Plan to ensure all staff have the most up-to-date information and can follow best practice protocols. • While the business is an essential service, the risk is severe to the project because the new equipment will not be able to be installed during levels 3 and 4. At levels 1 and 2 the equipment may be installed, and staff will follow appropriate physical distancing. Risks: The project will be delivered over a longer period; may be some public perception risk that CRRF is not being delivered effectively, but this risk is minor as the delivery timeframe is reasonable especially in consideration of recent Covid delays. At this stage the project is still on track to be delivered prior to the deed expiry date of 2 February 2023.
Peer Review	Name: Date: Comments:
Legal Review	Name: Date:

APPROVALS	**DEED of VARIATION** **Next steps** The Ministry for the Environment is now required to sign this Deed of Variation. [insert recipient org name] will then be asked to sign this Deed of Funding to complete this agreement.
DFA - Manager	Name: Date: Position/Title: Comments to DFAs: Signature:
DFA – Director	Name: Date: Position/Title: Comments: Signature:
DFA – Deputy Secretary	Name: Date: Position/Title: Comments: Signature:

FMS Documents *Doc ID# and FMS links*	Project number: PJ-0003060 • Deed of Variation #1 : DV#1 CRRF ACC A10 Fibre Deed of Variation • DOC-0015531 • FMS link • Email confirmation from Project : DV#1 CRRF ACC A10 email confirmation of dates • DOC-0015533 • FMS link No details No details