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Northern America and European Market Access for Pacific Cocoa

Technical Report #097

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Prepared for – Department of Foreign Affairs and Trade – ABN: 47 065 634 525

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Prepared by

AECOM Services Pty Ltd
Level 28, 91 King William Street, Adelaide SA 5000, Australia
T +61 8 7223 5400 F +61 8 7223 5499 www.aecom.com
ABN 46 000 691 690

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Prepared by Hannah Wheaton

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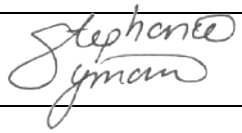
1	April 2016	FINAL	Stephanie Symon AECOM Project Manager	

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Acronyms

Abbreviation	Description
ADRA	Adventist Development and Relief Agency
CEMA	Commodities Exporting Marketing Authority
DFAT	Department of Foreign Affairs and Trade
FCIA	Fine Cocoa Industry Association
FCL	Full Container Load
FDA	Food and Drug Administration
FLO	Fairtrade Labelling Organizations
FOB	Free on Board
FSP	Fairtrade Sourcing Partnership
FT	Fairtrade
FT ANZ	Fairtrade Australia and New Zealand
HCP	Heirloom Cacao Preservation Initiative
LCL	Loose Container Load
LIFFE	London International Financial Futures and Options Exchange
MOQ	Minimum Order Quantity
mt	metric tonne
NGO	Non-Governmental Organisation
NY ICE	New York InterContinental Exchange
PHAMA	Pacific Horticultural and Agricultural Market Access Program
PNG	Papua New Guinea
SolKom	Solomon Kommodity
UK	United Kingdom
USA	United States of America
USD	United States Dollar
UTZ	UTZ Certified (sustainable farming for cocoa, coffee and tea)
VCGA	Vanuatu Cocoa Growers Association
VRTC	Vanuatu Research and Training Centre
YELP	Youth Empowerment Livelihood Project

Executive Summary

This report is designed to complement the Australasian industry analysis completed in November/December 2015. This report analyses the potential markets for Solomon Islands and Vanuatu cocoa in Northern America (United States of America (USA)/Canada), continental Europe and the United Kingdom (UK).

From the onset, a preliminary study made it clear that the size of the boutique market in terms of volume was much smaller than expected. Even though there are a large number of players in the industry, with over 200 specialty chocolatiers in the USA alone, the tonnage imported into the USA is only 400-500 mt annually. The figures are even smaller for the European market (300-400mt), putting the total demand for boutique/specialty cocoa beans in the northern hemisphere at a maximum of around 900mt. It must be noted that this demand is currently fulfilled by a number of origins, both large and small. It thus becomes very clear that the cocoa industry in Pacific Nations cannot rely solely on the boutique market to fuel growth, but rather focus equally on bulk markets.

The biggest obstacle faced by the Pacific cocoa industry is logistics. Many boutique chocolatiers buy less than 1mt of beans a year, making it an expensive proposition to transport directly from the origins (as was outlined in the Australasian industry analysis report). Thus chocolate makers of all sizes, across both Northern America and Europe stated a preference to purchase through an intermediary (trading house/consolidator/broker) to reduce both the cost and the hassle of importing directly in small batches. This allows them to focus on their core business of making chocolate and marketing the end product. Whilst all interviewees wanted to have more clarity on the source of their cocoa supplies and have a better understanding of the origins, this was more for marketing purposes than any other benefit to their business.

Since smaller businesses are able to source often from a single supplier (and import through a third party), traceability has become an industry norm and hence certification has become less relevant as a differentiating factor. The bigger buyers (those importing 200mt+) still require certification though and this tends to be Fairtrade and Organic in Northern America and UTZ and Organic in Europe.

The bulk market in the northern hemisphere is largely uninterested in sourcing beans from Solomon Islands and Vanuatu due to the long transit time and high cost of logistics for relatively small volumes on offer.

There has been overwhelming interest from the specialty market across all industry stakeholders in both Northern America and Europe. These markets are looking for something new and unique to add variety to their existing portfolios which are currently dominated by Central and South American origins. “Origin” is an industry term to denote country of origin for the cocoa. In reality, while most businesses have sufficiently differentiated brands, they all sell a similar product range, often sourced from the same plantation or cooperative (for example Akesson’s plantation supplies 90% of Madagascar beans in the market).

Given the market preference to source through a consolidator or trader, businesses with the financial independence to do so should first of all engage with the following businesses by sending samples and opening discussions on volume availability and price expectations:

- Atlantic Cocoa
- Meridian Cacao
- Daarnhouwer
- Cocoanect
- Cercle du Cacao

Two chocolate makers who have immediate interest to invest and engage are Dandelion Chocolate and Original Beans. SolKom and Chan Wings from Solomon Islands and Vanuatu Research and Training Centre (VRTC) and Vanuatu Cocoa Growers Association (VCGA) in Vanuatu would benefit from engaging with these companies to ascertain when they would need beans for processing.

If ACTIV Association (Vanuatu) has a current interest in exporting cocoa nibs TCHO would be a potential partner in the USA.

Concurrently with business engagement, if the exporting bodies have a serious interest in exporting to the USA they would be advised to start the Food and Drug Administration (FDA) approval procedure.

To maintain the quality of the cocoa during transit, the Industry Working Groups should engage with shipping companies to investigate the possibility of using refrigerated (reefer) containers for extended shipment times.

To further develop the industry on a broader scope, VRTC and the Solomon Island's Commodities Exporting Marketing Authority (CEMA) could establish sensory labs to better cater to future clients and to establish the external market. There are many micro-climates and genetic varieties present in both origins which define the flavour of cocoa. Given the importance of a flavour profile for the boutique market, this would play a role in both educating farmers about their cocoa and matching them to potential buyers. Sending samples to the Fine Cocoa Industry Association (FCIA) in the USA would complement this work.

The benefits from this study are limited to exporters with independent finance. In the Solomon Islands only 13% of cocoa production is represented by these exporters and 43% in Vanuatu. To ensure that the findings from these reports have as much impact as possible, the issue of finance still needs to be addressed. Alternate financing from global agri-business institutions such as Kiva and Root Capital should be investigated further to ascertain their potential in the Pacific.

The upcoming Chocolate Festival in the Solomon Islands is an excellent opportunity to engage a number of aforementioned stakeholders, provided the event is conducted with the level of professionalism expected by attendees. Given the close proximity to the suggested event dates and the lack of coordination communicated thus far, it would be of more benefit to delay the event until a time when expectations from all participants can be met.

It is vital that the momentum from this study is retained and that the Pacific Horticultural and Agricultural Market Access Program (PHAMA) continues to foster reliable, consistent and professional relationships with the businesses engaged in this survey. Appendix A provides a suggested timeline and action plan to support the recommendations from this report.

1.0 Introduction

1.1 Background

Given the boom in boutique/specialty chocolate shops in the USA and Europe over the past five years, it comes as no surprise that there is considerable scope for both Vanuatu and Solomon Islands to enter into these markets. The USA in particular is awash with cooperative sourced micro-batch beans from Central and South America. European chocolatiers are also sourcing from these groups as well as from smaller African nations such as the Democratic Republic of Congo and Liberia. As the industry grows, chocolatiers from both markets are looking for new flavours and a new story to tell. There has been overwhelming initial interest for both Solomon Islands and Vanuatu beans; the goal now is to ensure that these markets can in fact deliver in a professional and consistent manner. The USA, European and UK cocoa industries all have different drivers and it is important to understand what these are in order to build meaningful customer relationships.

1.2 Methodology

The research for this report took the form of three weeks desk work where the author analysed current industry initiatives by non-governmental organisations (NGO), Associations, certification bodies, trading houses and of course chocolate makers. The full list of reading material can be seen in the reference list. A two week trip to San Francisco, New York, Amsterdam, Brussels and London ensued between 5th – 18th March and interviews and/or phone calls were conducted with the business houses listed in this report.

1.3 Limitations

With such a scattered industry, only a relatively small sample size was interviewed for the purposes of this report. Given the limited amount of sun dried and high quality beans available in origin, it was deemed prudent to ease into the market with some of the well-known players, especially those who would be able to buy and distribute the beans, thus reducing the logistical burden on the exporters in country.

There remain many chocolate makers who were not interviewed for this report who could be possible future buyers.

Due to logistical constraints, samples were not available to prospective buyers prior to meetings taking place. This in turn has lengthened the consultation time required for this study as feedback on flavour profiles is important for the depth of this report.

2.0 Report Findings

2.1 North American Buyers

2.1.1 Market Overview

The North American boutique market has grown exponentially in the last five years. There are now hundreds of bean to bar manufacturers and chocolatiers trying to make a name for themselves in this market. The market size is difficult to define as some businesses buy chocolate products (liquor, butter and powder) while others work with whole beans. It is estimated that the market for beans is approximately 400-500mt per year.

The market is currently trying to standarise definitions and flavours to ensure consistency. Many terms such as “boutique”, “bean to bar” and “specialty” are ambiguous and mean different things to different individuals. Thus the Fine Cocoa Industry Association (FCIA) is in the process of developing standard flavour profiles much like the coffee industry has in place. This initiative has received mixed reviews across the industry however the main benefit would be felt by growers and exporters. The suggested standardisation would allow them to better supply a consistent product. CAOBISCO outlines the recent developments in a report entitled *Cocoa Beans: Chocolate & Cocoa Industry Quality Requirements* (http://www.cocoaquality.eu/data/Cocoa%20Beans%20Industry%20Quality%20Requirements%20Apr%202016_En.pdf) which is a valuable resource for all supply stakeholders.

Central and South American countries remain the most favoured sourcing origins, thanks to the close proximity and ease of logistics. However, with increasing numbers of players and little real differentiation in the market, most companies are looking for new flavours. The market is flooded with ‘*red fruit*’ flavours and there is an increasing demand for something with a ‘*savoury chocolatey, nutty flavour*’. In addition to a differentiated flavour profile, industry stakeholders want something that is unique and exotic - an origin which can be easily marketed. Both of these factors work to the advantage of Solomon Islands and Vanuatu cocoa industries.

Consistency and quality are synonymous in this market. Any business of scale aims to provide their customers with a recognizable portfolio of chocolate products. It is thus of utmost importance to ensure for them to identify a supplier who can be relied upon to provide consistent volumes and quality of raw materials. As blending is less common in the boutique market, there is less scope to use beans from another origin as a substitute. Therefore, for the boutique chocolatier, the single most important consideration while choosing a supplier is consistency of supply.

Due to the small volumes involved, very few chocolate makers choose to import their own beans into the country, instead opting to use intermediaries. At times they may choose to negotiate price directly with the supplier at origin, but use a third party importer to perform the actual logistics and documentation functions. Atlantic Cocoa is the largest intermediary for the boutique chocolate market, with the vast majority of specialty beans passing through them. Meridian Cacao and Uncommon Cacao also provide an aggregating function but on a much smaller scale.

It is also important to note that the boutique chocolate manufacturers tend not to follow the terminal (futures) market of cocoa (New York InterContinental Exchange (NY ICE) or London International Financial Futures and Options Exchange (LIFFE)). These are small businesses which rarely hedge their purchases against the market price and instead purchase insurance to cover any potential physical stock losses. This completely changes the market dynamics as price/flavour is different for each business and hence one business’s pricing cannot be benchmarked against another.

Certification is somewhat irrelevant in the boutique market as smaller buyers generally wish to have full traceability and a personal relationship with their sourcing partner. The bulk players still find certification of some form vital to connect with their customer base. Fairtrade International (America) is a well recognised brand, as is Organic. Mars is the biggest buyer of Rainforest Alliance beans in the USA, and UTZ has hardly any presence at all.

Logistics may well prove to be the most difficult aspect of access to the USA market. The transit time is approximately three months, possibly longer. In addition to this, exporters have to be registered with the FDA in order to be able to import in to the USA. This can often take some time to establish hence it is best to plan ahead of time.

2.1.2 Guittard Chocolate Company

Location: San Francisco, California

Guittard has a history of sourcing from the Pacific. When the company was originally founded in 1868, they bought beans from Samoa in the late 1800s and early 1900s. For a decade in the early 2000s they purchased from Markham Farms in PNG and have yet to find a substitute for their PNG beans.

Guittard has a preference for strong, chocolate flavoured beans and has a favourable impression of the amelonado variety. They also have a preference of sourcing through a trading house or third party exporter who would be able to arrange shipping, customs, quarantine and storage upon arrival etc. Lately, they have moved away from single origin branding on their chocolates as the market is now awash with these from other boutique chocolatiers.

Being a family owned business they have a great deal of flexibility with sourcing. If they found a flavour profile that they wanted to work with they could bring in anything from 15mt (one full-container-load (FCL) container) to 500mt if the product was exceptional. They have an excellent working relationship with both Olam and Ecom, hence if they trialled the samples and were interested in purchasing, they would be able to request for Vanuatu beans through Ecom (buying from C-Corp) and Olam (buying from VGCA).

Fairtrade is important to Guittard, and they buy both Fairtrade America (smallholders) and Fairtrade USA (plantations) cocoa. If PHAMA is successful in implementing the recommended certification projects in phase 1 of this report, Guittard would be able to use this product.

Since Guittard is a family owned business they were unable to disclose the volume of beans that they currently purchase annually or pricing.

2.1.3 Dandelion Chocolate

Location: San Francisco, California

Dandelion is a very visible brand, with the chocolate bars being made in front of customers at their San Francisco café. It is a rapidly expanding companyd in 2015 they purchased 60mt, in 2016 they plan to buy 100mt and they plan to scale that up to 300mt by 2018. They have recently opened a new café in Japan and have other plans to expand internationally.

They prefer to negotiate price directly with their sources in origin, occasionally importing directly to San Francisco. Where the volumes involved are smaller and the logistics more complex than from their key Central American origins, they channel the purchase through Atlantic or Meridian. The price is still negotiated with the farmers directly and Atlantic/Meridian simply charge for logistics, customs clearance, storage, etc.

They have tweaked a few aspects of the procurement/manufacturing process by leveraging their staff's experience in the tech industry. For example to combat pest/disease, they freeze all of their cocoa once it arrives in the States. They initially had problems with moth infestation and hence freeze the beans anywhere from 4 days to 2.5 years. They do not believe this has an impact on the flavour potential of the bean, provided the bean is able to defrost slowly. Tech wise they also use an optical sensor to sort the rubbish from the beans, this has been used before in the coffee industry and can be more effective than winnowing and hand sorting.

Dandelion places a great deal of importance on having a story to tell and full traceability of their beans. Certification is not something they actively seek, nor are any of their products currently certified. They only produce dark chocolate and use just cocoa beans and sugar in their product range.

They like to have 12 months inventory on hand at all times and using the freezer storage gives them a great deal of flexibility to manage their inventory, despite being an expensive process.

Dandelion currently uses some PNG beans in their products and have a keen interest in buying from the South Pacific. They are buying from Fiji and have previously explored buying from Samoa but were not able to source the volumes they needed. They are very keen to work with PHAMA in Vanuatu and the Solomon Islands.

Like the vast majority of the buyers in the USA, what they are looking for is an interesting and unique flavour profile that brings something new to the market. Their purchasing has no set quality specifications in regards to bean size or waste etc. and is based purely upon flavours.

2.1.4 TCHO – New American Chocolate

Location: San Francisco, California

TCHO currently sources from four origins and makes both single origin bars and inclusion bars (with nuts, fruits, cereals, etc.). Their products are available throughout Asia and Europe but the majority of their business is in the USA. In addition to their chocolate bars, they produce couverture, liquor and powder for the catering/manufacturing markets.

They currently buy approximately 100mt per year, and they source through Atlantic Cocoa for the vast majority of their beans. This is simply because the logistics, customs and storage become very expensive at the scale these small businesses operate at. They tend to negotiate price direct with suppliers and then Atlantic charges their fees on top. Pricing is dependent on the quality of the beans, specifically the flavour.

They buy four different flavour profiles; Fruity (Peru), Nutty (Ecuador), Bright (Madagascar) and Chocolatey (Ghana). TCHO has developed a number of flavour/sensory labs with the cooperatives or communities that they source from. They find this saves time and money in regards to sampling and means that farmers have a great understanding of the value chain. The head chocolate maker recommended that there needs to be at least three permanent members of the sensory panel to ensure consistency. They would be interested to diversifying their supply base if it could fit into the current flavour profiles

Since their primary priority is the flavour profile when they are buying, certification is not required for them but traceability is. They have changed their source origin in the past when the flavour changed and impacted on the consistency of their product lines.

TCHO is the only business that roasts either at origin or as close to origin as possible. They do this to value add as much as possible in country but send one of their chocolate makers to oversee the process to ensure control over the roast temperature and length of roasting etc. They then ship the roasted beans/nibs back to the USA. As the beans are now fully dried out, it reduces a number of logistical issues such as high moisture in the beans, mould etc.

2.1.5 Atlantic Cocoa / Ecom (bulk buyer/consolidator)

Location: New York City, New York State

Atlantic Cocoa is the USA branch of Ecom Agro-industrial. Five years ago they started dabbling in the boutique market by supplying beans to Mast Brothers who are arguably the founders of specialty chocolate in the USA.

These days Atlantic is the preferred trading house of the big industry players such as Blommer, Mars and Hersheys as well as all of the boutique players. Ecom has adapted their model to support the purchase and sale of micro-lots, a market which the other major trading houses are yet to participate in.

The Senior Cocoa Trader of Atlantic represents Atlantic on the Fine Chocolate Industry Association (FCIA) Board.

Atlantic has an interest in sourcing Pacific beans including Fiji, PNG and Samoa as well as Vanuatu and the Solomon Islands. There is scope here for both the larger scale smoke tainted beans and also 15mt mixed container loads of smoke free beans. Their minimum order would be 12-15mt full container load (FCL).

The best way to proceed with Atlantic would be to source a 12-15mt container of smoke free beans from VRTC or C-Corp in Vanuatu. A Solomon Islands sale will be harder to arrange as all of the producers with sun dried beans are scattered. It would require coordination from SolKom to arrange a container from various suppliers.

Atlantic is a certified trader in all of the major certification bodies so can source Fairtrade, Rainforest Alliance and Organic for their customer base.

2.1.6 Blommer Chocolate Co (bulk buyer)

Location: East Greenville, Pennsylvania

Blommer is one of the largest buyers of cocoa in the USA and previously purchased PNG beans. Given the reputation of Pacific beans to be inconsistent, smoke tainted and difficult to source logistically, they have no interest in Vanuatu or Solomon Island beans at this time.

2.1.7 Hersheys (bulk buyer)

Location: Hershey, Pennsylvania

Hersheys is one the other major players in USA cocoa. They buy both through trading houses and also source directly from origin. They source only from trusted suppliers with whom they can build a long term relationship, rarely do they buy spot unless there has been a delay in shipment.

Hersheys is one of the many large chocolate companies who manages a range of in-country projects to support cocoa farmers. They have *Hershey Learn to Grow* and *Cocoa Link* as well as supporting cocoa sustainability by purchasing certified beans. Historically, they have always preferred to manage their own traceability systems but due to consumer pressure they now incorporate branded certification such as UTZ, Rainforest Alliance and Fairtrade America into their products.

At the moment, given high cocoa prices and a stable supply network, they have no interest in sourcing from the Solomon Islands and Vanuatu.

2.1.8 Madecasse

Location: Brooklyn, New York State

The Co-Founder of Madecasse was a Peace Corps volunteer in Madagascar and he created Madecasse to support Madagascan cocoa farmers. Up until 2015 they sourced solely from Madagascar but are looking to branch out into new origins as they have recently started processing in the USA, and the UK in addition to processing in Madagascar.

More detailed information on potential interest after samples have arrived and been tested.

2.1.9 Theo Chocolates

Location: Seattle, Washington

Theo Chocolates is one of the largest “boutique” buyers in the USA, sourcing over 800mt per year. Theo buys solely Fairtrade Organic cocoa but has an interest in working with Pacific origins.

They currently buy from the Democratic Republic of Congo and Peru but given the popularity of their chocolate, they are very proactive in seeking out new sourcing partners. Their pricing is not based on the terminal market but on a more personal arrangement with the groups from who they buy. Theo is 100% transparent about their pricing and their pricing matrix is attached in Appendix B.

They were highly supportive of a conservation project in Morobe, PNG and would be interested to partner with other communities in the Pacific if the samples were suitable and the community was committed to obtain both organic and Fairtrade certification.

Theo publishes their required cocoa specification and their bean size scale finishes at 100. This may mean that Vanuatu exporters would be unable to sell to Theo as the Vanuatu bean count tends to be between 105-115. Given the standard Solomon Island quality beans, exporters (if they had the required certifications) would be able to sell at an indicative rate of USD$3,225/mt FOB Honiara.

2.1.10 Madre Chocolates

Location: Honolulu, Hawaii

Madre's involvement in this current study is twofold, firstly as a partner to the Adventist Development and Relief Agency (ADRA) in Solomon Islands cocoa industry development and secondly as a potential buyer of Pacific origin beans.

Madre has been partnering with ADRA to build visibility of Solomon Islands cocoa in the boutique market. Their focus is on businesses with a demand of 1mt or less of cocoa annually and they plan to partner with Uncommon Cacao to arrange logistics.

Madre buys less than 5mt of cocoa annually from Hawaii, Dominican Republic (organic), Guatemala (which they source through Uncommon Cacao) and Mexico. In addition to making chocolates, they are also involved in a number of development projects. This ties in well with the background of their staff in agricultural development and ethnobotany.

As one of the only businesses which has previously sampled Solomon Islands beans, they are concerned about the consistency of the quality. Consistency is of paramount importance to all buyers and a pattern of inconsistent flavours and processing quality is a serious concern.

2.1.11 Pitch Dark Chocolates

Location: Portland, Oregon

As the name would suggest, Pitch Dark only produces single origin dark chocolates. They currently sources beans from Madagascar, Ecuador, Nicaragua and Fiji. They are one of the smaller and newer players in the industry but they have recently branched out to offer wholesale products and drinking chocolate as well as their 12 traditional bars.

Given the popularity of their Fiji bar, they have a keen interest in exploring other Pacific origins. They do not buy certified beans, but need their beans to be fully traceable. Pricing is not based against the terminal market but rather on a cost based approach.

More detailed information on potential interest after samples have arrived and been tested.

2.1.12 Taza Chocolate

Location: Somerville, Massachusetts

Taza started in 2005 and makes stone ground chocolates using a traditional Mexican method. In 2015 they purchased 223mt and the business has been steadily growing over the last decade. They currently source solely from South and Central American origins: Bolivia, Dominican Republic, Belize and Haiti.

Traceability is core to their business and they ensure they pay a premium above the Fairtrade price to their suppliers for traceable certified beans. They also support farmer groups to plant seedlings and assist with the cost of organic certification.

Taza has established their own Direct Trade Cacao Certification program to ensure full traceability. Their beans also have to be certified Organic and non-GMO. They use the USDA Organic certification body for their beans. They paid an average of USD 3,896/mt FOB for the beans that they imported however this figure differs for different origins, quality, etc.

They work closely with Uncommon Cacao and import through this company.

More detailed information on potential interest after samples have arrived and been tested.

2.1.13 East Van Roasters

Location: Vancouver, British Colombia, Canada

Despite being based in Canada, East Van Roasters is well and truly part of the USA chocolate community. East Van Roasters is a social enterprise which provides training and employment to ex-drug addicts who reside at community-provided housing called the Rainer Hotel.

East Van Roasters only buys Organic Fairtrade beans and from this they create a range of drinking chocolate, truffles and single origin bars. They also supply roasted cocoa nibs and wholesale couverture chocolate to the food/catering industry.

East Van Roasters sources from the Dominican Republic and Peru and has requested a sample of both Vanuatu and Solomon Island beans.

More detailed information on potential interest after samples have arrived and been tested.

2.1.14 Uncommon Cacao (consolidator/broker)

Location: Boston, Massachusetts

Uncommon Cacao does not produce chocolate but instead sources from lesser known origins and distributes throughout the USA, Middle East, UK, Europe and Australia. 85% of their business is USA based. They are best known for the cocoa sourced from Belize and Guatemala (around 60mt from each annually) from community groups with whom they have been working with since 2010 and 2013 respectively. Their cocoa from Belize is so highly sought after that they have over 100 businesses on a waiting list for samples.

Uncommon Cacao is in the process of taking over a company called Cacao Vivo which was previously the micro-batch distributor affiliated with Taza Chocolate. Once the businesses are combined, they will import and distribute a total of 150mt per year from six origins, all in Central and South America. Their minimum order quantity used to be 1mt and over, however now they are also selling micro-batches (<1mt).

A number of their clients are Organic certified and hence they source both conventional and Organic beans. They do not source Fairtrade, Rainforest Alliance or UTZ beans. Every year Uncommon Cacao produces an “Impact Report” and the 2014 report can be found at the following address: http://www.mayamountaincacao.com/files/UncommonCocoaGroupAnnualImpactReport2014.pdf. They advocate transparent pricing and for their Belize sourced cocoa, 60 cents from every dollar of cocoa they sell goes to the farmer.

Perhaps of the most immediate value to PHAMA and the Pacific origins is the sources of finance that Uncommon Cocoa has invested in. They partner with Kiva to provide microfinance to farmers. They applied for a USD150,000 credit line with Kiva and then vetted the farmers and distributed loans from between USD100-2,000 to individuals. They now offer three loan products including individual loans, group loans and business loans. This could be an excellent solution to the pre-finance cycle in which many producers and exporters are locked into. There is a two year repayment period on individual and group loans and 90 days on business loans.

Uncommon Cacao is not looking to expand in 2016 but would like to source more unique beans with a different flavor profile in 2017. They are interested in keeping the discussion open with PHAMA and Pacific origins. At the very least they are a valuable contact to have for their huge network of chocolate makers.

2.1.15 Meridian (consolidator/broker)

Location: Portland, Oregon

Meridian was started in 2012 to supply the growing boutique cocoa industry in the USA. They source from a range of origins globally, and they sell in micro batches (<1mt) and also fill larger orders for businesses such as Dandelion.

The demand is for consistent quality beans with a consistent flavour profile. The company has four main origins from which it sources: Ecuador, Tanzania, Trinidad and Vietnam. The Managing Director has visited Papua New Guinea (PNG) before, but his attempt to source from a local cooperative was

met by communication lags and logistics difficulties. The difficulties he faced in PNG and the lack of consistency in samples from there has made him reticent to commit to sourcing from Pacific Origins.

2.2 European Buyers

2.2.1 Market Overview

The European market is a much older, more established market than the USA. It is understated in the sense that there is less marketing done than in the USA because consumers already know the business from which they buy. The focus tends to be on high quality, excellent chocolates instead of a "story" or the social element of chocolate making.

The boutique market size is estimated between 300-400 mt and there are very few industry players sourcing beans directly from origins. It is more common in Europe for chocolate companies to source products (liquor, butter and powder) as the emphasis is on quality.

In the bulk market, the vast majority of trading houses and large scale businesses buy from West African origins and have no interest in buying from smaller origins in the Pacific. This is partly because they cannot reliably secure the volume they need and also because the transit time can be over three months from the Pacific. Given this extended transit time, interested buyers have requested the beans to be shipped in reefer containers.

As with the USA, demand for certification is driven mainly by the large companies whereas boutique/mid-size businesses are looking for a specific flavour/quality. Because the vast majority of European cocoa in the bulk market is sourced from West Africa, the main certification body used is UTZ. Some buyers are also interested in Organic certified beans, driven by large brands such as Green and Black however demand for Fairtrade and Rainforest Alliance remains small.

Buyers such as Friis Holm and Kilbeggan Chocolates would not have even existed ten years ago due to the lack of small scale ("table top") processing equipment. The boutique industry is now supported by equipment to support enterprises of all sizes. The initial lack of this equipment is the reason why a number of chocolatiers began to create their chocolates from cocoa products (butter, power, liquor and couverture) and still continue to do so.

2.2.2 Chocolatemakers

Location: Amsterdam, Netherlands

Chocolatemakers buys from three origins: Peru, Congo and the Dominican Republic. They source beans through Daarnhouwer and Cocoanect who act as consolidators for specialty beans. In addition to this, when they have the storage capacity they buy a 20ft FCL from each origin meaning a total purchasing scope of 45 mt per year.

Chocolatemakers sells their product range within Holland, predominantly within Amsterdam itself. Quality is of paramount importance to them and the beans can have no defects such as mould or smoky flavours.

Their Dominican Republic beans are brought over by the Three Hombres sailing vessel which can carry a maximum of 35 mt. In the past, the Company founder and his business partner had previously discussed the possibility of a Pacific sailing trip to source cocoa, however the lack of Organic certification and logistical challenges made this somewhat difficult.

Chocolatemakers is organic certified and whilst they can work with conventional beans, their preference is to source certified beans. They are one of the few businesses that process everything on site and do not outsource any aspect of the process.

They would buy direct from origin if there was a readily available product, of a consistent quality and a professional relationship with the in-country partner. Initially, they would prefer to buy through a consolidator while they build up trust with an exporter in origin.

2.2.3 Theobroma / Dutch Cocoa (bulk buyer)

Location: Amsterdam, Netherlands

Dutch Cocoa (Ecom) purchased Armajaro (Theobroma) in 2014 and the two companies have been integrated yet still maintain their original supply chains.

Theobroma processes under their own brand, Tulip. Dutch Cocoa processes for clients and does not make any products of their own. Their minimum order quantity (MOQ) is 10 mt liquor, which is the equivalent of 12.5 mt cocoa (a 20ft FCL).

Belcolade has requested Vanuatu beans from Dutch Cocoa in the past 12 months but they have not known from whom to source the beans. Theobroma focuses more on West African origins and would have little interest in supplying their factories with Pacific Beans.

The main concern from Dutch Cocoa is inconsistency in supply and smoke taint. They prefer to do back to back businesses with smaller origins, however they expressed a willingness to take a chance with Vanuatu beans, given the previous demand from Belcolade. Price wise, they set pricing off the LIFFE market and as per market standards, would expect the beans to be cheaper than Indonesian beans.

If they were to purchase a 12.5mt container from Vanuatu, they would prefer to do so in a reefer (refrigerated) container to maintain quality and reduce condensation.

2.2.4 Original Beans

Location: Copenhagen, Denmark

Original beans has a unique business structure that is focused more on conservation than chocolate making. They outsource the processing of their beans to a company in Switzerland and currently process beans from five origins, equalling 20 mt per year in total.

Original Beans first establishes a partnership with a cooperative or a community group (they prefer not to work with large exporters or individuals) and they then establish a conservation plan. For example they have projects in 12 origins at the moment but are only buying beans from five origins. In year 1 they will buy 1-2 mt to launch a product and establish a market. In year 2 this can increase to 5 mt and is often as much as 15 mt (a FCL load) in year 3 of partnership. In year 1, given the small volumes they buy, they meet 60% of the export costs and expect their in-country partner (or a third party group) to fund 40% of the export/logistical fees. For shipments 5 mt and over Original Beans covers 100% of the export costs.

They source a large percentage of their beans through Cocoanect as sourcing such small volumes can often be difficult and prohibitively expensive. They have shipped 2 mt from PNG before and have just shipped 2 mt as an FCL which was very expensive but the only option.

Original Beans sources first and foremost for a flavour profile, secondly a great story and thirdly for the possibility to support a conservation initiative. They have a number of conditions that partners need to adhere to in order to work with Original Beans. The group needs to commit to becoming organic certified within 2-3 years of working with Original Beans and they partly finance this. They also need to partner with a local conservation group. This can be either environmental conservation or conservation of native fauna.

Pricing wise they base their price off the LIFFE market and then offer a range of premiums for preserving forest/natural environment, organic certification, unique flavours or unique genetic material. These premiums can be up to USD2,000 per mt.

They have a one bar, one tree policy which means that for every bar of chocolate sold, they either plant one cocoa tree or preserve one tree. Therefore for every mt of cocoa sold, their partner group needs to be committed to planting 12,000 new trees or conserving this number of trees in a forest or established cocoa block (with the financial assistance of Original Beans).

2.2.5 Cargill (bulk buyer)

Location: Brussels, Belgium

Cargill's European offices purchase predominantly from West African origins and bought 90,000 mt of certified cocoa alone in 2014. Cargill is one of the major global players in chocolate manufacturing and currently with high prices, manufacturers are using current stocks to avoid making chocolate at a loss. Given the small quantities that Vanuatu and the Solomon Islands can offer, coupled with logistical issues, Cargill has no interest in buying from these origins at this time.

2.2.6 Le Cercle du Cacao (consolidator/broker)

Location: Brussels, Belgium

Le Cercle du Cacao supply some of the best chocolatiers in France and Belgium. With the expansion of the bean to bar business in Europe, so too has their business expanded.

Their business supplies chocolate makers with two different products; firstly a more mainstream, bean which is blended to make couverture, pralines, etc. Secondly they source high quality and often niche market beans for chocolatiers to make single origin and often single plantation/farm bars. Clients of theirs, such as Pierre Marcollini, may market 3-10 single origin bars a year and Cercle Du Cacao sources and imports these beans into Antwerp where they are stored. They sell micro batches (<1mt) of the specialty cocoa and often over 100mt of the cocoa to be used in blends. The cocoa intended for blends is expected to follow the terminal markets whereas the niche cocoa has a different pricing structure.

Like most of the boutique market players, they have no demand for certified beans but traceability is of the utmost importance. Where possible, they would prefer to work with individual farmers or cooperatives instead of plantations.

Of particular concern to their customers at the moment is the cadmium levels in the cocoa and this is one of the first tests they conduct on the samples. As cadmium levels are usually higher in volcanic soils, this may be particularly applicable to Pacific origins.

Initially they would like 2 kg samples from different regions in each origin. If the samples meet their approval, then they would ship 2-5 mt FCL to Australia, then re-pack into an loose-container-load (LCL) container into Antwerp. If they find a viable market for the cocoa then they would be very interested to visit both origins and understand more about the genetic varieties and also the communities producing the beans.

2.2.7 Rausch Chocolates

Location: Berlin, Germany

Rausch is a well-known global brand based in Germany. They offer a wide range of chocolate products, including seven single origin products, one of which is a 35% PNG bar. They buy only "fine flavour" cocoa and prefer to work with plantations where they can secure a regular and consistent supply of large volumes of cocoa (45 mt+). Their rationale is that if they can source the volume of cocoa they require with the required quality characteristics then they can pay significantly above the global market price for this.

They source directly from plantations, often working with a trade facilitator or export intermediary but they value a close relationship with the suppliers. They do not buy certified beans but traceability is a core business model for them.

More detailed information on potential interest after samples have arrived and been tested.

2.2.8 Friis-Holm Chocolates

Location: Hvalso, Denmark

Friis-Holm is one of the “table top” producers in Europe which makes excellent quality chocolates but purchases less than 0.5mt of cocoa per year. Friis-Holm started in 2008 and is focused on direct trade and showcasing the natural flavours of non-GMO cocoa. They buy mainly from Central and South American origins and have won a number of international awards for their chocolate single origin bars and various product lines.

At this stage they are awaiting samples from which they will provide further feedback.

2.2.9 Minka SCS (bulk buyer)

Location: Zurich, Switzerland

Minka SCS previously expressed an interest in PNG beans however had very strict quality specifications and despite sampling, found the beans had an unsatisfactory level of defects. Given this experience in PNG and the relatively small volumes that could be offered by exporters in Vanuatu and the Solomon Islands, they have no interest in these origins at this time.

2.2.10 Bohnkaf Kolonial Gmbh (consolidator)

Location: Hamburg, Germany

Bohnkaf-Kolonial is a European import company for specialty beans with warehouses in Hamburg, Amsterdam and Antwerp. They import both beans and cocoa products and accept only the best quality. Currently they source only from the Caribbean and Latin America but are interested to trial new geographies.

Further feedback on the quality of the beans is dependent on samples from both origins, arranged by the in country teams.

2.2.11 Kilbeggan Handmade Chocolates

Location: Ireland

Kilbeggan Handmade Chocolates is a small business in Ireland which purchases less than 1 mt of beans per year. As the business is so small, the focus is on quality chocolate and select flavours instead of certification or traceability. Their pricing structure is not based on the terminal market but on a cost based approach. They are concerned about the logistical difficulties shipping such small volumes from the Pacific to Ireland and would be happy to work with cocoa nibs, They would be a good potential partner for ACTIV.

2.2.12 Daarnhouwer (consolidator/broker)

Location: Zaandam, The Netherlands (offices also in San Diego, USA & Medan, Indonesia)

Daarnhouwer imports cocoa, tree nuts and coffee. They trade in specialty beans and also cocoa products (butter, powder and liquor). The company is well established, having been founded in 1908. They have long supplied the European chocolate market and it is only in recent years that they have lost some of their market share to newcomer, Cocoanect. Daarnhouwer is certified to trade Fairtrade and Organic cocoa but mainly deal with conventional beans. It has been difficult to ascertain what their pricing levels are and likewise the volumes they purchase. For a new origin, they would be interested in one container only (12-15mt) which they could store and find a market for. If they had back to back sales they would be able to increase their import volumes.

2.2.13 Cocoanect (consolidator/broker)

Location: Rotterdam, The Netherlands

Cocoanect started in 2014 in The Netherlands to cater to the growing boutique cocoa industry. The trading team in Rotterdam is supported by an office in Ivory Coast as well as representatives in

Ecuador, Indonesia and Nigeria. Their pricing model is much more open and they send out a regular email to clients with the products in stock and transparent pricing.

They have a genuine interest in sourcing from Pacific origins but have concerns about the quality of the cocoa after such a long shipment time. They would prefer to ship using reefer containers and have a thorough understanding of not only the post-harvest procedures but also the container packing and export quality control process.

They are confident that they could easily find a market for Organic certified beans however would prefer to have back to back sales for any initial purchases. Quality is of paramount importance and they are concerned about the state of the beans after such a long transit period. They would be more comfortable to source from Vanuatu and the Solomon Islands if there were reefer containers available. they are interested to stay in touch and would like to be kept informed of any upcoming developments in the industry.

2.3 United Kingdom Buyers

2.3.1 Market Overview

The UK boutique chocolate industry has a few stalwart brands and a robust couverture based chocolate industry. Trends that are relevant in the more established boutique markets are not yet on the radar for the UK, such as industry standardization and certification. There are more and more table top brands emerging who purchase 60 kg or less per year and Pump Street Bakery, an international award winner came from these humble origins as well.

2.3.2 Pump Street Bakery

Location: Woodbridge, England

Pump Street Bakery processes 4-5 mt of cocoa in total every year from a mix of five origins; Honduras, Grenada, Venezuela, Madagascar and Ecuador. The brand is synonymous with high quality and chocolate bar prices start at £6.

If they were to proceed with a trial of beans from either Vanuatu or Solomon Islands, they would like to be matched with a grower or community with whom they could communicate directly. Their preferred method of communication is email, which does pose a problem for the more remote farmers. VRTC could benefit from a relationship with Pump Street Bakery, as would David Kebu. PHAMA would need to play a role in facilitating the communication from David Kebu.

Pump Street Bakery is “obsessive’ about all matters related to production and future business partners would have to be aware of this before engaging in a commercial agreement. They would start with a paid 20kg sample and then if the sample is acceptable they would like beans shipped LCL to the UK. Given the lack of LCL services from both Vanuatu and Solomon Islands, it would be recommended to air freight the beans to Australia and then to ship FCL. Alternatively, it is still cheaper to send 8-10 bags (0.5mt) as an FCL than air freight.

2.3.3 Mast Brothers

Location: London, England

Mast Brothers is arguably the founding father of boutique chocolate in the USA and the success of this business led to Mast Brothers opening in London. They are soon to open a branch in Los Angeles. Each branch arranges its own procurement, hence the interest from Mast in London more so than Brooklyn, New York.

Mast Brothers is somewhat controversial in the industry for producing a “smoke” bar (it was previously branded as PNG). Most suppliers and buyers alike are actively trying to eradicate this in the market as it masks the more favourable natural flavours in the beans. Mast Brothers USA sources these through Rich Falotico at Atlantic Cocoa.

At this stage they are awaiting samples from which they will provide further feedback.

2.3.4 Chocolate Wave

Location: Nottingham, England

Chocolate Wave does not produce any chocolate but acts as a consolidator and advises businesses in appropriate processing/manufacturing partners. They have recently partnered with Madecasse to increase their production capabilities and vary origin scope.

At this stage they are awaiting samples from which they will provide further feedback.

2.4 Other Industry Players

2.4.1 Fairtrade USA

Fairtrade USA split from Fairtrade International/ Fairtrade America/ Fairtrade Labelling Organisations (FLO) in 2011. The main difference between Fairtrade USA and Fairtrade America is that Fairtrade USA certifies plantations. Where FLO-CERT audits all Fairtrade International certified parties, Fairtrade USA announced a partnership with Scientific Certification Systems on September 27, 2011 to conduct audits and certify new producer groups that now will be able to join the Fairtrade movement.

This certification would benefit C-Corp if they wanted to enter into a Fairtrade market.

2.4.2 Fairtrade America

Location: Washington DC, USA

Fairtrade America is still affiliated with Fairtrade International and recognizes all FLO-CERT audited businesses/groups. Certification and annual fees are set on a sliding scale, so that it is affordable for companies of all sizes.

The Washington DC office is more focused on consumer and business-to-business transactions instead of the producer development work done by regional offices such as Fairtrade Australia and New Zealand (FT ANZ) in Auckland.

Cocoa is one of the most important certified commodities in America, increasingly so for smaller businesses as well as large, well known brands. The demand for Fairtrade branded chocolates has tripled in the last five years. Fairtrade is associated with higher costs for companies and many small companies are able to make this decision easier than large companies who have to confer with shareholders to make this decision.

FT ANZ has a Fairtrade Sourcing Partnership (FSP) agreement which allows a product to bear the Fairtrade logo even if all ingredients are not Fairtrade certified. This is not applicable in the USA as given the recent rift with Fairtrade USA, they have decided to remain as true to the Fairtrade brand as possible. FSP options are available to Australasian businesses who wish to mention their Fairtrade sourced ingredients in marketing etc. but the Fairtrade logo is not allowed on the product.

2.4.3 Fine Chocolate Industry Association (FCIA)

The FCIA promotes the artistry and craftsmanship of the chocolate industry. They support best practices in cacao processing and chocolate production; and transparent labelling and marketing practices. Their membership list boasts all of the major industry players in the USA and they are the driving force behind a number of industry initiatives. Currently one of their programs is to standardise flavour testing industry-wide so that there is consistent messaging to suppliers. More information on this is included in their report entitled *Cocoa Beans: Chocolate & Cocoa Industry Quality Requirements* which can be found at the following address: http://www.cocoaquality.eu/data/Cocoa%20Beans%20Industry%20Quality%20Requirements%20Apr%202016_En.pdf.

The Heirloom Initiative is another project which would be beneficial to Solomon Island and Vanuatu cocoa growers. Together the USA Department of Agriculture and FCIA are coordinating chocolate industry professionals, chocolate makers, farmers and chocolate enthusiasts from around the world to save the quickly diminishing Theobroma cacao genetics that are behind “fine flavour” cocoa. Farmers can send in samples to The Heirloom Cacao Preservation (HCP) Fund and be certified if they have the required cocoa genetics. The HCP application fee is only $1 per submission to have beans evaluated by the tasting panel. Appendix C outlines exactly how interested participants can submit a sample.

More information is available on their website http://www.finechocolateindustry.org/.

2.4.4 Adventist Development and Relief Agency (ADRA)

Location: Sydney, Australia – Honiara, Solomon Islands – Port Vila, Vanuatu

ADRA has been working with cocoa farmers in the Solomon Islands as part of the Youth Empowerment Livelihood Project (YELP). Through a mutual contact they reached out to Madre Chocolate in Honolulu, Hawaii. Their aim through this connection was to undertake a number of workshops in the Solomon Islands to improve post-harvest practices and hence quality.

They have recently submitted a proposal to the Australian Department of Foreign Affairs and Trade (DFAT) to implement a new cocoa program in the Solomon Islands and part of this project is to be the cocoa festival from 30th May – 3rd June 2016. They have worked closely with Madre on this event to engage boutique chocolate companies in the USA and Europe. The chocolate festival is being organized by ADRA with input from the cocoa industry working group and PHAMA.

The upcoming DFAT funded project will firstly explore the boutique market supply chain and then establish a community owned export enterprise. This business structure, whilst not yet finalized, appears to be quite similar to Solomon Komodity.

3.0 Constraints

If we looked at the companies most likely to make a purchase in the next 12 months and their minimum order quantity for smoke free beans, there is a potential demand for 173 mt per year from each origin (Vanutau and Solomon Islands).

Given the scepticism from buyers regarding reliable supply and acceptable/suitable quality, most companies have indicated that they would be interested to purchase a “trial” shipment provided that prior sampling had been approved. This first shipment/trial order amount is outlined below:

Business Name	**Minimum Order Quantity (mt)**
Guittard	15mt
Dandelion	15mt
TCHO	15mt
Atlantic boutique	15mt
Madre	1mt
Pitch Dark Chocolate	1mt
Taza Chocolate	7.5mt
Uncommon Cacao	7.5mt
Meridian	15mt
Theobroma	15mt
Original Beans	1mt
Le Cercle du Cacao	3mt
Rausch	15mt
Bohnkaf Kolonial	15mt
Daarnhouwer	15mt
Cocoanect	15mt
Pump Street	2mt
	173mt

In Vanuatu it would be possible to meet this demand through VCGA and C-Corp as both companies are not constrained by pre-financing arrangements. However, both C-Corp and VCGA currently have 1-2 buyers for their cocoa and this would considerably increase their administrative requirements. In addition to that, a number of the chocolate makers listed would prefer to work with a cooperative or community group and this would place a lot of pressure on VCGA. If this is an industry that they wanted to pursue, VCGA would need to considerably strengthen their administrative capabilities in order to be able to meet the expectations of potential buyers.

In the Solomon Islands there are even less financially independent exporters to work with and a much smaller volume of smoke free beans.

4.0 Recommendations

1. **Administrative strengthening**
    a. Exporters to arrange for FDA registration and qualify for requirements in order to be able to export to the USA.
    b. Basic business training available to exporters as outlined in Phase 1.
    c. PHAMA to continue to provide financial and administrative support in regards to sending samples.

2. **Connect to consolidators**. Sales to consolidators will be quicker and easier to arrange than direct to a chocolate maker. There needs to be a minimum of 15 mt of good quality cocoa readily available for export.
    a. Arrange for samples from VRTC to be sent to Atlantic Cocoa, Meridian, Daarnhouwer, Uncommon Cacao and Cocoanect.
    b. Arrange for samples from C-Corp Vanuatu to be sent to Atlantic Cocoa, Meridian, Daarnhouwer, Uncommon Cacao and Cocoanect.
    c. Arrange for samples from SolKom to be sent to Atlantic Cocoa, Meridian, Daarnhouwer, Uncommon Cacao and Cocoanect.
    d. Arrange for samples from VCGA to be sent to Atlantic Cocoa, Meridian, Daarnhouwer, Uncommon Cacao, Cercle du Cacao and Cocoanect.

3. **Fairtrade certification**. This certification is valued in both North American and European markets. Continue with recommendation from phase 1 to engage with FT ANZ to assess certification possibility for:
    a. VCGA
    b. SolKom (as promoting body for contract production)
    c. Chan Wings (as promoting body for contract production)
    d. C-Corp Solomon Islands (as promoting body for contract production)
    e. ACTIV
    f. Malo Island Farmers Association
    g. C-Corp Vanuatu (as promoting body for contract production)

4. **Plantation certification**. Fairtrade USA provides the opportunity for plantations to become Fairtrade certified. Discuss with C-Corp if this is something they would be interested to pursue.

5. **Tailored business partnership**. Original Beans is an excellent partner for a cooperative or small community group to gain financed organic certification and promote conservation.
    a. Discuss current conservation initiatives with in country PHAMA teams and make necessary introductions to Original Beans.

6. **Tailored business partnership**. Dandelion is a fast paced, innovative partner with proven purchase history in the Pacific. Follow up on samples sent and facilitate introductions to:
    a. SolKom
    b. VCGA
    c. VRTC
    d. Chan Wings

7. **Tailored business partnership**. TCHO requires their sourcing partners to roast the cocoa beans in origin in order to support and develop cocoa/chocolate industries in country. This would be an excellent opportunity for ACTIV to learn from internationally renowned chocolate makers and create a market for their cocoa nibs.

8. **Access to finance**. Access to finance remains one of the major barriers to entry for pre-financed exporters.
    a. Explore options using Kiva.
    b. Explore options using Root Capital.

9. **Flavour refinement and education**. Sensory information is required from all boutique buyers and if this information could be compiled in country, it could save time and money in sending samples. A centralized sensory panel could be made available for cooperatives and exporters to use. Engage with TCHO to better understand requirements. In country training could be done in partnership with Madre/ADRA.
    a. Location in Vanuatu – VRTC.
    b. Location in Solomon Islands – CEMA.

10. **Flavour refinement and education**. PHAMA to provide administrative and financial assistance for interested growers/exporters to send samples to FCIA to participate in the Heirloom Cacao Preservation project.

11. **Logistical Support**. Engage with shipping companies to explore the possibility of using reefer (refrigerated) containers to export cocoa. Ascertain availability of reefer containers and make pricing information available to the industry.

12. **Solomon Islands Chocolate Festival**. There is a general lack of clarity from prospective attendees and coordinating organisations as to the status of the upcoming Solomon Islands Chocolate Festival. If key festival details have yet to be finalized:
    a. Postpone the festival.
    b. If agreed upon by PHAMA PNG, Vanuatu and Samoa, a Pacific wide Cocoa/Chocolate Festival would be more cost and time efficient and provide interested buyers with the opportunity to assess all potential origins in one trip. The opportunity to network across all cocoa producing Pacific nations and to taste cocoa from all regions would be very valuable for a number of companies, and thus they would be more likely to finance, or partly finance their own trip. It would also be an excellent opportunity for regional exporters and growers to connect and share learning experiences.

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Appendix A

Action Plan

Appendix A Action Plan

The main crop should be starting in April/May 2016. In order to make progress in the 2016 calendar year, it is recommended to prepare the cocoa industries in Solomon Islands and Vanuatu to make sales during the April-September (main crop). Even the most basic action items can be quite time consuming hence planning ahead is key to success.

There are 20 businesses who requested samples in late February 2016 and without initial sampling, few businesses are able to commit to purchasing. This needs to be completed as soon as possible. Likewise there are a number of businesses that would like to visit origin locations and the Solomon Islands (SI) chocolate festival would be a great opportunity to do this. Hence the itinerary for this festival needs to be confirmed and communicated as soon as possible.

Logistically to prepare for export, exporters need to register with the FDA and confirm what shipping options they have. Fairtrade is interested to support producer groups with certification and their support should be facilitated.

A number of introductions can be made between buyers/stakeholders and exporters/community groups to facilitate ongoing relationships. These are outlined below.

Time Frame	Action Item	Responsible Party	Comments
April 2016	Samples sent as per updated recipient list	PHAMA SI and Vanuatu office staff	Initial stakeholder engagement began on 15th February, hence some businesses have been waiting a month and a half for samples. This needs to be remedied quickly.
April 2016	Clarify status of upcoming SI cocoa festival	PHAMA SI	Very few USA businesses seemed aware of the upcoming festival and had other commitments in June/July. It will do the industry more damage if the festival is unprofessional and unorganised. Perhaps a 2015 SI festival could go ahead but on a smaller scale and more inwards focused on the proposed dates. [1]
April/May 2016	Once samples have been received and trialled, contact consolidators to discuss pricing/volumes and timeframes	PHAMA SI and Vanuatu office staff in conjunction with Solkom, VCGA, VRTC and C-Corp	Possibility that C-Corp may choose not to engage with boutique businesses.
April/May 2016	Registration of FDA to be able to export to USA	PHAMA staff to follow up with relevant exporters	Dandelion and Atlantic actually help partnering businesses to arrange this.

[1] Depending on the outcome of this action item and the progress that has been made with the PNG cocoa festival, a large Melanesian/Pacific cocoa event (PNG, SI, Vanuatu, Samoa & Fiji) could be considered later in 2016 or an inaugural event could be organised in 2017.

April/May/June 2016	PHAMA in country teams to recommend a community group to work with Original Beans. Group must have interest to become Organic certified and be able to partner with conservation agency	PHAMA SI and Vanuatu office staff in collaboration with IWGs.	Original Beans wants to get moving very quickly on a partnership and given the financial support they can offer, they are an excellent partner. They only have demand for a small amount of beans per year, so would PHAMA be able to meet the 40% of shipping costs for 1-2mt? If not, is there another third party agency that could?
May 2016	Establish schedule for exporter business training as per five suggested sessions in phase 1.	PHAMA SI and Vanuatu office staff in collaboration with IWGs.	RDP possible facilitator in Solomon Islands
May 2016	Follow up certification possibilities with Fairtrade ANZ team	PHAMA Vanuatu office staff	Given that the FT ANZ spent 21st – 26th March in SI it is unlikely they will be making a trip back within the next six months. Perhaps focus on Vanuatu in the short term.
May 2016	Speak with C-Corp, see if they have any interest in certifying Metenesal plantation as Fairtrade.	PHAMA SI and Vanuatu office staff	Get FT USA contact from Guittard or someone from Atlantic team. Find out cost before approaching C-Corp
May 2016	Introduce TCHO to ACTIV	PHAMA Vanuatu office staff	Good possibility for ACTIV to learn more about processing, keep the value add aspect in country and also establish international market for the roasted nibs
May 2016	Collate list of interested participants for Heirloom Cacao Protection project. Bear in mind most islands will have very similar genetic profiling, hence one sample from each island region may be sufficient.	CIWGs	Is PHAMA able to finance the registration cost and courier fees?
June 2016	Explore alternate financing options. Excellent opportunity for businesses like SolKom and VCGA	PHAMA Vanuatu office staff	Uncommon Cacao to facilitate initial conversation with Kiva team. Possibility for PHAMA to act as vetting agency? Who best to undertake this role?
June 2016	Have a discussion with shipping companies listed in the phase 1 report about possibility to use reefer containers.	CIWGs	Is their currently any in country? Surely full of stock on way into country but what refrigerated products are being exported? This should mean empties going out and hence good rates for using reefer exports
June 2016	TCHO/Guittard to provide guidance on what is required for sensory panel/lab.	PHAMA SI and Vanuatu office staff	This could be tied in with Madre's next visit and they could conduct in country training.

Appendix B

Theo 2014 Pricing Matrix

Appendix B Theo 2014 Pricing Matrix

Cocoa Pricing Specifications

Characteristics				Fermentation				
Bean Size (beans/100g)	Mold (%)	Purple Beans (%)	Slatey Beans (%)	80% - 85%	75% - 79%	70% - 74%	65% - 69%	60% - 64%
<75	0	0-9	0	$ 4,500	$ 4,350	$ 4,250	$ 4,150	$ 4,000
<75	0	0-9	1-2	$ 4,475	$ 4,325	$ 4,225	$ 4,075	$ 3,875
<75	0	0-9	3-5	$ 4,450	$ 4,300	$ 4,200	$ 4,050	$ 3,850
<75	0	10-15	0	$ 4,450	$ 4,300	$ 4,200	$ 4,050	$ 3,850
<75	0	10-15	1-2	$ 4,425	$ 4,275	$ 4,175	$ 4,025	$ 3,825
<75	0	10-15	3-5	$ 4,400	$ 4,250	$ 4,150	$ 4,000	$ 3,800
<75	1	0-9	0	$ 4,400	$ 4,250	$ 4,150	$ 4,000	$ 3,800
<75	1	0-9	1-2	$ 4,375	$ 4,225	$ 4,125	$ 3,975	$ 3,775
<75	1	0-9	3-5	$ 4,350	$ 4,200	$ 4,100	$ 3,950	$ 3,750
<75	1	10-15	0	$ 4,350	$ 4,200	$ 4,100	$ 3,950	$ 3,750
<75	1	10-15	1-2	$ 4,325	$ 4,175	$ 4,075	$ 3,925	$ 3,725
<75	1	10-15	3-5	$ 4,300	$ 4,150	$ 4,050	$ 3,900	$ 3,700
<75	2	0-9	0	$ 4,250	$ 4,100	$ 4,000	$ 3,850	$ 3,650
<75	2	0-9	1-2	$ 4,225	$ 4,075	$ 3,975	$ 3,825	$ 3,625
<75	2	0-9	3-5	$ 4,200	$ 4,050	$ 3,950	$ 3,800	$ 3,600
<75	2	10-15	0	$ 4,200	$ 4,050	$ 3,950	$ 3,800	$ 3,600
<75	2	10-15	1-2	$ 4,175	$ 4,025	$ 3,925	$ 3,775	$ 3,575
<75	2	10-15	3-5	$ 4,150	$ 4,000	$ 3,900	$ 3,750	$ 3,550
<75	3	0-9	0	$ 4,100	$ 3,950	$ 3,850	$ 3,700	$ 3,500
<75	3	0-9	1-2	$ 4,075	$ 3,925	$ 3,825	$ 3,675	$ 3,475
<75	3	0-9	3-5	$ 4,050	$ 3,900	$ 3,800	$ 3,650	$ 3,450
<75	3	10-15	0	$ 4,050	$ 3,900	$ 3,800	$ 3,650	$ 3,450
<75	3	10-15	1-2	$ 4,025	$ 3,875	$ 3,775	$ 3,625	$ 3,425
<75	3	10-15	3-5	$ 4,000	$ 3,850	$ 3,750	$ 3,600	$ 3,400
76 - 80	0	0-9	0	$ 4,300	$ 4,150	$ 4,050	$ 3,900	$ 3,700
76 - 80	0	0-9	1-2	$ 4,275	$ 4,125	$ 4,025	$ 3,875	$ 3,675
76 - 80	0	0-9	3-5	$ 4,250	$ 4,100	$ 4,000	$ 3,850	$ 3,650
76 - 80	0	10-15	0	$ 4,250	$ 4,100	$ 4,000	$ 3,850	$ 3,650
76 - 80	0	10-15	1-2	$ 4,225	$ 4,075	$ 3,975	$ 3,825	$ 3,625
76 - 80	0	10-15	3-5	$ 4,200	$ 4,050	$ 3,950	$ 3,800	$ 3,600
76 - 80	1	0-9	0	$ 4,200	$ 4,050	$ 3,950	$ 3,800	$ 3,600
76 - 80	1	0-9	1-2	$ 4,175	$ 4,025	$ 3,925	$ 3,775	$ 3,575
76 - 80	1	0-9	3-5	$ 4,150	$ 4,000	$ 3,900	$ 3,750	$ 3,550
76 - 80	1	10-15	0	$ 4,150	$ 4,000	$ 3,900	$ 3,750	$ 3,550
76 - 80	1	10-15	1-2	$ 4,125	$ 3,975	$ 3,875	$ 3,725	$ 3,525
76 - 80	1	10-15	3-5	$ 4,100	$ 3,950	$ 3,850	$ 3,700	$ 3,500
76 - 80	2	0-9	0	$ 4,100	$ 3,950	$ 3,850	$ 3,700	$ 3,500
76 - 80	2	0-9	1-2	$ 4,075	$ 3,925	$ 3,825	$ 3,675	$ 3,475
76 - 80	2	0-9	3-5	$ 4,050	$ 3,900	$ 3,800	$ 3,650	$ 3,450
76 - 80	2	10-15	0	$ 4,050	$ 3,900	$ 3,800	$ 3,650	$ 3,450
76 - 80	2	10-15	1-2	$ 4,025	$ 3,875	$ 3,775	$ 3,625	$ 3,425
76 - 80	2	10-15	3-5	$ 4,000	$ 3,850	$ 3,750	$ 3,600	$ 3,400
76 - 80	3	0-9	0	$ 3,950	$ 3,800	$ 3,700	$ 3,550	$ 3,350
76 - 80	3	0-9	1-2	$ 3,925	$ 3,775	$ 3,675	$ 3,525	$ 3,325
76 - 80	3	0-9	3-5	$ 3,900	$ 3,750	$ 3,650	$ 3,500	$ 3,300
76 - 80	3	10-15	0	$ 3,900	$ 3,750	$ 3,650	$ 3,500	$ 3,300
76 - 80	3	10-15	1-2	$ 3,875	$ 3,725	$ 3,625	$ 3,475	$ 3,275
76 - 80	3	10-15	3-5	$ 3,850	$ 3,700	$ 3,600	$ 3,450	$ 3,250
81 - 85	0 - 1	0-9	0	$ 4,100	$ 3,850	$ 3,700	$ 3,600	$ 3,400
81 - 85	0 - 1	0-9	1-5	$ 4,075	$ 3,825	$ 3,675	$ 3,525	$ 3,375

81 - 85	0 - 1	10-15	0	$ 4,050	$ 3,800	$ 3,650	$ 3,500	$ 3,350
81 - 85	0 - 1	10-15	1-5	$ 4,025	$ 3,775	$ 3,625	$ 3,475	$ 3,325
81 - 85	2 - 3	0-9	0	$ 4,000	$ 3,750	$ 3,600	$ 3,450	$ 3,300
81 - 85	2 - 3	0-9	1-5	$ 3,975	$ 3,725	$ 3,575	$ 3,425	$ 3,275
81 - 85	2 - 3	10-15	0	$ 3,950	$ 3,700	$ 3,550	$ 3,400	$ 3,250
81 - 85	2 - 3	10-15	1-5	$ 3,925	$ 3,675	$ 3,525	$ 3,375	$ 3,225
86 - 94	0 - 1	0-9	0	$ 3,700	$ 3,550	$ 3,400	$ 3,350	$ 3,250
86 - 94	0 - 1	0-9	1-5	$ 3,675	$ 3,525	$ 3,375	$ 3,325	$ 3,275
86 - 94	0 - 1	10-15	0	$ 3,650	$ 3,500	$ 3,350	$ 3,300	$ 3,250
86 - 94	0 - 1	10-15	1-5	$ 3,625	$ 3,475	$ 3,325	$ 3,275	$ 3,225
86 - 94	2 - 3	0-9	0	$ 3,600	$ 3,450	$ 3,300	$ 3,250	$ 3,200
86 - 94	2 - 3	0-9	1-5	$ 3,575	$ 3,425	$ 3,275	$ 3,225	$ 3,175
86 - 94	2 - 3	10-15	0	$ 3,550	$ 3,400	$ 3,250	$ 3,200	$ 3,150
86 - 94	2 - 3	10-15	1-5	$ 3,525	$ 3,375	$ 3,225	$ 3,175	$ 3,125
95 - 100	0 - 3	0 - 15	0 - 5	$2,800	$2,800	$2,800	$2,800	$2,800

Theo Chocolate **will only accept** the following:

1) Mold 3% or less
2) Insect content 4% or less
3) Combined Insect + Mold less than 6%
4) Moisture content 7% or less
5) Purple less than 15%
6) Shrunken/flat beans 2% or less
7) Well fermented beans 60% or greater
8) Beans larger than 100 beans per 100g
9) Absence of off or negative flavors
10) Foreign material less than 5%

Representative Sampling Procedures: The total number of bags to be sampled is determined by taking the square root of the total number of bags in the lot. The bags will be chosen randomly from the entire lot and approximately 200g of beans pulled from each bag. Once collected, all of the beans will be mixed and a minimum of four 50-bean-cut-tests shall be performed from the composite sample to determine overall bean quality and pricing.

Beans outside of the Theo Chocolate Quality Specs will be accepted, rejected or priced on a case by case basis relative to quality or exceptional characteristics. Material that meets the cut test requirements but contains negative aromas or flavors may be rejected on a case by case basis.
All cocoa must be NOP Organic and Fair Trade certified. Respective premiums are built into the above pricing.
All prices listed in $USD per Metric Ton, FOB at the port nearest to cocoa prodcution, around the world.
Prices listed above are current as of January 1st, 2014 and are subject to change.

Please contact info@theochocolate.com with any questions.

Appendix C

HCP Protocols for Submission of Beans Through Site Visit

Appendix C HCP Protocols for Submission of Beans Through Site Visit

PROTOCOLS FOR SUBMISSION OF BEANS THROUGH

SITE VISIT FOR GENETIC TESTING

BEAN SUBMISSION DIRECTIONS AND REQUIREMENTS FOR PROCESSING AND EVALUATION

HCP IDENTIFICATION NUMBER

Upon paying the application fee, registering on the USDA site, and completing the application, the Heirloom Cacao Preservation Initiative (HCP) Applicant receives an HCP Identification Number. This number and bean information will be the ONLY information the HCP Lab sees when performing the blind processing and evaluation procedures for the Tasting Panel.

QUANTITY OF BEANS NEEDED FOR EVALUATION

The HCP requires **three (3) kilograms of cocoa beans** – cleaned and dried weight – representing the population of trees and commercial shipment quantity proposed Heirloom designation. The HCP defines “cleaned” as having all broken beans and foreign material removed. For those Applicants who normally wash and polish beans after drying, the HCP considers washing and polishing part of the cleaning process.

WHAT KIND OF BEANS SHOULD BE SUBMITTED

Fully mature, ripe, un-diseased beans harvested during the normal crop cycle so as to be fully representative of long-term production. Three kilograms of clean, dried beans will require beans from 20-60 pods (depending on bean weight and bean count per pod) from 20-60 bearing trees representing the population being assessed. Trees should be marked or tagged so they can be assessed for genetic diversity at a later time. (Genetic evaluation is done after the HCP designates the flavor of the beans as Heirloom.) If less than 3kg of clean, dried beans are available, the Applicant must receive agreement in advance from the HCP.

WHY WE NEED THREE KILOGRAMS OF BEANS

We ask for 3 kg of beans to ensure sufficient beans for the primary Lab tasks, provide spare beans in case of preparation or shipment problems, and allow for retained samples and returning liquor and chocolate samples to the Applicants. We assume the beans will be clean with no cleaning losses, and the yield of cleaned, roasted nibs from raw beans will be 65%. Thus, 3kg of beans are needed to cover the following HCP Lab tasks for evaluation:

Physical tests	175 g
Liquor for liquor evaluations	875 g
Liquor for chocolate evaluation	900 g
Total beans needed	**1950 g** 1.95kg (65% of 3kg)

FERMENTATION & DRYING REQUIREMENTS

- Fermentation and drying must be done in a manner that is consistent with the larger scale (commercial) production of this bean type. The HCP does not specify fermentation or drying practices.
- **NO fruit, fruit pulps, juices, spices, flavors, or any substance may be used to alter, enhance, add, or "spice up" the flavor of the beans during fermentation.**
- Drying should be completed until the moisture content of the beans is 6.5 to 7.9%. The ideal moisture content of the beans is 7.0 to 7.5%.
- **Following the completion of drying, samples must be stored for a minimum of six (6) weeks to allow the flavor to equilibrate and be representative of commercial shipments.**

STORAGE REQUIREMENTS

It is recommended that Applicants store a minimum of 6kg of beans in the following ideal storage conditions, retaining 3kg as an insurance against possible loss of sample during shipment or problems with the initial shipment.

- Beans should be stored in a breathable bag such as new, clean, odour-free burlap, jute, or cotton. Any material used should be smelled prior to its use as a storage bag for the beans to insure that it is free from any odour taint that would impart an off odour or flavor to the beans as a result of storage. Care should be taken to ensure this does not happen.
- Storage should be at ambient conditions but protected from excessive moisture or any possible off odours in the storage area. Care must be taken to avoid exposure to any conditions that will cause re-wetting or re- humidification of the beans and resulting mould growth on the beans. Mould present in a cut test above United States FDA standards (4% internal mould) will be grounds for immediate rejection of the sample. Care should be taken to ensure this does not happen.
- Bagged samples should be stored in screened but breathable containers that will protect them from insect infestation. The mesh size of the screen should be small enough (like mosquito netting) to prevent the entry of moths and larvae. The presence of any insect infestation in the cut test will be grounds for immediate rejection of the sample. Care should be taken to ensure this does not happen.

PRE-SHIPPING REQUIREMENTS

Applicants will need to confirm the details of the farm from the first part of the HCP Application and email the following additional information to the HCP prior to shipping:

- Date of harvest.
- Date of Drying Completion.
- Bean Type/Tree/Clone Information (necessary to determine the proper roasting conditions for each sample without un-blinding the application).

Applicants will also need to agree in that email that they utilized commercial practices for the fermenting and drying of the beans and all other Submission Protocol conditions.

Applicants MUST ensure that all necessary paperwork including bill of lading, commercial invoices, customs declarations, and any required United States FDA Prior Notice requirements

are met. If you do not have an account for Prior Notice you can create an account in less than ten minutes on the FDA Site:
http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/PriorNoticeofImportedFoods/default.htm

Prior to shipment of the cocoa beans, the Applicant should assemble and then enclose all this paperwork as well as a copy of the application information provided at the end of the Submission portion of the HCP Application with the Applicant's HCP Identification Number.

SHIPPING REQUIREMENTS

Beans should be shipped in the same breathable bags that they were stored in and not any other bag, like plastic Ziploc bags – applicants accustomed to shipping samples in plastic Ziploc bags should take care to note this point.

Bags should NOT have any markings aside from the HCP Identification Number. Multiple samples must be shipped separately and require individual applications for each sample being submitted.

Samples will be sent to the FCIA, which will immediately remove the bags of beans from Applicant's box, log them in, place them in a new, anonymous shipping box, and send them to the HCP Lab for processing. This ensures the Applicant's HCP number and bean type are the only information the Lab sees when performing the blind processing and evaluation procedures for the Tasting Panel.

SHIPPING INFORMATION

Paperwork and unmarked bags of beans should be sent to the HCP LAB. ADDRESS IS DISCLOSED WHEN USDA APPLICATION IS COMPLETED.

The HCP Lab will log the receipt of the beans by their HCP Identification Number. Applicant and HCP Tasting Panel will receive notification when this shipment is logged as received.

While at the HCP Lab, prior to evaluations, beans will be stored in a temperature and humidity controlled environment to ensure their stability. Beans will be stored separately from all other cocoa beans to minimize the opportunity for any infestation.

Following receipt at the HCP Lab, beans will be scheduled for bean counting, cut tests, and raw bean moisture content test and prepared for processing into liquor and chocolate covered in the next protocols.

You will soon be able to track your application in the HCP Database once it is received by the FCIA.

PROTOCOLS FOR HCP LAB TESTS & RAW BEAN CHARACTERIZATION PRE-LIQUOR PREPARATION & ANALYSIS

The following protocol covers what happens after the HCP Lab logs the receipt of the beans by their HCP Identification Number and bean information that will allow determination of the proper roasting conditions. While at the HCP Lab, prior to these tests, beans will be stored in a temperature and humidity controlled environment to ensure their stability.

Raw Bean Characterization Tests

Upon receipt, the HCP Lab will conduct the following tests on the Applicant's beans as they are prepared for processing into liquor and chocolate (covered in the following set of protocols):

- Bean Count (Beans/100g)
- Cut Test (2x 50 beans)
- Raw Bean Moisture by Mettler loss in weight moisture balance calibrated to vacuum oven moistures

There is no *a priori* requirement for the Cut Test evaluation with the exception of the internal mould and infested categories. The Cut Test simply documents the characteristics of the Applicant's beans. Mould and insect infestation must comply with the Proposed ISO Standard ISO/TC 34/SC "Cocoa Beans – Specification" (01/12/2012): maximum 3% mouldy; maximum 3% infested.

The HCP Lab will also photograph the cut tests. Photos will include a (MacBeth) ColorChecker or equivalent to allow standardization of the colors due to lighting differences.

In the Unlikely Event Beans Fail Cut Tests

If all tests are passed, the HCP Lab will mark the tests as passed. Should a sample fail a Cut Test in the HCP Lab, the HCP Lab will mark the test as failed, and the Applicant and Tasting panel will be notified. 110 beans will then be sent to two HCP Tasting Panel members who have labs and can perform additional Cut Tests of 2 x 50 beans and photograph them. The new Cut Test information will be entered into the HCP Database.

- If the result of the Cut Tests on the combined 6 x 50 beans passes the standard, the HCP Lab will mark the Cut Test as passed in the HCP Database and continue with the processing.
- If the result of the Cut Test still fails the standard, the HCP Lab will mark that bean as rejected in the HCP Database, which will email the Applicant to resubmit the beans at the Applicant's cost.

Once the beans are resubmitted following the standard HCP Submission Protocols, all tests will be performed again by the HCP Lab and if necessary the two additional Tasting Panel labs.

- If the results of the Cut Tests on the 2 x 50 or combined 6 x 50 beans pass the standard at any point, the HCP Lab will mark the Cut Test as passed in the HCP Database and continue with the processing.
- If the result of the Cut Test fails the standard a second time, the HCP Lab will again mark that bean as rejected in the HCP Database.

If rejected a second time, the HCP Tasting Panel will review the data of all the tests performed

and provide their final recommendation. If the consensus of the panel agrees with the Cut Test determinations then the HCP Lab will mark the beans as rejected. The HCP will then follow up with the Applicant to discuss the failure of the sample and any next steps.

Beans that pass the Cut Test are now processed into Liquor and Chocolate using the following Protocol.

PROTOCOLS FOR HCP LAB LIQUOR AND CHOCOLATE PREPARATION AND ANALYSIS

Processing of beans by the HCP has been standardized to ensure consistency for all submissions for Roasting, Liquor Milling, Chocolate Making, and Analyses of Liquor and Chocolate. Bean type information from the Applicant is essential to avoid delays in this protocol.

A. ROASTING, CRACKING, AND WINNOWING

Oven Specification

High efficiency convection ovens are required: Binder laboratory convection oven Model 111G-06-01 (800 gm full load of beans) or FD 23-UL (200 gm full load of beans), ThermoScientific LabLine Imperial series laboratory convection oven, or equivalent.

Ovens are loaded with a single, wide mesh screen tray. Beans are loaded single bean depth across the loading area. (Filler beans will be used as necessary to ensure the same loading for all roasts.)

Roasting Conditions

Specific roasting conditions for the beans are designed to maximize the flavor potential for each type of cocoa bean. Conditions are consistent with the Cocoa of Excellence roasting conditions used by CIRAD and Mars and international project evaluation conditions across a wide range of clones, geographical locations, and bean types:

- Trinitario Type (expected for most samples): 120°C for 25 minutes
- Forastero Type (typical of Amelonado types): 130°C for 25 minutes
- Ancient Criollo Types (eg. Porcelana, Guasare, etc.): 112°C for 25 minutes

All times are measured from -2°C of set point on oven recovery after insertion of the tray of beans into the oven. (Note: Binder ovens have a recovery time of 4.5 minutes for first model above and 2.5 min for the second model, which has a smaller cavity.)

In most cases, beans will follow the Trinitario protocol, as most beans will fall into the fruity/floral category. Modern Criollo types will primarily be roasted at Trinitario conditions as they are generally much closer genetically and processing wise to traditional Trinitario beans. Ancient Criollos are distinguished from the needs of the Modern Criollos (i.e., Criollo leaning Trinitarios) by the requirement for much lower temperatures to best express the nutty/caramel notes. The Forastero protocol is specified to bring out the maximum chocolate intensity in this type of sample. While referred to as “bulk” or “base” beans, the Forastero contribution to the chocolate flavor profile is critical and we encourage the work of the Cocoa of Excellence program, which awards this category of bean.

If necessary, based on the Lab raw bean tests and information available from the Applicant, the HCP Lab and Tasting Panel Chair may discuss the sample beans and what they know of them before roasting the quantity needed for liquor and chocolate evaluation. Then, if necessary, the Lab and Chair may elect to do a quick, small pilot roast of 30-50g to make liquor for the Lab and Panel Chair to taste if need be to determine the proper roasting conditions.

Bean type information from the Applicant is essential to avoid delays in this protocol. If necessary, in Applications in which the bean type is not provided or is unknown, the HCP

Lab will consult with an HCP Tasting Panel member with access to a lab who will receive a 150g sample of the beans for cut test evaluation and roast recommendation. If that cut test is not sufficient in the judgments of the HCP Lab, the HCP will allocate an additional 175g of beans and do small scale roasting and liquor milling on 50g samples at all recommended roasting conditions in this protocol to determine the proper roasting condition based on flavor of the samples. The HCP Lab will then use the selected condition to produce the liquor for liquor and chocolate evaluations by the Panel.

Roasting Needs

Amounts needed are based on supplying liquor to the HCP Tasting Panel for liquor flavor evaluation and the USDA for analytical flavor profiling, returning a sample to the Applicant, retaining a sample by the HCP Lab, and providing sufficient nibs and therefore liquor for the preparation of the chocolate samples.

Total liquor required for Panelists	260g
Liquor Retained Sample	150g
Liquor for returning to Applicant	50g
Liquor loss in preparation (milling)	85g
Total nib clean, shell free required	505g
Raw beans roasted at 65% yield	775g
Total chocolate required for Panelists	910g
Chocolate making loss	50g
Chocolate tempering loss	50g
Liquor needs at 61% liquor recipe	54g
(liquor losses included in liquor milling above)	
Raw beans roasted at 65% yield	835g

Unless absolutely necessary, roasting and liquor preparation will be done in several batches run at the same time to create a uniform batch of liquor. This would entail roasting 1.8 kg of raw beans. Depending on the roaster used, this will entail 3-5 roasting batches.

Winnowing

Following roasting, beans are cracked and winnowed. Cracking can be accomplished in any suitable device (e.g., Limprimita breaker by Capco Test Equipment, UK) or by hand. Following cracking, beans are winnowed using typical winnowing equipment such as a John Gordon or Capco Test Equipment Winnower or equivalent.

Following winnowing, all nibs are combined and well mixed. All nibs will be handpicked to remove all traces of shell—both free shell and shell still stuck to the nibs. Winnowing and handpicking will be performed in an area governed by GMP practices and with an HACCP program in place to ensure the wholesomeness of the product.

After winnowing, nibs will be stored in a sealed bag. Every effort will be made to convert nibs into liquor within 48 hours of roasting. If the nibs cannot be liquor milled within 24 hours of roasting, they will be stored in a tightly sealed bag, preferably a multi-layer, barrier film vacuum seal type to provide barrier film protection without vacuuming. Nibs will not be stored longer than seven (7) calendar days (even in a sealed bag) prior to liquor milling

Storage temperature should be 10-24°C (50-75°F). If nibs are stored at temperatures less than 18°C (64°F), they must be allowed to warm to room temperature prior to opening the bag.

The expected yield of cleaned roasted nibs from uniformly fermented and dried cocoa beans will be 70%. The HCP has calculated its needs based on 65% to provide added

insurance against loss.

B. LIQUOR MILLING

Liquor milling may be accomplished in any suitable slow rotating stone or porcelain grinding mill. Metal milling (e.g., ball mills) or high-speed mills are not to be used. Milling will be performed in an area free of other odours and protected from environmental influences. GMP practices will be in place as well as an active HACCP program to insure wholesomeness of the product.

During milling, the mill will be held at warm room conditions to insure that the liquor will not solidify during the milling process. The mill may be pre-warmed to operating conditions to facilitate milling.

Milling temperature will not exceed 55°C (130°F).

Exact milling times CANNOT be specified as this is dependent on a number of factors such as fat content of the nibs, degree of fermentation of the beans, specific mill used, condition of the stones in the mill, etc. But milling will be accomplished gently and without the addition of significant external mechanical pressure. The objective is to produce liquor that will have no discernible grit to the HCP Tasting Panel in their evaluation without being excessive. The balance between fineness and time will be determined by the HCP Lab, which has extensive experience in this process.

C. CHOCOLATE MAKING

The HCP Lab will use a standard 68% cacao, semisweet chocolate recipe for all evaluations:

Chocolate Liquor	65.10%
Deodorized Cocoa Butter[1]	3.00%
Sugar[2]	31.55%
Soya Lecithin[3]	0.35%

[1] Cocoa butter used in this formulation will be neutral tasting so as to not shift the flavor inherent in the liquor. The HCP Lab will verify by taste the use of neutral butter.
[2] Prior to use, the sugar must be assessed to ensure that it is neutral in taste and smell by placing 2-4 ounces of sugar in a jar twice that size,
securely capping the jar, and holding for at least one hour. The sugar will then be uncapped and immediately smelled to determine that it has no inherent odour.
[3] Soya lecithin used should be double bleached and also verified to ensure that it will not alter the flavor of the chocolate.

The same protocol steps for liquor milling then apply to chocolate making:

- Chocolate milling may be accomplished in any suitable slow rotating stone or porcelain grinding mill. Metal milling (e.g., ball mills) or high-speed mills are not to be used.
- Milling will be performed in an area free of other odours and protected from environmental influences. GMP practices will be in place as well as an active HACCP program to insure wholesomeness of the product.
- During milling, the mill will be held at warm room conditions to insure that the

liquor will not solidify during the milling process. The mill may be pre-warmed to operating conditions to facilitate milling.

- Milling temperature will not exceed 55°C (130°F).

Like liquor milling, exact chocolate milling times CANNOT be specified. However, in the case of chocolate, finished fineness is critically important so priority is given to achieving the fineness. The required fineness is less than 17 microns (6.7 10,000ths inches). This will be verified by micrometer (AACT method or equivalent) as an average of five independent measurements of a sample of the mass being milled.

Once the requisite fineness is reached, milling is concluded.

D. ANALYSES OF LIQUOR AND CHOCOLATE AND HOLDING OF SAMPLES

Following liquor milling, liquor will be checked either by PNMR or by NIR for total fat content. This data and the fineness of the chocolate will be provided to the HCP Tasting Panel with their evaluation samples.

Following all analytical tests on the beans and processing into liquor and chocolate, the remainder of the beans will be stored in a temperature and humidity controlled environment until the HCP completes all its analyses, including genetic sampling and ensure sufficient time for all parties, including the Applicant, to review the HCP results, Once it is determined that no further sampling of these beans is needed, the beans may be discarded or the HCP will provide the HCP Lab with other directions.

NOTE: The HCP IS aware that chocolate and in particular semisweet chocolate will change flavor profile—particularly mellowing—with long term storage. While this is understood, it is not practical to hold chocolate 2-4 months to provide a response the Applicant within a suitable time frame. Thus, HCP Tasting Panel samples will be stored one (1) week prior to flavor evaluation, which is covered in the following protocol.

PROTOCOLS FOR HCP LAB SAMPLING, STORAGE, & SHIPPING OF SAMPLES AND PANELIST RECEIVING & STORAGE OF SAMPLES

LIQUOR AND CHOCOLATE SAMPLING AND STORAGE

Samples - Liquor

The HCP Lab will pour melted and homogenized liquor into sample containers (VWR Polypropylene Wide Mouth Bottle, 30 ml (Cat No. 414004-122) or equivalent and tightly capped. Each sample bottle will be evaluated to insure they are free of any off odours.

Liquor samples will be prepared in the following amounts for the HCP Tasting Panel, USDA Applicant, which can change based on the needs of the HCP Tasting Panelists and the USDA:

HCP Tasting Panel and USDA

- 6 (FOUR) 20g containers — 120g total
- 3 (THREE) 30g containers — 90g total
- 2 (TWO) 25g containers — 50g total

To Return to Applicant

- 2 (TWO) 25g containers — 50g total

Retained by HCP Lab

- 2 (TWO) 75g samples in 4oz non-sterile polypropylene specimen jars — 150g total

All samples will be labelled with the HCP Application Number and the date of liquor milling.

Storage – Liquor (Pre-Shipping)

Liquor will be stored at chocolate warehouse temperatures (17-21°C, 62- 70°F) until shipped to the HCP Tasting Panel or returned to the Applicant.

Samples – Chocolate

Following milling, all chocolate for evaluation will be homogenized, hand tempered, and molded into the HCP Lab's standard molds of approximately 10g each. Tempered bars will be allowed to equilibrate over-night and will then be vacuum-sealed in multi-layer, barrier film vacuum seal bags (e.g., FoodSaver or equivalent) allocated as follows:

Chocolate for HCP Tasting Panel (60g x 9 Panelists)	540g
USDA	20g
Chocolate for returning to Applicant	100g
Chocolate for retained sample	250g

All samples will be labelled with the HCP Blind Code and the date of chocolate milling and molding.

Storage – Chocolate (Pre-Shipping)

At all times, chocolate will be stored at chocolate warehouse temperatures (17-21°C, 62-70°F) until shipped to the HCP Tasting Panel or returned to the Applicant. Storage will be at least two days but is not expected to be more than four days from date of molding.

LIQUOR AND CHOCOLATE SHIPPING AND LONG TERM STORAGE

Liquor and Chocolate Shipping for Evaluation

The HCP Lab will use overnight shipping with heat protection, frozen packs, and/or any other methods deemed appropriate by the Lab to send samples to the Tasting panel and the USDA. (The HCP Lab based on the location of the Panelists will determine the best carrier. For shipments to Venezuela and Trinidad, FedEx is the preferred carrier due to delivery logistics within those countries.) For international shipments, packages will be labelled "research samples for evaluation" or something similar to avoid being held at customs or charged any duties.

Prior to shipping the HCP Lab or the chair of the HCP Tasting will verify that Panelists are available to receive the sample shipment and to conduct the sensory evaluations in a timely manner.

Storage of Liquor and Chocolate (Following Shipping of Samples)

Following the shipment of liquor and chocolate samples to the HCP Tasting Panel and the USDA, all liquor and chocolate (for returning to Applicant and the retained sample) will be placed at refrigerator temperatures in an odour- free cooler at less than 13°C (50°F) until the HCP Tasting Panel completes its evaluation and samples are returned to the Applicant. (Retained liquor and chocolate samples may be disposed of following the same steps as beans in the previous protocol.)

If storage longer than 2 (TWO) months from date of milling is expected, samples will be transferred to odour-free frozen storage for long term holding. Any sample stored under these long-term conditions will be equilibrated to room temperature prior to opening the container/vacuum-sealed bag.

HCP TASTING PANEL RECEIVING AND STORAGE OF SAMPLES

Upon receipt of samples, if samples have been shipped with frozen packs, the HCP Panelist will opened the package and remove the samples BUT keep them in their sealed containers and allowed to equilibrate to room temperature. No sample will be opened when cold temperatures would allow any moisture condensation.

Panelists will store samples during this time at ambient conditions (air conditioned room temperature). If ambient conditions are too warm for the chocolate and pose risk of melting or bloom, then an odor-free refrigerator or wine cooler will be used to store the chocolate.

Panelist evaluation MUST BEGIN AT LEAST ONE WEEK from the completion of chocolate milling. Panelists determine their own schedule for the evaluation of the samples but will attempt to provide turn-around of the evaluations within four weeks of receipt of the samples.

HCP Tasting Panel Evaluation Procedures are covered in the next protocol.

HCP TASTING PANEL EVALUATION PROTOCOLS FOR EVALUATION AND HEIRLOOM DESIGNATION

The international HCP Tasting Panel is currently made up of nine experts from six countries with a minimum of 15 years' experience in chocolate—all of whom have all served as professional evaluators of cacao bean flavor and give a wide field view of the cacaos of the world, the cocoa supply, and fine chocolate production across the globe. Since these Panelists have established approaches to evaluating liquor and chocolate made from that liquor, the HCP Tasting Panel evaluation protocol initially retains the uniqueness of these approaches.

EVALUATION

The HCP Tasting Panel's initial sensory evaluations of liquor and chocolate samples will be in the format they currently use. Panelists will then translate their evaluations into HCP global scores for flavor, write short written evaluations of the liquor and chocolate IN ENGLISH, and make a Yes/No vote for Heirloom designation based on this scoring and evaluation.

HCP Panelists will enter their scores, written evaluations, and recommendations in the HCP Database. (If the Database is unavailable or offline, the Chair of the HCP Tasting Panel will compile the results into a single review and circulate it to the Panel.)

Panelists will conduct all evaluations independently and only discuss each other's assessments after the entire Panel's evaluations are complete. While the names of the HCP Tasting Panel are public, Panelists' scores, evaluations, and recommendations will be blinded; Applicants will only be able to see unattributed individual scores, chocolate and liquor flavor and evaluations, and recommendations.

GLOBAL SCORING

In addition to a written Sensory Evaluation of Liquor and Chocolate, Panelists will make two standard attribute evaluations from 1-10 (10=maximum) for:

- Overall Flavor (Quality and Balance); and
- Unique Flavor (distinctive or unusual flavor profile of long term value to the community of cacao worthy of preservation).

HCP RECOMMENDATION – YES/NO

Based on scoring and evaluation, each Panelist will cast a Yes/No vote for Heirloom designation.

While individual scores should play a part in making that designation, Panelists are NOT required to correlate their recommendations to a score (i.e., one Panelist could score a sample a "5" and another a "9" and both could vote yes, no, or split on Heirloom designation).

DETERMINATION OF HCP STATUS/NOTIFICATION

AFTER the evaluations are received, the Panel Chair will schedule a conference call to review the results with the Panel and prepare a final report. Full Panel participation in this call is preferable but not mandatory. Upon completion of this call and report, the Panel Chair will notify the HCP and the HCP office will notify the Applicant.

Supermajority Vote FOR Heirloom Designation

If a supermajority (70% or more) of the HCP Tasting Panelists vote yes, the sample will receive HCP designation as Heirloom flavor.

Majority but not Supermajority Vote FOR Heirloom Designation

If a majority but not a supermajority recommendation is made for Heirloom designation or the Panel is split, the HCP Tasting Panel Chair will take one or both of the following steps:

- If any Panelists were unavailable for the initial evaluation but are now available in a reasonable time frame to make an evaluation, the Panel Chair can hold the final result until one or more of those Panelists make an evaluation. If the recommendation(s) create(s) a supermajority or minority vote for Heirloom designation, the Panel Chair will follow the steps outlined above.
- If no Panelist is missing or missing Panelists are unavailable, **AFTER the evaluations are received, the Panel Chair will schedule a conference call to review the results with the Panel and prepare a final report.** The Panel Chair during the Panel discussion will see if any Panelist wants to re-taste the beans based on the discussion. If a re- tasting results in a Panelist vote for designation that creates a supermajority, the Panel Chair will follow the steps outlined for the supermajority. (Only the final consensus of the Panel will be made public.) If the Panel remains unchanged, the Panel Chair will take the steps in that follow.

Simple Majority, Tie, or Minority Vote Against Heirloom Designation If a simple majority of the HCP Tasting Panel votes yes, the Panel is tied, or a minority vote for Heirloom designation, the sample will NOT receive HCP designation as Heirloom flavor but will receive a score from the Panel.

IF the Panel perceives that the beans display the POTENTIAL for heirloom, regardless of whether there are any processing issues, the Panel may vote to allow the Applicant to re-submit the beans for re- evaluation under the rules under "Evaluation Troubleshooting."

Upon completion of this call and report, the Panel will notify the HCP and the HCP office will notify the Applicant.

OFFICIAL DESIGNATION OF HCP STATUS/NOTIFICATION

While Heirloom designation by the HCP is not contingent on genetics (unless a problem with the beans is detected – see "Troubleshooting" section that follows), **official designation as Heirloom flavor IS CONTINGENT on a field visit by the USDA or its representative to gather leaf material from the marked trees and verification/review of the fermentation process.**

Ideally, this will be done during production but always in a reasonable amount of time to not unnecessarily delay the announcement of the designation or Applicant's production and marketing of those beans.

IF upon site visit, any beans are found or suspected to be in violation of any of the HCP Submission Protocols at any time during or after this field visit, the HCP will withhold HCP Heirloom designation pending further discussion by the Tasting Panel, Lab, and Board.

EVALUATION TROUBLESHOOTING

Perceived Postharvest Processing Problem/Vote for Resubmission

IF the HCP Lab or Panelists perceive a failure in the sample due to postharvest processing AND feel that the liquor and chocolate display some desired attributes, the Panel will recommend the beans be resubmitted for re- evaluation by the Applicant as soon as new beans are available.

The HCP will allow for ONE resubmission per Application – provided the Applicant wants to have its beans re-evaluated by the HCP. Regardless of the Applicant's decision, it will still receive a full report of the original evaluation.

Applicant will be responsible for submitting the beans for re-evaluation, but the HCP will NOT require an additional application fee. **Re-submitted beans must come from the same trees as the original submission.** If the Applicant decides not to re-submit, the evaluation of the beans by the Panel will be submitted to the HCP as the final evaluation.

Perceived HCP Lab Processing Problem

IF in the unlikely event Panelists perceive a failure in the sample due to the processing of the beans into liquor and chocolate by the HCP Lab AND feel that the liquor and chocolate have reasonable potential for displaying HCP desired attributes, those Panelists will immediately inform the Panel Chair and may request another sample of liquor and chocolate along with the beans be re-sent for evaluation, if needed, to make a final recommendation. If after re-evaluation Panelist(s) detect the same problems, the Chair will review the comments and rationale and convene a Panel discussion as appropriate.

IF a Panelist perceives a failure in the sample due to processing of the beans into liquor and chocolate BUT feels that the sample DOES NOT have Heirloom potential, no action will be taken and the Panelist will vote NO.

Perceived Fermentation Alteration

IF the HCP Lab or any Panelist perceives a sample has been altered in any way during fermentation – a direct violation of the HCP Submission protocols
– AND feels that the liquor and chocolate display HCP desired attributes, the Panelist will immediately inform the Chair and the HCP Lab and the Chair will convene a Panel discussion as appropriate and decide what, if any, action to take. The HCP Tasting Panel Chair may recommend Heirloom designation be withheld pending a site visit AND genetic testing.

IF the Lab or a Panelist perceives the sample has been altered in any way AND feels that the sample DOES NOT have Heirloom potential, no action will be taken and the Panelist will vote NO.

HCP Panelist Unavailable

The HCP strives to have all Panelists provide evaluation input but recognizes there may be times when, due to travel, holidays, or emergencies, Panelists may not be available for an extended period of time.

The HCP Tasting Panel Chair will be responsible for determining whether a panel will proceed at these times or whether it will wait to send out samples. If the decision is made to wait, all samples whether at the HCP Lab or in the hands of Panelists will be frozen.

In no case will the panel proceed with fewer than five Panelists.

HCP PROTOCOLS FOR FIELD SITE VISIT & COLLECTION OF SAMPLES FOR GENETIC ANALYSIS

Official designation as Heirloom or fine flavor by the HCP IS CONTINGENT on a visit to the Applicant's field site by a USDA/ARS representative to gather leaf material from the marked trees that produced the HCP sample to determine their genetic makeup, supplemental data on those trees, and verification/review of the fermentation process. The HCP will coordinate this visit as soon as designation is final. Ideally, this visit will be done during production but most importantly in a reasonable amount of time to not unnecessarily delay the announcement of the HCP designation. The USDA will provide all materials for sampling and send them to the representative prior to his/her visit.

IF at any point during the site visit, the Applicant is found or suspected to be in violation of any of the HCP Submission Protocols or the representative has any concerns about the sampled trees, the representative will document them and inform the USDA/ARS and HCP immediately. If a violation is suspected that would affect designation and cannot be resolved during the site visit, the HCP will terminate the visit and withhold Heirloom designation pending further discussion by the Tasting Panel, Lab, and Board.

FIELD SITE VISIT PROCESS FOR TREE SAMPLING

When the Applicant takes the representative to the trees used for the HCP bean samples, a sample will be collected for genetic analysis from the most recent fully expanded leaf from no more than 46 trees. Data will be taken for each sampled tree and if trees are not marked or clearly marked, the Applicant will mark them with the number 1-46 corresponding to the number of each leaf sample.

- Only leaves that appear to have no browning or any signs of disease or pests will be taken.
- Only half of one leaf from each tree will be harvested and that leaf will be placed into a Ziploc type plastic bag with a desiccant. (Leaf samples will be completely dry in less than 24 hours and will remain green.)
- Trees sampled will be assigned a code and the sample bags will be labelled to indicate the tree's code.

The representative will also gather supplemental data about each tree (tree height, pod characteristics, bean color, yield, tree age, tree origin, disease resistance/susceptibility, etc.) and submit this information along with the leaf samples using the HCP data sheet.

FIELD SITE VISIT PROCESS – POSTHARVEST PROCESSING

The Applicant will show the representative all aspects of the postharvest processing used to process the beans submitted to the HCP.

The representative will gather basic information regarding the processing (fermentation times/temperatures, drying methods, etc.), as well as production and agronomic data (fertilizer use, soil characteristics, topography, climate, etc.). A list of basic information to collect in addition to other observations will be provided to the representative.

Photos of the process, unless proprietary, should be taken. FIELD REPRESENTATIVE WILL ASK IF ANY PART OF THE PROCESS IS PROPRIETARY BEFORE TAKING PICTURES. GPS of the farm (not the cooperative) must be taken.

SHIPPING OF SAMPLES

United States Animal and Plant Health Inspection Services (APHIS) guidelines will be followed to prevent the importation and release of plant pathogens.

The healthy dried leaf samples will be prepared for shipment to the USDA by the representative, including the APHIS permit (provided by the USDA) that will be placed in the package. The Applicant will then send the package to the USDA and submit the shipping receipt to the HCP for reimbursement.

Samples should be sent to: Lyndel
W. Meinhardt
USDA/ARS Sustainable Perennial Crops Lab
Building 001 Rm 222, BARC-WEST
Beltsville, MD, 20705-2350
Tel 301 504 1995 Fax 301 504 1998

Photos and information gathered should be emailed to Dr. Lyndel Meinhardt:
lyndel.meinhardt@ars.usda.gov

All submitted plant samples will be subject to quarantine and inspection upon arrival in the United States. If APHIS inspectors identify any signs of plant disease on the samples, the samples will be destroyed at the port of entry.

PROCESSING OF SAMPLES & NOTIFICATION

Once the samples arrive at the USDA, they will be processed and sent to the DNA testing facilities for analysis.

DNA will be extracted and analyzed with standard markers and compared to all known reference types. Parentage and sibling analysis will be done to determine what groups, hybrids, or clones are involved in the genetic makeup of the sampled trees.

The results of the genetic analysis will be sent to the Applicant and placed into a secure part of the HCP database for a period of five (5) years. This database will be the repository for genetic diversity population analysis, GIS population locations, bean quality traits, and flavor analysis. After that period it will be incorporated into the HCP public database. Until then, the public database will be the storage area for all of the international reference types, and after the designated time period, for all cacao types designated as Heirloom.

Once the samples are received and tested, the DNA matches (within reason) the DNA of the originally submitted beans, and Lyndel Meinhardt signs off on the report from the USDA representative, the HCP will provide the Applicant with the “Permission to Disclose” form in order to proceed with the announcement of Heirloom designation.