HealthSupport
Queensland
Forensic and Scientific Services

Project Plan

Stage 2

		Project #:	184
Name/s of Project Staff :	Justin Howes	**Start Date:**	25/07/2017
		Due Date:	09/08/2017
Name Project Team Leader :	Justin Howes	**Contact Phone Number:**	[redacted]
Technical Reviewer/s	Rhys Parry		
Project Title:	An Evaluation of the Efficacy of a Post-Extraction Concentration Step Using the Microcon® Centrifugal Filter Devices in Yielding DNA Profile Intelligence.		
Project type	☐ Administration ☐ IT/LIMS ☐ Laboratory ☒ Data mining/analysis ☐ External Project ☐ Other_____		

Project Background (may include a literature review):

The use of Microcon® filters to concentrate extract has been a standard post-extraction process within Forensic DNA Analysis to reduce the volume of extract from approximately 100uL to ≤20□L for AmpFℓSTR® Profiler Plus® and ≤35□L for PowerPlex® 21 (PP21) -requested samples.

Since the implementation of PP21 amplification kit within Forensic DNA Analysis for casework samples in December 2012, extracts with low Quantification values were recommended to be concentrated. Templates of <0.132ng were found to exhibit marked stochastic effects after amplification. Consequently, a workflow that directed extracts automatically to a concentration step based on Quantification value was implemented ('auto-microcon' process).

Anecdotally, the suitability to provide the Queensland Police Service (QPS) with DNA profile intelligence from extracts that have been concentrated has been noted to be limited. Furthermore, extracts that are of low quant value that have been automatically concentrated have been observed to rarely yield DNA information for QPS.

Project #163 – *Assessment of results obtained from 'automatic-microcon' samples* was conducted to evaluate the results of samples that were processed with the 'auto-microcon' process. A recommendation of this project was to re-evaluate after the introduction of the Forensic Register in conjunction with the use of Quantifiler® Trio DNA Quantification Kit.

The purpose of this project is to evaluate the suitability for interpretation of DNA profiles that may be obtained after the post-extraction concentration step using the Microcon® centrifugal filter devices. This evaluation will include an assessment of those samples that underwent the 'auto-microcon' process.

Benefit of Project:

This evaluation will be based on a data mine of extracts in the year 2016 that were concentrated with Microcon® centrifugal filter devices, and will assess the 'suitability' of PP21 profile outcomes as a function of quant values obtained from using the Quantifiler® Trio DNA Quantification Kit.

This evaluation will look at two data sets (from 2016) as a function of the quantification value:
- PP21 DNA profile outcomes from extracts that were processed through the 'auto-microcon' process;
- PP21 DNA profile outcomes from all extracts that were concentrated with the Microcon® filter devices.

Potentially, a new workflow could be designed based on the success/fail rates observed in the data. This could create time and cost savings for the laboratory, and increase the ability to process other higher DNA-yielding samples more quickly.

Proposed Methodology:

The evaluation will look at two data groups:

1. Evaluate the 'success' or 'fail' outcomes for PP21 samples that were processed in 2016 through the 'auto-microcon' workflow.The samples applicable to this experiment will have quantification values in the range 0.001ng/uL to 0.0088ng/uL.

2. Evaluate the 'success' or 'fail' outcomes for PP21 samples that were processed in 2016 and underwent a post-extraction concentration step using Microcon® centrifugal filter devices. The samples applicable to this experiment will have quantification values in the above 0.001ng/uL.

DNA profile interpretation outcomes will be grouped into either 'success' or 'fail' as a function of the quantification value.

- A percentage of samples that fall into these categories will be determined.

- Of the DNA profile interpretation outcomes of 'success', the type of outcome will be broken down further to determine:

    1. The percentage of these samples that were reworked; and,
    2. The percentage of samples that led to an upload of DNA information to NCIDD.

Expected Outcome:

It is expected that the data, especially the data generated for 'auto-microcon' samples will match the anecdotal information from case managers which has been gathered from years of experience. It is expected that the vast majority of DNA profile outcomes would be in the 'fail' category ie. mostly reported as 'complex unsuitable for interpretation'.

It is expected that there will be some 'success' and that this would include DNA profiles that would have been loaded to NCIDD and possibly obtained linking information for the QPS.

It is an expectation that any recommendations are communicated with QPS in order to agree on possible new workflow strategies. This could include not automatically processing low quant samples

with microcons, but to hold and communicate 'low DNA quant' to QPS. Samples could be processed upon request based on case assessment by QPS.

It is an expectation that Critical Priority (P1) samples be processed with the 'auto-microcon' process.

Outputs and Project Milestones: (Ensure that the Change Management Milestone Register is filled out I:\Change Management\Change Management Milestone Register.xls)

Description of Outputs/Milestones:	Expected due date:	Completed date:
1.Data generation and compilation	02/08/2017	
2. Report writing and submission to Mgt Team	04/09/2017	
3. Workflow strategy communication and decisions	03/10/2017	
4.Implementation of any agreed decisions	06/11/2017	
5.		

If expected due date/s not met - explanation of reason required:

Project Budget: Prepare using QIS 31052 (and attach to Project Plan)	**Total Project Budget**
	$5085

Gantt Chart (for large projects): If required, refer to Quality team for help preparing (and attach to Project Plan)

RISK ASSESSMENT:
If a risk is identified: Refer to QIS document 29100 and 29106 for further information on risk identification and management.

Team:	Details of Risk/s Identified	Type of Risk/s:
Evidence Recovery :	Nil risks to ER team, as noted below there is some risk of samples not being loaded to NCIDD however these are mitigated against and are offset by process efficiency meaning results should be more timely	☐ Business Risk ☐ OH&S **Signature Line Manager** ARM 04/08/2017
Analytical :	Nil risks to the Analytical team, if anything it could potentially decrease the post-extraction workload in the team. Low risk of samples not being concentrated and loaded to NCIDD however this might be determined on the outcome of the project.	☐ Business Risk ☐ OH&S **Signature Line Manager** MLM 10/08/2017

Intel :	Nil risks in the Intel team for the running of this project.	☐ Business Risk ☐ OH&S **Signature Line Manager** SMJ 28/08/2017
Reporting 1:	Nil risk in conducting this study and assessing the efficacy of microcons. Following the proposed data interrogation we can then assess any risk or trade-off associated with a process change such as curtailing the standard use of the microcon step.	☐ Business Risk ☐ OH&S **Signature Line Manager** MOH
Reporting 2 :	Nil risk and agree with comments of Reporting team 1	☐ Business Risk ☐ OH&S **Signature Line Manager** KDR
Quality and Projects (includes OO) :	Nil OHS risks. Business risk is that we do not concentrate/microcon and profile a sample where a loadable profile could be obtained. The risk of this is low and will need to be balanced with the cost implications of processing all samples in this way. Result of this project to specifically address this risk.	☐ Business Risk ☐ OH&S **Signature Line Manager** KDS
Admin :	Hi Justin As discussed, no business or OHS implications for admin staff. Kind regards **Saan Orion** A/Administration Support Officer	☐ Business Risk ☐ OH&S **Signature Line Manager** SO
Team Leader ER &Quality :	Potential risks of loadable sample not going to NCIDD. Low risk as case assessment would still be performed, and a determination of post-extraction processing requirements can be made at that time taking into consideration any other samples/results and circumstances of the case.	☐ Business Risk ☐ OH&S **Signature Team Leader** PMB 03/08/2017
Team Leader FRIT :	Potential risks of samples not going to NCIDD – expected to be a low percentage of samples. Samples could always be microconned if the case circumstances warrant eg. P1	☐ Business Risk ☐ OH&S **Signature Team Leader**

	case. Collaboration with QPS and communication of risks to occur.	JAH

Project Proposal approved by:			
Signature Team Leader ER and Quality:		**Date:**	
Signature Team Leader FRIT:		**Date:**	
Signature Managing Scientist:		**Date:**	

Comments:

Please send to Quality Team [redacted] after completion