

UNIVERSITI SAINS MALAYSIA  
GERAN PENYELIDIKAN UNIVERSITI PENYELIDIKAN  
LAPORAN AKHIR

HEALTH AND SAFETY: THE USE OF METAGENOMICS  
APPROACH TO STUDY THE SPECTRUM OF WATER  
MICROBIODATA TOWARDS ENSURING THE POST-FLOOD  
PATHOGEN-FREE WATER SOURCES

PENYELIDIK

PROFESOR MADYA DR. SITI SURAIYA BT. MD NOOR

PENYELIDIK BERSAMA

PROF. DR. ZEEHAIDA MOHAMED  
PROF. MADYA DR. AZIAN HARUN  
PROF. MADYA DR. ZAKUAN ZAINY DERIS

2017



KEMENTERIAN  
PENDIDIKAN  
MALAYSIA

FINAL REPORT  
GERAN PENYELIDIKAN PENGURUSAN BENCANA BANJIR  
Laporan Akhir Skim Geran Penyelidikan Fundamental (FRGS)  
Tahun 2015

**RUJUKAN**

**A RESEARCH TITLE:** The use metagenomics to study the spectrum of water microbiodata towards ensuring the post-flood pathogen free water sources

**YEAR:**

**THEME CODE: 1.0**  
(Please refer attachment)

**SUBTHEME CODE:**

Please Tick ( √ )

**PHASE:** 01: Pre-Disaster  02: During Disaster  03: Post-Disaster

**AREA:** 01: Preventive  02: Preparedness  03: Rescue and Recovery   
04: Adaptation  05: Mitigation

**START DATE:** 1 st April 2015  
**END DATE:** 31st March 2016

**PROJECT LEADER:** Assoc. Prof Dr. Siti Suraiya Md Noor  
**IC / PASSPORT NUMBER:** 701213025394

**PROJECT MEMBERS:** 1.: Prof. Dr Zeehaida Mohamed,  
Asoc. Prof Dr Azian Harun, Assoc. Prof Dr. Zakuan Zainy Deris  
(including GRA/RA/RO) 2. Mrs Siti Nur Ain Osman

**PROJECT ACHIEVEMENT (Prestasi Projek)**

**B**

**ACHIEVEMENT PERCENTAGE**

Project progress according to milestones achieved up to this period	0 - 50%	51 - 75%	76 - 100%
Percentage (please state #%)			100%

**RESEARCH OUTPUT**

Number of articles/ manuscripts/ books (Please attach the First Page of Publication)	Indexed Journal	Non-Indexed Journal
	Submitted to environmental microbiology-(Not accepted yet) 2 <sup>nd</sup> manuscript is still in the pipeline-wish to publish in PLOS pathogens	
Conference Proceeding (Please attach the First Page of Publication)	International	National
		Persidangan kajian bencana banjir 2014: Pullman Putrajaya lakesides 4-6 April 2016
Intellectual Property (Please specify)		

Number and title of Policy Paper / SOP / Technology Solution (Please specify)	1.
	2.
	3.

HUMAN CAPITAL DEVELOPMENT					
Human Capital	Number				Others (please specify)
	On-going		Graduated		
Citizen	Malaysian	Non Malaysian	Malaysian	Non Malaysian	
<b>No. PHD STUDENT</b>					
Student Fullname: IC / Passport No: Student ID:					
<b>No. MASTER STUDENT</b>					
Student Fullname: IC / Passport No: Student ID:					
<b>No. RA/RO</b>					
Student Fullname: IC / Passport No: Student ID:	Siti Nur Ain Osman				
<b>Total</b>					

**EXPENDITURE (Perbelanjaan) (Borang A-1/2016)**

<b>Budget Approved (Peruntukan diluluskan)</b>	: RM RM 99,100.00
<b>Amount Spent (Jumlah Perbelanjaan)</b>	: RM RM 92,464.00
<b>Balance (Baki)</b>	: <u>RM 6,636.00</u>
<b>Percentage of Amount Spent (Peratusan Belanja)</b>	: 93.3 %

**ADDITIONAL RESEARCH ACTIVITIES THAT CONTRIBUTE TOWARDS DEVELOPING SOFT AND HARD SKILLS (Aktiviti Penyelidikan Tambahan yang Menyumbang Kepada Kemahiran Digital dan Kejuruteraan)**

National		
Activity	Date (Month, Year)	Organizer
(e.g : Course/ Seminar/ Symposium/ Conference/ Workshop/ Site Visit)	Program memasyarakatkan kajian banjir USM- 31 October 2016 Kuala Krai, Kelantan	USM Kampus Kesihatan dengan kerjasama Pejabat Daerah Kuala Krai, Kelantan

**PROBLEMS / CONSTRAINTS IF ANY (Masalah / Kekangan sekiranya ada)**

Problem related to implementation of GST.  
During the proposal there was no budget allocated for Vat 52000, so there were a lot of troubles and problems encountered during the process to convert some amount of the budget to vat 52000.

**RECOMMENDATION (Cadangan / Perambatan)**

**RESEARCH ABSTRACT - No More Than 200 Words (Abstrak Penyelidikan - Tidak Lebih 200 patah perkataan)**

Recent massive flood in Kelantan led to contamination of water supply to the public. The magnitude of the contamination is very difficult to be measured by the conventional coliform count method. We used a metagenomic approach to estimate the burden of microbiological contamination of the water following the massive flood. The water sampled during the massive flood and 6 months after the incidence was extracted, analysed and compared. The results showed that even though Pseudomonas predominates the entire microorganisms population during flood and non flood water, there are few pathogenic organisms that really need special attention. The metagenomics approach is very useful as it provides the full spectrum of the diversity of the organisms present in the sampled water. The evidence is solid and has a very high value both to the community and also to the scientist.

**Date :** 8 October 2016  
**Tarikh**

**Project Leader's Signature:**  
**Tandatangan Ketua Projek**



**COMMENTS IF ANY / ENDORSEMENT BY RESEARCH MANAGEMENT CENTER (RMC)**


**(Komen / Sekiranya ada / Penerimaan oleh Pusat Pengurusan Penyelidikan)**

Tutup Ceran -

**Name:**  
**Nama:**

PROF. DR LEE KEAT TEONG  
Pengarah  
Pejabat Pengurusan & Kreativiti Penyelidikan  
Universiti Sains Malaysia

**Signature:**  
**Tandatangan:**

  
22/10/16

**Date:**  
**Tarikh:**