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Limerick City & County Council,
Merchant's Quay,
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Our Reference CW/BL/002_2535
Your Reference
Date 27th January 2021

Issued by email only

Attn: Richard Gorey

RE: University of Limerick to National Technology Park Cycle Lanes
- **Fee Proposal for Site-Specific Flood Risk Assessment**

Dear Richard,

Ryan Hanley has been requested by Limerick City and County Council (LCCC) to provide a fee-proposal for undertaking a site-specific flood risk assessment (SSFRA) for the proposed University of Limerick (UL) to National Technology Park (NTP) Cycle Path.

We understand that:

- The total length of the proposed main cycle path is 6.5km of which 4.2km is adjacent to the Shannon and Mulkear, in addition to 3 No. proposed links from Plassey Road.
- An existing pathway exists along much of the proposed route which is already used by pedestrian and cyclists.
- Sections of the proposed cycle path route are prone to flooding from the Shannon and Mulkear Rivers, cross a network of existing open channels and culvert draining from the Castletroy / UL area and will pass over existing flood embankments.
- Detailed hydrological and hydraulic studies have already been completed for the river reaches adjacent to the proposed cycle path by LCCC and by the OPW (CFRAM) and the design flood levels etc. concluded by these studies will be used for this SSFRA. Other past relevant studies, e.g., UL FRA report, IDA National Technology Park FRA report, may exist which will need to be considered.
- LCCC will source the hydrological reports etc. undertaken for them for the rivers in the study area and supply them to the project team.
- Topographical surveys have been completed to date for approximately 30% of the cycle path and the full length will be surveyed when Apex Surveys restarts the survey after the Government's requirement for non-essential services to work from home is relaxed. We note that LIDAR data may also be available from the OPW for the study area if the topographical survey is not completed within the SSFRA preparation period.

We propose that the Cycle Path SSFRA will comprise:

1. A review of The Planning System and Flood Risk Management Guidelines (DEHLG &OPW, Nov 2009) with respect to the proposed development;
2. Description of the proposed development (brief overview) including its horizontal and vertical alignments;

3. A site visit by the Hydrology team to inspect the proposed cycle path route (subject to COVID-19 movement restrictions);
4. Co-ordinating with LCCC on collation of available flood risk assessment reports, hydrological assessments etc. for the study area;
5. Review of the available reports and summarising the hydrological and design flood levels data relevant to the study area along River Shannon and its tributaries extending from Annacotty Bridge (R. Mulkear) to Groody Bridge (Groody R.);
6. Collating readily available historic information on past maximum flood levels along the route including photographic evidence, flood reports, anecdotal information etc.;
7. Preparation of a summary of design flood levels and mapping for the study area for the 10%, 2%, 1% and 0.1% Annual Exceedance Probability (AEP) events based on information being readily available;
8. Collation of all the existing drainage information and proposed culvert crossings of tributaries, back drains, etc.;
9. Estimation of design flow estimates for the minor tributaries;
10. Completion of Flood Risk Assessment involving comparison of the existing and proposed cycle-path levels to the design flood levels, understanding that the upgraded track will likely:
    - Increase the number of people in a flood zone;
    - Cut off Flowpaths to the main rivers; and,
    - Cross existing flood defences.
11. Proposal and Discussion of Mitigations:
    - Necessary works to alleviate flood risk impacts upstream due to the development;
    - Raise the track level to 1 in 10 year level or to the appropriate that is acceptable to the client/ design team;
    - Include protocols for closing off the track when it is flooded including diversion routes;
    - Install equipment needed for the cycle path that could be damaged by flooding either outside flood zone B (above the 1 in 1000 year level) or install them on plinths above the flood level with an appropriate freeboard;
    - Ensuring that the cycle path structure and foundations are appropriate for occasional flooding (i.e. overtopping, seepage, flows etc.). Early warning system for closure of gates to the cycle path during flood events; and,
    - Protocols/ design recommendations to ensure that cycle way does not impact on the existing flood defences or potential for development of flood defences or flow-paths from land to the river etc.
12. Preparation of a flood risk assessment conclusions and recommendations;
13. Project Management; and
14. Preparation for and attendance at two meetings (video conferencing) with the client to update on and present the SSFRA.

Our proposed hydrology and engineering team for this assessment will be led by Conor Warner (Senior Hydrologist) who will supported by Aristotles Tegos (Hydrologist) and Mark Sheridan (Project Engineer), and Ryan Hanley's UL to NTP Cycle Lanes project team.

The table below presents of our envisaged time input for the 14 No. tasks described above.

Role/ Rate per Day	Project Manager	Senior Hydrologist	Hydrologist	Project Engineer
Task	**€ 600**	**€ 600**	**€500**	**€300**
1		0.25		
2		0.5		1.5
3		1		
4			0.5	
5		0.75	2	
6			0.5	2.3
7			1	4
8				3.5
9			1	
10		2		
11		2		
12		0.5		
13	0.5			
14		1		
Total Days	**0.5**	**8**	**5**	**11.3**
Sub-Total for Role	**€ 300**	**€ 4,800**	**€ 2,500**	**€ 3,400**
Total Fee Proposal				**€ 11,000**

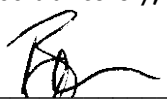
We propose a fee of **€11,000 + VAT** for the above services.

As set out above, the SSFRA will depend on the availability of existing studies on the main rivers in the study area. Please also note the following:

- If additional surveying or collection of existing survey data is required for the SSFRA, this will be additional to the SSFRA;
- Liaising with OPW to receive LIDAR data for the areas where the topographical survey has not yet been carried out will be additional to the SSFRA;
- No hydraulic model or hydrological analysis of the river system will be undertaken as part of this SSFRA;
- Any hydraulic modelling required for tributaries, back drains etc. will be undertaken as additional to this SSFRA; and,
- Consultation with the OPW regarding design of the trackway and the design of flood relief works will be an additional activity to the SSFRA.

We trust the above is acceptable. Please do not hesitate to contact the undersigned if you require any clarification on the above.

Yours sincerely,



Brendan Larkin