



when the travel restrictions are lifted. The project meets the transnational nature and mainly lies in the transfer of materials and complementarity expertise between the project partners. The Coordination of the individual Co-PIs with their national funding agencies has been very effective with strong local assessment in place. For example, the Irish Environmental Protection Agency carried out a full review, Technical, Impact and Communications Report as well as an in-person presentation and discussion (half-day) in front of a six person Expert Panel every six months. The project continues to meet the transnational nature.

### 3. Coordination with other international project funded by WaterWorks2015, or other instruments (Maximum 250 words)

The strategy of the SPy team was to give the researcher recruited under an opportunity to undergo training and establish expertise in their home laboratory before spending time in a partner laboratory. Unfortunately, the COVID-19 pandemic and subsequent travel restrictions have meant that researchers have not been able to undertake planned research/mobility visits across the consortium. However, they made strong links with the Break Biofilms (<https://www.breakbiofilms.com/>, Prof. Carmen del Blanco Lopez, Coordinator) EU funded ITN on the development of sensors for the detection of pathogens. Furthermore, they also collaborated with Prof. Gordon Wallace of the Intelligent Polymer Research Institute, Australia on the development of wireless electrochemical methods for the electrostimulation of biological cells and the development of electroceuticals. The report does however not give any details on how effective the collaboration has been and which parts of the project it has contributed to.

### 4. Coverage of the themes and sub-themes of the call (Maximum 250 words)

The SPy project contributes to a large range of themes and sub-themes of the call. This research covers Sub-theme 1.1. Promoting adaptive water management for global change and Sub-theme 1.3. Mitigating water stress in urbanized areas. Furthermore, the project strengthens Sub-theme 2.2. The reuse of water Theme 3. Supporting tools for sustainable integrative management of water resources. This theme aims to complement the actions developed under the European Strategy Forum for Research Infrastructures (ESFRI) and other European initiatives.

### 5. Stakeholder/industry engagement (Maximum 250 words)

The team has engaged with a major pharmaceutical company to understand the nature of their wastewater treatment needs, e.g., total organic load, volume, time profile for generation etc. The provision of actual wastewater samples and the formulation of appropriate test samples has been extensively discussed. The SPy technology has been presented with a view to refining the design and performance and to them becoming an advocate for the technology. The consortium has furthermore engaged with a leading food manufacturer to understand the composition of their wastewater streams, to discuss accessing real world samples for testing and to raise awareness of the SPy technology. They have been especially helpful in identifying performance criteria with respect to sample volume and throughput rates. The industry interactions have influenced the final operational performance needed from the reactor, e.g., outflow composition, flow rates, volumes etc. Moreover, engaging with diverse industries, pharmaceutical manufacturing and food, help to position the technology appropriately to maximize commercial impact. Very good progress has been made on the scientific objectives that have been effectively communicated to key target industries, i.e., pharmaceutical manufacturing and food production. The team has raised awareness of the technology and sought to reduce the barriers

to adoption by ensuring that the technology matches industry needs as closely as possible.

**6. Recommendations for improvements/amendments of the report** (Please complete Table below)

Page	Modification	Rationale for change
	none	

**7. Recommendations/ problems and risks** (Maximum 250 words)

The main problem identified is related to the COVID-19 situation, which has caused delays in starting and implementing the project as planned, i.e. the laboratory work in Ireland, France and Spain and South Africa had to stop in March 2020 and only re-opened between July and November 2020. The mid-term report reports a loss of 30 person months for experimental lab work. It also reports a loss of industry’s interest in the project. This caused delays in ordering of materials and services and longer time response from 3rd party suppliers lack of access to ‘real’ industrial samples.

Having different execution of contracts by funding agencies also posed a challenge for the different partners. E.g. DCU funding was meant to stop in March 2021, the contract between the University of Western Cape and the Water Research Commission of South Africa was signed later than the other contracts, coupled with the COVID-19 situation, led to a significant impact on the starting date of the project, i.e. almost one year after the official start of the project. One recommendation may be to include representatives of the industrial partners in the Advisory Board. A second recommendation is perhaps to extend the duration of the project.