



# Blue Green Dream

The Lord Berkeley OBE  
House of Lords  
London  
SW1A 0PW

1 November 2013

Dear Lord Berkeley,

I was impressed to hear your forward thinking on so many matters relating to Thames Water's proposed Thames Tideway Tunnel (TTT) project, most recently at the House of Lords debate on October 24<sup>th</sup>. As we have discussed previously at the meeting held at the House of Lords on December 10<sup>th</sup> 2012, the Blue Green Dream (BGD) project offers a more holistic approach to the overall long-term sustainable development of London, including a cleaner and healthier River Thames, through better integration of its water resources and ecosystem services provided by the city's green spaces, offering a viable alternative to the tunnel proposals.

The BGD approach is essential to tackling climate change in urban environments suffering from more frequent and pronounced droughts and flooding, by offering holistic fully integrated solutions that can be implemented with immediate effect. It also offers a sensible alternative to the TTT. Analysis undertaken here at Imperial College and at other leading EU and UK academic institutions indicates that Blue-Green (BG) solutions can be implemented immediately and begin to reduce overflow now, instead of waiting for the completion of the tunnel in 10 years. Colleagues and I have already raised our concerns about the TTT project at several high profile meetings, including the Greater London SUDS Debate held at the Institute of Civil Engineers held on May 20<sup>th</sup>, 2013 (see <http://www.ice.org.uk/Information-resources/Document-Library/The-Greater-London-SUDS-Debate>). However the proponents and defenders of the TTT have shown no interest in listening to and considering even simple common sense arguments calling for integrated, multi-functional, multi-faceted and multi-benefit solutions such as those proposed by the BGD project; compared to the single-function end-of-pipe solution offered by the TTT, which for example does not even tackle surface flooding in London.

It is our view that the proposed TTT is:

- a. Based on an outdated single-function output specification. During the past decade basic assumptions for the design of complex infrastructure projects have gone through a significant paradigm shift. In order to be compliant with the EU strategy for adaptation for climate change, only multifunctional systems (solving several problems with the same asset) are considered sustainable and acceptable. This argument stretches far beyond the current financial EU fine (which is significant). We also need to identify solutions to the problems the tunnel fails to address and these should be implemented now.
- b. An outdated concept, focusing on a single end-of-pipe solution to a complex set of climate change related problems facing London. Therefore we cannot justify such high investment costs this single-function system as it does not generate additional (multiple) benefits which cover the broader Thames Valley catchment area. The potential for additional benefits from alternative BG solutions have to be properly studied, modelled, documented and quantified. This has so far not been adequately carried out in the bid for the TTT project, nor addressed properly in the Environment Agency's (EA) study.
- c. A solution with a high carbon footprint, including high energy costs for pumping. Despite the high cost of such a solution, the benefits are limited as they only focus on reducing (not eliminating) overflows. BG solutions offer a much more integrated approach to dealing with



# Blue Green Dream

water management using both existing and new green spaces in the city to slow the flow of water, store it for dry periods and offer a multitude of benefits including: reduced surface flooding; reduced heat island effects; improved air quality; improved water quality; reduced noise; reduced demands on treated water supplies; improved biodiversity; and healthier places for citizens to live. In contrast, the TTT only focuses on the River Thames and removing valuable storm water from the city as quickly as possible, and does not take a multi-functional, multi-faceted, nor multi-disciplinary issues in its approach to the climate change issues facing our great city.

Based on our findings, I strongly support your call for a more extensive investigation into these alternative solutions. They need to be investigated and analysed to at least the same level of completeness as the TTT proposal. This requires time and resources in order to provide a viable and meaningful alternative to the TTT. People who defend the tunnel and dismiss the alternative solutions have no valid arguments for this, simply because the full range of alternative solutions (including both near the river bank and around the catchment area) have not been properly investigated.

As you highlighted in the debate, there are an increasing number of examples of cities that have considered and rejected large-scale storm water overflow tunnel projects in favour of integrated blue-green solutions to manage water quality as well as provide multiple other benefits to city residents, such as the well documented case of Philadelphia in the USA. The cost-benefit of tunnel projects when funded mainly by City Halls (instead of through consumers via a private sector water company) quickly builds the case to look for alternative solutions.

Therefore, as a result of these consultations, I offer my services to support the call for a comprehensive BG Study for London. This is necessary to address the gaps in evidence and knowledge not only around Sustainable Urban Drainage Systems (SUDS), which while being important are far from the only solution. I was part of the CIRIA project team in which the SUDS term was first coined, (Imperial College's team developed a training package for it). Almost two decades down the line many innovative concepts and solutions have further evolved the original SUDS concept which is often cited as being insufficient and therefore a main argument in support to the TTT. Both the Water Sensitive Urban Design (WSUD) and the even more comprehensive BG solutions include SUDS as one of their components, but provide many other "state-of-the-art" options which have benefits reaching far beyond SUDS.

The EA's "Sustainable Drainage Systems (SuDS) and Thames Tunnel Assessment" report, October 2013, was supposed to shed more light on this subject and assist governmental officials in better evaluating the options. Disappointingly it is creating more damage than good. The EA study had a very narrow focus and failed to address the basic issues. It is based on an arbitrary assumption of 50% disconnection of impervious areas. Why 50%? However, even if they used 30% or 70% the conclusions would be equally useless with such a narrow focus to the study. Once again it looks at SUDS as an almost exclusive solution and so results in a lot of arguments to claim that SuDS cannot provide solve the problem. There is no doubt that it would be difficult to justify the solution based solely on SUDS. Similarly without a comprehensive study of options based on BG solutions, it would be equally professionally irresponsible to claim:

- a. What the (quantifiable and quantified) comparative advantages of the options based on BG solutions are.
- b. What the other (non-tangible) benefits are (e.g. human health, amenity and alike). A fuller understanding of the cost-benefits is required, as many benefits are hard to measure in purely financial terms.



# Blue Green Dream

- c. To know **the costs** and **the timing** needed to achieve certain levels of compliance with EU water pollution acts without a full analysis of alternative solutions to the TTT across the catchment. Regretfully this knowledge is yet to be created, and should be provided through a comprehensive, independent, transparent, professionally competent BG Study for London.

I am certain that implementing BG solutions will offer ample opportunities for job creation and will stimulate a new on-going BG sector as part of a long-term strategy for the sustainable development of London. Such a study should by no means be confused with anything like a “light weight” Rapid Evidence Assessment (REA) approach. The importance of this issue requires a more profound investigation. Such a study would enable London to take a world-leading role in implementing a comprehensive BG strategy for both new urban developments and retrofitting the existing ones, as well as for the management of urban ecosystem services in the face of increasing climate change. Otherwise London will continue to lag behind the world’s forward looking cities and will ultimately be criticised even more by its own citizens than by the EU.

Finally, Thames Water (or a surrogate company) expects its catchment wide customers (including myself and my grandchildren) to commit to repaying for the TTT development for many decades to come. I would be very dishonest and professionally irresponsible if I were to agree to put that money into an outdated asset which does not meet basic “value for money” criteria. I would gladly commit even more money if it were to be used more wisely for multi-beneficial BG solutions which will achieve both what the TTT is planned for and also provide multiple additional benefits. Furthermore, the cost of many BG solutions (and related savings) would be borne by the developers and property owners around the catchment area. In this way the cost of implementing BG solutions would be distributed more fairly across the community.

I would expect those who depend on taxpayers / voters (these very same customers) to exercise a similar level of responsibility and common sense, not to mention wisdom.

Yours sincerely,

Prof. Čedo Maksimović PhD

Head of the Urban Water Research Group, EWRE Section

[www.bgd.org.uk](http://www.bgd.org.uk) (Blue Green Dream Project)

[www.raingain.eu/en/four-cities-gain-rain](http://www.raingain.eu/en/four-cities-gain-rain) (RainGain project)

Co-Editor-in-Chief Urban Water Journal and Urban Water Book series

[www.tandfonline.com/toc/nurw20/current#.Ujyi73Zwbc](http://www.tandfonline.com/toc/nurw20/current#.Ujyi73Zwbc)

[www.routledge.com/books/series/UWS/](http://www.routledge.com/books/series/UWS/)

Encl.