



Technical Stakeholder Meeting

Environmental Assessment

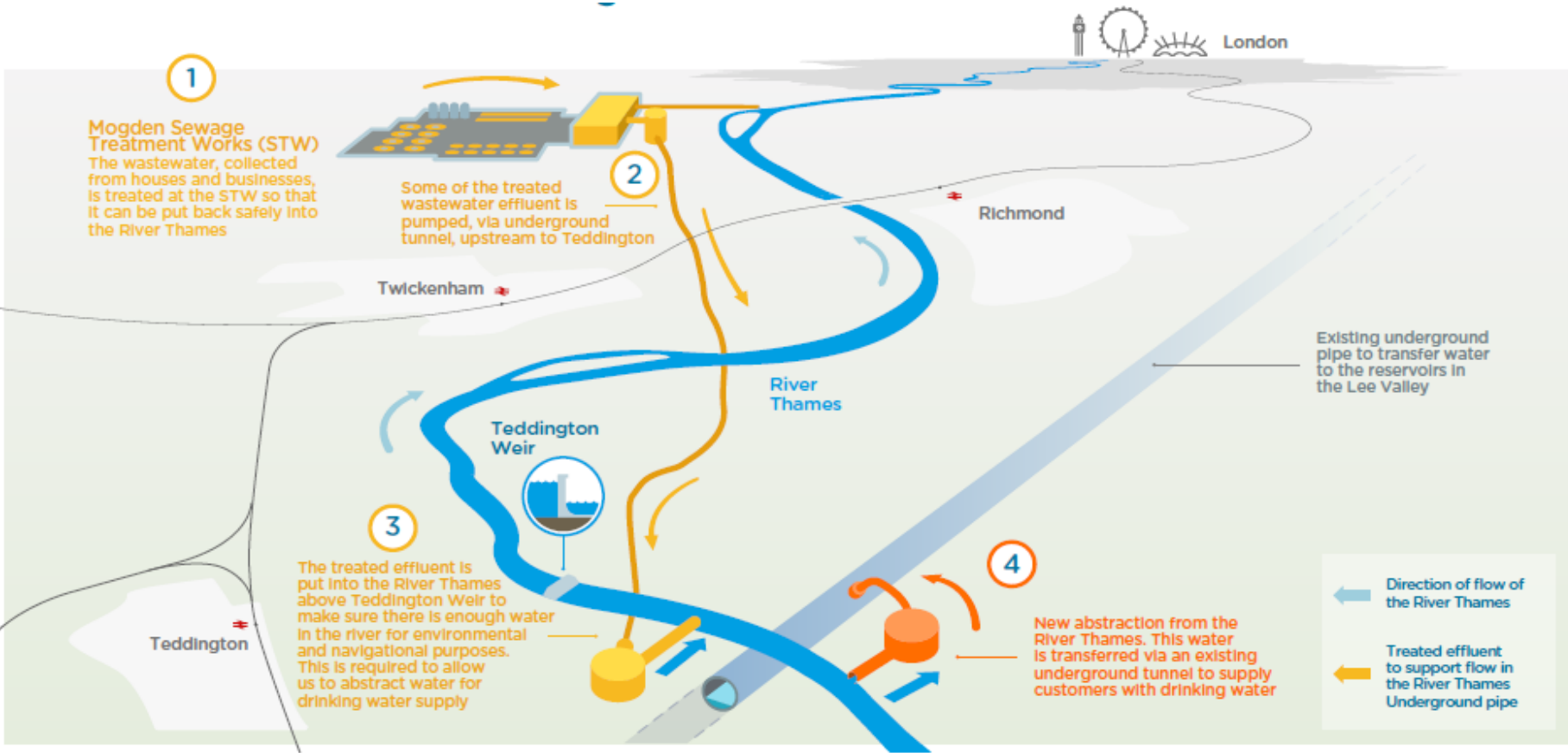
Example: Teddington Direct River Abstraction

June 2017

We have assessed the environmental impacts of the constrained resource options and demand management options.

This slide pack presents the assessment completed for Teddington Direct River Abstraction, as an example.

The schematic below shows how the Teddington option works.



Assessment of options

We have assessed all resource options according to their elemental parts e.g. water resource, the conveyance of the resource, and treatment process.

Teddington Direct River Abstraction comprises 3 elements as follows:

Element A: Tertiary treatment of effluent at Mogden Sewage Treatment Works (STWs)

Element B: Conveyance of treated effluent from Mogden STW to the River Thames




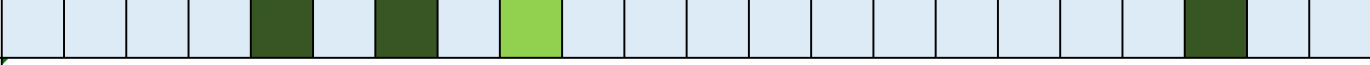
Element C: Conveyance of the water resource from Teddington to the reservoirs in the Lee Valley

The following pages provide a summary of the engineering scope of each element together with the summary environmental assessment and associated environmental metric grading which is used in programme appraisal.



Element A: Tertiary treatment of effluent at Mogden Sewage Treatment Works

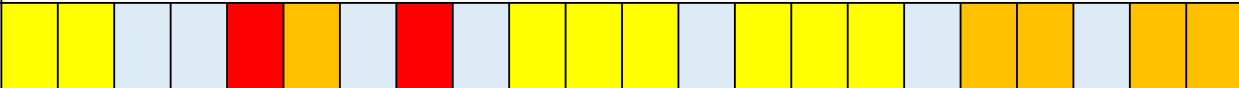
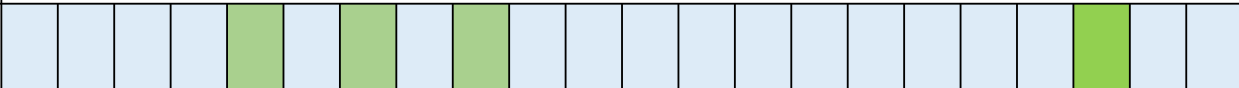
Engineering Scope	Tertiary treatment of 300MI/d of Mogden effluent at Mogden STW.
Engineering Components	<ul style="list-style-type: none"> ▪ Effluent abstraction pumping station – total 2,120 kW power rating ▪ Waste return pumping station - 55kW power rating ▪ Nitrifying Rapid Gravity Filters (RGFs) with ferric sulphate addition ▪ 3 No 9.6m deep storm water tanks (2 No 70m x 45m, 1 No 70m x 22.5m) ▪ Permanent land area of 22,150 m² ▪ New power supply of 2,300 KVA
Resource Benefit	268 MI/d [DYAA]

Summary commentary of scheme adverse effects	Two major adverse effects identified relating to potential impacts on health and wellbeing air quality. Six moderate adverse effects identified associated with biodiversity, population and health, resource use, air and climate, historic environment and landscape effects. The Habitat Regulations Assessment (HRA) shows that there would be no likely significant effects on European sites. The Water Framework Directive (WFD) assessment concludes no overall likely risk to WFD status. The metric rating does not include the objective relating to socio-economic effects of the element (reflected in the element's total costs) on affordability nor the objective that has regard to carbon effects (reflected in the element's carbon cost) so as to avoid potential double counting.		
SEA Objectives Adverse Effects Assessment Summary			
Environmental metric for adverse effects	-4		
Summary commentary of scheme beneficial effects	Three major beneficial effects due to protecting public health, provision of sustainable abstraction and provision of resilience to climate change. The metric rating does not include the objective relating to socio-economic effects of the scheme on affordability (reflected in the element's total costs) nor the objective that has regard to carbon effects (reflected in the element's carbon cost) so as to avoid double counting.		
SEA Objectives Beneficial Effects Assessment Summary			
Environmental metric for beneficial effects	+5		

Element B: Conveyance of treated water from Mogden STWs to the River Thames

Engineering Scope Treated water from the Mogden tertiary treatment plant will be pumped to a shaft and subsequently gravitated through a tunnel to discharge into the River Thames. This flow will supplement the flow upstream of Teddington Weir

- Engineering Components**
- Effluent abstraction pumping station - 148 kW power rating
 - Tunnel 3.5m diameter and length 4.5km
 - Drive shaft 12.5m diameter and depth 17m
 - Intermediate shaft diameter 10.5m and depth 17m; reception shaft diameter 10.5m and depth 20m
 - Pipeline from tunnel to river outfall 1.7m diameter and 40m long
 - Outfall and screening structure
 - Permanent land area of 1,400 m²
 - New power supply of 90 KVA

Summary commentary of scheme adverse effects	Two major adverse effects identified relating to potential impacts on biodiversity, health and well-being and consumption of resources and waste generated. Six moderate adverse effects identified associated with biodiversity, population and health, air and climate, historic environment and landscape effects. Eight minor adverse effects and seven negligible effects. The Habitat Regulations Assessment (HRA) shows that there would be no likely significant effects on European sites. The Water Framework Directive (WFD) assessment concludes no overall likely risk to WFD status. The metric rating does not include the objective relating to socio-economic effects of the element (reflected in the element's total costs) on affordability nor the objective that has regard to carbon effects (reflected in the element's carbon cost) so as to avoid potential double counting.		
SEA Objectives Adverse Effects Assessment Summary		HRA	WFD
Environmental metric for adverse effects	-4		
Summary commentary of scheme beneficial effects	One moderate beneficial effect due to provision of resilience to climate change. Three minor beneficial effects relating to protecting public health, provision of sustainable abstraction and helping safeguard water supplies to customers. The metric rating does not include the objective relating to socio-economic effects of the scheme on affordability (reflected in the element's total costs) nor the objective that has regard to carbon effects (reflected in the element's carbon cost) so as to avoid double counting.		
SEA Objectives Beneficial Effects Assessment Summary			
Environmental metric for beneficial effects	+2		

Element C: Pumped abstraction from River Thames upstream of Teddington Weir to the existing Thames Lee Tunnel (for conveyance to Lockwood Reservoir)

<ul style="list-style-type: none"> Engineering Scope 	<ul style="list-style-type: none"> A new abstraction from the River Thames upstream of the new Mogden effluent transfer discharge location. River water will be pumped into the Thames Lee Tunnel and conveyed to Lockwood for treatment at Coppermills WTW.
<ul style="list-style-type: none"> Engineering Components 	<ul style="list-style-type: none"> Intake structure and screens Raw water abstraction pumping station - 640 kW power rating Permanent land area of 1,200 m² One 7.5m diameter shaft at a depth of 38m Site security and landscaping New power supply of 600KVA and standby generation

Summary commentary of scheme adverse effects	<p>Two major adverse effects identified relating to potential impacts on recreational resources and cultural heritage. Three moderate adverse effects identified associated with biodiversity, population and health and landscape effects . Ten minor adverse effects and seven negligible effects.</p> <p>The Habitat Regulations Assessment (HRA) shows that there would be no likely significant effects (LSE) on European sites. The Water Framework Directive (WFD) assessment concludes no overall likely risk to WFD status. The metric rating does not include the objective relating to socio-economic effects of the element (reflected in the element's total costs) on affordability nor the objective that has regard to carbon effects (reflected in the element's carbon cost) so as to avoid potential double counting.</p>		
SEA Objectives Adverse Effects Assessment Summary		HRA	WFD
Environmental metric for adverse effects	-4		
Summary commentary of scheme beneficial effects	<p>One moderate beneficial effect due to provision of resilience to climate change. Three minor beneficial effects relating to protecting public health, provision of sustainable abstraction and helping safeguard water supplies to customers. The metric rating does not include the objective relating to socio-economic effects of the scheme on affordability (reflected in the element's total costs) nor the objective that has regard to carbon effects (reflected in the element's carbon cost) so as to avoid double counting.</p>		
SEA Objectives Beneficial Effects Assessment Summary			
Environmental metric for beneficial effects	+2		