

## **Appendix 14.5: Technical Note for Option 2**



# Technical Note

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Project:	Proposed Internal Power Generation Enhancement for Port Talbot Steelworks	Job No:	60275968
Subject:	Surface Water Environment Assessment – Phased Approach Scenarios		
Prepared by:	Poppy Michelsen	Date:	26/02/2014
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Approved by:	Catherine Mackay	Date:	13/03/2014

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*Note: This technical note should be read in conjunction with the technical note “Surface Water Environment Assessment - A Review of Model Findings”*

## 1.1 Introduction to Project Phasing

1. Tata are now exploring two different options for the construction of the proposed development as opposed to the single phase approach currently described in the Preliminary Environmental Information Report (PEIR) – Option 1. This is the complete installation and makes up the existing option, the results of which have already been provided in the meeting held 20<sup>th</sup> February 2014. This involves both boiler and turbine units being installed and constructed at the same time.
2. Option 2 is a phased build with two separate installations. This is an alternative scenario where project components (boiler and turbine units) are separated and only one boiler and one turbine is installed at a time (Phase 1), with the second to be installed up to 10 years later (Phase 2).
3. AECOM propose to use the hierarchy of abstraction and flow monitoring agreements made for Option 1, between Tata and NRW on 20<sup>th</sup> February 2014, for Option 2 in the Environmental Statement (ES).
4. The changes to the abstraction and discharge requirements which would occur as a result of the phased build should the phased approach be chosen by Tata are outlined below and provided in Figure 1.1 attached to this note.

### Phase 1

#### *Commissioning*

5. The water required for abstraction during commissioning of the development will be halved from 20,000 m<sup>3</sup> to 10,000 m<sup>3</sup>.

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## Operation

- Just over half of the additional proposed abstraction for Option 1 (5,000,000 m<sup>3</sup>/yr) is required from the River Afan (Dock Feeder Channel) at approximately 3,000,000 m<sup>3</sup>/yr, giving a total 13,000,000 m<sup>3</sup>/yr to be abstracted;  
*Note: This is more than half of Option 1, as the abstraction required for the boiler is not negated by the decommissioning of the 4 existing boilers. This is however negated for Option 1 because the 4 existing boilers have been decommissioned, meaning the additional abstraction requirement in Option 1 does not account for the boiler abstraction, whereas for Option 2, Phase 1 the boiler abstraction is accounted for.*
- The existing assets will not be decommissioned so the abstraction from the Port Talbot Dock remains the same at 166,000,000 m<sup>3</sup>/yr;
- The percentage of dock abstraction returned to the dock remains the same at 88%; and
- The volume of water abstracted from the Nant Ffrwdwyllt will remain the same at 900,000 m<sup>3</sup>/yr.

## Phase 2

6. As a result of the installation of the second boiler and turbine, the abstraction and discharge required for the second phase is effectively the same as already modelled for Option 1, as this constitutes the complete installation.

### **1.2 Additional Model Runs**

7. As a result of the phased approach, a new scenario for the operation of Phase 1 in Option 2, has been run through the model based on the amended abstraction - discharge requirements as outlined above. Three model runs have been undertaken for best and worst case scenarios. These include:
  - Run 9 – Scenario 3: Proposed Operations Worst Case
  - Run 10 – Scenario 3: Proposed Operations Best Case (with impoundment)
  - Run 11 – Scenario 3: Proposed Operations Best Case (without impoundment)

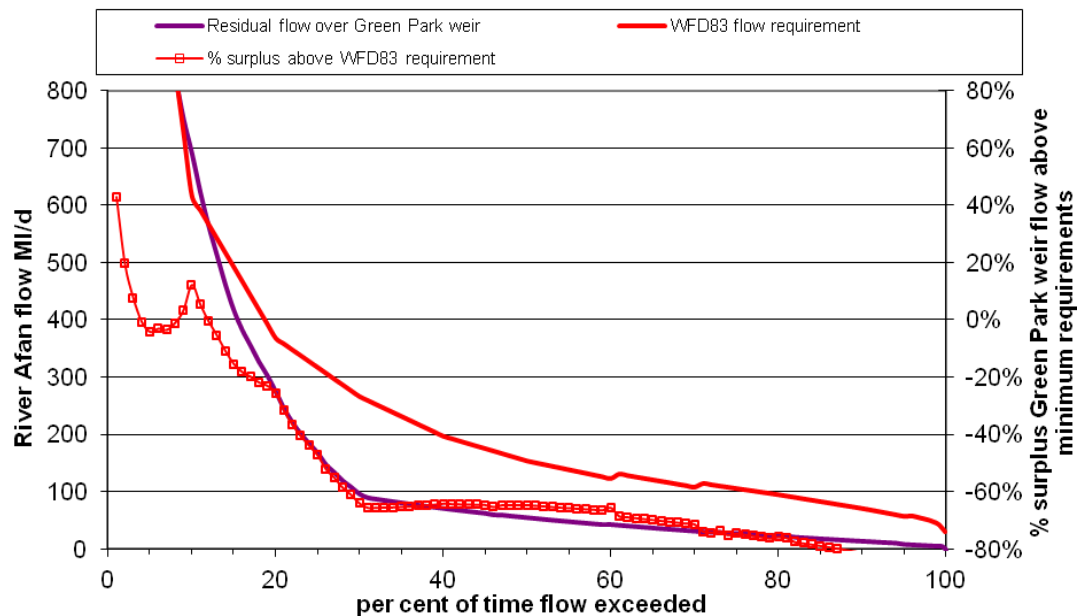
### **1.3 Results of Model Runs and Approach to Assessment**

#### River Afan Flows

8. The results for the River Afan flows are outlined below and demonstrated in Figures 1.2, 1.3 and 1.4:

- Run 9: WFD83 RFO is met for 4% of the time (Same as baseline);
- Run 10: WFD83 RFO is met for 41% of the time (Improved from baseline due to planned improvement works); and
- Run 11: WFD83 RFO is met for 39% of the time (Improved from baseline due to planned improvement works).

**Flow duration curves over simulation period**



**Figure 1.2: Run 9 Scenario 3 Proposed Operations Worst Case assuming required flow over Green Park weir is variable flow regime and uses Proposed Operations abstraction data for Option 2, Phase 1.**

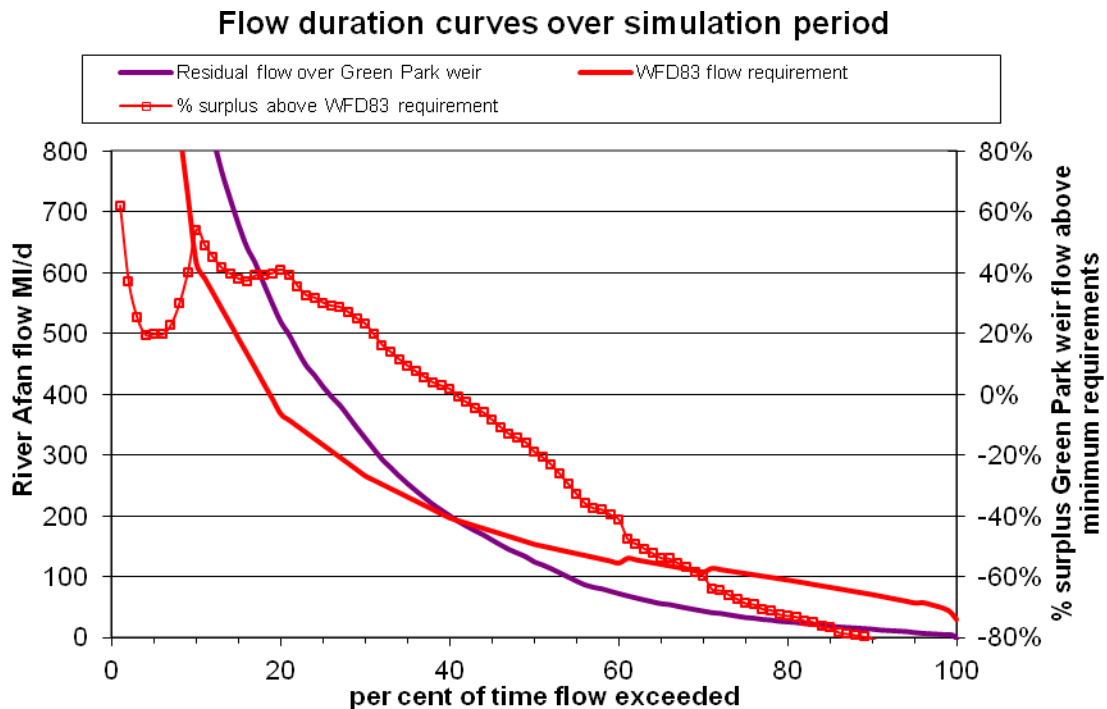


Figure 1.3: Run 10 Scenario 3 Proposed Operations Best Case (with impoundment) assuming required flow over Green Park weir is variable flow regime and uses Proposed Operations abstraction data for Option 2, Phase 1.

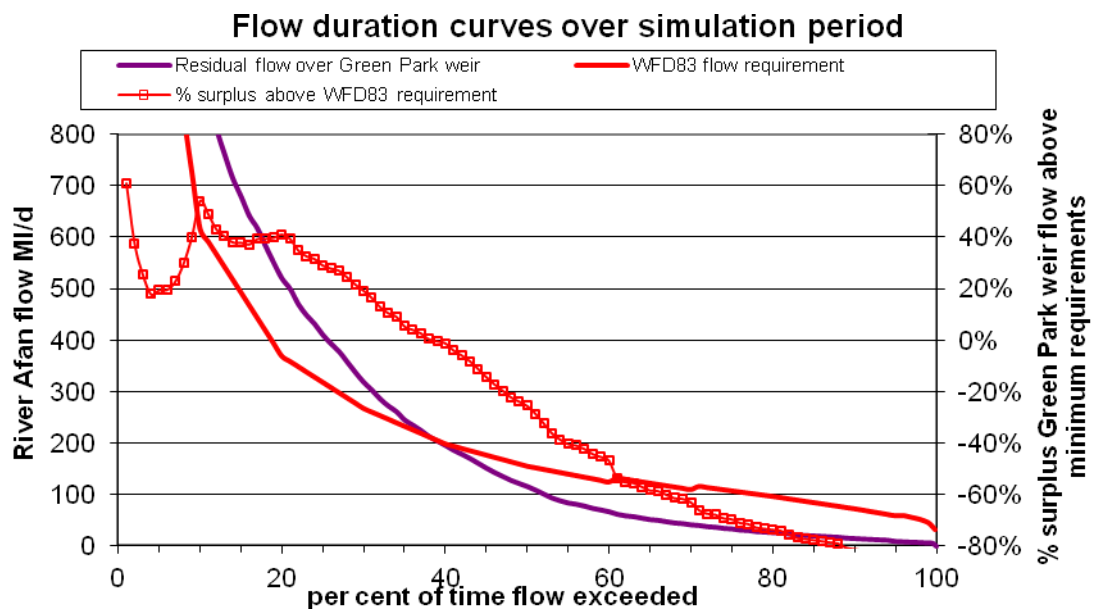


Figure 1.4: Run 11 Scenario 3 Proposed Operations Best Case (without impoundment) assuming required flow over Green Park weir is variable flow regime and uses Proposed Operations abstraction data for Option 2, Phase 1.

- Figure 1.2 demonstrates a negligible effect on River Afan flows as the percentage of time the WFD83 RFO is met is not changed from the baseline. Figure 1.3 and 1.4 demonstrate that for a

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best case scenario, where planned improvement works are assumed to have been undertaken, there is a moderate beneficial effect, as the planned improvement works means that flows in the river are improved even when the abstraction requirement is increased for the proposed development.

10. Due to the anomalous nature of the model outputs, established in the technical note “Surface Water Environment Assessment - A Review of Model Findings”, it is proposed that for the purposes of the assessment, the assessment of potential effects for River Afan flows from Option 2, Phase 1 will be based on the probability that:
  - A) The percentage of time the River Afan flows meets the WFD83 RFO will remain unchanged for the worst case scenario; and
  - B) The percentage of time the River Afan flows meets the WFD83 RFO will be improved for both best case scenarios, where improvement works are assumed to have been undertaken.

### Port Talbot Dock Levels

11. Although the changes to abstraction from the dock feeder channel may affect dock level during Phase 1 of Option 2, it has been established in the technical note “Surface Water Environment Assessment - A Review of Model Findings”, that the results of model runs are anomalous and cannot be viewed with any degree of confidence. For this reason, a new approach to assess dock level change was proposed for Option 1, where volumetric changes to dock level as a result of abstraction and return to and from the Port Talbot Dock were reviewed in isolation.
12. AECOM propose to use this same approach for Phase 1 of Option 2. Under this approach no change to baseline conditions occurs and therefore no assessment of effects on dock level is required for Phase 1 of Option 2, as the Port Talbot Dock abstraction and discharge requirements for this scenario will not change from the baseline.

*Note: The ES assessment for the Surface Water Environment will show no dependence on the planned improvements works being undertaken as a worst case scenario will be assessed as well as the best case scenarios.*

## **1.4 Requests from AECOM**

13. Please provide comments on the proposed methodology for assessment of effects on the Surface Water Environment for Option 2, as outlined in this technical note.

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14. Please find attached a summary of the assessment for the Surface Water Environment for Option 2, using the approach outlined in this technical note and provide comments.
  
  15. Please confirm whether the agreement made on 20<sup>th</sup> February 2014 between NRW and Tata that:
    - A hierarchy of abstraction will be utilised, with flows at the Marcroft gauging station to be monitored by NRW and an operational advisory notice to be issued to Tata when flows are not expected to meet the additional abstraction required as a result of the proposed development.

Is applicable to Option 2, as well as Option 1, should Tata choose this phased approach.