

Summary

Project No.		Project Description	Task	
B245773G		Linford WTW and Borehole scheme	PCD assurance	
Company	Ref	Short description	Risk score	Reported Performance for PCD
Northumbrian Water		Detailed design of a 7ML/d scheme as identified in the company's dWRMP24 preferred programme to be construction ready by 2025-26. This brings forward delivery by two years to 2027-28 compared with the dWRMP24. Construction is to include a new wide diameter chalk borehole with a capacity of 3.5 ML/d, and a new groundwater treatment works to treat water from both the new borehole and an existing (previously redundant) well.	A	10 ML/d
Findings Summary		<ul style="list-style-type: none"> The team demonstrated an extensive understanding of the project's requirements and regulatory expectations. In addition, the team provided extensive knowledge about the current state of play at Linford. The required delivered output at Linford has increased from 7ML/d to 10 ML/d. This change has not been formally confirmed by the regulators (Ofwat and the Environment Agency) but it is outlined in the fWRMP24 and reflected in Ofwat's published tables. Detailed design for the WTW is incomplete and the pilot borehole yield is insufficient to provide the full expected output. Land acquisition and planning permissions have impacted the project timeline contributing to the extension of completion date. The EA has indicated availability of 6.5ML/d WAFU but as the pilot borehole demonstrated, this does not guarantee accessibility. The Linford briefing note describes the intent of drilling multiple boreholes which deviates from Ofwat documentation. Linford poses a low reporting risk because we found NWL is correctly reporting against Ofwat's targets. However, there are valid reasons why NWL is not achieving the target components in Ofwat's requirements. Delivery of the scheme against Ofwat's targets is considered to be high risk. 		
Emerging risks/issues		<p>We consider the reporting risk to be low because NWL is reporting accurately against known facts of progress to date with Linford Well.</p> <p>The risk to achieving the profile of forecast deliverables is high (grade 'C' at best) because of numerous delays, for example with land lease agreements, and a lower than expected yield from the pilot borehole.</p>		
Date of audit	Jacobs Team		Client Team	
14/04/2025	Graham Hindley and Izzy Radley		George Mok	

Revision	Date	Description	Author	Checked	Reviewed
1.0	04/06/2025	Feedback sent	IR	GDH	YZ
2.0	13/06/2025	Updated with NWL comments	IR	GDH	YZ

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Risk Scores

Score	Meaning
A	Low reporting risk – criteria are fully met (no weaknesses in the methodology - no actions)
B	Low to medium reporting risk – criteria are not fully met (weaknesses exist but they are not material - must have action)
C	Medium to high reporting risk – criteria are only partially met (material weakness or several minor weaknesses with material effect).
D	High reporting risk – criteria are not met (two or more material weaknesses in the methodology).
NA	Not audited as it was outside our scope
Guidance on risk and materiality:	
The score reflects the level of reporting risk for the process and is based on the overall opinion of the auditors. In general, a weakness is material if it has the potential to impact the quality of the reported number to a greater degree than assumed by the confidence grade. All weaknesses (material and non-material) are described below (issues) and have been given a corresponding action.	

Issues and Actions

Ref	PCD Reference	Issue	Action	Impact (Material or non-material)
None	None	None	None	None

Test 1 – Detailed Design, Output Measurement and Reporting

Audit Test			Risk Score (A, B, C or D)
See criteria below			A
Criteria	Y, N or NA	Notes	
1.1	Y	The scheme output at Linford has increased from 7ML/d to 10ML/d. This change is a result of the scheme with a larger yield being included in the fWRMP24. Ofwat has reflected the change from 7ML/d to 10ML/d in its published tables, but there has been no formal confirmation between the regulator and NWL. NWL regulation team has identified this change and included it in the project brief/scheme output document circulated internally.	
1.2	Y	<p>Construction is intended to include a new wide diameter chalk borehole with capacity of at least 3.5 ML/d and a new groundwater treatment works.</p> <p>Due to the change in scope from 7ML/d to 10ML/d the current design intends for the new total diameter to be 6.5 ML/d in order to reach a total output of 10ML/d (3.5ML/d from the existing well and 6.5 ML/d from the new).</p> <p>While the scheme is currently in the concept stage, the project brief documentation mentions multiple boreholes summing to the total output of 10ML/d rather than just one at 6.5ML/d. This change could be a result of the physical geographies of the area, and indicative yield from the pilot borehole.</p>	
1.3	N	<p>Detailed design is not yet completed for the treatment works. The design of the treatment works is expected to evolve along the process of completion. There is an assumption that the detailed design of treatment works is being completed but NWL is not sufficiently advanced with the scheme.</p> <p>One pilot borehole has been drilled and detailed design has been completed for this borehole. However, due to the nature of the pilot borehole NWL is waiting for the results of the pilot to guide the production borehole design. At this time, the current yield of the pilot is not sufficient to secure a yield of 6.5 ML/d.</p>	
1.4	N	<p>The pilot borehole was not completed by 31/12/2024 due to land access issues. A pilot borehole has now been completed prior to the time of the audit, however it is producing a lower than expected yield. A groundwater report was not able to be conducted due to the low yield. A secondary pilot is in the process of being drilled. If a higher yield is achieved, then a groundwater report will be produced. Evidence of pilot borehole was reviewed.</p> <p>Numerous land constraints have delayed the progression of the scheme. Site selection was narrowed down from 71 sites to 25 sites in the area with only one landowner choosing to engage.</p>	

PCD Data Assurance Feedback

1.5	Does this equate to expected 12% of total project delivery costs? Should this include on-costs, company overheads, and in what price base?	Y	12.1% of component 1 project spend for AMP7 cost allocation. 72% of component 2 spend is expected in 2024/25. The table does not include the WTW however an assumption has been made that the WTW will be an additional cost.
1.6	Is the company on track to deliver upgrades at New Linford water treatment works including upgrading the existing well, constructing a new borehole and bringing a new water treatment works into supply in 2027-28?	N	The program is not on track due to unforeseen delays in land acquisition. NWL need to both acquire land to drill the boreholes and obtain planning permission for the WTW. The site selection for the WTW has been narrowed down to 25 sites from 71 sites. To proceed with planning permission 4 seasons of environmental surveys are required further delaying progress. NWL will not proceed with the purchase of land until planning permission is granted. The optimistic programme handover is estimated to be April 2029.
1.7	Will these works deliver a total water available for use (WAFU) gain for the Essex water resource of 6.75 ML/d under a 1-in-500 year drought scenario?	Y	With the change in outputs outlined in the WRMP, NWL has the opportunity to achieve 6.75ML/d WAFU pending that through site selection they can reach a necessary yield to satisfy the expected output. The yield is currently constrained by site selection for the borehole site. The Environment Agency has indicated there is 6.75ML/d of WAFU available but as the pilot borehole demonstrated, a yield of 6.75ML/d may not be available from the aquifer. Currently, an options paper is being completed.
1.8	Will the process losses be no higher than 0.25 ML/d? Please define process losses.	Y	The WTW process losses are not expected to exceed 0.25ML/d.
1.9	Is the estimated WAFU the same at dry year annual average and dry year critical period, as expected? Please record the relevant WAFU.	Y	10 ML/d is expected but is subject to NWL to confirming they can get the required additional yield of 6.5 ML/d from the aquifer.
1.10	Is pre-investment WAFU from the site 0 ML/d?	N	There is a redundant borehole at the Linford site which is 0 ML/d WAFU as a result. 3.5 ML/d comes from the existing well at Linford.
	Has the delivery of the outputs been reported and monitored through the existing APR process ?	Y	<p>The APR report is claiming 50% completion for 24/25 performance measures; completion of detailed design and securing land lease agreements. A land lease agreement is in place allowing for the pilot borehole to be drilled and tested in March 2025.</p> <p>There is currently no land lease agreement in place for the new WTW. Site selection is in progress and then will move into the planning process. Both steps need to be completed prior to the land lease agreement being completed then detailed design.</p>
Additional Guidance			
https://www.ofwat.gov.uk/wp-content/uploads/2023/04/Appendix-2-Accelerated-Delivery-Project-Final-Decisions-2023.pdf			

Detailed Observations to justify assurance decisions

To enable a person not involved in audit to understand the risk scores allocated above. Include screenshots and document references as appropriate.

Test 2 - Conditions of scheme

Audit Test			Risk Score (A, B, C or D)
See criteria below			A
Criteria		Y, N or NA	Notes
2.1	Is the company on track to deliver its PR19 water enhancement programme in full?	Y	The ESW WRMP19 included just one new water supply scheme which was the Abberton to Langford Pipeline. This scheme was delivered prior to the PR19 Business Plan regulatory deadline of 31 March 2025. The scheme will allow Abberton reservoir raw water to be transferred to Langford WTW bankside storage for treatment at Langford WTW.
2.2	Are the updated timings of the benefits of this scheme (WAFU) including any implications for the rest of the programme consistently taken account of in the company's final WRMP24?	N	<p>WRMP24 was published in October 2024. Progress with WRMP24 supply scheme delivery will be tracked by the following groups / meetings:</p> <ul style="list-style-type: none"> Water Service Planning Leadership Team Quarterly ESW / Environment Agency Liaison Meeting Quarterly Environment Agency / ESW Senior Managers (Directors) Meeting. AMP8 Water Resources Scheme Steering Group - chaired by Monisha Gower (NWL Assets Director) <p>Regulators will be formally updated on any variance to delivery of WRMP24 supply schemes via our WRMP24 Annual Review report which is submitted to Defra, EA and Ofwat by 30 June each year.</p> <p>Water Resources is responsible for maintaining an up to date supply demand balance for each ESW water resource zone. Updates to the supply demand balance will be made annually to take account of outturn and progress with supply and demand management schemes and if and when scheme delivery dates change.</p> <p>No recommendations or actions because ESW has a delivery plan in place.</p>
Additional Guidance			
https://www.ofwat.gov.uk/wp-content/uploads/2023/04/Appendix-2-Accelerated-Delivery-Project-Final-Decisions-2023.pdf			

Detailed Observations to justify assurance decisions

To enable a person not involved in audit to understand the risk scores allocated above. Include screenshots and document references as appropriate

Test 3 – Forecast Deliverables

Audit Test			Risk Score (A, B, C or D)
Have the data checks identified any issues?			A
Criteria	Y, N or NA	Notes	
3.1	N	The Ofwat table of forecast deliverables states that the detailed design, planning and pilot borehole drilling to deliver a 7ML/d groundwater scheme should be 100% complete in 2024/25. [Note the scheme is now to deliver a 10ML/d yield]. NWL estimates with the delays to date and lower than expected yield from the pilot borehole, the company is approximately 12% complete with this component of the Linford scheme.	
3.2	N	We understand the Linford project currently has a budget of £1.5m. NWL reports that it has spent £1.08m to date which equates to 72% of the current project budget. This expenditure appears at odds with the actual progress of deliverables.	

Test 4 – Forecast benefits

Audit Test			Risk Score (A, B, C or D)
See criterion below			A
Criteria		Y, N or NA	Notes
4.1	Does the WAFU benefit to Essex WRZ supply-demand balance meet the (ML/d) expectations forecasted for each year?	N	<p>Ofwat's profile of forecast benefit in WAFU shows a benefit of 6.75 ML/d being delivered in 2027/28 and the same in the following two years. Given the delays experienced to date and the lower than anticipated yield from the pilot borehole, this profile is unlikely to be achieved. NWL advised the optimistic profile is to deliver benefit in 2028/29 at the earliest.</p> <p>For reporting risk, we consider NWL is correctly reporting with known facts of progress to date. We have therefore graded this 'A' as low reporting risk. Delivery risk is higher and at best a grade 'C'.</p>
Additional Guidance			
https://www.ofwat.gov.uk/wp-content/uploads/2023/04/Appendix-2-Accelerated-Delivery-Project-Final-Decisions-2023.pdf			

Test 5 – Data Checks (record of checks made)

Document reference	Details of check	Findings
Scheme output.docx	Confirmation of regulation team's acceptance of 10MI/d output	No issues identified.
Draft Linford New Treatment Works and Borehole Project Brief PDF	Reviewed language used to describe boreholes.	Deviates from Ofwat documentation of One borehole to multiple boreholes in the project briefing document
Linford BH MASTER site Selection Database 2 May GM. xsl	Review of site selection process	No issues identified
WT024/0193 – Linford New BH and WTW- IMG_3123- All documents	Confirmation of pilot borehole	No issues identified
Linford WTW master programme 250319_28H.pdf	Review of programme	No issues identified
Linford WTW and Borehole Completion of detailed design and securing land lease agreements- Michael Gray 1. docx	Review of figures and metrics for APR 24/25	No issues identified
Final Tables 10F to 10H	Reviewed input figures and component completion level to date	No issues identified. This is an AMP7 table.

Sample Checks - approach

State the level of sampling carried out in this audit, the justification for the level of sampling and any recommendations for further sampling:

(consider – level of sampling already undertaken by the company within process, complexity reporting process, significance of measure, number of errors found, time available, significant over/under performance, ODI value)

[Risk-based sample checking of data or records for each PCD back to source (internal company source data only). Assurance should prioritise PCDs which cover a larger amount of expenditure and/or where there is no regulatory oversight other than Ofwat]

We sample checked the following items back to source:

Unique identifier	Source of data	Details of check	Findings
None	None	None	None

Additional Notes

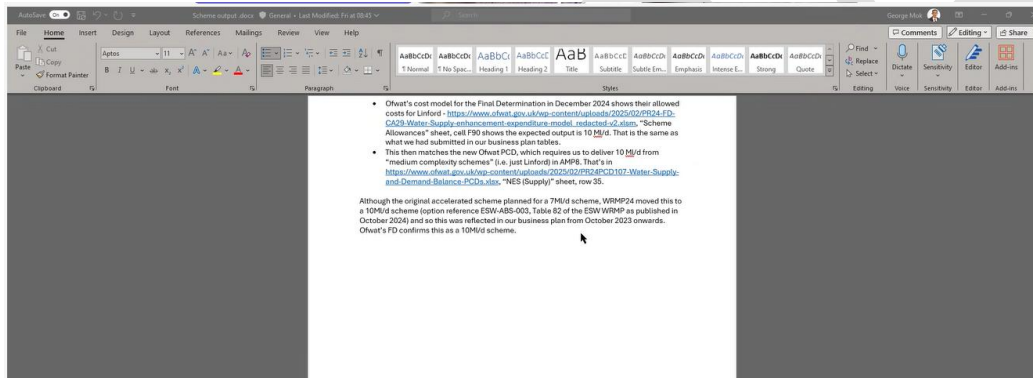
*Information on reporting process, assumptions, etc. to enable a person not involved in audit to understand the risk scores allocated above. Include **screenshots** and document references as appropriate*

Record of Evidence Reviewed

List of all documents reviewed as part of the audit:

1. Scheme output.docx
2. Draft Linford New Treatment Works and Borehole Project Brief PDF
3. Linford BH MASTER site Selection Database 2 May GM. xls
4. WT024/0193 – Linford New BH and WTW- IMG_3123- All documents
5. Linford WTW master programme 250319_28H.pdf
6. Linford WTW and Borehole Completion of detailed design and securing land lease agreements- Michael Gray 1. docx
7. Final Tables 10F to 10H

Screenshots



My Documents - O...

Viva Engage - Orga...

NWG-Asset

NWG-PMO

NWG-projects

NWG-Data sys

NWG-AMP

Contracts

CEng

H&S

Misc

OFWAT

Clarify - Welcome

NWG-Water Resour...

LifeSight

Other favourites

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1.2 ISSUE OVERVIEW

As part of the Water Resources Management Plan for the 2024 Water Price Review, it has been identified that in the future the Essex area will be facing a supply deficit. To provide a resilience of supply to customers in Essex the existing borehole at Linford will be brought back online and a new borehole and standby will also be required.

At present, there is no facility to treat water to a compliant and safe standard at the existing Linford site meaning that a new Treatment Works is also required for a throughput of a minimum of 10 Megalitres per day (M/d) to be able to treat the raw water from the existing bore and the new boreholes.

This Project Brief captures the requirement and recommended solution to achieve this.

1.3 RECOMMENDED OPTION AND JUSTIFICATION

Option 2 – Construct Borehole and Water Treatment Works on New Site

The recommended option is to construct a new water treatment works and new duty and standby boreholes. It is expected that the new boreholes will produce around 6 M/d and once the existing borehole has been reinstated at Linford, this will supply 3.5M/d providing a total throughput of 10M/d of raw water through the new water treatment works.

The reinstatement of the existing Linford borehole is not part of the scope of this project, however water quality analysis and test pumping will need to take place to establish whether more than 3.5M/d can be abstracted from here. The current license for Linford is shared with Sifford.

The location for the works and new borehole have not yet been confirmed but it is understood that land will need to be purchased to accommodate the footprint of a new treatment works.

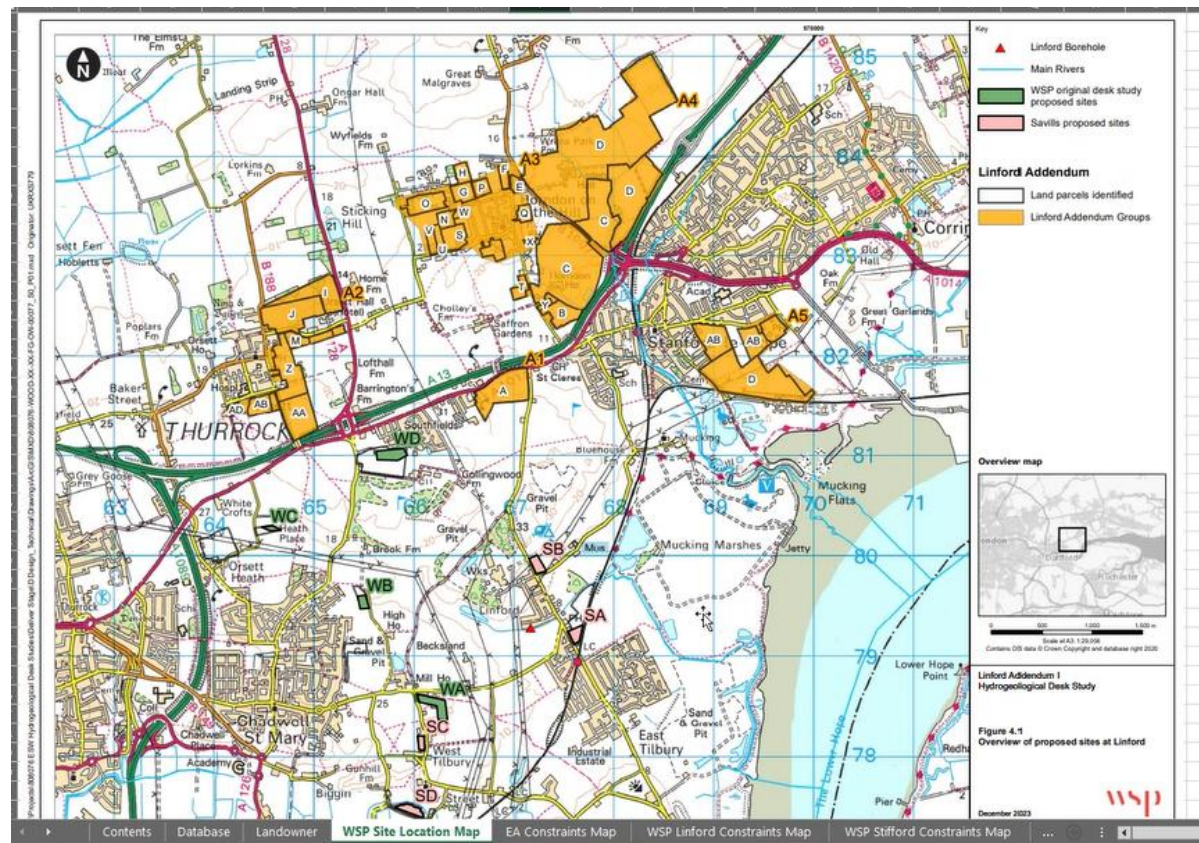
Justification

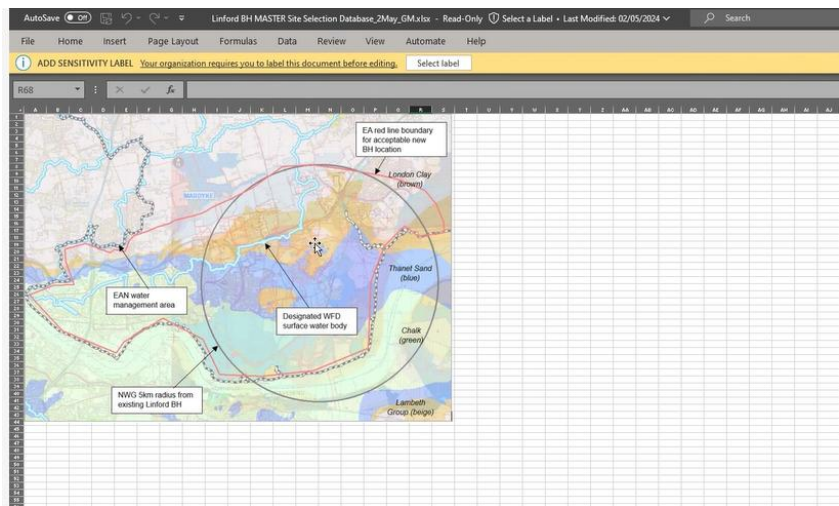
Northumbrian Water have considered Government policy as set out in a regulatory document titled Government Expectations for Water Resources Planning (Defra, 2022) which is outlined in the Water Resources Management Plan. This includes the requirements to improve supply resilience from a 1 in 200 years to a 1 in 500 years scenario for Level 4 drought plan restrictions by 2040. The overall result of the baseline demand forecast on normal year Distribution Input (DI) is that DI is forecast to increase to from 473.38 M/d (base year) to 493.51M/d in 2049/50.

Therefore, the preferred option will result in building greater resilience into the supply of water in Essex, but also will provide a potential opportunity in the future to expand output up to 13M/d, dependent on Environment Agency license allowances and the yield from the existing borehole.

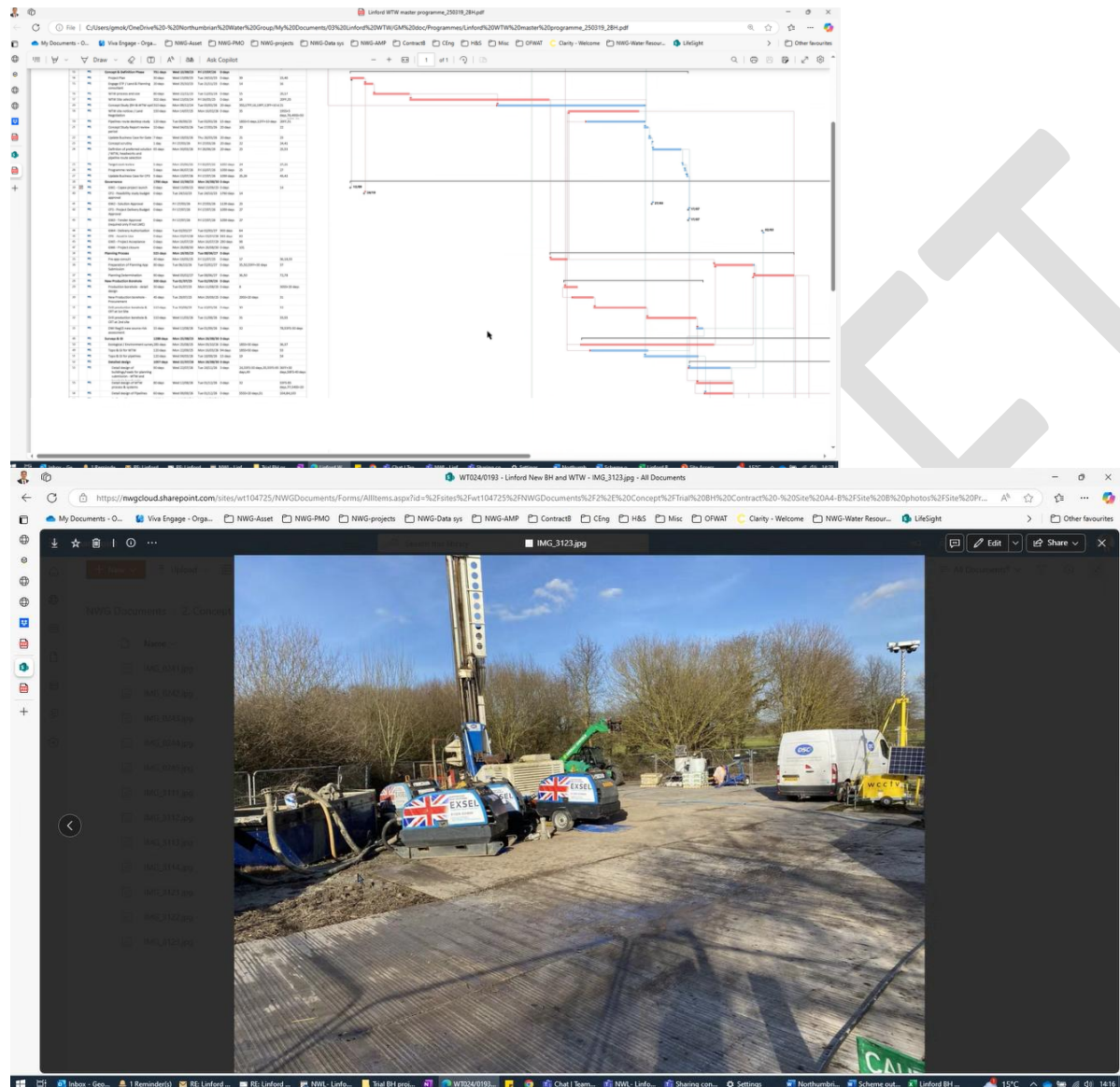
Table 1: Recommended Option Summary Table

Metric	Value	Source
Recommended Option Cost Estimate	£34,199,927.22	Mott's quote - July 2023
AMSG Annual Baseline Plan	£0	No allocation of funding in the Locked Down MTP (May 2023) as this project has been agreed for early release funding in late May 2023.
Regulatory Obligation	Yes	OFWAT & DWI commitment
Obligation Completion Date	31 st March 2027	Deadline outlined in the PR24 WRMP and committed to the DWI.
Regulatory Financial Penalty	£2.7M (based on estimated cost of project)	





PCD Data Assurance Feedback



PCD Data Assurance Feedback

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NWL ANNUAL PERFORMANCE REPORT 2024/25

CONTENT TEMPLATE

Outcome	We are resilient and provide clean drinking water and effective sewerage services; now, and for future generations
Measure	Linford WTW and Borehole: Completion of detailed design and securing land lease agreements.
Performance 2024/25 (figures)	50% Land lease agreement in place for borehole which allowed pilot borehole to be drilled and tested by March 2025. Detailed design of new WTW completed which allowed site selection process to be progressed.
Our promise 2024/25 (figures)	100%
Was performance met	No, land lease agreement not yet in place for new wtw. Site selection and planning process both need to be completed prior to land negotiation.
Reward/Penalty (£)	No.
Content provider	Daniel WilsonMichael Gray / Will Robinson
Content reviewer	Phil Hicks / Katie Davis
ELT approver	Kieran Ingram / Monisha Gower

CONTENT

- Explain measure (see previous report) and provide narrative to reflect 2024/25 overall performance, including key pieces of work, new developments, and issues faced.
- Explain why the measure was met or why it was not. Where performance is poor, can you specify anything innovative we are doing to turn performance around i.e. better use of data or smart technology?
- Include the impact on customers, especially where we have not met our performance target.
- Can you include how we fair compared to the rest of the industry? What are the leading companies doing in this area and can we at least match (or better them)? Can we highlight anything that differentiates us / makes us stand out?
- Include wider story to be included in Annual Report.
- Please use the Company style guide on writing style for report.

Page 1 of 3878 wordsEnglish (United Kingdom)

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Inbox - G...1 Remind...RE Linfor...RE Linfor...100% Lin...APR reportLinford...Chat | Tea...NWL, Lin...Sharing c...SettingsNorthum...Scheme...Download...Linford B...Site Ass...FTSE 1...14:39

A screenshot of a Windows 10 desktop environment. A large, light gray 'DRAFT' watermark is oriented diagonally across the center of the screen. The taskbar at the bottom is active, showing icons for various applications: Microsoft Edge, File Explorer, and several instances of Google Chrome. One Chrome window is titled 'C:\Users\user\Documents' and displays a file explorer view. Other open windows include 'LinkedIn', 'Email', and 'Display Settings'. The system tray on the right shows the date and time as '15/06/2020 15:00'.

PCD Data Assurance Feedback

AutoSave Final tables 10P to 10H.xlsx Confidential Saved George Mok

File Home Insert Page Layout Formulas Data Review View Automate Help

Clipboard Font Paragraph Styles

Normal 2.2 Normal 2.3.2 Normal 3

Normal 8.2 Validation error Normal

Insert Delete Format Cells Editing

Analysis Data Sensitivity Add-ins

Comments Share

C57 Detailed design, planning and pilot borehole drilling to deliver a 7Ml/d groundwater scheme

Component 12	Per capita consumption reduction	l/h/l (cum.)	2	0.10	0.00	0.0%	0	0%	100.19
Component 13	Leakage reduction	Ml/d (cum.)	3	0.173	0.000	0.0%	0	0%	100.20

Northumbrian Water

Scheme 1	Cost 2022-25, £m
New Linford WTWs and borehole	1.5

Component	Name	Unit	decimal places	Component level at completion	2023-24		2024-25		RAG & reference
					Component level to date	Percentage complete	Component level to date	Percentage complete	
Component 1	Detailed design, planning and pilot borehole drilling to deliver a 7Ml/d groundwater scheme	%	0	100%	12%	12.1%	50%	50%	100.21
Component 2	Overall project earned value	%	1	11.8%	1.4%	12.1%	8.5%	72%	100.22
Component 3	WAFU benefits Essex WRZ supply-demand balance	Ml/d	2	6.75	0.00	0.0%	0.00	0%	100.23

Schemes 2, 3, 4	Cost 2022-25, £m
Suffolk Strategic Network and Storage Enhancements Detailed Design, North Suffolk Winter Storage Reservoir Detailed Design and Lowestoft Reuse Detailed Design	21.22

Component	Name	Unit	decimal places	Component level at completion	2023-24		2024-25		RAG & reference
					Component level to date	Percentage complete	Component level to date	Percentage complete	
Component 1	Detailed design and planning (Suffolk Strategic Network and Storage Enhancements Detailed Design)	% complete	0	100%	30%	30.0%	70%	70%	100.24
Component 2	Detailed design and planning (North Suffolk Winter Storage Reservoir Detailed Design)	% complete	0	100%	0%	0.0%	70%	70%	100.25

Ready Accessibility Investigate

10P 10Q 10H

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