

**Appendix 11e:
Generating value from
Yorkshire Water's land
holdings September 2016**

KeldaGroup



GENERATING VALUE FROM YORKSHIRE WATER'S LAND HOLDINGS

A paper from WSP | Parsons
Brinckerhoff and Knight Frank

September 2016



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APPENDIX - LAND OPPORTUNITIES LONG LIST



EXECUTIVE SUMMARY

WSP | Parsons Brinckerhoff and Knight Frank worked with the Kelda Markets team and Yorkshire Water's Land and Property team to identify a small number of specific projects to deliver extra value from its land holdings.

We've grouped our recommendations into twelve specific projects shown opposite. We recommend that Yorkshire Water should aim to have made substantial progress on at least six of these projects by February 2017, and substantial progress on all twelve by September 2017. This will require a bias for action. Four actions will support implementation:

- 1. A Steering Group drawn from across the business with the mandate, accountability and time to drive implementation of these projects.** This group could include an executive sponsor, together with representatives from Land & Property, Asset Strategy, Asset Planning, Service Delivery, Communications and Security. The individual members could appoint other representatives for individual projects while maintaining overall accountability for implementation.
- 2. Completion of the land strategy** – This could be one of the first actions of the programme team. It should give clarity on why Yorkshire Water owns land, expected financial and ecosystem-service returns from land together with practical principles on when land should be held by operations teams and when it should be considered for short /medium / long term alternative uses – or sold.
- 3. A clear, once-through, process for taking and implementing informed decisions.** This process should include both commercial returns and also consideration of wider ecosystem-service benefits from management of the firm's land.
- 4. Sufficient, competent, resources to implement the recommendations.** Yorkshire Water should be confident that it has the time and resources to implement those recommendations it agrees in a timely way. This resource could be internal Kelda teams, external teams commissioned to deliver particular work packages or tendering and outsourcing non-core developments to third parties. In many cases, delivery of these projects will be faster by subcontracting implementation to specialist third parties, leaving Yorkshire Water free to focus on core business.

Twelve specific projects to deliver value from Yorkshire Water's land

1. Rapid review of ten operational sites to identify alternative land value.
2. Relocate operational sites as part of a disposal strategy
3. Commercialise gateway and recreation sites
4. Restructure agricultural tenancies to deliver additional value
5. Deliver flood risk alleviation through scaling-up peat restoration
6. Use operational land for grid-scale energy storage
7. Deploy solar power at scale on land and reservoirs
8. Sell redundant biological filter aggregate and unlock spare land
9. Develop education centres that also bring commercial revenues
10. Develop a commercial masterplan & strategy for Esholt
11. Maximise value of Normanton Depot for operational resilience
12. Sensitively Develop Tourism and Recreation Hubs



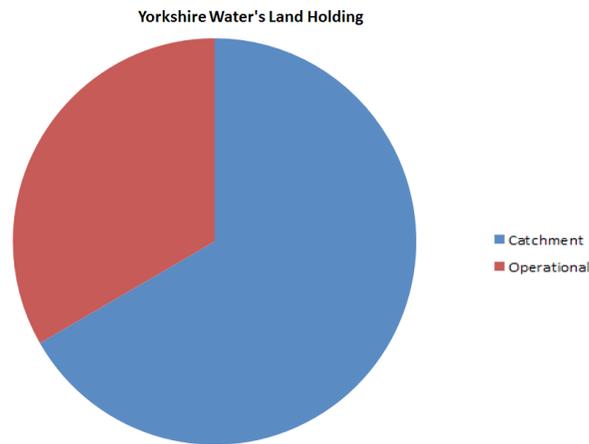
THIS PAPER PROVIDES 12 PRIORITY ACTIONS WHICH KELDA GROUP COULD TAKE TO RELEASE SIGNIFICANT VALUE FROM ITS LAND HOLDINGS, WHILE ALSO SUPPORTING STRATEGIC BUSINESS OBJECTIVES

This paper provides 12 priority actions which Kelda Group could take to release significant value from Yorkshire Water's land holdings, while also supporting Strategic Business Objectives (SBOs).

Yorkshire Water owns around 30,000 hectares of land across the region¹⁾. This paper takes a high level view across the land holdings and makes 12 high level, but specific recommendations on how to deliver additional value from this land over the next 5 years. The review was carried out in August 2016 and was led by specialist advisors, WSP | Parson Brinckerhoff and Knight Frank LLP. It's based on four main areas:

- A review of Yorkshire Water's land holdings
- Kelda and Yorkshire Water's long term strategy – both existing SBOs and also the business' emerging post-2020 strategy
- Discussions with Kelda's markets team and Yorkshire Water's land and property team, and a range of others in the business. Through this we identified the key priorities for the business, practical experience of property investments and other work underway which these 12 projects could build on.
- WSP | Parsons Brinckerhoff and Knight Frank's knowledge of best practice for property management, the experience of other large landowners and long term megatrends affecting the water sector.

We considered a large number of potential actions to develop our short list of 12 actions. The full list is contained in the appendix to this report.



¹⁾ The wider Kelda Group owns additional land but this was outside of the scope of this review.

A CLEAR PROCESS WILL MAKE IMPLEMENTATION OF THESE RECOMMENDATIONS AND FUTURE RECOMMENDATIONS MUCH EASIER

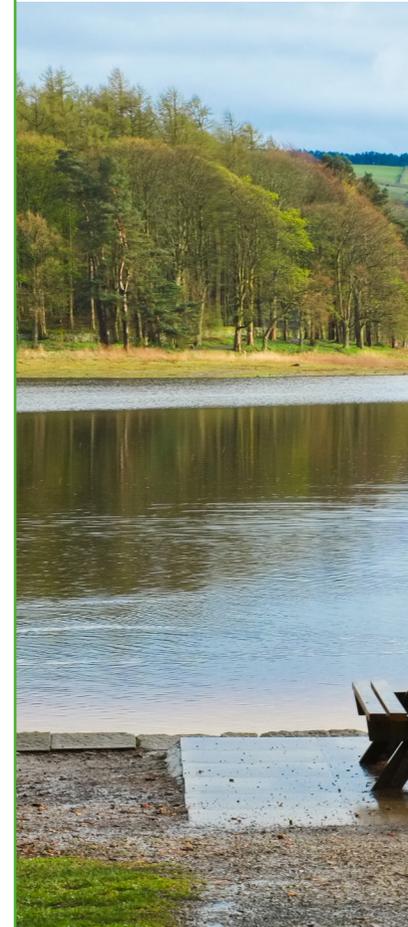
Successful execution of all strategies is dependent on three key pre-requisites:

1. Excellent ideas which support business strategy
2. An ability to build a strong commitment and buy in
3. Sufficient resources - including time and finance.

The ideas that this project has identified have, in many cases, built on the strong ideas that already exist in the business. This makes sense as Kelda employs bright staff who have excellent ideas and who think and care deeply about their company and its strategy.

Successful execution of these ideas will be made easier by the following:

1. **A Steering Group drawn from across the business with the mandate, accountability and time to drive implementation of these projects.** This group could include an executive sponsor, together with representatives from Land & Property, Asset Strategy, Asset Planning, Service Delivery, Communications and Security. The individual members could appoint other representatives for individual projects while maintaining overall accountability for implementation.
2. **Completion of the land strategy** – This could be one of the first actions of the programme team. It should give clarity on why Yorkshire Water owns land, expected financial and ecosystem-service returns from land together with practical principles on when land should be held by operations teams and when it should be considered for short / medium / long term alternative uses – or sold.
3. **A clear, once-through, process for taking and implementing informed decisions.** This process should include both commercial returns and also consideration of wider ecosystem-service benefits from management of the firm's land.
4. **Sufficient, competent, resources to implement the recommendations.** Yorkshire Water should be confident that it has the time and resources to implement those recommendations it agrees in a timely way. This resource could be internal Kelda teams, external teams commissioned to deliver particular work packages or tendering and outsourcing non-core developments to third parties. In many cases, delivery of these projects will be faster by subcontracting implementation to specialist third parties, leaving Yorkshire Water free to focus on core business.



KEY OPPORTUNITY 1 - RAPID REVIEW OF TEN OPERATIONAL SITES TO IDENTIFY ALTERNATIVE LAND VALUE

THE OPPORTUNITY IN MORE DETAIL

Many of Yorkshire Water's operational sites are large and contain land that isn't used for water or wastewater operations today. They may be needed for operations in the short, medium or long term. These sites may produce better value for the business – by leasing spare land for other uses in the short or medium term or by identifying land that is indeed surplus to requirements.

This project follows a practical, rapid and systematic exercise to agree clear options at ten initial sites. It would serve as an enabler of other opportunities in this report and ensure rapid action and results. It would deliver four things:

1. Identification of what land is available at each site and when
2. The commercial and ecosystem-service value for different uses of the available land
3. What the operational business would be charged if a market rent was applied to the whole site.
4. Agreement on action for the ten sites together with practical lessons for extending this to others.

BARRIERS TO OVERCOME

Clear ground rules on the business' expectations for management of Yorkshire Water's land.

A clear, once through, decision making process for land holdings which then leads to action.

A clear understanding of different teams' needs from Yorkshire Water's property and on the reasons for owning land.



POTENTIAL SITES

- Castleford STW
- Normanton STW
- Allerton
- Acomb WTW, York
- Ilkley STW
- Naburn STW
- Esholt STW
- Knostrop STW
- Old Whittington STW
- Old Walk

BUSINESS CASE

Benefit to Kelda

- It was suggested that Castleford STW alone could release land worth £4m.
- See opportunities 6&7 for the value of semi-flexible medium-term rental of operational land for energy storage and solar.

Carrying out a fast review of ten sites would:

- Practically test the opportunity and barriers to releasing spare land
- Develop and test a practical set of ground rules for land holdings
- Integrate ecosystem services into property decision-making in a practical way.
- Provide the basis for a wider roll out of the exercise across all operational sites.

NEXT STEPS

- Form a practical team with accountability for making decisions.
- Confirm initial sites for review.
- Establish ground rules for land holdings with exec sign off.
- Develop a practical process for the site review. Identify land that is definitely spare and land which could be spare subject to further specific review. Identify options for using the spare land and the potential value that could be released.
- Carry out the exercise with an aim that the first list of ten sites is reviewed within six months (ideally faster).

KEY OPPORTUNITY 2 - RELOCATE OPERATIONAL SITES AS PART OF A DISPOSAL STRATEGY

THE OPPORTUNITY IN MORE DETAIL

The Operational Portfolio has sites across the region and often within areas of potential development. The opportunity is to consider the lifetime of key assets and balance any reinvestment programme with replacement or combining with other operational sites.

This will assist the business in reviewing the importance of assets and ensuring that they are replaced in the most cost efficient way whilst maximising income generation.

The re-use opportunities of sites is not limited, but we have highlighted a few potential sites. Residential will be the highest value re-use, but not appropriate in all areas. A site specific opportunity would be the potential for a marina on the River Ouse.

The outcome for each site will depend on various factors including planning, costs of decommissioning and clean up, but provides an exit strategy for the decommissioning of sites and additional disposal income. The intention is that the early consideration of subsequent uses will ensure sites become an opportunity not a liability.

EXAMPLES OF SUCCESSFUL SCHEMES

- **Thames Water – Slyfield**
Relocation of a sewage treatment plant to unlock a brownfield mixed use development to include 1000 homes.

BARRIERS TO OVERCOME

1. There would need to be buy in from the operational business to facilitate the lifecycle planning of sites to establish a pipeline of sites.
2. Town and Country Planning
3. Contamination issues
4. Acquisition of sites and rights for relocation



POTENTIAL SITES

Residential

- Bank Lane, Holmfirth
- Heslington, York
- Headingley, Leeds
- Gilstead WTW
- Ilkley STW (diversion of flows to an expanded Ben Rhydding STW)
- Ripon (as part of redevelopment of brownfield site, due to constrained access)
- Springhill Lane, Scarborough

Industrial and Logistics

Knostrop, Leeds
Normanton, Wakefield Europort

Potential Marina/ Residential

River Ouse at Fulford, York

BUSINESS CASE

The business case for this opportunity is highly site-specific. We would see the process to developing a solid business case as follows:

1. Provisional operational sign off
This would be a formal process for sign off ahead of making any steps towards redevelopment.
2. Promotion Planning consent
Upon gaining sign off from the operational business Keyland would be introduced to commence the procedure for promoting the site and gaining a favourable planning consent for redevelopment.
3. Final operational sign off
At this point the business would need to provide an irrevocable sign off.
4. Disposal
The disposal could be undertaken pre or post decommissioning and this would depend on the value and risk to a purchaser.

The expectation is that the sites could be decommissioned more economically by Yorkshire Water than a purchaser and offering a clear site would be favoured by the market.

NEXT STEPS

- Progress in line with the overarching approach as outlined in the executive summary, including the land strategy and classification exercise.
- Identify potential sites from classification exercise and review individual site strategy
- Review Town and Country Planning including constraints such as flooding etc

KEY OPPORTUNITY 3 - COMMERCIALISE GATEWAY AND RECREATION SITES

THE OPPORTUNITY IN MORE DETAIL

The recreation strategy has categorised all visitor sites based on the level of provision ranging from a Gateway Site with full provision through to an Adventure site in a remote area with very limited provisions for visitors. The opportunity is to focus on the enhanced delivery at Gateway and Recreational Sites to preserve and enhance the on-going investment programme with the opportunity for commercial returns.

The current commercial return is based on the letting of pitches for ice cream vendors. The Tophill Low Nature Reserve charges for car parking access to the reserve.

There is an opportunity to make more use of the existing facilities with consideration of the following:

1. Car parking charges (see business case)
2. Vending pitches
3. Events – use of car parking, facilities and adjoining managed space

EXAMPLES OF SUCCESSFUL SCHEMES

Severn Trent Water currently generate over £750,000 from their visitor car parks, using appropriate price branding and offering annual permits on sites where repeat visits are popular.

Anglian Water, Pitsford Water Park - A venue for walking, cycling, fishing, sailing and birdwatching in partnership with Northamptonshire CC's Brixworth Country Park, 3 car parks with £3/day charge or annual passes.

BARRIERS TO OVERCOME

1. There is an internal resistance at Yorkshire Water to charging for car parking but this could be limited to selected gateway/recreational sites with an improved infrastructure 'offer'
2. There is a resistance or expected resistance from Yorkshire water customers to paying for car parking.
3. There is potential resistance from local businesses, as they may consider that people will not visit the areas if car park charges are made.
4. Charges may lead people to park inappropriately on roadsides and gateways causing hazards on the highways and inconvenience to local people



POTENTIAL SITES

As outlined within the document 'Our Strategy for Recreation on Land and Water'
→ Gateway Sites (Swinsty/ Fewston/ Thruscross, Langsett, Scammonden and Deanhead,
→ Recreation Sites

BUSINESS CASE

The business case will need to reflect existing facilities and to justify future improvements. The charges ensure that visitors 'value' the surroundings and the facilities provided.

As an example, we have estimated that Fewston Reservoir Car Park has around 150 car parking spaces. This equates to 54,750 available spaces in a year.

If just 20% of these are filled at £2.50 per car per day then this would equate to an income of £27,375 per annum.

A lot of the barriers will be overcome on setting the charges appropriately for the site and the facilities on offer.

On the basis of around 25 potential sites, at an average income of £15,000 this would deliver £375,000 per annum. There would be an initial cost of installing the equipment and an on-going cost of emptying and monitoring machines, which can be undertaken along with the existing site management. This could potentially fund a greater Yorkshire Water presence on the ground, which would be positive.

We would suggest consideration is given to ideas to promote visits to other sites, perhaps by the provision of 'free passes' at urban education centres to visit and enjoy rural recreational sites. This would improve the diversity of visitors to rural sites.

NEXT STEPS

- Review sites
- Include counters on sites to assess demand and likely income from car parking etc
- Develop a communication strategy for stakeholders and locals
- Implement charges
- Implement on-going review and enhancement of facilities

KEY OPPORTUNITY 4 - RESTRUCTURE AGRICULTURAL TENANCIES TO DELIVER ADDITIONAL VALUE

THE OPPORTUNITY IN MORE DETAIL

It is understood that the majority of the farm tenancies are let on historic Agricultural Holdings Act (AHA) leases, which provide for onerous maintenance terms on the landlord, restricted incomes and have a historic focus on agriculture.

The opportunity is to review the farms portfolio to look for new options:

- Restructuring of secure and onerous AHA tenancies
- Rent increases (until opportunity arises for restructuring) – often the perception is that rents are significantly reduced from the market due to the terms placed on the tenants from water companies, but in many cases the obligations are no higher than the statutory obligations, particularly on designated sites.
- Identify diversification opportunities and existing occupiers that can deliver higher returns

EXAMPLES OF SUCCESSFUL SCHEMES

Knight Frank have recently completed the surrender of an AHA and re letting on a modern commercial Farm Business Tenancy (FBT) on a 600 acre upland farm. The surrender was paid out on the basis of an uplift over the first three years of a new tenancy.

Existing rent : £5,500 per annum

New rent £16,000 per annum

Uplift £10,500 per annum

Paid to outgoing tenant - £16,500 (as 50% of the first three year uplift)

Return to landlord

- £88,500 uplift on rent over the ten year term
- Reduced maintenance obligations
- A farm in better stewardship
- Modern lease terms
- Opportunity to retain access and ability to undertake catchment improvement works e.g. grip blocking on blanket bog
- Certainty on vacant possession
- Opportunity to secure tenants looking to diversify and enhance incomes

BARRIERS TO OVERCOME

1. The existing tenants may not be willing or in a position to cooperate. The challenge with a review of this kind is to understand the tenants' current position and tailor the deal accordingly.
2. The restrictive AHA means that if tenants are not willing to consider a proposal they are well protected. There are pressure points for the landlord, but these need to be used cautiously.
3. Stakeholder management – any change may attract attention and this needs to be managed

POTENTIAL SITES

Farms across the portfolio

BUSINESS CASE

The worked example provides the business case and delivers:

- Capital growth
- Increased revenue
- Improved lease terms
- Limits liabilities on maintenance
- Reduces day to day management of repairs etc
- Delivers a clear succession plan for the farms portfolio
- The potential uncertainty around Brexit and future support of UK farming will provide a good opportunity to discuss alternative options with existing tenants.
- The approach to farming tenants needs to be considered carefully to encourage them to open up and consider new opportunities as often they are resistant to change.
- The input of an external agent assists in having what is almost an independent discussion with tenants to encourage a full and frank exchange.

NEXT STEPS

A review of the farm portfolio to identify opportunities highlighting:

- Tenants looking to retire
- Tenants with 'successors' with potential to do a deal
- Holdings with increased income potential
- Holdings with significant maintenance costs

This will then provide the ability to build a strategy to unlocking value from the farms portfolio.

KEY OPPORTUNITY 5 - DELIVER FLOOD RISK ALLEVIATION THROUGH PEAT UPLAND RESTORATION

THE OPPORTUNITY IN MORE DETAIL

Yorkshire's iconic uplands have been damaged by industrial pollution and damaging land management and they require restoration to protect their landscape, biodiversity and carbon sequestration potential. They also offer the potential to alleviate downstream flood risks which are a major concern for customers in hotspots such as Calderdale. Yorkshire Water should build upon its existing catchment management efforts and adopt the nascent Peatland Code to deliver a system of **Payments for Yorkshire Ecosystems Services**. Large Yorkshire businesses would be invited to contribute to funding upland management efforts as part of their corporate responsibility/community investments but also where they may directly benefit as owners of downstream assets in flood risk areas (e.g. Asda, Morrisons, Pace and various others).

Yorkshire Water has traditionally managed its upland catchment land, and the farm tenants thereon, for the purposes of protecting water quality in its reservoirs. More recently, it has also worked as part of the 'Moors for the Future' partnership to restore the condition of peat uplands on its land, to provide multiple benefits. Moors for the Future has been successful in attracting European funding for improvements to SSSIs but with additional funding, more could be done and directed at flood risk alleviation.

Catchment management activities can reduce operational costs for water treatment. While Yorkshire Water has no legal responsibility in relation to alleviation of flood risk downstream of its catchment land, it is coming under increasing pressure to contribute in key areas such as Calderdale and Keighley. In addition, Yorkshire Water (like many businesses in the region) has suffered significant losses and increased insurance costs as a result of recent flooding episodes. It would therefore benefit from further upland management activities which include attenuation of flows.

The Peatland Code is a new mechanism to provide certified restoration projects. It does not deliver certified emission reductions for 'carbon trading', however, it provides a mechanism for attracting funding from businesses who are interested in contributing to the delivery of 'ecosystem services' as part of their corporate responsibility investment programmes.

BARRIERS TO OVERCOME

- Negotiations and permissions from holders of shooting rights on uplands. Peat restoration (and flow attenuation) is generally contrary to shooting interests.
- Negotiations, permissions and involvement of tenant farmers.
- Demonstration of downstream benefits for communities and businesses.
- Securing funding from within Kelda and other Yorkshire businesses. This might be justified on grounds of operational cost reduction (subject to funding through PR process) as well as public relations, asset flood resilience and ecosystem services.
- Availability of other funding from Defra and subject to the outcome of the National Flood Resilience Review.

POTENTIAL SITES

The greatest benefits may be from restoring upland catchment around Calderdale and Keighley: areas of major flood damage and disruption in recent years and with multiple Yorkshire Water operational assets and other businesses on the downstream floodplain. The focus should therefore be:

- Turley Holes & Higher House Moor
- Heptonstall Moor
- Ovenden Moor
- Stanbury/Howarth Moor
- Keighley/Oakworth Moor
- Rombald's Moor

BUSINESS CASE

Benefit to Kelda

- Increased engagement with customers and partners. Public relations benefits from tackling flood risk in hotspots such as Calderdale.
- Reduced operational costs due to improved water quality (particularly colour) in reservoirs.
- Potential reduction in costs of downstream flood damage at operational sites: service mitigation, repair of assets and insurance premiums. The December 2015 flood affected 130 operational sites costing millions of pounds and increasing insurance premiums by £2m per year.
- Working with other big Yorkshire businesses to secure wider funding to cover costs of scaling-up peat upland restoration.

NEXT STEPS

- Form a project team including Yorkshire Water's existing experts in upland catchment management and flood risk.
- Discuss with Environment Agency catchment leads.
- Involve YW/Kelda staff on business engagement and begin reaching out to potential scheme participants.
- Coordinate and launch marketing to maximise public relations benefits.
- Secure funding from at least one other big Yorkshire Business for a PYES pilot scheme.

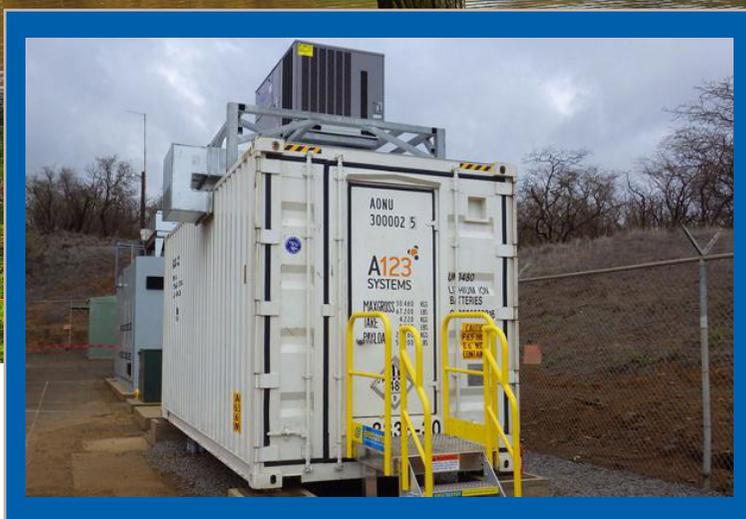
KEY OPPORTUNITY 6 - USE OPERATIONAL LAND FOR GRID-SCALE ENERGY STORAGE

THE OPPORTUNITY IN MORE DETAIL

Yorkshire Water has large areas of spare land on its secure operational sites which often also benefit from good grid connections, industrial settings with low planning pressures and HGV access – each making them perfect locations for the growing market for grid-scale energy storage. Energy storage developers (e.g. BELECTRIC) are actively seeking sites to locate containerised batteries and Yorkshire Water could lease areas of operational sites for this purpose.

As UK electricity is decarbonised using intermittent forms of renewable generation, and peak demand is increased by electrification of heating and transport systems, the development of grid-scale energy storage is forecast to become a key factor in balancing the UK grid. In March 2016, the National Infrastructure Commission released its Smart Power report setting a target of 15GW of new storage capacity by 2030. While pumped-storage facilities such as 'Electric Mountain' in Wales offer the largest capacity, there are few suitable locations. As the performance, capacity and cost of large-scale batteries continues to improve, this is set to become the big growth area.

The opportunity is to provide energy storage for feeding back into the grid. An independent developer is best placed to attract investment in this technology and also administrate the multiple (potentially stacked) incentive revenue streams. The lease income for Yorkshire Water is likely to be moderate and dependent on the area of land available, but this opportunity may be 'without cost' - able to fit flexibility around site operations without disruption. Yorkshire Water is already understood to be well equipped to provide demand-reduction response (e.g. STOR) through turning off pumping/treatment assets. However, an alternative opportunity is for battery storage to be installed in order to take operational sites off-grid during peak periods.



EXAMPLES OF SUCCESSFUL SCHEMES

- ABB & UK Power Networks – 0.2MW Li-ion battery in Hemsby, Norfolk
- Smarter Network Storage project – 6MW Li-ion battery in Leighton Buzzard, Bedfordshire (Belectric)
- Northern Power Grid – 6 grid-storage sites including 2.5MW at Rise Carr substation, Darlington
- AES UK – 10 MW Kilroot Battery Array

BARRIERS TO OVERCOME

The main barrier will be to agree suitable locations on operational sites (at least 0.4 ha) which can be released for this use for a long period (up to 25 years). The nature of containerised battery storage does however allow a degree of flexibility since the batteries could be moved on/between Yorkshire Water sites with relative ease.

POTENTIAL SITES

- Many operational sites – with existing strong grid connections particularly sewage treatment works – including:
- Esholt STW
 - Huddersfield STW complex
 - Knostrop STW

BUSINESS CASE

Benefit to Kelda

- Lease of land to an energy storage developer means essentially no cost to Yorkshire Water.
- Lease income from spare parcels of low value land at operational sites. This market is emerging but suitable sites may command annual rents of £25k -£65k per hectare (£268k - £669k over 25 years, NPV with 9% DR).
- Flexibility to fit and move around operational requirements on one or more sites.

NEXT STEPS

- Establish a small project team
- Hold conversations with developers to position Yorkshire Water for this and explore the requirements and commercial model.
- Identify suitable packages of sites on operational land.
- Package up a number of suitable sites and tender for developers.

KEY OPPORTUNITY 7 - DEPLOY SOLAR POWER AT SCALE ON LAND AND RESERVOIRS

THE OPPORTUNITY IN MORE DETAIL

Deploying large scale solar power at scale on Kelda's sites is the largest renewable energy opportunity for the business today. The business has planning permission for solar development at Elvington water treatment works and has done some limited research on other potential sites.

Large scale solar development will work best at sites where:

- **Planning permission** can be obtained. Applications on already developed sites – such as water and wastewater plants - are particularly attractive as a result.
- **There is an on-site power demand** which will take the majority of energy generated. This is generally a pre-requisite for successful developments now that government Feed in Tariffs have reduced.
- **Security is good** – both for the panels and also where access to the panels can be provided while also giving security to operational parts of the sites.
- **A site can be allocated to solar for over 15 years** – ideally longer (although panels could be moved on or even between sites, to allow flexibility in future operational plans).

Floating solar developments on reservoirs are generally more expensive to install initially, but have reported benefits from shading the water such as lower evaporation and reduced algal blooms. They are also more efficient at generation due to cooling from the water. Reservoirs offer large, open surface areas supporting development at scale if suitable water bodies are available.

EXAMPLES OF SUCCESSFUL SCHEMES

Many other UK water companies have successfully installed solar schemes on their sites – both operational sites and on reservoirs.

- Severn Trent Water partnered with Lark Energy and planned to install 10MW across 19 operational sites in 2016.
- United Utilities are developing ground-mounted and floating solar projects across their operational sites.
- Thames Water has solar installations across 41 operational sites including Europe's largest floating solar installation on its reservoir near Heathrow (developed by Lightsource).

BARRIERS TO OVERCOME

Kelda has struggled to deploy renewable energy in the past because of financial hurdles, negative publicity from customers surrounding wind developments and staff constraints. These barriers could largely be overcome by tendering a package of sites to commercial solar developers with Kelda getting lower cost energy and or/a return from the land, with the developer receiving income from electricity sales and Feed in Tariffs.

There may be security concerns in relation to the need for maintenance access at operational sites (particularly drinking water sites); however, this may be resolved by providing separate secure-accessed areas of the site. The main routine maintenance requirement is for grass cutting to prevent shading of panels. Otherwise, only annual checks are needed as well as responding to any problems which are identified by remote telemetry.

POTENTIAL SITES

The potential sites we've identified are operational sites, which appear to have large areas of spare land (estimates in brackets), and also reservoirs near to operational sites with limited recreational/landscape value.

Ground-mounted

- Esholt STW (21ha)
- Elvington (12ha)
- Don Valley STW (9ha)
- Castleford STW (5.7ha)
- Deighton STW (5.5ha)
- Normanton STW (5.4ha)
- Bingley STW (5.4ha)
- Nayburn STW (5ha)
- Keighley STW (4.5ha)
- Cooper Bridge STW (3.2ha)

Floating

- Albert WTW (2.5ha)
- Blackmoor Foot reservoir (15ha if an 'island' of panels is installed in the centre)
- Bransholme drainage reservoir (3.2ha)

BUSINESS CASE

The most common approach to solar development today involves commissioning a specialist third party to develop, operate and maintain the panels, supplying electricity at a low cost to Kelda.

Benefit to Kelda

- No up-front capital cost – the developer would pay these.
- Lower cost electricity – typically 2p/kWh below market price.
- Deployment across the above sites might cover up to 95 hectares, providing around 48MW of peak generation capacity. Even if only half that could be realised, this would reduce Kelda's energy bills by around £380,000 each year (saving over 25 years of £4m, NPV with 9% DR).
- Lower greenhouse gas emissions – around 10,000 tonnes CO₂e pa.

NEXT STEPS

- Establish a small project team.
- Agree to pursue solar and key constraints.
- Identify two initial packages of sites suitable for solar – possibly split into land and reservoir.
- Hold initial conversations with developers to draw up long list of tenderers.
- Issue tender package and let contract.

KEY OPPORTUNITY 8 - SELL REDUNDANT BIOLOGICAL FILTER AGGREGATE AND UNLOCK SPARE LAND

THE OPPORTUNITY IN MORE DETAIL

Yorkshire Water has large numbers of semi-decommissioned wastewater filter beds. These filter beds were typically filled with large volumes of premium quality river gravel and high specification furnace slag and remain in the beds today. As at Esholt, Kelda could sell this aggregate to an aggregates business, either on a standalone basis or as part of site redevelopment.

As well as raising revenue for Kelda, these schemes will reduce the safety risk from redundant assets and help improve the sustainability of Yorkshire's construction industry by providing a medium-term stream of secondary aggregates.

EXAMPLES OF SUCCESSFUL SCHEMES

At Esholt, Keyland has contracted with Thompsons of Prudhoe to demolish, recycle and reclaim the wastewater filter beds. This will include reclamation of over 400,000 tonnes of aggregate from the filter beds at an approximate value of £2.50 per tonne to Kelda i.e. £1m total.

By the end of 2015/16, 40,000 tonnes had been sold for reuse, of which about 25,000 tonnes was used in the construction of the new Apperley Bridge Rail Station. Once the last of the material has been recovered, the large footprint of the redundant filter beds will be prepared for redevelopment.

BARRIERS TO OVERCOME

Obtaining a good knowledge of the semi decommissioned filter beds which exist across the business.

Speed of execution, particularly if filter bed excavation can only be carried out as part of wider redevelopment.



POTENTIAL SITES

- Knostrop (potentially partner with Tarmac given their site is next door. Tarmac is also actively developing its own circular economy strategy at the moment, so this could represent a quick win for both Kelda and Tarmac.
- Huddersfield STW complex – especially the Colne Bridge facility

BUSINESS CASE

As at Esholt, contracting with an aggregates firm would provide the best approach

Benefit to Kelda

- Public safety risk reduced through clearance of end of life assets
- No up front capital cost
- Revenue of up to £2.50 per tonne for the aggregates. £1m for aggregate at STWs on the scale of Esholt
- Cleared site, ready for redevelopment and/or reuse
- Support to the Sustainable Resources SBO, particularly where aggregates can be reused on Yorkshire Water construction projects
- Lower cost aggregates as Aggregate Levy (£2 per tonne) doesn't apply to recycled aggregate

NEXT STEPS

- Confirm if the two sites are identified are suitable for reprocessing. Identify two alternative sites right away, if not.
- Review Esholt tender and approach, hold discussions with potential contractors.
- Tender package.
- Develop a full knowledge of potential further sites as part of the land holding update project.

KEY OPPORTUNITY 9 - DEVELOP EDUCATION CENTRES THAT ALSO BRING COMMERCIAL REVENUES

THE OPPORTUNITY IN MORE DETAIL

Yorkshire Water has a clear plan to increase education and awareness of the water cycle and efficient use of water to customers and Yorkshire residents. Ofwat is challenging water companies to engage with customers in more innovative ways.

Today, Yorkshire Water has one education centre operating, at Headingley with two mothballed facilities at Esholt and Ewden. The business aims to expand to ten facilities, located across Yorkshire Water's region. Quick wins include using existing spare meeting facilities, nature sites such as Tophill Low and possibly partnerships with underused properties, such as Langsett Barn.

Developing education centres, in partnership with other commercial ventures would provide a good way to amplify Yorkshire Water's core messages, have larger impact and also spread the cost of the investment. Possible opportunities which could be considered include;

- A facility used for education during the day, and then for wider community use in the evenings and weekends
- An education centre combined with museum, café, activity park and wider recreation.
- Including education as part of the development of other key strategies – such as the recreation strategy and the recommendations in this document for Langsett.
- Engaging adult customers of Yorkshire Water through use of education centre facilities for meetings of local flood groups – which Yorkshire Water has an increasing role in.

EXAMPLES OF SUCCESSFUL SCHEMES

The London Museum of Water and Steam, located in an old waterworks company site in Kew, London provides a showcase for steam engines used to pump water historically, an outdoors recreation centre and an interactive, high quality exhibition on water and wastewater management, run by Thames Water.

The museum is managed by a Trust and underwent a major redevelopment during 2013 - 2014. The project was led by the Trust, and was supported by a £1.8m Heritage Lottery Fund grant, London Borough of Hounslow, Thames Water and numerous charitable trusts, sponsors and individual donors. The project also includes an education programme together with an events and activities programme aimed at a wide audience. It also provides conferencing facilities offers itself as a wedding venue and a café.

In 2014 the museum attracted around 18,500 visitors

BARRIERS TO OVERCOME

Security and H&S concerns at operational sites.

Developing a partnership scheme takes longer and is commercially more complex

Identifying suitable sites and partners.

POTENTIAL SITES

Langsett Reservoir as a recreational partnership

Springhead Pumping Station, Hull possibly as an historic site for a similar operation to London Museum of Water and Steam. This site used to operate as a museum, but closed some years ago.

Partnership with existing educational centres such as Eureka and Magma.

BUSINESS CASE

Benefit to Kelda

- Shared (and potentially lower) costs per visitor
- Higher quality visitor experience
- Higher visitor numbers, and wider engagement with the community
- Supports wider SBOs such as Trusted Company.
- Possible link to Hull's year as the UK City of Culture 2017

NEXT STEPS

- Team currently working on the education strategy considers a wider range of medium term options, in addition to the short term immediate opening of facilities.
- Identify suitable sites and potential business cases for partnership working with others.
- Develop practical roll out (and tender) strategy for end 2017



KEY OPPORTUNITY 10 - DEVELOP A COMMERCIAL MASTERPLAN AND STRATEGY FOR ESHOLT

THE OPPORTUNITY IN MORE DETAIL

Esholt is currently being proposed as an exciting circular economy demonstration site. This Integrated Water and Waste Resource (IWWR) system proposes installing Yorkshire Water's Advanced Thermal Combustion Gasification process on the site. By products from this ATC process – including heat, energy and treated water would then be fed to nearby uses – potentially including a vertical farm (supported by Phillips), a heat network for nearby homes, and other water intensive industry. Technical research using a team from Arup and University of Bradford.

Allied to this, other options could exist for Esholt, including

- Selling the Hall for a different use, or selling this to a specialist conference organiser on sale/leaseback or guaranteeing occupancy for a period of time.
- Sale of non-core land to private sector.
- Solar an/or energy

A clear commercial masterplan and strategy for the site is needed to take these technical plans and apply a clear programme and commercial strategy to execution of idea.



EXAMPLES OF SUCCESSFUL SCHEMES

- Thanet Earth is a large industrial agriculture / plant factory project consortium in the United Kingdom. Located on the Isle of Thanet, in Kent it is the largest greenhouse complex in the UK, covering 90 hectares of land. The glasshouses produce approximately 225 million tomatoes, 16 million peppers and 13 million cucumbers a year, equal to roughly 12, 11 and 8 per cent respectively of Britain's entire annual production of those salad ingredients. The complex is powered by combined heat and power systems that create heat, power and carbon dioxide (which is absorbed by the plants) for the greenhouses. Through a partnership with a Virtual power plant they also export their excess power to the grid and automatically add extra power to the grid at times of peak demand. The process is approximately 20x more productive per hectare than for standard salad farming practices.

BARRIERS TO OVERCOME

- Developing a clear strategy for a large site, particularly given the interest and profile of the site in Kelda's estate.
- The need for a strong, commercial team with dedicated time to deliver and execute the strategy.
- "Perfect being the enemy of the good" in the development of an exciting and high profile project.
- Security and Health & Safety concerns around operational sites.

BUSINESS CASE

Benefit to Kelda

- The team's already spent some time and resources on developing the technical case for the project and estimates that the uplift in land values could be between 20 and 40%.
- Successful delivery of the scheme would provide a worldclass demonstration of circular economy principles, fully support the Sustainable Resources SBO and provide a template that Kelda could apply on other sites.
- Bringing a masterplan and a commercial strategy to the project, plus also considering all of the options for Esholt will help make rapid progress and actually deliver the project through a full range of skills with sufficient time to execute the project.

NEXT STEPS

- Draw together a small team from the business
- Agree the scope of the brief
- Commission a masterplan for the site (including constraints analysis) and develop a strong commercial strategy.
- Depending on the outcome appoint a dedicated commercial team to execute the strategy.

KEY OPPORTUNITY 11 - MAXIMISE VALUE OF NORMANTON DEPOT FOR OPERATIONAL RESILIENCE

THE OPPORTUNITY IN MORE DETAIL

Yorkshire Water own a 21,000 sq ft unit on Foxbridge Way on the Normanton Industrial Estate. It is a modern detached warehouse unit with secure yard. Based at Wakefield Europort this site would continue to be an appealing asset on freehold and leasehold terms.

The opportunity is to consider whether the building is being maximised for the purposes of the storage and distribution of parts.

The options to consider are as follows:

1. Increase use of Normanton to relieve storage on other sites

A move towards consolidating all spares at Normanton could potentially free up storage space on other sites and avoid the business over ordering parts on the basis that any already on site are not accounted for in an inventory system and subsequently risk getting forgotten about.

2. Sale and leaseback

There could be an opportunity for the business to maximise the interest in the Normanton area by releasing capital on a sale and leaseback with terms reflecting the current market.

3. Outsource

The outsourcing of the parts inventory and distribution to a third party logistics provider.

4. Partner with a Business with a similar requirement

To reduce the costs of running and maintaining a dedicated parts inventory and distribution hub these could be offset by finding an suitable partner that covers the same geography and has a similar requirement for parts distribution.

An example could be working with the regional electrical grid provider, Northern PowerGrid, who may have a similar requirement and geographic coverage.

5. Partner and Outsource

A combination of the two would allow the third party provider to optimise the efficiencies created by collaborative storage, inventory management and distribution.

EXAMPLES OF SUCCESSFUL SCHEMES

Ford Motor Company work with Neovia to provide warehouse, distribution and inventory management.

BARRIERS TO OVERCOME

1. Finding a logistics company fit for purposes.
2. Finding an outsourced model that delivers the specific requirements of Yorkshire Water as the requirement is very specific and has controls between parts for clean water and parts for waste

BUSINESS CASE

The opportunity for the business is to maximise the use of Normanton to deliver costs savings from good stock management and release space on other operational sites.

As part of an overarching approach the key will be the buy in from the Service Delivery arm of the business to ensure that the facility is maximised and the inventory is accurate and effective.

The outcome of this will ensure:

1. Stock is managed effectively, ensuring that only parts that are required are ordered
2. Parts left on existing sites are not forgotten and abandoned
3. Free up storage or surplus property from operational sites

This would not preclude the business from releasing capital by means of a sale and lease back of the site to a potential investor. The building is in a popular logistics location and Yorkshire Water would be an excellent and appealing covenant to the market.

NEXT STEPS

- Take the overarching approach to develop a system for Service Delivery to buy into the potential for enhanced use of the Normanton Depot. Review the potential for capital release as part of a leaseback deal.
- Optimise the use of the depot to relieve storage on other sites and improve stock management
- Identify and classify any available property released from the improved use of Normanton and review for other uses.

KEY OPPORTUNITY 12 - SENSITIVELY DEVELOP TOURISM AND RECREATION HUBS

THE OPPORTUNITY IN MORE DETAIL

Yorkshire Water's portfolio includes a significant volume of important landscape and this has been further enhanced by the operational reservoirs that provide a focal point and opportunity for recreation. The ambition would be for the sites to become a 'must do' for visitors to Yorkshire.

The creation of Tourism Hubs within the Yorkshire Water portfolio, will build on the Recreation Strategy to increase and secure incomes and enhance values.

The elements required to make a tourism development include:

1. Accommodation

In order to achieve a successful tourism hub there must be accommodation available to increase the dwell time of visitors.

2. Attraction

There needs to be an attraction. The landscape value will draw visitors, but a clear offering of activities needs to be available to encourage them to stay and spend. The attraction needs to have a focus and market research will dictate which market will be most beneficial to pursue.

3. Services

There must also be sufficient services to cater for the visitors in terms of catering and retail.

On the basis that the tourism hub relies on these three elements we would suggest that a holistic plan is developed to consider how best each of these is delivered.

The delivery of a project like this is best undertaken with partners with a proven track record:

1. Forest Holidays

Forest Holidays was started with co-investment from the Forestry Commission (FC) to maximise the tourism offering within their land ownership. The business remains partly owned by the FC and they are now looking for opportunities outside of the FC portfolio.

2. Zipworld

A more extreme offering is the new 'Zipworld' in Snowdonia, which has revitalised the historic mining town of Blaunau Ffestiniog with the establishment of a thrill seeking theme park including tree top walkways and zipwires through redundant slate caverns. We understand that Zipworld are looking for new opportunities elsewhere in the UK. Perhaps a zipwire across the reservoir or from the dam...

3. Go Ape

Go Ape is a forestry based adventure activity involving tree top climbs, walkways and zip lines. We understand that Yorkshire Water have been approached by Go Ape in the past. As part of a demonstrable plan for a new tourism hub, supported by accommodation, this would be an attractive opportunity. The income proposed by Go Ape at Swinsty was in the region of £80,000 per annum and linked to the turnover on the site. The proposal of a Tourism Hub would help secure key tenants of this kind.

Other recreation activities include – open swimming (policy under review), triathlon training sites, underwater sculpture park (West End Village at Washburn)

POTENTIAL SITES

Washburn Valley reservoirs
Langsett/Underbank Reservoir

EXAMPLES OF SUCCESSFUL SCHEMES

Kielder Water and Forest Park

The Park was established by a Trust made up of Northumbrian Water, Forestry Commission, Calvert Trust Kielder, Northumberland County Council and Kielder Observatory Society with the assistance of lottery funding.

Forest Holidays

Their most recent development includes 60 luxury woodland lodges in the New Forest, Hampshire.

BARRIERS TO OVERCOME

1. Stakeholder management – local residents/ local groups e.g. Washburn Heritage Centre, National Park Authorities
2. Support from internal Yorkshire Water
3. Support from existing users of sites for 'quiet recreation' (requiring sensitive development, restricted to particular areas and preservation of remaining areas)
4. Promote and encourage access, ensure that local businesses are supported and don't perceive adverse competition
5. It is important to manage expectations of stakeholders and interested parties and as such we would make the delivery very much targeted to partners that Yorkshire Water can see value in working with

BUSINESS CASE

The business case for new Tourism Development Hubs has the following benefits

1. Opportunity to work with stakeholders for the promotion and enhancement of visitor facilities
2. Reliance on the delivery from experienced third parties.
3. Proposals would be invited from consortia bringing experienced operators along with investors
4. Support existing farm tenants and underpin diversification
5. Provide increased and sustainable income capital growth
6. Enhanced visitor experience for YW customers
7. Capture non YW customer base visiting Yorkshire

Potential to create two hubs tailored to different markets:

1. Active and recreational (towards extreme) – probably at Langsett and/or Underbank
2. Luxury, landscape, tranquillity and 'light recreation' – probably in the Washburn Valley.

NEXT STEPS

- Develop a clear ambition to become a leader in the sector and undertake market research
- Identify two sites on which individual strategies can be worked up.
- Undertake due diligence on land ownership, occupation and Town & Country Planning Review
- Review with key stakeholders and partners (e.g. National Park authorities, Local authorities)
- Promote opportunity to potential commercial partners
- Confirm masterplan and invite commercial tenders for tenants/operators of facilities.

APPENDIX - LAND OPPORTUNITIES LONG LIST

Category	Specific opportunity
Operational sites	Identify vacant land parcels on operational sites for sale or alternative use
	Relocate entire site from high value to lower value location/site consolidation
	Sell redundant biological filter media
	De-risk wastewater sludge bed and develop wildlife sites
	Increase use of the Normanton depot
Energy	Install large scale solar on land
	Install large scale solar on reservoirs
	Install large scale battery storage on YW land
	Link existing reservoir cascades to provide pumped energy storage
	Exploit minerals and hydrocarbons on/under YW land
	Support landowners to move to short rotation coppicing / miscanthus
	Develop a food waste plant for key cities
Recreation / education	Create an underwater sculpture park
	Develop education centres (with commercial revenue)
	Create an angling academy
	Open water swimming or enclosed pools in reservoirs / triathlon training centre
	Turn remaining 16 residential properties into holiday lets through a third party
	Blackburn Meadows as a tourist attraction
	Support tenants with JVs to expand pay and play facilities at key reservoirs for leisure. Surface water rights
	Commercialise 'gateway' sites with car parking charges
	Events – e.g. festivals and major sports events
	Tourism hub(s) at Langsett and/or Washburn Valley (including multiple recreational opportunities)
	Glamping/ camping/ camping barns
Let existing in-hand fisheries	
Biodiversity / catchment management / agriculture	Use biodiversity offsetting as a way to finance re-wilding
	Support a sphagnum moss grower to support peatland restoration.
	Urban wetlands for redundant centre sites
	Willow herb planting
	Catchment ecosystem services: water quality and upland peat restoration programmes
	Enhance value from farms portfolio: Successions (heat map). Pursue vacant possession. Review age profile (risk and opportunity). Diversification support/ policy – incentive occupiers on business case.
	Partnership working on farms -value –conservation/ farming (added value)
Forestry	Work existing forestry harder
	Recreation/tourism opportunities (above)
Sub leases	Sell telecoms leases as a package
	Storage –transport yards (location specific)
	Container storage locations
	Provide land to support major construction/infrastructure projects: HS2, HS3, Trans Pennine road tunnel
Circular Economy hub	Commercial master plan for Esholt –sell the hall, provide training in education centres
	Green business centres with resource circularity between YW and business/industrial tenants. E.g. provide non-potable process water (treated effluent) and take wastewater flow. Green business centres

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