

**Appendix 11c:  
Yorkshire Water Growth  
Schemes Scenarios - Phase  
1 Report**



# YORKSHIRE WATER

# GROWTH SCHEMES SCENARIO MODELLING

Phase 1 Report – 21<sup>st</sup> May 2018

Version 1.2



# REPORT OVERVIEW

## OBJECTIVES AND SCOPE

Yorkshire Water (YW) have identified a number of growth sites within its area which will be developed in the period 2019-2035 and is considering alternatives to the “conventional” incumbent model; working with third-party companies to share the delivery and operation of the new infrastructure. We have been requested by YW to support in investigating and modelling available approaches.

The purpose of this Phase 1 Report is to provide YW with an overview of the approaches available for developing future growth sites, with particular focus on the resulting TOTEX impact and associated charges between relevant parties.

We have considered the approaches identified in discussion with the Markets team. This is intended to inform the strategic direction and narrow the focus for the next phase of investigation. It is expected that this high-level report will be followed by a more detailed investigation into the four specific sites that have been identified for development in the coming AMPs.

## EXECUTIVE SUMMARY

The Phase 1 investigation has shown that different scenarios give different TOTEX outcomes.

If the objective is to minimise TOTEX, scenario 3b) (self-served NAV) provides the best solution. At this stage this does not consider any geographical constraints, which may limit the attractiveness of this option to a NAV.

Both options 2) and 3a) offer reductions in TOTEX compared to option 1) (incumbent supply). The quantum of the reduction will be proportional to the split between on-site and off-site costs, but option 3a) consistently produces a lower TOTEX outcome for YW.

We created an illustrative model of a 1000-property development in order to apply the various scenarios (see page 9). In this model, a TOTEX reduction of 33% is achieved with scenario 3a), and 3b) transfers all TOTEX from YW.

In practice, the optimal feasible approach will fall somewhere between 3a) and 3b), depending on site-specific conditions.

**Next steps:** To review each of the four proposed developments, further refine the financial model using specific costs (where available) and broadly consider geographic factors that might determine which NAV option is likely to be attractive.

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# CONCLUSIONS

**Fully self-served NAVs (scenario 3b)) present the best option for reducing YW TOTEX, site conditions permitting.**

Between the four scenarios considered, the fully self-served NAV approach (scenario 3b)) most effectively reduces the TOTEX incurred by YW; shifting almost all of it to the NAV company. Once the NAV company has been appointed, there is no contractual relationship with the NAV and it is responsible for delivering and operating the new infrastructure and assets, and serving the new end-users.

**In practice, the best feasible option will likely be a combination of 3a) and 3b).**

It must be noted that, in practice, the choice of approach will depend upon the feasibility of creating a self-served site, based on the geography of the site and the existence of surrounding network assets and capacity. In our modelling of a generic 1000-property development, scenario 3a) gave a TOTEX reduction of 33% compared to scenario 1) (incumbent supply). If the on-site costs are greater in relation to those of the off-site infrastructure, this reduction will be greater.

**When working with NAVs, YW must consider its role in supporting the appointment of the NAV, securing any bulk agreements and creating a compelling commercial case for this approach.**

Where a NAV is applying to Ofwat to become the appointee for a site (scenarios 3a) and 3b)), YW is required to cooperate with the NAV company, including providing information about whether the site is served and the location of suitable points of connection to the YW network. Where there is to be a bulk connection with the new site (scenario 3a)), YW must work with the NAV to set up a bulk agreement, including setting up bulk service charges in accordance with Ofwat's latest guidance: 'Bulk charges for NAVs: final guidance' (May 2018).

A central principle throughout the evolution of the NAV market has been ensuring a level playing field between the incumbent, SLOs and NAVs, when competing for developers' business. YW has achieved this by removing the income offset (and associated asset payment). The challenge for NAVs in realising scenario 3b) may be in providing an on-site solution for water and/or wastewater treatment which is cost-competitive with creating a bulk connection to the existing incumbent network. They must present a compelling commercial model to the developer, whilst operating within the Ofwat requirement that the end-users on the NAV site be 'no worse off' – i.e. their level of service must be maintained and their bills cannot exceed what the incumbent would have charged.

## Next steps

We would suggest to apply the same modelling methodology to each of the four proposed developments, further refine the financial model using specific costs (where available) and broadly consider geographic factors that might determine which NAV option is likely to be attractive. This would provide further evidence to support the strategic direction for each of the developments and a more accurate estimate of the TOTEX incurred (and avoided) by YW in relation to these growth schemes.

# FOUR SCENARIOS

These scenarios describe, at their extreme, different approaches available to Yorkshire Water with respect to developing and serving future growth schemes.

1

## INCUMBENT SUPPLY

This is the “conventional” model, whereby YW, as the incumbent, delivers the work to lay both on-site and off-site mains and connect the development with their existing network. The developer normally self-lays local wastewater assets for adoption by YW.

The end-user customers and all the assets become the responsibility of YW.

2

## SLO-DELIVERED NETWORK

In this approach, on-site infrastructure is laid and connected by a Self-lay Organisation, contracted by the Developer, and YW carries out any off-site enabling works and Network Reinforcement.

The end-user customers and all the assets become the responsibility of YW.

3a)

## BULK-CONNECTED NAV

A NAV company is appointed to the site and it is contracted by the Developer to lay and connect the on-site infrastructure. YW carries out any off-site enabling works and Network Reinforcement.

A bulk service agreement is created for YW to provide bulk services to the NAV. The on-site infrastructure remains the responsibility of the NAV and the end-users become its customers.

3b)

## SELF-SERVED NAV

A NAV company is appointed to the site and it is contracted by the Developer to lay and connect the on-site infrastructure. The NAV also builds and operates Water and Wastewater Treatment assets to independently provide services to the site.

There is no contractual relationship between YW and the NAV and the end-users in the new premises become customers of the NAV.

*Each scenario is described in further detail on pages 5 - 8*

# 1) INCUMBENT SUPPLY

## Expenditure

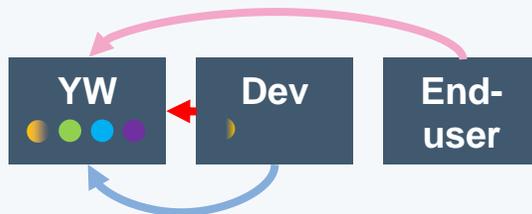
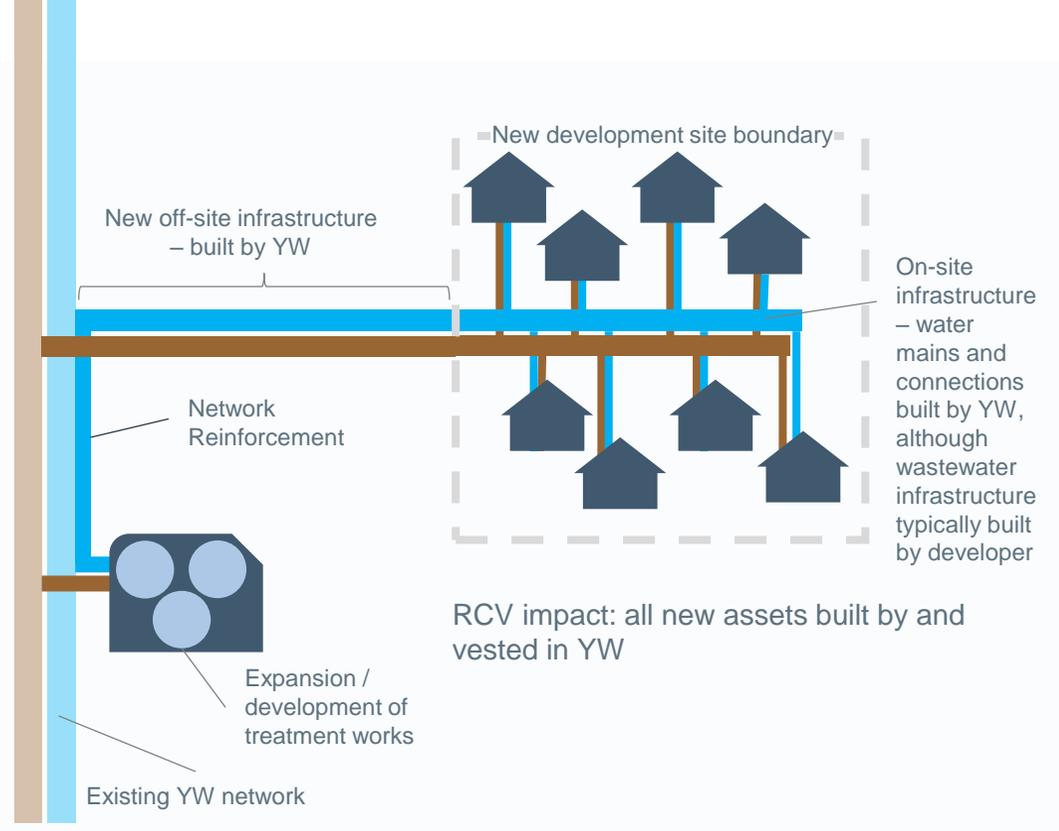
YW incurs the TOTEX for all new on-site and off-site water infrastructure, whereas the developer typically lays and connects the wastewater infrastructure itself. YW also incurs the TOTEX for any Network Reinforcement required.

The ongoing cost of operation and maintenance for all new assets is also incurred by YW.

## Charges

The cost of delivering the on-site and off-site\* work is borne through connection and requisition charges paid through the developer. The new end-users also pay Infrastructure Charges, again through the developer, which contribute to Network Reinforcement.

Once development is complete, the new end-users become the customers of YW, and pay for water and sewerage services through standing and volumetric charges.



Allocation of expenditure and flow of charges

## Expenditure:

- On-site infrastructure
- Off-site infrastructure and assets
- Operation & maintenance
- Retail

## Flow of charges:

- ➔ Connection / requisition charges
- ➔ Infrastructure charges
- ➔ Commodity charges

## 2) SLO-DELIVERED

### Expenditure

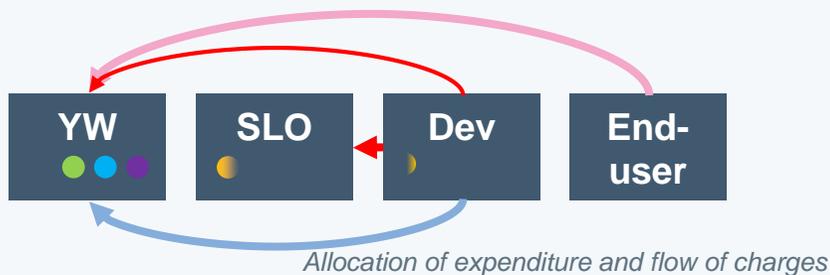
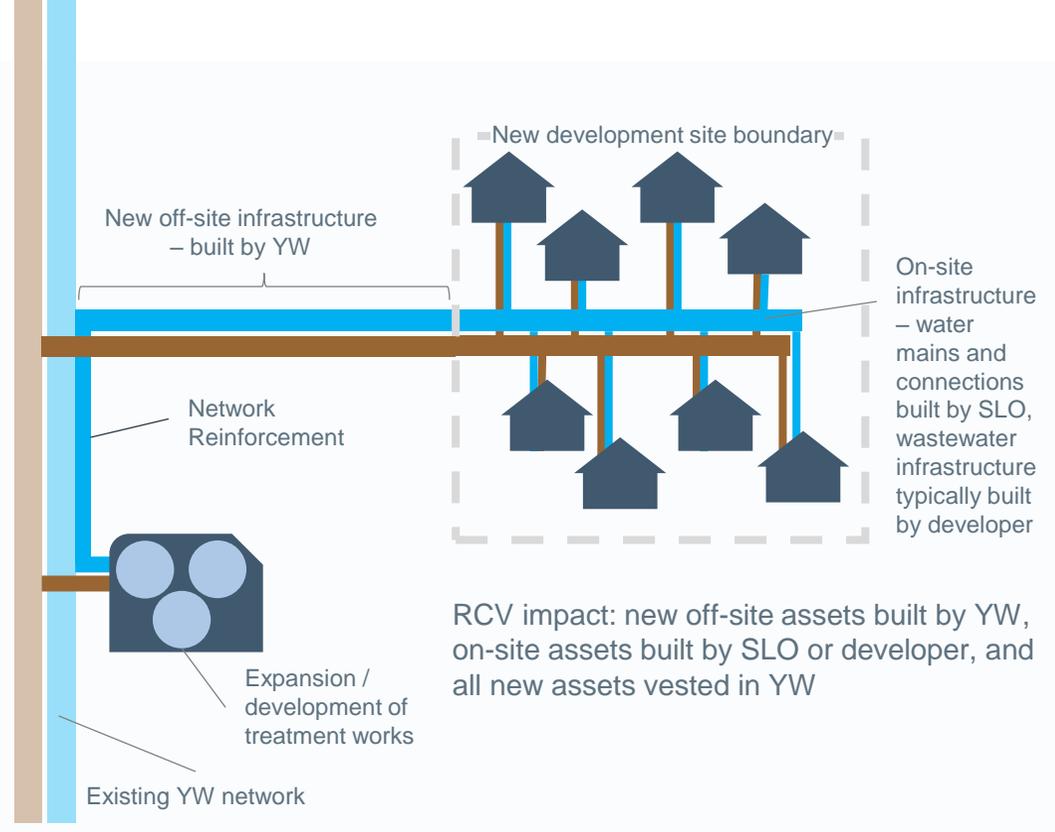
YW incurs the TOTEX for all new off-site water infrastructure and for any Network Reinforcement required. On-site infrastructure is delivered by the Self-lay Organisation (which in the case of the wastewater assets is often the developer), and later adopted by YW.

The ongoing cost of operation and maintenance for all new assets is also incurred by YW.

### Charges

YW collects requisition charges for the off-site work\*, through the developer. New occupants still pay Infrastructure Charges, again through the developer, which contribute to Network Reinforcement.

As in Scenario 1), the new end-users become the customers of YW, and pay standing and volumetric charges.



### Expenditure:

- On-site infrastructure
- Off-site infrastructure and assets
- Operation & maintenance
- Retail

### Flow of charges:

- ➔ Connection / requisition charges
- ➔ Infrastructure charges
- ➔ Commodity charges

### 3a) BULK-CONNECTED NAV

#### Expenditure

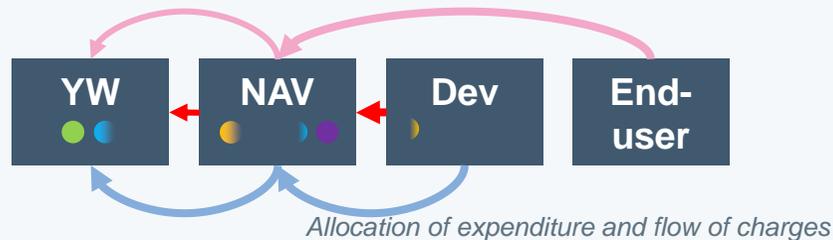
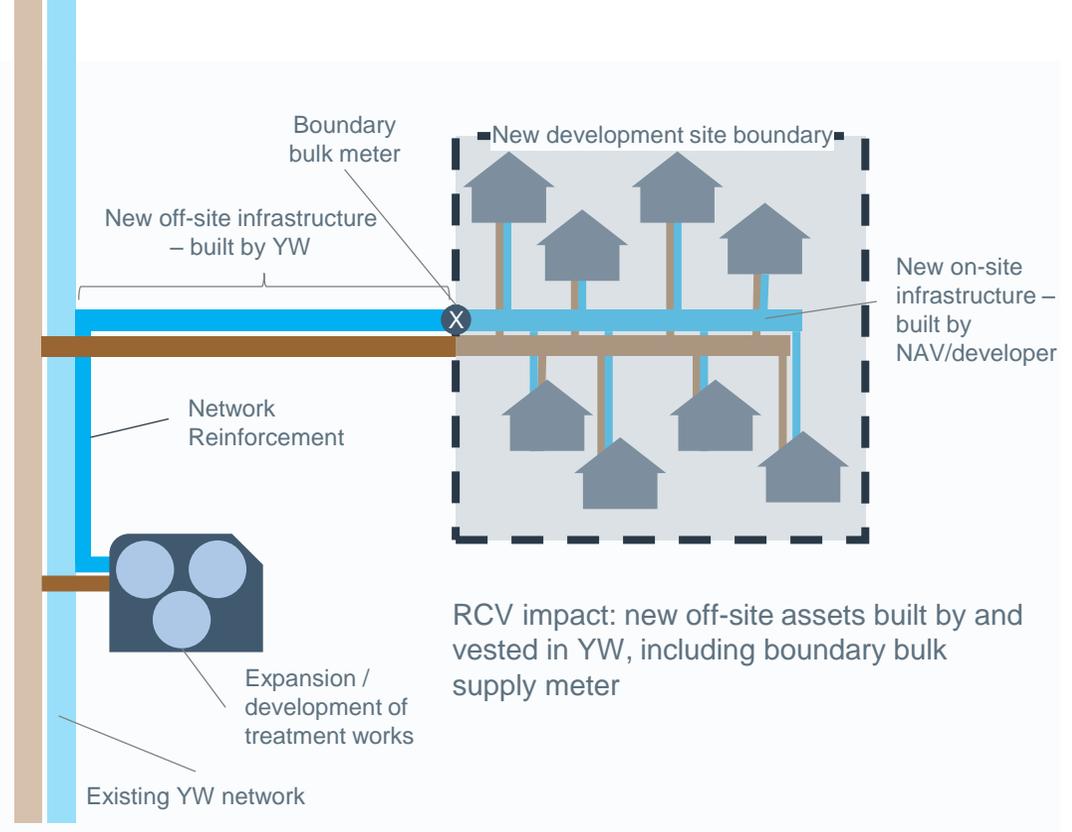
YW incurs the TOTEX for all new off-site water infrastructure, whereas the developer typically lays and connects the wastewater infrastructure itself. YW also incurs the TOTEX for any Network Reinforcement required. On-site infrastructure is delivered by the NAV, who then operates and maintains the assets.

YW incurs the ongoing cost of operation and maintenance for off-site assets only.

#### Charges

YW collects charges for the off-site work, by agreement, from the NAV. New occupants still pay Infrastructure Charges, passed on through the NAV, which contribute to Network Reinforcement.

YW collects a bulk service charge, calculated with a 'Wholesale Minus' approach, but end-users are the customers of the NAV and pay charges to it.



#### Expenditure:

- On-site infrastructure
- Off-site infrastructure and assets
- Operation & maintenance
- Retail

#### Flow of charges:

- ➔ Connection / requisition charges
- ➔ Infrastructure charges
- ➔ Commodity charges

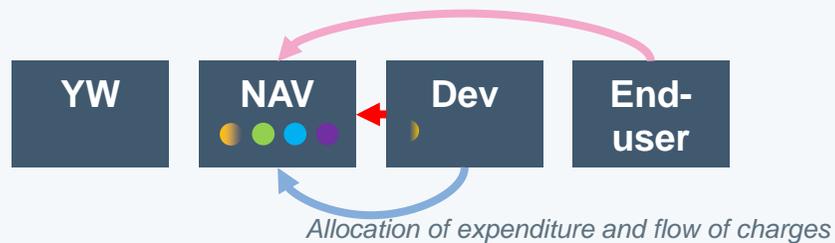
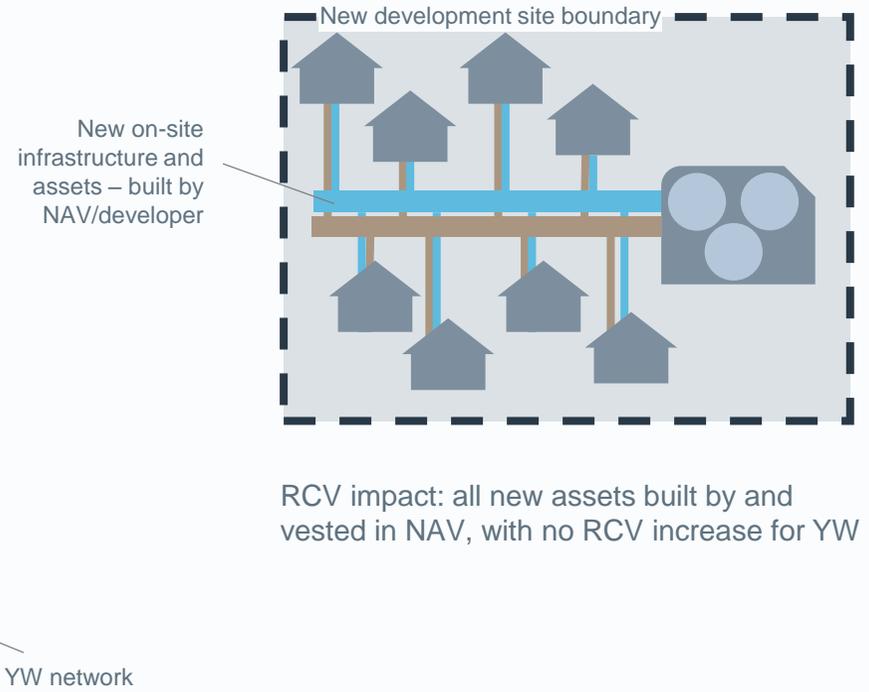
### 3b) SELF-SERVED NAV

#### Expenditure

YW incurs no TOTEX for the new development.

#### Charges

YW collects no charges from the NAV, the developer or the new end-users.



#### Expenditure:

- On-site infrastructure
- Off-site infrastructure and assets
- Operation & maintenance
- Retail

#### Flow of charges:

- ➔ Connection / requisition charges
- ➔ Infrastructure charges
- ➔ Commodity charges

# MODELLING A SITE WITH 1000 NEW HOMES SHOWS THE SCALE AND DISTRIBUTION OF EXPENDITURE AND CHARGES

To illustrate the impact of adopting each of the proposed approaches, a typical growth site of 1000 new domestic premises is modelled in each scenario

Assumptions: 1000 domestic premises, each with 2.4 occupants, using 125l/person/day; onsite: 10 km of new clean mains, 10 km of sewer mains, 5m service connection / lateral drains; offsite: £4.4k per premises (average of four growth sites), O&M = 2.5% of CAPEX, Retail cost = retail margin

1

## INCUMBENT SUPPLY

|           | Capex   |          | Opex (over one AMP) |        |       |
|-----------|---------|----------|---------------------|--------|-------|
|           | On-site | Off-site | O&M                 | Retail | TOTEX |
| YW        | £1.4m   | £4.4m    | £1.3m               | £0.17m | £7.3m |
| Developer | £4.9m   |          |                     |        |       |

2

## SLO-DELIVERED NETWORK

|           | Capex   |          | Opex (over one AMP) |        |       | % of 1) |
|-----------|---------|----------|---------------------|--------|-------|---------|
|           | On-site | Off-site | O&M                 | Retail | TOTEX |         |
| YW        | £0.1m   | £4.4m    | £1.3m               | £0.17m | £6.0m | 82%     |
| Developer | £4.9m   |          |                     |        |       |         |
| SLO       | £1.3m   |          |                     |        |       |         |

3a)

## BULK-CONNECTED NAV

|           | Capex   |          | Opex (over one AMP) |        |       | % of 1) |
|-----------|---------|----------|---------------------|--------|-------|---------|
|           | On-site | Off-site | O&M                 | Retail | TOTEX |         |
| YW        |         | £4.4m    | £0.5m               |        | £4.9m | 67%     |
| Developer | £4.9m   |          |                     |        |       |         |
| NAV       | £1.4m   |          | £0.8m               | £0.17m |       |         |

3b)

## SELF-SERVED NAV

|           | Capex   |          | Opex (over one AMP) |        |       | % of 1) |
|-----------|---------|----------|---------------------|--------|-------|---------|
|           | On-site | Off-site | O&M                 | Retail | TOTEX |         |
| YW        |         |          |                     |        | £0.0m | 0%      |
| Developer | £4.9m   |          |                     |        |       |         |
| NAV       | £1.4m   | £4.4m    | £1.3m               | £0.17m |       |         |