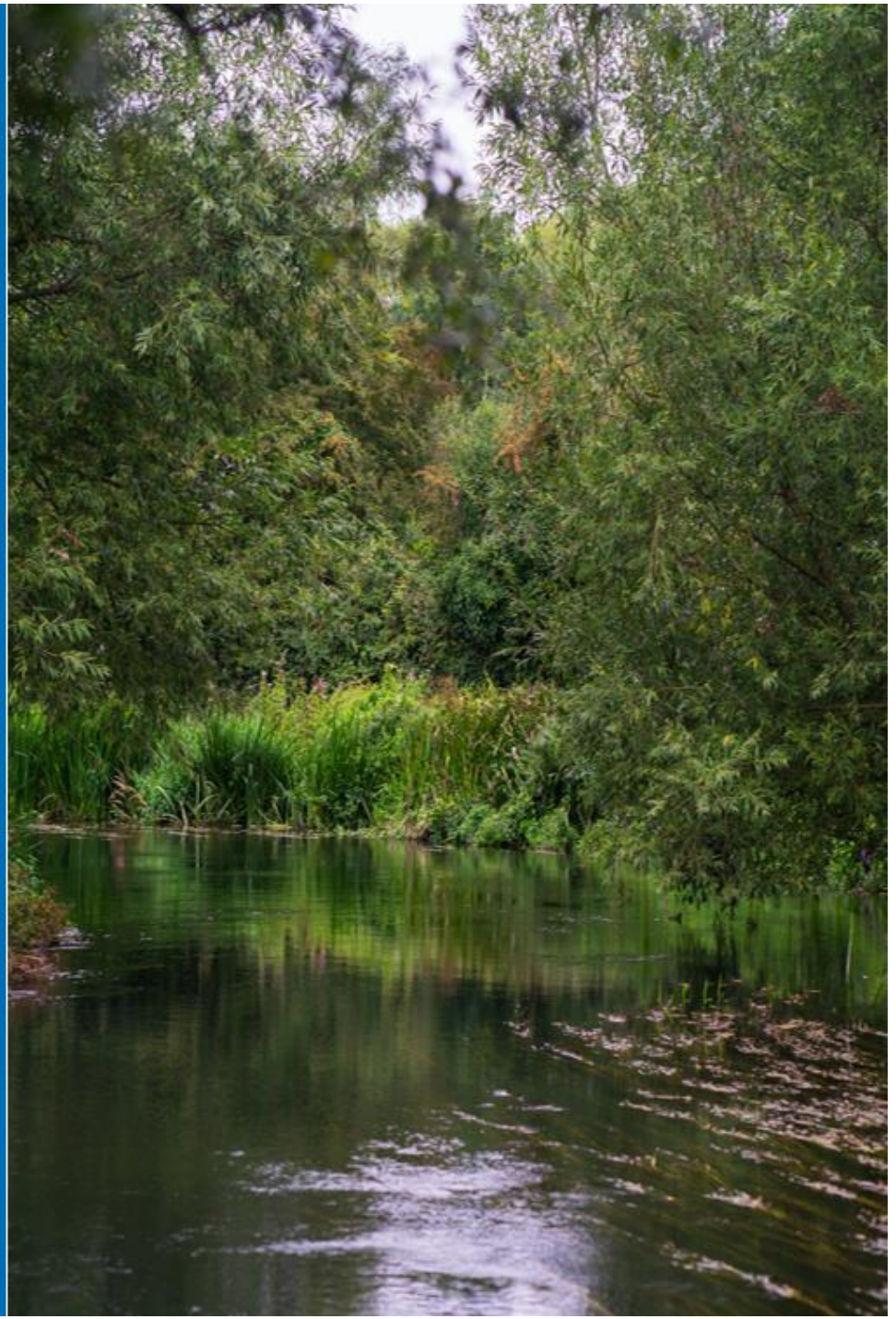
Portsmouth Water

Investment Option and Valuation in Copperleaf – Enhancement Cases

Asset Management - August 2024



Contents

01

PFAS Resilience

Our Investment Options

Fishbourne PFAS Resilience – Best Value Option

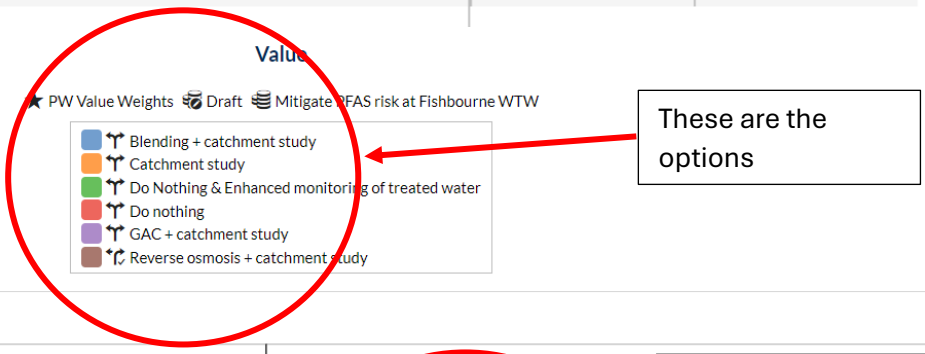
Investments / Mitigate PFAS risk at Fishbourne WTW

Value Comparison

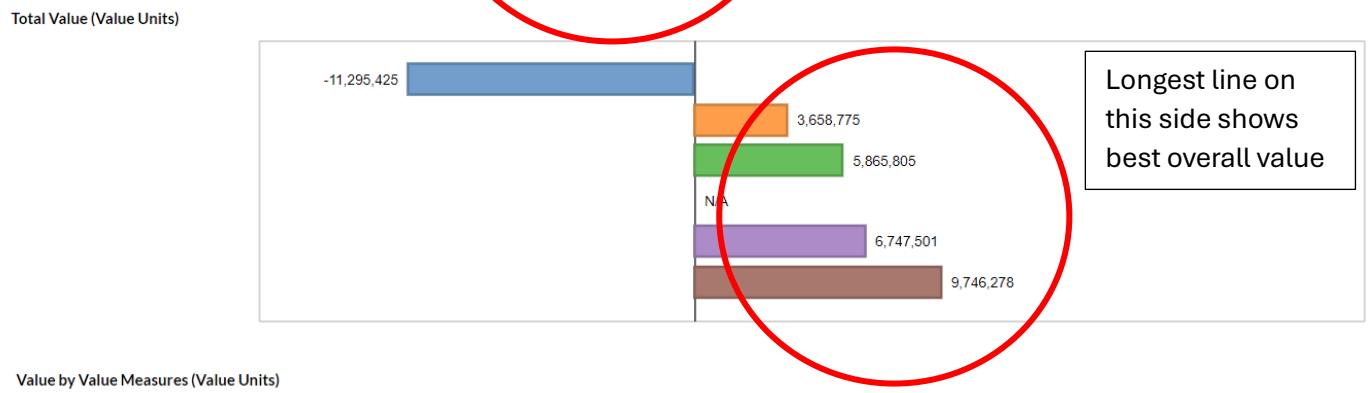
Submit | Reports

Compare: Financial Metrics

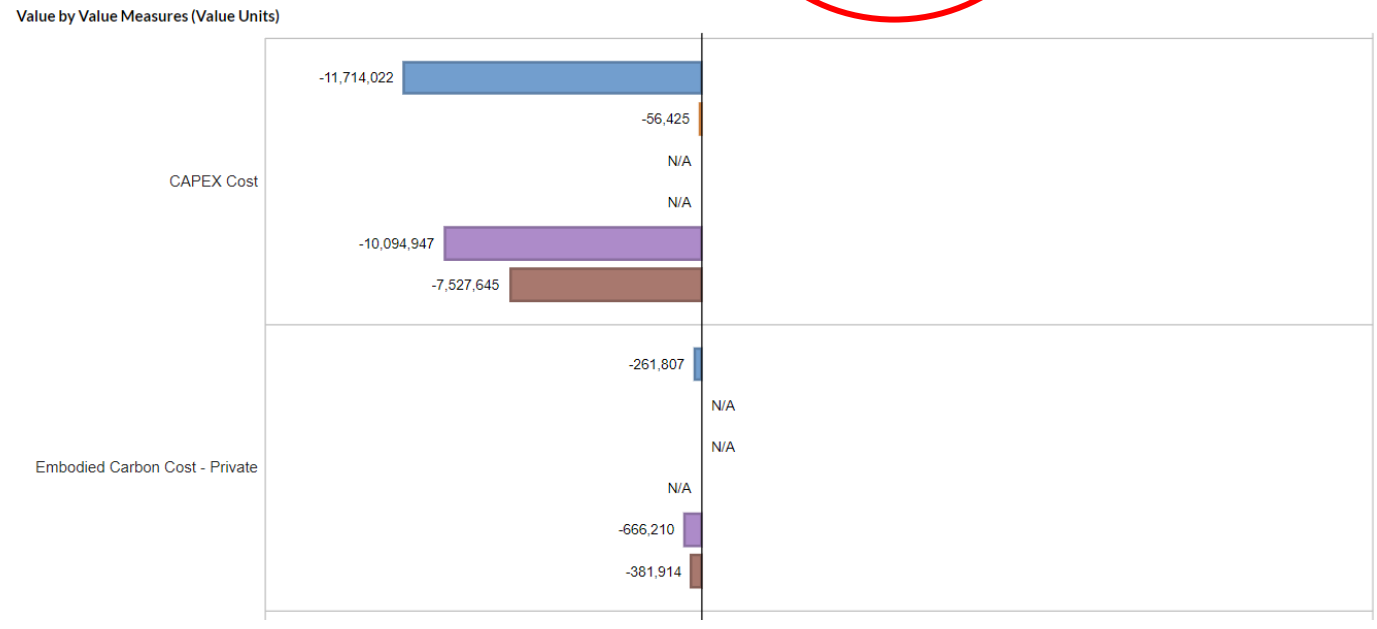
Alternative	B/C	V/C
Do nothing		
Do Nothing & Enhanced monitoring of treated water	55.29	54.29
Catchment study	5.27	4.27
GAC + catchment study	1.54	0.47
Blending + catchment study	0.18	(0.85)
Reverse osmosis + catchment study	1.88	0.84

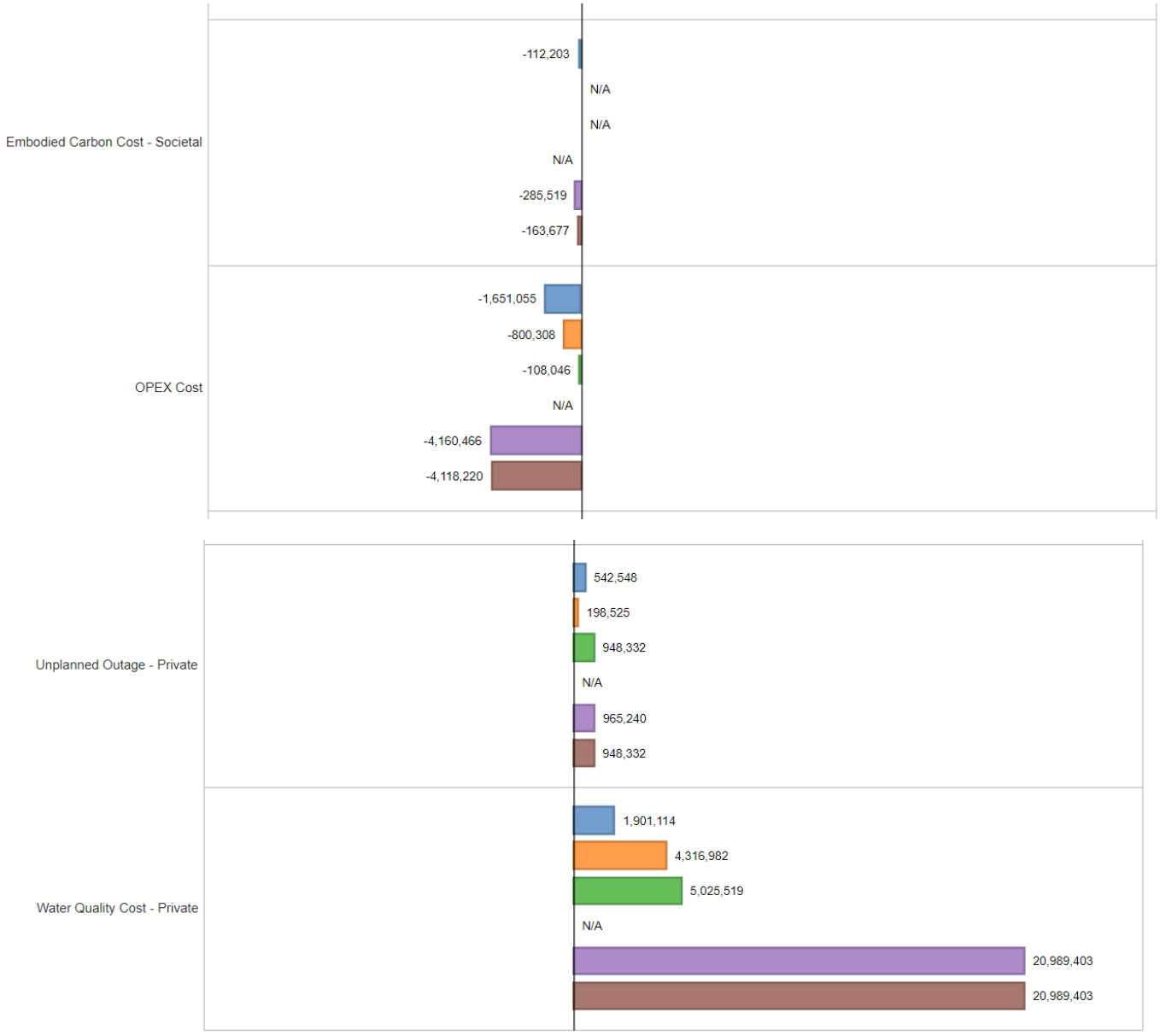


These are the options



Longest line on this side shows best overall value





Conclusions:

The best Value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission

Assumptions:

1. The Baseline CRI Risk increases from 1:10years by 1:10 years every 5 years to 2050.
2. The Solution mitigates the CRI risk at this site fully.
3. The Baseline Outage Risk increases from 1:10years by 1:10 years every 5 years to 2050.
4. The Solution mitigates the Outage risk at this site fully.
5. Embodied Carbon Costs for new Facility included.

02

Nitrate Resilience

Our Investment Needs

Slindon Drought Resilience – Best Value Option

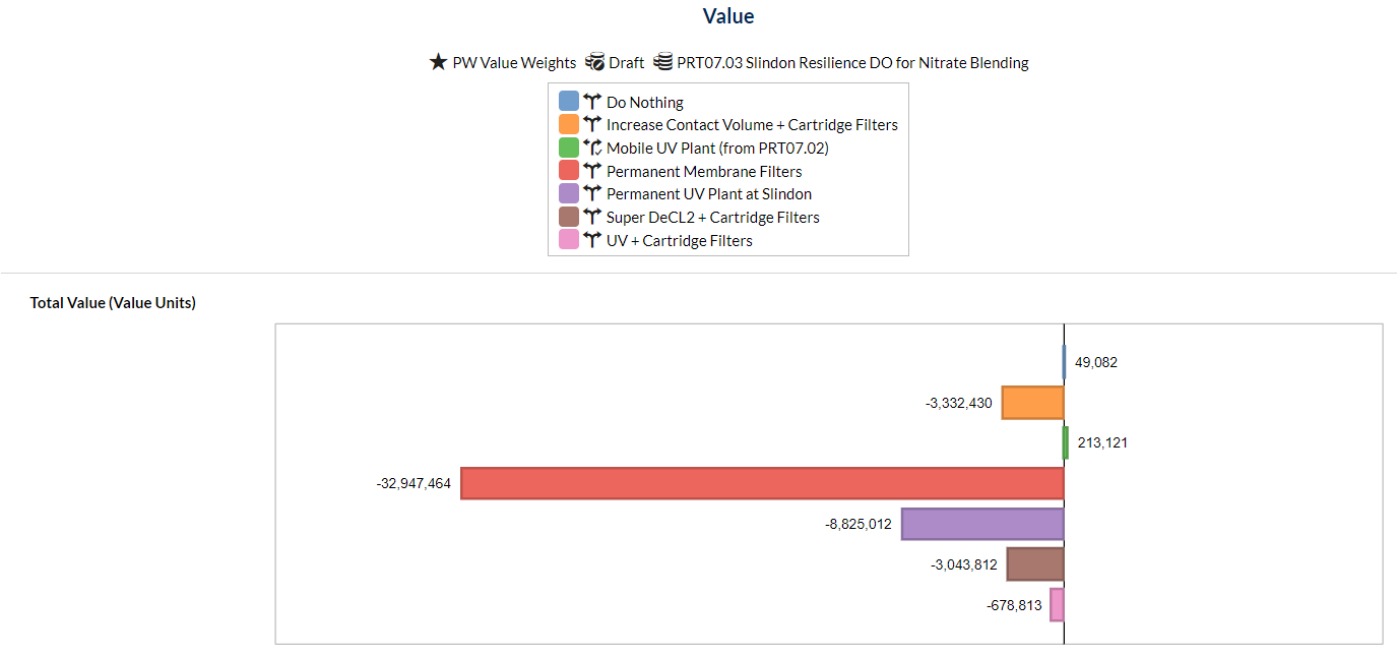
Investments / PRT07.03 Slindon Resilience DO for Nitrate Blending

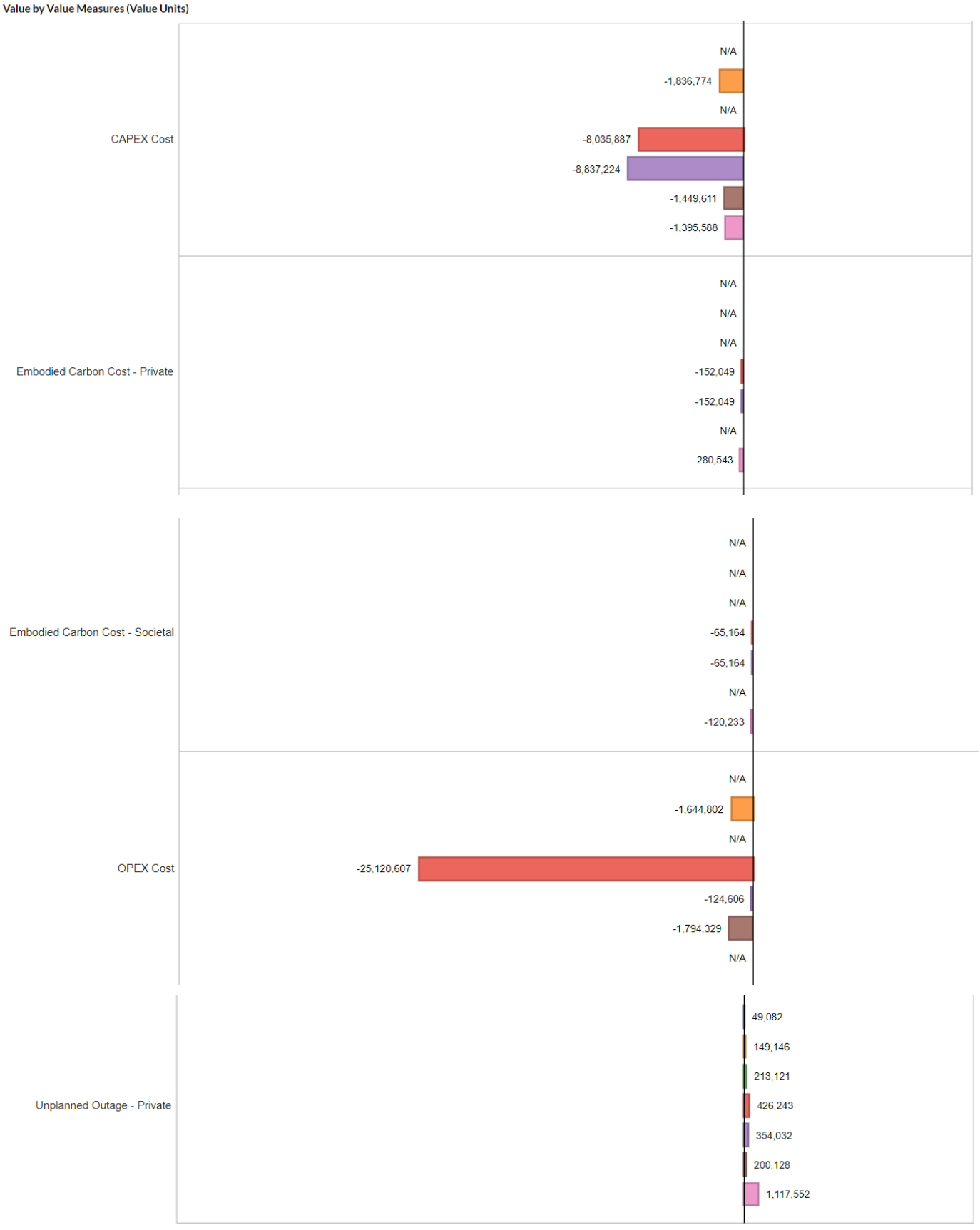
Value Comparison

Submit | Reports

Compare: Financial Metrics

Alternative	B/C	V/C
Do Nothing		
Permanent UV Plant at Slindon	0.04	(0.98)
Increase Contact Volume + Cartridge Filters	0.04	(0.96)
Super DeCL2 + Cartridge Filters	0.06	(0.94)
Permanent Membrane Filters	0.01	(0.99)
UV + Cartridge Filters	0.80	(0.49)
Mobile UV Plant (from PRT07.02)		





Conclusions:

The best Value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. As the Cost for the Mobile UV is covered else where it would have offered a 2.85 B/C.

Assumptions:

- The Baseline Outage Risk (Crypto) assumes a 1:10yr event
- The Solution mitigates the Outage risk fully
- The Outcome benefit for any filtration solution was added

Lovedean Nitrate Resilience – Best Value Option

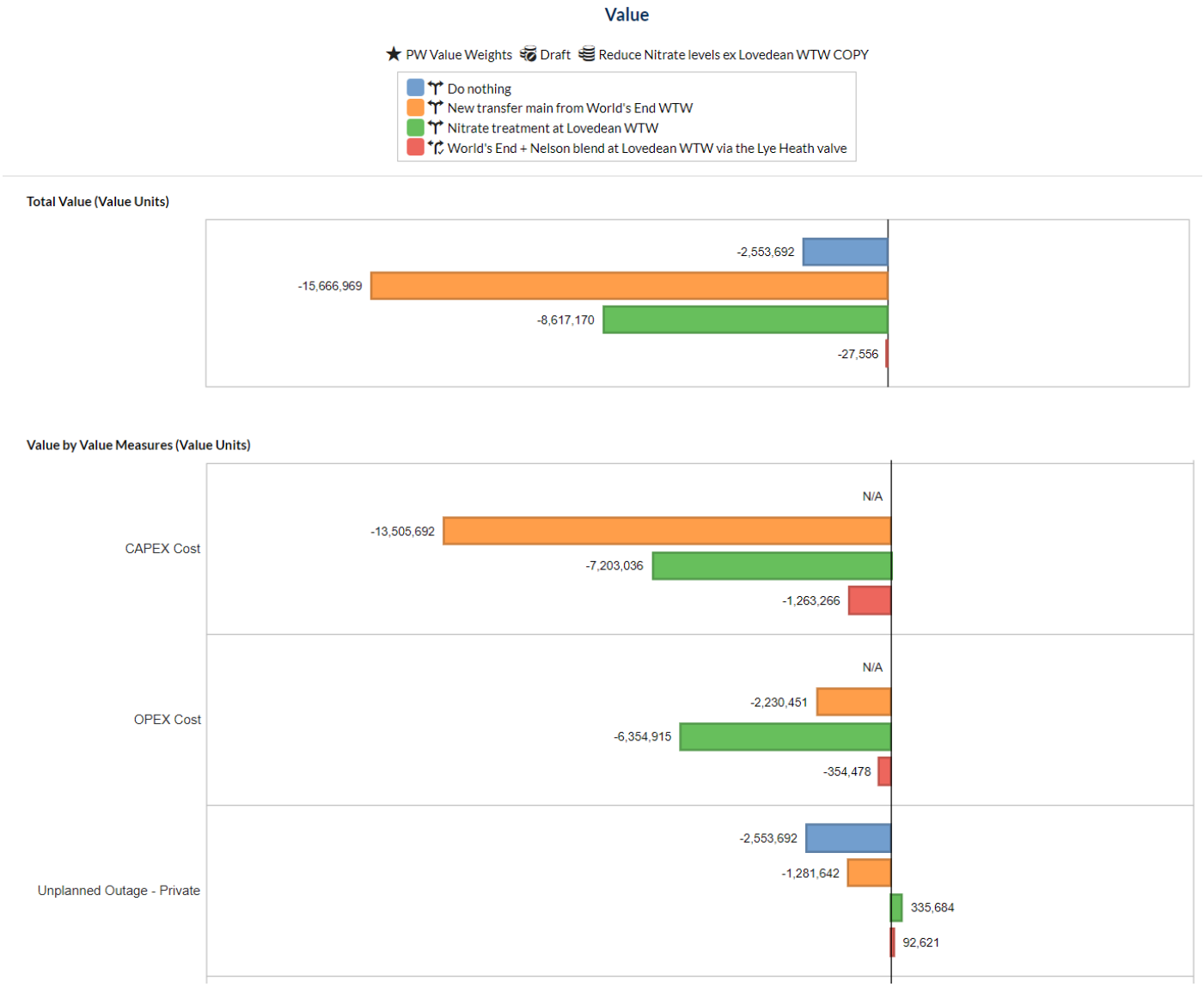
Investments / Reduce Nitrate levels ex Lovedean WTW COPY

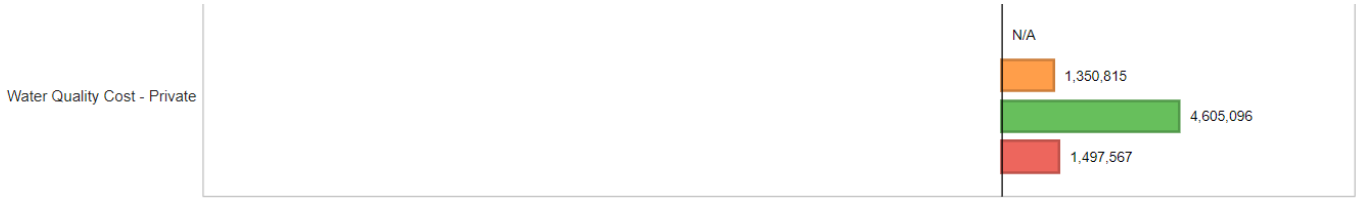
Value Comparison

Submit | Reports

Compare: Financial Metrics

Alternative	B/C	V/C
Do nothing		
New transfer main from World's End WTW	0.09	(0.91)
Nitrate treatment at Lovedean WTW	0.47	(0.53)
World's End + Nelson blend at Lovedean WTW via the Lye Heath valve	0.98	(0.02)





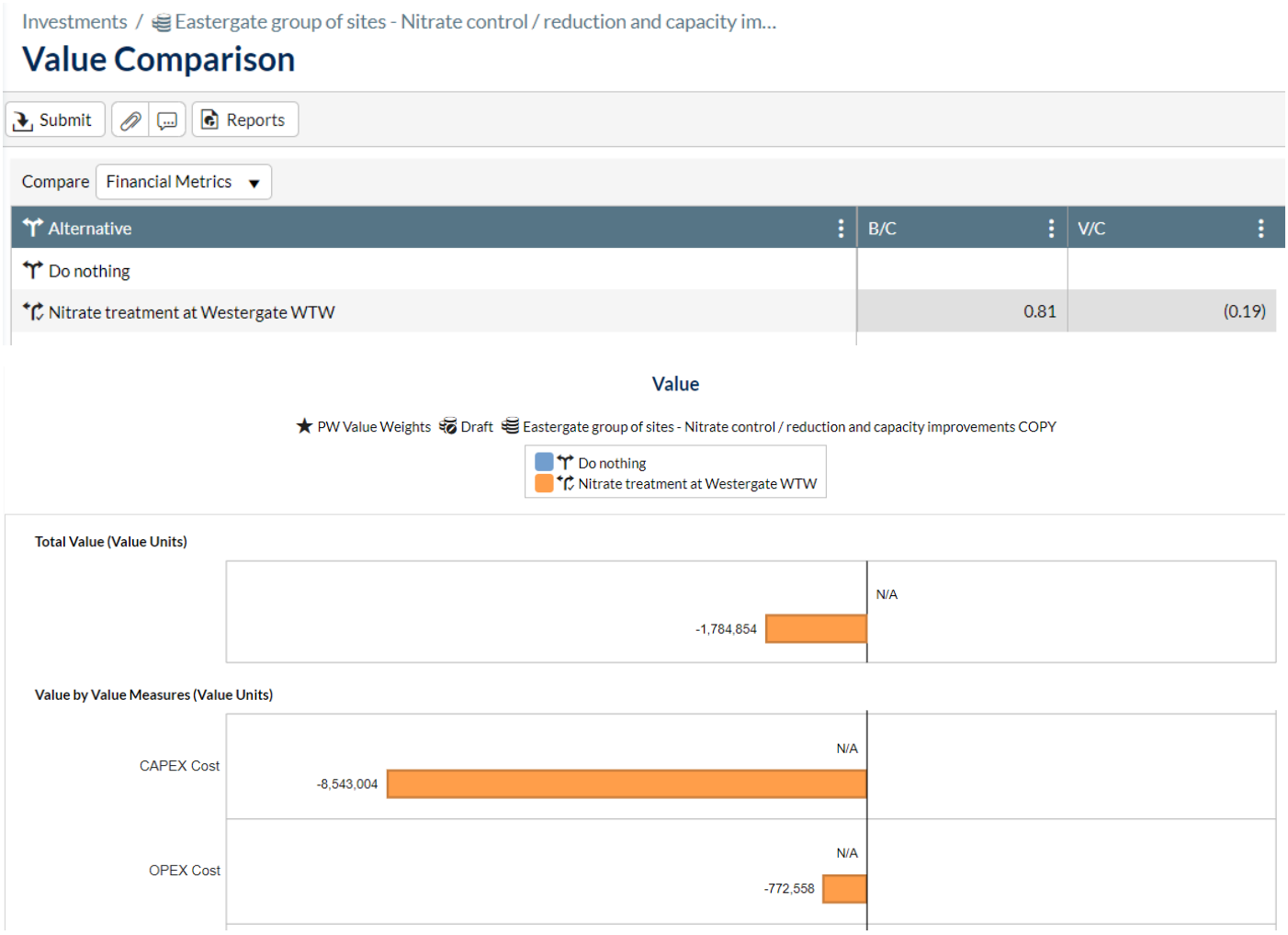
Conclusions:

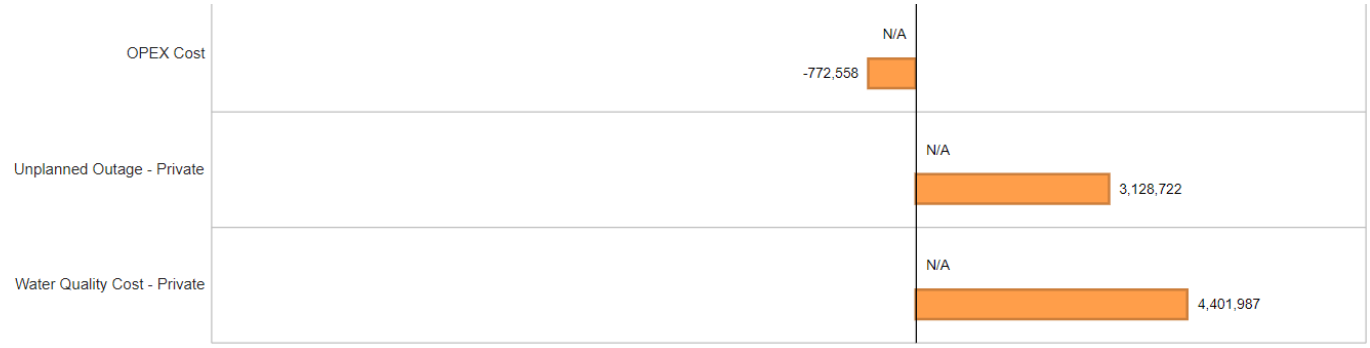
The best Value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission

Assumptions:

- The Baseline CRI Risk OF 1:10 years
- The Solution mitigates the CRI risk at this site until 2034 when the risk returns showing that longer term effectiveness is more difficult to guarantee
- The Baseline Outage Risk assumes that every 5 years the ability to get a site to peak production increases by a week assuming an upward Nitrate Trend
- The Solution mitigates the Outage risk at this until 2034 when the outage risk returns

Eastergate Group Nitrate Resilience – Best Value Option





Conclusions:

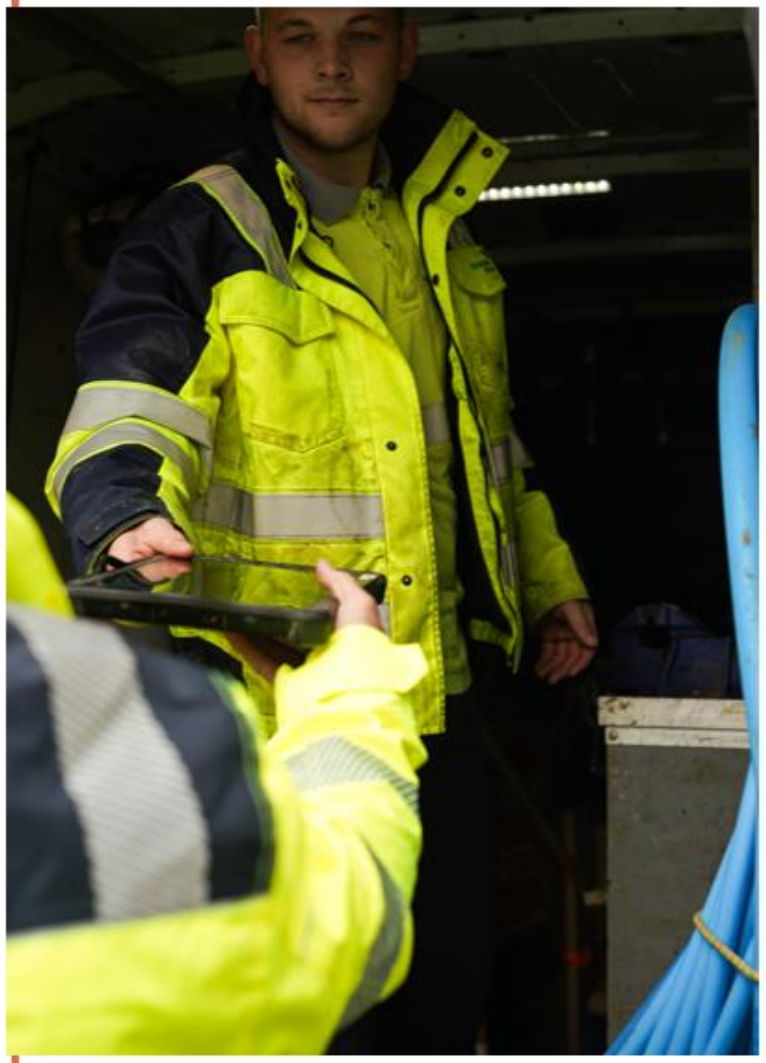
The best Value option in Copperleaf supports the best value option selected by Portsmouth Water in the PR24 Draft Submission. The Water Quality benefit has been assessed relative to the “Do nothing” benefit.

Assumptions:

- The Baseline CRI Risk OF 1:10 years
- The outcome CRI Risk is fully mitigated with the solution
- Unplanned outage Risk assumes that for every 5 years it is out production it would take a week longer to get it back to peak production output.

03

Cryptosporidium and Deployable Output Resilience (UV)



Maindell and Slindon Crypto Resilience – Best Value Option

Investments / Maindell and Slindon Crypto Resilience

Value Comparison

Submit (2) | Reports

Compare: Financial Metrics

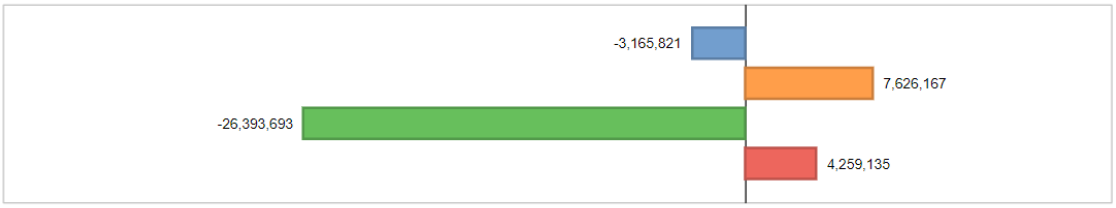
Alternative	B/C	V/C
Mobile UV Plant	3.31	2.31
Do Nothing	0.00	(1.00)
Permanent Membrane Plants	0.29	(0.71)
Permanent UV Plants	1.69	0.66

Value

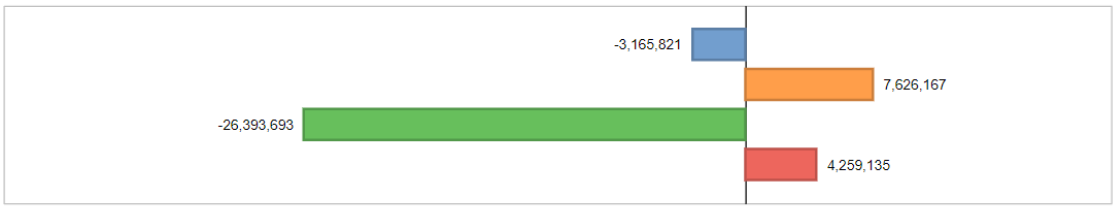
★ PW Value Weights | Draft | Maindell and Slindon Crypto Resilience

- Do Nothing
- Mobile UV Plant
- Permanent Membrane Plants
- Permanent UV Plants

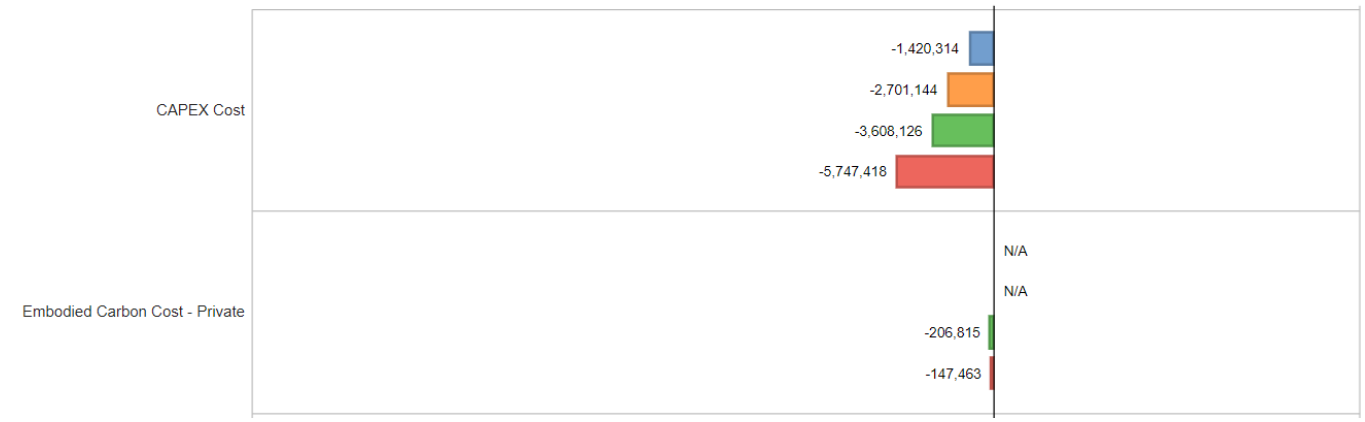
Total Value (Value Units)

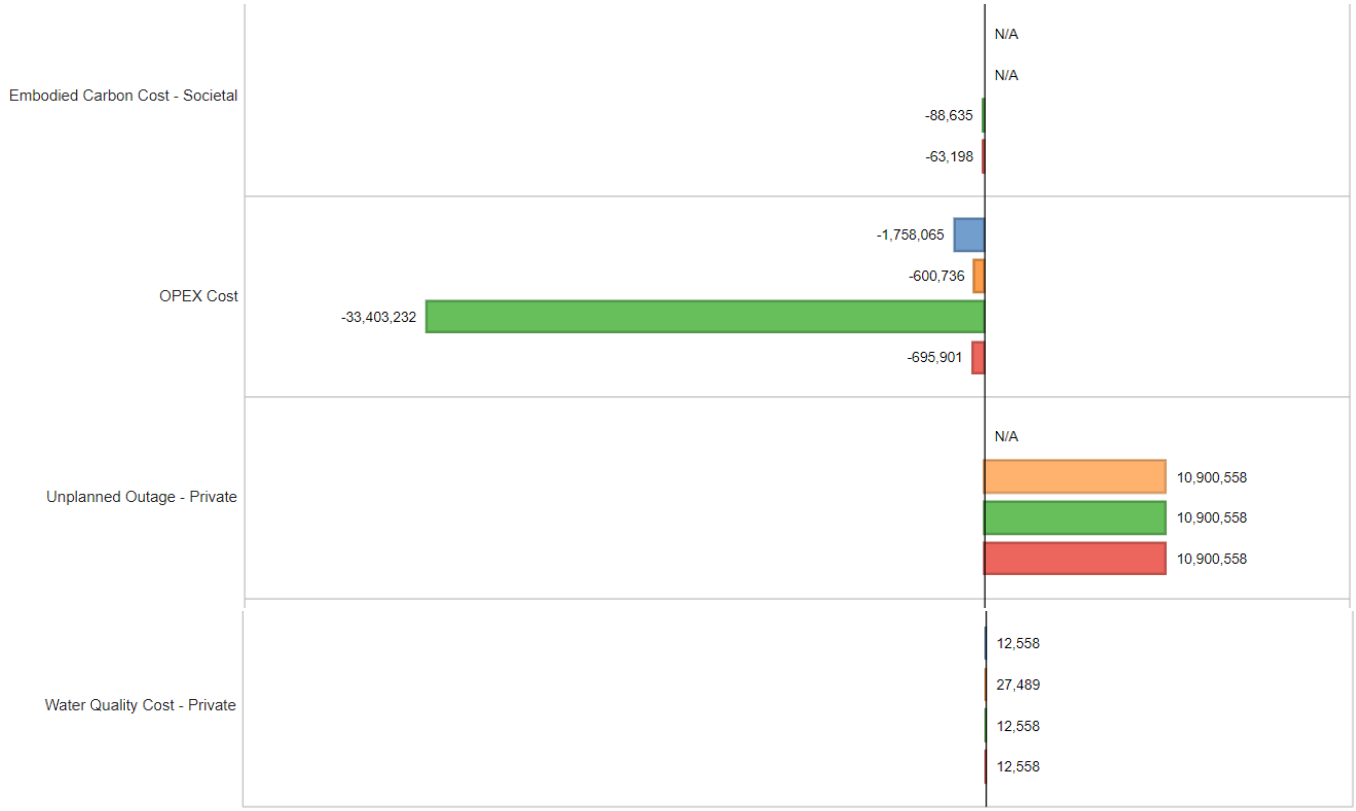


Total Value (Value Units)



Value by Value Measures (Value Units)





Conclusions:

The best Value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission

Assumptions:

- The Baseline CRI Risk OF 1:10 years
- The Solution mitigates the CRI risk fully and permanently
- Outage Baseline risk includes only 3MLD from Slindon to contribute
- Outage outcome Risk includes additional approx. 10MLD supplied by Maindell which the do nothing scenario will not show.
- The Solution mitigates the Outage risk at this until 2034 when the outage risk returns

West Street Crypto Resilience – Best Value Option

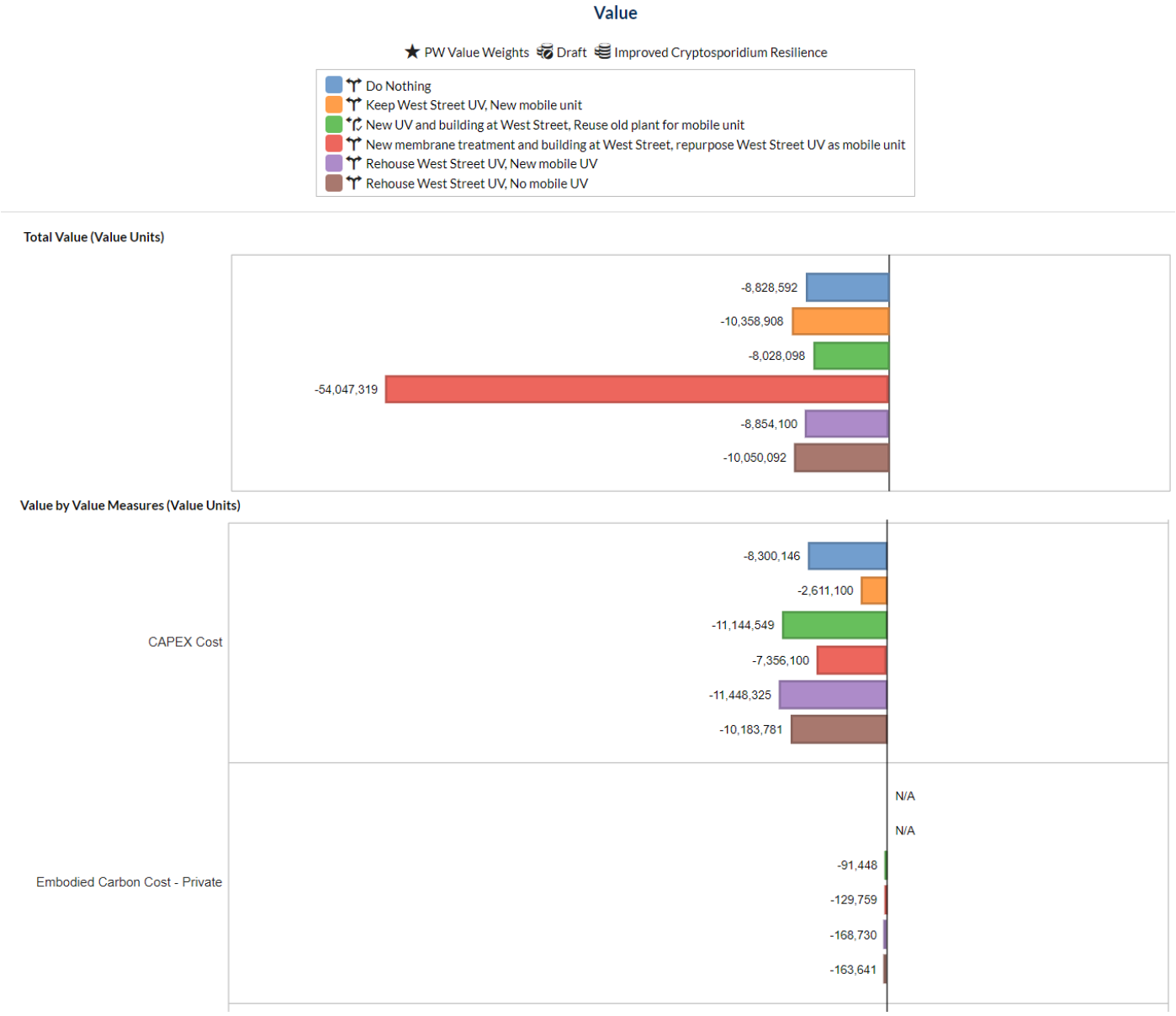
Investments / Improved Cryptosporidium Resilience

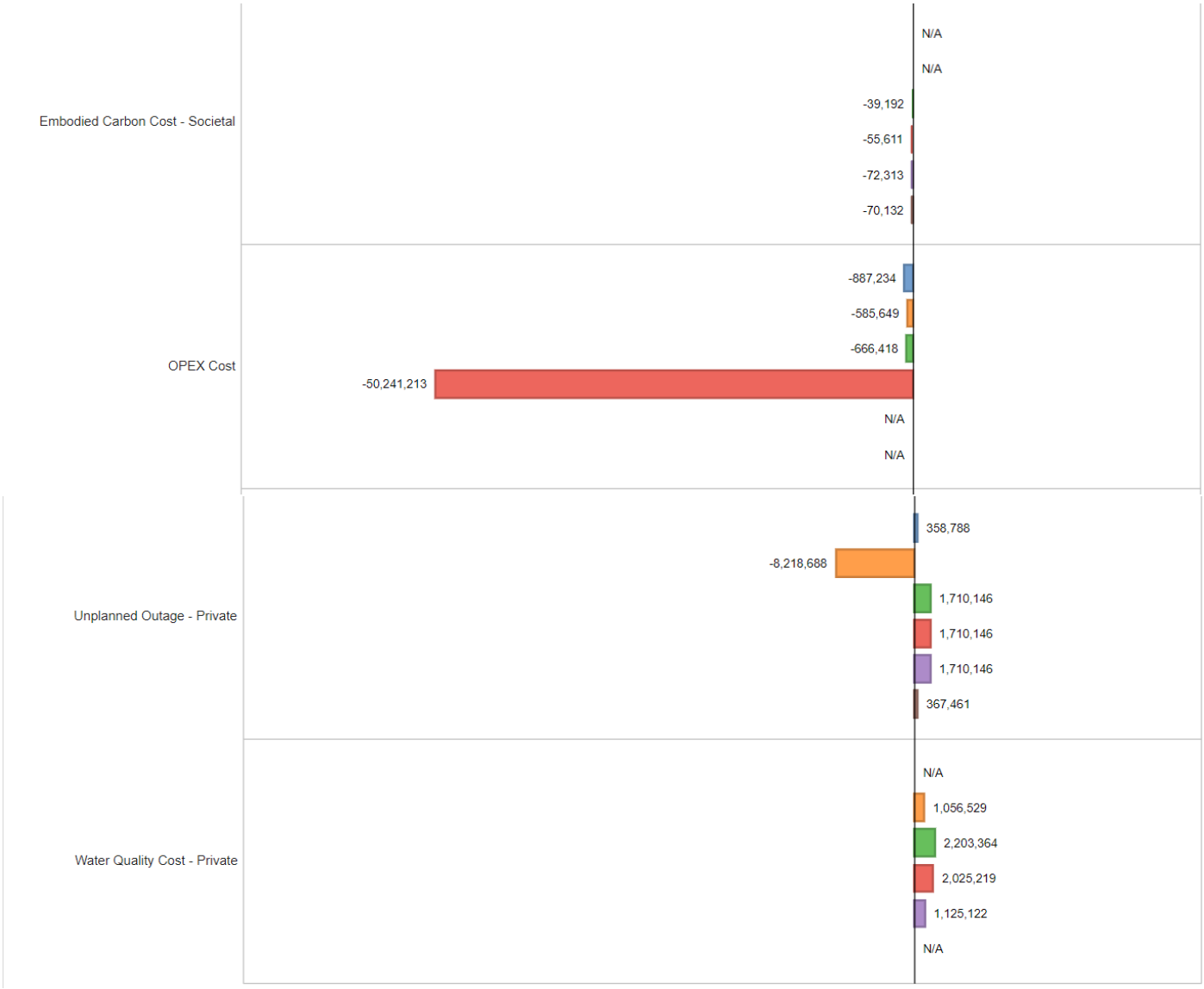
Value Comparison

Submit (2) | Reports

Compare: Financial Metrics

Alternative	B/C	V/C
Keep West Street UV, New mobile unit	(2.24)	(3.24)
Rehouse West Street UV, No mobile UV	0.04	(0.99)
Do Nothing	0.04	(0.96)
New membrane treatment and building at West Street, repurpose West Street UV as mobile unit	0.06	(0.94)
Rehouse West Street UV, New mobile UV	0.25	(0.77)
New UV and building at West Street, Reuse old plant for mobile unit	0.33	(0.68)





Conclusions:

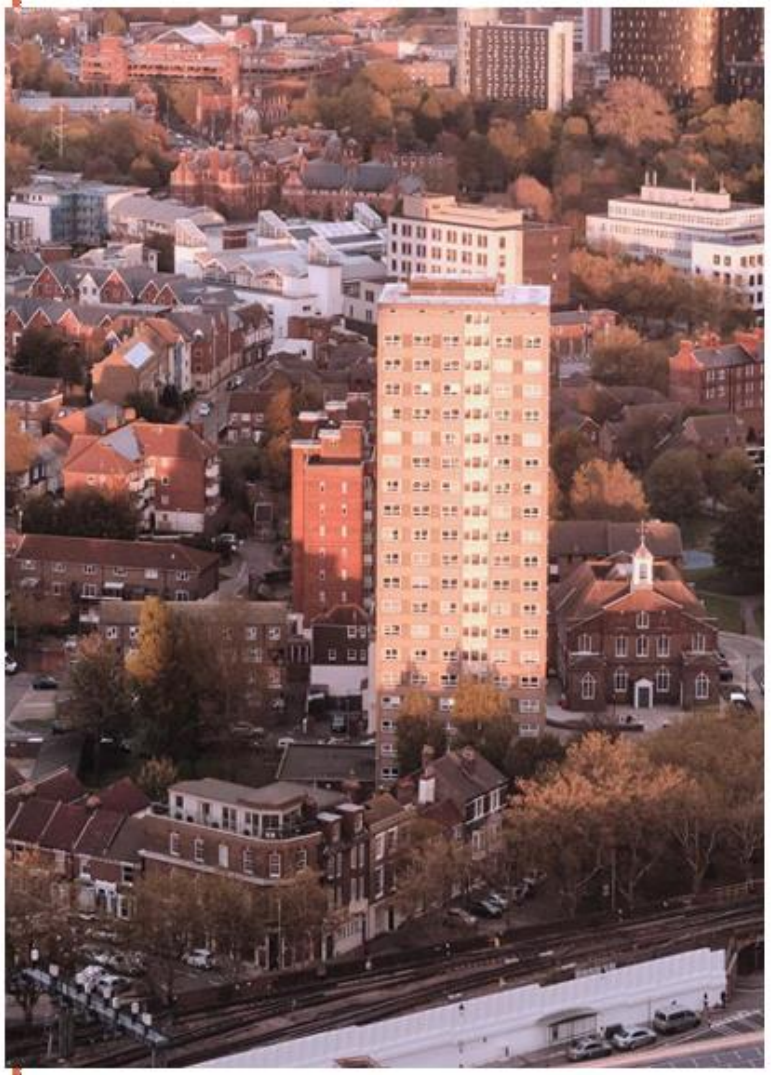
The best Value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission

Assumptions:

- The Baseline CRI Risk OF 1:10 years
- The Solution mitigates the CRI risk fully and permanently
- The Solution Mitigates outage risk over the long term

04

Service Reservoirs Isolation and Recovery



Portfolios

Portfolio Hierarchies

Submit | Scenarios | Reports

Ad Hoc Portfolios

Ad Hoc Portfolios	
All Investments	439
Asset Management	71
Enhancement	131
PR24 All	332
PR24 Investment Cases	0
PRT07.02 Raw Water Resilience (Disinfection)	2
PRT07.03 COPY	3
PRT07.03 Raw Water Deterioration and Drought Cap...	2
PRT07.04 The Isolation and Recovery of Service Reser...	13
PRTXX.XX PFAS Resilience Enhancement	1

Portfolio Investments | Add Investments | Remove Investments

Name	Code	Type
Appledown Reservoir bypass facilities: new VSD to 2x 37.5kw booster pumps under pressure control from PT ...	Appledown000408	Project
Catherington Reservoir bypass facilities: new VSD to 2x 45kw booster pumps under pressure control from PT ...	Catherington000409	Project
Clanfield - Reservoir bypass facilities - VSD to 2 90kw booster pumps + pressure control from PT via PLC	Clanfield 1000410	Project
Firdown - Reservoir bypass facilities - fit VSD to 2 37.5kw booster pumps + pressure control from PT via PLC	Fir Down 1000411	Project
George - Reservoir bypass facilities - Automate the Lye Hill valve under pressure control from newly installed ...	George000413	Project
Highdown - Reservoir bypass facilities - fit VSD to2 37.5kw booster pumps+ pressure control from PT via PLC	Highdown000412	Project
Nelson Reservoir bypass VSD to 2 204kw b pumps + pressure control PT via PLC + bypass to 20" Porchester o...	Nelson000414	Project
Racton - Reservoir bypass facilities - VSD to 2 (220kw and 75kw) booster pumps + pressure control from PT vi...	Racton 1000415	Project
Shedfield Reservoir bypass - Enhance control of Nelson to Shedfield FCV to PRV + pressure control from PT vi...	Shedfield 2000419	Project
Street End - Reservoir bypass facilities - fit new VSD to two 37.5kw booster pumps + pressure control from PT ...	Street End 2000417	Project
West Meon - Reservoir bypass facilities - fit new VSD to two 5.5kw booster pumps + pressure control from PT ...	West Meon 2000418	Project
Whiteways Reservoir bypass: VSD to 2 75kw booster pumps + pressure control from PT via PLC + booster set ...	Whiteways Lodge000420	Project
Southwick - Reservoir bypass facilities - fit new VSD to two 18.5kw booster pumps + pressure control from PT ...	PwWide000416	Project

Appledown Reservoir:

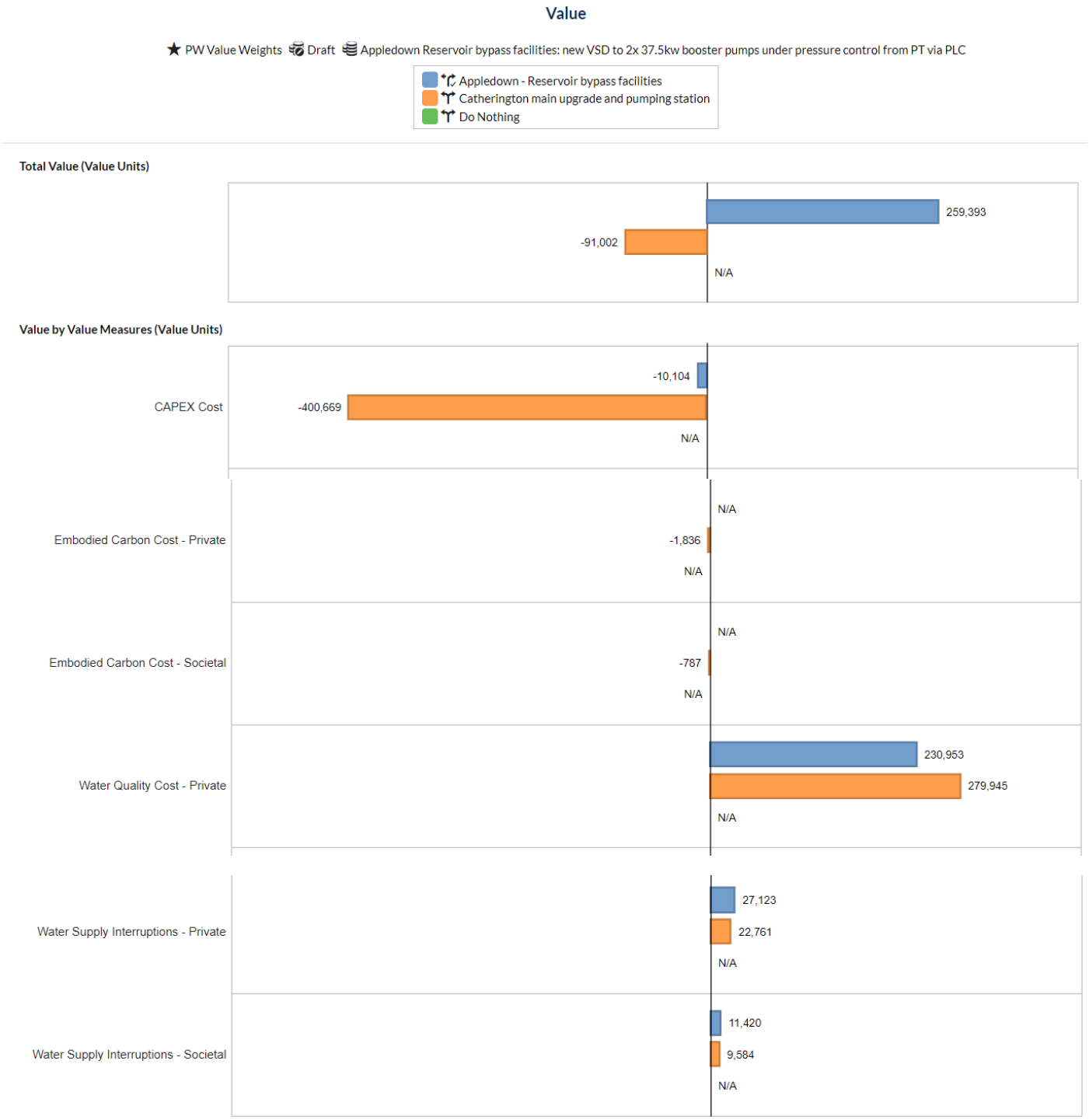
Investments / Appledown Reservoir bypass facilities: new VSD to 2x 37.5kw booste...

Value Comparison

Submit | Reports

Compare: Financial Metrics

Alternative	B/C	V/C
Do Nothing		
Catherington main upgrade and pumping station	0.70	(0.23)
Appledown - Reservoir bypass facilities	22.86	25.67



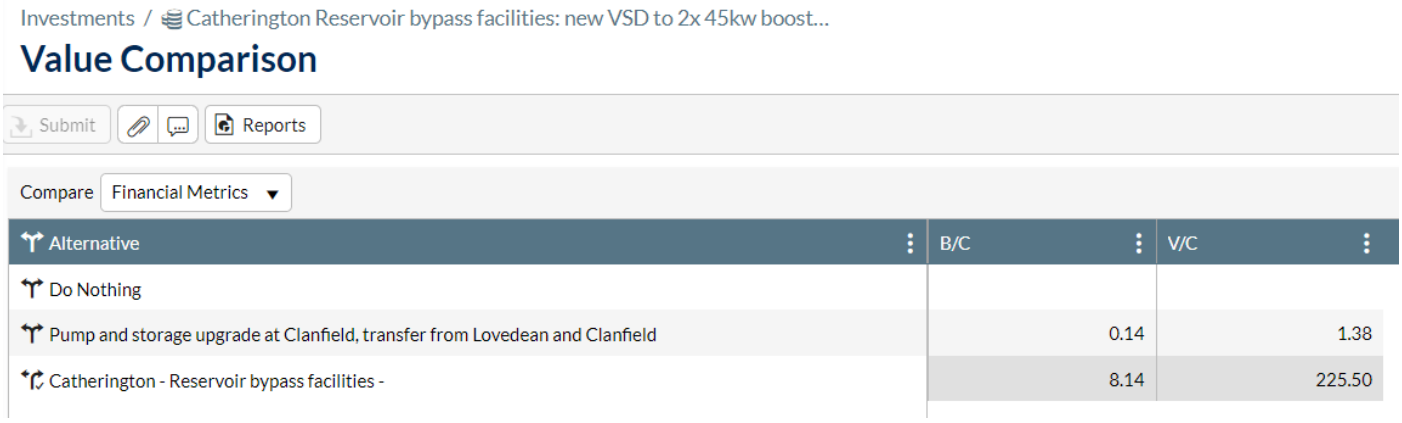
Conclusions:

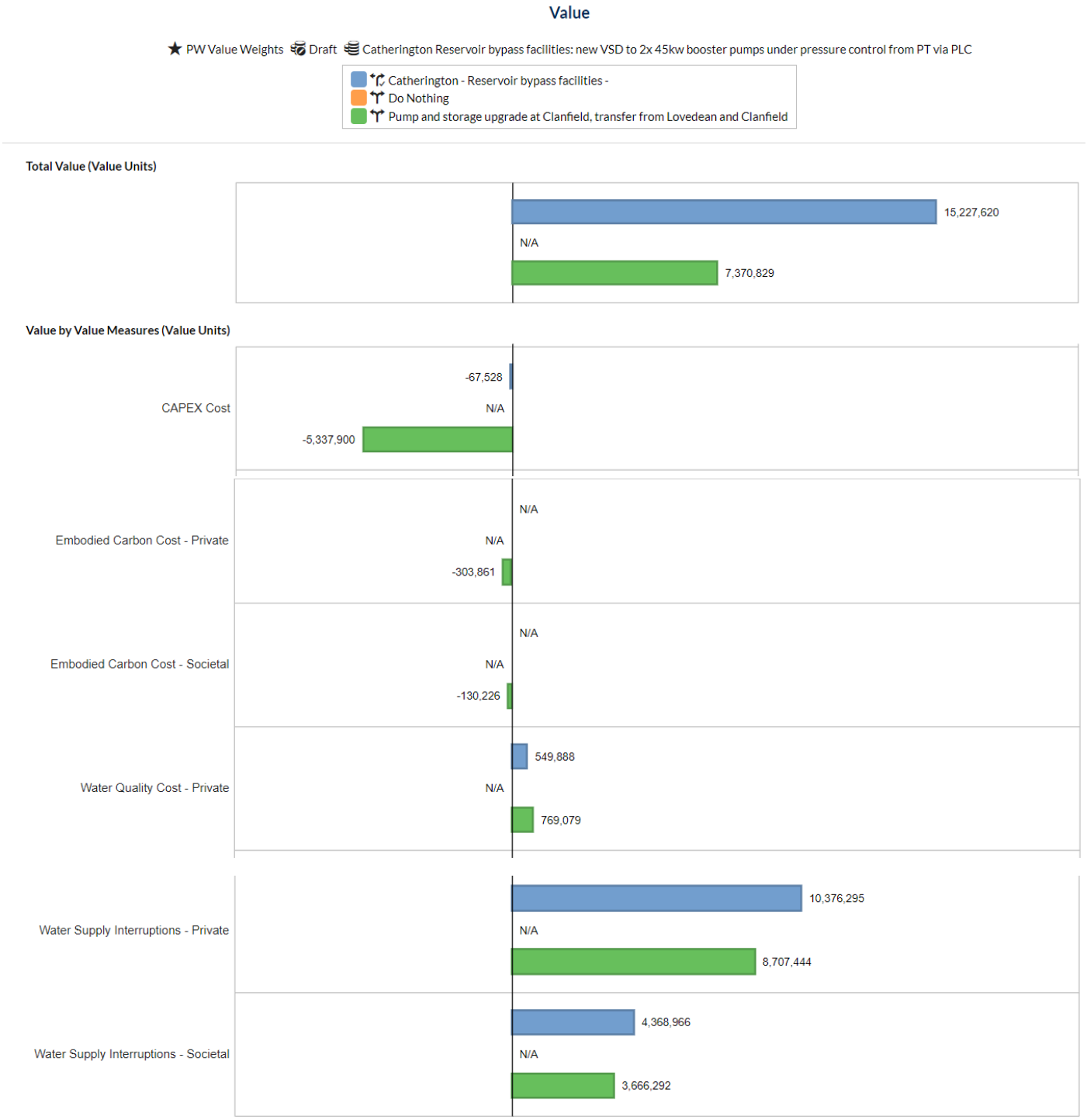
The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Water Quality compliance Events will reduce from 1:4years to 1:10 years with both solutions over do nothing

Catherington Reservoir





Conclusions:

The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Water Quality compliance Events will reduce from 1:4years to 1:10 years with both solutions over do nothing

Clanfield Reservoir

Investments / Clanfield - Reservoir bypass facilities - VSD to 2 90kw booster pumps...

Value Comparison

Submit | Reports

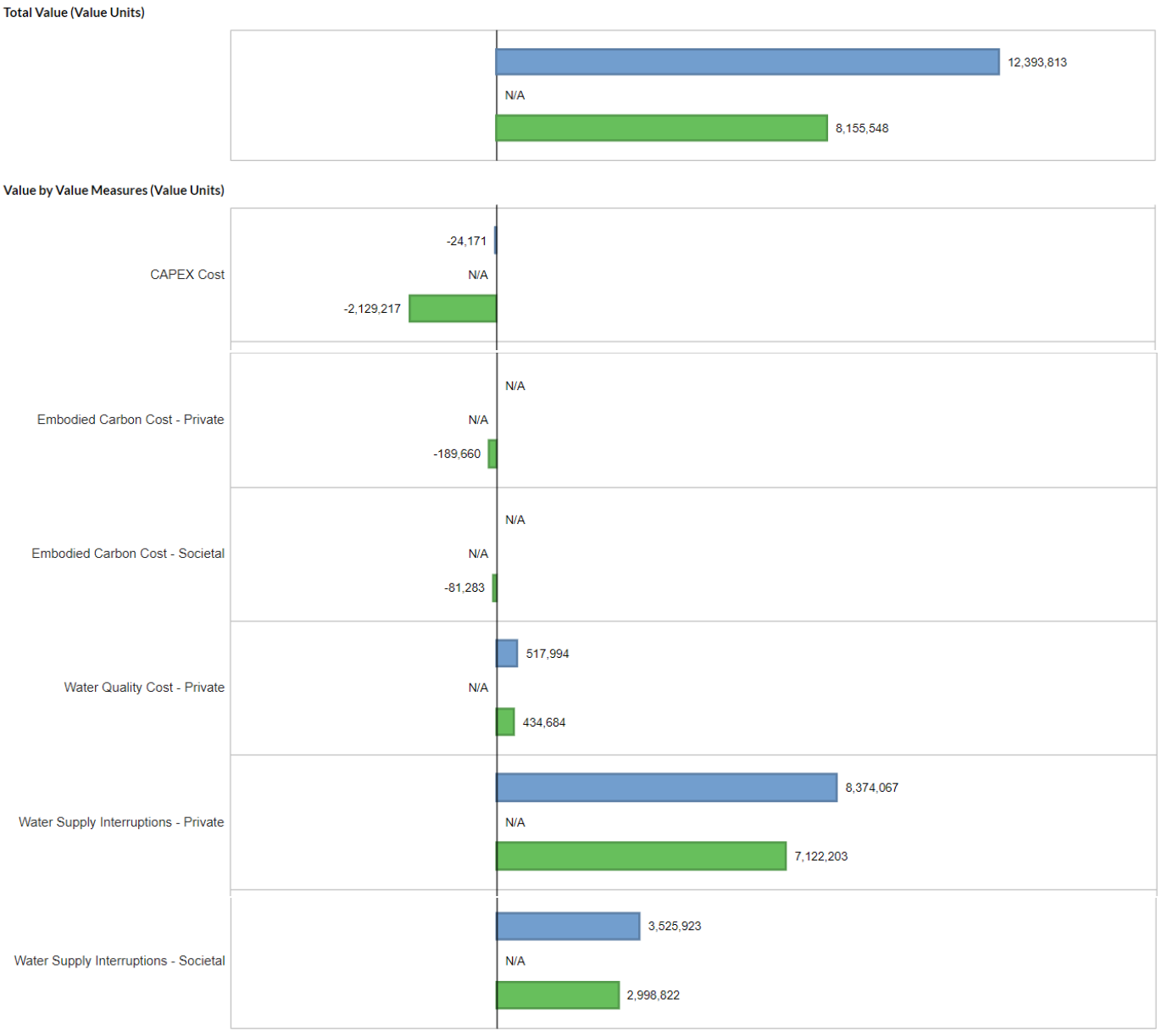
Compare: Financial Metrics

Alternative	B/C	V/C
Do Nothing		
Storage upgrade and new pumps at Catherington, transfer from Lovedean and Catherington	0.34	3.97
Clanfield - Reservoir bypass facilities -	21.43	512.76

Value

PW Value Weights | Draft | Clanfield - Reservoir bypass facilities - VSD to 2 90kw booster pumps + pressure control from PT via PLC

Clanfield - Reservoir bypass facilities -
Do Nothing
Storage upgrade and new pumps at Catherington, transfer from Lovedean and Catherington



Conclusions:

The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Both options mitigate Water Quality Compliance Risk
- Water Quality compliance Events will reduce from 1:4years to 1:10 years with both solutions over do nothing

Firdown Reservoir

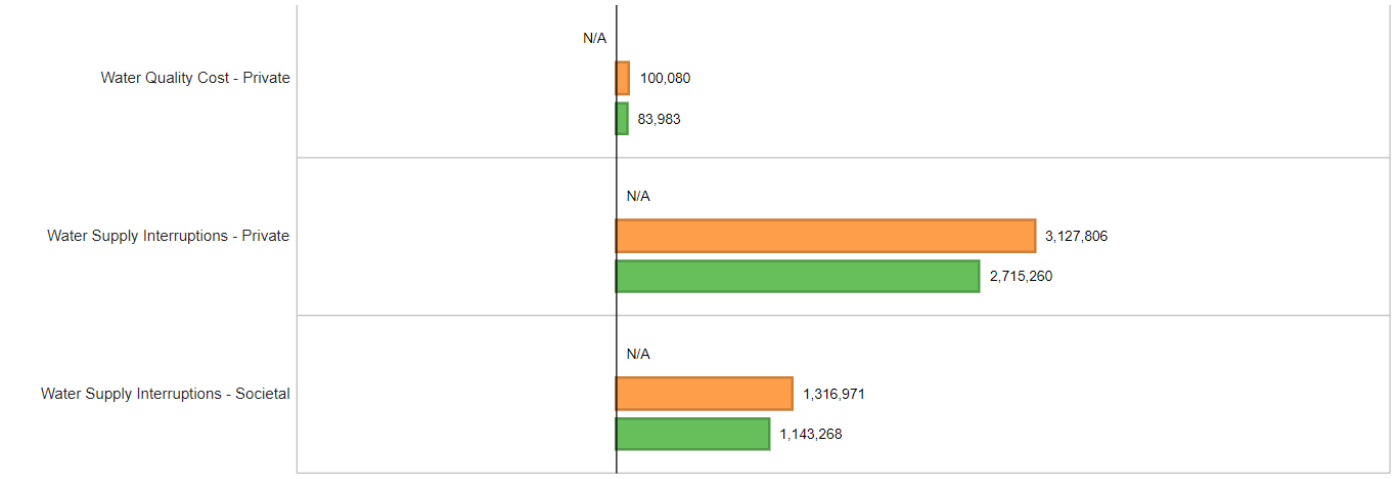
Investments / Firdown - Reservoir bypass facilities - fit VSD to 2 37.5kw booster pu...

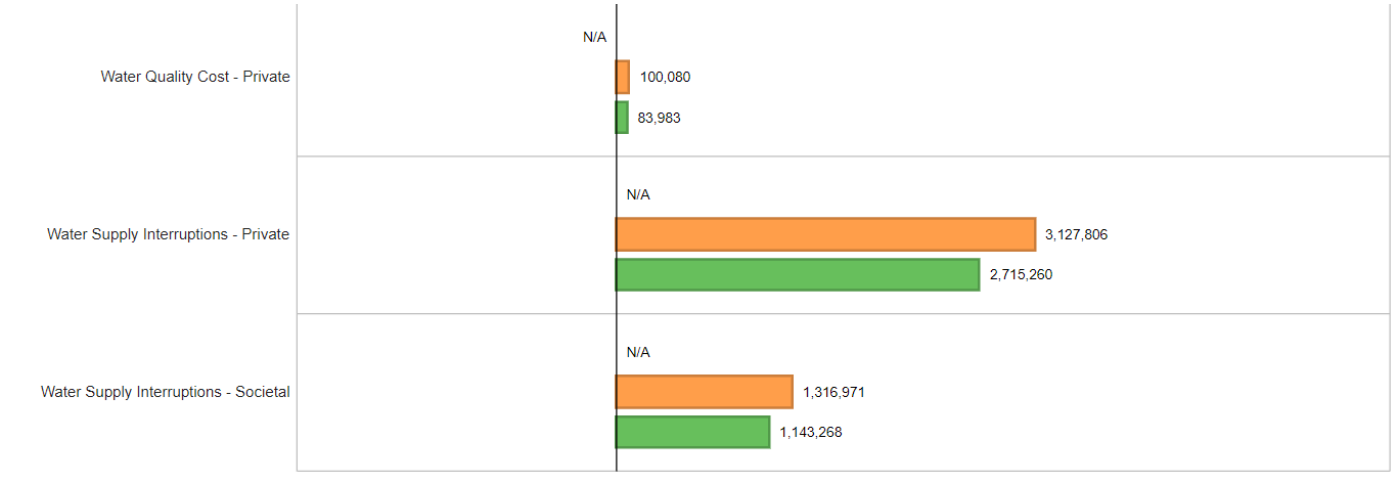
Value Comparison

Submit | Reports

Compare: Financial Metrics

Alternative	B/C	V/C
Do Nothing		
New Booster Pump and cross-connection to supply	1.55	71.98
Firdown - Reservoir bypass facilities	3.37	151.96





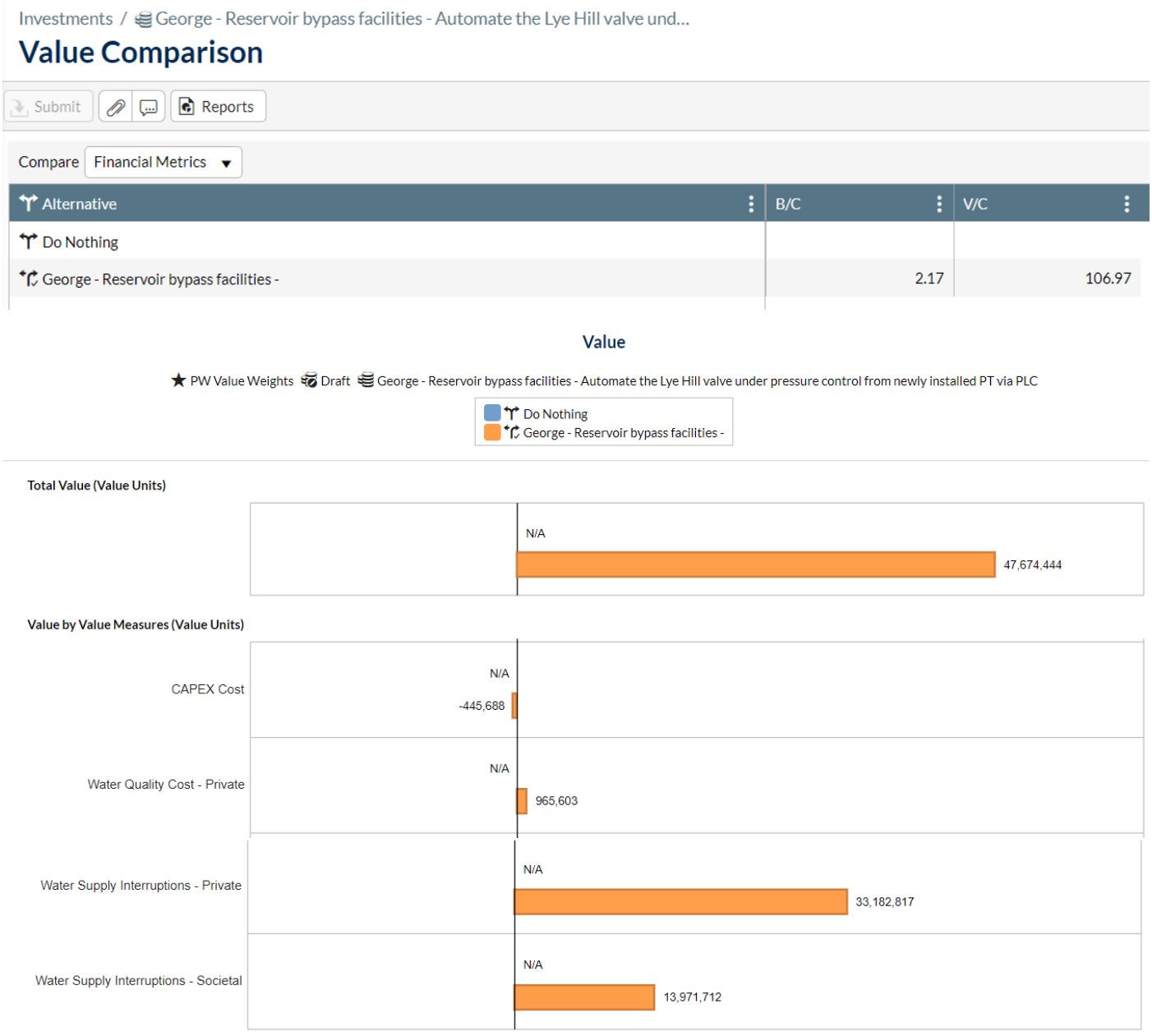
Conclusions:

The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Both options mitigate Water Quality Compliance Risk
- Water Quality compliance Events will reduce from 1:4years to 1:10 years with both solutions over do nothing

George Reservoir



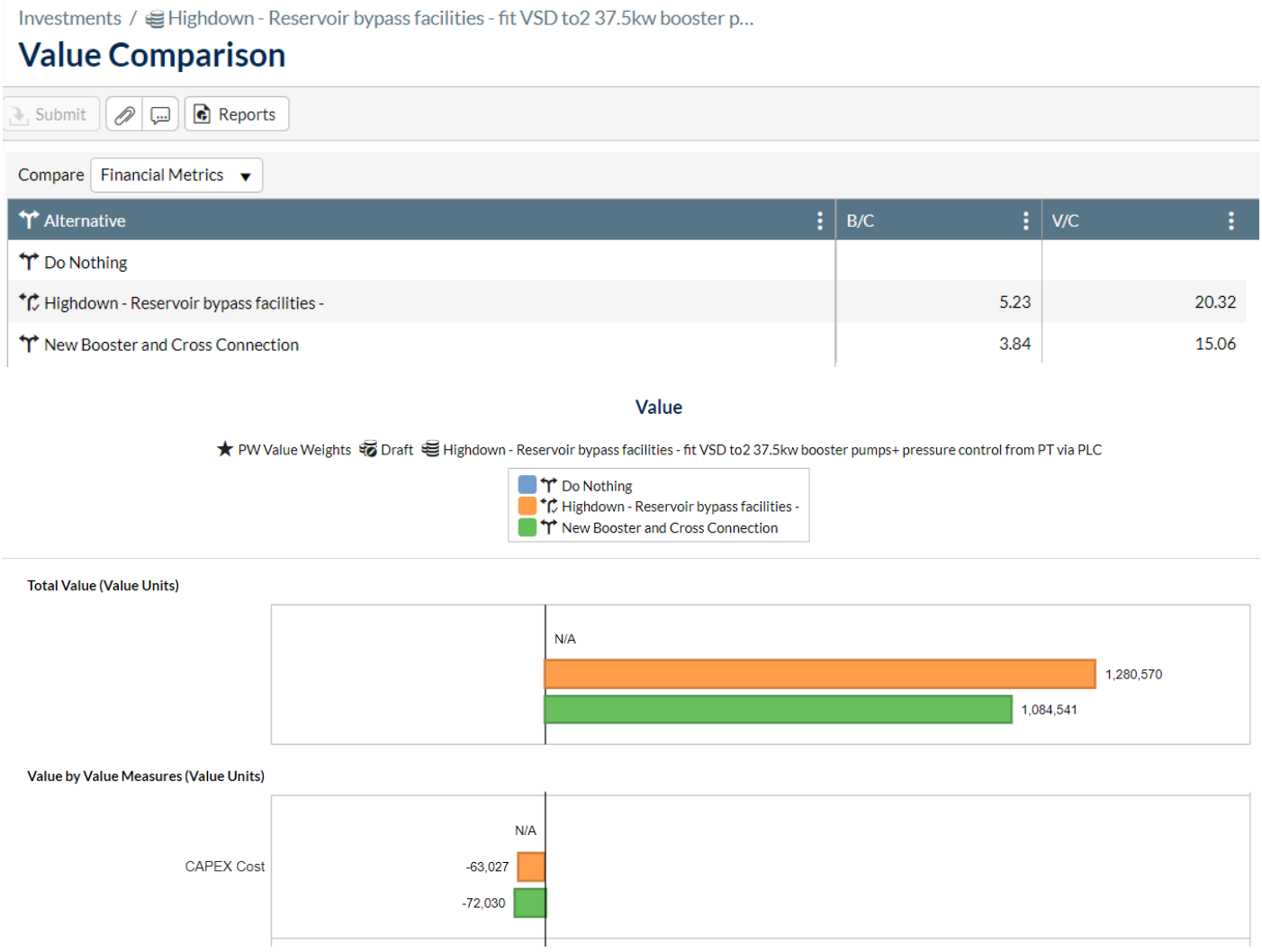
Conclusions:

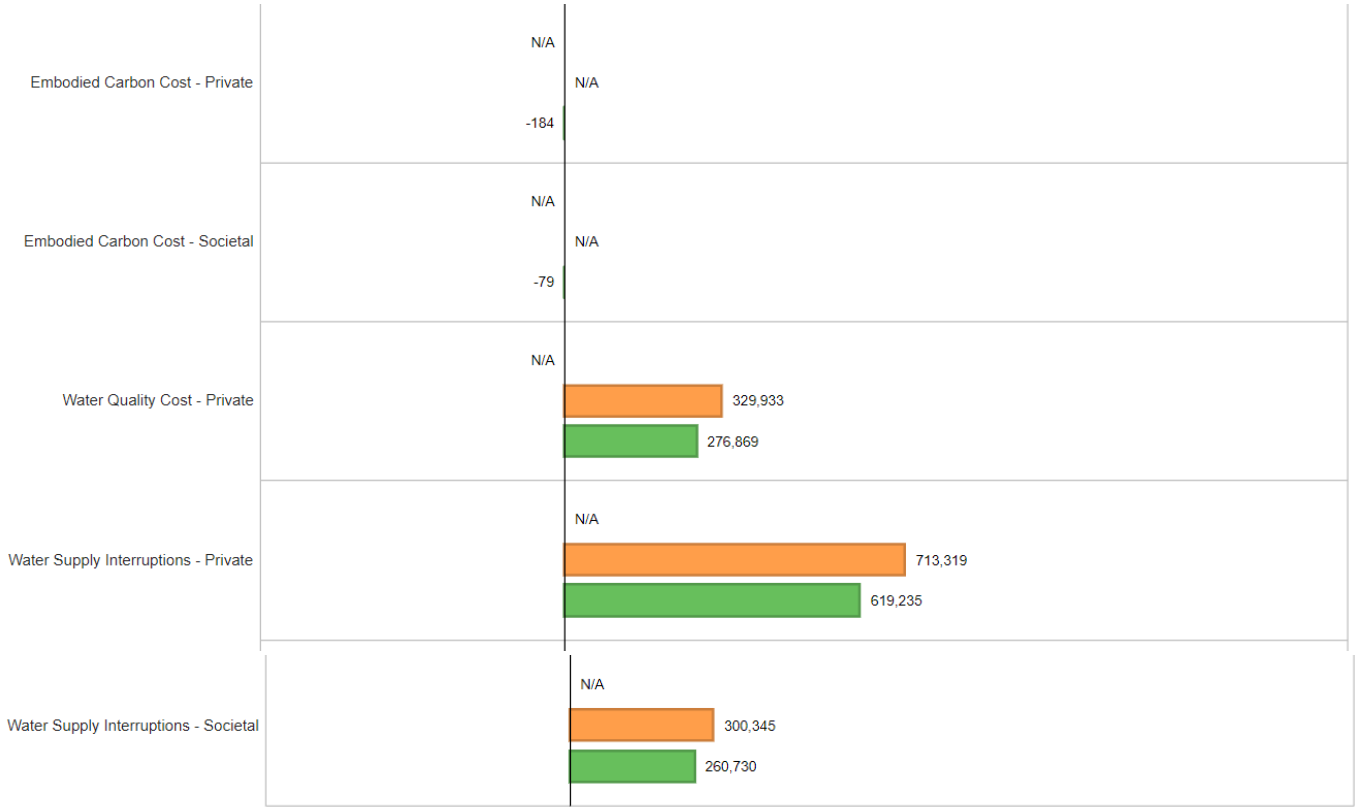
There was no feasible alternative supply (capital works) to the George system however the investment shows benefit against the do nothing option

Assumptions:

- The do nothing options assumes that existing risk prevails
- The investment assumes that this risk is fully mitigatable.
- Water Quality compliance Events will reduce from 1:4years to 1:10 years with solution over do nothing

Highdown Reservoir





Conclusions:

The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Both options mitigate Water Quality Compliance Risk
- Water Quality compliance Events will reduce from 1:4years to 1:10 years with both solutions over do nothing

Nelson Reservoir

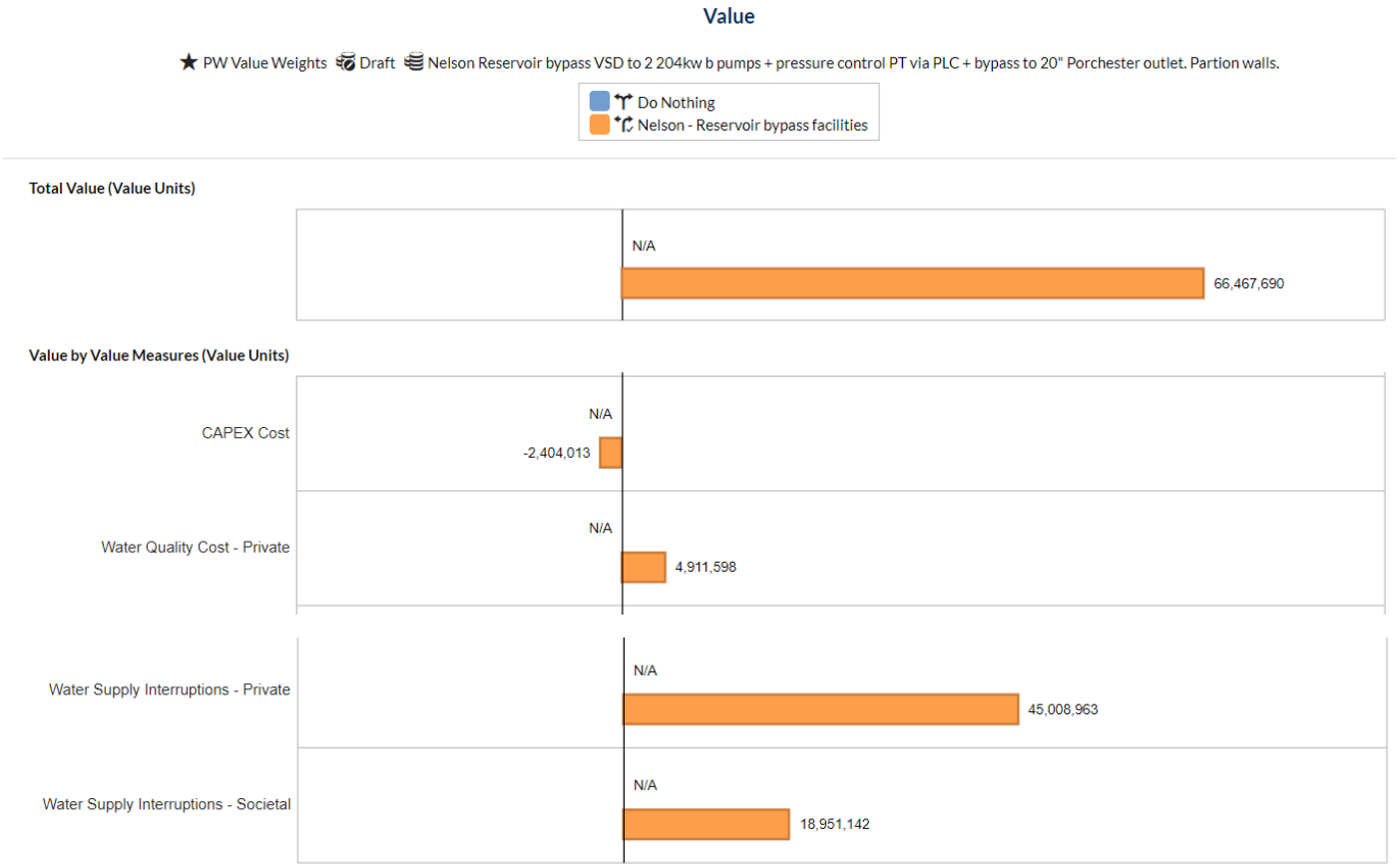
Investments / Nelson Reservoir bypass VSD to 2 204kw b pumps + pressure control...

Value Comparison

Submit | Reports

Compare: Financial Metrics

Alternative	B/C	V/C
Do Nothing		
Nelson - Reservoir bypass facilities	2.04	27.65



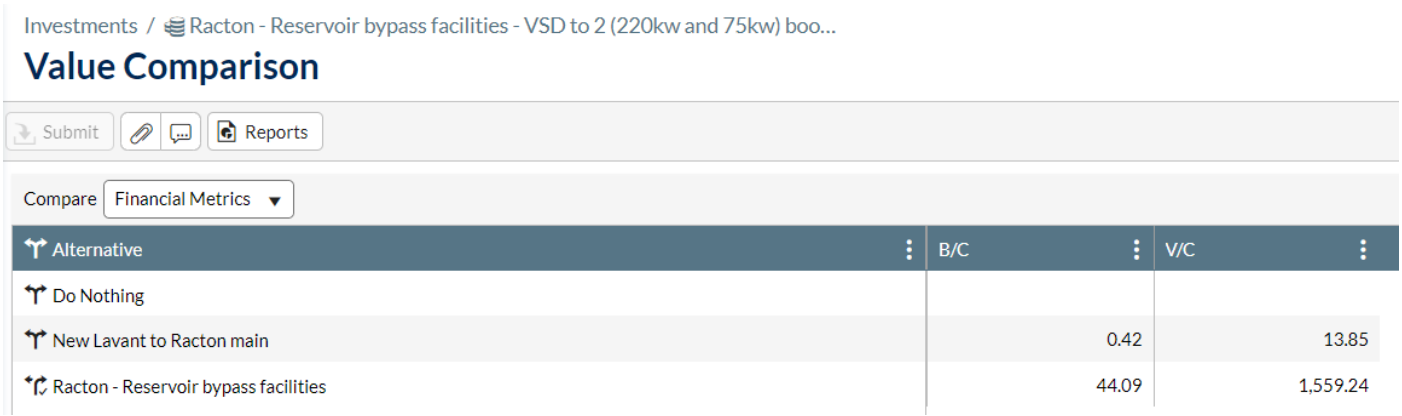
Conclusions:

There was no feasible alternative supply (capital works) to the Nelson system however the investment shows benefit against the do nothing option.

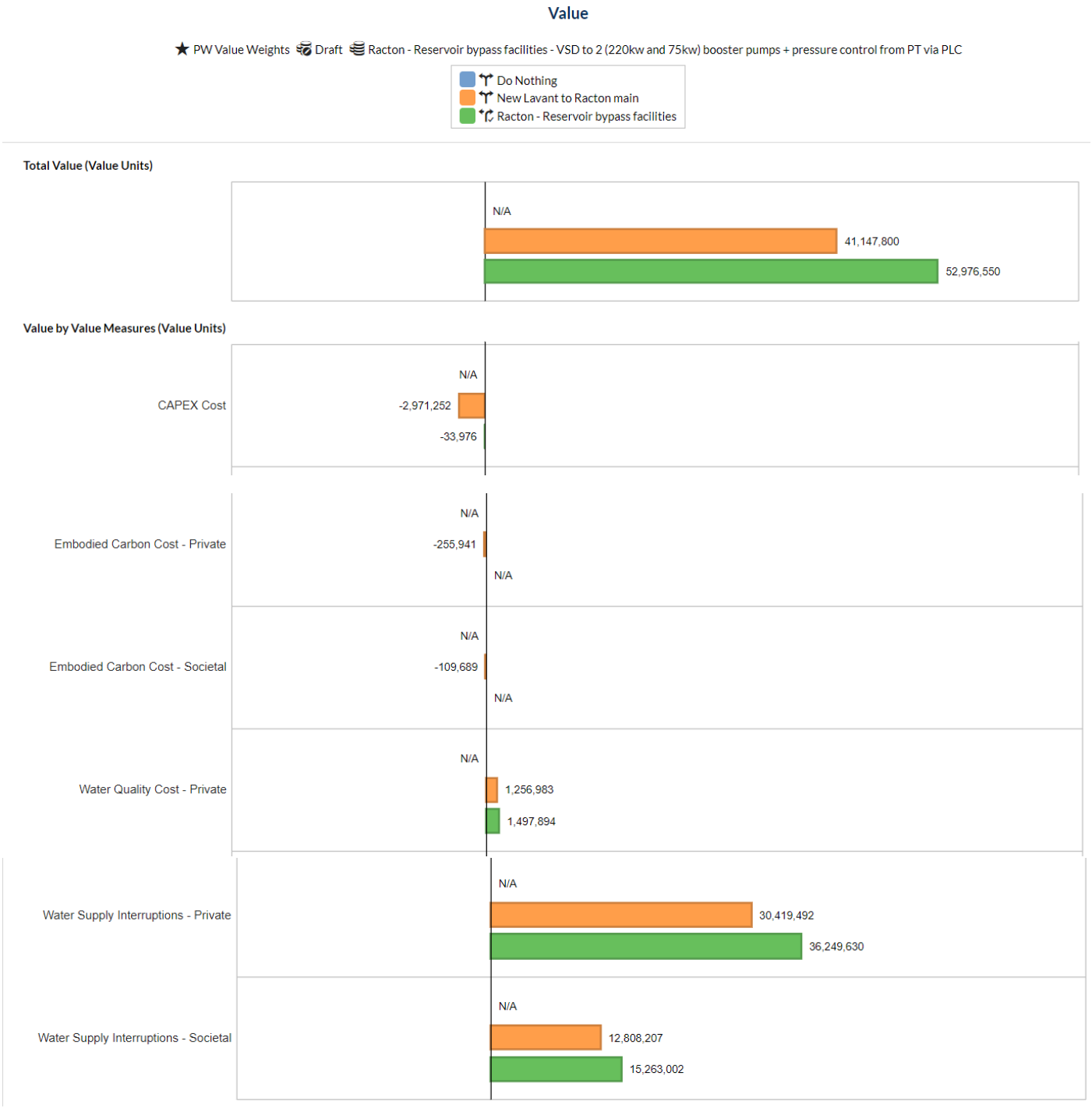
Assumptions:

- The do nothing options assumes that existing risk prevails
- The investment assumes that this risk is fully mitigatable.

Racton Reservoir:



Alternative	B/C	V/C
Do Nothing		
New Lavant to Racton main	0.42	13.85
Racton - Reservoir bypass facilities	44.09	1,559.24



Conclusions:

The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Both options mitigate Water Quality Compliance Risk
- Water Quality compliance Events will reduce from 1:4years to 1:10 years with both solutions over do nothing

Shedfield Reservoir

Investments / Shedfield Reservoir bypass - Enhance control of Nelson to Shedfield ...

Value Comparison

Submit | Reports

Compare: Financial Metrics

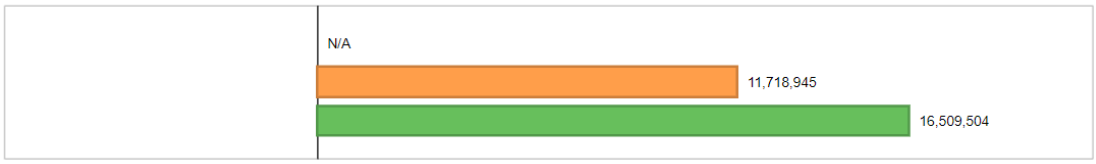
Alternative	B/C	V/C
Do Nothing		
New main and pumps from Hoads Hill	0.69	5.43
Shedfield - Reservoir bypass facilities	11.21	104.78

Value

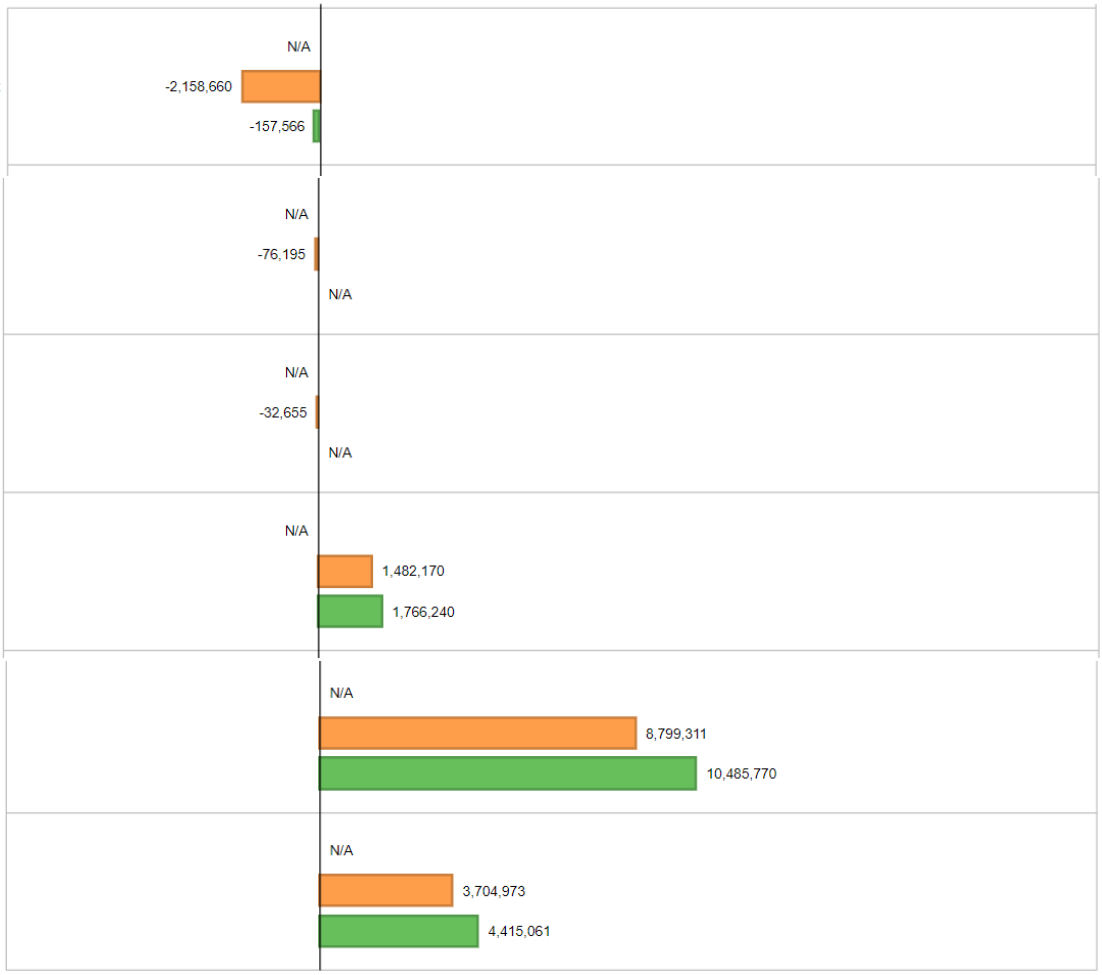
PW Value Weights | Draft | Shedfield Reservoir bypass - Enhance control of Nelson to Shedfield FCV to PRV + pressure control from PT via PLC

- Do Nothing
- New main and pumps from Hoads Hill
- Shedfield - Reservoir bypass facilities

Total Value (Value Units)



Value by Value Measures (Value Units)



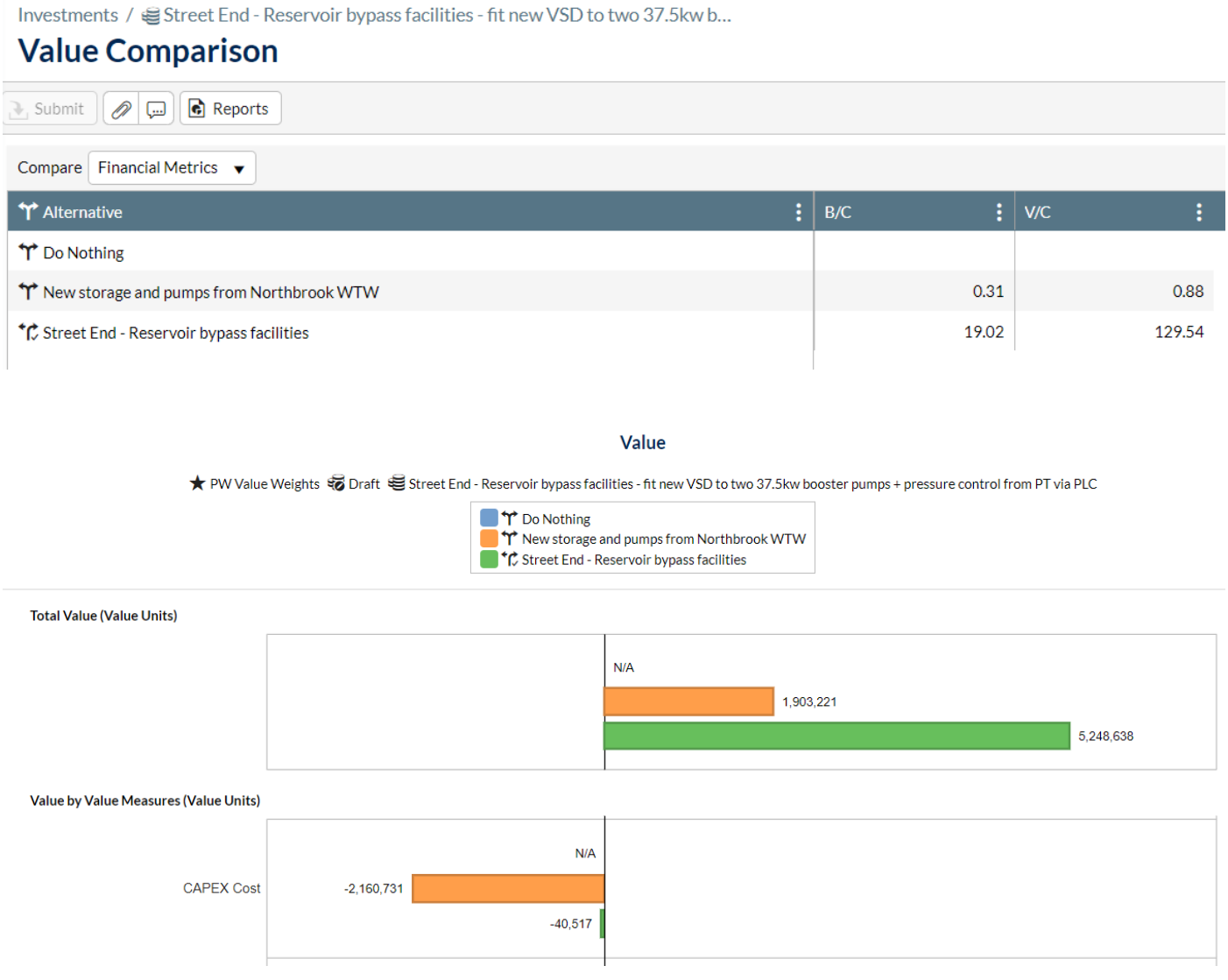
Conclusions:

The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Both options mitigate Water Quality Compliance Risk
- Water Quality compliance events will reduce from 1:4years to 1:10 years with both solutions over do nothing

Street End Reservoir:



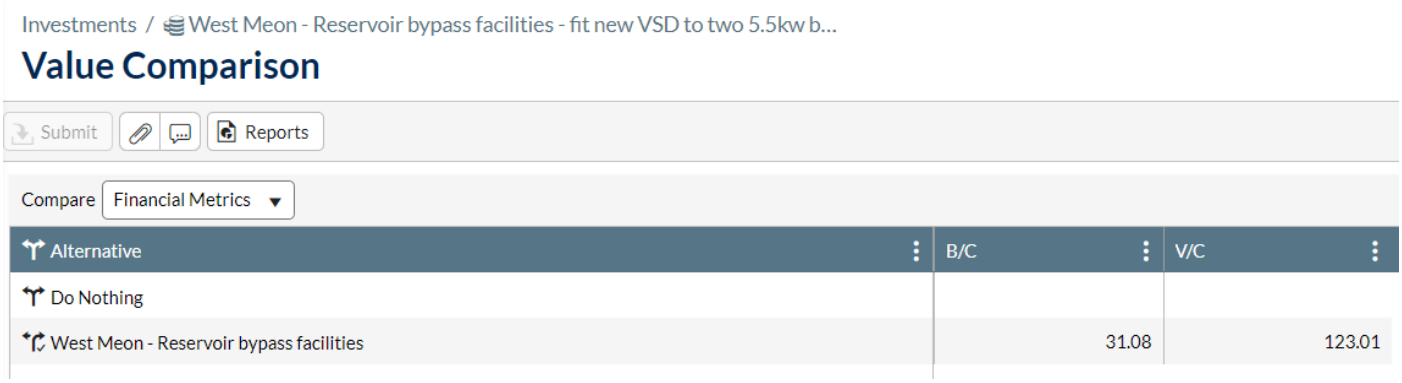
Conclusions:

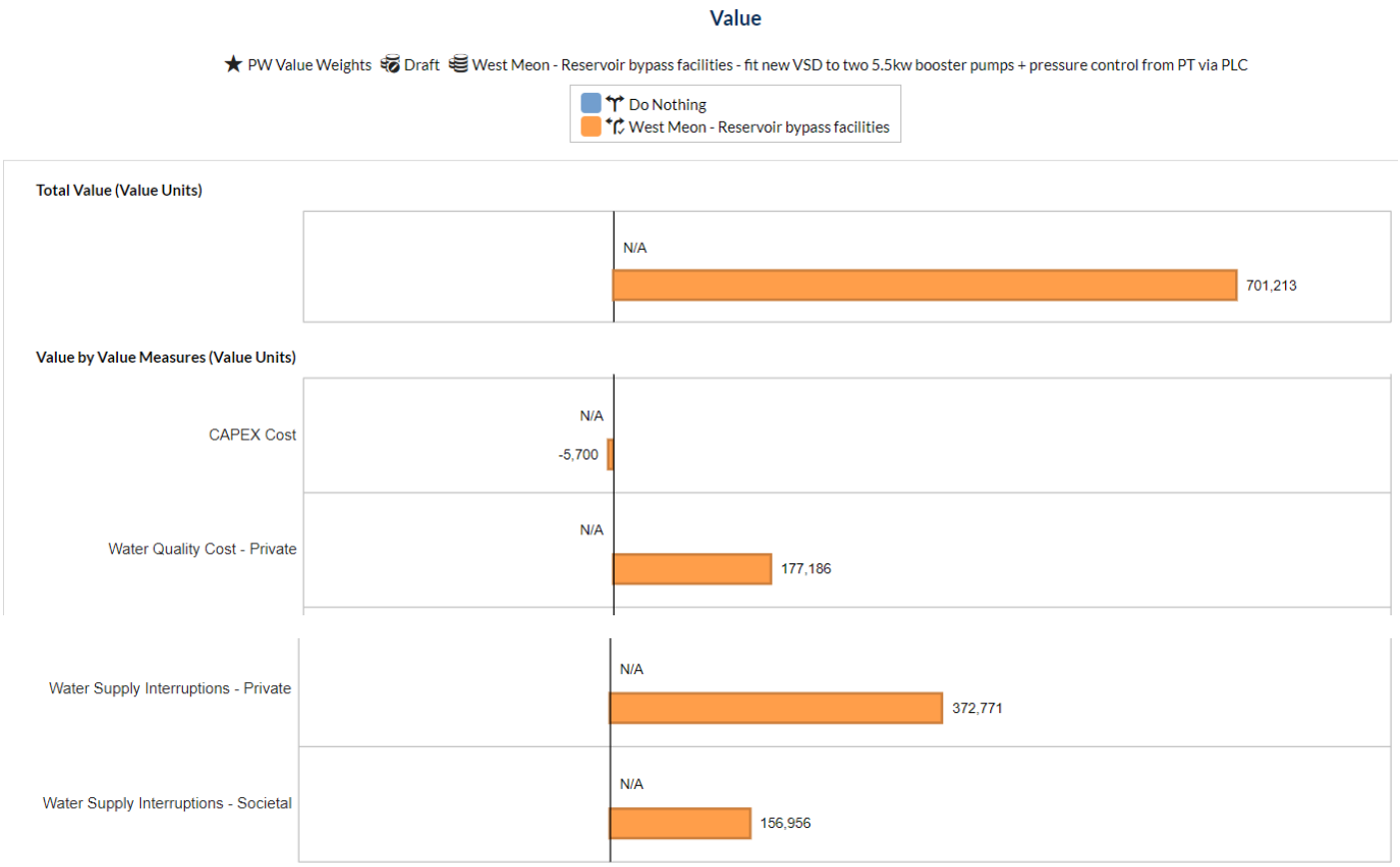
The best value option in Copperleaf concurs with the best value option selected by Portsmouth Water in the PR24 Draft Submission. Both investment options offer good levels of service interruption resilience.

Assumptions:

- Both options mitigate Water Quality Compliance Risk
- Water Quality compliance events will reduce from 1:4 years to 1:10 years with both solutions over do nothing

West Meon Reservoir:





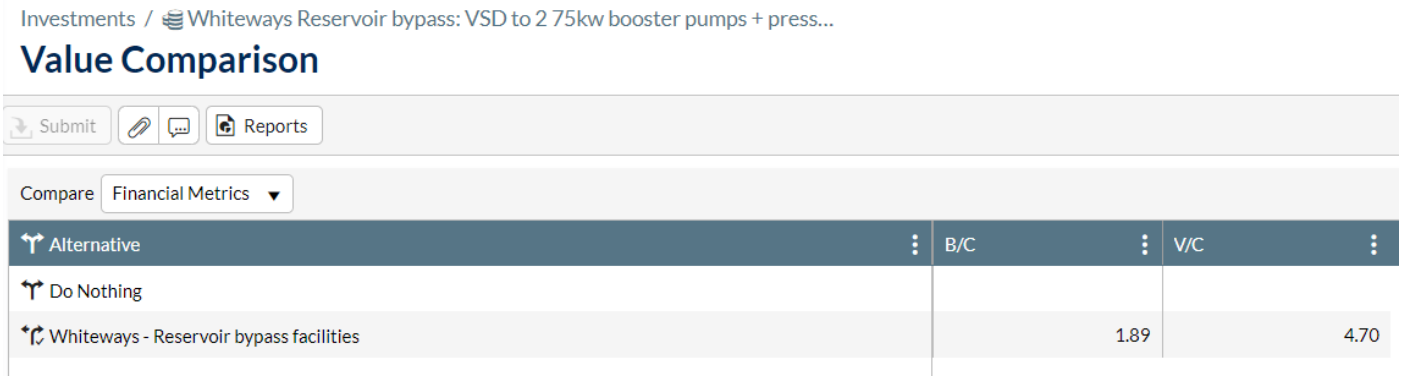
Conclusions:

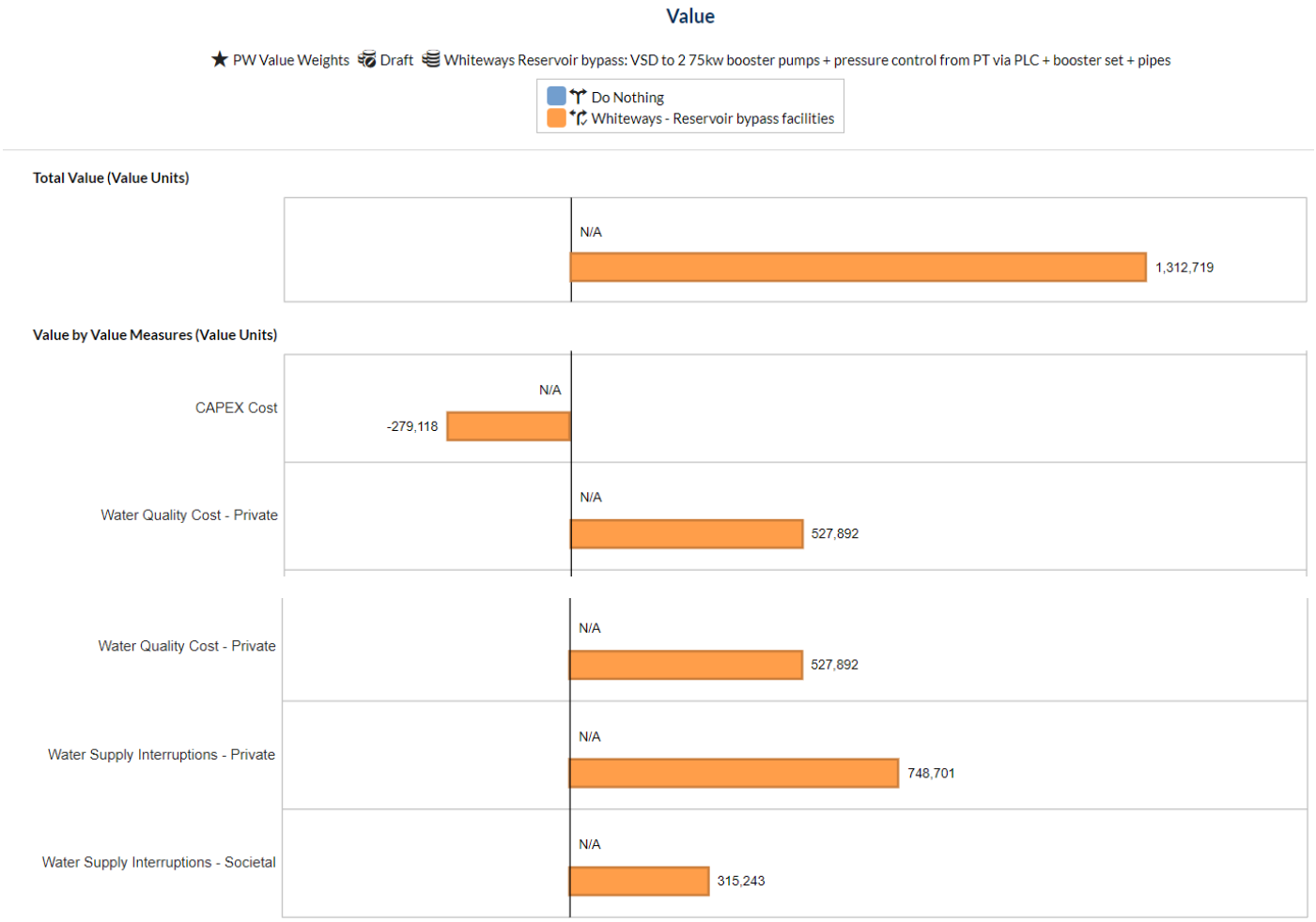
There was no feasible alternative supply (capital works) to the West Meon system however the investment shows benefit against the do nothing option.

Assumptions:

- The do nothing options assumes that existing risk prevails
- The investment assumes that this risk is fully mitigatable.

Whiteways Reservoir:





Conclusions:

There was no feasible alternative supply (capital works) to the Whiteways system due to its geography, however the investment shows significant benefit against the do nothing option.

Assumptions:

- The do nothing options assumes that existing risk prevails
- The investment assumes that this risk is fully mitigatable.

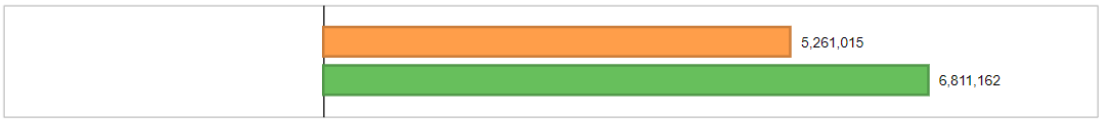
Southwick Reservoir:

Value

★ PW Value Weights Draft Southwick - Reservoir bypass facilities - fit new VSD to two 18.5kw booster pumps + pressure control from PT via PLC

- Do Nothing
- New pumps and connection to Nelson
- Southwick - Reservoir bypass facilities

Total Value (Value Units)



Value by Value Measures (Value Units)