

Justification for the Omission of Rainwater Harvesting Systems

Proposed 60-Unit Residential Development – Pavenhill, Purton

1. Executive Summary

This note sets out the rationale for not incorporating individual rainwater harvesting systems within the proposed 60-unit residential development.

Whilst the environmental benefits of rainwater harvesting are recognised, the installation of such systems would result in a substantial increase in build costs, introduce ongoing maintenance and management obligations, and deliver limited environmental benefit when considered against the overall viability and sustainability measures already incorporated within the scheme.

The development adopts a fabric-first approach to sustainability, incorporating highly insulated building envelopes, efficient heating systems, water-efficient fittings, biodiversity enhancements and sustainable drainage measures, which collectively provide a more proportionate and cost-effective means of reducing environmental impacts.

2. Cost Implications

Based on current build cost estimates, the provision of rainwater harvesting systems would increase construction costs by approximately **5.44% on average per dwelling**.

Analysis of the proposed house types indicates:

- Additional cost per dwelling ranges from **£11,000 to £15,000**.
- Percentage increases vary between **3.94% and 7.95%** depending on house size.
- Smaller affordable and entry-level homes experience the greatest financial impact.

Applying these figures across a 60-unit development results in an estimated additional project cost of:

60 dwellings × average £13,200 per dwelling = approximately £792,000

This represents a significant additional capital expenditure which would adversely affect scheme viability and could impact on the delivery of affordable housing, public open space, ecological enhancements and other community benefits.

3. Limited Environmental Benefit Relative to Cost

Rainwater harvesting systems are most effective where there is a significant non-potable water demand, such as:

- Commercial developments.
- Apartment blocks with communal landscaping.
- Educational or industrial facilities.

Within a typical residential housing development:

- Water demand for external irrigation is relatively low.
- Seasonal rainfall patterns reduce the reliability of stored water.
- Systems frequently require mains-water top-up during dry periods.
- Actual potable water savings are often lower than predicted due to resident usage patterns.

As a result, the environmental benefit achieved is not considered proportionate to the significant capital investment required.

4. Maintenance and Operational Considerations

Rainwater harvesting systems introduce additional maintenance requirements including:

- Pumps and control equipment.
- Water storage tanks.
- Filters and treatment components.
- Regular inspection and servicing.

For a development comprising 60 individual dwellings this would create:

- Increased homeowner maintenance responsibilities.
- Potential future repair and replacement costs.
- Risk of systems becoming inoperative if maintenance is not undertaken.
- Increased management requirements for any shared infrastructure.

There is therefore a risk that the anticipated long-term performance benefits would not be realised throughout the lifetime of the development.

5. Alternative Sustainability Measures

The development already incorporates a range of sustainability measures which are considered to provide a more efficient and reliable reduction in environmental impacts, including:

- High levels of insulation and airtightness.
- Fabric-first energy-efficient design.
- Water-efficient sanitaryware and fittings.
- Sustainable Drainage Systems (SuDS).
- Biodiversity Net Gain enhancements.
- Tree, bird and bat box provision.
- Electric vehicle charging infrastructure.
- Cycle storage provision.

These measures provide measurable environmental benefits with lower maintenance requirements and better long-term performance outcomes.

6. Viability and Housing Delivery

The cumulative financial burden associated with rainwater harvesting systems would place additional pressure on development viability.

An estimated additional cost of approximately **£792,000** across the development has been used to contribute towards:

- Affordable housing provision.
- Biodiversity enhancement measures.
- Public open space improvements.
- Highway and infrastructure works.
- Enhanced building fabric performance.

The omission of rainwater harvesting therefore assists in ensuring the scheme remains deliverable whilst continuing to meet broader sustainability objectives.

7. Conclusion

The proposed omission of rainwater harvesting systems is considered justified on the following grounds:

1. The systems would add approximately **£792,000** to the cost of a 60-unit development.
2. They increase dwelling build costs by approximately **5.44% on average**.
3. Environmental benefits are relatively limited in comparison with the capital investment required.
4. Ongoing maintenance liabilities and future replacement costs would be transferred to homeowners and management bodies.
5. Alternative sustainability measures incorporated within the scheme provide a more cost-effective and reliable approach to reducing environmental impacts.
6. The omission assists in maintaining scheme viability and supporting the delivery of housing, affordable homes, infrastructure and biodiversity enhancements.

Accordingly, it is considered that the exclusion of rainwater harvesting systems represents a reasonable and proportionate design decision that balances sustainability objectives with deliverability, affordability and long-term operational practicality
