



**Town and Country Planning Act 1990
Town and Country Planning (Inquiries Procedure)
(England) Rules 2000 (As Amended)**

Appeal by Persimmon Homes Severn Valley

Planning Inspectorate reference: APP/D0121/W/24/3343144

North Somerset Council reference: 23/P/0664/OUT

Summary proof of evidence of:

Simon Bunn

Flood Risk Manager, North Somerset Council

1.0 Introduction

- 1.1 The evidence in my proof shows that the development site is at risk of flooding for the 1 in 200 year plus climate change (higher central) design flood event and would result in 1.2m deep flood water in the undefended scenario and 2.55m deep in the undefended scenario plus climate change (upper end).
- 1.2 Although there are policies within the current version of the Severn Estuary Shoreline Management Plan to upgrade defences in line with climate change, the policies are not statutory and future funding for the works is at best uncertain.
- 1.3 In my professional opinion, based on both the undefended and defended 1 in 200 year plus climate change design flood impacts, the proposed development would have negative economic and social costs and negative environmental impacts. Therefore, by building in a flood risk area the development is inherently unsustainable.

2.0 Existing Flood Risk Context and how the site is protected

- 2.1 The site is shown as being in flood zone 3 on the Environment Agency flood map for planning. Flood zone 3 has a 0.5% chance of flooding each year which is also expressed as a 1 in 200 year event. The site is protected by flood defences at Sand Bay and at Woodspring Bay. The flood map for planning shows the flood risk if the defences were not in place. This is to account for future uncertainty and for the following reasons:
 - They may be overtopped in extreme events;
 - They may fail and be breached in a storm;
 - They may not be present for the lifetime of the development due to coastal erosion or a reduction in maintenance activities, or
 - In the future they may be realigned in a different location and may no longer provide a level of protection to some areas;
 - There is uncertainty that the defences will be upgraded due to the lack of available funding or environmental constraints.

2.2 Modelling undertaken by Hydrock for the Appellant shows that without defences for the design flood event the flooding is 1.2m deep. This is the residual risk that needs to be managed in the site proposals.

3.0 Future flood risk and coastal management

3.1 The coast of England and North Somerset is managed through Coastal Groups who have created Shoreline Management Plans (SMPs). The Shoreline Management Plans have divided up the coast into sections related to their how they hydraulically function and assigned policies to each section of the coast.

3.2 The policy for Sand Bay is hold the line and the current standard of protection is 1 in 100.

3.3 The policy for Woodspring Bay is managed realignment and the current standard of protection is a combination of 1 in 200, 1 in 100, 1 in 50 and 1 in 25.

3.4 For both policies upgrades will be required to continue the same or higher standard of protection due to sea level associated climate change.

3.5 The environmental designations along the Severn Estuary add a complexity to any future improvements that adds to the cost of any scheme.

3.6 Policies in the SMPs are unfunded and the challenge of finding future funding to deliver the policies is considerable, therefore it is uncertain that the required defence improvements can be delivered in accordance with the policies at the right time.

3.7 North Somerset faces one of the largest challenges in England due to the level of change that is needed combined with the complexity and extent of flooding that is present now and in the future.

4.0 Sustainability of flooding

4.1 Flooding has an economic, social and environmental cost that means it is inherently unsustainable to promote development in flood zones.

4.2 Damages and repair costs associated with flooding are estimated by the Association of British Insurers to be £33,6000. The deeper the flooding and the longer it is present the higher the cost will be. For the proposed development in

the undefended scenario with flood depths between 1m and 1.5m the economic cost of repair could be as much as £18,050,000.

4.3 Flooding has a negative effect on the health of those impacted.

Direct health effects include:

- drowning
- physical trauma (for example, concealed or displaced objects, electrocution, fire)
- skin and gut infections from exposure to contaminated flood water

Longer-term health effects include:

- mental health impacts (secondary stressors)
- carbon monoxide poisoning due to inappropriate use of generators
- respiratory disease from mould and damp
- rodent-borne disease
- other health effects (for example, heart attacks)

4.4 The Environment Agency has a methodology to enable the health cost of flooding to be monetised and for the appeal site this could equate to £785,840.

4.5 The environmental impact of flooding is related to the cost of recovery which includes the disposal and replacement of damage items such as flooring, furniture and kitchens. This combined with the use of de-humidifiers to dry the building out and the necessary repair to the building fabric could equate to over 2600 tonnes of CO₂ emissions.