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Hastings Landslide

This is one of 15 case studies informing the Infrastructure Systems Review.

System: Coupled cliff stability, property and risk-financing.

Systems contribution and value: Reframed risk in terms of the cliff system, rather than individual properties, integrating geotechnics, monitoring, planning, finance and community action. Developed lower-cost intervention options with the potential to restore property value and insurability.

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Summary

This case study focuses on HASTE (Hydraulic Activity Stabilisation Template), which applies systems approaches to inland landslide risk in Hastings.

HASTE shows how a systems approach to inland landslide risk delivers better outcomes per pound than fragmented, reactive responses, and how its method is repeatable. In St Leonards-on-Sea, 1km of unstable cliff affects 540 homes: first the safety of the people who live on and below it, then their wellbeing, property values, insurability and mortgageability. What needs to change is the response – from property-by-property remediation that displaces risk, to coordinated intervention across the cliff as one system.

A community interest company (CIC) convenes parties, holds the evidence and coordinates the response, procuring design and construction from chartered firms carrying professional indemnity.

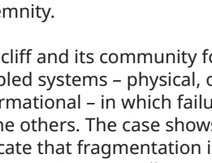
The cliff and its community form a system of four tightly coupled systems – physical, organisational, financial and informational – in which failure in one propagates rapidly to the others. The case shows three things. Estimates indicate that fragmentation is expensive: continuing as we are costs £32.3 million in present value over 30 years, against £8.6 million for an evidence-led response, and the affected homes have become progressively harder to insure, mortgage and sell. Delivering the same works at the scale of the engineering system, rather than the property boundary, cuts cost through economies of scale. And a financing architecture matched to the cliff's long life can fund stabilisation while restoring functioning insurance and mortgage markets.

HASTE's core innovation is organisational: a community-led body convening a whole-system response where no single actor could. As a template, what transfers to other places is its method, independent of Hastings' geology.

Scope

The system of interest is 1km of cliff frontage in St Leonards-on-Sea and the 540 properties, infrastructure and public realm it supports – the physical cliff and its hydrology and drainage; the built environment at risk; and the organisational and financial arrangements that determine whether risk can be managed over time.

The constraints are structural. Before HASTE, the response was reactive and case-by-case. No homeowner could stabilise ground beyond their boundary; no council or agency held a clear mandate or budget for inland cliff instability; and the evidence needed to act was scattered across planning files and privatised utilities. The pre-existing institutions were not resilient to a shared hazard but vulnerable to it. In the absence of any body positioned to act for the whole, locally-led coordination was the only route forward.



£43,990

HASTE reduction in whole-life cost per property from £59,840 to £15,850

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In scope are the system-level activities that shape outcomes: integrated evidence-gathering and modelling; identification of engineering zones; coordination of infrastructure works; planning controls to prevent further deterioration; and financing and governance aligned to long-term value. Stakeholders span residents; Hastings Borough Council; insurers, lenders and valuers; highways authorities and utilities; technical partners; central government and national agencies; the LGA Coastal SIG and peer councils; and developers where land-use change affects stability.

Out of scope are detailed engineering designs and property-specific decisions, which depend on later technical and governance stages. Government is a stakeholder throughout; what is out of scope is HASTE performing the functions only government can perform, set out in 'Systemic assessment', below.

Outcomes

The intended outcomes are clear: people should be safe in their homes, properties should remain insurable and mortgageable, communities should remain stable, and public bodies should avoid escalating emergency costs. These outcomes are experienced by people – and by the natural coastal-edge system – as benefits or disbenefits, which is why those most affected, including residents with no other voice in the process, must help define them. Pursuing them means explicit trade-offs – prioritising system-scale coordination over faster property-by-property fixes, and sequencing the most active zones first – held steady against the cliff's long timeline rather than annual funding cycles.

In practice, outcomes have diverged sharply. Residents experience anxiety and uncertainty as instability worsens. Insurance withdrawal and crude risk screening have rendered some properties uninsurable, triggering tighter mortgage conditions and reduced liquidity. Local authorities face significant pressure to act but lack clear mandates, funding routes and national frameworks. On the HASTE cliff, six landslides since November 2023 – with around 20 more across the town – occurred in unmaintained ground during prolonged extreme rainfall, with estimated property-value falls of around 20% across the affected area, indicated by transaction analysis and resident accounts.

These outcomes arose from many organisations each behaving rationally within its own constraints and time horizons: insurers withdrew full cover; lenders tightened lending; councils avoided legal precedent; operators followed statutory regimes. Collectively, these rational actions created systemic lock-in. This is a collective-action failure: 540 homes are affected by an integrated failure surface and morphology, yet decisions are taken plot by plot. Actions by one change the risk carried by neighbours through externalities each is powerless to resolve alone, while responsibility for the cliff as a whole is fragmented across hundreds of titles and several statutory bodies. The result is a market that has stopped functioning.

Intensifying rainfall under climate change makes such events more frequent and severe, so a response that merely reinstates past conditions will be overtaken by the next. HASTE is therefore designed to be preventative and adaptive:

- monitoring the system continuously
- an early-warning network that gives residents time to act
- stabilising ahead of failure rather than repairing after it.

The evidence base for systems change Hastings Landslide

Figure 1. HASTE has been conceived in terms of desired outcomes, the systems responsible for the outcomes, and the interventions necessary to change the performance of those systems.



SYSTEMS	INTERVENTIONS	OUTCOMES
Physical system Engineered coastal edge across several geological zones, with the water, power and highways infrastructure within it.	**Stabilisation works** System-scale engineering across the three zones, coordinated with statutory infrastructure works.	**Stabilised cliff** Maintained for the long term; the design horizon matched to the system, not the property boundary.
Informational system Planning records, geotechnical documents and borehole logs, consolidated into one picture.	**Shared evidence** One integrated ground model and a live monitoring network, replacing scattered private records.	**Shared decision-support** Evidence that planning, insurance, lending and delivery all draw on; held as community-owned data.
Financial system Mortgages, insurance, FloodRe and pension capital, against substantial housing value and mortgage exposure.	**Three-layer financing** Capital, recovery and endurance layers, matched to the cliff's long time horizon.	**Functioning markets** Insurable and mortgageable; value retained by residents; a route into the FloodRe transition.
Organisational system Households, council, parish, undertakers, government and partners; the community and its social capital.	**Stakeholder coordination** HASTE convenes the partners; named accountabilities; a trained resident workforce.	**Resilient community** Clear responsibilities; a durable, replicable governance model.

Organisational 'connective tissue' links systems, interventions and outcomes horizontally and vertically. It convenes the actors, holds the evidence in common, and sustains maintenance once the works are done.

The systems are tightly coupled: how land is managed sets physical stability; the informational system makes that stability legible as shared evidence; and only against that evidence can the financial system price risk and fund the works.

Monitoring also serves as a learning mechanism: it tests assumptions and adapts interventions as ground behaviour is observed, with phased, reversible works allowing learning without disproportionate risk on a live cliff.

A systems approach also changes what each actor does. Insurers can price risk rather than withdraw from it. Authorities can share data and contribute to a solution rather than only manage failure. Developers can coordinate around shared ground evidence rather than externalise risk.

Benefits then accrue across the system. Homeowners gain safety, clarity and – through community-led delivery with professional oversight – opportunities for trained employment. Insurers and lenders gain better information. Councils gain defensible pathways. National bodies gain a replicable model that can inform the FloodRe 2039 transition.

Building this local capability – skills in monitoring, sensing, geology and stewardship – is itself a resilience outcome, and community agency both enables and outlasts the response.

Systems

The HASTE case is a system of four systems – physical, organisational, financial and informational.

The physical system spans 1km of engineered coastal edge across three geological zones, with ground, groundwater and slope behaviour that ignores property boundaries, plus the water, power and highways infrastructure within it.

The organisational system encompasses 540 households across hundreds of titles, Hastings Borough Council, statutory undertakers, national government and 60+ technical and policy partners.

The financial system represents around £148.5 million of housing-stock value, with mortgage security impaired across a frontage where every property still stands, coupled to insurers and pension capital.

The informational system provides the evidence the other three depend on. Relevant knowledge was fragmented across 6,171 planning records, 97 geotechnical documents and 17 prior investigations by eight consultancies, with community knowledge lost each time a property changed hands. HASTE consolidates this into an integrated ground model and live monitoring network, turning private records into shared decision-support that technical partners can scrutinise. Treated this way, data becomes a community asset rather than a private one pointing toward community-owned data stewardship and cooperative business models.

These systems are tightly coupled: how land is managed sets physical stability; the informational system makes that stability legible as shared evidence; and only against that evidence can the financial system price risk and fund the works. Running through all three is the organisational system – the community and the social capital it holds. It is the connective tissue the others depend on: it builds trust, inspires belief and leverages community skills – convening the actors, holding the evidence in common, and sustaining the maintenance once the works are done.

A systems approach reframes the problem from ‘who should fix the cliff?’ to ‘why does the system fail to deliver safe, insurable and mortgageable homes?’ Treating the cliff as a system avoids property-by-property fixes that displace risk. Shared evidence – a single representation that different parties reason from together (Figure 1) – supports consistent decision-making across markets and authorities.

Systems thinking makes trade-offs explicit and manageable, allowing decisions to be taken coherently across organisations and timescales. The binding constraint is as much governance as engineering, which is why HASTE’s innovation is organisational and informational as well as technical.

Interventions

Interventions in HASTE focus on enabling coordinated system action in place of isolated construction works. The approach is structured through a five-phase methodology – Understand > Plan > Finance > Stabilise > Monitor – applied once across the cliff, with each intervention assessed to support the wider slope system. The framing is deliberately about managing cliff risk: measures are selected by risk, mechanism and evidence and will differ along the frontage, combining engineering, drainage, monitoring and planning controls.

The key innovation is organisational rather than technical. HASTE creates the space in which system-scale intervention can be delivered by holding shared evidence, aligning incentives, and assembling patient finance matched to the life of the asset. The innovation is a new organisational model creating a repeatable way for a community to convene the whole system around a shared hazard.

Conventional approaches commission independent investigations across the same ground, producing duplications and inconsistencies. HASTE treats the cliff as one system.

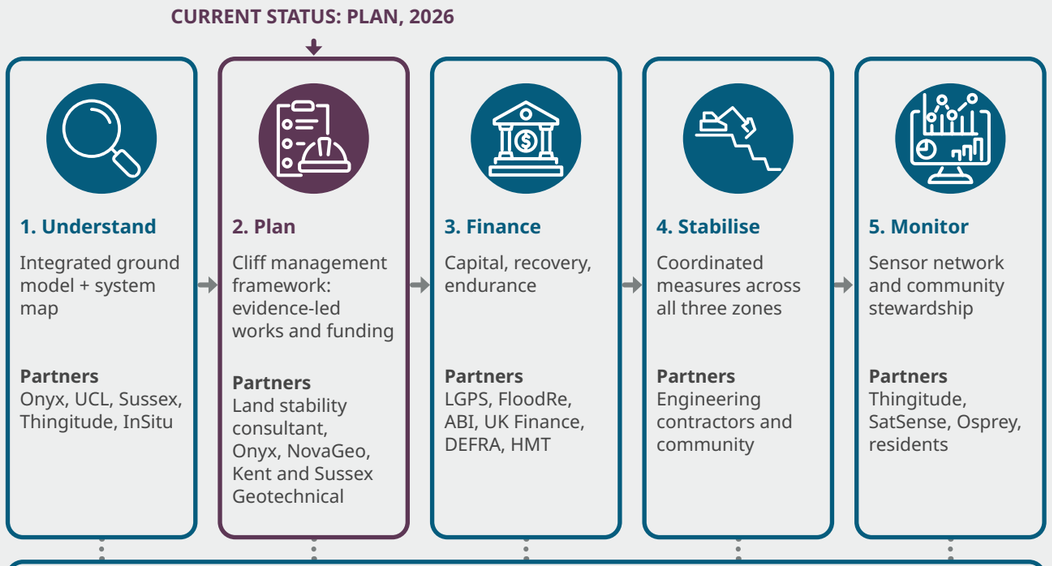
Evidence is generated once and shared with delivery coordinated and financed through one programme, and governance considered alongside engineering design.

Outputs to date include an integrated desk study across

The evidence base for systems change Hastings Landslide

Figure 2. HASTE’s five-phase methodology

The cliff management framework spans all five phases and is set out in detail during plan.



three engineering zones, installation of monitoring infrastructure, development of costed intervention options, and planning controls to prevent further deterioration. Designed to be replicable, these create templates for evidence, delivery, financing and governance that can be applied elsewhere.

Economic assessment

The economic case begins with a market failure. The cliff is one interacting coastal slope system, so stabilising one plot can push instability onto the next: each party, acting rationally but alone, worsens the position of the whole. Responsibility is fragmented across hundreds of titles and several statutory bodies, none with an enforceable duty.

Fragmentation costs in two distinct ways. First, money is being spent: continuing as we are costs £32.3m in present value over 30 years. Second, value is being lost: the market has repriced this stock since November 2023, while every property still stands. Land Registry repeat-sales analysis gives a discount of 17.3%. Homes are becoming uninsurable, making them unmortgageable. HASTE’s intervention is therefore timely.

Four approaches are compared against a do-nothing baseline over 30 years:

- no coordinated intervention
- reactive site-by-site management
- coordinated conventional stabilisation committed before a ground model exists
- building the ground model first, then selecting measures from it.

Continuing as we are returns a benefit-cost ratio of 0.49; coordinated delivery returns 1.95; understanding first

Table 1. Who bears the cost and who benefits, by scenario.

Party	Under business as usual	Under HASTE
Homeowners and residents	Falling value, uninsurable, unsellable homes; anxiety of unmanaged risk.	Pay a lower, shared cost; reduce risk to assets, wellbeing and life; gain local jobs.
Local council	Emergency costs, legal exposure; no funding route.	Administers a defensible levy; lower long-run cost.
Mortgage lenders	Rising exposure against impaired security.	Security improves as value and insurability recover, though outcomes vary by provider.
Insurers	Withdraw cover – cost avoided and shifted onto others.	Risk priceable again as it is reduced and shared
Infrastructure operators and developers	Separate regimes; risk displaced onto the cliff, cost externalised.	Coordinated via shared ground data; contribute to the solution.
Government	No mandate exercised; residual risk left with residents.	Underwrite uninsurable risk, set a national pathway, clarify ownership.

Figure 3: HASTE financing architecture

Capital layer

Who provides the upfront investment? Long-duration capital

- Pension fund (LGPS)
- Mortgage provider
- Residents
- Government grants
- Insurers
- Private investors

Government backstop (proposed): a public guarantee reduces the investor yield required.

Regenerative value component: sizes a complementary tranche against the net value of avoided harm, restored property value, GDP contribution and wider capitals impact.

↓

Stabilisation works — community-delivered, with professional oversight

↓

Property values recover — value restored and retained by residents over the recovery period

Recovery layer

How is the capital repaid?

Charge on sale | Through insurance | Community contract | Through mortgage | Council levy | Other

Council planning pathway — Phase B unlocks these routes.

Endurance layer

How is long-term coordination funded permanently?

Coordination & maintenance: tiered membership; Phase A voluntary → Phase B statutory levy; surplus recycled via the CIC asset lock.

Long-term reserve: a seed reserve compounding over time to fund long-term maintenance and absorb future shocks.

The evidence base for systems change Hastings Landslide

returns 3.77, with net present social value of £23.7 million and £23.8 million of cash released. It still clears at 1.43 if no further loss occurs. The coordinating body costs £2.5 million and returns 9.6 to 1. The 30-year appraisal period is deliberately shorter than the 60-year design life of the measures.[1]

Removing these inefficiencies reshuffles who bears the cost (Table 1, left).

HASTE reduces cost substantially, from £59,840 per property to £15,850 in whole-life-cost across all parties. The saving is cash-releasing and lowers real expenditure, as distinct from accruing as welfare value.

This is where government becomes decisive. HASTE can convene the system and coordinate finance, but only government can enable coordination at scale, underwrite risk no market will insure, and regulate insurers.

The financing connects the integrated systems into one framework: a capital layer sized against avoided harm; a recovery layer repaid through a council levy, subject to statutory basis and resident consent; and an endurance layer funding coordination.

Systemic assessment

HASTE frames inland landslide risk as four tightly coupled systems: physical, organisational, financial and informational. Integrated intervention depends on all four, and the current fragmented model creates avoidable cost, delay and risk.

Four structural findings emerge:

- **System-scale understanding is structurally cheaper and changes what must be built:** property-scale commissioning duplicates investigation and consent, and commits to a solution before the mechanism driving instability is understood. Coordination alone reduces whole-life cost while understanding the mechanism first changes which measures are needed. Together they release £23.8m against the current trajectory.
- **Finance must match physical time horizons:** Victorian retaining structures built as part of an integrated system still stand, but are now fragmented across hundreds of properties. Funding their renewal requires 60-year design lives, against the 20-30-year cycles that currently apply.
- **Integrated ground evidence is a public good:** scattered private investigations have limited system value until consolidated into a shared model. No national funding route exists to consolidate them: flood and coastal erosion risk management (FCERM) does not cover groundwater-driven landslides.
- **Community-led delivery works here, and its transferability is largely untested:** membership funding depends on a resident base with value to recover, and works differently where there is substantial social housing, absentee landlords or lower values. Establishing what transfers is work still to do.

The organisational system is implicated in every finding. HASTE provides boundary-spanning leadership across 60+ organisations, disciplines and lifecycle stages. But replicable intervention relies on the government, which alone can resolve cross-boundary trade-offs, fund long-term coordination, underwrite uninsurable risk and clarify ownership.

Recommendations

- **Deliver at system scale:** commission evidence, design and works around the geology, hydrology and infrastructure system, in place of ownership lines.
- **Treat ground evidence as public-good infrastructure:** consolidate surveys, borehole logs, historic reports and monitoring into shared ground models held as community-owned data – a community-scale demonstrator of what the Geotechnical Data Bill (Ground Data for Growth Bill) proposes nationally via NUAR and the BGS.
- **Recognise land stabilisation as critical infrastructure:** beginning in the Hastings Town Plan and scaling to national legislation.
- **Give landslide risk a departmental home:** name a lead department; create a duty to investigate and log ground-instability incidents; extend the FCERM definition to groundwater-driven instability and establish a remediation and search regime.[2] [3] [4]
- **Align incentives to long-term value:** reward value preservation and risk reduction across homeowners, insurers, lenders, councils and investors, with financing matched to the cliff's physical time horizon rather than short funding cycles.
- **Underwrite what the market will not:** extend FloodRe-style collective, preventative cover to geological hazards – which, unlike flooding, currently have no insurance or backstop – with government as insurer of last resort.
- **Build adaptive, learning-based governance:** let resilience policy learn from local innovation rather than foreclose it, feeding community monitoring into the local-tier risk assessment the Resilience Action Plan envisages, with clear institutional accountability.
- **Scale from a testbed:** support HASTE to extend the model across the wider Hastings catchment first, where the geology, institutions and community are known, and codify what transfers before claiming national applicability. A legal framework for collective action across property boundaries is the enabling step.

1 Appraised on the HM Treasury Green Book, February 2026 edition: 2026 prices, 3.5% discount rate, 25% optimism bias applied equally to all four scenarios. Scenario 1 is derived from the logged record of expenditure; the Scenario 2 and 3 cost stacks are scenario-modelled pending the ground model.
2 Groundwater is already a lead local flood authority responsibility under the Flood and Water Management Act 2010, so the driver of instability is within statutory scope; only the consequence falls outside it.
3 Mirroring the Section 19 duty to investigate and publish flood incidents. No equivalent exists for ground instability, which is why 25 events on this frontage went unrecorded until a community group compiled them.
4 On the Mining Remediation Authority model - statutory duty, public search data, an insurance market built on it - applied to geological instability, and correcting its exclusion of blight.

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