



## Scoping Report

A Competitive Coastline: Pressures and Prioritisation of (Waste) Water Management at the interface of Terrestrial and Marine Planning

*Snapshot Assessment of how Water Quality and (Waste) Water Management activities and procedures are currently perceived; In context with other Marine factors, as well as Terrestrial interests.*

*Perceptions Report commissioned by Catchment Tay Ltd  
Winter 2022/2023*



## Executive Summary

Following a pipeline incident at Dundee's Riverside Drive, in August 2022, Catchment Tay Ltd commissioned the Tay Estuary Forum (TEF), a Local Coastal Partnership, hosted by University of Dundee, to assess the way water quality and water management is currently perceived locally in the TEF region, in terms of both practice and procedure; against a moving backdrop of competing terrestrial and marine priorities. Catchment Tay Ltd is a waste water and sewage treatment utility company and has been a long-standing (15 years+) member of the TEF Steering Group, based in the region of East-Central Scotland.

This report is prompted by a general trend of increasing difficulties, encountered by utility companies when carrying out both ongoing, smaller- scale, standard remedial work, but also in making immediate and urgent repairs at the larger scale. This report intends to scope out and frame either a positive or negative trend in perceptions and if so, investigate possible causes.

The report draws on perspectives from the local coastal region of the Tay Estuary, from policy makers and practitioners who work in the region across a variety of environmental and planning sectors.

### **Rationale (Catchment Tay Ltd, April 2022):**

*Key findings show that requiring marine licenses under marine planning legislation is delaying essential maintenance and repair work (new construction exempted) at several locations and it is clear that licensing and exemption processes are not currently fit for purpose with regards to essential utility repair and maintenance. It has resulted in delays and additional costs to undertake works. These delays have resulted in further damage to assets that organisations like Catchment Tay Ltd have been unable to repair. Planning requirements take little or no account of (post) COVID issues, contract works backlog since the start of COVID, tide, weather, season, unforeseen ground conditions and many other factors.*

*The Scottish marine licensing framework is effectively divorced from real life and needs to be aligned with existing Scottish Water/SEPA/NHS emergency planning at the very least and given an automatic exemption as a standard for all repair work to make it workable, even if there is a retrospective administration process after the work is completed. (Catchment Tay Ltd April 2022).*

## Contents

	Page
Executive Summary and Rationale	1
1) Background and Context	3
➤ <i>System drivers: Global to Local</i>	3
➤ <i>Sustainable Perspectives</i>	5
➤ <i>Issues under a Changing Climate</i>	5
2) Policy Milestones	6
➤ <i>Supportive Research: Tay Wastewater Project</i>	8
3) Social Perceptions for Renewable Energy Infrastructure	9
4) Focusing Events	12
➤ <i>Press &amp; Media</i>	12
5) Public perception and Community Engagement	14
➤ <i>Campaigns</i>	14
6) Sectoral perspectives & Stakeholder Engagement	15
➤ <i>Fife Council (Jan 2023)</i>	16
➤ <i>Moray Firth Partnership (Jan 2023)</i>	16
➤ <i>River South Esk Partnership &amp; Tayside Biodiversity Partnership (Jan 2023)</i>	17
➤ <i>Dundee City Council (July 2023)</i>	17
7) Conclusions	22
References	23

## 1. Background and Context

Globally, the combined crises of climate change, biodiversity loss, and energy insecurity require an unprecedented acceleration of renewable energy and electricity grid deployment, with offshore renewables contributing significantly to reaching renewable energy targets.

Scotland's East Coast sits at the forefront of these potentially rapid changes with large-scale construction for offshore renewable developments both existing and planned in the North Sea. However, there is growing awareness that to limit damage to our regional marine and coastal ecosystems it requires due consideration. Offshore wind energy projects and connecting grid infrastructure, when properly planned and deployed, can and should instrumentally contribute to restoration of our seas and become *nature neutral* (minimising negative impact to the marine environment). These two drivers, whilst potentially at odds with each other, are both strongly dominating the narrative.

The balances that must be upheld a) between extraction (or exploitation) and preservation of the natural environment and b) balancing *value* (natural and social capital) against *cost*; transfer across all scales. The theme of nature-based solutions often headlines many international conferences but needs to transfer to the local scale in terms of practice. Scottish societies require solutions that:

- a) prioritise the natural environment;
- b) align with preserving our existing infrastructure;
- c) align with creation of new infrastructure we need for facing an uncertain future;
- d) navigate the well-established local terrestrial planning priorities alongside a newly developing, formal marine planning system.

Working sustainably within the environmental system within which we currently enjoy high levels of amenity and value, has been the TEF guiding principle for its members since 1997.

### ➤ System drivers: Global to Local

The Ukraine invasion placed immediate pressure on Governmental energy security plans and priorities across Europe, with effects trickling rapidly down to the local scale. Immediately, European, the UK and Scottish Governments were forced into prioritising alternative, politically secure energy options for the future, which impacts areas of renewables development, like the North Sea and adjacent coastline as particular 'frontier' regions for change.

Sectors tasked with maintaining the water quality of a system such as the Tay Estuary and the adjacent coast are now dealing with knock-on impacts of complex systemic shocks such as this, both at the thin end of the wedge (in delivery and maintenance) and at the broader end (systemic drivers, licensing, marine planning priorities), but crucially also in dealing with cross-over between long-established terrestrial and newly formed marine planning regimes.

Organizations such as Catchment Tay Ltd operate at this interface whereby these pressures need to be balanced, at the same time carrying out maintenance in the public space where pressures may increase but (public) perception often lags behind.

This is also true of policy taking time to catch up with practice (within the policy and decision-making sector itself) but also in public perception, with regards media coverage and company reputations helping to drive those policy changes. This is especially the case within the newly-emerging policy arena of marine planning. Regional Steering Groups (like Tay Estuary Forum) assess differing levels of understanding and fluctuating appetites for marine priorities, amongst local, regional and national level stakeholders that deal with planning matters and the administration burden associated with that.

Maintaining ageing infrastructure, under sudden systemic pressures and a changing climate means acceptance levels of the general public might not always be stable or relative to the work required, especially at places like ports or city centres where terrestrial and marine planning sectors converge, Dundee being one such example. Increasingly, definition is being applied to marine planning while the terrestrial planning system is well established. The coast remains the contentious area where both systems have to meet, overlap or align. The processes of how we do this effectively, are still being worked out. This is often where immediate actions are required to take place, for example, to store stormwater from increasing extreme weather events, which are likely to become more frequent under changing climate. Or immediate repair of damaged assets which intersect with coastal infrastructure (e.g. roads, rail and water supply/ sewage systems). Coastal defence is a key issue regionally for TEF and of course this offers its own influence on priorities facing the utility companies working in this setting. There needs therefore to be sympathetic realization of increasing complexity of maintaining the systems that converge at the coast, in terms of urban drainage, water quality, storm-water storage, access to pipes and sewer networks, updating aging infrastructure for preserving the urban (and rural) settings in which we live above-ground.

Changes in political, social, and economic factors appear to have altered the perceived priority of water quality in the hierarchy of public concerns in 2022, albeit that this may now take different forms that need to be better understood. With the emergence of marine planning and all this entails, does water quality fall under mainly marine planning priorities, or terrestrial, or both? Development of marine planning, for instance, seems largely driven by the rapid expansion of marine construction in the form of wind and wave energy, hence the heavy bias towards managing construction and offsetting associated impacts. However, all other aspects of the marine environment have become incorporated and it is necessary to review how water quality has fared during this development and implementation phase.

When asked this question, stakeholders without exception, maintain that water quality is a high continuing priority, across the board. However, it is the increasing complexities involved in gaining access to pipes and infrastructure that are less well understood. In short, it is an easy statement to make, but in practice, there are growing competing interests (mainly with a result of utilisation of space in urban settings) that make maintaining high levels of water quality we currently enjoy, perhaps more difficult (or potentially more disruptive) in future. This “disruption” will require sensitive management in order that the balance between economic, social and environmental aspects of water quality management can be upheld as well as coordination of regulators and regulations.

## ➤ Sustainable Perspectives

The TEF is a voluntary Local Coastal Partnership which since 1996 has coordinated a Steering Group of local coastal stakeholders to promote sustainable management of the Tay Estuary and adjacent coastline. The TEF identifies issues and performs a conflict resolution role where these may become contentious. Specifically, the TEF has undertaken a snapshot assessment of the hierarchical position water quality currently holds on the agendas of both terrestrial and marine planners. With terrestrial planning well established and marine planning still an emerging function, there are opportunities for assessing such issues at this relatively early stage in the marine planning process for the Tay region- namely, the South East Scottish Marine Region.

This report draws perspectives from a wide range of stakeholders (practitioners) and the public in assessing the importance of water quality as a critical issue amongst the public, as an informed opinion about the relative importance of water quality in the hierarchy of environmental, planning and development matters in 2022-2023.

## ➤ Issues under a changing climate

To reconcile potential conflicts between upholding the quality of dynamic natural systems, against impacts of climate change and in developing robust waste, water, energy and transport infrastructure, careful, comprehensive planning is needed. Identified solutions need to be tested and deployed at scale by permitting authorities and project developers alike. As part of Europe's renewable energy and nature restoration goals, water quality management undoubtedly plays a critical role between terrestrial and marine (planning and physical) spheres, perhaps more so than any other sector. It is critical therefore, that activities remain in harmony with both spheres, which ought to guarantee it retaining the highest priority in the perceptions of stakeholders and the general public.

The Scottish Environment Protection Agency (SEPA, 2007) estimate that climate change will influence pollution levels in Scottish recreational waters as follows:

- Higher river flows in Scotland's west and north will reduce impact of pollution in rivers, but increase loading of pollutants to the sea - this will increase risk of the failure of microbiological standards in bathing waters and shellfish growing waters;
- Higher intensity rainfall will increase sewer overflow rates, leading to an increase in the discharge of sewage to water bodies;
- Lower summer river flows in Scotland's south and east will provide less dilution for discharges.

Diffuse pollution is an increasing problem for the Tay regional water quality; invasive species and litter threaten blockage of river and stream channels and more extreme storms pose increasing risks to coastal infrastructure, coastal sewerage plants, outfalls and pipe networks.

With natural and political changes to the system, the water sector undeniably faces a more complex backdrop to work in. This must in turn translate to public perception. Litter is one issue used to focus public perception and participation and will be discussed in Section 5.

## 2. Policy Milestones

One of the foundations upon which Scotland's current water quality and management policy is built is improvement in water quality achieved through the introduction of secondary sewage treatment and collection and transfer of diffuse sewage outlets to centres for treatment, developed through the late 1990s and early 2000s. This established the infrastructure vital both to maintaining public health and a healthy marine environment, supported by extensive environmental impact assessments and marine dispersion modelling.

Catchment Tay Ltd plays a vital role in maintaining water quality and as the Urban Wastewater Treatment Directive (1991) was applied to large urban areas in the 1990s, the facilities that the company now operates and maintains were constructed to meet these water quality standards. Ongoing work contributes to this target outcome and day-to-day repair and maintenance of the assets is a fundamental part of that and is integral to delivery of the key objectives, under both the umbrellas of the Urban Wastewater Treatment Directive and bathing water quality targets.

Catchment Tay Ltd and Catchment Moray Ltd: The Catchment companies operate extensive sewerage infrastructure interfacing with coastal areas and the marine environment along Scotland's North and East Coasts. Working closely with Scottish Water, this also includes Scottish Environmental Protection Agency (SEPA) which licenses such systems and monitors discharges of wastewater as fully treated, storm and emergency overflows into the marine environment. Marine Scotland licenses new construction works and essential and urgent maintenance of any infrastructure located below mean high water spring.

Catchment Tay Ltd understands first-hand the interactions that take place in the TEF region and the changes that have taken place there over the past 25 years- also how operation, maintenance/repair of these assets (and many other services that intersect with sewers and pipelines) affects water quality in the marine environment. This specific focus on water quality aligns with the objectives of SEPA (top priority) but can seem to conflict with the objectives of Marine Scotland where a license or exemption has to be applied for repairs to existing and essential infrastructure.

### a) Water Framework Directive (2000)

In 2000 the European Commission (EC) launched the Water Framework Directive (WFD), and for the first time encompassed all of Europe's water bodies, with the aim of achieving good water quality status across the community (EC, 2000). With a commitment to streamlining the Community's effective but vast water legislation, five first wave Directives (freshwater quality; the fish water, shellfish water, groundwater directives and the directive on dangerous substances discharges) were repealed under the WFD. With its guiding vision of good ecological status as well as specific standards, it paved the way for integrated management of water bodies throughout Europe. In 1996, the EC held a two day water conference that was attended by 250 delegates from Member States' governments, competent and local

authorities, industry, Non-Governmental Organizations (NGOs) and individuals to define what the key issues to the stakeholders were. These are highlighted below:

- water management based on river basins;
- "combined approach" of emission limit values and quality standards;
- getting the prices right;
- getting the citizen involved more closely;
- streamlining legislation.

## b) Bathing Waters Directive (2010)

The Bathing Water Directive (SEPA, 2010) is based on:

- scientific knowledge on protecting health and the environment, as well as environmental management experience;
- better and earlier information to citizens about quality of their bathing waters, informing about bathing water quality; moves from simple sampling and monitoring of bathing waters to bathing quality management; and
- integration into all other EU measures protecting the quality of all our waters (rivers, lakes, groundwaters and coastal waters) through the Water Framework Directive.

The Directive also seeks greater public participation in its implementation. It puts more emphasis on providing information to bathers, including via the internet, and particularly on the risks bathers might face from pollution. In the past decades, huge (national-level) litter campaigns have also highlighted water quality on the broad scale and championed successes in the media, helping to encourage community responsibility.

Increasingly a more holistic and integrated approach to water management has emerged anchored to these policy milestones. This integration remains, but, with advancement of marine planning, there is a danger of fragmentation, perhaps even reverting to operating within sectoral silos, as organisations/ companies are now legally required to seek new licenses to carry out work or activity that would have previously been deemed "ongoing maintenance" and exclusion of ongoing maintenance as part of the construction permit.

Increased formalisation (e.g. licensing) of marine planning activities can in some cases erode integrative practices that may have evolved organically since the 1990s and 2000s, based on cooperative concepts established under Integrated Coastal Zone Management (ICZM). Can formalising planning procedures therefore put organisations back into sectoral "silos"? Perhaps making them less likely (or able) to have scope, resources or inclination to step outside of their remit, in order to engage more cooperatively? These are questions to pose to all sectors working in coastal management and marine planning, and ones the TEF has been exploring since the Marine (Scotland) Act 2010.



➤ Supportive research: Tay Wastewater Project

The Tay Wastewater Project was commissioned in 2001, in response to the EU Water Directives, to collect and treat wastewater along the north shore of the Tay Estuary between Invergowrie and Arbroath. The Project was conceived and justified primarily to meet impending water quality standards for larger urban areas and put out to tender by NoSWA in the late 1990s. It also serves a vital public health function. Figure 1 shows the scope of the project that involved the construction of ten pumping stations, with associated storm water storage tanks and overflows, to transfer sewage flows from Arbroath, Carnoustie, Monifieth and Dundee to a new sewage treatment works at Hatton which is located about 8 km southeast of Arbroath. Over 30 km of pumped sewer pipelines connect the pumping stations to the works and a 1.6 km long outfall from the works discharges the treated sewage into the Tay Estuary. Figure 1 gives an overall view of the infrastructure.



Figure 1: Pumping station network and outfalls in the TEF region (Carr, 2004, from University of Abertay report, 2011).

As the systems and infrastructure in our developing urban centres, like Dundee, age and become increasingly difficult to maintain, stakeholders face an unprecedented rate of challenges (and costs) in terms of offsetting societal, economic and environmental pressures and more recently, major policy shifts. Public perceptions can fluctuate under these pressures, and it is important to make sure that the progression of these areas does not clash with ongoing maintenance and functioning of the systems that the public has come to rely on.

### 3. Renewable Energy Infrastructure: Social Perceptions

Social Research Report, Diffley Partnership for Scottish Government, (2022).

A recent report (July 2022) based on a survey carried out by the Diffley Partnership shows a high degree of public support for renewable energy infrastructure, particularly with a view to the future. Respondents were overwhelmingly in favour of the infrastructure that they believe to be a necessary longer-term asset to the coast and a sustainable energy future for Scotland (Figure 2). The results are interesting as they are indicative of the public being in favour of offshore renewables-related infrastructure projects being likely to increase at the coast. This offers a useful comparison for the water sector operating alongside.

Objections remain of course, but the negative attitudes of the early 2000s when windfarms perhaps split societal attitudes, are disappearing as people increasingly recognize the need for achieving an independent and clean energy supply, particularly since the Ukraine invasion has “weaponised” imported or internationally-reliant energy supplies for much of Europe. This wave of societal acceptance (understanding) will naturally boost construction projects’ roll out and marine infrastructure activities accordingly, with key systemic drivers in charge. The media also strongly boost these messages in informing the societal shift.

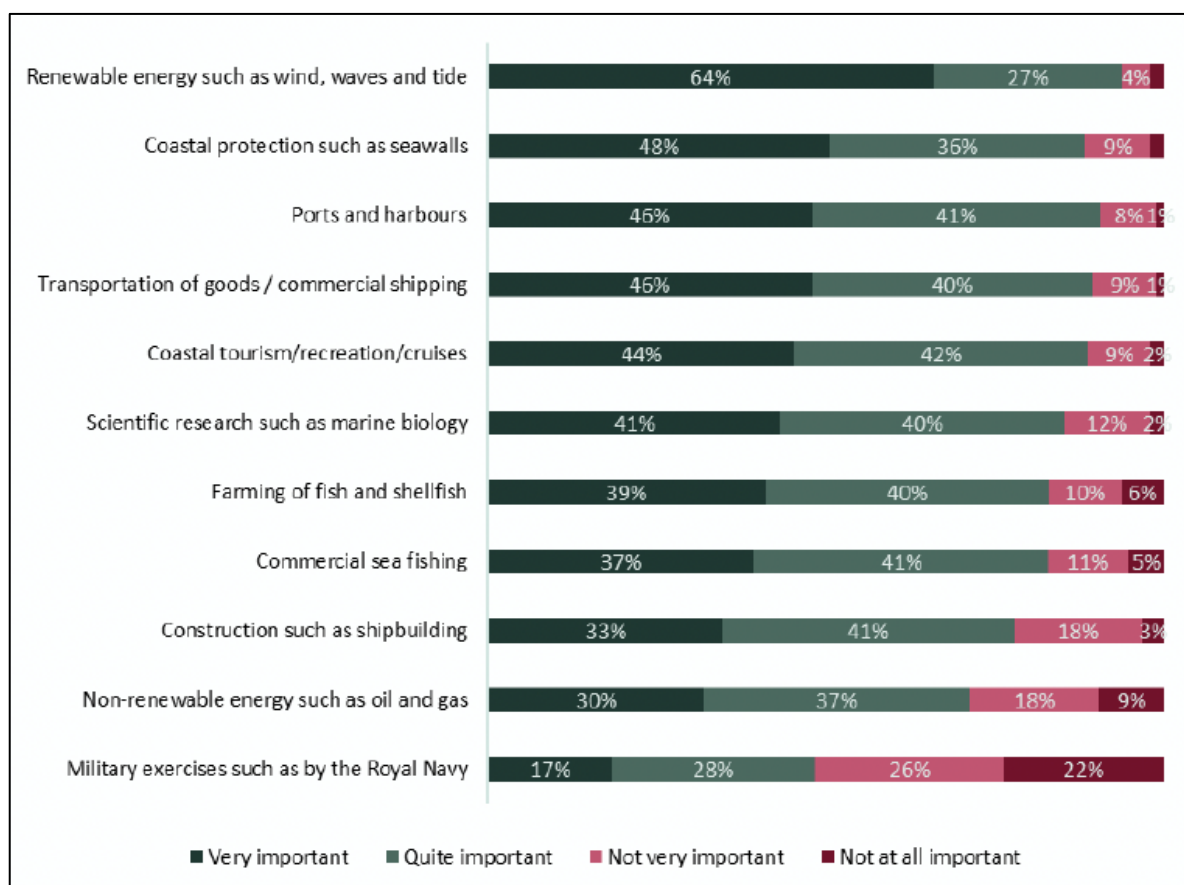


Figure 2: How important the various sectors or industries are to Scotland in terms of their **social value** By social value, the Report’s authors mean their value to society as a whole or to local communities (Diffley Partnership, July 2022).

However, even with changes in perception it has to be realised that the regulatory framework was created based on experience gained in the early stages of this process so new projects still take typically 5 to 10 years to be realised. It is only as recently as 2022 that the UK Government has indicated that planning processes will be adapted to reduce this delay.

Interestingly, throughout the report, there is no mention of water quality, water management or sewage treatment, as either an active sector, or a prioritised asset societally. The report’s authors have been invited to comment. They maintain the importance of the issue but say it lay outwith the scope of the report.

When asked what impact, if any, offshore wind farms have regionally, respondents noted a strongly positive impact on “feelings about the future” (Figure 3). While accepted, what does this actually mean in practice, for the **present** “local infrastructure”? Again responses were largely positive, with only minor negative impacts foreseen. Interestingly, the largest potential negative impact was attached to seascape/landscape character. So, does that suggest the *aesthetic* “condition” of landscape and habitat is perhaps deemed more important as a theoretical impact, than the actual *physical* condition, of which water quality plays an integral part. This again touches on the argument of *seen* versus *unseen* attributes.

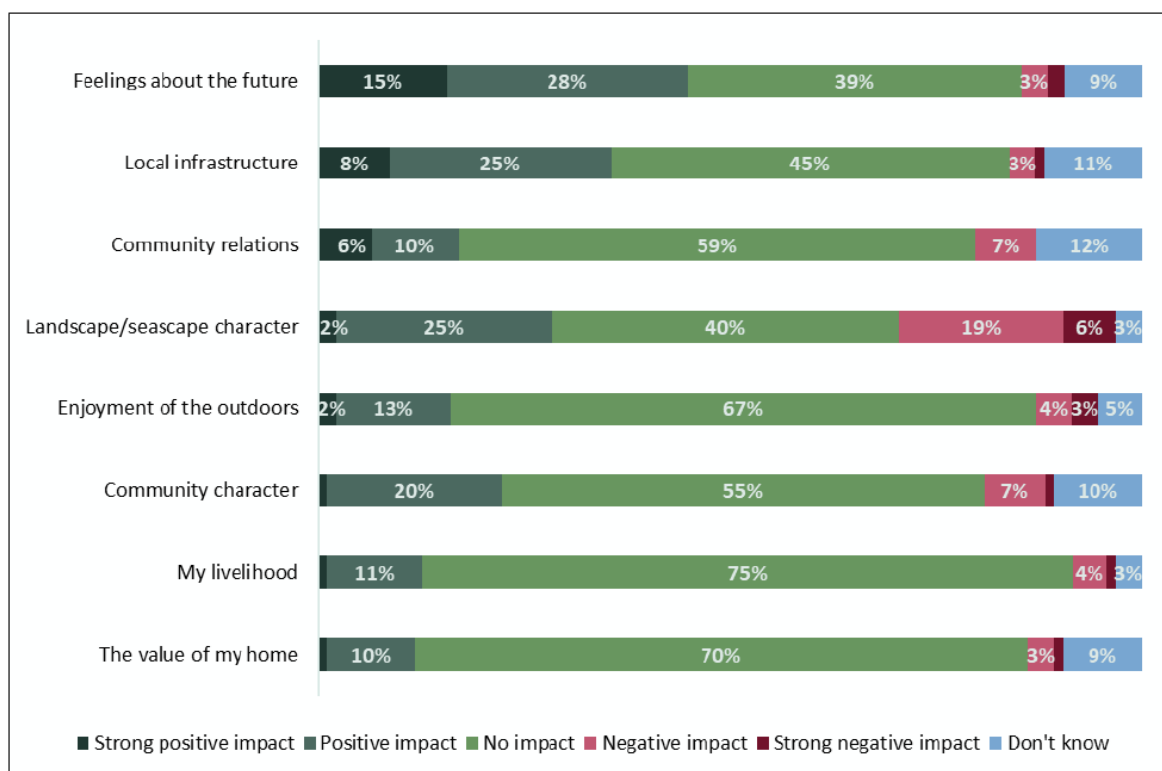


Figure 3: Regional impact of windfarms (Diffley Partnership, July 2022)

When asked about different components of an offshore wind farm and what impacts these might have, respondents noted, again, a significantly neutral-positive response, as opposed to negative (Figure 4).

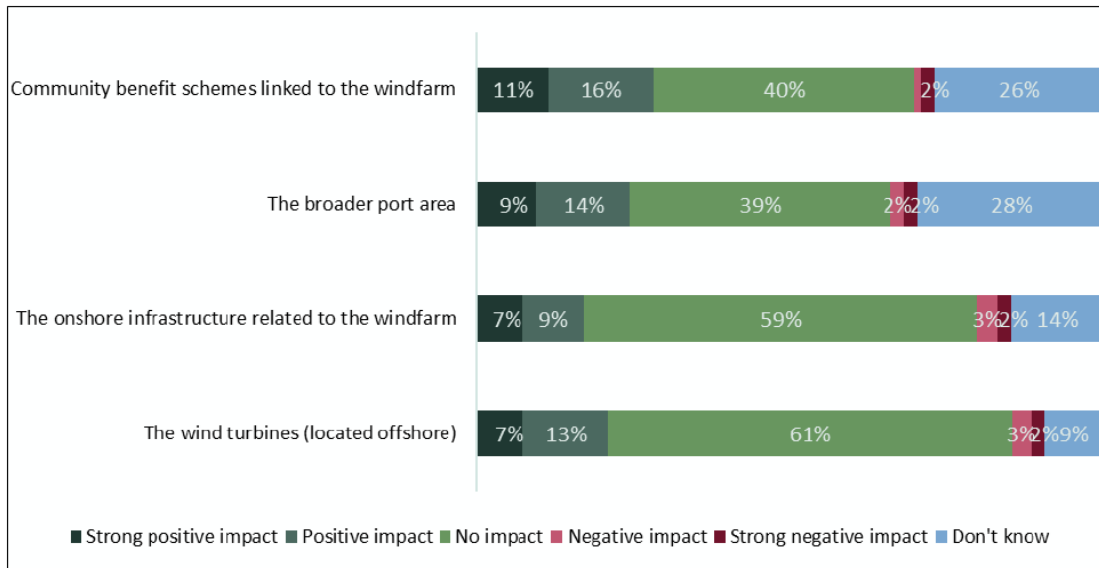


Figure 4: Impacts of the components of offshore windfarms (Diffley Partnership, July 2022).

Ranking of marine priorities is as follows, but “water quality”, does not feature (Figure 5). Is this because the marine sector views it as a largely terrestrial environmental concern (e.g. riverine and estuarine quality, wastewater and diffuse pollution at source?), and the terrestrial sector views it as a largely marine concern (e.g. bathing water quality?) If an activity, by its nature spans both spheres, does this mean it can also be overlooked potentially, by both spheres?

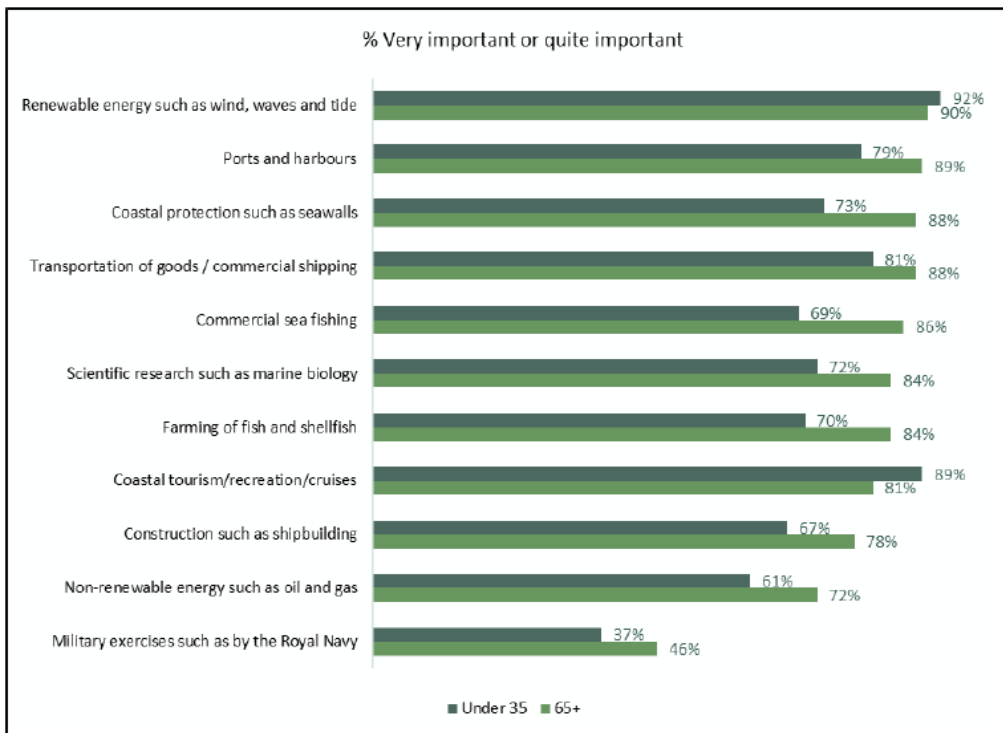


Figure 5: Social value of industries and sectors (Diffley Partnership, July 2022)

## 4. Focusing Events

Public perception of water quality peaks when incidents occur that put assets at risk that are normally taken for granted: access, e.g. road network disruption or building or remedial works, also bathing water quality and drinking water quality. Under “normal” circumstances, the issue goes largely unnoticed until there is a problem, when awareness becomes heightened and amplified by local media (Box 1: Article in the *Dundee Courier*, August 2022).

### ➤ Press and Media

Press reports can be both positive and negative and for water resource managers, media communication and accurate reporting is essential for delivering clear and timely messages to the public.

#### Case Study: BATHING BEACHES RETURNING TO NORMAL AFTER SEWER REPAIR (PRESS RELEASE Scottish Water)



*“Following completion of a complex repair to a 600mm sewer rising main beneath Riverside Drive in Dundee on Tuesday evening (Figure 6), precautionary advice against bathing or paddling at Broughty Ferry and Monifieth beaches is being lifted from 12noon today [Thursday].*

*Since the return of the sewer network to normal operation overnight on Tuesday, flows from the west side of Dundee are again being transported via a series of pumping stations to Hatton Waste Water Treatment Works, between Carnoustie and Arbroath on the Angus coast.*

*Figure 6: Pipe repair at Riverside, August 2022 (Image D. Wishart)*

*Scottish Water and Veolia, who operate the infrastructure under a PFI contract, have been liaising with SEPA, NHS Tayside and local authorities to ensure the short term risk to water quality at the bathing beaches has passed (Figure 7).*

*Reinstatement work has also been progressing since the sewer repair was completed in the eastbound carriageway of Riverside Drive. Carrying out this final stage of work takes time in order to ensure a long-lasting repair of the road surface, where extensive excavation was needed to access the sewer. A section of the road is expected to remain closed until Friday, with a signposted diversion in place via Perth Road and Hawkhill. The westbound carriageway is unaffected.*

*A Scottish Water spokesperson said: “Since the completion of the repair on Tuesday evening, the sewer network that serves our customers in Dundee has returned to normal operation. “Warnings have remained in place on a precautionary basis at the bathing beaches while a residual impact on water quality remained possible. We are pleased that these can now be lifted so that normal use of the water can resume.*

*“Our contractor working on site at Riverside Drive remains focused on achieving a high quality reinstatement of the excavation as quickly as possible so that the eastbound carriageway can re-open before the weekend. Time is needed at each stage in the process to allow tar to cure, but we will return the road network to normal as soon as we are confident the final surface is ready to receive traffic.*

*“We would like to thank local communities and road users for their continuing patience and support while our team has been responding to this issue”.*

*Figure 7: Broughty Ferry Beach. The Dundee Courier 25.08.22)*



## 5. Public Perception and Community Engagement

Stakeholders are largely an extension of the general public (via the press) as during water quality major incidents almost every stakeholder (SEPA, Dundee City Council, Community Councils, water user groups etc.) are contacted by the press and/or public which influences their actions. Clear early communication from the outset of an issue can alleviate misinformation and focus attention on information at source, preserving key messages from dilution or misinterpretation. Relationships with media, particularly in the event of an issue or repair seem to generate assistance from a broader range of “supportive” stakeholders.

### ➤ Campaigns



Public campaigns, such as *Nature Calls* (Figure 8), help to manage public perception of a utility company and can help greatly in managing public response when carrying out work in the public sphere:

<https://www.yourwateryourlife.co.uk/nature-calls/>.

Such campaigns help raise awareness not just of the management issues the company faces, but also promote the identity of the organization, its activities and the positive branding/ message which accompanies these schemes boost acceptance when repairs are made.

(Figure 8: *Nature Calls* initiative, Catchment Tay Ltd, 2022)

The perception is that water quality is still as high a priority as it ever was with issues seen and often reported rapidly by members of the public and passed to the relevant actors. Maintenance of our water infrastructure, particularly sewage and wastewater, however, is perhaps less understood. If there is a spill, affecting bathing water and drinking water, the urgency is obvious and a shared public concern. If the public cannot see the immediate impacts, a “positive” company image can go a long way in communicating the need for or duration of work.

Scottish Water, for instance, have their own media/public relations team so will to some extent manage public messaging via local signage/social media etc. about the reason for the works and timescale. The crossover might come with a Local Authority if the works require some form of road or footway closure which needs a temporary traffic order and then there is a protocol for that via Network Management who will contact Local Councillors, Fire Service, the Police, etc.

Local Authority representative: *“For a wastewater issue it would be solely Scottish Water's or Catchment Tay Ltd issue to manage public messaging, and I'm not aware of a circumstance since I've been with the Council where we've got involved (or needed to get involved) in a wastewater issue, although none have been major spillages to my knowledge. The Council does deal with other types of pollution in liaison with other responders, for instance oil pollution along the coast, and there have been incidents over the last few years where it's a Council- led clean up and therefore the public messaging has been led by the Council, in that instance”.*

## 6. Sectoral perspectives & Stakeholder Engagement

Largely, the asset (pipe) owner or manager, in this case Scottish Water for clean water or Catchment Tay Ltd for wastewater and sewage, takes overall responsibility for maintenance and repair of their own pipes. This tends to be carried out promptly “in-house” in terms of a first response, when alerted to an issue. If the issue begins to affect the public directly, other agencies become involved. Collaboration seems to currently work well and is “nested” within the responsible organizations’ efforts, lending support when necessary.

- **Fife Case Study:** The only ‘major’ or significant spillage Fife Council recall where water pollution was a significant issue was a pipe failure that happened near the Castle Golf Course near St Andrews. That situation then involved Fife Council, Fife Coast & Countryside Trust (FCCT), SEPA and predominantly Scottish Water. Fife Council were involved as it was close to affecting some Community Services land (Caravan Park, Kinkell Braes) and as Coastal Authority, Fife Coast & Countryside Trust were involved as it was spilling over the Coastal Path, SEPA were involved as it was an effluent spill (under pressure, for around 48hrs, from a large bore pipe (approx. 400mm) and the spill was ending up in protected coastal waters), and Scottish Water as it was ultimately their asset.

In that situation Fife Council were observers only, although they stepped in to provide advice to FCCT over what to advise and instruct Scottish Water to do about cliff stabilisation as the spill had washed out a sizeable area of vegetation and material from the path and cliff face. It was not necessary for Fife Council to do any PR / Comms / closures / remediation as Scottish Water had that as part of their remit.

*Fife Council representative (Coastal Flooding and Coastal Defence team): “In flooding, the principle is that collaborative working is a key feature of the Act. It was OK for a few years, but over the last 2yrs Scottish Water have regressed somewhat. Now I feel we have to drag information out of them. If we get a note of contaminated water from a member of the public, I’ll fire it across to a key contact and leave it to them. Usually I don’t hear anything back”.*

In terms of any rise or falls reported in the ability of Scottish Water/SEPA to deal with issues from the perspective of the Local Authorities, water management is the same level of priority it always was- high. Also any interactions with SEPA and Scottish Water are largely, positive. But rare: *Fife Council Representative: “That’s a difficult one to judge as “I have relatively few interactions with Scottish Water / SEPA in an average year on the coast. Certainly, the last wastewater leak on a main sewer we had on the Promenade at Kirkcaldy was dealt with promptly by Scottish Water”.*

In terms of sectoral interactions (Booth et al., 2013), TEF carried out a snapshot in 2012 as part of a national interactions report for Marine Scotland, including sewage and waste water management. The results can be viewed in the report: <https://sites.dundee.ac.uk/tef/wp-content/uploads/sites/9/2014/04/Sectoral-Interactions-on-the-Tay-report1.pdf> and in Appendix 1.



The report highlights, with regard to this specific sector, “managed competition” as a category noted in terms of interactions with electricity, oil and gas, and telecoms subsea cables and pipelines (see report). The same type of interaction was noted for the category “coastal development” (including power stations, residential, industrial, road transport/ bridges and coastal defences. Largely it seems the situation is unchanged. Interactions remain “mixed” in relation to a managed approach to competition. Generally this works well, where sectoral contacts are known and the network (communication network significantly) maintained.

SEPA acts as the authority for water quality, but not for infrastructure below Mean High Water Springs (MHWS). Therefore Local Authorities rarely get reports of water quality incidents or concerns and thus don't directly deal with them on a regular basis. On the odd occasion Councils do deal with a water quality query, it's usually a failure of a pipe or works causing a discharge to the coast and that is immediately referred to Scottish Water to action. The only other occasional query comes from the pumping of mine water from old collieries (this is more a Forth Estuary not a Tay Estuary issue), but again that is referred to SEPA to investigate.

➤ ***Maintaining and improving water quality: Moray Firth Coastal Partnership (MFCP) Perspectives (Jan 2023):***

*The Scottish Environmental Protection Agency (SEPA) is responsible for helping to preserve and improve the quality of Scottish lochs, rivers, estuaries, wetlands, groundwaters and coastal waters so that they are sustainable for the future. Under the EU Water Framework Directive, the River Basin Management Plan for Scotland was adopted in 2015. Water quality in the Moray Firth remains ‘Good’ overall, ‘Excellent’ in areas such as Dornoch, Findhorn and Rosehearty, although some work needs to be done in some water bodies.*

*Areas of growth such as the A96 corridor between Inverness and Nairn, and the new town of Tornagrain, will require additional capacity in the future. Scottish Water have made improvements to the existing wastewater treatment plant in the area, including UV filters to improve water quality and the environment for species such as the bottlenose dolphin population. Lossiemouth East is also an area that could be improved (SEPA data describes water quality in this area as ‘Sufficient’).*

*Objectives and policies for improving water quality could be included in a regional marine plan to protect, restore and promote the sustainable use of coastal ecosystems. Policies would aim to reduce, to the extent necessary, the pollution of all waters from both diffuse and point sources of pollution.*

*The key issues around water quality focus on agricultural runoff and urban wastewater, including urban surface water, and discharges from private septic tanks*

*MFCP do not regularly engage with individuals about the issue, but would welcome having more engagement, through the evolving regional marine planning process. MFCP agree that individuals are not really involved in the discussion around the ongoing maintenance of water infrastructure and tend to be more aware only of major works/improvements.*

➤ **River South Esk Catchment Partnership & Tayside Biodiversity Partnership perspective (Jan 2023):**

*Environmental Partnership working in Angus that centres on improving water quality and riparian habitats is predominantly focused on limiting anthropogenic pollution sources and enabling ecosystems to function in as healthy a state as possible. From watersheds, farmland, rural areas, urban settlements and in coastal and estuarine areas, a range of activities and inputs can lower water quality, reduce ecosystem health, and have direct impacts on species and habitats. The Partnership work supported by the Tayside Biodiversity Partnership and River South Esk Catchment Partnership focus on nature-based solutions, often at large spatial scales, mitigating impacts of diffuse and point source pollution from a range of sources. Solutions tailored to mitigate sources of pollution identified by communities and landowners, should predominantly be **nature restoration** focused to ensure the widest range of benefits, and most cost-effective solutions.*

➤ **Seeking Solutions: Changing context for Water Quality in Dundee, perspective of Dundee City Council (DCC): July 2023.**

Water Quality remains a high priority for DCC, if not even more so, under the new Planning Framework. The National Planning Framework 4 sets out new requirements for the planning system to take greater account of nature in decisions it makes, including flood risk and water management issues, coastal adaptation, and blue and green infrastructure. Local Development Plans are now required to avoid development in areas at flood risk as a first principle, and identify, protect and enhance blue infrastructure assets.

<https://www.gov.scot/publications/national-planning-framework-4/documents/>

Dundee City Council is currently preparing a new Local Development Plan which will replace the 2019 adopted plan. Full details and timescales for the review can be found here: <https://www.dundee.gov.uk/service-area/city-development/local-development-plan/dundee-local-development-plan-review>

**The Water Resilient Dundee Partnership** sees Dundee City Council (DCC) working closely with Scottish Water (SW) seeking to reduce potential flood risk by freeing up capacity in the existing system and in developing and integrating successful pilot schemes within Brownfield development sites.

It is hoped, under new legislation, more funding will be included specifically for better provision of maintenance under Section 7 of the Sewerage (Scotland) Act 1968. Infrastructure funding can enable new avenues for development; however, Section 7 maintenance of water infrastructure can also create additional burden to councils on top of regular maintenance. The goal would be a fully publicly- maintained system. DCC is seeking a fully-costed maintenance schedule and to make early provision in future maintenance budgets, including future maintenance into SUDS will be essential.

New developments are required to provide drainage in a sustainable form, more commonly known as SuDS (Sustainable Drainage System). This is regulated under the Water Environment (Controlled Activities) (Scotland) Regulations 2011 to ensure that reasonable protection is provided to the water environment. There are no legislative regulations which determine who or what authority is responsible for SuDS after they are constructed. Roads Authorities only have responsibility for road drainage and Scottish Water's responsibilities are for curtilage drainage.

**The issue(s):**

Dundee, like all (coastal) cities will likely face more intense rainfall or storm events in coming years. Coupled with ageing infrastructure, this has created a widening gap between limited capacities to cope with the new "norms" we can expect under climate change. Extreme events (e.g. 2023 Storm Babet) affect capacity of the current systems being able to cope without significant and sustainable updates to be made. Planning has to take, and is taking this into consideration as a priority, but timescales for both planning and policy implementation are not matching up to the rate of change according to representatives in some water treatment, planning and environmental sectors.

As an example, river flushing practices, could be greatly improved along the East Coast in order to become more efficient and to save significant quantities of energy. Currently, in storm events, even relatively minor storms, sewage discharge can quickly return to "clean" or acceptable levels after only 20-30mins, however vast quantities of energy are regularly spent using water quality measures well beyond that- effectively continuing to treat already clean water.

All Dundee sewage is pumped to the treatment plant at Hatton except excess storm flows, whereas perhaps it can be locally stored/ distributed/ treated in more sustainable ways. Making full use of, or taking full advantage of the natural systems wherever possible is a longer-term aim for both City planners and water treatment companies alike (e.g. keeping natural watercourses free from debris through mechanical clearing or public volunteer initiatives) and de-coupling of surface water runoff from the combined sewer system, where possible.

**The aim:**

The longer- term aim is to disconnect surface water run-off from the combined sewer system where possible. The ability to achieve this relies on partnership working. Whilst maintaining high standards of water quality regionally and along the local coastline, culverts in some areas need reconnecting to the wider water environment as they have been isolated from them to date, perhaps through blockage or disrepair.

In Dundee City Centre, surface run-off is to be gradually disconnected or diverted from the sewer system, in favour of using natural conduits (or storage) in order to reduce pressure during storms or heavy precipitation events. In short, sustainability is paramount, making use of natural features where possible to reduce pressure on the sewer system improving its capacity to function during more frequent extreme events.

## Progress and Pilot Projects:

The St Leonard Park project is the first phase of a storm water drainage strategy for the St Mary's area of Dundee, developed jointly by Scottish Water and Dundee City Council in consultation with partners such as SEPA and NatureScot. The main focus is to reduce the risk of flooding in this area by introducing blue-green infrastructure – in other words, using landscaped green spaces to collect and drain away surface water more naturally, rather than being directed into the combined sewer system (Figure 9).

The strategy proposes to reinstate the historic Back Burn above ground in an area of greenspace alongside St Leonard Place, which floods regularly during periods of heavy rainfall. The area would be landscaped to allow this water to flow into the Dighty Burn, taking with it any excess surface water. This will then enable Scottish Water to disconnect surface water from the combined sewer, freeing up capacity in the system and significantly reducing the risk of flooding.

While flood prevention is the driver for these plans, the proposed management of water in greenspaces provides exciting opportunities to realise multiple benefits for people and nature (Figure 10). Enhancing the park with open water and additional planting will boost biodiversity, providing habitats for a range of insects, birds, mammals and amphibians. The park will also become a more attractive area for play and recreation, as well as encouraging walking, cycling and wheeling, enabling better, healthier access to schools and local amenities. The scheme at St Mary's has been well-received by the public and it is hoped as a successful pilot scheme to replicate in other Dundee locations.

Full article can be read at: <https://www.scottishwater.co.uk/About-Us/News-and-Views/2022/06/170622-St-Leonard-Park>

- Other initiatives, often small-scale, like the Albert Street rain garden have been well received and seen as a blueprint for future rollout.



Figure 9: Dundee Rain Gardens; *The Courier*, June 2022.



Figure 10: Retrofitting rain gardens into projects to retard flow of water into sewers. (Image Sustrans).

Full article can be viewed here:

<https://www.thecourier.co.uk/fp/news/dundee/3418833/pocket-park-stobswell-approved/>

- SEPA's Dighty Restoration Project is currently in the early stages, promoting active travel and biodiversity benefits. Dundee City Council are working with NatureScot in applying for Grants currently. Full article can be read here: [https://www.dundee.gov.uk/news/article?article\\_ref=4489](https://www.dundee.gov.uk/news/article?article_ref=4489)

Relating to SUDs, or river restoration schemes, it is the *maintenance* of such schemes that must be factored in at the budget and construction phases. If not adequately provided for, infrastructure will not last. Despite maintenance work itself perhaps being inconvenient or unattractive, it is essential to take care of the infrastructure if it is to last. In terms of river restoration- numbers of people count. Volunteer schemes are important and encouraging better dialogue between sector representatives will focus attention on how things will look in 20 or 30 years' time - raising the question, how much will it cost to keep it functioning?

**Sectoral Engagement:** Dundee City Council holds regular meetings with Transport Scotland and welcomes involvement with the strategy, including the roads maintenance team. Where single or specific-purpose assets need to be disrupted to provide maintenance work, it can take months to gather necessary responses, or permissions. Feedback can often initially be positive and supportive, (e.g. for the flood protection scheme along Riverside Drive), until teams start digging up the road network. Media can assist in presenting clear messages and consistent, cross-sectoral communication will be key.

**Marine Planning:** As well as posing "new" legal considerations, Marine planning undoubtedly offers new opportunities, but it is still a growing concept- particularly in terrestrial planning offices where marine matters can seem far removed from urgent, day-to-day priorities. Marine issues haven't yet emerged onto all terrestrial planning teams' radars equally (this can often be influenced by the size of coastline a local planning authority has to consider). This means regional roll-out for marine planning will not be the same everywhere and will progress at different rates. Both planning spheres will need to become more closely linked as there are still serious issues which need to be addressed. Both forms of planning will need to become more flexible and capable of change much more quickly than is currently the case, to match the speed at which climate change is impacting the built environment.

Shoreline activity can be competitive, particularly where new infrastructure is to be introduced where existing critical infrastructure already exists, such as water supply and sewage pipes. If priority is given to cable siting associated with major offshore energy projects, existing utilities onshore can be overlooked, even neglected, specifically in seeking permission for “standard” maintenance and repair of those assets. Repair to existing infrastructure below MHWS requires permission from Marine Scotland and the cable owner, requiring clear communication, from the requesting organisation. However, this chain (or channel) of communication is not always as effective in reverse (or top-down). This issue will increase in significance as energy independence becomes an even more pivotal political issue. Those external pressures can and will build rapidly, as seen in the knock-on impacts of the Ukraine invasion. These issues are not insurmountable, however. There are ways to achieve a better cooperation, faster decisions and easier access, but it takes communication and transparency to achieve this meaningfully on a day-to-day basis. In the meantime, lengthy reviews mean delays to refinement leaving operators to “muddle along”, when probably much more could be done to improve efficiency. For instance, delegated authority to secure emergency licenses, particularly along the foreshore would be particularly beneficial.

#### **Partnership and Engagement:**

Dundee City and Angus Councils remain closely engaged with Scottish Water, SEPA and NatureScot. The Councils also remain regularly engaged with Tay Estuary Forum.

#### **Summary:**

A lot of work is being done to reverse negative effects that have built up over decades of disjointed planning activities or “silo” sectoral activity (e.g. excessive surface water connected to the sewer systems). With common threats, like climate change, emphasis in recent years has increasingly been placed on finding more sustainable, holistic solutions; using partnership-working to ease the burden on single sectors, to share costs more broadly and to encourage mutual collaboration but in some sectors this effort is still relatively new.

There is enthusiasm for new initiatives, and this is increasing among the general public. While undoubtedly positive, the issue remains that in practice, planning still involves long waiting times.

Long gaps between planning and implementation increase risk of losing public support or awareness of the issues. Any new initiatives will take many years to reach a scale that materially improve the current situation. In the meantime, society is still relying on old infrastructure which is not designed for today’s environments (urban or climatic) and it cannot be expected to protect the assets that are in place- this won’t change for at least another decade at the current rate of development. This report focuses primarily on these short- to mid-term challenges.

#### **Links:**

<https://www.sustainabledundee.co.uk/about-us>

## 7. Conclusions

There is a critical difference at play when maintaining assets the public can see, versus the ones they cannot. When a building requires urgent repair, such as a broken window or leaking roof, the repair is visual and obvious but when issues occur below ground, under complex cityscapes, and surface-level action appears separate from the repair, frustrations can arise.

Positive perception of organisations which require to carry out their activities is paramount, but a void remains between the public and critical utility and transport industries. Catchment Tay Ltd is proactive in terms of outreach within the local community but also via neutral organisations like TEF, it keeps an ear to the ground regarding changing attitudes. The Tay enjoys some of the highest water quality in Europe and when all systems function properly, wastewater and water treatment companies work in tandem with environmental bodies such as SEPA and Nature Scotland overseeing use and demands “versus” environmental capacity. Coupled with the fact that the Tay system has such a high rate of exchange, with the largest freshwater inflow to any UK estuary and flushing of the system twice daily in its tidal regions, the system is a dynamic one, requiring dynamism and flexibility amongst the sectors that operate here.

There is a strong need to uphold this quality and standards that we have as a society become accustomed to, under increasing demands for space, access and investment priorities. Companies dealing with issues on a daily basis remain a valued and integral part of TEF, in order that we can ensure sustainable decision-making can continue. Currently sectoral interactions in the TEF region are well-managed (SIM report 2012); balancing a healthy functioning society and high quality environment is the reason platforms like TEF exist, and have continued to deliver integrated management since the late 1990s.

The perception is still of water quality being of the highest priority regionally, however, the maintenance and infrastructure required in order to preserve this prioritisation is less well understood. That is the challenge facing water and utility companies moving forward, against a moving backdrop of formalising marine planning and climate change which particularly impacts the tidal coastline, within which lies a vast assortment of critical infrastructure.

## References

- A Discussion of Factors Affecting Water Quality and the Use of Coastal Waters in the Tay Estuary (2011) University of Abertay report.
- Booth, L.M; Milne, F.D; Duck, R.W: 2013. *Sectoral interactions in the Scottish coastal zone: Measuring sustainability in theory and practice*. Journal of Ocean & Coastal Management Vol. 85 (2013)39-45.
- Tay wastewater project Carr C. (2004). Tay wastewater project. Dundee. Scottish Water
- Sectoral Interactions Matrix Review (2012)  
<https://sites.dundee.ac.uk/tef/wp-content/uploads/sites/9/2014/04/SIM-peer-review-Final-1.pdf>
- Sectoral Interactions on the Tay Estuary and adjacent coastline of East Scotland: Montrose Basin to Fife Ness (2012)  
<https://sites.dundee.ac.uk/tef/wp-content/uploads/sites/9/2014/04/Sectoral-Interactions-on-the-Tay-report1.pdf>
- SEPA (2007) Significant water management issues in the Scotland river basin district. Stirling.
- SEPA (2010) Scottish Bathing Waters 2010. Stirling
- Offshore wind farm developments - Public perceptions: survey, Diffley Partnership, June 2022: <https://www.gov.scot/publications/public-perceptions-offshore-wind-farm-developments-scotland/>

### Further Reading:

- Finan, K. (2007) Masters Thesis: Water quality changes in the Tay Estuary: does public perception match reality? (2007) University of Dundee Library



Appendix 1: The TEF Sectoral Interactions Matrix. The photograph demonstrates the type and extent of interactivity on the Tay and adjacent coast across five definitions of interaction:  competition (MC managed)  neutral  conflict  positive,  incompatible,  Mix (hatched).

