Green Infrastructure: A ‘How To’ Guide for Disseminating and Integrating the Concept into Spatial Planning Practice

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ENVIRONMENTAL PROTECTION AGENCY

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The work of the EPA can be divided into three main areas:

Regulation: We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don’t comply.

Knowledge: We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.

Advocacy: We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.

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- the contained use and controlled release of Genetically Modified Organisms (GMOs);
- sources of ionising radiation (e.g. x-ray and radiotherapy equipment, industrial sources);
- large petrol storage facilities;
- waste water discharges;
- dumping at sea activities.

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- Supervising the supply of drinking water by public water suppliers.
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- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiological Protection
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.
Integrating Ecosystem Approaches, Green Infrastructure and Spatial Planning

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EPA Research Report

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The EPA Research Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in relation to environmental protection. These reports are intended as contributions to the necessary debate on the protection of the environment.
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In recent years the Irish planning system has been reshaped in response to the challenges posed by such pressing issues as climate change, flooding, threats to biodiversity and the need to improve water quality. There is enormous pressure on planners and allied professionals to respond to such pressing issues when formulating spatial plans. This short document seeks to relieve such pressures for those involved in the formulation of spatial plans by presenting a “How To” guide on disseminating and integrating the green infrastructure (GI) concept – an approach that addresses multiple issues in an environmentally sensitive manner by promoting spatial connectivity and multifunctionality.

This guide forms part of a suite of GI planning resources available at www.ecoplanresearch.org and www.epa.ie/researchandeducation/research/safer including downloadable presentation and concept dissemination material, national and international best practice case studies, an annotated bibliography of relevant literature and a detailed report entitled Integrating Ecosystems Approaches, Green Infrastructure and Spatial Planning. This concept dissemination and integration guide complements guidance produced by Comhar and the Urban Forum on potential methods that may be employed when seeking to develop a GI strategy for a county or city development plan, local area plan or site master plan.\(^1\)

The document is divided into four sections. Sections 1 and 2, respectively, outline “why” the GI approach should be adopted and “what” GI means. These two sections are aimed at all planners and allied professionals involved in spatial planning. Sections 3 and 4, respectively, outline “how” to disseminate the GI concept and “when” is the most suitable time to begin integrating GI thinking into planning activities. While all planners and allied professionals involved in spatial planning will benefit from reviewing Sections 3 and 4, these two sections are specifically aimed at those co-ordinating the formulation of spatial plans.

Few would deny that we live in a world of declining biodiversity, anthropogenic climate change and a host of related issues resulting from human influence on the environment. Indeed, the pressures placed on the planet by human activities pose some of the most complex and demanding challenges facing societies and policymakers across the globe, requiring integrated and innovative policymaking to build resilient social-ecological systems that foster more sustainable relationships between humanity and the environment. Observed increases in storm intensity\(^2\) and the challenges faced in seeking to preserve the quality of our environment while advancing socio-economic development\(^3\) illustrate that Ireland is subject to such pressures and, therefore, shares in the responsibility to address them.

At a global level, the United Nations Framework Convention on Climate Change (UN, 1992a) and the Convention on Biological Diversity (UN, 1992b) have both highlighted the need for action and specified the broad contours of a transition pathway to more sustainable forms of human interaction with the environment. Such global initiatives are given national representation in the National Climate Change Adaptation Framework (DECLG, 2012a) and the National Biodiversity Plan (DAHG, 2011), which are being implemented “on the ground” through local development plan policies on climate change and via the production of Biodiversity Action Plans.

This interconnectivity is also reflected in the activities of the European Union (EU) which has been in the vanguard in responding to complex environmental issues by producing a series of targeted directives, such as the Strategic Environmental Assessment (SEA) Directive concerning the assessment of the potential impacts of plans and programmes; the Birds and Habitats Directives regarding the identification, designation and protection of species and habitats, as well as the assessment of potential impacts from proposed developments on such species and habitats; the Water Framework Directive concerning the protection of all high-status waters, prevention of further deterioration of all waters and the restoration of degraded surface and ground waters to a good status; and the Floods Directive concerning the management of flooding risks. These have been transposed in Irish legislation and policy by an array of initiatives that include, but are not limited to, such initiatives as the formulation of Site-Specific Conservation Objectives for the enhancement of biodiversity and the production of River Basin Management Plans to improve water quality.

Complementing this EU-driven environmental policy has been policy leadership in Ireland regarding a host of associated issues. Such nationally instigated initiatives include, but are not limited to, promoting a modal shift to less carbon-intensive modes of transport (DoT, 2009), advancing high quality design in the consideration of environmental issues (DECLG, 2012b, 2013), and ensuring that the recreational needs of young people are met through the development of youth-friendly safe environments (DoHC, 2007).

\(^2\) DECLG, 2012a.
\(^3\) EPA, 2012.
This growing number of policies has been integrated into planning at the local level, with several local authorities showing considerable initiative in promoting innovative approaches to accommodating a broadening range of policy objectives. Much of this has been undertaken within a resource-constrained working environment. However, while planners and allied professionals have demonstrated commitment to enhancing the quality of Ireland’s built and natural environment, the volume and complexity of policy objectives now weighing upon the planning system have made it a challenge to effectively meet the range of goals emanating from a variety of sources at international, EU, national and local levels.

A GI APPROACH TO PLANNING OFFERS THE FOLLOWING SOLUTIONS

» It enables planning authorities to meet a wide range of objectives in an integrated manner focused on ecologically sound development outcomes, including drainage management; habitat provision; ecological connectivity; landscape conservation and management; health, well-being and community development; recreation space; sustainable transport; climate change (mitigation and adaptation); and economic development.

» It enables local authorities to meet a range of environmental obligations under European and national legislation, including, but not limited to, SEA; Environmental Impact Assessment (EIA); Appropriate Assessment (AA, i.e. Natura Impact Assessment); and Flood Risk Management.
A key advantage of the GI approach is its emphasis on positive synergies between several functions in the same area. Thus, in contrast to much conventional planning activity which focuses on a single functional objective, the GI approach advances a **multifunctional and spatially connected land use perspective** that promotes “win–win” **combinations that deliver mutual benefits** to both nature and society. For example, a conventional approach may seek to designate an area simply as a floodplain. However, a GI approach would seek to explore the positive synergies that such a designation may have with other land uses. Here, it may be discovered that a suitably designed programme of deciduous tree planting and relatively inexpensive unsealed pathway provision could provide riparian bank stabilisation, enhance the area’s aesthetic appearance, supply habitat connectivity between Natura sites, improve pedestrian and cycle connectivity, while a series of robust sunken play spaces designed for use outside flood periods could be employed to improve flood alleviation by providing water detention areas during times of heavy rainfall.

**FOUR CORE PRINCIPLES UNDERLIE THE GI APPROACH**

1. **Respect Context**

Understanding, emulating and enhancing local ecological, topographical and cultural distinctiveness is the starting point for a GI approach to plan formulation.

2. **GI Assets are Fundamental Infrastructure**

Planning for the conservation and enhancement of valuable GI assets and functions should precede the allocation of lands for development. GI assets include, but are not limited to, woodlands, public open green spaces, riparian corridors, hedgerows, conservation areas, non-motorised transport routes, and sustainable urban drainage systems.

Images courtesy of the European Commission (EC, 2016)
3. Spatial Connectivity
Promoting spatial connectivity assists nature conservation by connecting habitats and thereby enabling species mobility. Spatial connectivity also involves identifying and planning for the interrelated roles played by different types of spaces that are connected across different spatial scales. For example, the different, yet interrelated, roles played by a spatially connected suburban hedgerow, an urban park, and a woodland located on an urban periphery.

4. Multifunctionality
A focus on how planning may enhance mutually beneficial social-ecological interactions by orientating spatial planning towards an emphasis on improving positive synergies between abiotic, biotic and social systems. By emphasising positive multifunctional synergies, a central value of the GI approach is that it supplies a resource-efficient means to effectively respond to the increasing scope, volume and complexity of issues and policy pressures that must be addressed in spatial planning, design and management activities.

EXAMPLE OF THE GI PLANNING APPROACH
An example of how to operationalise the GI planning approach is illustrated in the innovative and interlinked local area plans produced by Fingal County Council (FCC, 2013) for the contiguously located areas of Baldoyle-Stapolin and Portmarnock South. Both plans were adopted in 2013 and are effective for the 6-year period 2013–2019. These plans employ a GI approach to holistically frame and integrate policy initiatives concerning landscape aesthetics, biodiversity, sustainable urban drainage, archaeology and built heritage, as well as open spaces and recreation. Through a detailed and iterative environmental assessment process, both documents show respect for context by negotiating the development constraints posed by various conservation designations (SPA, SAC, Shellfish Waters) in a manner that aims to sensitively accommodate both urban expansion and environmental protection. The plans emphasise that GI assets are fundamental infrastructure rather than an ancillary design issue by seeking that all new residential areas are fully integrated with parkland, sustainable urban drainage schemes, non-motorised transport routes and spaces for “urban farming”. Spatial connectivity underpins the layout of the plans such that permeability is maximised for pedestrians, cyclists and a range of species, as well as motorists. Both plans also promote the multifunctionality of spaces, with, for example, parkland recreational spaces designed to provide habitats for wintering birds and enhance the appearance of the area. A key feature of these plans is, therefore, how they employ the GI approach to work synergistically in facilitating high quality urban extensions to the Baldoyle and Portmarnock urban areas while concurrently protecting the ecological integrity of the Baldoyle Estuary.

See: http://www.fingalcoco.ie

Images on this page courtesy of the European Commission (EC, 2016)
Images (overleaf) for Baldoyle-Stapolin and Portmarnock South LAPs courtesy of Àit (Urbanism + Landscape)
Open Space and Landscape Concepts

Location of the Baldoyle-Stapolin and Portmarnock South LAP lands showing main greenway connections (green arrows)

Green Infrastructure Concepts for the Portmarnock South LAP
Green Infrastructure and Landscape Strategy for the Portmarnock South LAP
FOR PLAN-MAKING CO-ORDINATORS
Sections 3 and 4
“How” to disseminate the GI approach
&
“When” to integrate GI thinking into the plan-making process

The GI Approach

- European Landscape Convention
- SEA and EIA Directives
- Habitats Directive
  Birds Directive
  (also Ramsar)
- Water Framework Directive
- Sustainable mobility
- Floods Risk Directive
- Public open space

- Sustainable mobility
3-HOW?

In line with the principle of multifunctionality, a GI approach necessitates collaborative working between a broad spectrum of professional disciplines in order to realise positive functional synergies in a spatially connected network. Consequently, a continuing professional development workshop was carefully devised to encourage GI thinking and collaborative problem-solving in order to simulate real world planning dilemmas. This interactive workshop employs a group-based methodology centred on a board game called “GI Quest”. This deliberative toolkit was specially produced to disseminate the GI concept and foster positive interdisciplinary collaboration on resolving complex planning issues at a range of scales. The description below provides an outline of the GI Quest workshop for plan-making co-ordinators so that they can gauge its usefulness for disseminating GI thinking among their colleagues during the plan-making process. Detailed guidance on how to run this workshop and the materials necessary to do so are available online (www.ecoplanresearch.org and www.epa.ie/researchandeducation/research/safer).

The workshop lasts approximately 3 hours and 30 minutes, inclusive of a 20-minute comfort break.

THE WORKSHOP IS ORGANISED INTO FIVE PHASES:

PHASE 1: FAMILIARISATION

» A 25-minute PowerPoint presentation is delivered.

» This presentation outlines the rationale and principles of the GI approach, as well as discussing a range of internationally sourced best practice examples to illustrate the successful deployment of the approach in solving complex planning issues.

PHASE 2: IDENTIFICATION OF GI ASSETS

» This phase of the workshop is approximately 40 minutes in duration.

» The participants are separated into clusters of four or five and physically grouped into small working teams.

» Each team is allocated a separate table.

» Importantly, participant inclinations towards habitual disciplinary groupings should be countered by requesting that officers with a range of disciplinary backgrounds comprise each group.

» This creates the necessary conditions for interdisciplinary interaction.
Phase 2: Identification of GI Assets (continued)

» Located on each table is an A1 size aerial photograph of a fictional coastal town called “Ballystewart”, a series of coloured markers and tracing paper.

» The participants are informed that the fictional local authority for the town intends to formulate a local area plan for the settlement that employs the GI approach to inform the planning and design of both strategic policies and specific proposals.

» The participants are then provided with further contextual information in the form of a number of A4 sheets of texts and illustrations. Information is also provided concerning local political and planning aspirations for a number of urban extensions to the town.

» The participants are tasked with examining the aerial photograph and contextual information supplied to identify possible GI assets (parks, rivers, wooded areas, cycleways, conservation sites etc.) and explore potential opportunities for enhancing green space connectivity and multifunctionality by employing the GI approach.

» Using the tracing paper and coloured markers provided, each team is requested to record in tracings, sketches and summary text their collaboratively derived planning and design objectives for consolidating and enhancing the area’s existing green infrastructure.

» Participants are also tasked with providing some outline ideas on how to manage the local authority’s aspiration for urban expansion.

PHASE 3: GAME PLAY

» This phase of the workshop occupies approximately one hour and builds upon the nascent interdisciplinary collaboration of the preceding phase.

» At this juncture, the participants have familiarised themselves with the context and formulated a series of planning and design ideas.

» The workshop facilitators now distribute a series of colour-coded cards, dice and some place markers.

» The attention of the participants is then directed to the series of coloured blocks bordering the aerial photograph and informed that each block corresponds to a different set of cards.

» These cards address a variety of themes, namely “ecology”, “hydrology”, “sustainable mobility”, “cultural heritage”, “recreation” and “wildcard” – the last theme addresses miscellaneous issues, such as unforeseen political interference and lottery bursaries.

» Associated with the cards are a series of posters displayed around the room that address issues specifically referenced on the cards, such as protected views, flooding zones and the location of sites designated for ecological conservation.

» Many of these posters also provide useful supplementary context information.

» Participants are instructed to rest their place marker on the block identified as “Start” and roll the dice to commence their passage along the coloured boxes, drawing the corresponding colour-coded card to the box they land on.
Phase 3: Game Play (continued)

» Each card presents the team with a new challenge which they must negotiate through collaboratively, revising the outline plans and designs they formulated in Phase 2 of the workshop.

» The cards are designed to simulate issues that may emerge in devising a site masterplan or local area plan. For example, an “ecology” card may specify that a recent ecological assessment has identified the presence of an internationally protected animal within a certain area with consequent implications concerning development limitations and conservation requirements.

» The game cards are designed to encourage participants to consider the potential for enhancing spatial connectivity and the multifunctional potential of sites.

» Therefore, participants are encouraged throughout to reflect on both “what” the GI approach entails and on “how” it can be operationalised through the planning system.

» Several game cards also require participants to reflect upon their understanding of GI by obliging them to develop a “communication strategy” outlining the benefits of the approach to elected politicians and the broader public.

» The game thereby provides an opportunity for a range of professionals from different disciplines to collaboratively formulate and rehearse arguments that can be taken away from the workshop and later deployed in their workplace when seeking to advance the GI approach.

» The participants finish their passage around the coloured boxes by landing on the large red circular shape identified as “GI”.

PHASE 4: GI CHALLENGE

» The workshop facilitators now present each team with details concerning a planning application for a complex mixed-use residential, hotel and golf course development located adjacent to a nature conservation area and partially situated within an identified flood plain.

» Each team is tasked to once again pool their respective expertise in assessing the merits of this proposal against the GI-informed design and planning concepts they have formulated so far.

» This phase of the workshop lasts about 30 minutes and was specifically formulated to simulate the application of a GI approach in a development management context. This phase of the workshop involves a transition from simulating policy development to simulating policy implementation.

» At the end of this phase, the facilitator asks each team to outline the decision they reached and justify the reasoning underpinning this assessment.

» A brief discussion of each team’s analysis then ensues, with particular attention paid to how the principles of the GI approach influenced the decision that was reached.
PHASE 5: DISCUSSION

» The workshop concludes with an open discussion of about 35 minutes that provides a forum for participants to “reflect-on-action” what has been learned through “reflection-in-action”.

» In this phase of the workshop, participants are invited to relate and identify the potential benefits and constraints of the GI approach to their own experiences.

» Participants are also asked to consider the possible barriers to applying the GI approach in their work and to offer suggestions on how such barriers could be overcome.

4-WHEN?

One of the core principles of the GI approach is that GI assets are seen as fundamental infrastructure. Accordingly, while recommending that a GI approach be advanced at all stages in policy formulation and development management processes, it is particularly important to integrate the GI concept into planning activities from the outset. Thus, it is recommended that the GI Quest workshop be run before producing the Issues Paper for a city or county development plan or local area plan. Should this not be possible, the concept dissemination and integration benefits of the workshop could also be fully realised if the workshop was run following the publication of the Issues Paper, but prior to the preparation of the draft plan. Running the workshop during the preparation of the draft plan or following the first public consultation display of the draft plan is less ideal for concept dissemination and integration. However, the benefits from running the workshop during this period of plan-making can still be realised. Such benefits include the dissemination of the GI concept for subsequent integration into specific (detailed) land use objectives within chapters of the plan as these are reviewed during production of the draft and/or following the review of submissions on the first public consultation display of the draft plan.

The workshop should be attended by all those involved in plan-making and development management processes within a local authority. This includes, but is not limited to, planners; drainage, transportation and water services engineers; parks professionals; community and economic development professionals; heritage officers; biodiversity officers; architects; housing officers; directors of services; municipal district managers; and councillors.
Once the GI concept has been disseminated among those involved in the plan-making and development management processes in local authorities, it should be integrated into the SEA, AA and EIA processes that underpin the environmental assessment of plans, programmes and projects. In particular, the GI concept should be used to inform the formulation and assessment of alternative development scenarios and the mitigation measures that may be proposed in the SEA, AA and EIA processes. For example, alternative policy or zoning options, along with mitigation measures, should be informed by the GI concept with respect to the SEA process. Similarly, alternative locations or site-specific designs, along with mitigation measures, should be informed by the GI concept with respect to EIA. The flowchart diagram on the next page indicates when it is best to integrate GI thinking into the environmental assessment processes of SEA, AA and EIA.
Boxes with bright red borders indicate the stages of SEA, AA and EIA where the GI concept can be best integrated into environmental assessment processes. Note: green boxes indicate "common" procedural stages; yellow boxes indicate correlation between some of the processes; white refers to those stages solely applicable to one of the processes; and the orange highlights the primacy of this legislative process for refusing consent. Red arrows refer to the critical outcomes of screening for AA; grey dotted arrows link all the rest of the relevant stages; discontinuous grey arrows point to reconsideration of proposals in light of IROPI.
GI WEB-LINKS

Global Links
• Convention on Biological Diversity (local authorities); www.cbd.int
• Greenroofs & Greenwalls; www.greenroofs.com
• ISOCARP Congress 2012 (portal to papers); www.isocarp.net
• Urban Habitats (free journal); www.urbanhabitats.org

European Community Links
• European Capitals of Biodiversity; www.capital-biodiversity.eu/2.html
• European Commission (GI pages); http://ec.europa.eu/environment/nature/ecosystems/
• European Commission (LIFE Programme); http://ec.europa.eu/environment/life/
• Green & Blue Space; www.interreg4c.eu/projects/project-details/?project=10-green-and-blue-space-adaptation-for-urban-areas-and-eco-towns&
• Greenstructure & Urban Planning; www.greenstructureplanning.eu
• SURF Nature; www.surf-nature.eu
• Sustainable Urban Fringes; www.sustainablefringes.eu/home/home.asp
• URGE (urban green environment); www.urge-project.ufz.de

European Countries Links
• CABE (UK, archived material); www.designcouncil.org.uk/our-services/built-environment-cabe
• DAC & CITIES (Denmark); www.dac.dk/en/dac-cities/
• Ecosystems Knowledge Network; http://ecosystemsknowledge.net
• Forestry Commission (UK); www.eforestry.gov.uk/forestdss/webpages/bgi/home.jsp
• Plurel (Pan-European); www.plurel.net/Project-4.aspx
• GreenSpace (UK); www.ourgreenspace.org.uk
• Green Infrastructure North West (UK); www.greeninfrastructurenw.co.uk/html/index.php
• GCV Green Network (UK); www.gcvgreennetwork.gov.uk
• Natural England; www.gov.uk/government/organisations/natural-england
• Online Green City (Pan-European); www.onlinegreencity.com
• The Wildlife Trusts (UK); www.wildlifetrusts.org
• Town and Country Planning Association (UK); www.tcpa.org.uk
• Trees & Design Action Group (UK); www.tdag.org.uk

North America Links
• Centre for Green Infrastructure (USA); www.gicinc.org
• Ecosystems Valuation (USA); www.ecosystemvaluation.org
• Green Infrastructure Ontario Coalition; www.greeninfrastructureontario.org
• Green Infrastructure Resources (USA); www.epa.gov/green-infrastructure
• Infrastructure Canada; www.infrastructure.gc.ca/prog/gif-fiv-eng.html
• Project for Public Spaces (USA); www.pps.org
• S.W.I.M. Coalition (USA); http://swimmablenyc.info
• The Conservation Fund (USA); www.conservationfund.org
• The Trust for Public Land (USA); www.tpl.org

Irish Best Practice
• Dublin City Development Plan (Dublin City Council); www.dublincity.ie/main-menu-services-planning/city-development-plan
• Naas Road Local Area Plan (Dublin City Council); www.dublincity.ie/main-menu-services-planning-urban-development-plans-local-area-plans/naas-road-lands-local-area-plan
• George’s Quay Local Area Plan (Dublin City Council); www.dublincity.ie/main-menu-services-planning-urban-development-plans-local-area-plans/george’s-quay-local-area-plan
• Liberties Local Area Plan (Dublin City Council); www.dublincity.ie/main-menu-services-planning-urban-development-plans-local-area-plans/liberties-local-area-plan
• Clongriffin-Belmayne Local Area Plan (Dublin City Council); www.dublincity.ie/clongriffin-%E2%80%93-belmayne-north-fringe
• Fingal County Development Plan (Fingal County Council); www.fingalcoco.ie/planning-and-buildings/development-plans-and-consultations/fingal-development-plan/
• Portmarnock South Local Area Plan (Fingal County Council); www.fingalcoco.ie/planning-and-buildings/development-plans-and-consultations/adopted-local-area-plans/portmarnock-local-area-plan/
• Baldoyle-Stapolin Local Area Plan (Fingal County Council); www.fingalcoco.ie/planning-and-buildings/development-plans-and-consultations/adopted-local-area-plans/baldoyle-stapolin-local-area-plan/
• Bartrsparks Local Area Plan (Fingal County Council); www.fingalcoco.ie/planning-and-buildings/development-plans-and-consultations/adopted-local-area-plans/bartrsparks-local-area-plan/
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References


### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Appropriate Assessment</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>ER</td>
<td>Environmental Report</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>GI</td>
<td>Green infrastructure</td>
</tr>
<tr>
<td>IROPI</td>
<td>Imperative reasons of overriding public interest</td>
</tr>
<tr>
<td>LAP</td>
<td>Local area plan</td>
</tr>
<tr>
<td>NHA</td>
<td>Natural Heritage Area</td>
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<tr>
<td>pNHA</td>
<td>Proposed Natural Heritage Area</td>
</tr>
<tr>
<td>SAC</td>
<td>Special Area of Conservation</td>
</tr>
<tr>
<td>SEA</td>
<td>Strategic Environmental Assessment</td>
</tr>
<tr>
<td>SEO</td>
<td>Strategic Environmental Objective</td>
</tr>
<tr>
<td>SPA</td>
<td>Special Protection Area</td>
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</table>
Is féidir obair na Gníomhaireachta a roinnt ina triú phríomhréimse:

Rialú: Déanaimid na gníomhaíochtaí seo a rialú ionas nach ndéanann an bhFreagrachtaí inbhuanaithe maith, agus le hiompar a chuirfidh le comhshaol chun tacú le comhshaol atá glan, táirgíúil agus cosanta go tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar comhshaol atá ar ardchaighdeán, spriocdhírithe ag Eolas:

1. gach leibhéal tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar comhshaol atá ar ardchaighdeán, spriocdhírithe ag Eolas:

2. fíor eolais na radaíocht:

3. rialú:

   a. roinnt ina trí phríomhréimse:

   b. Is féidir obair na Gníomhaireachta a gcomhshaol a chaomhnú agus a fheabhsú mar shócmhain luachmhar do na táirgíúil agus cosanta go tráthúil.

   c. Déanaimid córais éifeachtacha rialaithe agus comhlíonta leis an péirte a bhaintear d'fhreagraíocht na radaíocht agus na fhréagraíocht an tsábháilteacht raideolaíochta.

   d. Sainseirbhísí cosanta ar an radaíocht a nuícleacha agus leis an tsábháilteacht raideolaíochta.

   e. Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí eascairt as taismí núicléacha.

   f. Cabhrú le pleananna cabhrú le cinnteoireacht an rialtais na nGáis Ceaptha Teasa agus an rialtais ar leasúchán.

   g. Measúnacht Straitéiseach Timpeallachta:

      h. Measúnacht a dhéanamh ar chéile de na táirgíúil agus cosanta.

   i. Sainseirbhísí cosanta ar an radaíocht a nuícleacht, nó maoirse ar an t-achaladh a bhíonn le cruadh agus ar an triuinn a bhíonn le fáil.

   j. Forbairt an tsábháilteacht raideolaíochta agus an tsábháilteacht na radaíocht.

   k. Measúnacht a dhéanamh ar thionchar pleananna agus don tsábháilteacht raideolaíochta.

   l. Monatóireacht a dhéanamh ar leibhéil radaíochta, measúnacht a dhéanamh ar líonra aonairta, nó maoirsiú a dhéanamh ar leasúchán.

Teorí: Faisnéis Inrochtana agus Oideachas:

1. Comhairle ar a chur ar fáil dá fheirme nó aon rud eile a bhfuil fáilte faoi dhiaidh sin.

2. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta.

3. Maoirse a bhíonn le fáil ar thionchar pleananna agus don tsábháilteacht raideolaíochta.

4. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta agus na náisiúnta a fhorbairt chun éigeandálaí a chur i bhfeidhm.

5. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta agus na náisiúnta a fhorbairt chun éigeandálaí a chur i bhfeidhm.

6. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta agus na náisiúnta a fhorbairt chun éigeandálaí a chur i bhfeidhm.

Bainistíocht Uisce:

1. Monatóireacht agus tuairiscíú ar an tsábháilteacht raideolaíochta agus an tsábháilteacht na radaíocht.

2. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta agus na náisiúnta a fhorbairt chun éigeandálaí a chur i bhfeidhm.

3. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta agus na náisiúnta a fhorbairt chun éigeandálaí a chur i bhfeidhm.

4. Maoirse a bhíonn le fáil ar an tsábháilteacht raideolaíochta agus na náisiúnta a fhorbairt chun éigeandálaí a chur i bhfeidhm.
Identifying Pressures
Pressures placed on the planet by human activities pose some of the most complex and demanding challenges facing societies and policy-makers across the globe. Observed increases in storm intensity and the challenges faced in seeking to preserve the quality of our environment while advancing socio-economic development illustrates that Ireland too is subject to such global pressures and thereby shares in the responsibility to address them. In recent years the Irish planning system has been reshaped in response to the challenges posed by these issues. There now exists enormous pressure on planners and allied professionals to respond to such pressing issues when formulating land use plans.

Informing Policy
This document outlines how the ‘green infrastructure’ (GI) concept can help planners and allied professionals respond to the challenges posed by these pressures when formulating spatial plans. The GI concept addresses multiple issues in an environmentally sensitive manner by promoting spatial connectivity and multifunctionality. This document outlines how employing the GI concept enables those working within the planning system to meet a diverse array of complicated objectives that often seem to conflict. It describes how this can be achieved by simply enhancing certain existing work practices to better facilitate a more context sensitive form of planning that supplies a range of mutually reinforcing social, economic and environmental benefits.

Developing Solutions
This document seeks to assist planners and allied professionals involved in the formulation of spatial plans by presenting a ‘How To’ guide on disseminating and integrating the GI concept into spatial planning practice. This centres on the description of an interactive workshop that fosters novel perspectives on spatial policy formulation and new collaborative working arrangements between a range professionals. The materials and instructions for running this workshop are available from www.ecoplanresearch.org and www.epa.ie/researchandeducation/research/safer. This workshop material forms part of a suite of GI related resources produced and collated in this EPA funded project.