Nature-Based Solutions and Green Infrastructure for Sustainable Urban Transformations

REPLAN GEODESIGN WORKSHOP

"Applying Geodesign to support planning towards sustainable urban transformation with NBS-GI in Skarpnäck, Stockholm, Sweden"

14–15 March 2023

Stockholm, Sweden

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Content

1. Introduction and aim of the workshop

REPLAN is a transdisciplinary project aiming to co-produce new and essential knowledge of how local and regional planning practices can support ecosystem services and biodiversity, by exploring transformative trajectories for spatial planning processes. More specifically, it aims to create credible and salient solutions to how local and regional planning processes can be organised and designed to effectively make use of Nature-based Solutions (NBS) and Green Infrastructure (GI) to shape thriving urban and peri-urban environments and to combat biodiversity challenges. It pursues a transdisciplinary research approach with an embedded multiple case study in which academic and societal actors from the spatial planning system participate in the joint generation of knowledge for NBS-GI. Building on existing evidence and together with stakeholders, it addresses challenges in using NBS-GI in Swedish planning to promote sustainable land and water use that support ecosystem services and biodiversity in metropolitan regions.

Box 1. Definitions

Nature-based solutions (NBS) *is an umbrella concept embracing a number of different ecosystem-based approaches. The European Commission defines NBS as "solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes, and seascapes, through locally adapted, resource-efficient and systemic interventions" [1]. While IUCN proposed a working definition of NBS as "actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively while providing human well-being and biodiversity benefits" [2].*

Green Infrastructure *as "a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings." [3]. According to the Swedish Environmental Protection Agency, Green Infrastructure is "a way of working with community planning to maintain or recreate functioning habitats for animals and plants. The work aims to link green and blue areas into functioning natural environments that can continue to deliver services to humans."*

Transformative change *is defined as "a fundamental, system-wide reorganisation across technological, economic and social factors, including paradigms, goals and values" [4].*

REPLAN is structured according to **three specific research objectives:** (1) to map and systematise current understandings of how established concepts, e.g. NBS, GI and ecosystem services, are used in spatial planning practices and analyse challenges and opportunities for effective integration of NBS-GI in planning at municipal and regional levels (**WP1**); (2) to analyse the potential of digital tools and NBS-GI scenarios to act as a translational tool for knowledge integration and to facilitate the interaction between processes, actors and scales – from sites to landscapes and regions (**WP2**); (3) to foster co-production of robust and practically useful strategies enhancing the governance, organisation and patterns of collaboration needed to address sustainability challenges in local and regional planning processes (**WP3**).

The **REPLAN GEODESIGN WORKSHOP**, taking place on **March 14-15, 2023** in Stockholm, Sweden, is part of the second research objective (WP2). The aim of this **two half-day transdisciplinary workshop is to pilot/experiment a geodesign process** to facilitate collaboration and co-creation between actors involved in planning towards sustainable urban transformations with NBS-GI, to explore the potential of a geodesign process as a translational tool for knowledge integration, visualisation and co-creation, across disciplines/sectors and spatio-temporal scales. A form of planning support system (PSS), geodesign is '*a design and planning method which tightly couples the creation of design proposals with impact simulations informed by geographic contexts, systems thinking and digital technology*' [5]. Geodesign can help translate ideas into spatial information, mediate between different opinions, mediate between science and practice, and support transformative change[6].

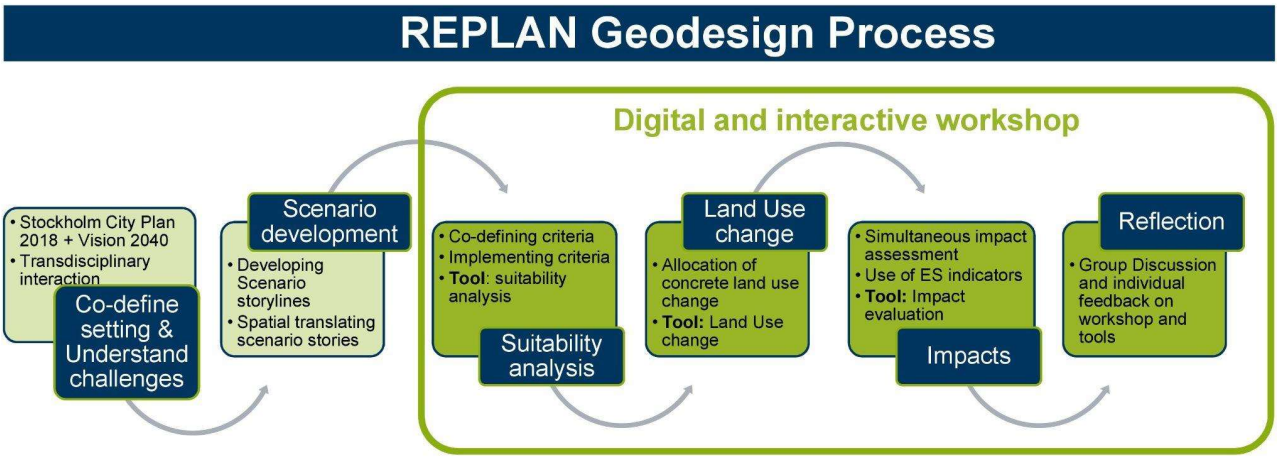


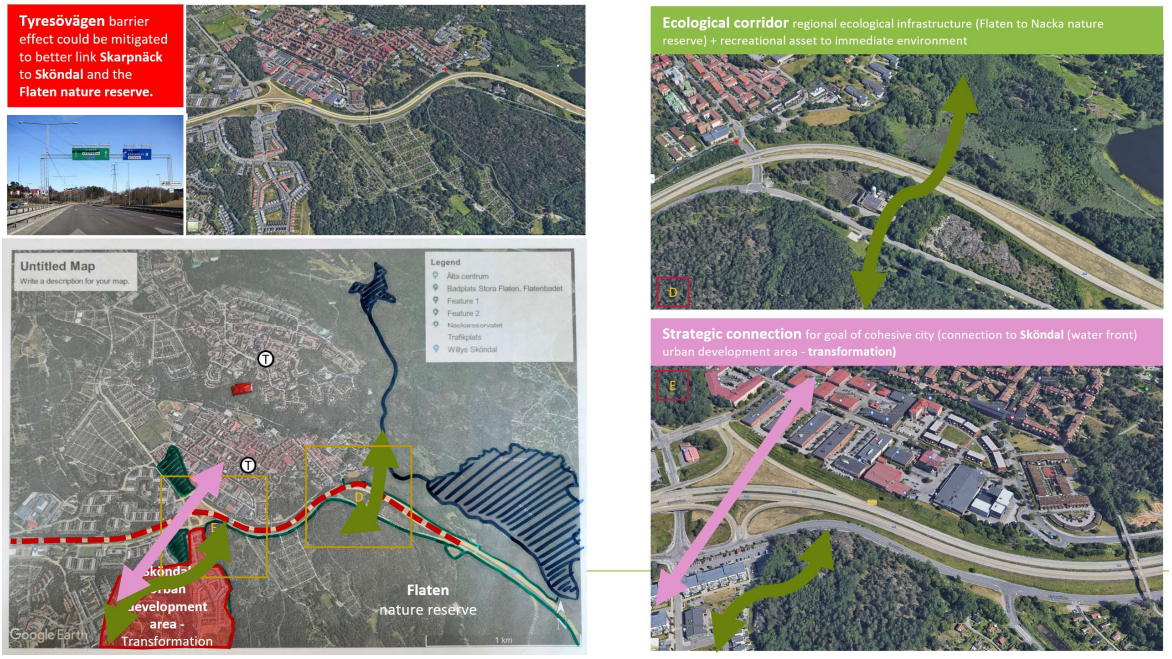
Figure 1. Six key steps of the REPLAN Geodesign Process: the first two steps are implemented in advance; the last four steps will take place during the 2-day digital and interactive workshop. Along with the final 'reflection' step, short questionnaires and discussions will be conducted throughout (Adapted after Gottwald et al., 2021).

The REPLAN Geodesign Process consists of **six key steps**, of which the first two steps are implemented before the workshop, while the last four steps will take place during the two-day digital and interactive workshop (Figure 1). **Step 1** involves the joint definition of the setting and understanding of the challenges in the study area based on transdisciplinary interactions between REPLAN researchers and planners, and review of relevant documents, primarily the Stockholm City Plan 2018[7]. **Step 2** deals with the development of two scenarios with different transformative ambitions, i.e. a **Current SCP Scenario** aligned with the Stockholm City Plan and a **Transformative NBS-GI Scenario** promoting a stronger adoption of NBS-GI, followed by a spatial translation of the scenarios. The following steps, namely: Suitability Analysis (**Step 3**), Land Use Change (**Step 4),** and Impact Assessment (**Step 5**) are covered during the two-day Geodesign workshop. The workshop ends with a reflection session where the different steps are discussed and evaluated (**Step 6**), although several short questionnaires and discussions will be held throughout.

The geodesign workshop participants were jointly recruited by the REPLAN team and the contact person at the City of Stockholm, to represent different planning levels and competences, from local to regional. "Planning" should here be seen in a wide sense, including the contribution of several disciplines needed for strengthening ecosystem

services and biodiversity in urban planning. We target stakeholders who are interested and knowledgeable concerning both the political and operational context of the Swedish planning system, as well as the societal challenges faced by the metropolitan area of Stockholm. The study area is Skarpnäck, situated in the southern part of the City of Stockholm (Box 2). The geodesign workshop participants include stakeholders directly involved in the Skarpnäck study area, the larger context of the City of Stockholm, the regional level in the form of the County Administrative Board, as well as REPLAN project partners. They will test the proposed REPLAN Geodesign process and provide feedback on the different steps of the process based on their experience. Interested participants will be actively involved in further activities within the REPLAN project.

Box 2. STUDY AREA: The district of Skarpnäck is an interesting example that offers valuable insight into the local implications of the City Plan. With a population of 46,145 in 2016, which is expected to increase to 64,574 by 2040, the district is characterised by a diverse urban environment with good transport links. Two notable advantages of Skarpnäck are the access to the vast natural areas of Nacka and Flaten nature reserves and the expansion of the metro, which offers good opportunities for densification with more homes and workplaces. In this study, we focus on **Bagarmossen** and **Skarpnäcks Gård**: two neighbourhoods in the district separated by an appreciated "green strip". Largely developed in the 1950s, Bagarmossen is characterised by semi-open blocks adapted to the terrain and a small local centre. Skarpnäck Gård is laid out on a grid with buildings of different scales but with a uniform character.



Step 1: Co-define settings and understand challenges

Based on document analysis and interactions with local stakeholders, we identified main challenges to address in the study area. We focus on the themes of *social values*, in the form of nature-based recreation, *climate adaptation* in the form of urban heat and flood risk, and *biodiversity protection*. Common interests between stakeholders exist in different dimensions: spatial scale (municipal, regional, and national); competences and responsibilities (e.g. planning, planning support, decision-making, consultancy); educational backgrounds; and interests pursued in relation to the selected themes. Associated to these themes, we selected four ecosystem services, namely **ES1** Local

climate regulation, **ES2** Stormwater retention, **ES3** Habitat (focus on oaks), and **ES4** Nature-based recreation. In the subsequent steps, the impact of the scenarios on the four ecosystem services will be measured as indicators, and the extent to which the alternative proposals contribute to addressing the identified challenges.

Step 2: Scenario development

Two scenario storylines were developed through iterative discussions in the REPLAN team with feedback from the contact person at the City of Stockholm (table below). The starting point was the Stockholm City Plan (SCP) and in particular the local Development Opportunities (DOP) identified in the study area (Översiktsplan för Stockholm, 2018). The **Current SCP Scenario** represents the translation of the plan's goals into the local context as we perceive the current planning situation. Stemming from a *Nature for Nature* perspective[8], the **Transformative NBS-GI Scenario** goes even further, and proposes more radical interventions to strengthen ecosystem services and biodiversity.

Box 3. Scenarios

Current SCP Scenario	***Transformative GI NBS-Scenario***
Major local development opportunities for new housing, services, businesses and more public spaces are fully exploited. The regional green infrastructure is improved, which also enriches the immediate surroundings with recreational values. The central green corridor between Bagarmossen & Skarpnäcks Gård is expanded with new activities and destinations to connect the two areas. Existing corridors and social connections both within the areas themselves and to neighboring municipality and districts are encouraged, as is the potential ecological corridor between Bagarmossenskogen and Skogskyrkogården. Tyresövägen maintains its important traffic function but the barrier effect of the main road is partially alleviated by the development of a busy urban corridor to better connect Skarpnäck with Sköndal and the Flaten nature reserve.	*The urban development is compact with extensively consolidated greenspaces to better protect and safeguard sensitive species and the local biodiversity. There is more space for nature, enabling ecological processes to operate with less human intervention. The vital role of Bagarmossen-Skarpnäck for the connectivity of the regional oak habitat network is restored: the available opportunity spaces for urban development are re-designed to accommodate dynamic natural processes, including movements and dispersal. The "green strip" between Bagarmossen and Skarpnäcks Gård is protected and new forests and parks are created/restored and sustained with native species, increasing ecological connectivity. Tyresövägen and the power line are hardly noticeable; this east-west axis is radically transformed to allow a better connectivity for both people and nature.*

Opportunity spaces

These are areas where development opportunities could be found. **Land use changes** to be explored using the Geodesign tool will focus on these areas. Land use can be either **urban development** (housing units) or implementation of **NBS** (forests and retention ponds). We have **avoided** areas with already existing **detailed plans** but included areas with plan proposals and the two nature **reserves.** The **result was 8 distinct subareas** within the study area. The subareas are 1) *Nacka nature reserve*, 2) *Flaten nature reserve*, 3) *Central green strip*, 4) *Bagarmossen east*, 5) *Skarpnäcks Gård*, 6) *Tyresövägen*, 7) *Bagarmossen north-west*, and 8) *Sköndal north-east*.

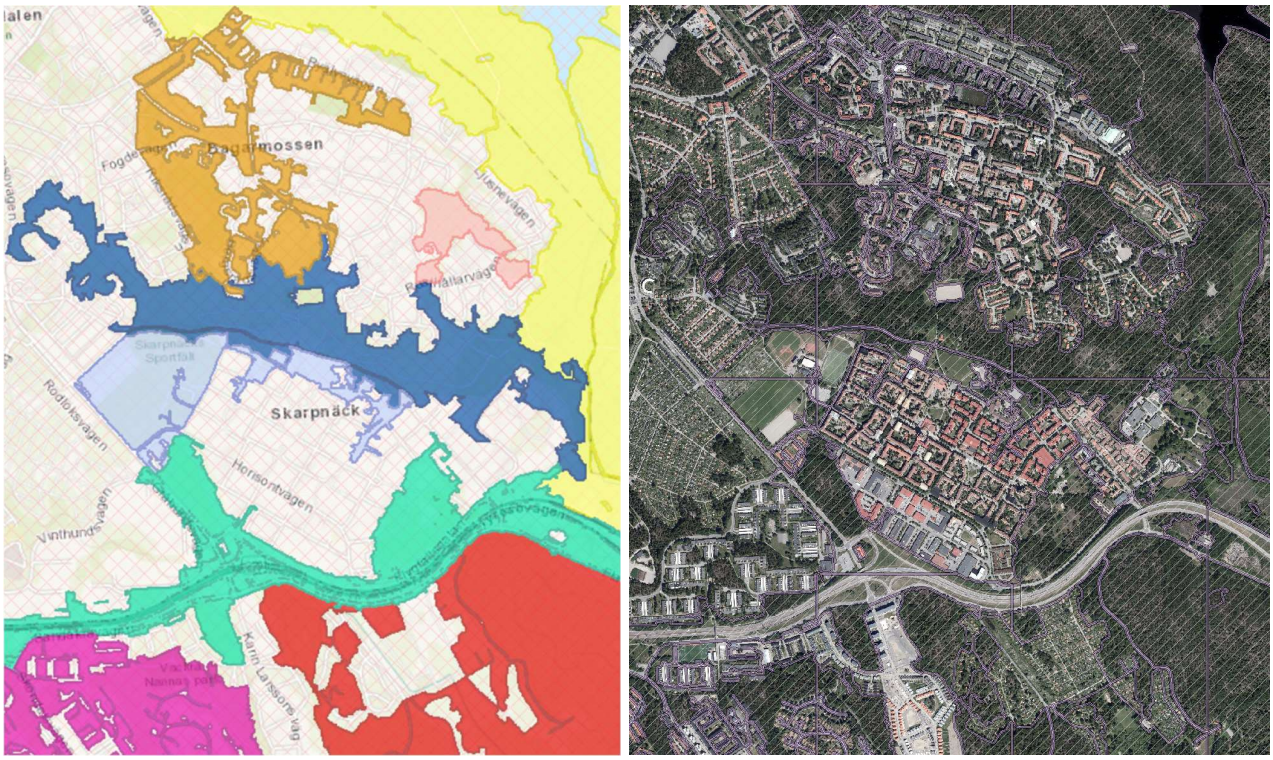


Figure 2. 8 sub-areas identified as opportunity spaces for transformative change in Bagarmossen-Skarpnäck. For analysis purposes and to facilitate communication each area is subdivided into smaller polygons.

During the digital interactive workshop

Step 3: Suitability Analysis

During the digital interactive workshop, we will use three touch tables and a specially prepared GIS interface (ArcGIS with the extension CommunityViz). In this step, participants will use the interface to explore background data and to perform a suitability analysis to identify the areas that are **most suitable for new housing (Task 1)** and the areas that **most need NBS interventions (Task 2).**

The digital tool makes it possible to study the effects of different weight combinations of the criteria, until an agreement is reached by the group. At the end of each task, the group will have agreed on **two final sets of weights** (0-10), one for each scenario, to be assigned to the predefined criteria.

	Name	Criteria	Criteria assumption	Weight [0-10]	
				Housing	NBS
C1	Metro	Distance from metro stations	Closer proximity → higher scores		
C2	Schools	Distance from schools	Closer proximity → higher scores		
C3	Industrial buildings	Distance from industrial buildings	Closer proximity → lower scores		
C4	Tyresövägen	Distance from Tyresövägen	Closer proximity → lower scores		
CA	Tree Canopy	Tree canopy cover density (100 m)	Higher scores result from higher average density values		
CB	Oak habitat	Overlap with oak habitat	Lower scores result from habitat loss		
CC	NB-recreation	Distance from sociotopes with high value for NB-recreation	Closer proximity → higher scores		
CD	Imperviousness	Impervious density (100 m)	Lower scores result from higher average density values		

Step 4 and 5: Land use change and Impact assessment

On Day 2, the participants will use the digital interface to iteratively co-design land use changes (e.g. allocate land uses to meet the desired number of new housing units), considering the two scenarios. Negotiations between participants during the co-design process will take place with the support of a real-time assessment of multidimensional impacts. Specifically, the potential impacts in terms of four selected ecosystem services indicators will be considered, with different levels of aggregation. Based on the relevant themes identified in Step 1, the focus is on ES1 Local climate regulation, ES2 Stormwater retention, ES3 Habitat (focus on oaks), ES4 Nature-based recreation.

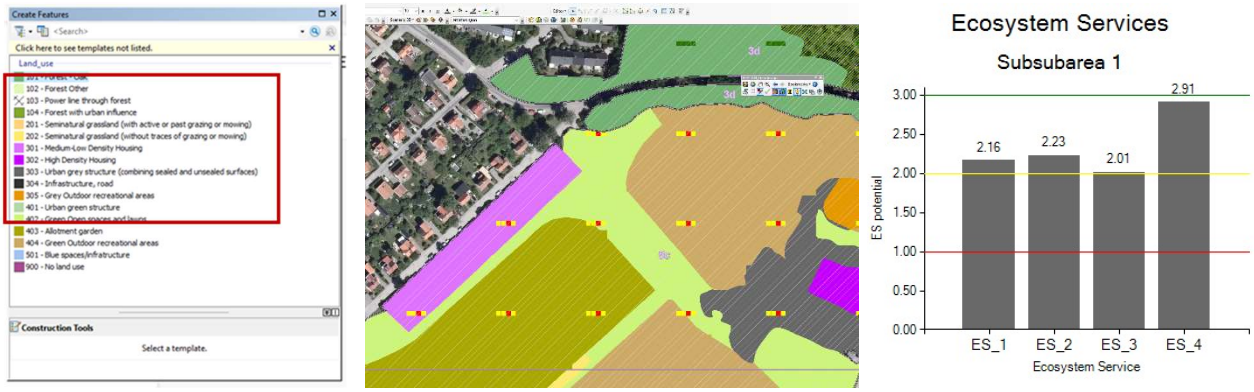


Figure 3. Tools used for changing land uses and assessing local (traffic lights) and aggregated impact on each of the 8 subareas.

The assessment of potential impacts is based on a look-up table approach building on Biotope SE[9]. Through a Delphi approach, the REPLAN team and the contact person from the City of Stockholm first assessed the potential of each biotope found in the Skarpnäck study area to provide the selected ecosystem services on a scale from 0 (negligible) to 3 (high). The assessments have been reviewed by an expert outside of the team; finally, consensus was reached on the values shown in Table 1. Ultimately, a potential value for ecosystem services was assigned to each land use class in the study area, calculated as an area-weighted average of the biotopes contained therein (Table 2).

Step 6: Reflection

Reflecting on challenges and opportunities of Geodesign for local planning towards sustainable urban transformations with NBS. It involves open discussions and evaluation of the workshop in a plenary session identifying positive and negative aspects.

Pre-workshop tasks for participants

Please print out a copy of the REPLAN pre-workshop Questionnaire (Q1) and fill it in and bring it with you to the workshop.

A first important (but voluntary) task before the workshop for the participants is to reflect on your views on the challenges and opportunities in planning for transformative changes in the Stockholm/Swedish planning context. This includes providing feedback on the two scenarios that will be analyzed during the workshop, see **Box 3** and the appended questionnaire **Q1**. The second pre-workshop task is to take a critical look at the expert judgement expressed in **Table 1** and highlight those values that you would strongly contradict. In addition, interested participants can also participate in the Delphi process by completing the entire survey (https://forms.gle/EL9VqJ6GXmn6E6FL6). The results of the pre-workshop tasks will be shared and further discussed during the workshop.

Table 1. Expert-based assessment of the ecosystem services potential of the biotopes that are present in Skarpnäck study area:

LEGEND

ES1. Local Climate Regulation
ES2. Stormwater retention
ES2. Habitat (focus on oaks)
ES4. Nature-based recreation
0 = Negligible; 1 = Low; 2 = Medium; 3 = High;
*classes form merging of stg. 1-2 biotopes

Biotope code	Biotope (SE)	Biotope (EN)	ES1	ES2	ES2	ES4
110	Hög icke-vegetation, i huvudsak byggnader	Tall non-vegetation, mainly buildings	**0**	**0**	**0**	**0**
120	Urban gråstruktur, hårdgjord	Suggested sealed urban grey structure	**0**	**0**	**0**	**0**
130	Urban gråstruktur, ej hårdgjord	Suggested non-vegetation, unsealed urban grey structure	**0**	**1**	**0**	**0**
141	Infrastruktur, vägområde med beläggning och bro över vatten	Infrastructure, road area sealed, and bridge over water	**0**	**0**	**0**	**0**
142	Infrastruktur, vägområde grusväg	Infrastructure, road area gravel/unsealed	**0**	**1**	**0**	**0**
150	Infrastruktur, järnvägsområde i huvudsak ej hårdgjord	Infrastructure, railway area, mainly unsealed	**0**	**1**	**0**	**0**
210	Urban grönstruktur av öppen karaktär	Urban green structure of open character	**1**	**2**	**1**	**2**
211	Urban grönstruktur vägren/slänt	Urban green structure road verges	**1**	**1**	**1**	**0**
212	Grönt tak: sedum, torv, gräs, örter, buskar mm (steg1-2 kod)	Green roof: sedum, turf, grass, herbs, shrubs etc	**1**	**1**	**1**	**0**
220	Urban grönstruktur av lummig (fruktträd, bärbuskar) karaktär	Urban green structure of lush (fruit trees, berry shrubs) character	**2**	**2**	**1**	**2**
231	Urban grönstruktur av trädkaraktär enligt NMD talldominerad	Urban green structure of wooded character, according to NMD pine dominated	**3**	**3**	**2**	**2**
233 + 234 + 235	Urban grönstruktur av trädkaraktär enligt NMD barrblandad + NMD lövblandad barrdominerad + NMD lövdominerad	Urban green structure of wooded character, according to NMD mixed conifer dominated + NMD mixed coniferous and deciduous + NMD decidous dominated	**1**	**2**	**1**	**2**
236 + 237	Urban grönstruktur av trädkaraktär enligt NMD ädellövdominerad + NMD blandlövsdominerad	Urban green structure of wooded character, according to NMD hardwood dominated + NMD decidous mixed with hardwood	**3**	**3**	**3**	**2**
240	Urban grönstruktur av grå karaktär	Urban green structure of grey character	**1**	**1**	**0**	**0**
250	Urban grönstruktur av naturtomtskaraktär på SGU berg i dagen	Urban green structure on SGU bedrock coutcrop	**1**	**1**	**1**	**2**
320	Odlingsmark - kultiverad gräsmark, fd åker på SGU grovsediment	Agricultural land - suggested cultivated grassland on SGU coarse sediment	**1**	**3**	**1**	**1**
330	Odlingsmark - kultiverad gräsmark, fd åker på övrig fuktighetsregim	Agricultural land - suggested cultivated grassland on remaining moisture regime	**1**	**2**	**1**	**1**
411	Öppen hällmark, berg i dagen	Open substrate dominated land, bedrock	**0**	**0**	**1**	**2**

412	Öppen block-stendominerad mark	Open substrate dominated land, boulders and stones	**0**	**0**	**1**	**1**
432 + 433	Öppen torr-frisk gräsmark + Öppen frisk-fuktig gräsmark	Open dry-mesic grassland + Open mesic-moist grassland	**1**	**2**	**2**	**2**
447 + 440	Föreslagen tät vassvegetation ej i vatten (Steg1_kod)	Dense reeds, typically on wetland but not in water	**2**	**3**	**2**	**2**
515	övriga lövbuskar, inkl. blandning av 513-514, på SGU berg i dagen (>50 % BT)	Other deciduous shrubs, incl. Mixture of 513-514, on SGU bedrock (>50% SC)	**1**	**1**	**2**	**2**
525	övriga lövbuskar, inkl. blandning av 523-524, på SGU hälgrovsediment mark (>50 % BT)	Other deciduous shrubs, incl. Mixture of 533-534, on SGU coarse sediment(>50% SC)	**1**	**3**	**2**	**2**
535 + 540*	övriga lövbuskar, inkl. blandning av 523-524, på SGU hälgrovsediment mark (>50 % BT)	Other deciduous shrubs, incl. Mixture of 520-540, on dry - wet land (>50% SC)	**2**	**2**	**2**	**2**
545	övriga lövbuskar, inkl. blandning av 543-544, på SGU/fastighetskarta våtmark (>50 % BT)	Other deciduous shrubs, incl. Mixture of 543-544, on SGU/fastighetskarta wetland (>50% SC)	**2**	**3**	**2**	**2**
611 + 621 + 631 + 641* + 640*	Talldominerad skog/trädklädd mark på SGU berg i dagen + SGU grovsediment + övrig fuktighetsregim	Pine dominated forest/tree covered land on SGU bedrock outcrop + SGU coarse sediment + remaining moisture regime	**2**	**2**	**2**	**3**
632	Grandominerad skog/trädklädd mark på övrig fuktighetsregim	Spruce dominated forest/tree covered land on remaining moisture regime	**3**	**3**	**2**	**3**
613	Barrdominerad skog/trädklädd mark på SGU berg i dagen	Mixed coniferous forest/tree covered land on SGU bedrock outcrop	**2**	**2**	**2**	**3**
623 + 633 + 643	Barrdominerad skog/trädklädd mark på SGU grovsediment + övrig fuktighetsregim + SGU/fastighetskartan våtmark	Mixed coniferous forest/tree covered land on SGU coarse sediment + remaining moisture regime + SGU/fastighetskartan wetland	**3**	**3**	**2**	**3**
614	Blandad (barr/löv) skog/trädklädd mark på SGU berg i dagen	Mixed coniferous and deciduous forest/tree covered land on SGU bedrock outcrop	**2**	**2**	**2**	**3**
624	Blandad (barr/löv) skog/trädklädd mark på SGU grovsediment	Mixed coniferous and deciduous forest/tree covered land on SGU coarse sediment	**2**	**3**	**2**	**3**
634 + 644	Blandad (barr/löv) skog/trädklädd mark på övrig fuktighetsregim + SGU/fastighetskartan våtmark	Mixed coniferous and deciduous forest/tree covered land on remaining moisture regime + SGU/fastighetskartan wetland	**3**	**3**	**2**	**3**
615	Triviallövsdominerad skog/trädklädd mark på SGU berg i dagen	Deciduous dominated forest/tree covered land on SGU bedrock outcrop	**2**	**2**	**2**	**3**
625	Triviallövsdominerad skog/trädklädd mark på SGU grovsediment	Deciduous dominated forest/tree covered land on SGU coarse sediment	**2**	**3**	**2**	**3**
635 + 645	Triviallövsdominerad skog/trädklädd mark på övrig fuktighetsregim + SGU/fastighetskartan våtmark	Deciduous dominated forest/tree covered land on remaining moisture regime + SGU/fastighetskartan wetland	**3**	**3**	**2**	**3**
616	Ädellövsdominerad skog/trädklädd mark på SGU berg i dagen	Hardwood deciduous dominated forest/tree covered land on SGU bedrock outcrop	**2**	**2**	**3**	**3**
626 + 636	Ädellövsdominerad skog/trädklädd mark på SGU grovsediment + övrig fuktighetsregim	Hardwood deciduous dominated (deciduous) forest/tree covered land on SGU coarse sediment + on remaining moisture regime	**3**	**3**	**3**	**3**
617	Blandlövsdominerad (ädellövsinslag) skog/trädklädd mark på SGU berg i dagen	Mixed deciduous forest/tree covered land on SGU bedrock outcrop	**2**	**2**	**3**	**3**

637 + 647	Blandlövsdominerad (ädellövsinslag) skog/trädklädd mark på övrig fuktighetsregim + SGU/fastighetskartan våtmark	Mixed deciduous forest/tree covered land on remaining moisture regime + SGU/fastighetskartan wetland	**3**	**3**	**3**	**3**
618 + 648*	Hygge/övrig störd potentiellt trädklädd mark på SGU berg i dagen	Clear-cut/other disturbed tree covered land on SGU bedrock outcrop	**2**	**2**	**1**	**3**
711 + 710*	Öppet vatten utan anläggning	Open water without installations (or without facilities)	**2**	**2**	**1**	**3**
722 + 723 + 720*	Vatten med flytbladsvegetation (hydrofyter) + blandad vattenvegetation (övervatten/flytblad)	Water with floating vegetation (hydrophytes) + mixed water vegetation (helophytes/hydrophytes)	**2**	**2**	**2**	**3**
726	Vatten med hög vegetation, överhängande eller i permanent vatten	Water with tall vegetation, overhanging or in permanent water	**3**	**2**	**2**	**3**

Table 2. Tier 1 Look up table for real-time impact assessment based on land uses in Skarpnäck study area.

				Area weighted average			
LU Code	**LU Class name**	**Area (ha)**	**%**	**ES1**	**ES2**	**ES3**	**ES4**
LU101	**Forest - Oak**	**36,96**	**9,74%**	2,35	2,35	3,00	3,00
LU102	**Forest - Other**	**200,89**	**52,93%**	2,22	2,22	2,00	3,00
LU103	Power line through forest	3,98	1,05%	1,55	2,11	1,15	2,52
LU104	Forest with urban influence	3,68	0,97%	1,68	1,85	2,21	2,34
LU201	Seminatural grassland (with active or past grazing or mowing)	7,23	1,90%	1,89	2,23	2,32	2,43
LU202	Seminatural grassland (without traces of grazing or mowing)	8,90	2,34%	1,34	2,13	1,63	1,86
LU301	**Medium-Low Density Housing**	**16,25**	**4,28%**	1,32	2,01	1,10	1,93
LU302	**High Density Housing**	**16,87**	**4,44%**	1,12	1,90	1,09	1,90
LU303	Urban grey structure (combining sealed and unsealed surfaces)	5,27	1,39%	0,00	0,47	0,00	0,00
LU304	**Infrastructure, road**	**15,67**	**4,13%**	0,00	0,00	0,00	0,00
LU305	Grey Outdoor recreational areas	0,98	0,26%	0,00	0,53	0,00	0,00
LU401	Urban green structure	11,65	3,07%	1,33	1,97	1,11	1,63
LU402	**Green Open spaces and lawns**	**32,25**	**8,50%**	1,16	1,77	1,13	1,53
LU403	Allotment garden	5,15	1,36%	2,00	2,00	1,00	2,00
LU404	Green Outdoor recreational areas	12,08	3,18%	0,94	1,60	1,15	2,09
LU501	Blue spaces/infrastructure	0.00	0.00%	2.00	2.00	1.50	3.00
LU900	No Land use	1,75	0,46%	2,00	2,71	2,00	2,00

2. Structure of the two-day workshop

DAY 1: Tuesday, 14 March 2023			
Time	**Event**		
12:00-13:00	**Lunch and mingle;** collect pre-questionnaire (**Q1**)		
13:00-13.10	Welcome and brief introduction to REPLAN		
13:10-13:30	**Session 1**: Introduction to case study + aim and structure of the workshop		
13:30-14:30	**Session 2**: Discussing scenarios (**D1**)		
14:30-14:50	Coffee break		
14:50-16:10	**Session 3:** Suitability Analysis task: housing and need for NBS (Questionnaire **Q2**)		
	Group 1	Group 2	Group 3
16:10-17:00	**Session 4:** Reporting key points from sessions 3 + Q&A		
17:00-18:00	**Mingle!!**		

DAY 2: Wednesday, 15 March 2023			
Time	**Event**		
8:00-8:30	**Breakfast coffee**		
8:30-8:50	**Session 5**: Recap of Day 1 + aim and structure of the Geodesign workshop		
8:50-10:00	**Session 6:** Land Use Change and Impact Assessment tasks (Current SCP Scenario)		
	Group 1	Group 2	Group 3
10:00-10:20	Coffee break + Group picture		
10:20-11:50	**Session 7:** Land Use Change and Impact Assessment tasks (Scenario Transformative NBS) + (Questionnaire **Q3**) + Reflection on Session 6 & 7		
	Group 1	Group 2	Group 3
11:50-12:30	**Session 8:** Reflection on challenges and opportunities		
12:00 -	**Lunch**		

3. Practical information

Some practical information:

Venue	Sahara, Teknikringen 10B, entrance floor, KTH Campus
Meeting rooms	Sahara, Pacific, Ocean, Arctic, all at the same address, entrance floor, KTH Campus
Wi-Fi	Participants will be provided with a login and password

4. References

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[9] Skånes, H. 2022. BIOTOP SE Del B Klassificeringssystem och databasdesign Metadata till BIOTOP SE 4.0 (DBM220630), Stockholms universitet.