technopolis group

June 2023

Research assessment Department of the Built Environment – TU/e

Final Report

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Final Report

Report by the Research Assessment Committee

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1 Foreword

The committee is grateful to the Department staff and students for their kind cooperation and energetic participation in the entire programme, but in particular during the site visit, which was also extremely well organised. The Department community was consistently open and transparent – and this was very much appreciated by the committee. Overall, the meetings with staff and PhD students added depth and nuance to the committee's understanding of the current health of the Department's research programmes.

The Department's self-assessment report was noticeably clear about the current and past aims and strategies. There was a clear sense that the Department recognises that it is on a journey, and that the committee's advice and recommendations would be warmly received as part of this process.

The committee commends the Department on its ambition to be a 'fearless' organisation, that is open and inclusive. This is a strong attitude upon which staff and students can continue to build their research profile and societal impact – locally and internationally – in a Department which is supportive and reflexive. This bodes very well for the future.

Prof. Jacqueline Glass

Chair

2 Introduction

In the period March – May 2023 an independent assessment committee conducted the Research Assessment of the Department of the Built Environment at Eindhoven University of Technology. This report contains the findings, recommendations and conclusions of the assessment committee.

The assessment covers the time period 2016 – 2021. The goal of the assessment was to evaluate the Department in light of its own aims and strategy. The assessment builds on several written sources, including the self-evaluation of the Department, the Terms of Reference, the Strategy Evaluation Protocol 2021-2027 and the final report by the Peer Review Committee from the last assessment. Furthermore, the assessment committee conducted a site visit of the Department on March 21-23.

In accordance with the Strategy Evaluation Protocol 2021-2027 for Research Assessment in the Netherlands (SEP), the committee's task was to assess the research on the following criteria: Research Quality, Societal Relevance, and Viability (extent to which the Department is equipped for the future). The assessment encompassed four further aspects: Open Science, Academic Culture, Human Resources Policy and PhD Policy and Training.

In addition, the committee was asked to assess the following aspect:

- Reflect on and give recommendations with regards to the Department's ambitions and the mechanisms it has introduced (or intends to introduce) to reach these ambitions.

The committee gave a qualitative evaluation and recommendations on the different criteria.

2.1 Composition of the assessment committee

The composition of the committee was as follows:

- Prof. Jacqueline Glass (full professor and vice dean research, UCL Bartlett) (chair)
- Dr. Stephan van Dijk (director of innovation, AMS Institute)
- Ir. Mar Muñoz Aparici (PhD candidate, TU Delft)
- Prof. Claudia R. Binder (full professor and dean ENAC, EPFL)
- Dr. Francesco Causone (associate professor, Politecnico di Milano)
- Dr. Meike Schalk (associate professor, KTH)

Ir. Ivette Oomens (Technopolis Group) was appointed as secretary to the committee.

2.2 Procedures followed

The committee proceeded according to the Strategy Evaluation Protocol 2021-2027 (SEP). Before the start of the site visit, the committee reviewed the relevant documentation. On March 6, an online introduction session was organised with the committee where the committee made first introductions, the secretary briefed the committee about the Strategy Evaluation Protocol (SEP) and initial reflections on the self-evaluation were shared. Furthermore, the site visit and reporting process were presented.

A site visit was organised for the afternoon of Tuesday 21 March, the entire day of Wednesday 22 March and the morning of Thursday 23 March (see Appendix A for the programme of the site visit). During the site visit, the committee interviewed the Rector Magnificus and the Department Board, representatives of the Management Team Research and the unit chairs, a cross-section of staff, the Graduate Programme Director and a selection of PhD students.

The committee also had the opportunity to examine the Living Cities exhibition, the DDSS VR-lab, the SolarBEAT lab and the Structures Laboratory with the 3D Concrete Printer. After the interviews, the committee discussed the assessment of the Department as a whole. At the end of the site visit, the committee presented the preliminary assessment to representatives of the Department. The presentation was open to everyone interested.

After the site visit, the committee drafted an assessment report based on all the documentation, interviews, and the presentation of the experimental facilities and PhD posters. The report was sent to the Department of the Built Environment for a check on factual inaccuracies, after which it was finalised and presented to the board of the Eindhoven University of Technology.

3 Evaluation of the research unit

3.1 Aim and strategy

The directions and choices of the Department in the period 2016-2021 have been guided by the Departmental strategy 2014-2020 (Building the Future) and the succeeding Built Environment Strategic Plan 2020-2030. In 2014, to strengthen its academic position and to improve continuity for the long-term, the Department decided to enhance the research profile of the Department. The objectives were:

- To make the transition from a mainly education-oriented Department to a Department where research and education were more in balance (including the ambition to be internationally recognised for high quality research);
- Research in the Department should be directed along themes to improve collaboration and societal impact;
- The Department should be an open, inclusive, safe and collaborative community with room for everyone's talent (this objective was added during the evaluation period).

Towards 2030 the Department has formulated a vision: the Department aims to take the lead in (re)shaping the built environment and making it future proof. According to the Department, their strategic choices are aimed at creating and fostering a collaborative environment for research, education and impact, both within and beyond the Department. They also expressed an ambition to be a 'fearless organisation' in respect of academic culture that is strongly oriented towards tackling transitions in the built environment.

3.2 Research quality

The quality of the research at the Department is **strong and recognised** by the international scientific community and local stakeholders. The Department has a distinctive research profile, grounded in rigorous technical and scientific disciplines, with growing, complementary research lines in design, digitalisation and human behaviour disciplines. The Department is proud of its uniqueness, combining technical and design research. The laboratories are **excellent**: they are large, properly equipped and managed, thereby supporting work with local stakeholders on societal challenges and collaboration with international partners on high-scientific-level projects. The Department collaborates with major cross-university institutes within the university, notably the Eindhoven Institute for Renewable Energy Systems (EIRES) and the Eindhoven Artificial Intelligence Systems Institute (EAISI).

Further **collaboration** between units (e.g., Architectural Urban Design and Engineering, - Structural Engineering and Design), Departments (e.g., Industrial Design Engineering) or institutions (e.g., Eindhoven Design Academy) could increase the Department's profile and contribute to societal relevance and public impact. The research units seem to have many research topics in common, however collaboration is limited and should be increased. Unit Building Physics and Services seems to have the highest levels of interconnections with other units and might play a pivotal role in promoting collaboration. Inequalities exist among research units, some of them being more teaching oriented. Increasing collaboration on societal challenges may reduce inequality and improve balance. **Design** can be a powerful focus to bring the department community together and stimulate new ideas, research collaborations, and societal outcomes.

Although international collaborations are in place, local stakeholders seem to be the main source of funding. If the Department wants a stronger international standing, it must **think globally and act locally**. It might align its strategies in a clearer way with, for example, the

United Nations Sustainable Development Goals, the European Union (EU) agenda and EU missions in Horizon Europe. The Department can use this vision to inform local stakeholders and address local challenges.

Recommendations:

- Identify with the Department's community a small number of key priorities/themes which can drive future research and strongly support interdisciplinary thinking and collaborative working, and overtly invite disruptive thinking.
- Co-create a looser intellectual framing for the Department's research mission that strongly supports bottom-up invention and collaboration (e.g., via living labs and PhD community conferences), rather than a top-down control of research agendas and an overly delineated disciplinary mapping of research groups.

3.3 Societal relevance

The Department has a **clear ambition** to better connect to societal challenges, but no clear **vision** to link the research with these challenges. The research lines of the research units are primarily disciplinary and unit focused, which stimulates disciplinary research excellence. The important **societal themes** that the Department has adopted[1] (and which are aligned with the university themes), do not seem to have a strong programmatic approach. While the academic staff is committed to contributing to society through their research, the current themes do not guide them in developing research lines and topics for the future, which can limit the contribution to societal challenges.

Collaboration and partnerships are present in most research projects, although this is a common requirement in research grant and subsidy programmes. This is positive but does not guarantee effective knowledge transfer – **transfer and dissemination** could be more actively managed during research. In some units, interest from industry and collaborations happen outside of the research grant structures and obligations, which is very positive. For instance, in the 3DCP area, at the SED unit, and at the BPS unit. For USRE and AUDE, this is less obvious.

Developments in the region present a timely and unique window of opportunity to foster the societal impact of the Department's research activities. The regional Urban Development Initiative holds promise for more active knowledge transfer and collaboration with industry and local governmental partners. Stakeholders trust and highly appreciate the collaboration with research units and chairs, yet research appears to be determined by the municipality and user **demand**.

The Department has the **potential to be a 'change maker'** in the region, not least in understanding how to achieve sustainable development. A first step is **communication**. In some areas the Department has been able to establish a strong presence in public debates and/or news channels and social media presence, for instance related to the 3D concrete printing facilities or to building physics and health. However, stimulating and enabling academic experts to take an active leadership role in the public debate on national or regional urban development challenges seems less well developed and could be improved. This could include taking a more active and critical stance within regional development processes, but also by showing, demonstrating and co-creating visions for the future about what is possible or

[1] These are sustainability, energy, inclusiveness and key enabling technologies

what is needed to tackle societal challenges in this domain, making the best use of the design capabilities of the Department as well.

Finally, **entrepreneurship** is currently not actively supported within the Department and there is a limited number of role models of entrepreneurial researchers. In general, entrepreneurial support services at TU/e are centralised (through The Gate) and open to all researchers and students, but it doesn't appear that the Department is making full use of these options. Stimulating an entrepreneurial culture for both students and researchers holds great promise, specifically in light of urgent and large societal challenges in the Built Environment. The type of startups and/or entrepreneurs originating from this Department might be different from the high-tech startups of other Departments and might need different support as a result, for example by finding ways for staff and student to engage with **social innovation and social enterprises**.

Recommendations:

- Refresh the impact narrative (and associated communications plan) to reflect the breadth of collaborations and capability, making more use of design as a way to envision new ways to approach to societal challenges.
- Strongly promote and support student teams, via the existing programs in TU/e, to open up opportunities to engage staff (particularly international and non-Dutch speakers) in bottom-up valorisation and engagement with companies.
- More actively connect with entrepreneurship and valorisation services and facilities within TU/e, such as The Gate.

3.4 Viability

The research of the Department **is and will remain important**. Local stakeholders recognise the important role and expertise of the Department in addressing societal challenges. Given the dimensions of the societal challenges the region is facing, the **capacity** of the Department could however be limited. To tackle these challenges, the Department is expected to train a growing number of engineers/architects and to directly support stakeholders with consultancy guidance and inspiration on how these challenges need to be addressed.

This presents a conundrum: on the one hand the university wants to increase the number of students, and with this the educational workload of the Department, and on the other hand the Department wants to be more focused on research quality and societal impact. This is all possible if the number of staff increases (both researchers that combine teaching with research and lecturers to focus on teaching), but by increasing research activities and teaching, administrative tasks will also rise. Indeed, staff among all ranks recognise the important work and increase in the **research support staff team**, including project development officers. With increasing research ambitions, research support should be developed accordingly, and carefully stewarded such that people remain in post and continue to provide what was described as an excellent service.

Finally, a high number of senior **support staff** will retire soon, and the recruitment of new academic, support and laboratory staff should be arranged quickly to ensure continuity.

Recommendations:

- Ensure that proper support is provided by an adequate number of well trained and motivated research support staff, otherwise the quality of research and teaching could be compromised.

3.5 Specific aspects

3.5.1 Open Science

The self-evaluation and the site visit show that **open science is recognised as important**.

A series of actions to support Open Science have been established, including: 1) a professional data steward; 2) training on research and management FAIR principles; 3) expertise on open access provided to individuals via the library; 4) updates of the management team research criteria, including open access. Open Science is also appreciated via Departmental research awards. Attention is not given to publications but also on databases, software/codes release and adoption. Several successful research and PhD projects on Open Science have taken place.

The importance of Open Science for the Department's ambitions and the positive effects that its broader implementation could have for research impact could however be **better communicated** and **awareness** of Open Science principles within the Department should be expanded at all staff levels, such that everyone is confident about what open science means for individuals and the community as a whole. A new departmental level **strategy** for open science would be helpful. This should include extending the current training for staff and students, identifying additional support and resources required, and showcasing some examples of good practice.

Recommendation:

- Establish a Departmental open science strategy to increase overall awareness and individual understanding of the principles of Open Science.

3.5.2 Academic culture

Overall **staff satisfaction** seems to be high – people appreciate the social and communicative working environment, the excellent experimental facilities, and the potential for growth. That said, the academic culture of the Department has clearly been affected by a **large influx of new staff**, in particular assistant professors and PhD students. There was some **tension** between recently appointed assistant professors and the more established associate and full professors. Furthermore, the relationship between **lecturers** employed part-time for teaching and researchers employed full-time seems unbalanced. Lecturers seem not to feel valued and are less integrated into the academic environment. This compromises the opportunity to better integrate education and research.

Workload per staff member has been diminishing (improving) through increasing staff, although it still appears to be high. The relation between the time assistant professors have for research, education and administration, for example, is on paper 40%, 40% and 20%, but in reality, teaching often takes over and leaves little time for achieving research goals.

New lecturers should be welcomed and actively integrated into the community, such that they can engage with the vision and mission of the Department and transmit this to students. All

early career staff need to feel integrated in the Department's academic culture such that they can influence the dynamics of this culture and contribute to the shift that is under way, moving from scientific excellence only to supporting research with societal impact, by including individual collaboration and sharing.

The Department is concerned with creating an **'open, inclusive, safe and collaborative community with room for everyone's talent'**. It has made efforts to bring specific groups across the units together, for example in science cafés and conferences, and PhD students meet in self-organised activities. Nevertheless, it is unclear how the Department is planning to create an open, inclusive, safe and collaborative community with room for everyone's talent. There are few collaborations across the research units and it is unclear how the Department will broaden its strategy and create incentives for future collaborations. There is much to be gained from increasing the **visibility of research** between groups and individuals, for instance through PhD conferences and cross-cutting thematic seminars.

Recommendations:

- Establish a representative group of staff to carry out a fresh review of workload across the Department, considering the apparent imbalances across the units and agreeing on a suitable workload tariff for PhD supervision.

3.5.3 Human Resources Policy

The Human Resources (HR) policy with respect to **Equality, Diversity and Inclusion** (EDI) is lagging behind that of other (international) universities. The Department has been engaged in increasing the number of women among the academic staff and has been quite successful in doing so, mostly at the level of assistant professors. The Department recognises that further efforts are needed to increase the proportion of women at the levels of associate and full professors – which was echoed by staff during the site visit. With the current openings at these levels, the aim is to achieve a more balanced cohort of staff. However, the general level of understanding and practice on EDI was not as strong as in peer universities, where EDI is framed much more broadly to incorporate sex, gender identity, race, ethnicity, and disability, with active programs and projects on intersectionality and neurodivergence, for example. The Department has the **potential** to become a leader in the university by championing EDI throughout its activities and operations. Careful consultation and sensitive, inclusive conversations will be needed to develop a suitable local approach – actively involving staff and students with diverse backgrounds and characteristics to co-produce a safe, engaging and empowering EDI programme.

The **Talent Programme** was praised as being excellent as it encourages growth, networking, and provides mentoring as well as support regarding the tenure process. Particularly relevant were the personal development plans developed in the programme, which were thought to be key to building their profile towards tenure. However, not all assistant professors appeared to be involved in the Talent Programme, which may be creating or sustaining inequalities and reinforcing competitive, rather than collaborative behaviours.

The assistant professors felt comfortable regarding the **promotion criteria** in general, but less clear on the details, for example in respect of societal impact, where individuals were unclear how their research aligns with Departmental priorities and would be recognised for doing so. There was also some concern that mentoring was not planned until tenure was reached.

A PI-oriented approach is being pursued for early career academics, which is positive, yet **implementation of the PI model** is unclear. The model has the potential to cause staff

dissatisfaction and conflict because it challenges established power structures, for example by evaluating and promoting researchers as groups, rather than individuals. The role of full professors and associate professors in the PI model appeared somewhat unclear. The Department should therefore establish a clear **governance** of the implementation process and navigate through it with care. This should address practical matters such as how to balance expectations around individual versus team working, how to create new 'groups' in the future, and how all this relates to promotion criteria.

Recommendations:

- Establish, with care, an EDI committee in the Department which is diverse and inclusive, including staff and students.
- Develop a Departmental EDI policy and strategy, to help strengthen the Department's understanding and awareness of equality, diversity and inclusion (EDI).
- Challenge the university to improve the status of EDI thinking across campus.
- Identify further ways to improve the clarity of the promotion criteria, addressing emerging priorities such as interdisciplinarity and collaboration.
- Undertake a careful consultation with staff before implementing the PI model, such that the community can input concerns and ideas about how this will be operationalised, and carry out an EDI risk assessment of the final plan for the PI model prior to implementation.

3.5.4 PhD Policy and Training

The **research quality** of the PhD students who presented was impressive. They showed the Department's ambitions of interdisciplinarity, excellence and societal impact. PhD candidates appeared generally positive about their experience in the Department on the professional and personal level. The Department's initiative to clarify its PhD policy in a position paper is very positive. Planned actions appear to be the clarification of types of funding and differences, involving PhD students in education independently of their funding, and training for supervisors, all of which can help create and maintain a sense of community.

Supervisors co-supervise six PhD students on average, and promotors up to double that number. The **PhD supervision workload** is rather high and seems to be a challenge for staff. PhD supervision is counted as research and due to the high intake of PhD students in recent years, this creates pressure on supervisors to find sufficient time for PhD student research and support. PhD candidates felt they received good quality supervisory support, but they also noticed the strain their supervisors are facing and would like more guidance capacity especially towards the end of their PhD. There were concerns about why so many students had not completed their PhD dissertations on time between 2017-21, and it was felt that understanding their situations could helpfully identify more effective support structures.

Given the rising numbers of PhD candidates, especially with an international background, **equality, diversity and inclusion** will become more relevant to create a community that fosters collaboration. The PhD training available is appropriate and in line with peer institutions. However, more training on collaboration and interdisciplinary thinking, humanities, EDI or design could be beneficial to reinforce the Department's ambition. Furthermore, beyond an obligatory course in ethics, it would be helpful to create a PhD course in critical thinking which fosters interrogation of how to problematise challenges potentially leading to a variety of answers.

Some PhD students were actively connecting with peers in other Departments but others voiced concerns about a **lack of networking opportunities.** The Department could explore ways to improve this, for example through Departmental PhD conferences.

Recommendation:

- Implement the PhD position paper, and clarify further the types of funding, supervision and training possibilities.
- Carry out an independent review of equity across the PhD cohort and recent graduates, in respect of resources, support, supervision, and access to opportunities.

3.5.5 Additional questions based on the Terms of Reference

The Department's vision is **clear, pertinent and relevant** given the challenges facing society. There is an excellent opportunity to pivot the way that the Department presents this mission to a more open and enabling approach that recognises and catalyses a diversity of ideas, positions, ways of working and outcomes, as outlined throughout this report. To ensure that the Department can thrive and develop further in time, having a strong and clear strategic position will help. The Department should therefore take care to articulate its distinctiveness nationally and internationally. This will enable staff, students and external stakeholders to appreciate and value the Department's potential both now and in the future.

In addition to the **Recommendations in Section 3.2** (Research Quality), and to improve societal impact and leverage its resources, the Department community should reflect carefully on the following and seek out new ways to generate research ideas for the future.

- **Balance between disciplinary excellence and interdisciplinarity:** The Department has followed a strategy to increase research quality by hiring excellent young researchers, mostly at assistant professor level, with high disciplinary skills. While this has resulted in an increase in scientific outputs, collaboration and interdisciplinarity has not necessarily increased. Moreover, a key criterion for promotion is to "be known and recognised in a field", and to fulfil this, assistant professors have to perform well in their respective fields, which might jeopardise their ability (timewise) to engage in interdisciplinary projects.
- **Balance between rewarding group performance and PI model:** The Department has the ambition to develop teams and team work as one of the key axes on their way towards achieving a common culture. At the same time, it is tasked with implementing the PI model to give more autonomy and leadership to assistant and associate professors. There is an open question of how the Department can balance these two ambitions and make them speak to each other fruitfully. Full professors could take a leadership role in paving the way for collaboration and integrating lines of research.
- **Balance between top-down themes and bottom-up defined themes:** The definition of themes is essential for funnelling the societal impact of the Department and fostering mission-driven research. Themes should be sufficiently societally relevant to remain valid for longer periods of time. Top-down definition might ensure longevity, but may not be widely acceptable. Bottom-up themes might be well accepted, but depend on support from the Department's leadership team, which changes over time. The current themes seem not to engage the whole Department. On the one hand they are specific (energy transition), on the other hand too general (sustainability, inclusiveness).

Recommendations:

- Strengthen the unique positioning of the Department compared to other Built Environment Departments elsewhere.
- Devise and implement practical ways to promote systemic, life cycle thinking about global challenges in ways which support staff and students to think critically and reflect on their work in a much broader, societal context.

4 Summary

The quality of the **research** conducted at the Department is strong and recognised by the international scientific community and local stakeholders. The Department has a distinctive research profile, grounded in rigorous technical and scientific disciplines. The Department has a clear ambition to better connect with **societal challenges**, but currently a vision to link the research with these challenges is unclear. There is scope for a different intellectual approach to presenting and operationalising the Department's priorities which empowers individuals to make choices in the way that they attend to the overall mission. This has the potential to support the Department's stated aspiration to be a 'fearless' organisation. Having societal impact also relates to connections and **collaborations**. There is strong interest in the region and significant opportunity to develop a more ambitious and engaging programme for future collaborations which will lead to more substantive societal impact. The Department has the potential to become an influential connector and changemaker.

There are some operational issues that are hindering research in the Department, which should be addressed now for the long-term **viability** and vitality of future research. There is scope for improvements in certain areas to create a community that is truly fearless and equitable – to create the safe and inclusive spaces that the Department is seeking. This also includes promotion criteria that were not well understood and a lack of confidence in how these were operationalised. There is scope to work with staff to establish a clearer understanding and consistent application of such criteria and ways of supporting staff that enables them to succeed in the way they wish to do so.

The above results in recommendations regarding: 1) the strategy and ambition of the Department, 2) societal impact, 3) the ways of working, and 4) supporting individuals for success.

4.1 Recommendations:

Strategy and ambition of the Department

1. Identify with the Department's community a small number of key priorities/themes which can drive future research and strongly support interdisciplinary thinking and collaborative working, and overtly invite disruptive thinking.
2. Strengthen the unique positioning of the Department compared to other Built Environment Departments elsewhere.
3. Co-create a looser intellectual framing for the Department's research mission that strongly supports bottom-up invention and collaboration (e.g., via living labs and PhD community conferences), rather than a top-down control of research agendas and an overly delineated disciplinary mapping of research groups.
4. Establish a Departmental open science strategy to increase overall awareness and individual understanding of the principles of Open Science.
5. Implement the PhD position paper, and clarify further the types of funding, supervision and training possibilities.

Societal impact

6. Refresh the impact narrative (and associated communications plan) to reflect the breadth of collaborations and capability, making more use of design as a way to envision new ways to approach to societal challenges.
7. Devise and implement practical ways to promote systemic, life cycle thinking about global challenges in ways which support staff and students to think critically and reflect on their work in a much broader, societal context.
8. More actively connect with entrepreneurship and valorisation services and facilities within TU/e, such as The Gate.
9. Strongly promote and support student teams, via the existing programs in TU/e, to open up opportunities to engage staff (particularly international and non-Dutch speakers) in bottom-up valorisation and engagement with companies.

Ways of working

10. Establish, with care, an EDI committee in the Department which is diverse and inclusive, including staff and students.
11. Develop a Departmental EDI policy and strategy, to help strengthen the Department's understanding and awareness of equality, diversity and inclusion (EDI).
12. Challenge the university to improve the status of EDI thinking across campus.
13. Carry out an independent review of equity across the PhD cohort and recent graduates, in respect of resources, support, supervision, and access to opportunities.

Supporting individuals for success

14. Identify further ways to improve the clarity of the promotion criteria, addressing emerging priorities such as interdisciplinarity and collaboration.
15. Undertake a careful consultation with staff before implementing the PI model, such that the community can input concerns and ideas about how this will be operationalised and carry out an EDI risk assessment of the final plan prior to implementation.
16. Establish a representative group of staff to carry out a fresh review of workload across the Department, considering the apparent imbalances across the units and agreeing on a suitable workload tariff for PhD supervision.
17. Ensure that proper support is provided by an adequate number of well trained and motivated research support staff, otherwise the quality of research and teaching could be compromised.

Appendix A Site visit programme

Tuesday 21 March 2023

15:00-17:00	Arrival and check-in at hotel
17:00-18:00	Welcome meeting
18:15-18:30	Transfer from hotel to TU/e University Club
18:30-21:00	Dinner in TU/e University Club
21:15-21:30	Transfer to hotel

Wednesday 22 March 2023

08:00-08:15	Transfer from hotel to TU/e
08:30-09:30	Meeting with Rector Magnificus and Department Board
09:45-11:00	Staff panel meeting MTR and unit chairs/research programmes
11:00-11:45	Break and time to walk around the LC Exhibition and see the DDSS VR-lab set-up
11:45-12:30	External stakeholder panel: advisory board, Urban Development Initiative, institutes
12:30-13:30	Lunch session
13:30-14:15	Private committee deliberation
14:15-15:00	Meeting with Graduate Programme Director and Board BE-PhD/EngD network
15:15-16:15	Staff panel meeting – dialogue with cross-section staff
16:30-18:00	Visit to experimental facilities SolarBEAT lab,3D Concrete Printer in Structures Laboratory and TU/e Innovation Space
18:00-21:30	Private committee dinner
21:30-21:45	Transfer to hotel

Thursday 23 March 2023

08:30-09:00	Check-out
09:00-12:00	Private committee meeting, wrap-up and writing of first draft
12:15-12:30	Transfer to campus
12:30-13:30	Lunch meeting with Rector Magnificus and Dean
13:30-14:00	Presentation of preliminary results to Department
14:30	End of programme, return travel

Appendix B Quantitative data on the research unit's composition and funding

B.1 Input of research staff

Table 1 SEP E2 Input of research staff (headcount / FTE)

	2016	2017	2018	2019	2020	2021
Built Environment						
Scientific staff						
Assistant professor	40 / 31,9	39 / 28,7	40 / 28,7	36 / 27,9	39 / 34,2	41 / 37,1
Associate professor	13 / 11,7	13 / 11,5	10 / 8,1	11 / 9,5	12 / 10,8	11 / 9,1
Full professor	18 / 14,6	18 / 14,2	18 / 14,2	18 / 14,6	22 / 14,6	21 / 14
Postdocs	14 / 11,8	14 / 12,5	14 / 13,6	18 / 17,1	24 / 21,7	17 / 15,3
PhD candidates	139 / n.a.	160 / n.a.	176 / n.a.	185 / n.a.	186 / n.a.	187 / n.a.
EngD trainees	14 / 13,6	17 / 16,6	22 / 22,0	18 / 17,1	29 / 28,1	35 / 34,0
Total research staff	**238 / 83,6**	**261 / 83,5**	**280 / 86,6**	**286 / 86,2**	**312 / 109,4**	**312 / 109,5**
Teaching staff	24 / 15,9	26 / 17,0	23 / 14,8	25 / 15,8	25 / 15,8	40 / 18,8
Support staff (technician)	9 / 9,0	11 / 11,0	11 / 11,0	11 / 11,0	11 / 11,0	10 / 10,0
Support staff (other)	78 / 56,0	66 / 43,5	60 / 41,2	66 / 42,8	73 / 49,2	64 / 44,2
Visiting fellows[2]						
Total staff	**349 / 164,5**	**364 / 155,0**	**374 / 153,6**	**388 / 155,8**	**421 / 185,4**	**426 / 182,5**

Source: TU/e BE Self Evaluation Report Research 2023

B.2 Funding

Table 2 SEP E3 Research funding & expenditures (K€)

	2016	2017	2018	2019	2020	2021
Built Environment						
Funding:						
Direct funding	821	883	690	544	961	1,579
Research grants	1,359	1,558	1,498	2,001	1,734	1,854
Contract research	3,363	2,648	2,927	3,972	5,343	5,941
Other	313	81	113	156	185	240
Total funding	**5,856**	**5,170**	**5,228**	**6,673**	**8,223**	**9,614**

[2] Visiting fellows are not registered in the TU/e administration and it is therefore not possible to provide a reliable number.

	2016	2017	2018	2019	2020	2021
Expenditure:						
Personnel costs	5,205	4,321	4,206	5,613	6,804	7,982
Material costs[3]						
Other costs	651	849	1,022	1,060	1,419	1,632
Total expenditure	**5,856**	**5,170**	**5,228**	**6,673**	**8,223**	**9,614**

Source: TU/e BE Self Evaluation Report Research 2023

B.3 PhD candidates

Table 3 SEP E4 PhD candidates

Enrolment				**Success rates**					
Starting year	Enrolment (male/female		Total (M+F)	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Not yet finished*	Discon-tinued
2014	12	6	18	2 / 11%	8 / 44%	10 / 56%	10 / 56%	4 / 22%	2 / 11%
2015	11	17	28	10 / 36%	18 / 64%	19 / 68%	20 / 71%	5 / 18%	3 / 11%
2016	9	20	29	11 / 38%	17 / 59%	17 / 59%	17 / 59%	9 / 31%	3 / 10%
2017	17	17	34	9 / 26%	9 / 26%	9 / 26%		20 / 59%	5 / 15%
2018	16	15	32	2[4] / 6%	2 / 6%			27 / 84%	3 / 9%
Total	**65**	**75**	**141**	**34 / 24%**				**65/46%**	**16/11%**

Source: TU/e BE Self Evaluation Report Research 2023. *= 31-12-2021

[3] Material costs are not specified separately in the TU/e administration, but included in other costs. It is estimated that the costs for equipment and materials sum up to around 50% of the other costs. The other 50% concerns travel and the hiring of third parties.

[4] These concern double doctorate PhD students, conducting the first two years of the PhD trajectory at another university and the last two years at TU/e.

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