## **Accepted Manuscript**

Environmental assessment of green concretes for structural use

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PII: S0959-6526(17)30711-4

DOI: 10.1016/j.jclepro.2017.04.015

Reference: JCLP 9366

To appear in: Journal of Cleaner Production

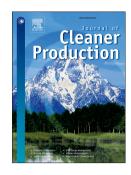
Received Date: 12 January 2017

Revised Date: 22 March 2017

Accepted Date: 3 April 2017

Please cite this article as: Marinković Snež, Dragaš J, Ignjatović I, Tošić N, Environmental assessment of green concretes for structural use, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.04.015.

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## ACCEPTED MANUSCRIPT

1	13392
2	ENVIRONMENTAL ASSESSMENT OF GREEN CONCRETES FOR STRUCTURAL USE
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12	
13	Abstract
14	This paper presents a comparative environmental assessment of several different green
15	concrete mixes for structural use. Four green concrete mixes were compared with a
16	conventional <b>concrete mix</b> : recycled aggregate concrete with a cement binder, high-volume
17	fly ash concrete with natural and recycled aggregates, and alkali activated fly ash concrete
18	with natural aggregates. All five concrete mixes were designed and experimentally verified to
19	have equal compressive strength and workability. An attributional life cycle assessment,
20	based on the scenario which included construction practice, transport distances, and
21	materials available in Serbia, was performed. When treating fly ash impacts, three
22	allocation procedures were compared: 'no allocation', economic, and mass allocation, with
23	mass allocation giving unreasonably high impacts of fly ash. Normalization and aggregation
24	of indicators was performed and the impact of each <b>concrete mix</b> was expressed through a
25	global sustainability indicator. A sensitivity analysis was also performed to evaluate the

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